

Annual Report on Environmental Statistics 2017

■ Chapter 1 Overview of Society and Economy

Domestic Basic Indices		page
1.01	Population, area, gross prefectural product and electricity consumed by prefecture	1
1.02	Chart of Japan's energy balance flow (FY2016)	5
1.03	Trends in total amount of domestic primary energy supply	6
1.04	Trends in final domestic energy consumption	7
1.05	Fuel consumption for residential and commercial industry use	8
1.06	Supply and demand of food	9
1.07	Energy consumption by manufacturing industry (by industry type)	10
1.08	Energy intensity of manufacturing (IIP basis)	13
1.09	Residential energy consumption by use	14
1.10	Residential energy consumption by energy	15
1.11	Residential energy consumption per household by use	16
1.12	Residential energy consumption per household (by use and by energy)	17
1.13	Penetration and ownership of home appliances	18
1.14	Commercial energy consumption by use	19
1.15	Commercial energy consumption by energy	20
1.16	Commercial energy consumption by business type	21
1.17	Commercial energy consumption per floor space by use	22
1.18	Commercial energy consumption per floor space by use and energy	23
1.19	Transportation energy consumption (by mode)	24
1.20	Energy intensity by mode	25
1.21	Trends in proportion of power generation by energy source	26
1.22	Trends in rate of utilization for nuclear power plants	27
1.23	Trend in CO2 emissions per unit of user-end electricity	28
1.24	New energy supply	29
1.25	Installed capacity and utilization of new energy	30
Overseas Basic Indices		page
1.26	Energy balance by country and region (production amount, consumption amount)	31
1.27	Consumption of coal, oil, natural gas and electric power	32
1.28	World new energy supply	33
1.29	Production quantity of marine products (by species)	34

Annual Report on Environmental Statistics 2016

■ Chapter 2 Global Environment

Greenhouse Gas Emissions	page
2.01 Trends in emission amounts of greenhouse gasses in Japan	36
2.02 Trends in Carbon Dioxide Emissions by Sectors in Japan	37
2.03 Trend in Major Socioeconomic Activities and Carbon Dioxide emissions	38
2.04 Trends in carbon dioxide emissions by energy use in major countries and regions	40
2.05 Carbon dioxide emissions by source in major countries and regions	42
2.06 Atmospheric concentrations and anthropogenic emission of CO ₂	43
2.07 Emissions of greenhouse gasses in major countries and regions	44
2.08 Anomalies of annual average land temperature in the World and Japan	45
Ozone Layer Depletion	page
2.09 Shipping volume of CFC in Japan	46
2.10 Production and consumption volumes of HCFC in Japan	49
2.11 Changes in production volume of major CFCs in the world	50
2.12 Emissions of Ozone Depleting Substances on PRTR basis	51
2.13 Chronological changes in Background Concentration of Specified Substances in the Atmosphere in Hokkaido	52
2.14 Changes in annual average of total ozone amount over Japan	54
2.15 Changes in ozone hole area in the Antarctic	55
2.16 Recovery and Destruction of Fluorocarbons	56
2.17 Japan's contribution to the Montreal Protocol Multilateral Fund	57
Acid Precipitation	page
2.18 Trends in emissions of sulfur dioxide (SO _x) by country	58
2.19 Trends in emissions of nitrogen oxide (NO _x) by country	59
2.20 Acid deposition in Europe (Annual average of pH in precipitation)	60
2.21 Acid Deposition in Japan (Annual Average of pH in Precipitation)	61
2.22 Annual average pH at monitoring sites of East Asia acid deposition monitoring network (EANET)	62
Water Quality	page
2.23 Water quality in rivers	63
2.24 Water quality in lakes	64
2.25 Population accessible to sewage treatment facilities	65
Water Resources	page
2.26 Amount of water intake and fresh water resources by country	66
Ocean Contamination	page
2.27 Ocean-dumping of Waste	68
Soil Contamination	page
2.28 Consumption of fertilizer by country	69
Biodiversity	page
2.29 Changes in land-use by country	70
2.30 Threatened species in each country	71
Forest Resources	page
2.31 Areas of agricultural land by country	74
2.32 Forest area in each country	75
Environmental Issues in Developing Countries	page
2.33 Performance records of Environment-related ODA	76

Annual Report on Environmental Statistics 2016

■ Chapter 3 Natural Environment

Land Use	page
3.01 Area of forest converted by purpose	77
3.02 Area of five categories on Basic Land Use Planning by prefecture	78
3.03 Shares of Vegetation Categories by Region	79
3.04 Shares of Vegetation Naturalness by Region	80
3.05 Changes in Vegetation Naturalness over Time	81
3.06 Areas of Forest and Grazing Land (by prefectures and type of ownership)	82
3.07 Area of forest used for public benefits by prefecture	83
Nature Conservation	page
3.08 Number of Natural Parks and Visitors	84
3.09 Annual number of visitors in each national park	85
3.10 Annual number of visitors to each quasi-national park	88
3.11 Number of Applications for Permission for Activities in National Parks (Numbers of Approvals by the Ministry of the Environment)	92
3.12 Area of Natural Parks by Region	93
3.13 Area of Natural Parks by Prefecture	94
3.14 Marine Parks located in the National Parks and the Quasi-National Parks	95
3.15 Area of Wilderness Areas, Nature Conservation Areas	98
3.16 Area of World Natural Heritages	100
Use and Protection of Hot Springs	page
3.17 Annual Survey on the Administrative Measures based on Hot Springs Law	101
3.18 Survey on the Administrative Measures based on Hot Springs Law (by Prefecture)	102
3.19 Changes in Utilization of Hot Springs	107
3.20 Utilization of Hot Springs by prefecture	109
City Parks	page
3.21 Status of city parks (by prefecture)	111
Shorelines	page
3.22 Changes in the total length of nationwide Coastline	114
3.23 Alteration of Lake Shorelines	115
3.24 Total length of the coast by prefecture	116
Wetland Conservation	page
3.25 Distribution of Extant Tidal flats (by sea area)	119
3.26 Change in Nationwide tidal flats area	120
3.27 Distribution of Extant Sea Grass Beds (by sea area)	121
3.28 Area of Hermatypical Coral by Prefecture	122
3.29 Designated Ramsar sites in Japan	123
Biodiversity	page
3.30 Threatened Wildlife Species in Japan (the species listed in the Red List of the Ministry of the Environment)	124
3.31 Number of Nationally Endangered Species of Wild fauna and flora and protection and recovery program in Japan	125
3.32 Designation of Natural Habitat Protection Area	126
3.33 Designation of Wildlife Protection Areas and Areas for Paid Game Hunting	127
3.34 Number of Hunting Licenses and Captured Wildlife by Hunting	128
3.35 The number of Invasive Alien Species and of Confirmed/Acknowledged Cases of their Mitigation based on Invasive Alien Species Act	129
Animal Protection and Management	page
3.36 Registration Status of the Animal Handling Business Operators	130
3.37 Change in the Number of Dogs and Cats Adopted, Reunited with Owners, and Put to Sleep	132

Annual Report on Environmental Statistics 2016

■ Chapter 4 Material-Cycle

Material Flow	page
4.01 Material Flow in Japan	133
4.02 Changes in Material Flow Indicators in Japan	134
Municipal Waste	page
4.03 Waste Disposal Flow Sheet	135
4.04 Trends in total amount of waste generated	136
4.05 Changes in generation of waste per person per day	137
4.06 Waste Treatment by Prefecture	138
4.07 Development of Waste Incineration Plants	140
4.08 Development of Waste Incineration Plants by Prefecture	141
4.09 Development of Recycling Facilities	142
4.10 Development of Recycling Facilities by Prefecture	144
4.11 Development of Bulky Waste Disposal Facilities	145
4.12 Development of Bulky Waste Facilities by Prefecture	146
4.13 Changes in Total Volume of Final Disposal	147
4.14 Development of Final Disposal Sites by Prefecture	148
4.15 Changes in Annual Expenses for the Waste Management	150
4.16 Changes in Annual Expenditures for Waste Management Program	151
Industrial Waste	page
4.17 Flow of treatment for industrial waste	152
4.18 Generation of Industrial Waste by Industrial Sector	153
4.19 Generation of Industrial Waste by Type	156
4.20 Changes in Disposal/Treatment of Industrial Waste	158
4.21 Changes in the Number of Permissions for the Industrial Waste and the Remaining Periods of the Capacity of Final Disposal Sites	159
4.22 Number of illegal-dumping cases of Industrial Waste and volume dumped by Prefecture (Newly-reported cases)	160
4.23 Survey on Environmental impacts by Illegal dumping and measures by prefectures (the unsolved cases)	163
4.24 Offenders of illegal dumping	164
4.25 Number of Unsolved Cases of Illegal Dumping and Remaining Amount	165
4.26 Number of the Unsolved Cases of Illegal Dumping and Remaining Amount by Prefecture	166
4.27 Improper Disposal of Sulfate Pitch	167
Wide-Area Movement	page
4.28 Wide-area movement of municipal waste	168
4.29 Wide-area movement of industrial waste	169
Package Recycling	page
4.30 Percentage of Containers and Packaging in Household Waste	170
4.31 Production and disposal of plastics	171
4.32 Changes in sales amounts of aluminum cans and recycling ratio	172
4.33 Changes in consumption and recycling rate of steel cans	173
4.34 Change in recovery rate of cardboard	174
4.35 Changes in production volumes and recovery ratio of PET bottles	175
4.36 Utilization of products from recycled PET bottles	176
4.37 Changes in sales volume and collection rate of household cartons	177
4.38 Achievement on Sorted Collection and Recycling based on the Containers and Packaging Recycling Act	178
4.39 Changes in production volume and recycling rate of foamed polystyrene	179
Home Appliances Recycling	page
4.40 Implementation of Recycling of Specified Home Appliances	180
Construction Recycling	
4.41 Volumes of construction waste by type	182
4.42 Recycling of construction waste by item	183
Food Recycling	
4.43 Generation and treatment of food waste	184
Automobile Recycling	page
4.44 Collection of used cars (number of cases reported)	185
4.45 Rate of recycling of Shredder dust (ASR) and the like by automobile manufacturers	186
Effective Resource Utilization	page
4.46 Voluntary collection and resource regeneration of PC and small rechargeable batteries	187

Annual Report on Environmental Statistics 2016

■ Chapter 5 Aquatic Environment

Water Quality	page
5.01 Number of Specified Sites in accordance with the Water Pollution Control Act	188
5.02 Number of specified Facilities by prefecture in accordance with Water Pollution Control Act	189
5.03 Results of the comprehensive survey of release of water pollution substances	190
5.04 Rate of compliance with environmental quality on health issues (non-achievement rate)	191
5.05 Rate of compliance for environmental standards (BOD or COD)	192
5.06 Water quality of enclosed sea area (annual average of COD)	193
5.07 Changes in Water quality in the specified lakes (COD)	194
5.08 Achievement rate of Environmental Quality Standards for total nitrogen and total phosphorus in marine water	195
5.09 Achievement of Environment Standards for Total Nitrogen and Total Phosphorus in Lakes	196
5.10 Generation Loads and Reduction Targets for 3 Sea Areas with Area-wide Total Pollutant Controls by Source	197
5.11 Number of occurrences of Red Tides in Seto Inland Sea	198
5.12 Licensed landfill area of Seto inland sea	199
5.13 Amount of sea gravel extracted in coastal prefectures in Seto Inland Sea	200
Groundwater Contamination	page
5.14 Groundwater contamination - Yearly number of confirmed cases where contamination level exceeds the standards	201
5.15 Itemized breakdown of groundwater contamination cases	202
Groundwater Quality	page
5.16 Results of groundwater quality survey	203
Ocean Contamination	page
5.17 Changes in number of confirmed marine pollution cases by sea area	209
5.18 Changes in number of cases of referral by violations against marine environmental laws	210
Waste Water Treatment	page
5.19 Night soil treatment flow sheet	211
5.20 Changes in population using flush toilets and treatment volume of night soil	212
5.21 Current situations of night soil treatment facilities by prefectures	214
5.22 Trends in breakdown of nationwide night soil treatment facilities by type (start-of-construction-basis)	216
5.23 Changes in number of installed septic tanks (Nationwide)	217
5.24 Night soil treatment facilities (established by municipalities and administration associations) by prefecture	218
5.25 Diffusion of septic tanks and community plants by prefecture	219
5.26 Population served by waste-water treatment system by year	220
5.27 Changes in expenses for night soil treatment projects	221
Soil Contamination	page
5.28 Production and Shipment of Major Agrochemicals	222
5.29 Production of chemical fertilizer	223
5.30 Changes in numbers of soil pollution incidents where Environmental Quality Standards (EQS) were exceeded	224
5.31 Number of soil contamination investigations and countermeasures taken by prefecture	225
5.32 Progress of agricultural land soil pollution countermeasures	226
5.33 Designated-contamination areas and areas with projects for countermeasures completed in each year	227
Ground Subsidence	page
5.34 Use of ground water in Japan	228
5.35 Changes in nationwide ground subsidence	229

Annual Report on Environmental Statistics 2016

■ Chapter 6 Atmospheric Environment

Fixed Sources	page
6.01 Changes in number of facilities emitting soot and smoke	230
6.02 Number of facilities emitting soot and smoke by prefecture	231
6.03 Changes in of particulate-discharging facilities (Ordinary particulate/specified particulates)	232
6.04 Prefectural number of facilities discharging ordinary particulates	233
6.05 Air pollutant emissions (from Stationary sources)	234
6.06 Sulfur oxide emissions (breakdown by type of facility)	235
6.07 Nitrogen oxide emissions (breakdown by type of facility)	236
6.08 Soot and dust emissions (breakdown by type of facility)	237
Mobile Sources	page
6.09 Changes in car ownership	238
6.10 Total automobile transportation volume and car ownership by prefecture	245
6.11 Trends in freight transportation	246
6.12 Changes in volume of passenger transportation	248
6.13 Changes in transport share by mode	250
6.14 Development and coverage rate of national highways by prefecture	252
6.15 Traffic Volume of National Expressways, Urban Expressways and Common Roadways	255
6.16 Changes in Kilometers Traveling (one million kilometers)	257
Low Emission Vehicles	page
6.17 Changes in number of the next-generation vehicles	258
6.18 Changes in number of fueling facilities for next-generation vehicles	259
Sulfur-Oxides	page
6.19 Trends in annual average concentration of Sulfur Dioxide (Ambient air pollution monitoring stations/Roadside air pollution monitoring stations)	260
6.20 Achievement of environmental quality standards for concentration of Sulfur Dioxide (Ambient air pollution monitoring stations/roadside air pollution monitoring stations)	261
Nitrogen-Oxides	
6.21 Trends in annual average concentration of Nitrogen Dioxide (NO ₂) and Nitrogen Monoxide (NO) (Ambient air pollution monitoring stations / Roadside air pollution monitoring stations)	262
6.22 Achievement situation of environmental quality standards for Nitrogen Dioxide (Ambient air pollution monitoring stations / Roadside traffic environment monitoring stations)	263
6.23 Achievement situation of environmental quality standards for Nitrogen Dioxide by prefecture (Ambient Air Pollution Monitoring Stations)	264
6.24 Achievement situation of environmental standards for Nitrogen Dioxide (NO ₂) by prefecture (Roadside air pollution monitoring stations)	265
Suspended Particulate Matters	page
6.25 Trends in annual average concentration of Suspended Particulate Matters (Ambient Air Pollution Monitoring Stations/Roadside Air Pollution Monitoring Stations)	266
6.26 Achievement situation of environmental quality standards for Suspended Particulate Matters (Ambient air pollution monitoring stations / Roadside air pollution monitoring stations)	267
6.27 Trends in annual average concentration of Particulate Matters	268
6.28 Achievement situation of environmental quality standards for Suspended Particulate Matters by prefecture (Ambient Air Pollution Monitoring Stations)	269
6.29 Achievement situation of environmental quality standards for Suspended Particulate Matters by prefecture (Roadside Air Pollution Monitoring Stations)	270
Carbon-Monoxide	page
6.30 Trends in annual average concentration of Carbon Monoxide (Ambient Air Pollution Monitoring Stations/Roadside Air Pollution Monitoring Stations)	271
Non-Methane Hydrocarbon	page
6.31 Trends in annual average concentration of Non-Methane Hydrocarbon (Ambient Air Pollution Monitoring Stations / Roadside Air Pollution Monitoring Stations)	272
Hazardous Air Pollutants	page
6.32 Changes in nationwide average concentration of hazardous air pollutants to which environmental standards are applied	273
6.33 Achievement of the Environmental Quality Standards for designated Hazardous Air Pollutants	274
6.34 Changes in nationwide averages of concentration of hazardous air pollutants for which guideline values are set	275
6.35 Changes in nationwide averages of concentration of hazardous air pollutants for which guidelines are set	276
Photochemical Oxidant	page
6.36 Trends in number of days when photochemical oxidant alerts and warnings were issued and reported damages	277
6.37 Trends in number of days when photochemical oxidant alerts and warnings were issued by prefecture	278
Noises/Vibrations/Odors	page
6.38 Changes in the number of specified facilities under the Noise Regulation Law	280
6.39 Changes in numbers of specified facilities under Vibration Regulation Law	281
6.40 Changes in number of specified facilities under Noise Regulation Law by prefecture	282
6.41 Changes in number of specified facilities under Vibration Regulation Law by prefecture	283
6.42 Trends in numbers of complaints on noise, vibration and odor	284
6.43 Achievement of environmental standards for noises caused by automobiles, airplanes and Shinkansen	285

Annual Report on Environmental Statistics 2016

■ Chapter 7 Chemical Substances

Dioxins	page
7.01 Dioxins emission inventory	286
7.02 Result of environmental survey on dioxins	288
7.03 Chronological changes in daily intake of dioxins per person in Japan	289
7.04 Chronological changes in daily intake of dioxins originated from total diet samples	290
7.05 Notifications of specified facilities based on the Law concerning Special Measures against Dioxins	291
7.06 Specified facilities subject to Gas Emission Standards, based on the Law Concerning Special Measures against Dioxins (by type of notification)	293
7.07 Notifications from facilities subject to Effluent Emission Standards, based on the Act on Special Measures against Dioxins (by contents of notification)	294
Chemical Substances	page
7.08 Number of notifications for new chemical compounds based on Act on the Evaluation of Chemical Substances and Regulation of their Manufacture, etc.	295
7.09 Results of the Initial Environmental Survey	296
7.10 Results of the Detailed Environmental Survey	297
7.11 Results of Environmental Monitoring	298
7.12 Amount of releases and transfers based on PRTR by industry	301
7.13 Amounts of releases and transfers based on PRTR by prefecture	302
7.14 Reported releases and estimated releases by prefecture	303
7.15 PRTR top ten substances of reported releases and transfers	304
7.16 PRTR top ten substances of reported releases and estimated releases	305

■ Chapter 8 Overview of Environmental Measures

Public Administration	page
8.01 ① Budget for competitive funding on environmental research and development of environmental technology	306
8.01 ② Number of employees in environmental divisions of local governments by prefecture	307
8.02 Trainees at the National Environmental Research and Training Institute, Ministry of the Environment	308
8.03 Changes in number of arrests for environmental crimes grouped by law	309
8.04 Number of arrests for violation of Waste Disposal Act by type	310
8.05 Changes in numbers of offenders normally accepted / processed	311
8.06 Regions under the Regional Environmental Pollution Control Programs	312
8.07 The Costs relating to the Pollution Prevention Projects, and Additional Subsidies	313
8.08 Existing number of Patients by Region, subject to Law Concerning Pollution-Related Health Damage Compensation and other Measures	314
8.09 Changes in Existing number of Patients by Region, subject to the Pollution Damage Compensation Act	315
8.10 ① Number of certified persons by Act on Compensation, etc. for pollution related health damage (Status of application process for Minamata disease certification)	317
8.10 ② Judgment on relief measures based on the Law Concerning Special Measures for Compensation of Minamata Disease	318
8.11 Acceptance and approval applications based on the Act on Asbestos Health Damage Relief	319
8.12 Implementation Rate of Green Procurement in Local Governments and Enterprises	320
8.13 Enforcement of performed environmental impact assessment under Environmental Impact Assessment Law	321
8.14 The number of cases that completed environmental impact assessment procedures under Environmental Impact Assessment Law (as of the end of FY2014)	322
8.15 Status of formulating basic ordinances of Environmental Policy	323
8.16 Status of formulating basic plans of Environmental Policies	324
8.17 Status of environmental policies local governments are focusing on	325
Enterprises	page
8.18 Business confidence in Environmental business in Japan	326
8.19 Top 5 Environmental business that are expected to grow (total of all enterprise scale)	327
8.20 Business outlook (Diffusion Index)	328
8.21 Environmental business outlook (by type of environmental business)	329
8.22 Initiatives toward environmental management (Listed companies)	330
8.23 Companies that disclose environmental information	331
8.24 Status of compiling and disclosing of environmental reports	332
8.25 Conditions of introduction of environmental accounting	333
8.26 Changes in results of National examinations for Pollution Control Manager and Others	334
Citizens/NGOs	page
8.27 Number of Environmental NGOs and the like	335
8.28 Funding from Japan Fund for Global Environment	336