

Part Two

Current Environmental Issues and Environmental Conservation Measures by the Government

Part Two of the *Quality of the Environment in Japan 2003* introduces the environmental conservation measures implemented in FY 2002 based on the state of environmental problems and in line with the Basic Environment Plan, in the chapters structured as shown below. Part Two of this booklet will make clear the issues and current state of environmental problems in the major fields.

- Chapter One: Measures for Various Environmental Problems
- Chapter Two: Basis of Various Measures, and Measures Facilitating the Participation of Various Actors
- Chapter Three: Promotion of International Activities
- Chapter Four: Effective Implementation of the Basic Environment Plan

1. Conservation of the Global Atmospheric Environment

(1) Global Warming

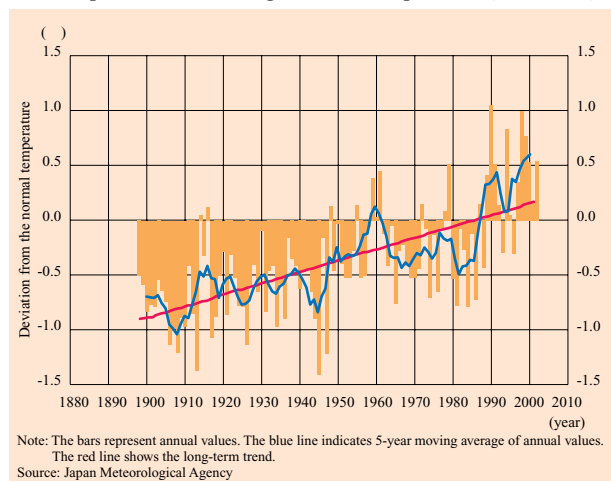
In recent years, expanding human activities have discharged vast quantities of carbon dioxide, methane and other greenhouse gases into the atmosphere. These gases have enhanced the greenhouse effect and have given rise to the threat of global warming.

According to the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report—Climate Change 2001, the global average surface temperature has increased since 1861. Over the 20th century the increase has been $0.6 \pm 0.2^{\circ}\text{C}$. The progress of global warming may have far-reaching and serious effects on both the living environment of humans and the natural habitats of other living organisms. According to the 2001 IPCC Report, global mean sea level is projected to rise by a maximum of 88 cm between 1990 and 2100. According to observations conducted by the Japan Meteorological Agency, Japan has also experienced an increase of about 1.0°C in the annual mean temperature over the last one hundred years. The effects of global warming on the natural environment have already become apparent, as shown by the decrease in the area of sea ice in the Sea of Okhotsk and range shifts of plants and animals.

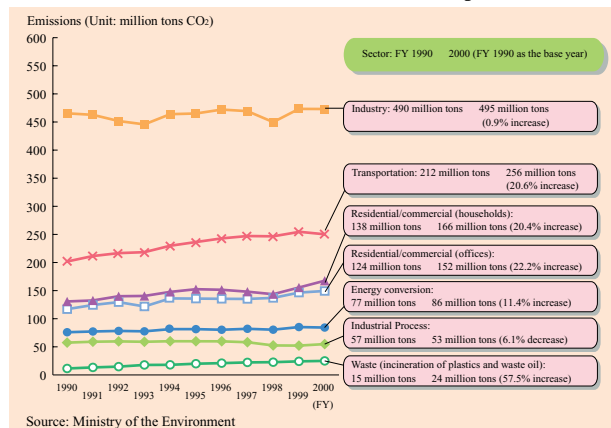
Of the amounts of greenhouse gases emitted in Japan in FY 2000, carbon dioxide emissions were 1,237 million tons, with a per-capita emission of 9.75 tons. Compared to the FY 1990 figures, total emission has increased by 10.5% and the per-capita emission by 7.6%. A breakdown by sector shows that emissions from the industrial sector have increased by 0.9%, the commercial/institutional sector by 22.2%, the residential sector by 20.4% and the transport sector by 20.6%.

In May 2002, Japan revised the “Law Concerning the Promotion of the Measures to Cope with Global Warming,” and in June of the same year concluded the Kyoto Protocol that sets legally binding quantitative targets for greenhouse gas emissions in developed nations. Drastic initiatives will be needed to devise a solution to the problem of global warming. These initiatives include strengthening policies in all areas of our socio-economic system, organically structuring the various policies, and in the future reengineering our current socio-economic system of mass production, mass consumption and mass disposal.

Secular Changes in Deviation from Japan's Annual Average Surface Temperature (1898–2002)



Emissions of Carbon Dioxide in Japan



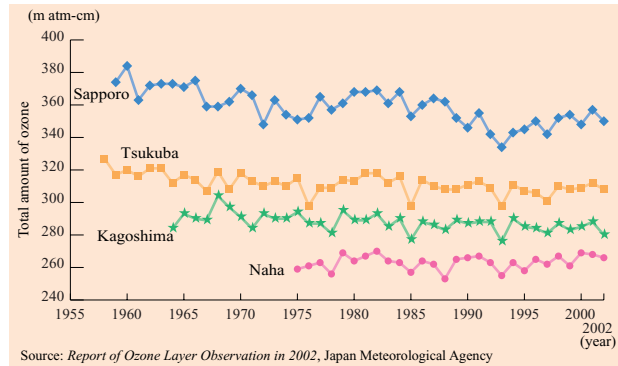
(2) Depletion of the Ozone Layer

It is well known that the ozone layer has been destroyed by ozone-depleting substances (ODSs) such as Chlorofluorocarbons (CFCs). Ozone layer depletion leads to the increase of the quantity of harmful ultraviolet rays reaching the earth and the increased radiation may possibly cause health damages such as skin cancer and cataracts in humans.

The ozone layer is being depleted almost over the entire globe, with the exception of the tropical areas, and the decrease is particularly notable at the higher latitudes. In Japan, too, a statistically significant depletion in the ozone layer above Sapporo (which is northern part of Japan) has been observed. The largest ozone hole above Antarctica was recorded in 2000.

In 1988, the Japanese Government enacted the Ozone Layer Protection Law to regulate the production, etc. of ODSs such as CFCs. Then in June 2001, the government enacted the Law for Ensuring the Implementation of Recovery and Destruction of Fluorocarbons concerning Specified Products (Fluorocarbons Recovery and Destruction Law). The Law requires recovering and destroying of fluorocarbons when discarding commercial refrigeration and air conditioning equipment, or automobile air conditioners.

Changes in the Annual Average of Total Ozone over Japan



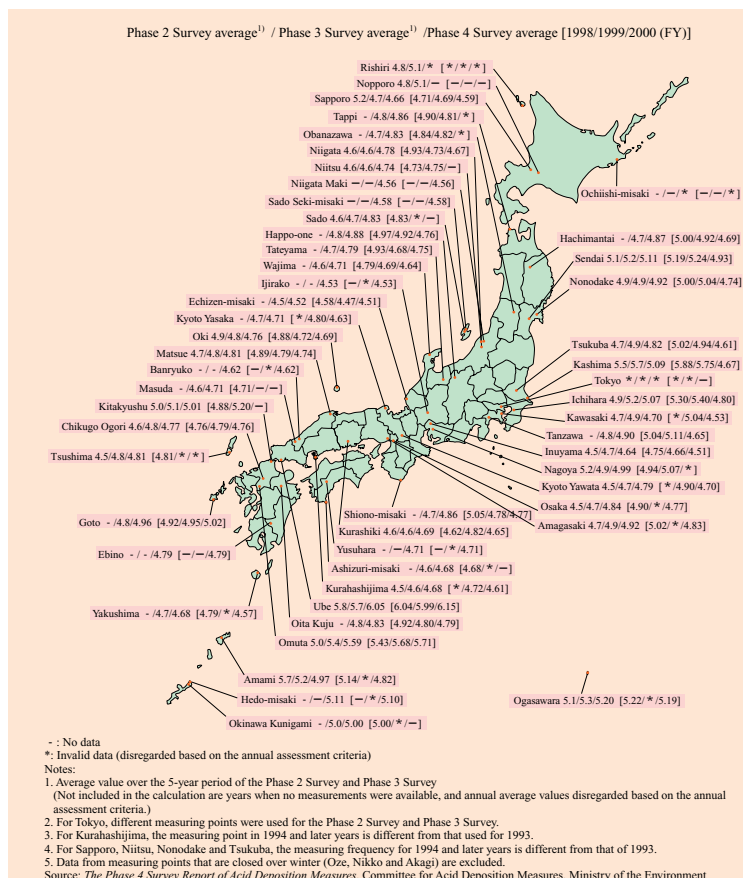
2. Conservation of the Atmospheric Environment (not including the global atmospheric environment)

(1) Acid Deposition

Air pollutants such as sulfur oxides and nitrogen oxides emitted to the atmosphere by the combustion of fossil fuels are converted to sulfuric and nitric acids. These acids are incorporated into clouds, and fall onto the ground in the form of rain, snow and mists. These deposited acids increase acidity in soils and inland water such as lakes and rivers, and impact on forests, fishes, and other living creatures. The acid deposition also impacts on trees and cultural assets.

The impact of acid deposition in Japan is still not apparent at this time. But it is considered that the impact of acid deposition may take a long time before it becomes apparent, and the acid deposition will become a critical problem in the future.

Levels of pH in Precipitation



(2) Photochemical Oxidants

Photochemical oxidants are secondary pollutants formed when primary pollutants composed mainly of nitrogen oxides (NO_x) and hydrocarbons (HC) emitted from factories, business establishments and automobiles are exposed to sunlight and experience a photochemical reaction. Photochemical oxidants are a cause of photochemical smog that causes eye and throat irritation and respiratory distress. Level of exposure to photochemical oxidants still exceeds the environmental quality standard (EQS)—a one-hour value of 0.06 ppm or less—in almost all regions throughout the country.

(3) Nitrogen Oxides

Nitrogen oxides (NO_x) are mainly generated by combustion from stationary sources, such as factories, and mobile sources, such as motor vehicles. High concentrations of NO_x can damage the respiratory system.

The average annual values for nitrogen dioxide concentrations have remained steady over a long time. Its concentration achieved a 99.0% compliance with the environmental quality standard for nitrogen dioxide in ambient air pollution monitoring stations in FY 2001. Since compliance with the environmental quality standard remained low in large cities, which were specified as target areas for countermeasures by the Law Concerning Special Measures for Total Emission Reduction of Nitrogen Oxides from Automobiles in Specified Areas (Automobile NO_x Law), in 2001, the Law was revised and strengthened to become the Law Concerning Special Measures for Total Emission Reduction of Nitrogen Oxides and Particulate Matter from Automobiles in Specified Areas (Automobile NO_x/PM Law).

(4) Suspended Particulate Matter (SPM)

Suspended particulate matter in the air with a diameter of 10µm or less is categorized as primary particles or 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 those formed by chemical reaction within the atmosphere from gaseous substances, such as nitrogen oxides (NO_x). Because SPM is minute, it remains in the air for extended periods of time. An accumulation of SPM in high concentrations in the lungs or the trachea can have damaging effects on the respiratory system.

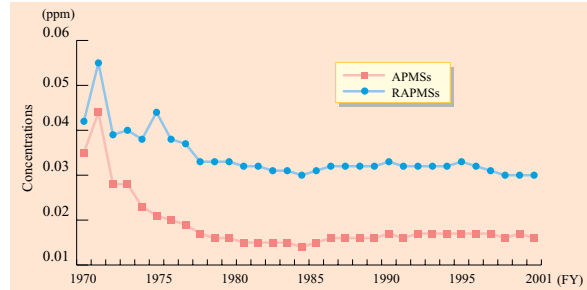
The annual average for SPM concentration in recent years has shown signs of a shift from a steady state to a steady decline. However, the compliance rates to EQS have been in decline since FY 2000. In FY 2001, under the Automobile NO_x/PM Law, particulate matter was added in the list of subjects to be controlled. Furthermore, studies have been conducted on fine particulate matter with a diameter of 2.5 µm or less and diesel exhaust particles, for their impact on human health have recently raised concerns.

Changes in the Total Number of Days Warnings Were Issued and Number of Sufferers Reported (1993–2002)

Item	Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Changes in the total number of days warnings were issued (days)		71	175	139	99	95	135	100	259	193	184
Number of sufferers reported (persons)		93	564	192	64	315	1,270	402	1,479	343	1,347

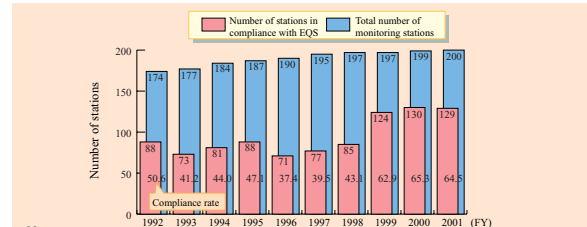
Source: Compiled from Information related to Air Pollution by Photochemical Oxidants in 2002, Ministry of the Environment

Changes in the Annual Average of Nitrogen Dioxide Concentrations (FY 1970–2001)



Source: Compiled from FY 2001 Report on the State of Air Pollution, Ministry of the Environment

Changes in the State of Compliance with the Environmental Quality Standard (EQS) for Nitrogen Dioxide in Specified Areas (RAPMSSs) (FY 1992–2001)

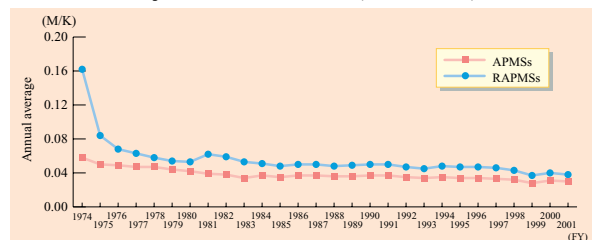


Notes:

1. Specified areas refer to areas in parts of Saitama, Chiba, Tokyo, Kanagawa, Aichi, Mie, Osaka and Hyogo prefectures, which are the areas designated pursuant to the Automobile NO_x/PM Law.
2. Evaluation of air pollution by the EQS for nitrogen dioxide is carried out with the annual 98-percentile of daily averages of nitrogen dioxide taken at each monitoring station.

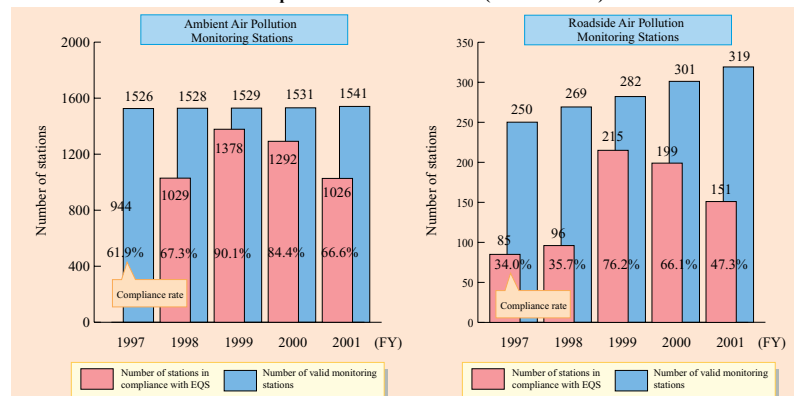
Source: Compiled from FY 2001 Report on the State of Air Pollution, Ministry of the Environment

Changes in the Annual Averages of the Concentration of Suspended Particulate Matter (FY 1974–2001)



Source: Compiled from FY 2001 Report on the State of Air Pollution, Ministry of the Environment

Changes in the State of Compliance with the Environmental Quality Standard (EQS) for Suspended Particulate Matter (FY 1997–2001)



Source: Compiled from FY 2001 Report on the State of Air Pollution, Ministry of the Environment

(5) Hazardous Air Pollutants

Based on the Air Pollution Control Law, measures against hazardous air pollutants focus on the promotion of voluntary efforts by businesses as well as the control of emission of designated substances, such as benzene.

In FY 2001, the concentration of benzene in the ambient air exceeded the environmental standard in 67 of 368 sites. To reduce benzene emissions further, voluntary efforts by businesses in five areas where benzene concentration is consistently high have been encouraged since FY 2001.

(6) Noise, Vibration and Offensive Odors

Noise, vibration and offensive odors affect the human senses and are becoming important issues, along with air pollution, in the conservation of a favorable living environment. Among various types of pollution, noise and offensive odors are problems that are closely related to everyday life. The sources of these problems are complex and diverse. Each year, complaints about noise and offensive odors account for the large percentage of pollution-related complaints. Complaints about noise had declined over the last ten years but began to increase in FY 2000. Complaints about offensive odors have increased over the past several years. In particular, complaints about odors from outdoor incineration have dramatically increased.

(7) Heat Island Phenomenon

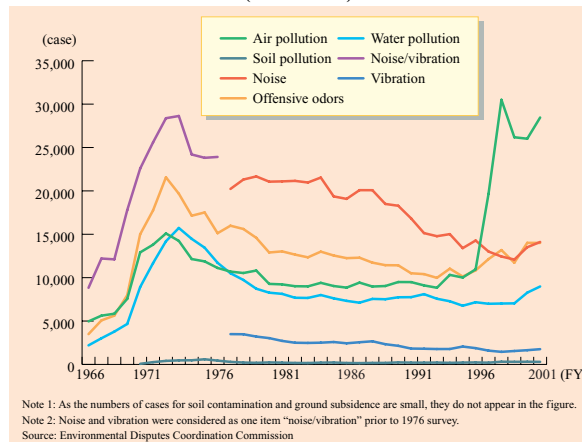
The heat island phenomenon occurs when temperatures rise more in urban areas than in surrounding suburban areas. This phenomenon results in an increase in the number of nights in which the temperature stays over 25°C and an increase in energy consumption, mainly in major cities. These factors have an adverse effect on the environment. Policies to help mitigate this phenomenon are necessary. With this backdrop, the Three-Year Program for Promoting Regulatory Reform (re-amended in March 2003) calls for a guideline for measures to mitigate the heat island phenomenon to be created in FY 2003.

3. Conservation of the Water, Soil and Ground Environments

(1) Water Environment

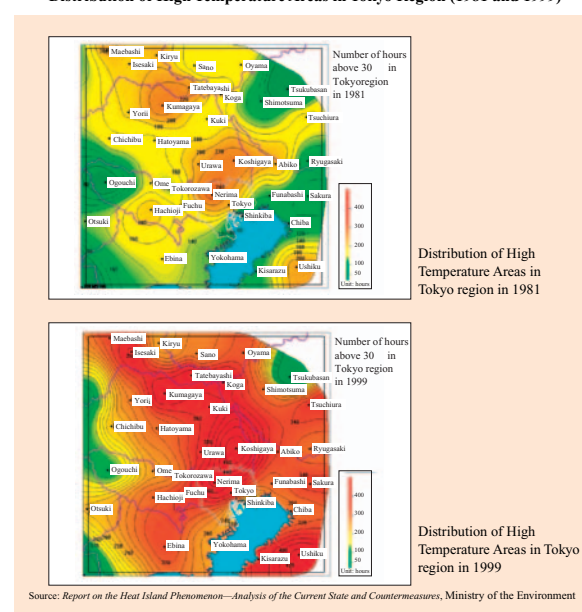
According to the results of the FY 2001 Nationwide Water Quality Survey of Public Water Areas, the rate of compliance with human health-related environmental quality standard (EQS) items such as cadmium was 99.4%. The compliance rate for COD, a typical water-quality indicator for organic pollution as a living environment-related EQS, reached 79.5%. However, compliance rates were still low for enclosed water areas including lakes, reservoirs, inner bays and inland seas. The compliance rate for COD was 68% for Tokyo

Changes in the Number of Complaints against the Seven Typical Types of Pollution (FY 1966–2001)



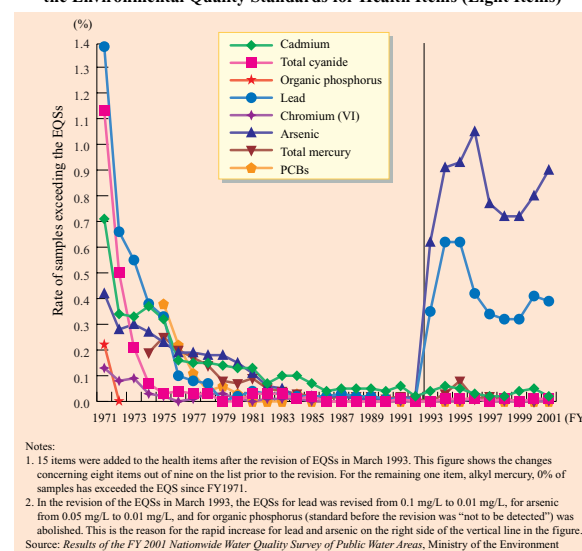
Note 1: As the numbers of cases for soil contamination and ground subsidence are small, they do not appear in the figure.
 Note 2: Noise and vibration were considered as one item "noise/vibration" prior to 1976 survey.
 Source: Environmental Disputes Coordination Commission

Distribution of High Temperature Areas in Tokyo Region (1981 and 1999)



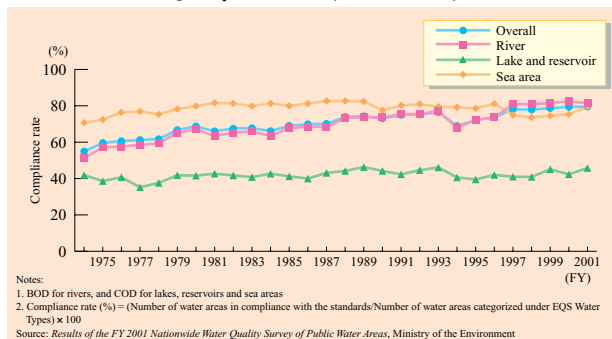
Source: Report on the Heat Island Phenomenon—Analysis of the Current State and Countermeasures, Ministry of the Environment

Changes in the Rate of Samples Exceeding the Environmental Quality Standards for Health Items (Eight Items)

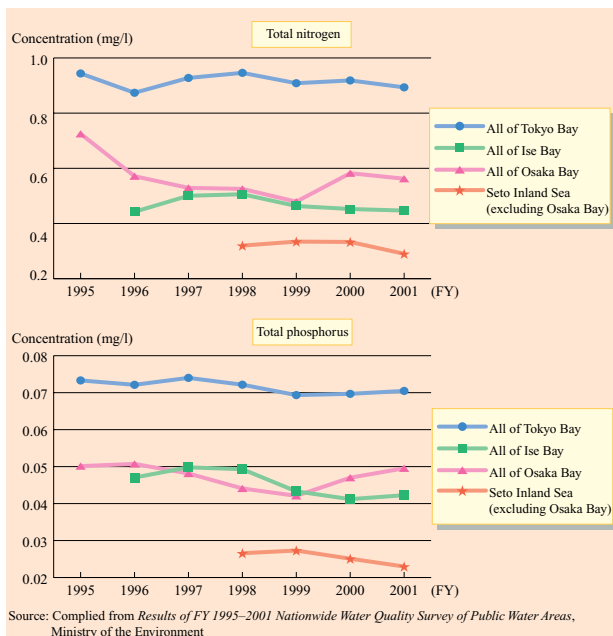


Notes:
 1. 15 items were added to the health items after the revision of EQSs in March 1993. This figure shows the changes concerning eight items out of nine on the list prior to the revision. For the remaining one item, alkyl mercury, 0% of samples has exceeded the EQS since FY1971.
 2. In the revision of the EQSs in March 1993, the EQSs for lead was revised from 0.1 mg/L to 0.01 mg/L, for arsenic from 0.05 mg/L to 0.01 mg/L, and for organic phosphorus (standard before the revision was "not to be detected") was abolished. This is the reason for the rapid increase for lead and arsenic on the right side of the vertical line in the figure.
 Source: Results of the FY 2001 Nationwide Water Quality Survey of Public Water Areas, Ministry of the Environment

Changes in Rates of Compliance with Environmental Quality Standards (BOD or COD)



Changes in the Water Quality of Three Sea Areas



Bay, 56% for Ise Bay, 74% for the Seto Inland Sea and 45.8% for lakes and reservoirs. In order to meet water quality objectives, the total pollutant load control programmes for Tokyo Bay, Ise Bay and Seto Inland Sea have set targets for the total daily COD load permissible from all point sources (with FY 2004 set as the target year). These programmes include nitrogen and phosphorus from 2001, as one of the measures against eutrophication in enclosed water body.

The results of the FY 2001 Water Quality Survey of Groundwater reported that 7.2% of the total wells surveyed had substances that exceeded their environmental quality standards. Nitrate nitrogen/nitrite nitrogen was found in levels exceeding the environmental quality standard in 5.8% of the wells. Immediate measures are needed to deal with this pollution.

(2) Marine Pollution

There were 516 occurrences of marine pollution incidents in sea areas surrounding Japan in FY 2002, an increase of 30 occurrences as compared to FY 2001.

Results of Groundwater Quality Survey for FY 2001 (General Survey)

Substance	Number of wells surveyed	Number of wells exceeding EQS	Excess rate (%)	EQS
Cadmium	3,003	0	0	0.01 mg/L or less
Total cyanide	2,660	0	0	Not detected
Lead	3,362	13	0.4	0.01 mg/L or less
Chromium (VI)	3,175	0	0	0.05 mg/L or less
Arsenic	3,422	44	1.3	0.01 mg/L or less
Total mercury	2,907	3	0.1	0.0005 mg/L or less
Alkyl mercury	1,075	0	0	Not detected
PCBs	2,044	0	0	Not detected
Dichloromethane	3,548	1	0.0	0.02 mg/L or less
Carbon tetrachloride	3,700	0	0	0.002 mg/L or less
1, 2-dichloroethane	3,316	0	0	0.004 mg/L or less
1, 1-dichloroethylene	3,668	0	0	0.02 mg/L or less
cis-1, 2-dichloroethylene	3,673	5	0.1	0.04 mg/L or less
1, 1, 1-trichloroethane	4,290	0	0	1 mg/L or less
1, 1, 2-trichloroethane	3,308	0	0	0.006 mg/L or less
Trichloroethylene	4,371	11	0.3	0.03 mg/L or less
Tetrachloroethylene	4,374	10	0.2	0.01 mg/L or less
1, 3-dichloropropene	2,898	0	0	0.002 mg/L or less
Thiuram	2,506	0	0	0.006 mg/L or less
Simazine	2,638	0	0	0.003 mg/L or less
Thiobencarb	2,575	0	0	0.02 mg/L or less
Benzene	3,324	0	0	0.01 mg/L or less
Selenium	2,600	0	0	0.01 mg/L or less
Nitrate nitrogen/nitrite nitrogen	4,017	231	5.8	10 mg/L or less
Fluorine	3,558	25	0.7	0.8 mg/L or less
Boron	3,408	14	0.4	1.0 mg/L or less
Total (actual number of wells)	4,722	341	7.2	

Source: Results of the FY 2001 Nationwide Water Quality Survey of Groundwater, Ministry of the Environment

Changes in Occurrences of Marine Pollution by Sea Area

Year	Sea area	Type of pollutant	Sea area										Total
			Coast of Hokkaido	East coast of Honshu	Tokyo Bay	Ise Bay	Osaka Bay	Seto Inland Sea (excluding Osaka Bay)	Southern coast of Honshu	Coast of Kyushu	Coast of Japan Sea	Southwestern sea area	
1998	Other than oil	Oil	32	24	73	12	16	67	52	47	33	32	388
		Hazardous liquid substances	0	7	1	0	1	2	33	0	0	2	46
		Wastes	8	6	2	13	37	60	33	39	13	0	211
		Other	2	0	9	1	1	11	1	1	0	0	26
		Subtotal	10	13	12	14	39	73	67	40	13	2	283
		Red tide	0	1	2	6	1	8	5	0	3	0	26
Total			42	38	87	32	56	148	124	87	49	34	697
1999	Other than oil	Oil	18	33	64	11	14	47	31	37	35	49	339
		Hazardous liquid substances	0	2	2	0	0	1	13	2	0	0	20
		Wastes	13	3	4	20	9	49	40	18	21	4	181
		Other	1	3	6	0	5	5	1	0	2	0	23
		Subtotal	14	8	12	20	14	55	54	20	23	4	224
		Red tide	0	2	10	3	3	2	2	0	4	0	26
Total			32	43	86	34	31	104	87	57	62	589	
2000	Other than oil	Oil	13	23	78	17	16	44	45	31	13	27	307
		Hazardous liquid substances	0	1	0	1	1	1	25	0	1	0	30
		Wastes	10	9	2	45	3	43	10	39	64	1	226
		Other	1	1	4	0	1	3	5	1	0	0	16
		Subtotal	11	11	6	46	5	47	40	40	65	1	272
		Red tide	0	0	15	5	1	1	6	2	1	0	31
Total			24	34	99	68	22	92	91	73	79	28	610
2001	Other than oil	Oil	15	19	73	28	11	49	31	45	38	18	327
		Hazardous liquid substances	0	2	1	1	2	1	0	1	0	0	8
		Wastes	1	3	3	6	5	32	13	8	31	1	103
		Other	1	1	8	0	0	0	1	0	0	0	11
		Subtotal	2	6	12	7	7	33	14	9	31	1	122
		Red tide	0	0	16	4	0	3	4	6	4	0	37
Total			17	25	101	39	18	85	49	60	73	19	486
2002	Other than oil	Oil	32	29	68	21	16	63	14	45	42	28	358
		Hazardous liquid substances	0	0	0	0	2	1	4	1	0	0	8
		Wastes	2	7	2	2	2	12	9	10	33	0	79
		Other	1	1	9	1	0	7	1	2	1	0	23
		Subtotal	3	8	11	3	4	20	14	13	34	0	110
		Red tide	0	3	4	14	0	10	8	5	4	0	48
Total			35	40	83	38	20	93	36	63	80	28	516

Notes:
1. "Hazardous liquid substances" in "Other than oil" refer to hazardous liquids designated by the Law Relating to the Prevention of Marine Pollution and Maritime Disaster or liquids that have not been assessed.
2. "Other" in "Other than oil" includes industrial effluent, blue tides, etc.
Source: Japan Coast Guard

(3) Soil Pollution

Contaminated soil accumulates hazardous substances, perpetuating the state of pollution. In recent years, an increasing number of urban soil contamination cases are found during redevelopment work of former factories and research facilities. There were as many as 134 of such cases in FY 2000. The Soil Contamination Countermeasures Law was established in May 2002 and implemented on February 15, 2003, to carry out measures against soil pollution such as getting an accurate picture of the current state of soil pollution and prevention of harm to human health caused by soil pollution.

(4) Ground Subsidence

Excessive pumping of groundwater can lower the level of the groundwater and shrink the clay layer, which leads to ground subsidence. Once ground subsidence occurs, the ground will not recover to its former level, which can cause damage to buildings and aggravate flooding. There were a total of 61 areas in 37 prefectures that reported ground subsidence by FY 2001.

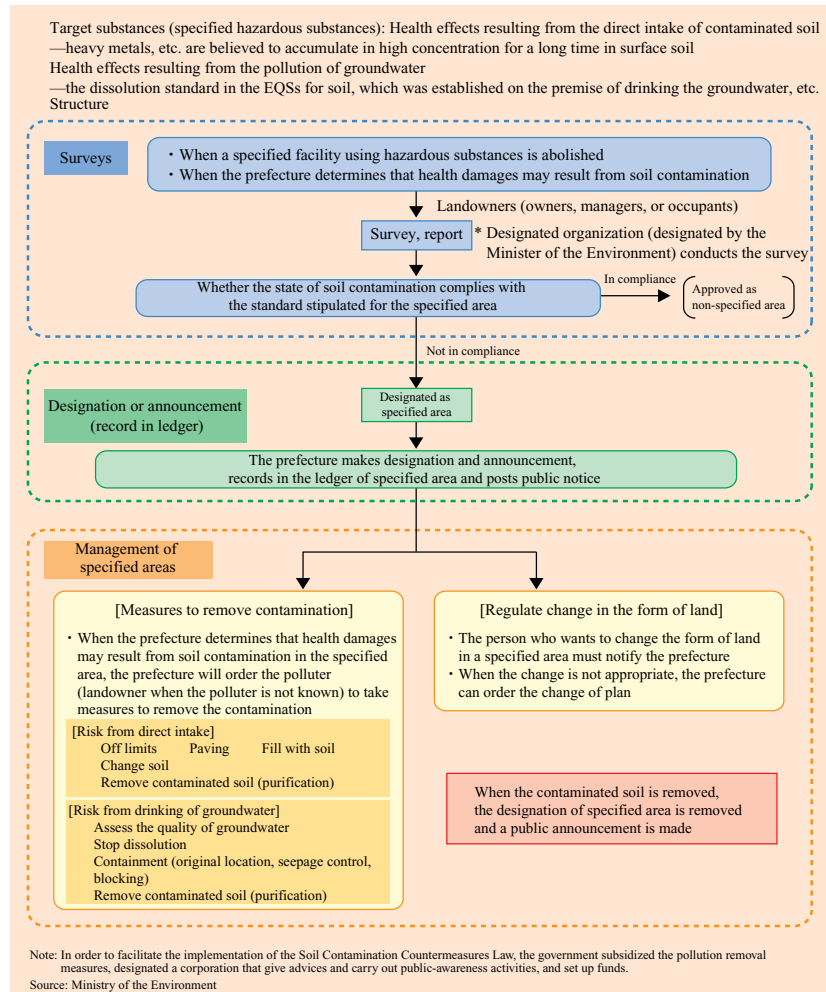
4. Measures for Waste and Recycling

Since FY 1989, Japan has been generating domestic waste at an annual volume of approximately 50 million tons or more. These annual volumes have remained steady over the last several years. Of all domestic waste, direct incineration accounted for 77.4% and recycling accounted for 16.7% in FY 2000. The final volume disposed at landfill sites was 10.51 million tons, a decrease of 360,000 tons from the previous year. Packaging and containers represent 61.0% of domestic waste (volume ratio).

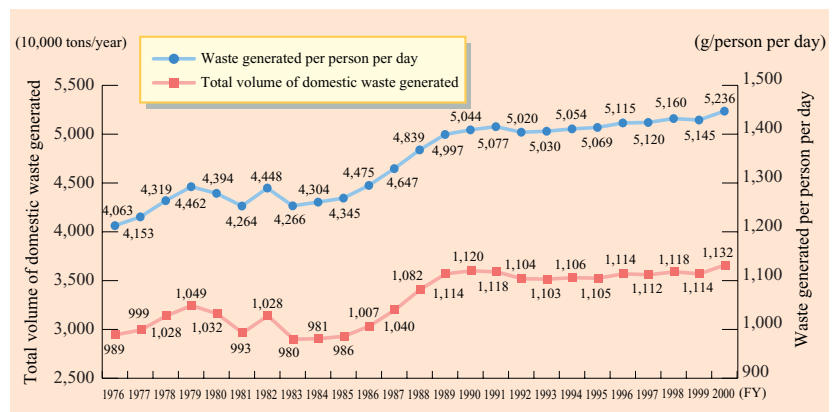
The total volume of industrial waste in Japan has also remained steady over the last several years. The volume in FY 2000 was approximately 406 million tons, a slight increase from the previous year. Approximately 45 million tons were discarded at final disposal sites, a decrease over the previous year in the percentage to the total amount of industrial waste generated. Nationally, an average of 3.9 years of capacity in final disposal sites for industrial waste remained as of FY 2000, presenting a serious situation. The outlook is especially grim for the greater Tokyo area with only 1.2 years of capacity remaining.

To solve these problems, the goals for waste disposal and recycling are prioritized as follows according to the Basic

Outline of the Soil Contamination Countermeasures Law



Changes in the Total Volume of Domestic Waste and Waste Generated per Person per Day



Law for Establishing the Recycling-based Society enacted in 2000: (i) reduce waste, (ii) reuse end-of-life products and parts, (iii) recycle as raw materials, (iv) recover heat as energy, and (v) dispose as final waste. The Law stipulated that the government was to formulate the Basic Plan for Establishing a Recycling-based Society to ensure that waste and recycling measures are implemented in a comprehensive and systematic manner. The Plan, formulated in March 2003, defined a specific image of the type of recycling-based society that Japan is aiming at, target values and the respective roles of citizens, NPOs, NGOs, businesses, local governments, and the national government.

Illegal dumping of industrial waste has remained steady at around 400,000 tons for the past several years, but in FY 2001, the volume decreased drastically to 240,000 tons.

5. Measures for Environmental Risk from Chemical Substances

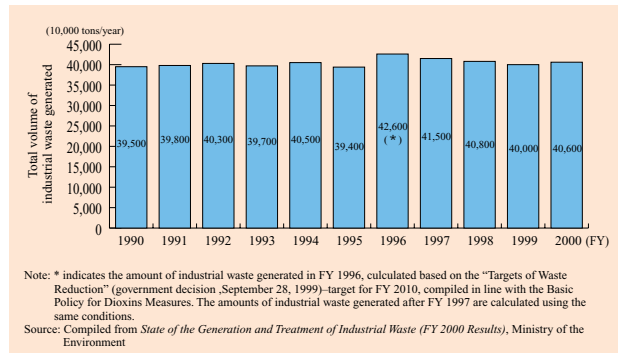
Among the 50,000 or more chemical substances said to be distributed in Japan, there are many that have various kinds of toxicity, such as carcinogenicity and reproductive toxicity. It is feared that these substances may affect humans and the ecosystem through various media, such as air and water.

In order to prevent damage by these substances, the environmental risk (possible interference with environmental conservation) of these chemical substances must be assessed and proper measures must be taken based on the assessment results.

Until recently, Japan's system for evaluating and regulating chemical substances took the position of protecting human health alone. In order to introduce an evaluation and regulation system that focuses on the impact of chemical substances on plants and animals, in addition to the protection of human health, a revised draft of the Chemical Substances Control Law was passed by the Cabinet and sent to the Diet in March 2003. The draft also adopts more efficient and effective measures that take into consideration the possibility of chemical substances being released into the environment. The preparations must be made to implement a new evaluation and regulation system based on the revised Chemical Substances Control Law.

The average daily intake volume of dioxins for humans is decreasing annually. The volume is less than the tolerable daily intake level (4pg-TEQ/kg/day) that is low enough that even if this volume were to be absorbed throughout one's lifetime, it would not have adverse health effects.

Changes in the Volume of Industrial Waste Generated

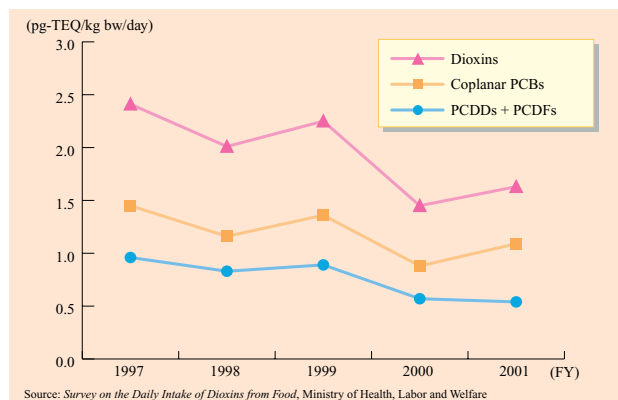


Current State of the Illegal Dumping of Industrial Waste

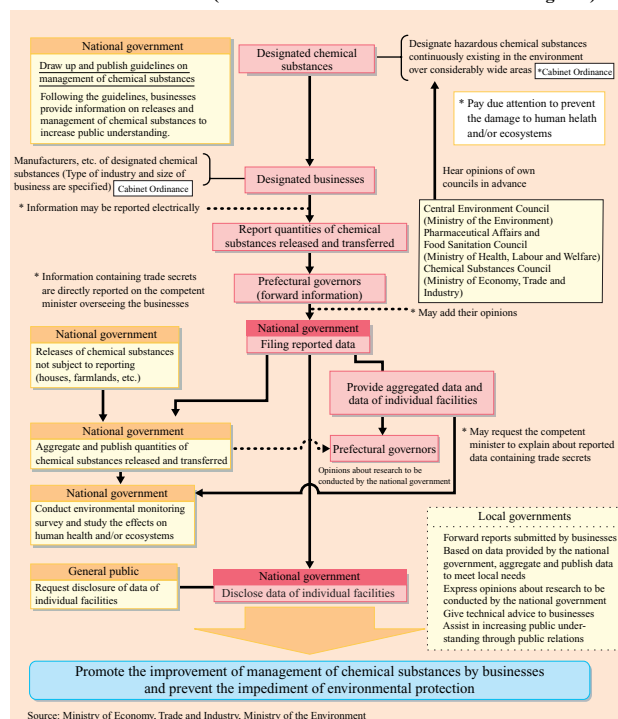
FY	Average of 1993-1995	1996	1997	1998	1999	2000	2001
Number of dumping (case)	435	719	855	1,197	1,049	1,027	1,150
Amount of dumping (10,000 tons)	38.9	21.9	40.8	42.4	43.3	40.3	24.2

Source: Compiled from State of the Illegal Dumping of Industrial Waste (FY 2001), Ministry of the Environment

Changes in Daily Intake of Dioxins



Implementation Procedure of Reporting, etc. of Releases of Specific Chemical Substances (PRTR/Pollutant Release and Transfer Register)



In addition, because the toxicity of endocrine disrupting chemicals, which impact the endocrine system (hormones) by causing damage to or having harmful effects on the body, is mostly unknown, studies are being promoted to gather scientific knowledge.

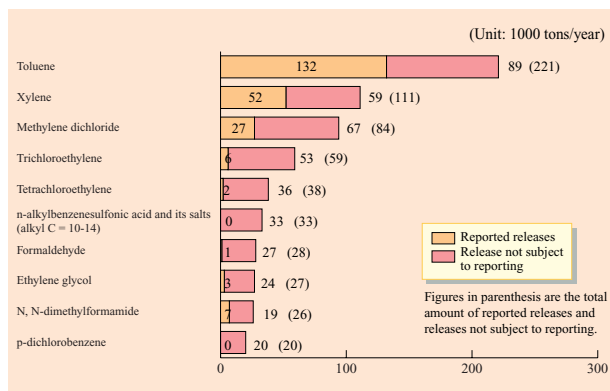
Moreover, Japan introduced the Pollutant Release and Transfer Register system (PRTR system) for chemicals that are suspected of being harmful to human health and ecosystems. The PRTR system assesses, aggregates, and disseminates the amount of these substances released to the environment or transferred off-site from industrial establishments via waste products. Since March 2003, the first results have been published and requests for disclosure of individual data have been accepted. The promotion of risk communication on chemical substances will take on more importance in the future.

6. Ensuring the Coexistence of Man and Nature

When we look at the current state of the natural environment in Japan, we see that natural forests and secondary forests are in decline while afforested areas, urban areas, and reclaimed lands are increasing. The areas of tidal flats and seaweed/seagrass beds as well as natural coastlines are also in decline. The number of species exposed to the danger of extinction includes 2 species of mammals and 39 species of birds. In total, 62 species have been classified as national endangered species of wild fauna and flora in the Law for the Conservation of Endangered Species of Wild Fauna and Flora. The number of threatened species listed on the Red List has reached a little more than 20% of mammals, amphibians, brackish/freshwater fish and vascular plants (Tracheophyte), a little less than 20% of reptiles and a little more than 10% of bird species inhabiting Japan.

With this backdrop in March 2002, the government revised the National Strategy on Biological Diversity based on the following three pillars. (1) Strengthening conservation is proposed to tackle issues such as the extinction of species, decrease in

Top 10 Chemical Substances for Reported Releases and Releases Not Subject to Reporting (FY 2001)

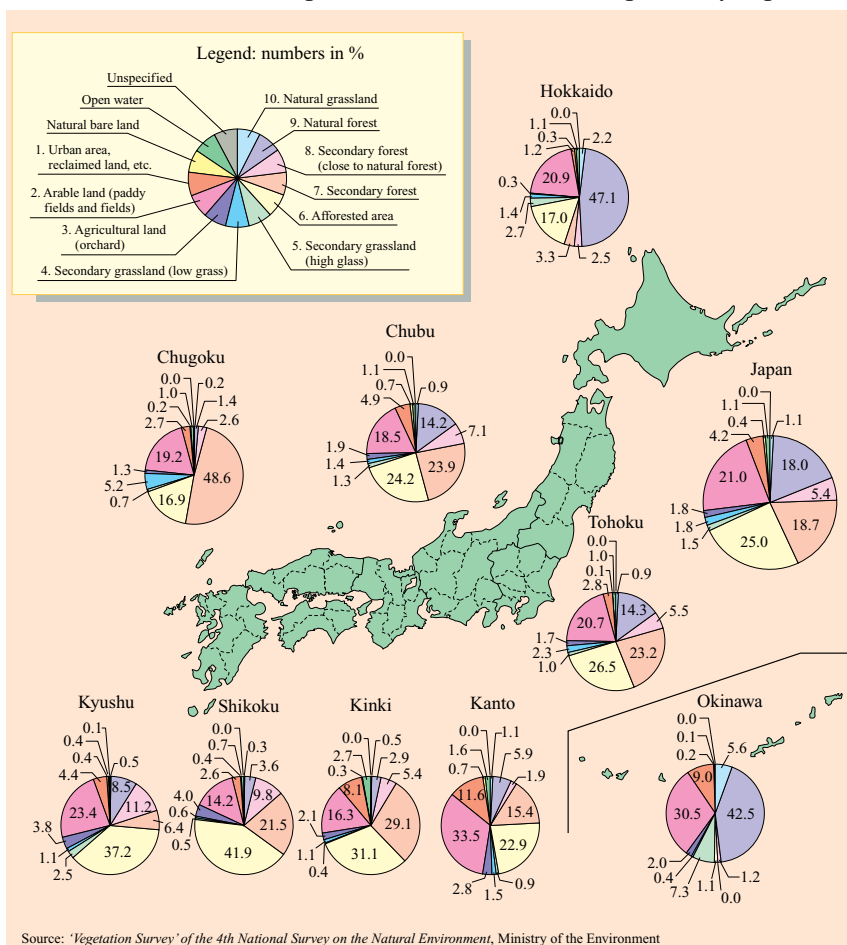


Degree of Human Disturbance of Vegetation

Number of vegetation	Category of Vegetation	3rd Survey		4th Survey		Increase/decrease	
		Number of meshes	Percentage (%)	Number of meshes	Percentage (%)	Number of meshes	Percentage (%)
10	Natural grassland	4,038	1.1	4,011	1.1	- 27	0.0
9	Natural forest	66,979	18.2	66,394	18.0	- 585	- 0.2
8	Secondary forest (close to natural forest)	20,046	5.4	19,733	5.4	- 313	- 0.1
7	Secondary forest	70,484	19.1	69,030	18.7	- 1,454	- 0.4
6	Afforested area	91,029	24.7	92,072	25.0	1,043	0.3
5	Secondary grassland (high grass)	5,737	1.6	5,626	1.5	- 111	0.0
4	Secondary grassland (low grass)	5,939	1.6	6,498	1.8	559	0.2
3	Agricultural land (orchard)	6,798	1.8	6,817	1.8	19	0.0
2	Arable land (paddy fields and fields)	76,945	20.9	77,311	21.0	366	0.1
1	Urban area, reclaimed land, etc.	14,841	4.0	15,420	4.2	579	0.2
	Natural bare land	1,392	0.4	1,416	0.4	24	0.0
	Open water	4,170	1.1	4,211	1.1	41	0.0
	Unspecified	72	0.0	71	0.0	- 1	0.0
	Total	368,470	100.0	368,610	100.0	140	0.0

Source: 'Vegetation Survey' of the 4th National Survey on the Natural Environment, Ministry of the Environment

Distribution Ratio of Degree of Human Disturbance of Vegetation by Region



Threatened Wildlife of Japan (species listed on the Red List and the Red Data Book)

(as of March 2003)

Taxonomical group	Species assessed	Extinct	Extinct in the wild	Threatened species		Near threatened	Lack of information	Threatened local population	Number of threatened species	
				Critically endangered + Endangered	Vulnerable					
Animals	Mammals	Approx.200	4	0	32 12 20	16	16	9	12	48
	Birds	Approx.700	13	1	42 17 25	47	16	16	2	89
	Reptiles	97	0	0	7 2 5	11	9	1	2	18
	Amphibians	64	0	0	5 1 4	9	5	0	4	14
	Brackish water and freshwater fishes	Approx. 300	3	0	58 29 29	18	12	5	14	76
	Insects	Approx. 30,000	2	0	63	76	161	88	3	139
	Land/freshwater molluscs	Approx.1,000	25	0	86	165	206	69	5	251
	Spiders/crustacea	Approx.4,200	0	1	10	23	31	36	0	33
	Subtotal for animals		47	2	303	365	456	224	42	668
	Plants	Vascular plants	Approx.7,000	20	5	1,044 564 480	621	145	52	0
Bryophytes		Approx.1,800	0	0	110	70	4	54	0	180
Algae		Approx.5,500	5	1	35	6	24	0	0	41
Lichen		Approx.1,000	3	0	22	23	17	17	0	45
Fungi		Approx.16,500	27	1	53	10	0	0	0	63
Subtotal for plants		55	7	1,264	730	190	123	0	1,994	
Total		102	9	1,567	1,095	646	347	42	2,662	

- (1) Data on the assessed animal species (including subspecies) were derived from the *Checklist of Japanese Species of Wildlife* 1993, 1995, and 1998 edited by the Environment Agency.
- (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 Environment Agency surveys.
- (4) Data on the current state of threatened species (including subspecies) were derived from the *Revised Red Data Book—Threatened Wildlife of Japan: Amphibians, Reptiles, Plants I, and Plants II* (edited by the Environment Agency in 2000), *Mammals and Birds* (edited by the Ministry of the Environment in 2002) and the *Red Lists on Brackish water and freshwater fish, Invertebrates (Insects, Land/freshwater shellfish, Arachnids, and Myriapods, Crustacea, etc.)* compiled by the Environment Agency in 1998, 1999, and 2000.
- The categories are as follows:
 Extinct: Species that are considered extinct in Japan
 Extinct in the Wild: Species that can only survive by being raised or by 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 species that is isolated in an area and has high possibility of extinction.
- Source: Compiled by the Ministry of the Environment

Location of National and Quasi-national Parks

National park		Quasi-national park	
① Rishiri-Rebun-Sarobetsu	② Sanin Kaigan	① Shokanbetsu-Teuri	② Sado-Yahiko-Yoneyama
③ Shiretoko	④ Setonaikai	③ Abashiri	④ Noto Hanto
⑤ Akan	⑥ Daisen-Oki	⑤ Niseko-Shakotan	⑥ Kitangato Kaigan
⑦ Kushiro Shitsugen	⑧ Ashizuri-Uwakai	⑦ Otaru Kaigan	⑧ Echizen-Kaga Kaigan
⑨ Daisetsuzan	⑩ Saikai	⑨ Hidaka Sanmyaku-Erimo	⑩ Wakasawan
⑪ Shikotsu-Toya	⑫ Unzen-Amakusa	⑪ Onuma	⑫ Yatsugatake-Chushin Kogen
⑬ Towada-Hachimantai	⑭ Aso-Kuju	⑬ Shimokita Hanto	⑭ Tenryu-Okumikawa
⑮ Rikuchu Kaigan	⑯ Kirishima-Yaku	⑮ Tsugaru	⑯ Ibi-Sekigahara-Yoro
⑰ Bandai-Asahi	⑱ Iriomote	⑰ Hayachine	⑰ Hida-Kisogawa
⑲ Nikko		⑲ Kurikoma	⑲ Aichi Kogen
⑳ Joshinetsu Kogen		㉑ Minamisanriku-Kinkazan	㉑ Mikawan
㉒ Chichibu-Tama-Kai		㉒ Zao	㉒ Suzuka
㉔ Ogasawara		㉔ Oga	㉔ Muroo-Akame-Aoyama
㉖ Fuji-Hakone-Izu		㉖ Chokai	㉖ Biwako
㉘ Chubu Sangaku		㉘ Echigo Sanzan-Tadami	㉘ Meiji Memorial Forest Mimoo
㉚ Hakusan		㉚ Suigo-Trukuba	㉚ Kango-Ikema-Kisen
㉜ Minami Alps		㉜ Myogi-Arafune-Saku Kogen	㉜ Hyonosen-Ushiroyama
㉞ Ise-Shima		㉞ Minamiboso	㉞ Yamato-Aogaki
㉟ Yoshino-Kumano		㉟ Meiji Memorial Forest Takao	㉟ Koya-Ryujin
		㊱ Tanzawa-Oyama	㊱ Hiba-Dogo-Taishaku
		㊲ Nishichugoku Sanchi	
		㊳ Akiyoshidai	
		㊴ Muroto-Anan Kaigan	
		㊵ Ishizuchi	
		㊶ Kitakyushu	
		㊷ Genkai	
		㊸ Yaba-Hita-Hikosan	
		㊹ Iki-Tsushima	
		㊺ Kyushu Chuo Sanchi	
		㊻ Nippo Kaigan	
		㊼ Sobo-Katamuki	
		㊽ Nichinan Kaigan	
		㊾ Amami Gunto	
		㊿ Okinawa Kaigan	
		Old Battlefields of Okinawa	

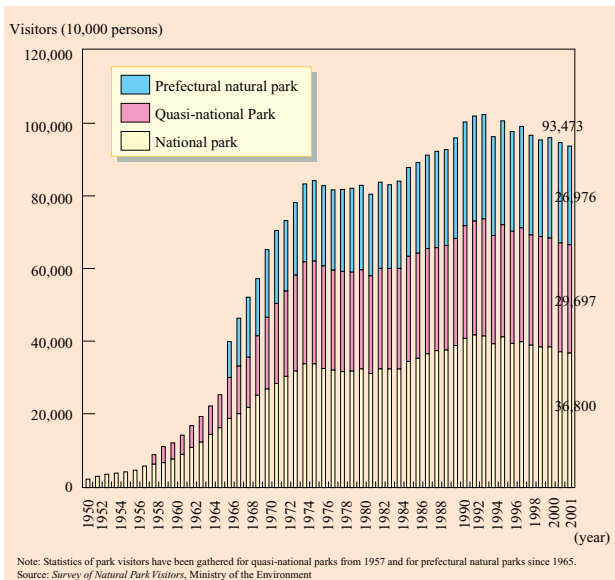
Source: Compiled by the Ministry of the Environment

wetland, the problem with invasive alien species, etc. (2) In addition to conservation, active “restoration of the nature” is proposed. (3) “Sustainable use” of various kinds of space, such as *satochi-satoyama*, is proposed. In other words, concrete, efficient measures are developed with these three pillars as a basic policy to promote regional biodiversity conservation.

Natural parks, including national parks, represent the excellent natural scenery of Japan. Based on the revision of the National Strategy on Biological Diversity, the Natural Parks Law has also been revised to include the establishment of a regulated utilization zones for the conservation and appropriate use of ecosystems; establishment of a scenic landscape protection agreement system to protect secondary natural scenery areas such as grasslands and *satochi-satoyama*; and a system to assign citizens’ groups as park management organizations. In addition, to promote the conservation of internationally important wetlands, Miyajima-numa and Fujimae-higata were added to the Ramsar List of Wetlands of International Importance in November 2002.

In addition, the restoration of the natural environment destroyed in the past has begun with the participation of experts, local authorities, NPOs and local residents. These projects include the restoration of meandering river in the Kushiro-shitsugen wetlands and the regeneration of coppice in Musashino at Kunugiyama in Saitama Prefecture. Furthermore, the Law for the Promotion of Nature Restoration was established recently, setting forth basic principles for the restoration of nature and concrete procedures for its promotion.

Changes in the Number of Natural Park Visitors



Systems for the law's smooth operation are being strengthened.

Besides those mentioned above, as a part of policy for conservation and management of wildlife, the bill to establish a system for the precise and smooth implementation of the Cartagena Protocol, which provides an international framework concerning export and import of living modified organisms, is being submitted to the Diet.

7. Conservation of Global Environment

(1) Transboundary Movements of Hazardous Waste

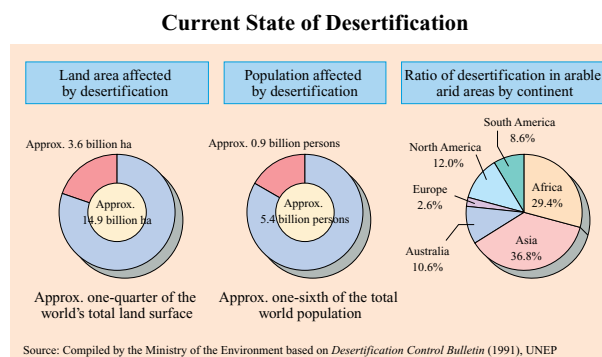
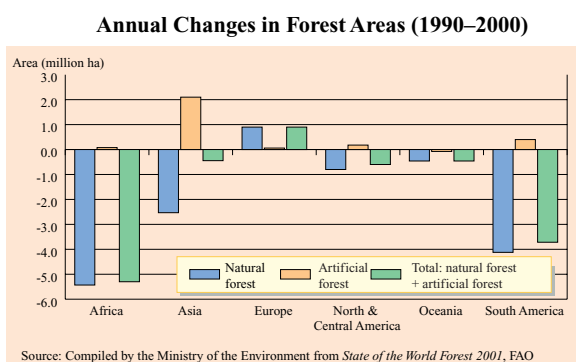
There are global environmental problems other than global warming, destruction of the ozone layer, acid deposition and pollution of the oceans discussed so far. From the 1970s to the 1980s, developed nations exported toxic waste materials to developing nations with looser regulations and cheaper processing fees where the waste was inappropriately treated or illegally dumped, causing environmental pollution. There were also repeated occurrences of ships carrying toxic wastes drifting on the ocean without a destination because they had been denied permission to unload. With this backdrop, the problem of transboundary movement of hazardous wastes became recognized by the international community as requiring global efforts. In 1992, the Basel Convention came into effect. As of March 2003, 155 nations including Japan, and the EC had joined the Convention.

(2) Deforestation

Forests have multiple functions, including the provision of living and breeding grounds for wildlife and the absorption of carbon dioxide. From 1990 to 2000, approximately 94 million hectares of forests disappeared in the world. Because of this, the importance of conservation and sustainable management of forests, including combating illegal logging, has been recognized. In 2000, the United Nations Forum on Forests (UNFF) was established and since then has been involved in the promotion and implementation of a number of proposals for action.

(3) Desertification

Besides the aridity of the soil, desertification includes soil erosion, salinization and the decrease of natural plant species. Desertification is a global problem. According to a UNEP survey, about 1/4 of all land area in the world is subject to the influences of desertification, which is about 70% of the arable arid area, affecting about 1/6 of the world's population or 900 million people. For this reason, the UN Convention to Combat Desertification (UNCCD) came into effect in 1996, and currently many measures are proceeding to effectively implement this convention.



Measures to be Implemented in FY 2003

In the *Quality of the Environment in Japan 2003*, the environmental conservation measures that are planned for FY 2003 based on the Basic Environment Plan are reported in the structure shown below.

- Chapter One: Measures for Various Environmental Problems
- Chapter Two: Basis of Various Measures, and Measures Facilitating the Participation of Various Actors
- Chapter Three: Promotion of International Activities
- Chapter Four: Effective Implementation of the Basic Environment Plan