

## 2.01 Trends in emission amounts of greenhouse gasses in Japan

( Unit: million t-CO<sub>2</sub> )

	Carbon dioxide ( CO <sub>2</sub> )	Methane ( CH <sub>4</sub> )	Nitrous oxide ( N <sub>2</sub> O )	Hydrofluorocarbons ( HFCs )	Perfluorocarbons ( PFCs )	Sulfur hexafluoride ( SF <sub>6</sub> )	Nitrogen trifluoride ( NF <sub>3</sub> )	Total
GWP	1	25	298	HFC-134a : 1,430 and the like	PFC-14 : 7,390 and the like	22,800	17,200	
1990	1,156	49	31	16	7	13	0.03	1,271
1991	1,164	47	31	17	8	14	0.03	1,281
1992	1,175	48	31	18	8	16	0.03	1,294
1993	1,168	43	31	18	11	16	0.04	1,286
1994	1,229	48	32	21	13	15	0.08	1,358
1995	1,242	46	32	25	18	16	0.20	1,380
1996	1,255	45	33	25	18	17	0.19	1,393
1997	1,253	44	34	24	20	15	0.17	1,390
1998	1,218	41	33	24	17	13	0.17	1,346
1999	1,253	41	26	24	13	9	0.28	1,368
2000	1,274	41	29	23	12	7	0.19	1,387
2001	1,257	40	25	19	10	6	0.20	1,359
2002	1,294	39	25	16	9	6	0.27	1,390
2003	1,299	38	25	16	9	5	0.30	1,393
2004	1,298	39	25	12	9	5	0.37	1,390
2005	1,306	39	25	13	9	5	1.25	1,397
2006	1,285	38	25	15	9	5	1.09	1,378
2007	1,320	38	24	17	8	5	1.21	1,413
2008	1,235	38	23	19	6	4	1.17	1,327
2009	1,163	37	23	21	4	2	1.17	1,251
2010	1,213	38	22	23	4	2	1.37	1,305
2011	1,262	37	22	26	4	2	1.56	1,355
2012	1,296	36	21	29	3	2	1.26	1,390
2013	1,312	36	21	32	3	2	1.36	1,408
2014	1,265	35	21	36	3	2	0.83	1,364

Note:

GWP; Global Warming Potential: a coefficient to indicate the extent that a GHG in question brings a greenhouse gas effect. It is expressed by a ratio of the effect caused by the GHG to that caused by CO<sub>2</sub>. The values are from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (2007).

Source: "National Greenhouse Gas Inventory Report of JAPAN," MOE, the Government of Japan.

## 2.02 Trends in Carbon Dioxide Emissions by Sectors in Japan

### CO<sub>2</sub> emissions from energy sources

(Unit: million t-CO<sub>2</sub>, % increase/decrease compared with 1990)

Year	Total ①		Industry		Transport		Commercial and other		Households		Energy conversion	
	Value	% change	Value	% change	Value	% change	Value	% change	Value	% change	Value	% change
1990	1,066.8		501.9		206.2		137.0		130.6		91.1	
1991	1,074.0	0.7%	491.0	-2.2%	218.7	6.0%	140.4	2.5%	132.5	1.5%	91.5	0.4%
1992	1,082.5	1.5%	480.7	-4.2%	225.1	9.2%	145.0	5.9%	139.8	7.0%	91.8	0.8%
1993	1,077.8	1.0%	466.8	-7.0%	228.4	10.7%	151.3	10.4%	141.0	7.9%	90.4	-0.8%
1994	1,134.2	6.3%	483.7	-3.6%	238.0	15.4%	166.6	21.6%	148.4	13.6%	97.6	7.1%
1995	1,146.7	7.5%	477.8	-4.8%	246.5	19.5%	170.2	24.3%	151.8	16.3%	100.3	10.0%
1996	1,158.4	8.6%	482.1	-3.9%	252.8	22.6%	175.2	27.8%	151.4	15.9%	97.0	6.4%
1997	1,157.2	8.5%	473.4	-5.7%	253.9	23.1%	180.5	31.8%	147.8	13.1%	101.6	11.5%
1998	1,128.1	5.7%	443.2	-11.7%	251.9	22.1%	193.4	41.2%	147.8	13.2%	91.7	0.7%
1999	1,162.8	9.0%	454.7	-9.4%	256.0	24.1%	203.4	48.5%	156.3	19.6%	92.4	1.4%
2000	1,182.1	10.8%	465.9	-7.2%	254.8	23.6%	210.3	53.5%	161.3	23.5%	89.8	-1.4%
2001	1,167.0	9.4%	453.3	-9.7%	258.9	25.5%	210.0	53.3%	157.6	20.6%	87.2	-4.2%
2002	1,206.5	13.1%	467.8	-6.8%	255.1	23.7%	221.4	61.6%	169.0	29.4%	93.3	2.4%
2003	1,211.7	13.6%	470.9	-6.2%	251.3	21.8%	225.6	64.7%	171.1	31.0%	92.8	1.8%
2004	1,211.6	13.6%	468.2	-6.7%	245.2	18.9%	238.8	74.3%	170.1	30.2%	89.2	-2.0%
2005	1,219.0	14.3%	456.9	-9.0%	239.7	16.2%	238.9	74.4%	179.9	37.7%	103.7	13.8%
2006	1,199.9	12.5%	471.8	-6.0%	236.1	14.5%	235.7	72.0%	168.3	28.8%	88.0	-3.4%
2007	1,234.6	15.7%	472.0	-6.0%	234.0	13.5%	237.3	73.2%	183.7	40.7%	107.6	18.1%
2008	1,153.2	8.1%	417.0	-16.9%	225.3	9.2%	231.5	69.0%	173.7	33.0%	105.8	16.1%
2009	1,090.0	2.2%	382.1	-23.9%	221.4	7.4%	219.9	60.5%	163.4	25.1%	103.2	13.3%
2010	1,138.8	6.7%	413.5	-17.6%	222.1	7.7%	218.8	59.7%	174.1	33.3%	110.2	21.0%
2011	1,188.4	11.4%	429.0	-14.5%	220.5	6.9%	235.9	72.2%	191.8	46.8%	111.3	22.1%
2012	1,220.7	14.4%	432.2	-13.9%	226.1	9.6%	253.6	85.1%	204.2	56.3%	104.6	14.8%
2013	1,235.0	15.8%	431.9	-14.0%	224.7	8.9%	278.3	103.1%	201.3	54.2%	98.9	8.5%
2014	1,189.3	11.5%	425.9	-15.1%	217.0	5.2%	260.9	90.5%	191.8	46.8%	93.7	2.8%

### CO<sub>2</sub> emissions from non-energy sources

Year	Total ②		Industrial processes		Agriculture		Waste		Leakage from fuel		total ( ① + ② )	
	Value	% change	Value	% change	Value	% change	Value	% change	Value	% change	Value	% change
1990	89.1		64.0		0.6		24.0		0.6		1,156.0	
1991	90.4	1.4%	65.1	1.7%	0.5	-10.0%	24.2	0.8%	0.6	8.7%	1,164.5	0.7%
1992	92.2	3.4%	65.0	1.6%	0.5	-19.0%	26.0	8.3%	0.7	13.9%	1,174.6	1.6%
1993	89.9	0.8%	63.7	-0.4%	0.5	-14.0%	25.0	4.2%	0.7	12.0%	1,167.7	1.0%
1994	94.7	6.3%	65.2	1.9%	0.3	-43.7%	28.6	19.1%	0.7	12.5%	1,228.9	6.3%
1995	95.8	7.5%	65.5	2.3%	0.4	-41.0%	29.1	21.4%	0.9	59.1%	1,242.5	7.5%
1996	96.9	8.7%	65.9	3.0%	0.3	-42.6%	29.6	23.5%	1.0	76.7%	1,255.3	8.6%
1997	95.9	7.6%	63.2	-1.2%	0.4	-39.0%	31.2	30.0%	1.1	94.0%	1,253.1	8.4%
1998	90.1	1.1%	57.3	-10.5%	0.4	-38.1%	31.4	31.0%	1.1	83.2%	1,218.3	5.4%
1999	90.2	1.2%	57.4	-10.2%	0.4	-39.2%	31.3	30.7%	1.1	90.0%	1,253.1	8.4%
2000	92.2	3.4%	57.9	-9.5%	0.4	-27.3%	32.8	36.9%	1.0	77.3%	1,274.3	10.2%
2001	90.4	1.4%	56.5	-11.7%	0.4	-39.6%	32.4	35.3%	1.1	84.9%	1,257.4	8.8%
2002	87.9	-1.4%	53.8	-16.0%	0.4	-33.0%	32.7	36.4%	1.0	76.0%	1,294.4	12.0%
2003	87.8	-1.5%	53.0	-17.2%	0.4	-29.3%	33.4	39.5%	1.0	66.4%	1,299.5	12.4%
2004	86.8	-2.6%	52.9	-17.4%	0.4	-33.9%	32.6	36.1%	0.9	59.2%	1,298.4	12.3%
2005	86.9	-2.5%	54.0	-15.7%	0.4	-32.6%	31.6	31.8%	1.0	65.6%	1,305.9	13.0%
2006	85.3	-4.4%	54.1	-15.5%	0.4	-37.0%	29.8	24.3%	1.0	70.4%	1,285.2	11.2%
2007	85.2	-4.4%	53.3	-16.7%	0.5	-17.9%	30.4	26.7%	1.0	77.8%	1,319.8	14.2%
2008	82.2	-7.8%	49.2	-23.2%	0.4	-27.7%	31.6	32.0%	0.9	63.1%	1,235.5	6.9%
2009	72.6	-18.5%	43.5	-32.0%	0.4	-35.9%	27.8	16.1%	0.9	48.8%	1,162.6	0.6%
2010	74.2	-16.8%	44.7	-30.2%	0.4	-33.8%	28.3	18.1%	0.8	40.0%	1,213.0	4.9%
2011	73.5	-17.6%	44.5	-30.4%	0.4	-31.9%	27.8	15.8%	0.8	33.0%	1,261.9	9.2%
2012	75.4	-15.4%	44.7	-30.1%	0.5	-14.6%	29.4	22.8%	0.8	30.4%	1,296.2	12.1%
2013	76.5	-14.2%	46.4	-27.5%	0.6	-5.1%	28.8	20.1%	0.7	21.4%	1,311.5	13.5%
2014	76.2	-14.5%	46.1	-27.9%	0.6	-5.1%	28.8	20.2%	0.7	16.8%	1,265.5	9.5%

#### Note:

The emissions from energy sources by sector are the amount that CO<sub>2</sub> emissions caused by power and heat generation are allocated to each of the final consumption sectors.

Source: "National Greenhouse Gas Inventory Report of JAPAN," MOE, the Government of Japan.

## 2.03 Trend in Major Socioeconomic Activities and Carbon Dioxide emissions

	FY1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total CO <sub>2</sub> emissions (M Mt-CO <sub>2</sub> )	1,156.0	1,242.5	1,255.3	1,253.1	1,218.3	1,253.1	1,274.3	1,257.4	1,294.4	1,299.5	1,298.4	1,305.9
(vs. the previous year)		1.1%	1.0%	-0.2%	-2.8%	2.9%	1.7%	-1.3%	2.9%	0.4%	-0.1%	0.6%
(vs. 1990)		7.5%	8.6%	8.4%	5.4%	8.4%	10.2%	8.8%	12.0%	12.4%	12.3%	13.0%
Emissions from energy sources	1,066.8	1,146.7	1,158.4	1,157.2	1,128.1	1,162.8	1,182.1	1,167.0	1,206.5	1,211.7	1,211.6	1,219.0
(vs. the previous year)		1.1%	1.0%	-0.1%	-2.5%	3.1%	1.7%	-1.3%	3.4%	0.4%	0.0%	0.6%
(vs. 1990)		7.5%	8.6%	8.5%	5.7%	9.0%	10.8%	9.4%	13.1%	13.6%	13.6%	14.3%
Emissions from non-energy sources	89.1	95.8	96.9	95.9	90.1	90.2	92.2	90.4	87.9	87.8	86.8	86.9
(vs. the previous year)		1.2%	1.1%	-1.0%	-6.0%	0.1%	2.2%	-2.0%	-2.8%	-0.1%	-1.2%	0.1%
(vs. 1990)		7.5%	8.7%	7.6%	1.1%	1.2%	3.4%	1.4%	-1.4%	-1.5%	-2.6%	-2.5%
Electric energy generation of electric companies (in MM kWh)	757,593	868,027	884,574	904,935	909,150	921,062	940,687	921,997	935,807	920,134	946,756	969,135
(vs. the previous year)		2.2%	1.9%	2.3%	0.5%	1.3%	2.1%	-2.0%	1.5%	-1.7%	2.9%	2.4%
(vs. 1990)		14.6%	16.8%	19.4%	20.0%	21.6%	24.2%	21.7%	23.5%	21.5%	25.0%	27.9%
Components of power supply by source	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Thermal power	61.5%	56.5%	56.2%	54.1%	52.7%	55.8%	56.0%	55.6%	59.2%	63.1%	59.7%	60.0%
Hydro power	11.7%	9.7%	9.4%	10.3%	10.5%	9.6%	9.5%	9.4%	9.0%	10.4%	10.1%	8.2%
Nuclear power	26.6%	33.4%	34.0%	35.2%	36.4%	34.3%	34.2%	34.7%	31.4%	26.1%	29.8%	31.4%
New energy	0.2%	0.3%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.4%	0.3%	0.3%
Industrial Production Index (IPI : in 2005 = 100)	107.4	101.7	105.1	106.3	99.0	101.6	106.0	96.3	99.0	102.0	105.9	107.6
(vs. the previous year)		2.1	3.4	1.2	-7.3	2.6	4.3	-9.7	2.8	2.9	3.9	1.7
Crude steel production (in 1,000 t)	111,710	100,023	100,793	102,800	90,979	97,999	106,901	102,064	109,786	110,998	112,897	112,718
(vs. the previous year)		-1.3%	0.8%	2.0%	-11.5%	7.7%	9.1%	-4.5%	7.6%	1.1%	1.7%	-0.2%
(vs. 1990)		-10.5%	-9.8%	-8.0%	-18.6%	-12.3%	-4.3%	-8.6%	-1.7%	-0.6%	1.1%	0.9%
Ethylene production (in 1,000 t)	5,810	6,944	7,138	7,338	7,223	7,721	7,566	7,206	7,283	7,419	7,555	7,549
(vs. the previous year)		13.4%	2.8%	2.8%	-1.6%	6.9%	-2.0%	-4.8%	1.1%	1.9%	1.8%	-0.1%
(vs. 1990)		19.5%	22.9%	26.3%	24.3%	32.9%	30.2%	24.0%	25.4%	27.7%	30.0%	130593.9%
Cement production (in 1,000 t)	86,893	91,645	94,363	89,446	80,794	80,494	80,068	75,722	70,819	68,253	67,046	70,127
(vs. the previous year)		0.0%	3.0%	-5.2%	-9.7%	-0.4%	-0.5%	-5.4%	-6.5%	-3.6%	-1.8%	4.6%
(vs. 1990)		5.5%	8.6%	2.9%	-7.0%	-7.4%	-7.9%	-12.9%	-18.5%	-21.5%	-22.8%	-19.3%
Paper, paperboard and pulp production (in 1,000 t)	39,227	40,637	41,068	42,414	40,507	42,086	43,008	40,942	41,415	41,149	41,550	41,832
(vs. the previous year)		4.3%	1.1%	3.3%	-4.5%	3.9%	2.2%	-4.8%	1.2%	-0.6%	1.0%	0.7%
(vs. 1990)		3.6%	4.7%	8.1%	3.3%	7.3%	9.6%	4.4%	5.6%	4.9%	5.9%	6.6%
Number of households (in 1,000)	41,156	44,236	44,831	45,498	46,157	46,812	47,420	48,015	48,638	49,261	49,838	50,382
(vs. the previous year)		1.3%	1.3%	1.5%	1.4%	1.4%	1.3%	1.3%	1.3%	1.3%	1.2%	1.1%
(vs. 1990)		7.5%	8.9%	10.5%	12.1%	13.7%	15.2%	16.7%	18.2%	19.7%	21.1%	22.4%
Commercial sector's floor area (in M m <sup>2</sup> )	1,285	1,498	1,530	1,564	1,601	1,631	1,656	1,686	1,702	1,722	1,739	1,759
(vs. the previous year)		3.0%	2.1%	2.2%	2.4%	1.9%	1.5%	1.8%	0.9%	1.2%	1.0%	1.2%
(vs. 1990)		16.6%	19.1%	21.7%	24.6%	26.9%	28.9%	31.2%	32.5%	34.0%	35.3%	36.9%
Transport volume in passenger sector (in M persons / km)	1,295,356	1,385,408	1,405,948	1,416,287	1,421,926	1,422,105	1,417,323	1,422,857	1,423,180	1,424,193	1,416,130	1,409,239
(vs. the previous year)		1.5%	1.5%	0.7%	0.4%	0.0%	-0.3%	0.4%	0.0%	0.1%	-0.6%	-0.5%
(vs. 1990)		7.0%	8.5%	9.3%	9.8%	9.8%	9.4%	9.8%	9.9%	9.9%	9.3%	8.8%
Private vehicles	727,049	806,336	823,552	839,254	852,031	854,762	851,893	856,140	857,330	855,827	849,692	833,455
Business vehicles	12,558	11,078	10,661	10,293	9,912	9,728	9,678	9,477	9,557	9,610	9,303	9,222
Bus	110,972	97,287	94,891	92,900	90,433	88,686	87,306	86,350	86,181	86,391	86,286	88,066
Railway	387,478	400,056	402,156	395,239	388,938	385,101	384,441	385,421	382,236	384,958	385,163	391,228
Navigation	6,274	5,637	5,634	5,351	4,620	4,479	4,304	4,006	3,893	4,024	3,869	4,025
Aviation	51,624	65,014	69,053	73,250	75,992	79,349	79,700	81,463	83,982	83,382	81,816	83,242
Transport volume in cargo sector (in M tons / km)	461,127	466,837	477,615	472,844	457,134	463,584	479,072	481,592	471,895	461,655	465,892	463,815
(vs. the previous year)		1.7%	2.3%	-1.0%	-3.3%	1.4%	3.3%	0.5%	-2.0%	-2.2%	0.9%	-0.4%
(vs. 1990)		1.2%	3.6%	2.5%	-0.9%	0.5%	3.9%	4.4%	2.3%	0.1%	1.0%	0.6%
Truck	188,586	202,482	209,929	210,226	206,250	210,572	214,190	213,954	213,190	219,643	223,525	228,351
Railway	27,196	25,101	24,968	24,618	22,920	22,541	22,136	22,193	22,131	22,794	22,476	22,813
Navigation	244,546	238,330	241,756	237,018	226,980	229,432	241,671	244,451	235,582	218,191	218,833	211,576
Aviation	799	924	963	981	985	1,039	1,075	994	991	1,027	1,059	1,076

Source: materials of Low Carbon Society Promotion Office, Global Environment Bureau, MOE, the Government of Japan

## 2.03 Trend in Major Socioeconomic Activities and Carbon Dioxide emissions

	2006	FY2007	2008	2009	2010	2011	2012	2013	2014	Source
Total CO <sub>2</sub> emissions (M Mt-CO <sub>2</sub> )	1,285.2	1,319.8	1,235.5	1,162.6	1,213.0	1,261.9	1,296.2	1,311.5	1,265.5	Greenhouse Gas emissions/removals listings
(vs. the previous year)	-1.6%	2.7%	-6.4%	-5.9%	4.3%	4.0%	2.7%	1.2%	-3.5%	
(vs. 1990)	11.2%	14.2%	6.9%	0.6%	4.9%	9.2%	12.1%	13.5%	9.5%	
Emissions from energy sources	1,199.9	1,234.6	1,153.2	1,090.0	1,138.8	1,188.4	1,220.7	1,235.0	1,189.3	
(vs. the previous year)	-1.6%	2.9%	-6.6%	-5.5%	4.5%	4.4%	2.7%	1.2%	-3.7%	
(vs. 1990)	12.5%	15.7%	8.1%	2.2%	6.7%	11.4%	14.4%	15.8%	11.5%	
Emissions from non-energy sources	85.3	85.2	82.2	72.6	74.2	73.5	75.4	76.5	76.2	
(vs. the previous year)	-1.9%	-0.1%	-3.5%	-11.7%	2.2%	-1.0%	2.6%	1.4%	-0.4%	
(vs. 1990)	-4.4%	-4.4%	-7.8%	-18.5%	-16.8%	-17.6%	-15.4%	-14.2%	-14.5%	
Electric energy generation of electric companies (in MM kWh)	972,883	1,004,622	957,889	925,392	918,239	857,405	821,955	823,668	790,561	The Electric Power Companies Handbook(Component ratio of electric power supply is based on electric-generating capacity.)
(vs. the previous year)	0.4%	3.3%	-4.7%	-3.4%	-0.8%	-6.6%	-4.1%	0.2%	-4.0%	※As to the data for 2010, neither other "electric power suppliers" in the area of "Electric power distributors" nor their electric power generating amount are included in this table.
(vs. 1990)	28.4%	32.6%	26.4%	22.1%	21.2%	13.2%	8.5%	0	0	
Components of power supply by source	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Thermal power	59.4%	65.8%	64.9%	61.4%	60.3%	79.1%	89.5%	90.2%	90.8%	
Hydro power	9.1%	7.6%	7.9%	8.1%	8.1%	8.7%	8.2%	8.3%	8.9%	
Nuclear power	31.2%	26.3%	26.9%	30.2%	31.4%	11.9%	1.9%	1.1%	0.0%	
New energy	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	
Industrial Production Index (IPI : in 2005 = 100)	112.5	115.6	101.0	91.3	99.4	98.8	95.8	99.0	98.5	The comprehensive list of Production Index(Indices of Industrial Production, Producer's Shipment and Producer's Inventory) - Base year 2005 -
(vs. the previous year)	4.9	3.1	-14.6	-9.7	8.1	-0.6	-3.0	3.2	-0.5	
Crude steel production (in 1,000 t)	117,745	121,511	105,500	96,448	110,793	106,462	107,305	111,524	109,844	Current Survey of Production, Ministry of Economy, Trade, and Industry (For 2002 - 2010, the Annual Report of Statistics for Metals, Non-metals, and Metal products. For 1990 - 2000, cf. The Annual Report of Statistics for steel)
(vs. the previous year)	4.5%	3.2%	-13.2%	-8.6%	14.9%	-3.9%	0.8%	3.9%	-1.5%	
(vs. 1990)	5.4%	8.8%	-5.6%	-13.7%	-0.8%	-4.7%	-3.9%	-0.2%	-1.7%	
Ethylene production (in 1,000 t)	7,661	7,559	6,520	7,219	6,999	6,474	6,261	6,764	6,687	Current Survey of Production, Ministry of Economy, Trade, and Industry (For 1990 - 2010, the Annual Report of Statistics for Chemical industries)
(vs. the previous year)	1.5%	-1.3%	-13.7%	10.7%	-3.0%	-7.5%	-3.3%	8.0%	-1.1%	
(vs. 1990)	31.9%	30.1%	12.2%	24.3%	20.5%	11.4%	7.8%	16.4%	15.1%	
Cement production (in 1,000 t)	70,145	66,477	61,295	53,195	50,901	52,641	55,072	58,827	56,882	Current Survey of Production, Ministry of Economy, Trade, and Industry (For 1990 - 2010, the Annual report of Statistics re: Ceramic engineering and Architectural materials)
(vs. the previous year)	0.0%	-5.2%	-7.8%	-13.2%	-4.3%	3.4%	4.6%	6.8%	-3.3%	
(vs. 1990)	-19.3%	-23.5%	-29.5%	-38.8%	-41.4%	-39.4%	-36.6%	-32.3%	-34.5%	
Paper, paperboard and pulp production (in 1,000 t)	41,910	42,304	38,620	35,782	36,754	35,543	34,275	35,618	35,118	Current Survey of Production, Ministry of Economy, Trade, and Industry (For 1990-2001, the Annual Report for Paper, Pulp; For 2002-2003, the Annual Report for Paper, Pulp, Plastics, Rubber products, For 2004 - 2010, the Annual Report of Statistics for Paper, Printing, Plastics, Rubber products) For 1990-1996, the data are taken by the calendar year.
(vs. the previous year)	0.2%	0.9%	-8.7%	-7.4%	2.7%	-3.3%	-3.6%	3.9%	-1.4%	
(vs. 1990)	6.8%	7.8%	-1.5%	-8.8%	-6.3%	-9.4%	-12.6%	-9.2%	-10.5%	
Number of households (in 1,000)	51,102	51,713	52,325	52,878	53,363	53,783	54,171	54,595	54,952	Survey on Population, Demographics and the number of households based on the Basic Resident Register (Ministry of Internal Affairs and Communications)
(vs. the previous year)	1.4%	1.2%	1.2%	1.1%	0.9%	0.8%	0.7%	0.8%	0.7%	
(vs. 1990)	24.2%	25.6%	27.1%	28.5%	29.7%	30.7%	31.6%	32.7%	33.5%	
Commercial sector's floor area (in M m <sup>2</sup> )	1,776	1,791	1,812	1,821	1,830	1,827	1,834	1,846	1,856	The Handbook of Japan's & World Energy & Economic Statistics (Japanese version)
(vs. the previous year)	1.0%	0.8%	1.2%	0.5%	0.5%	-0.2%	0.4%	0.7%	0.5%	
(vs. 1990)	38.2%	39.4%	41.0%	41.7%	42.4%	42.2%	42.7%	43.7%	44.4%	The Energy Data and Modelling Center (EDMC, 2016)
Transport volume in passenger sector (in M persons / km)	1,401,124	1,410,596	1,392,870	1,368,794	1,366,333	1,362,496	1,423,126	1,456,453	1,497,279	The Handbook of Japan's & World Energy & Economic Statistics (Japanese version)
(vs. the previous year)	-0.6%	0.7%	-1.3%	-1.7%	-0.2%	-0.3%	4.4%	2.3%	2.8%	
(vs. 1990)	8.2%	8.9%	7.5%	5.7%	5.5%	5.2%	9.9%	12.4%	15.6%	The Energy Data and Modelling Center (EDMC, 2016)
Private vehicles	817,785	818,993	805,415	801,163	802,562	804,557	847,476	866,391	906,816	※ The figure of navigation in 2014 is not shown.
Business vehicles	9,198	8,913	8,489	8,155	7,796	7,292	7,210	7,044	6,930	
Bus	88,699	88,969	89,921	87,402	85,725	81,907	83,021	81,197	79,493	
Railway	395,908	405,544	404,585	393,765	393,466	395,067	404,396	414,387	413,970	
Navigation	3,783	3,834	3,510	3,073	3,004	3,047	3,092	3,265	N.A.	
Aviation	85,752	84,343	80,950	75,235	73,779	71,226	77,931	84,169	86,807	
Transport volume in cargo sector (in M tons / km)	468,498	469,200	447,518	417,214	449,006	431,266	410,724	422,694	417,046	The Energy Data and Modelling Center (EDMC, 2015)
(vs. the previous year)	1.0%	0.1%	-4.6%	-6.8%	7.6%	-4.0%	-4.8%	2.9%	-1.3%	
(vs. 1990)	1.6%	1.8%	-3.0%	-9.5%	-2.6%	-6.5%	-10.9%	-8.3%	-9.6%	
Trucks	239,363	241,758	236,324	228,293	247,676	235,374	211,444	215,663	211,772	
Railway	23,192	23,334	22,256	20,562	20,398	19,998	20,471	21,071	21,029	
Navigation	207,849	202,962	187,859	167,315	179,898	174,900	177,791	184,860	183,120	
Aviation	1,095	1,146	1,080	1,044	1,033	993	1,018	1,100	1,125	

## 2.04 Trends in carbon dioxide emissions by energy use in major countries and regions

CO <sub>2</sub> emissions in the world	(Unit: million t-CO <sub>2</sub> )													
	1971	1973	1980	1990	1995	2000	2005	2007	2008	2009	2010	2011	2012	2013
North America	4,628	5,066	5,017	5,221	5,522	6,159	6,238	6,240	6,050	5,624	5,871	5,743	5,556	5,656
USA	4,288	4,690	4,595	4,802	5,073	5,643	5,702	5,686	5,512	5,120	5,355	5,219	5,032	5,120
Canada	340	376	422	419	448	516	536	554	539	504	515	524	524	536
Latin America	452	528	732	842	975	1,171	1,291	1,372	1,431	1,408	1,504	1,546	1,613	1,661
Mexico	93.7	118	205	260	286	344	382	405	399	396	414	428	434	452
Brazil	87.5	112	168	184	228	292	311	330	348	324	370	390	422	452
Chile	21.0	20.0	21.4	29.4	37.1	48.6	54.4	63.1	66.5	64.2	68.6	75.3	77.2	82.0
Peru	15.4	16.3	20.4	19.1	23.3	26.4	28.6	30.9	35.2	37.7	41.1	44.2	44.0	45.5
Europe	5,813	6,389	7,394	7,841	6,454	6,266	6,495	6,608	6,586	6,072	6,329	6,324	6,244	6,126
Europe OECD	3,625	3,929	4,101	3,900	3,819	3,889	4,024	4,017	3,944	3,668	3,792	3,650	3,638	3,553
UK	621	634	570	548	514	521	531	521	508	459	477	439	462	449
Germany	978	1,052	1,048	940	857	812	787	767	775	720	759	731	745	760
France	423	474	455	346	344	365	370	353	349	333	340	310	312	316
Italy	289	328	355	389	401	420	456	441	429	384	392	384	367	338
Europe non-OECD	2,188	2,460	3,293	3,940	2,635	2,377	2,471	2,591	2,642	2,404	2,537	2,673	2,606	2,573
Former Soviet Union	1,942	2,189	2,936	3,606	2,400	2,164	2,232	2,344	2,397	2,181	2,318	2,435	2,384	2,370
Russia	N.A.	N.A.	N.A.	2,163	1,548	1,474	1,482	1,533	1,554	1,440	1,529	1,604	1,551	1,543
Africa	249	285	398	529	576	658	858	909	968	956	999	1,001	1,054	1,075
South Africa	157	178	208	244	260	281	372	391	423	399	409	395	408	420
Middle East	96	124	303	535	744	886	1,154	1,281	1,366	1,436	1,496	1,548	1,615	1,647
Iran	39	52	88	171	244	312	418	480	487	504	498	509	516	526
Saudi Arabia	13	18	99	151	192	235	298	333	364	379	419	435	463	472
Asia	2,067	2,360	3,139	4,710	6,141	6,924	9,562	10,813	10,900	11,298	12,055	13,521	13,850	14,459
China	831	920	1,436	2,184	2,998	3,259	5,360	6,276	6,338	6,618	7,095	8,420	8,519	8,977
Japan	751	897	870	1,049	1,122	1,157	1,196	1,221	1,137	1,076	1,126	1,178	1,217	1,235
Hong Kong	9.2	9.6	14.6	33.3	36.5	40.3	41.3	44.0	42.9	46.2	42.0	45.6	45.1	46.1
Taiwan	29.8	38.1	71.4	111	154	214	254	264	253	240	256	255	247	249
South Korea	52.9	68.2	126	232	357	432	458	477	489	502	551	574	575	572
Singapore	6.06	8.12	12.65	28.96	37.57	42.12	37.86	39.37	39.30	40.28	44.22	46.68	46.14	46.56
Brunei	0.400	0.680	2.64	3.26	4.50	4.42	4.82	6.84	7.22	7.43	6.86	7.01	6.97	6.85
Indonesia	25.2	32.1	67.6	134	204	258	322	358	355	370	383	390	416	425
Malaysia	12.8	13.0	23.7	49.2	78.9	114	155	177	189	169	188	190	191	207
Philippines	23.0	27.3	33.3	38.0	57.2	68.1	71.5	69.0	71.2	71.5	77.1	77.7	80.4	89.6
Thailand	16.2	20.7	33.7	80.9	140	152	200	209	215	207	223	222	239	247
India	182	189	264	534	708	892	1,086	1,266	1,342	1,513	1,597	1,660	1,780	1,869
Vietnam	16.3	17.6	14.9	17.4	27.5	44.2	79.1	89.8	101	112	126	127	127	130
Oceania	157	174	223	281	309	364	405	419	422	425	415	415	418	419
Australia	143	158	207	260	285	335	371	386	389	394	385	385	387	389
New Zealand	13.5	16.7	16.5	21.7	23.9	29.0	33.7	32.5	33.5	30.4	30.3	29.7	31.2	30.7
OECD34	9,342	10,288	10,582	11,006	11,496	12,447	12,816	12,907	12,573	11,819	12,306	12,132	11,990	12,038
Non-OECD	4,130	4,647	6,638	8,987	9,261	10,021	13,229	14,779	15,195	15,446	16,406	18,012	18,405	19,053
EU 28	N.A.	N.A.	N.A.	4,024	3,807	3,782	3,916	3,868	3,790	3,499	3,611	3,465	3,425	3,340
EU 15	N.A.	N.A.	N.A.	3,038	3,008	3,082	3,188	3,121	3,060	2,822	2,906	2,763	2,751	2,692
Euro zone 19	N.A.	N.A.	N.A.	2,549	2,480	2,549	2,659	2,605	2,561	2,367	2,434	2,334	2,303	2,258
APEC 20	N.A.	N.A.	N.A.	11,935	12,943	14,201	16,767	17,922	17,764	17,446	18,458	19,843	19,790	20,429
ASEAN 9	105	123	194	356	558	695	883	963	989	988	1,062	1,073	1,124	1,171
Bunker	523	579	559	630	721	854	1,003	1,097	1,104	1,056	1,127	1,149	1,096	1,099
World	13,995	15,515	17,780	20,623	21,478	23,322	27,048	28,783	28,871	28,322	29,838	31,293	31,491	32,190

Note:

For the figures in the shadowed columns, the values are calculated by summing CO<sub>2</sub> emissions of each country in the group, as the source data do not pertain the same group.

Source: "CO<sub>2</sub> Emissions from Fuel Combustion 2015 Edition," IEA.

## 2.04 Trends in carbon dioxide emissions by energy use in major countries and regions

CO <sub>2</sub> emissions per person in the world												( Unit: t-CO <sub>2</sub> / person )		
	1971	1973	1980	1990	1995	2000	2005	2007	2008	2009	2010	2011	2012	2013
North America	20.2	21.6	19.9	18.8	18.7	19.7	19.0	18.7	17.9	16.5	17.1	16.6	15.9	16.1
USA	20.7	22.1	20.2	19.2	19.0	20.0	19.3	18.9	18.1	16.7	17.3	16.7	16.0	16.2
Canada	15.5	16.7	17.2	15.1	15.3	16.8	16.6	16.9	16.2	15.0	15.2	15.3	15.1	15.3
Latin America	1.56	1.73	2.03	1.90	2.03	2.25	2.33	2.41	2.49	2.42	2.56	2.60	2.68	2.73
Mexico	1.75	2.06	2.91	2.98	3.02	3.41	3.56	3.69	3.58	3.51	3.62	3.70	3.71	3.82
Brazil	0.89	1.09	1.37	1.23	1.41	1.67	1.67	1.74	1.81	1.68	1.90	1.98	2.12	2.26
Chile	2.16	1.99	1.92	2.23	2.57	3.16	3.35	3.80	3.97	3.79	4.01	4.36	4.43	4.65
Peru	1.13	1.13	1.18	0.88	0.97	1.02	1.03	1.09	1.23	1.30	1.40	1.49	1.47	1.50
Europe	7.81	8.44	9.30	9.29	7.54	7.26	7.44	7.52	7.46	6.85	7.11	7.07	6.95	6.80
Europe OECD	8.08	8.63	8.66	7.80	7.46	7.45	7.49	7.39	7.21	6.67	6.86	6.57	6.52	6.34
UK	11.1	11.3	10.1	9.57	8.85	8.85	8.79	8.50	8.22	7.37	7.59	6.93	7.24	7.00
Germany	12.5	13.3	13.4	11.9	10.5	9.9	9.54	9.32	9.44	8.80	9.28	8.94	9.09	9.25
France	8.07	8.89	8.25	5.93	5.78	5.99	5.86	5.52	5.43	5.16	5.23	4.75	4.75	4.79
Italy	5.35	5.99	6.29	6.86	7.05	7.38	7.84	7.51	7.24	6.44	6.55	6.40	6.08	5.58
Europe non-OECD	7.39	8.15	10.3	11.5	7.66	6.96	7.35	7.73	7.87	7.15	7.52	7.88	7.66	7.54
Former Soviet Union	7.97	8.81	11.1	12.54	8.28	7.52	7.86	8.25	8.42	7.63	8.08	8.42	8.22	8.14
Russia	N.A.	N.A.	N.A.	14.62	10.46	10.03	10.36	10.80	10.94	10.14	10.77	11.22	10.84	10.79
Africa	0.67	0.73	0.84	0.85	0.81	0.82	0.94	0.95	0.99	0.95	0.97	0.95	0.97	0.97
South Africa	6.95	7.54	7.56	6.93	6.64	6.38	7.86	8.04	8.58	7.98	8.05	7.66	7.79	7.91
Middle East	1.49	1.80	3.43	4.22	5.19	5.53	6.39	6.74	7.00	7.18	7.31	7.40	7.56	7.57
Iran	1.32	1.68	2.27	3.04	4.04	4.74	5.95	6.68	6.71	6.85	6.69	6.75	6.76	6.79
Saudi Arabia	2.09	2.64	10.10	9.32	10.3	11.6	12.1	12.9	13.8	14.2	15.4	15.7	16.4	16.4
Asia	1.01	1.11	1.29	1.60	1.94	2.04	2.66	2.94	2.94	3.01	3.18	3.54	3.59	3.71
China	0.99	1.04	1.46	1.92	2.50	2.59	4.12	4.75	4.80	4.98	5.30	6.28	6.31	6.60
Japan	7.15	8.24	7.43	8.49	8.95	9.12	9.36	9.54	8.88	8.41	8.79	9.21	9.54	9.70
Hong Kong	2.28	2.27	2.88	5.84	5.93	6.05	6.07	6.37	6.16	6.63	5.98	6.45	6.30	6.41
Taiwan	1.99	2.45	3.99	5.45	7.21	9.62	11.1	11.5	11.0	10.4	11.1	11.0	10.6	10.6
South Korea	1.61	2.00	3.29	5.41	7.92	9.18	9.50	9.8	10.0	10.2	11.2	11.5	11.5	11.4
Singapore	2.87	3.70	5.24	9.50	10.66	10.46	8.87	8.58	8.12	8.08	8.71	9.00	8.69	8.62
Brunei	2.93	4.63	13.67	12.68	15.26	13.33	13.10	17.96	18.61	18.86	17.11	17.23	16.91	16.39
Indonesia	0.22	0.26	0.47	0.75	1.05	1.24	1.44	1.55	1.52	1.56	1.59	1.60	1.69	1.70
Malaysia	1.14	1.11	1.71	2.70	3.81	4.87	5.98	6.59	6.92	6.06	6.66	6.60	6.55	6.97
Philippines	0.62	0.70	0.70	0.61	0.82	0.88	0.83	0.78	0.79	0.78	0.83	0.82	0.83	0.91
Thailand	0.43	0.52	0.71	1.43	2.37	2.44	3.05	3.17	3.25	3.13	3.36	3.33	3.58	3.69
India	0.32	0.32	0.38	0.61	0.74	0.86	0.96	1.09	1.15	1.27	1.32	1.36	1.44	1.49
Vietnam	0.37	0.38	0.28	0.26	0.38	0.57	0.96	1.07	1.19	1.30	1.45	1.44	1.43	1.45
Oceania	9.8	10.5	12.4	13.7	14.2	15.8	16.6	16.6	16.4	16.2	15.7	15.5	15.3	15.1
Australia	10.9	11.6	14.0	15.1	15.8	17.5	18.3	18.4	18.2	18.1	17.4	17.2	16.9	16.7
New Zealand	4.71	5.62	5.24	6.45	6.48	7.50	8.13	7.68	7.83	7.04	6.93	6.75	7.06	6.89
OECD34	10.4	11.2	10.8	10.3	10.3	10.8	10.7	10.6	10.3	9.60	9.93	9.73	9.56	9.55
Non-OECD	1.44	1.55	1.92	2.14	2.03	2.03	2.50	2.72	2.77	2.78	2.91	3.16	3.18	3.25
EU 28	N.A.	N.A.	N.A.	8.42	7.87	7.76	7.89	7.73	7.55	6.95	7.15	6.84	6.75	6.57
EU 15	N.A.	N.A.	N.A.	8.30	8.07	8.15	8.20	7.93	7.73	7.10	7.29	6.90	6.85	6.68
Euro zone 19	N.A.	N.A.	N.A.	8.19	7.83	7.95	8.07	7.83	7.65	7.05	7.24	6.92	6.81	6.67
APEC 20	N.A.	N.A.	N.A.	5.22	5.36	5.59	6.35	6.68	6.59	6.42	6.73	7.20	7.13	7.30
ASEAN 9	0.378	0.422	0.562	0.832	1.17	1.35	1.60	1.70	1.72	1.70	1.81	1.80	1.87	1.92
World	3.72	3.97	4.01	3.91	3.78	3.83	4.17	4.34	4.30	4.17	4.34	4.50	4.47	4.52

Note:

For the figures in the shadowed columns, the values are calculated by dividing the total CO<sub>2</sub> emissions of each country in the group by total population of each country, as the source data do not pertain the same group.

Source: "CO<sub>2</sub> Emissions from Fuel Combustion 2015 Edition," IEA.

## 2.05 Carbon dioxide emissions by source in major countries and regions

(Unit: million t)

	Transport sector 1)		Bunker oil 2)		Energy conversion 3)		Industry 4)		Others 5)	
	1988	2005	1988	2005	1988	2005	1988	2005	1988	2005
Canada	128.3	160.2	6.1	4.4	107.0	191.2	102.8	90.9	89.9	106.2
Mexico	67.3	130.8	5.2	10.6	62.3	166.5	59.8	58.5	23.3	33.6
USA	1,237.6	1,813.3	109.1	134.2	1,780.2	2,743.6	951.9	636.0	697.9	624.0
Japan	156.7	249.2	40.8	40.3	333.3	512.9	251.9	268.2	127.0	183.9
South Korea	14.4	86.9	1.1	38.9	33.4	199.6	29.5	93.8	44.6	68.6
Australia	49.3	79.7	5.9	10.8	99.7	236.2	47.6	42.4	11.1	18.5
New Zealand	6.7	14.1	1.7	3.2	2.2	13.1	4.7	4.9	2.8	2.9
Austria	11.9	22.4	0.4	1.7	11.8	25.3	14.3	15.7	18.0	13.9
Belgium	16.1	26.2	8.9	28.5	41.9	28.9	34.9	25.5	33.7	31.1
Czech Republic	6.7	18.9	0.9	1.0	57.4	65.4	67.0	22.3	34.4	11.6
Denmark	9.1	13.3	3.0	5.2	26.8	22.8	8.3	5.1	18.8	6.3
Finland	8.4	13.3	2.3	2.9	20.9	24.7	14.8	12.3	11.5	5.2
France	89.7	134.5	18.4	26.0	135.2	72.0	120.3	78.2	119.6	103.8
Germany	130.2	158.5	19.6	28.3	443.0	363.7	234.5	118.5	252.9	172.8
Greece	9.6	22.1	5.0	11.5	19.6	50.1	10.6	9.4	5.9	14.1
Hungary	8.5	11.9	0.4	0.7	34.0	20.0	22.8	8.5	20.4	17.3
Iceland	0.5	0.7	0.1	0.6	0.0	0.0	0.5	0.8	0.7	0.7
Ireland	4.6	12.8	0.9	2.8	8.2	15.5	6.0	5.2	7.2	10.4
Italy	71.8	119.1	17.5	22.1	119.3	160.9	92.7	84.2	78.8	89.8
Luxembourg	1.3	7.0	0.2	1.3	1.8	1.3	7.4	1.6	1.5	1.4
Netherlands	22.4	34.6	32.4	64.7	49.4	71.9	35.7	40.3	46.3	36.0
Norway	8.6	13.8	1.6	3.0	3.4	12.2	10.9	7.3	5.5	3.7
Poland	28.1	34.9	2.9	2.0	240.3	172.2	68.1	37.8	82.8	50.8
Portugal	6.9	19.3	2.3	4.0	6.5	27.6	7.9	9.5	2.8	6.6
Slovakia	3.7	6.5	0.0	0.1	18.4	15.9	20.1	9.6	16.1	6.3
Spain	45.5	110.7	7.8	34.7	70.4	129.3	53.7	64.5	19.9	37.3
Sweden	17.0	22.9	3.2	8.1	10.6	11.7	20.1	11.8	26.6	4.7
Switzerland	10.5	16.7	2.1	3.7	1.3	2.7	8.7	6.5	19.3	19.1
Turkey	16.8	37.9	0.1	6.7	16.5	81.1	20.9	57.1	17.3	42.9
UK	90.5	129.1	16.6	43.5	257.8	232.8	104.7	63.5	119.9	104.5
North America	1,433.2	2,104.3	120.4	149.2	1,949.5	3,101.3	1,114.6	785.4	811.1	763.9
Europe (OECD members)	618.4	987.1	146.3	302.9	1,594.2	1,607.7	984.8	694.8	959.8	790.4
EU-15	535.1	845.8	138.3	285.2	1,223.0	1,238.3	765.6	545.0	763.4	637.8
OECD countries	2,278.7	3,521.3	316.3	545.3	4,012.2	5,670.9	2,433.1	1,889.4	1,956.5	1,828.2
Brazil	72.5	137.1	2.0	14.3	20.0	58.6	68.2	99.5	17.4	34.1
Russia	..	206.0	..	31.7	..	933.9	..	221.9	..	182.0
India	55.5	97.5	4.3	10.5	99.2	694.8	90.8	243.4	46.7	111.8
Indonesia	17.7	73.9	1.5	3.4	11.9	135.1	21.7	93.3	17.8	38.7
China *	82.9	337.3	7.0	63.1	360.5	2,700.5	653.5	1,594.6	321.2	468.2
South Africa	25.3	42.9	6.1	10.7	103.4	210.5	73.0	51.2	13.0	25.7
Europe (Non-OECD members)	26.8	45.1	3.0	7.7	120.0	140.1	136.0	48.6	77.3	28.9
Africa	83.3	181.6	26.0	35.1	156.9	405.1	123.4	140.2	47.4	108.1
Asia	127.6	407.5	35.5	149.0	212.5	1,303.1	260.7	634.9	116.8	245.5
Former Soviet Union	278.6	279.3	87.4	37.1	1,283.1	1,280.5	904.2	390.5	597.4	352.2
South America	181.0	324.4	25.9	45.6	145.6	262.9	155.8	238.8	64.5	111.5
Middle East	78.5	281.5	46.3	76.1	113.5	544.1	99.9	247.1	48.9	165.5
Non-OECD countries	858.6	1,856.7	231.1	413.7	2,392.0	6,636.4	2,333.4	3,294.6	1,273.4	1,479.9
World	3,684.7	6,337.0	547.4	959.1	6,404.2	12,307.2	4,766.5	5,184.0	3,229.9	3,308.1

## Notes:

- Published data indicate anthropogenic emission of carbon dioxide only by energy use.
- Emissions from the use of bunker oil for international navigation and aviation are excluded (except for "world"). Emission from the use of biomass fuel are excluded. Peat is included.
- China\* includes Hong Kong.
- 1. Regardless of the modes, emissions caused by fuel combustion from every transporting activities are included. However, bunker oil for international navigation and aviation are excluded;
  - It means to include domestic air, domestic marine transport, road transport, railway transport, and pipeline transport. "World" includes bunker oil for domestic navigation as well as international aviation.
- 2. Bunker oil for international navigation and aviation.
- 3. Power plants, heat supply plant, and oil refining.
- 4. Manufacturing industry and constructing industry. Excludes oil refining.
- 5. Emissions from commerce, public, agriculture, forestry, fishery, residence and other unidentified emission sources.

Source: "OECD Environmental Data Compendium"

## 2.06 Atmospheric concentrations and anthropogenic emission of CO<sub>2</sub>

	Annual average concentration of CO <sub>2</sub> (ppm)	Total (million t-CO <sub>2</sub> )	Anthropogenic emissions of CO <sub>2</sub>				
			Shares by emissions source (%)				
			Solid fuel	Liquid fuel	Natural gas	Flare gas	Cement manufacturing
1950	-	5,977	65.6	25.9	5.9	1.4	1.1
1955	-	7,487	59.1	30.6	7.3	1.5	1.5
1960	316.9	9,420	54.9	33.1	8.8	1.5	1.7
1965	320.0	11,477	46.6	38.9	10.8	1.8	1.9
1970	325.7	14,861	38.4	45.4	12.2	2.1	1.9
1971	326.3	15,429	37.0	46.3	12.6	2.1	2.0
1972	327.5	16,045	36.0	47.0	12.8	2.2	2.0
1973	329.7	16,918	34.3	48.6	12.7	2.4	2.1
1974	330.2	16,951	34.1	48.6	12.9	2.3	2.1
1975	331.1	16,852	36.4	46.4	13.1	2.0	2.1
1976	332.1	17,835	35.1	47.6	12.9	2.2	2.1
1977	333.8	18,392	35.0	47.8	13.0	2.1	2.2
1978	335.4	18,605	35.1	47.1	13.4	2.1	2.3
1979	336.8	19,642	35.0	47.5	13.5	1.8	2.2
1980	338.8	19,437	36.5	45.7	13.9	1.6	2.3
1981	340.0	18,839	37.1	44.6	14.7	1.3	2.4
1982	340.8	18,678	38.8	43.1	14.5	1.3	2.4
1983	342.4	18,608	39.0	42.9	14.6	1.1	2.5
1984	344.0	19,279	39.4	41.8	15.3	1.0	2.4
1985	345.5	19,862	40.9	40.4	15.4	0.9	2.4
1986	346.9	20,471	40.8	41.1	14.9	0.8	2.5
1987	348.6	20,992	40.9	40.3	15.6	0.8	2.5
1988	351.2	21,765	40.2	40.6	15.8	0.8	2.6
1989	352.8	22,242	40.0	40.5	16.2	0.7	2.6
1990	354.0	22,352	39.1	40.9	16.8	0.7	2.6
1991	355.3	22,627	37.5	42.2	17.0	0.7	2.6
1992	356.0	22,403	38.0	40.9	17.7	0.6	2.7
1993	356.7	22,381	37.1	41.2	18.3	0.6	2.9
1994	358.2	22,763	37.3	40.8	18.3	0.6	3.0
1995	360.0	23,261	37.8	40.3	18.2	0.6	3.1
1996	361.8	23,800	37.3	40.5	18.5	0.6	3.1
1997	362.9	24,160	37.1	41.0	18.1	0.6	3.2
1998	365.6	24,094	35.7	42.0	18.6	0.5	3.2
1999	367.6	24,050	35.2	41.8	19.2	0.5	3.3
2000	368.9	24,666	34.6	42.3	19.1	0.7	3.4
2001	370.4	25,249	35.5	41.3	19.1	0.7	3.4
2002	372.4	25,469	35.5	40.8	19.4	0.7	3.6
2003	375.0	27,012	36.6	40.2	18.9	0.7	3.7
2004	376.8	28,362	37.5	39.4	18.6	0.7	3.9
2005	378.8	29,425	38.6	38.2	18.4	0.7	4.0
2006	380.9	30,459	39.3	37.2	18.4	0.7	4.3
2007	382.7	31,123	39.8	36.5	18.4	0.8	4.5
2008	384.8	32,039	40.4	35.8	18.6	0.8	4.4
2009	386.3	31,684	40.7	35.5	18.3	0.7	4.8
2010	388.6	33,502	41.5	34.2	18.6	0.7	4.9
2011	390.5	34,863	42.4	33.2	18.5	0.7	5.2
2012	392.5	35,460	42.2	33.2	18.5	0.7	5.4
2013	395.2	35,845	42.3	32.9	18.5	0.7	5.7
2014	397.2	-	-	-	-	-	-
2015	399.4	-	-	-	-	-	-

## Notes:

- The standard observation point: Mauna Loa Island, Hawaii. (19. 32 north latitude and 155. 35 west longitude.)
- For annual average CO<sub>2</sub> concentration, refer to the website (<http://www.esrl.noaa.gov/gmd/ccgg/trends/>) of NOAA Earth System Research Laboratory (NOAA / ESRL).
- ppm : One-millionth for dry air (by volume)
- For anthropogenic emission of CO<sub>2</sub>, refer to the website ([http://cdiac.ornl.gov/trends/emis/meth\\_reg.html](http://cdiac.ornl.gov/trends/emis/meth_reg.html)) of The Carbon Dioxide Information Analysis Center (CDIAC), Oak Ridge National Laboratory (ORNL).
- Shares by emission source are estimates based on emissions by source, using the data from the Carbon Dioxide Information Analysis Center (CDIAC) of Oak Ridge National Laboratory.
- For 2014 and 2015, data of "Anthropogenic emissions of CO<sub>2</sub>" were not disclosed to the public as of June 2, 2016.

Source: Compiled by MOE based on the data from NOAA/ESRL and data from the Carbon Dioxide Information Analysis Center (CDIAC) of Oak Ridge National Laboratory



## 2.07 Emissions of greenhouse gasses in major countries and regions (2005)

( Unit : 1,000 t-CO<sub>2</sub> )

	Carbon dioxide ( CO <sub>2</sub> )	Methane ( CH <sub>4</sub> )	Nitrous oxide ( N <sub>2</sub> O )	Hydro fluorocarbons ( HFCs )	Perfluorocarbons ( PFCs )	Sulfur hexafluoride ( SF <sub>6</sub> )	Total 1)
Canada	583,379	109,233	43,837	4,844	3,078	2,518	746,889
Mexico *	393,532	142,919	12,033	4,425	405	15	553,329
USA	6,089,490	527,717	461,267	140,066	6,107	16,835	7,241,482
Japan	1,293,469	24,071	25,450	7,138	5,673	4,114	1,359,914
South Korea *	510,671	25,788	18,129	7,687	2,501	17,418	582,194
Australia *	384,161	111,108	23,799	4,252	1,567	521	525,408
New Zealand	35,880	27,175	13,260	742	81	22	77,159
Austria	79,650	7,057	5,256	912	118	287	93,280
Belgium	123,329	7,833	11,049	1,454	141	43	143,848
Czech Republic	125,932	10,950	8,039	594	10	86	145,611
Denmark	50,426	5,636	7,044	805	14	22	63,947
Finland	57,011	4,487	6,850	864	10	20	69,241
France	416,610	56,742	70,819	11,060	1,801	1,360	558,392
Germany	872,943	47,632	66,079	9,363	718	4,740	1,001,476
Greece	111,668	8,492	13,095	5,911	72	4	139,242
Hungary	61,808	7,777	9,707	518	209	201	80,219
Iceland	2,872	416	309	77	26	5	3,705
Ireland	47,292	13,102	8,850	431	174	96	69,945
Italy	493,372	39,721	40,366	5,267	361	460	579,548
Luxembourg	11,874	349	428	83	..	4	12,738
Netherlands	175,905	16,711	17,562	1,354	265	337	212,134
Norway	43,149	4,600	4,781	482	829	312	54,153
Poland	326,511	38,308	31,099	2,750	261	24	398,952
Portugal	67,918	11,147	6,072	391	..	10	85,538
Slovakia	39,757	4,155	3,743	175	20	17	47,866
Spain	368,282	37,269	29,571	5,011	244	272	440,649
Sweden	52,569	5,613	7,558	777	296	142	66,955
Switzerland	45,966	3,518	3,260	639	56	196	53,636
Turkey *	256,326	49,317	3,432	2,379	..	859	312,312
United Kingdom	557,546	49,492	39,643	9,221	351	1,143	657,396
North America *	6,672,900	636,900	505,100	144,900	9,200	19,400	7,988,400
Europe * (OECD members)	4,388,700	430,300	394,600	60,500	6,000	10,600	5,290,800
EU-15 *	3,486,400	311,300	330,200	52,900	4,600	8,900	4,194,300
OECD countries *	12,775,100	1,229,600	962,200	217,600	22,500	34,600	15,241,600

## Notes:

Mexico: Figure as of year 2002.

Korea: National data of year 2003.

Denmark: Excludes Faroe Islands and Greenland.

France: Metropolitan France and French overseas territories

Turkey: National data.

Total: Estimated aggregation of North America, Europe, EU-15, OECD countries, excluding Mexico and South Korea.

1. Does not include emissions caused by change of land use and woodlands.

Source: "OECD Environmental Data Compendium"

2.08 Penetration rate of major consumer durables (general households)

(Unit : %)

Durables	Toilet seat with a warm-water shower feature	Bathroom vanity with a shampoo bowl	Built-in kitchen	Water heater	Cloth dryer	Washer integrated	Others(including bathroom dryer)	Dishwasher	Fan heater	Air conditioner	Air purifier	Color TV	
												CRT TV	Thin-type (LCD, plasma)
1959.2													
1960.2													
1961.2										0.4			
1962.2										0.7			
1963.2										1.3			
1964.2										1.7			
1965.2										2.0			
1966.2										2.0		0.3	
1967.2										2.8		1.6	
1968.2										3.9		5.4	
1969.2										4.7		13.9	
1970.2										5.9		26.3	
1971.2										7.7		42.3	
1972.2										9.3		61.1	
1973.2										12.9		75.8	
1974.2										12.4		85.9	
1975.2										17.2		90.3	
1976.2										19.5		93.7	
1977.2										25.7		95.4	
1978.3										29.9		97.7	
1979.3										35.5		97.8	
1980.3										39.2		98.2	
1981.3										41.2		98.5	
1982.3										42.2		98.9	
1983.3										49.6		98.8	
1984.3										22.3		99.2	
1985.3										28.7		99.1	
1986.3										33.2		98.9	
1987.3										37.1		98.7	
1988.3										40.4		99.0	
1989.3										45.4		99.3	
1990.3										48.0		99.4	
1991.3										53.6		99.3	
1992.3										55.6		99.0	
1993.3										56.4		99.1	
1994.3										59.0		99.0	
1995.3										59.2		98.9	
1996.3										61.0		99.1	
1997.3										61.9		99.2	
1998.3										61.9		99.2	
1999.3										62.6		98.9	
2000.3										63.7		99.0	
2001.3										64.2		99.2	
2002.3										65.6		99.3	
2003.3										66.9		99.4	
2004.3										67.5		99.0	
2005.3										68.8		99.3	
2006.3										67.5		99.4	
2007.3										66.2		99.5	
2008.3										64.4		99.7	
2009.3										65.0		99.4	
2010.3										65.6		99.5	
2011.3										63.0		99.6	
2012.3										64.4		99.4	
2013.3										61.7		90.5	
2014.3										59.9		42.3	
2015.3										59.1		44.4	
2016.3										58.5		44.3	

Notes:

1. Shaded figures in italic are data among non-farmers and are only in cities 1963 or before.
2. As of the end of fiscal year (end of March). Up to 1978, as of end of February, since survey was not conducted in March until 1978.
3. Since Starting in FY 2013, survey methods have been were changed. For detailed information on the change, please refer to the web site at <http://www.esri.cao.go.jp/jp/stat/shouhi/yuusouka2.html> "Information regarding changes of the survey after 2013 April. Before the changes of the survey, preliminary investigation was conducted. For detailed information of the preliminary investigation, please refer to "Consumer Confidence Survey (Preliminary investigation)" at <http://www.esri.cao.go.jp/jp/stat/shouhi/shiken2012/shikenhouwa.html> .)
4. Since March, 2014, cloth dryer was segmentalized into washer integrated-type machine and others including the ones equipped with the bathroom drying machine.
5. Survey on TV sets with CRT was discontinued at March, 2013

Source: "Consumer Confidence Survey (National Index)," Economic Statistics Division, Economic and Social Research Institute, Cabinet Office.

**2.08 Penetration rate of major consumer durables (general households)**

(Unit : %)

Survey time	Video camera	Digital	Optical disk player and recorder					PC	FAX	Cell phone	Smart-phone	Others	Car	
			DVD player (playback only)	DVD recorder (playback/recording)	DVD (player/recorder)	Blu-ray (player/recorder)	New when purchased						Used when purchased	
1959.2														
1960.2	2.4													
1961.2	2.8													
1962.2	3.8	Photographic machine (1960/Feb.-1968/Feb.)											2.8	
1963.2	4.7												5.1	
1964.2	3.2												6.1	
1965.2	3.4												6.0	
1966.2	4.0												9.2	
1967.2	4.1												12.1	
1968.2	5.1												12.1	
1969.2													9.5	
1970.2													13.1	
1971.2													17.3	
1972.2													22.1	
1973.2													26.8	
1974.2	7.1												30.1	
1975.2	7.9												36.7	
1976.2	9.0												39.8	
1977.2	10.1												41.2	
1978.3	8.6												44.0	
1979.3	9.3												48.7	
1980.3	8.6												51.7	
1981.3	9.0												54.6	
1982.3	8.8												57.2	
1983.3	8.2												58.5	
1984.3	8.8												62.0	
1985.3	8.4												62.9	31.0
1986.3	8.5												64.8	33.8
1987.3	10.4												67.4	37.5
1988.3	11.3												67.4	38.5
1989.3	14.9												70.6	40.5
1990.3	15.6												71.9	40.5
1991.3	23.7												76.0	45.5
1992.3	26.0												77.3	44.8
1993.3	25.6												79.5	48.7
1994.3	29.9												78.6	46.8
1995.3	31.3												80.0	46.7
1996.3	32.3												79.7	47.6
1997.3	33.6												80.0	47.0
1998.3	35.0												80.1	46.6
1999.3	36.3												82.6	48.1
2000.3	37.9												83.1	48.4
2001.3	36.6												82.5	48.0
2002.3	37.2												83.6	49.7
2003.3	39.1												85.3	49.7
2004.3	42.0												85.3	51.1
2005.3	39.6												84.4	50.9
2006.3	40.2												86.4	52.0
2007.3	41.2												86.4	52.0
2008.3	41.4												85.1	70.7
2009.3	41.0												83.2	67.8
2010.3	40.0												81.6	48.2
2011.3	39.9												83.9	51.1
2012.3	40.2												83.9	67.1
2013.3	41.5												84.1	66.5
2014.3	40.1												81.0	65.1
2015.3	39.1												80.1	63.9
2016.3													81.8	64.8

Notes:

1. Shaded figures in italic are data among o non-farmers and are only in cities 1963 or before.
2. As of the end of fiscal year (end of March). Up to 1978, as of end of February, since survey was not conducted in March until 1978.
3. Since Starting in FY 2013, survey methods have been changed. For detailed information on the change, please refer to the web site at <http://www.esri.cao.go.jp/jp/stat/shouhi/yuusouka2.html> "Information regarding changes of the survey after 2013 April. Before the changes of the survey, preliminary investigation was conducted. For detailed information of the preliminary investigation, please refer to "Consumer Confidence Survey (Preliminary investigation)" at <http://www.esri.cao.go.jp/jp/stat/shouhi/shiken2012/shikenchousa.html> .)
4. As more than one vehicles are owned in a household, the aggregated number of the registered units of automobiles is divided by the number of surveyed households and then multiply by 100.
5. Following changes were made starting in 2014 March survey: "DVD player" and "DVD recorder" were categorized under "DVD player/recorder."; The "Cell phone" was divided into two categories: "Smart phone" and "Other than smart phone."
6. The names of breakdown items were changed from "New car" and "Used car" to "New when purchased" and "Used when purchased" starting in 2005 March survey.

Source: "Consumer Confidence Survey (National Index)," Economic Statistics Division, Economic and Social Research Institute, Cabinet Office.

## 2.09 Anomalies of annual average land temperature in the World and Japan

Anomalies of annual average land temperature of the World.

				( Unit : °C )			
Year	World	Northern Hemisphere	Southern Hemisphere	Year	World	Northern Hemisphere	Southern Hemisphere
1891	-0.63	-0.68	-0.59	1956	-0.56	-0.61	-0.53
1892	-0.71	-0.80	-0.62	1957	-0.28	-0.32	-0.25
1893	-0.75	-0.87	-0.63	1958	-0.22	-0.19	-0.28
1894	-0.70	-0.73	-0.68	1959	-0.29	-0.30	-0.30
1895	-0.68	-0.75	-0.60	1960	-0.33	-0.32	-0.36
1896	-0.47	-0.53	-0.42	1961	-0.23	-0.25	-0.24
1897	-0.49	-0.53	-0.45	1962	-0.21	-0.19	-0.26
1898	-0.66	-0.65	-0.68	1963	-0.18	-0.16	-0.23
1899	-0.56	-0.58	-0.55	1964	-0.49	-0.50	-0.49
1900	-0.49	-0.48	-0.51	1965	-0.42	-0.48	-0.37
1901	-0.58	-0.55	-0.63	1966	-0.35	-0.33	-0.39
1902	-0.70	-0.75	-0.66	1967	-0.35	-0.32	-0.42
1903	-0.77	-0.78	-0.77	1968	-0.37	-0.37	-0.39
1904	-0.84	-0.88	-0.79	1969	-0.27	-0.38	-0.14
1905	-0.70	-0.72	-0.68	1970	-0.29	-0.36	-0.22
1906	-0.60	-0.59	-0.62	1971	-0.41	-0.48	-0.33
1907	-0.78	-0.85	-0.70	1972	-0.29	-0.49	-0.06
1908	-0.82	-0.84	-0.82	1973	-0.16	-0.26	-0.05
1909	-0.82	-0.84	-0.81	1974	-0.44	-0.54	-0.34
1910	-0.79	-0.78	-0.80	1975	-0.39	-0.42	-0.35
1911	-0.82	-0.79	-0.85	1976	-0.48	-0.58	-0.36
1912	-0.73	-0.83	-0.61	1977	-0.19	-0.25	-0.12
1913	-0.70	-0.79	-0.60	1978	-0.28	-0.34	-0.21
1914	-0.53	-0.57	-0.49	1979	-0.16	-0.25	-0.07
1915	-0.43	-0.47	-0.40	1980	-0.13	-0.22	-0.05
1916	-0.64	-0.70	-0.59	1981	-0.09	-0.05	-0.13
1917	-0.71	-0.77	-0.64	1982	-0.21	-0.29	-0.13
1918	-0.55	-0.61	-0.48	1983	-0.06	-0.13	0.02
1919	-0.58	-0.68	-0.45	1984	-0.24	-0.36	-0.13
1920	-0.51	-0.56	-0.46	1985	-0.26	-0.40	-0.11
1921	-0.43	-0.39	-0.52	1986	-0.17	-0.25	-0.09
1922	-0.56	-0.56	-0.58	1987	-0.01	-0.10	0.08
1923	-0.54	-0.54	-0.55	1988	-0.03	-0.06	-0.01
1924	-0.55	-0.53	-0.60	1989	-0.10	-0.12	-0.09
1925	-0.46	-0.42	-0.52	1990	0.04	0.08	0.00
1926	-0.36	-0.33	-0.42	1991	-0.02	-0.06	0.00
1927	-0.47	-0.43	-0.54	1992	-0.17	-0.25	-0.09
1928	-0.47	-0.47	-0.50	1993	-0.15	-0.22	-0.06
1929	-0.60	-0.62	-0.59	1994	-0.07	-0.07	-0.08
1930	-0.38	-0.33	-0.46	1995	0.01	0.06	-0.04
1931	-0.34	-0.31	-0.41	1996	-0.09	-0.15	-0.04
1932	-0.38	-0.38	-0.39	1997	0.09	0.10	0.07
1933	-0.53	-0.57	-0.50	1998	0.22	0.24	0.19
1934	-0.37	-0.37	-0.39	1999	0.00	0.03	-0.05
1935	-0.46	-0.45	-0.49	2000	0.00	0.02	-0.04
1936	-0.48	-0.43	-0.56	2001	0.12	0.14	0.10
1937	-0.37	-0.32	-0.46	2002	0.16	0.18	0.13
1938	-0.33	-0.26	-0.45	2003	0.16	0.20	0.10
1939	-0.37	-0.34	-0.46	2004	0.12	0.20	0.04
1940	-0.32	-0.39	-0.25	2005	0.17	0.26	0.08
1941	-0.26	-0.31	-0.21	2006	0.16	0.24	0.07
1942	-0.26	-0.31	-0.24	2007	0.12	0.24	0.00
1943	-0.23	-0.21	-0.31	2008	0.05	0.12	-0.02
1944	-0.11	-0.15	-0.11	2009	0.16	0.19	0.15
1945	-0.25	-0.33	-0.16	2010	0.20	0.28	0.12
1946	-0.40	-0.36	-0.52	2011	0.08	0.13	0.02
1947	-0.43	-0.43	-0.46	2012	0.15	0.21	0.09
1948	-0.40	-0.36	-0.50	2013	0.20	0.25	0.15
1949	-0.42	-0.40	-0.47	2014	0.27	0.38	0.17
1950	-0.49	-0.52	-0.47	2015	0.42	0.59	0.27
1951	-0.35	-0.31	-0.44				
1952	-0.29	-0.31	-0.30				
1953	-0.22	-0.18	-0.31				
1954	-0.45	-0.43	-0.52				
1955	-0.47	-0.42	-0.57				

Note: Anomaly, also known as the deviation from normal, is a value obtained by subtracting normal from average temperature. As normal, an average for 30 years from 1981 to 2010 is used.

Source: Compiled from the materials below.

World Meteorological Agency press release (updated on 2016/2/1)  
[http://www.data.jma.go.jp/cpdinfo/temp/list/an\\_wld.html](http://www.data.jma.go.jp/cpdinfo/temp/list/an_wld.html)

Japan Meteorological Agency press release (updated on 2016/1/29)  
[http://www.data.kishou.go.jp/climate/cpdinfo/temp/list/an\\_jpn.html](http://www.data.kishou.go.jp/climate/cpdinfo/temp/list/an_jpn.html)

Anomalies of annual average land temperature of Japan.

		( Unit : °C )	
Year	Japan	Year	Japan
1891		1956	-0.74
1892		1957	-0.76
1893		1958	-0.29
1894		1959	0.12
1895		1960	-0.22
1896		1961	0.18
1897		1962	-0.37
1898	-0.73	1963	-0.64
1899	-0.81	1964	-0.29
1900	-1.06	1965	-0.99
1901	-1.03	1966	-0.53
1902	-1.03	1967	-0.47
1903	-0.76	1968	-0.64
1904	-0.86	1969	-0.79
1905	-0.95	1970	-0.75
1906	-1.32	1971	-0.68
1907	-1.21	1972	-0.14
1908	-1.44	1973	-0.30
1909	-1.13	1974	-0.91
1910	-1.22	1975	-0.35
1911	-0.70	1976	-0.87
1912	-1.12	1977	-0.41
1913	-1.59	1978	-0.16
1914	-0.20	1979	0.20
1915	-0.56	1980	-0.78
1916	-0.14	1981	-0.98
1917	-1.31	1982	-0.33
1918	-1.09	1983	-0.49
1919	-0.74	1984	-0.99
1920	-0.51	1985	-0.37
1921	-1.08	1986	-0.95
1922	-0.58	1987	-0.13
1923	-0.76	1988	-0.65
1924	-1.01	1989	0.16
1925	-0.94	1990	0.78
1926	-1.32	1991	0.25
1927	-0.93	1992	-0.11
1928	-0.62	1993	-0.52
1929	-0.87	1994	0.56
1930	-0.32	1995	-0.19
1931	-1.04	1996	-0.54
1932	-0.72	1997	0.10
1933	-0.64	1998	0.75
1934	-1.14	1999	0.49
1935	-0.76	2000	0.28
1936	-1.10	2001	-0.05
1937	-0.37	2002	0.29
1938	-0.54	2003	-0.06
1939	-0.68	2004	0.77
1940	-0.85	2005	-0.01
1941	-0.79	2006	0.20
1942	-0.67	2007	0.61
1943	-0.86	2008	0.22
1944	-1.09	2009	0.30
1945	-1.57	2010	0.61
1946	-0.36	2011	0.13
1947	-1.42	2012	0.04
1948	-0.08	2013	0.34
1949	-0.65	2014	0.14
1950	-0.29	2015	0.69
1951	-0.62		
1952	-0.74		
1953	-0.74		
1954	-0.53		
1955	-0.12		

2.10 Shipping volume of CFC in Japan

Shipment volume of CFC (\* ChloroFluorCarbon = CFC)

(Unit : in ton)

	CFC-11						CFC-12					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1985	2,139	4,283	18,295	200	291	25,208	18,834	7,059	8,269	0	149	34,311
1986	2,573	4,439	21,211	305	873	29,401	21,439	7,157	9,292	0	315	38,203
1987	2,802	4,511	25,609	503	806	34,231	22,716	7,042	11,004	0	178	40,940
1988	2,348	4,218	25,232	1,236	1,303	34,337	20,708	7,401	12,115	0	990	41,214
1989	3,051	3,807	23,541	1,156	930	32,485	24,880	6,585	9,606	0	335	41,406
1990	2,444	1,120	19,235	411	401	23,611	18,480	3,461	5,646	0	0	27,587
1991	2,156	653	17,286	713	158	20,966	15,495	2,544	2,825	81	501	21,446
1992	1,950	299	11,366	477	86	14,178	15,091	1,286	1,253	88	288	18,006
1993	2,305	93	8,557	531	14	11,500	20,109	1,016	261	75	249	21,710
1994	785	46	8,212	363	0	9,406	9,694	1,013	104	0	45	10,856
1995	493	299	6,850	23	88	7,753	4,678	423	101	0	174	5,376
1996	7	40	749	1	8	805	1,731	119	1	29	16	1,896
1997	7	95	189	0	17	308	484	172	0	0	16	672
1998	11	19	5	0	0	35	509	33	0	0	0	542
1999	0	34	7	0	4	45	58	62	0	0	5	125
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-	-	-	-	-

	CFC-113						CFC-114					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1985	155	143	197	54,749	1,544	56,788	130	131	1,382	0	10	1,653
1986	144	159	176	62,182	917	63,578	134	150	1,318	0	11	1,613
1987	130	171	251	76,707	2	77,261	117	542	1,871	0	0	2,530
1988	115	23	276	79,968	3	80,385	141	401	2,057	0	60	2,659
1989	108	227	210	82,927	19	83,491	161	588	1,975	0	14	2,738
1990	168	160	224	57,177	75	57,804	57	41	1,424	0	0	1,522
1991	70	81	246	50,371	0	50,768	179	24	1,465	0	1	1,669
1992	93	9	274	26,462	0	26,838	194	17	690	0	1	902
1993	72	9	31	11,655	34	11,801	193	15	246	0	1	455
1994	204	4	21	10,709	4	10,942	43	15	17	0	256	331
1995	13	0	48	11,654	52	11,767	22	19	5	0	191	237
1996	0	0	0	1,598	179	1,777	24	12	0	0	4	40
1997	0	0	0	281	22	303	0	55	0	0	0	55
1998	0	0	0	91	0	91	0	0	0	0	0	0
1999	0	0	0	14	1	15	0	0	0	0	0	0
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-	-	-	-	-

	CFC-115						CFC Total					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1985	93	0	0	0	2	95	21,351	11,616	28,143	54,949	1,996	118,055
1986	119	0	0	0	11	130	24,409	11,905	31,997	62,487	2,127	132,925
1987	610	0	0	0	0	610	26,375	12,266	38,735	77,210	986	155,572
1988	616	0	0	0	9	625	23,928	12,043	39,680	81,204	2,365	159,220
1989	601	0	0	0	0	601	28,801	11,207	35,332	84,083	1,298	160,721
1990	686	0	0	0	0	686	21,835	4,782	26,529	57,588	476	111,210
1991	728	0	0	0	1	729	18,628	3,302	21,822	51,165	661	95,578
1992	679	0	0	0	1	680	18,007	1,611	13,583	27,027	376	60,604
1993	409	0	0	0	0	409	23,088	1,133	9,095	12,261	298	45,875
1994	214	0	0	0	0	214	10,940	1,078	8,354	11,072	305	31,749
1995	335	0	0	0	0	335	5,541	741	7,004	11,677	505	25,468
1996	39	0	0	0	0	39	1,801	171	750	1,628	207	4,557
1997	6	0	0	0	0	6	497	322	189	281	55	1,344
1998	0	0	0	0	0	0	520	52	5	91	0	668
1999	0	0	0	14	1	15	58	96	7	28	11	200
2000	-	-	-	-	-	-	40	0	0	5	26	71
2001	-	-	-	-	-	-	0	0	0	0	0	0
2002	-	-	-	-	-	-	0	0	0	0	0	0
2003	-	-	-	-	-	-	0	0	0	0	0	0
2004	-	-	-	-	-	-	0	0	0	0	0	0
2005	-	-	-	-	-	-	0	0	0	0	0	0
2006	-	-	-	-	-	-	0	0	0	0	0	0
2007	-	-	-	-	-	-	0	0	0	0	0	0

2.10 Shipping volume of CFC in Japan

Shipment volume of HCFC (\* Hydro Chlorofluorocarbon = CFC)

(Unit : in 1,000 tons)

	HCFC-22						HCFC-141b					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1995	30.6	-	0.8	0.0	0.1	31.5	0.0	-	8.6	2.1	0.0	10.7
1996	31.7	-	0.6	0.0	0.3	32.6	0.0	-	13.5	3.2	0.1	16.8
1997	28.4	-	0.5	0.0	1.5	30.4	0.0	-	14.8	3.0	0.0	17.8
1998	27.5	-	0.4	0.0	1.6	29.5	0.0	-	12.9	3.3	-	16.2
1999	26.8	-	0.3	0.0	1.7	28.8	0.0	-	11.9	4.0	-	15.9
2000	24.0	-	0.0	-	2.0	26.0	0.0	-	11.0	3.0	0.0	15.0
2001	21.6	-	0.2	0.0	1.2	23.0	0.0	-	9.3	3.0	0.2	12.5
2002	15.6	-	0.2	0.0	0.7	16.5	0.0	-	9.3	3.0	0.0	12.4
2003	13.7	-	0.1	0.0	1.2	15.0	0.0	-	11.5	3.0	0.0	14.5
2004	12.7	0.0	0.0	0.0	1.2	14.0	0.0	0.0	0.7	2.3	0.0	3.1
2005	10.8	0.0	0.0	0.0	1.2	12.0	0.0	0.0	0.0	2.3	0.0	2.3
2006	9.1	0.0	0.0	0.0	0.1	9.2	0.0	0.0	0.0	2.5	0.0	2.5
2007	-	-	-	-	-	-	-	-	-	-	-	-

  

	HCFC-142b						HCFC-225					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1995	0.0	-	3.7	0.0	0.1	3.8	0.0	-	0.0	1.2	0.0	1.2
1996	0.0	-	3.9	0.0	0.1	4.0	0.0	-	0.0	2.0	0.0	2.0
1997	0.0	-	3.8	0.0	0.2	4.1	0.0	-	0.0	2.8	0.0	2.8
1998	0.0	-	3.4	0.0	0.2	3.6	0.0	-	0.0	2.6	0.0	2.6
1999	-	-	3.7	0.0	0.7	4.4	0.0	-	0.0	3.0	0.1	3.1
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-	-	-	-	-

  

	HCFC-123						HCFC-124					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1995	0.5	-	0.0	0.0	0.0	0.5	0.0	-	0.0	0.0	0.0	0.0
1996	0.5	-	0.0	0.0	0.0	0.5	0.0	-	0.0	0.0	0.0	0.0
1997	0.4	-	0.0	0.0	0.0	0.4	0.0	-	0.0	0.0	0.0	0.0
1998	0.4	-	0.0	-	-	0.4	-	-	0.0	0.0	-	-
1999	0.3	-	-	0.0	-	0.3	-	-	0.1	0.0	0.0	0.1
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-	-	-	-	-

  

	HCFC-142b,225,123,124 Total						HCFC Total					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1995	0.5	-	3.7	1.2	0.1	5.5	31.1	-	13.1	3.3	0.2	47.7
1996	0.5	-	3.9	2.0	0.1	6.5	32.2	-	18.0	5.2	0.5	55.9
1997	0.4	-	3.9	2.8	0.2	7.3	28.8	-	19.2	5.8	1.7	55.5
1998	0.4	-	3.4	2.6	0.2	6.6	27.9	-	16.7	5.9	1.8	52.3
1999	0.3	-	3.8	3.0	0.8	7.9	27.1	-	16.0	7.0	2.5	52.6
2000	0.0	-	4.0	3.0	1.0	7.0	25.0	-	15.0	6.0	2.0	48.0
2001	0.3	-	3.5	2.2	0.7	6.7	21.9	-	13.0	5.2	2.0	42.1
2002	0.2	-	2.9	2.0	0.1	5.2	15.8	-	12.3	5.0	0.8	34.1
2003	0.2	-	1.4	1.6	0.2	3.4	13.9	-	13.0	4.6	1.4	32.9
2004	0.2	0.1	0.4	2.8	0.0	3.4	12.9	0.1	1.1	5.1	1.3	20.5
2005	0.2	0.1	0.0	2.3	0.2	2.8	11.0	0.1	0.0	4.6	1.4	17.1
2006	0.2	0.1	0.0	1.3	0.1	1.7	9.3	0.1	0.0	3.8	0.1	13.3
2007	-	-	-	-	-	-	8.0	0.1	0.0	3.4	0.3	11.8

## 2.10 Shipping volume of CFC in Japan

## Shipment volume of HFC (\* Hydro Fluorocarbon = HFC)

(Unit : in 1,000 tons)

	HFC-134a						Other HFC					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1995	7.8	1.2	0.3	0.0	0.0	9.3	0.1	0.0	0.0	0.0	0.1	0.2
1996	8.6	1.8	0.4	0.0	0.0	10.8	0.1	0.0	0.0	0.0	0.1	0.2
1997	8.9	2.2	0.4	0.0	0.0	11.5	0.2	0.0	0.0	0.0	0.2	0.4
1998	8.4	2.5	0.5	0.0	0.0	11.4	0.4	0.0	0.0	0.2	0.3	0.9
1999	9.6	3.1	0.6	0.0	0.2	13.5	1.0	0.0	-	-	0.2	1.2
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-	-	-
2007	-	-	-	-	-	-	-	-	-	-	-	-

	HFC Total					
	Refrigerant	Aerosol	Foaming agent	Detergent	Other	Total
1995	7.9	1.2	0.3	0.0	0.1	9.5
1996	8.7	1.8	0.4	0.0	0.1	11.0
1997	9.1	2.2	0.4	0.0	0.2	11.9
1998	8.8	2.5	0.5	0.2	0.3	12.3
1999	10.6	3.1	0.6	0.0	0.4	14.7
2000	11.0	3.0	1.0	0.0	1.0	16.0
2001	14.0	2.9	0.7	0.0	0.2	17.9
2002	18.0	3.1	0.8	0.1	0.5	22.5
2003	19.2	2.9	1.5	0.1	0.5	24.2
2004	21.0	2.4	3.3	0.3	0.5	27.5
2005	22.8	2.3	5.2	0.3	0.1	30.7
2006	23.5	2.0	7.6	0.8	0.3	34.1
2007	24.9	1.4	6.9	0.8	0.2	34.3

Note: In 2000 and 2007, calculation method has been changed, and now only total shipment volumes of CFC, HCFC, and HFC are shown.

Source: "The Annual Report of Ozone Monitoring result in the FY 2011," Global Environment Bureau, MOE, the Government of Japan.

## 2.11 Production and consumption volumes of HCFC in Japan

( Unit: ODP ton ) 1)

	Production	Consumption 2)
Basis volume 3)		5,562
January 1996 – December 1996		4,141
January 1997 – December 1997		4,152
January 1998 – December 1998	3,966	3,633
January 1999 – December 1999	4,608	3,899
January 2000 – December 2000	3,928	3,531
January 2001 – December 2001	3,792	3,500
January 2002 – December 2002	3,195	2,907
January 2003 – December 2003	3,145	2,810
January 2004 – December 2004	1,921	1,473
January 2005 – December 2005	1,344	1,118
January 2006 – December 2006	872	747
January 2007 – December 2007	728	770
January 2008 – December 2008	777	787
January 2009 – December 2009	494	518
January 2010 – December 2010	400	453
January 2011 – December 2011	397	470
January 2012 – December 2012	297	342
January 2013 – December 2013	294	335
January 2014 – December 2014	252	283

Notes:

- 1) ODP ton is a sum of production and consumption amounts of each HCFC substance multiplied by relevant ozone depletion potential (ODP).
- 2) Consumption = production + import – export
- 3) Basis volume of HCFC consumption = "the estimated consumption of HCFC in 1989" + "the estimated consumption of CFC in 1989" × 0.028

Source: "The Annual Report of Result of Ozone Monitoring in 2014," CFC Measures Promotion Agency, Environmental Protection Measures Division, Global Environment Bureau, Ministry of the Environment, and a web page of Ministry of Economy, Trade and Industry, the Government of Japan.



## 2.12 Changes in production volume of major CFCs in the world

(Unit: t)

Year	CFC-11	CFC-12	CFC-113	CFC-114	CFC-115	HCFC-22	HCFC-124	HCFC-141b	HCFC-142b	HFC-134a	HFC-125	HFC-143a
1931 ~ 1935	90	2,676										
1936 ~ 1940	590	16,102										
1941 ~ 1945	1,724	57,244										
1946 ~ 1950	16,149	122,244										
1951	9,072	36,242										
1952	13,562	37,240										
1953	17,282	46,493										
1954	20,911	49,124										
1955	26,263	57,606										
1956	32,477	68,674										
1957	33,929	74,163										
1958	29,529	73,437										
1959	35,562	87,589										
1960	49,714	99,428										
1961	60,464	108,499										
1962	78,109	128,095										
1963	93,304	146,420										
1964	111,085	170,097										
1965	122,833	190,056										
1966	141,022	216,182										
1967	159,756	242,763										
1968	183,116	267,484										
1969	217,271	297,285										
1970	238,136	321,099				56,071						
1971	263,175	341,556				60,582						
1972	306,856	379,884				63,250						
1973	349,085	423,338				74,346						
1974	369,724	442,798				83,390						
1975	314,068	380,973				74,989						
1976	339,832	410,729				90,706						
1977	320,464	382,833				101,375						
1978	308,852	372,082				111,662						
1979	289,483	357,159	*1 706,830	*1 319,830	*1 57,533	117,892						
1980	289,619	350,219	103,667	14,994	9,342	126,323						
1981	286,943	351,308	108,536	14,011	9,955	130,811			2,587			
1982	271,443	328,039	112,987	13,580	10,366	123,616			1,898			
1983	291,731	355,331	132,743	14,774	11,629	143,881			2,204			
1984	312,355	382,107	171,122	15,573	11,221	152,356			2,352			
1985	326,814	376,339	187,011	17,091	10,036	153,432			1,370			
1986	350,148	398,363	196,614	19,101	11,818	164,993			7,121			
1987	382,050	424,726	225,812	17,098	12,772	173,304			6,883			
1988	375,986	421,002	247,444	16,483	13,550	203,545			7,841			
1989	302,489	379,778	251,326	14,963	14,191	219,537			10,288			
1990	232,916	230,950	174,801	8,311	11,347	213,714			18,757	189		
1991	213,486	224,805	147,625	6,658	12,276	236,812	17	1,507	27,154	2,198		
1992	186,434	216,207	107,507	4,691	10,711	245,715	99	13,254	30,691	6,404		
1993	147,131	214,664	48,037	4,576	11,411	240,619	532	43,291	33,682	26,526		
1994	60,232	133,600	29,547	3,207	6,834	239,444	897	81,231	38,361	50,400		
1995	32,683	82,822	23,321	3,135	3,651	243,468	3,078	113,154	38,711	73,769		
1996	22,123	48,856	6,007	713	2,019	267,523	4,834	121,085	37,736	83,674	2 0	*2 794
1997	18,577	32,900	3,008	1,196	836	246,937	4,143	122,356	40,197	97,949	296	339
1998	14,600	33,269	1,589	1,199	922	271,980	5,181	129,037	38,771	112,174	698	557
1999	12,871	27,132	1,000	292	396	248,552	2,776	130,415	40,166	131,710	1,243	750
2000	9,900	24,564	942	505	213	239,197	3,131	132,476	40,517	130,056	7,400	5,396
2001	8,311	20,873	787	280	237	213,328	2,064	121,757	33,616	133,956	12,583	9,151
2002	6,795	20,181	917	608	145	193,955	2,736	116,673	21,417	156,987	16,190	9,656
2003	3,145	12,536	599	336	37	187,262	2,765	74,596	19,685	166,899	22,631	12,972
2004	2,043	8,938	-	1,114	-	189,545	2,529	40,417	21,539	173,851	32,734	14,053
2005	-	-	-	-	-	176,373	1,878	25,619	22,112	169,999	31,819	16,321
2006	-	-	-	-	-	165,478	2,134	22,548	22,257	156,573	38,537	16,257
2007	-	-	-	-	-	165,862	2,120	21,835	33,779	158,161	42,573	18,325
Total	8,714,314	11,507,103	-	514,319	-	6,411,825	40,914	1,311,350	601,693	1,831,475	206,704	103,776

Note:

\*1 The sum up to 1979.

\*2 The sum up to 1996.

The data and the total of CFC-113 and CFC-115 in 2004 and 2005 are not published.

The data and the total of CFC-11, CFC-12, and CFC-114 in 2005 are not published.

Source: "The Alternative Fluorocarbons Environmental Acceptability Study (AFEAS)"

## 2.13 Emissions of Ozone Depleting Substances on PRTR basis

(Unit: t)

Substance	Fiscal Year	Emissions notified 1)		Emissions outside notification 2)	Total emissions	Transferred amount notified 3)
		Air	Public Water Areas			
CFC	FY2003	51	1	3,526	3,578	65
	2004	80	1	2,577	2,659	48
	2005	49	2	1,815	1,866	109
	2006	38	1	1,490	1,529	77
	2007	23	0	1,227	1,250	98
	2008	19	1	1,353	1,372	51
	2009	32	0	1,197	1,230	58
	2010	17	0	2,330	2,348	2
	2011	9	0	2,177	2,186	5
	2012	10	0	2,046	2,056	6
	2013	9	0	1,522	1,531	2
	2014	13	0	1,478	1,491	20
Halon	FY2003	13	0	17	30	0
	2004	10	0	12	22	5
	2005	7	0	13	20	0
	2006	9	0	19	28	14
	2007	12	0	12	24	4
	2008	8	0	13	22	4
	2009	11	0	15	26	2
	2010	11	0	13	24	2
	2011	13	0	9	23	2
	2012	27	0	11	38	1
	2013	15	0	13	28	10
	2014	10	0	5	15	0
HCFC	FY2003	11	0	11	22	2
	2004	6	0	7	13	0
	2005	6,194	2	16,327	22,523	1546
	2006	4,334	3	16,339	20,676	468
	2007	3,953	2	15,571	19,526	451
	2008	2,867	2	14,961	17,831	409
	2009	2,429	3	15,545	17,977	352
	2010	2,088	0	15,262	17,350	353
	2011	1,910	0	14,413	16,323	357
	2012	1,570	0	20,384	21,953	303
	2013	1,306	0	18,283	19,589	280
	2014	1,184	0	18,639	19,823	172
Carbon tetrachloride	FY2003	1009	0	17069	18079	117
	2004	912	0	15726	16638	149
	2005	973	0	12982	13956	152
	2006	824	0	11727	12552	160
	2007	72	1	0	72	151
	2008	66	1	0	66	131
	2009	46	1	0	47	166
	2010	22	1	0	22	211
	2011	7	1	0	8	244
	2012	15	1	0	16	227
	2013	9	1	0	9	411
	2014	6	0	0	6	229
1, 1, 1-trichloroethane	FY2003	6	0	0	7	170
	2004	7	0	0	7	391
	2005	7	0	0	7	198
	2006	7	0	0	7	325
	2007	7	0	0	7	289
	2008	6	0	0	6	290
	2009	49	35	0	85	1
	2010	25	18	0	43	0
	2011	21	21	0	42	23
	2012	20	14	0	35	32
	2013	16	14	0	30	9
	2014	9	13	0	22	17
Methyl bromide	FY2003	8	9	0	17	19
	2004	8	11	0	19	18
	2005	3	11	0	13	0
	2006	4	11	0	14	1
	2007	0	12	0	13	0
	2008	0	14	0	14	0
	2009	0	14	0	15	0
	2010	0	16	0	17	0
	2011	542	0	3,172	3,715	27
	2012	567	0	3,857	4,424	27
	2013	559	0	2,666	3,225	23
	2014	475	0	2,631	3,105	19
Methyl bromide	FY2003	413	0	2,747	3,159	10
	2004	329	0	1,493	1,821	5
	2005	279	0	1,343	1,622	7
	2006	217	0	1,054	1,271	8
	2007	222	0	855	1,078	5
	2008	223	0	681	904	7
	2009	181	0	700	881	6
	2010	147	0	690	838	6
	2011	127	0	488	615	6
	2012	119	0	443	563	8
	2013	127	0	488	615	6
	2014	119	0	443	563	8

## Notes:

- 1) The amount of emissions released into the environment over a year from business entities subject to PRTR, which was notified to the state by them.
- 2) The state's estimated amount of emissions released from business entities not subject to PRTR
- 3) The carried-away amount as waste from business entities subject to PRTR

Source: "PRTR Data Overview (each fiscal year version)," Environmental Safety Division, Environmental Health Department, Integrated Environmental Policy Bureau, MOE, the Government of Japan.

## 2.14 Chronological changes in Background Concentration of Specified Substances in the Atmosphere in Hokkaido

Sampling period	CFC-11		CFC-12		CFC-113		CFC-114		CFC-115		Halon 1211		Halon 1301		
	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	
1989	Jan	246	4	500	1	74	1	14.3	0.30	5.30	0.10	2.40	0.120	1.90	0.030
	Mar	247	2	501	7	76	1	14.3	0.20	5.80	0.10	2.50	0.041	1.90	0.050
	Oct	254	6	509	8	85	3	14.6	0.20	5.70	0.30	2.70	0.070	2.00	0.100
1990	Jan	255	3	504	4	75	2	14.7	0.20	6.00	0.30	2.70	0.040	2.10	0.060
	Mar	252	3	503	3	75	1	14.8	0.10	5.90	0.10	2.80	0.010	2.10	0.020
	Oct	264	6	509	2	79	1	14.8	0.10	6.20	0.30	2.80	0.040	2.20	0.040
1991	Jan	264	4	510	2	79	1	14.8	0.10	6.20	0.50	2.90	0.080	2.20	0.030
	Mar	264	3	511	4	81	1	14.9	0.30	6.30	0.30	2.90	0.050	2.30	0.050
	Aug	262	2	516	5	80	1	14.7	0.10	6.40	0.10	2.90	0.050	2.20	0.020
1992	Jan	266	5	520	3	84	1	14.9	0.30	6.60	0.20	3.10	0.080	2.40	0.020
	Mar	267	2	519	5	85	2	15.1	0.10	6.50	0.10	3.20	0.100	2.40	0.060
	Aug	270	4	525	2	87	-	15.0	0.10	7.10	0.40	3.20	0.030	2.40	0.070
1993	Jan	271	6	530	3	85	1	14.9	0.20	7.00	0.20	3.40	0.070	2.60	0.030
	Mar	264	2	526	6	86	1	15.0	0.30	7.10	0.10	3.40	0.080	2.60	0.060
	Aug	264	2	529	3	85	1	15.0	0.10	7.20	0.30	3.30	0.030	2.60	0.020
1994	Jan	269	3	537	5	86.1	-	15.1	0.22	7.58	0.37	3.52	0.120	2.70	0.014
	Mar	266	6	534	3	86.3	0.9	15.1	0.32	7.51	0.40	3.54	0.041	2.64	0.062
	Jul	266	7	539	4	86.5	1.7	15.1	0.25	7.57	0.24	3.58	0.074	2.68	0.051
1995	Jan	266	2	541	5	86.2	1.5	15.0	0.20	7.61	0.23	3.67	0.080	2.72	0.050
	Mar	265	3	543	4	86.0	2.0	15.1	0.35	7.67	0.19	3.75	0.054	2.74	0.045
	Aug	262	4	543	5	86.2	1.4	15.0	0.20	7.76	0.11	3.78	0.100	2.74	0.089
1996	Jan	262	1	541	4	84.5	1.2	15.2	0.16	7.89	0.09	3.88	0.042	2.80	0.071
	Mar	262	2	541	4	85.4	1.1	15.2	0.16	8.04	0.29	3.87	0.090	2.82	0.058
	Aug	265	3	542	4	84.4	2.1	15.0	0.21	8.04	0.18	3.91	0.083	2.79	0.019
1997	Jan	261	1	549	3	84.9	1.6	15.2	0.12	8.38	0.08	4.02	0.099	2.86	0.039
	Mar	261	2	548	3	84.1	0.6	15.2	0.21	8.32	0.07	4.00	0.044	2.83	0.031
	Aug	263	3	552	6	84.5	1.2	15.0	0.34	8.33	0.03	4.08	0.094	2.87	0.046
1998	Jan	257	3	548	4	84.6	0.7	15.2	0.11	8.27	0.39	4.20	0.050	2.94	0.077
	Mar	256	1	547	4	84.6	0.4	15.2	0.22	8.56	0.12	4.25	0.079	2.96	0.069
	Aug	260	4	552	2	83.6	1.1	15.3	0.21	8.64	0.19	4.20	0.048	2.86	0.048
1999	Feb	256	3	546	1	82.6	0.9	15.1	0.16	8.36	0.29	4.34	0.030	2.94	0.064
	Mar	256	3	548	4	83.4	2.1	15.2	0.26	8.56	0.48	4.26	0.058	2.90	0.043
	Aug	258	4	547	3	83.3	0.7	15.2	0.26	8.55	0.13	4.31	0.025	2.90	0.034
2000	Jan	251	2	551	4	82.7	1.4	15.2	0.10	8.48	0.13	4.43	0.056	2.93	0.032
	Mar	253	3	550	2	82.9	1.3	15.2	0.15	8.58	0.25	4.40	0.073	2.94	0.058
	Aug	255	2	551	2	81.3	0.6	15.0	0.10	8.44	0.10	4.51	0.029	2.99	0.036
2001	Jan	255	2	551	4	82.4	0.7	15.1	0.15	8.56	0.22	4.60	0.047	3.04	0.024
	Mar	253	2	549	3	82.5	0.7	15.2	0.10	8.48	0.16	4.56	0.059	3.03	0.034
	Aug	254	1	549	2	81.4	0.7	15.1	0.21	8.65	0.17	4.58	0.077	3.08	0.034
2002	Jan	253	1	550	2	80.5	0.5	15.2	0.25	8.72	0.16	4.62	0.039	3.12	0.010
	Mar	252	1	550	2	80.8	0.2	15.0	0.16	8.70	0.12	4.68	0.026	3.11	0.062
	Aug	251	1	551	1	80.8	1.1	15.1	0.19	8.79	0.22	4.60	0.061	3.12	0.048
2003	Jan	250	1	551	4	79.6	0.7	15.2	0.19	8.83	0.23	4.73	0.061	3.16	0.021
	Mar	249	2	549	2	80.6	0.5	15.2	0.14	8.79	0.25	4.69	0.052	3.18	0.028
	Aug	247	1	554	2	79.7	0.2	15.1	0.15	8.90	0.20	4.68	0.015	3.22	0.025
2004	Jan	247	2	550	2	79.3	0.4	14.9	0.08	8.82	0.23	4.71	0.058	3.26	0.027
	Mar	247	1	550	3	79.7	0.4	15.0	0.06	8.87	0.19	4.69	0.022	3.27	0.013
	Aug	246	1	548	4	79.4	0.4	14.9	0.18	8.85	0.24	4.70	0.029	3.26	0.016
2005	Jan	246	1	549	1	78.8	0.5	14.9	0.23	8.86	0.16	4.74	0.029	3.30	0.022
	Mar	246	1	549	1	79.0	0.4	15.0	0.08	8.87	0.23	4.78	0.020	3.30	0.018
	Aug	244	1	549	2	78.9	0.3	15.0	0.10	8.89	0.13	4.73	0.010	3.29	0.021
2006	Jan	244	1	548	2	78.3	0.3	15.1	0.10	8.93	0.11	4.76	0.031	3.32	0.018
	Mar	244	1	549	1	78.7	0.6	15.0	0.04	8.92	0.08	4.77	0.028	3.32	0.013
	Aug	242	1	549	3	78.1	0.5	15.0	0.18	8.92	0.13	4.75	0.069	3.33	0.020
2007	Jan	244	2	549	4	76.4	0.4	15.1	0.12	8.91	0.08	4.71	0.024	3.34	0.044
	Aug	243	2	545	2	76.1	0.6	14.8	0.25	9.02	0.11	4.65	0.038	3.35	0.030
	Jan	241	1	544	2	77.1	0.5	14.9	0.31	9.09	0.16	4.68	0.085	3.36	0.006
2008	Aug	238	2	544	3	76.4	0.2	14.9	0.10	8.96	0.08	4.56	0.032	3.37	0.014
	Jan	238	1	543	2	77.2	0.2	15.0	0.10	8.90	0.07	4.61	0.040	3.40	0.008
	Aug	236	1	539	1	76.3	0.3	14.9	0.12	8.96	0.17	4.51	0.028	3.37	0.023
2010	Jan	236	1	539	1	76.3	0.5	15.0	0.04	8.96	0.10	4.48	0.021	3.40	0.012
	Aug	233	1	537	1	75.4	0.3	15.0	0.19	8.96	0.09	4.42	0.013	3.43	0.014
	Dec	233	1	536	1	75.6	0.3	14.9	0.08	8.95	0.10	4.43	0.008	3.44	0.024
2011	Aug	233	2	534	1	75.0	0.3	14.9	0.09	8.97	0.16	4.36	0.016	3.51	0.021
	Dec	232	2	535	2	74.9	0.2	14.8	0.07	8.90	0.08	4.37	0.019	3.48	0.016
	Aug	230	1	531	1	74.3	0.4	14.8	0.05	8.95	0.14	4.24	0.042	3.46	0.039
2012	Dec	230	1	532	2	74.5	0.2	14.8	0.05	8.95	0.13	4.22	0.010	3.46	0.021
	Aug	228	1	529	1	74.2	0.4	14.8	0.00	8.84	0.04	4.14	0.020	3.50	0.020
	Dec	228	1	528	3	73.8	0.4	14.8	0.07	8.86	0.13	4.11	0.010	3.49	0.020
2014	Aug	226	2	526	2	73.8	0.2	14.8	0.06	8.91	0.14	4.03	0.030	3.51	0.020
	Dec	227	1	526	2	73.6	0.2	14.8	0.12	8.88	0.15	4.02	0.020	3.52	0.030

Note:

The figures are averages of measurement for each month (in principle, n = 6, n is the number of samples per 1 plot). For some substances, concentrations are indicated down to the three decimal places, however, they don't necessarily mean to be significant digits.

Source: "The Annual Report of Result of Ozone Monitoring in 2014," Office of Fluorocarbons Control Policy, Global Environmental Issues Division, Global Environment Bureau, Ministry of the Environment.

## 2.14 Chronological changes in Background Concentration of Specified Substances in the Atmosphere in Hokkaido

Sampling period	Halon 2402		1, 1, 1-trichloroethane		Carbon tetrachloride		HCFC-22		HCFC-142b		Methyl bromide		HCFC-134a	
	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation	Concentration	Standard deviation
1989	Jan	0.45	0.020	165.0	2	-	-	-	-	-	-	-	-	-
	Mar	0.47	0.010	166.0	4	-	-	-	-	-	-	-	-	-
	Oct	0.46	0.010	178.0	13	114.0	4.0	-	-	-	-	-	-	-
1990	Jan	0.47	0.030	176.0	6	112.0	5.0	-	-	-	-	-	-	-
	Mar	0.48	0.020	175.0	2	106.0	1.0	-	-	-	-	-	-	-
	Oct	0.50	0.020	179.0	12	111.0	4.0	-	-	-	-	-	-	-
1991	Jan	0.49	0.020	176.0	2	111.0	1.0	-	-	-	-	-	-	-
	Mar	0.48	0.020	177.0	2	108.0	1.0	-	-	-	-	-	-	-
	Aug	0.48	0.010	172.0	8	116.0	4.0	-	-	-	-	-	-	-
1992	Jan	0.51	0.020	177.0	3	113.0	3.0	-	-	-	-	-	-	-
	Mar	0.52	0.020	177.0	1	111.0	1.0	-	-	-	-	-	-	-
	Aug	0.52	0.030	177.0	4	116.0	2.0	111	2	4.50	0.70	-	-	-
1993	Jan	0.51	0.010	177.0	10	110.0	2.0	112	6	5.40	0.40	-	-	-
	Mar	0.54	-	174.0	9	113.0	4.0	114	7	5.40	0.40	-	-	-
	Aug	0.50	0.010	146.0	4	110.0	5.0	114	5	6.30	0.70	-	-	-
1994	Jan	0.52	0.023	147.0	6	105.0	2.0	120	5	7.00	0.54	-	-	-
	Mar	0.51	0.028	143.0	2	109.0	2.0	121	2	6.61	0.27	-	-	-
	Jul	0.53	0.012	144.0	11	108.0	2.0	120	3	7.45	1.10	-	-	-
1995	Jan	0.54	0.006	129.0	2	104.0	3	123	4	7.78	0.68	-	-	-
	Mar	0.53	0.015	130.0	2	105.0	3	124	2	7.68	0.38	-	-	-
	Aug	0.54	-	120.0	2	-	-	125	4	8.52	0.64	-	-	-
1996	Jan	0.54	-	112.0	1	-	-	128	3	8.94	0.96	-	-	-
	Mar	0.54	0.013	111.0	2	-	-	127	5	9.60	0.43	-	-	-
	Aug	0.53	0.013	102.0	7	104.0	1	133	5	9.94	0.86	-	-	-
1997	Jan	0.53	-	95.6	0.7	-	-	134	3	9.88	0.40	-	-	-
	Mar	0.54	-	95.4	0.4	107.0	1	133	5	10.0	1.1	-	-	-
	Aug	0.54	0.016	88.3	4.3	110.0	5	137	3	10.4	2.1	-	-	-
1998	Jan	0.53	-	78.1	1.8	106.0	4	136	2	11.2	0.59	-	-	-
	Mar	0.52	0.012	76.0	1.5	106.0	3	138	3	10.8	1.1	11.2	0.52	-
	Aug	0.53	0.029	76.5	1.5	108.0	2	142	3	11.6	0.57	11.7	0.55	-
1999	Feb	-	-	70.1	1.6	103.0	1	150	2	12.0	0.43	11.2	0.59	-
	Mar	0.53	0.036	71.5	1.6	108.0	3	150	2	12.2	0.59	10.6	0.00	-
	Aug	0.52	0.020	64.2	0.8	110.0	4	149	7	11.5	0.45	10.4	0.68	-
2000	Jan	0.53	0.018	58.7	0.7	103.0	2	150	3	13.2	0.39	9.4	0.35	-
	Mar	0.51	0.018	57.5	1.9	106.0	1	150	1	12.8	1.1	9.5	0.78	-
	Aug	0.52	0.021	50.1	1.5	108.0	1.3	153	2	13.4	0.64	10.0	0.65	17.0
2001	Jan	0.51	0.028	50.4	0.5	105.0	0.5	157	2	14.4	0.26	9.2	0.39	20.1
	Mar	0.51	0.018	50.7	0.5	105.0	1.4	158	2	14.1	0.55	10.2	0.90	19.5
	Aug	0.50	0.013	43.0	0.7	105.0	0.8	157	3	14.1	0.17	9.4	0.99	21.3
2002	Jan	0.50	0.028	37.6	0.1	104.0	0.8	158	2	15.3	0.47	9.5	0.52	24.1
	Mar	0.51	0.026	37.1	0.2	104.0	0.8	158	2	15.4	0.47	8.9	0.33	24.4
	Aug	0.50	0.027	35.7	0.6	106.0	1.0	163	2	15.2	0.59	10.0	0.56	25.8
2003	Jan	0.51	0.020	32.5	0.4	104.0	2.1	166	1	15.4	0.64	9.5	0.11	29.4
	Mar	0.50	0.012	31.8	0.8	103.0	0.4	163	1	15.9	0.58	9.5	0.28	28.9
	Aug	0.50	0.018	28.4	0.4	100.0	0.7	168	3	15.5	0.64	9.6	0.80	30.7
2004	Jan	0.50	0.004	26.6	0.3	99.5	0.8	168	1	15.9	0.44	10.3	0.62	32.3
	Mar	0.50	0.024	26.6	0.4	99.3	0.8	169	1	16.5	0.32	9.6	0.51	33.1
	Aug	0.49	0.013	23.8	0.6	99.0	0.7	171	2	16.6	0.18	9.4	0.39	34.8
2005	Jan	0.50	0.008	21.9	0.3	98.0	0.7	174	2	16.4	0.08	9.4	0.38	36.9
	Mar	0.50	0.008	21.9	0.9	99.4	0.7	174	1	16.6	0.20	9.8	0.29	37.5
	Aug	0.49	0.010	20.8	0.3	97.5	0.7	179	3	17.1	0.26	10.2	0.45	40.0
2006	Jan	0.49	0.019	19.2	0.2	96.7	0.4	179	2	17.4	0.23	9.1	0.15	41.8
	Mar	0.50	0.021	18.6	0.3	96.0	1.1	183	1	17.2	0.26	9.5	0.21	43.5
	Aug	0.48	0.006	16.2	0.4	97.0	0.6	186	2	17.6	0.35	9.5	0.17	44.8
2007	Jan	0.48	0.021	16.2	0.1	96.5	0.4	190	2	18.4	0.18	9.4	0.42	46.8
	Aug	0.48	0.008	14.4	0.2	96.0	0.8	200	2	20.3	0.46	9.8	0.69	50.5
2008	Jan	0.46	0.014	14.5	0.3	95.6	0.6	198	3	19.7	0.23	9.4	0.49	51.8
	Aug	0.48	0.008	11.6	0.1	93.4	0.6	203	4	20.2	0.67	8.7	0.71	54.4
2009	Jan	0.48	0.005	11.6	0.1	92.9	0.4	204	4	21.1	0.18	8.7	0.34	56.9
	Aug	0.47	0.004	10.4	0.2	93.0	1.2	205	1	20.7	0.49	8.9	0.87	57.4
2010	Jan	0.47	0.012	9.6	0.2	91.7	0.6	206	1	21.4	0.32	8.3	0.17	59.7
	Aug	0.47	0.012	8.5	0.2	90.8	0.5	212	1	22.4	0.38	9.1	0.34	65.0
	Dec	0.47	0.008	8.2	0.1	90.6	0.8	220	2	22.6	0.37	8.4	0.31	66.2
2011	Aug	0.46	0.005	6.8	0.2	90.3	0.7	236	2	23.2	0.71	10.8	0.83	71.2
	Dec	0.46	0.006	6.7	0.1	89.6	0.2	224	2	23.6	0.34	8.5	0.15	72.7
2012	Aug	0.46	0.004	5.6	0.1	88.8	0.4	226	8	23.7	0.77	10.7	0.46	74.0
	Dec	0.45	0.005	5.5	0.1	88.9	1.0	229	2	23.6	0.21	8.6	0.26	76.4
2013	Aug	0.45	0.010	88.7	0.9	4.8	0.1	233	2	24.2	0.20	9.3	0.30	78.8
	Dec	0.45	0.010	88.6	0.5	4.6	0.1	234	2	24.2	0.20	8.2	0.10	81.9
2014	Aug	0.45	0.010	87.7	0.5	4.0	0.1	244	3	26.7	0.60	24.4	0.30	9.0
	Dec	0.45	0.010	87.3	0.8	3.8	0.1	236	1	26.6	0.30	24.4	0.40	7.7

Source: "The Annual Report of Result of Ozone Monitoring in 2014," Office of Fluorocarbons Control Policy, Global Environmental Issues Division, Global Environment Bureau, Ministry of the Environment.

## 2.15 Changes in annual average of total ozone amount over Japan

( Unit: m atm - cm )

	Sapporo	Tsukuba	Kagoshima	Naha
1958	361	327	306	—
1959	374	317	290	—
1960	384	320	310	—
1961	363	316	—	—
1962	372	321	—	—
1963	373	321	290	—
1964	373	312	275	—
1965	371	317	284	—
1966	375	314	281	—
1967	359	307	280	—
1968	359	319	295	—
1969	362	308	288	—
1970	370	318	282	—
1971	366	313	275	—
1972	348	310	284	—
1973	363	313	281	—
1974	354	310	281	266
1975	351	315	285	259
1976	352	298	278	261
1977	365	309	278	263
1978	357	309	272	256
1979	361	314	286	269
1980	368	313	280	264
1981	368	318	280	267
1982	369	318	284	270
1983	361	312	276	264
1984	368	316	281	263
1985	353	298	268	257
1986	360	314	279	264
1987	364	310	286	262
1988	362	308	283	253
1989	352	308	289	265
1990	346	311	287	266
1991	355	313	288	267
1992	342	309	288	263
1993	334	298	276	255
1994	343	311	290	263
1995	345	307	285	258
1996	350	306	284	265
1997	342	301	281	262
1998	352	310	287	267
1999	354	308	283	261
2000	348	309	285	269
2001	357	312	288	268
2002	350	308	280	266
2003	352	314	283	272
2004	349	303	282	270
2005	358	316	—	271
2006	357	316	—	269
2007	357	315	—	274
2008	348	309	—	267
2009	355	311	—	269
2010	362	319	—	272
2011	354	311	—	271
2012	353	309	—	271
2013	357	311	—	271
2014	355	315	—	275
2015	360	315	—	267

Source: materials of Japan Meteorological Agency

## 2.16 Changes in ozone hole area in the Antarctic

( Unit : 10,000 km<sup>2</sup> )

	Area
1979	110
1980	330
1981	310
1982	1,080
1983	1,220
1984	1,460
1985	1,880
1986	1,440
1987	2,240
1988	1,370
1989	2,170
1990	2,100
1991	2,250
1992	2,490
1993	2,570
1994	2,510
1995	2,280
1996	2,670
1997	2,500
1998	2,780
1999	2,560
2000	2,960
2001	2,630
2002	2,170
2003	2,830
2004	2,270
2005	2,670
2006	2,930
2007	2,490
2008	2,650
2009	2,400
2010	2,190
2011	2,550
2012	2,080
2013	2,340
2014	2,340
2015	2,780

Source: materials of Japan Meteorological Agency

## 2.17 Recovery and Destruction of Fluorocarbons

		CFC	HCFC	HFC	Total			
Commercial equipment for refrigeration and air conditioning	Number of collected equipment	2005	138,927	638,013	127,749	904,689		
		2006	115,157	597,874	165,399	878,430		
		2007	104,096	667,412	261,127	1,032,635		
		2008	104,130	685,974	447,374	1,237,478		
		2009	84,141	593,761	494,489	1,172,391		
		2010	72,615	571,284	520,259	1,164,158		
		2011	62,944	538,777	628,339	1,230,060		
		2012	55,178	514,037	730,014	1,299,229		
		2013	64,469	497,208	806,291	1,367,968		
		2014	58,864	456,750	878,429	1,394,043		
		Amount recovered (ton)	2005	292	1,823	183	2,298	
			2006	348	1,987	206	2,541	
			2007	342	2,404	422	3,168	
			2008	290	2,814	669	3,773	
	2009		207	2,661	733	3,601		
	2010		216	2,862	817	3,895		
	2011		185	2,850	922	3,958		
	2012		211	3,140	1,193	4,543		
	2013		175	2,917	1,371	4,463		
	2014		150	2,847	1,427	4,424		
	Recycled		2005	82	310	42	434	
			2006	63	325	34	422	
			2007	126	493	111	729	
			2008	90	511	135	736	
		2009	73	599	151	824		
		2010	65	672	166	903		
		2011	69	719	209	996		
		2012	75	739	271	1,084		
2013		45	790	341	1,176			
2014		50	877	389	1,316			
Automobile Recycling Act		Amount recovered (ton)	2005	342	-	441	783	
			2006	320	-	608	928	
			2007	256	-	724	980	
			2008	193	-	821	1,014	
	2009		164	-	977	1,141		
	2010		70	-	845	915		
	2011		34	-	640	673		
	2012		26	-	781	807		
	2013		19	-	792	811		
	2014		14	-	773	787		
	Recycled		2005	17	-	15	32	
			2006	10	-	12	22	
			2007	9	-	14	22	
			2008	6	-	11	17	
2009		5	-	12	17			
2010		4	-	12	16			
2011		2	-	13	15			
2012		1	-	10	11			
2013		1	-	11	12			
2014		2	-	13	15			
Car air conditioners		Car air-conditioners collected (units)	2005	45	-	53	98	
			2006	9,310	-	16,105	25,415	
			2007	26	-	90	116	
			2008	26	-	90	116	
	2009		6	-	40	46		
	2010		2	-	7	9		
	2011		3	-	3	6		
	2012		2	-	10	12		
	2013		0	-	1	1		
	2014		0	-	0	0		
	Law Concerning the Recovery and Destruction of Fluorocarbons		Amount recovered (tons)	2005	12	-	16	28
				2006	2.92	-	5.91	8.83
				2007	0.01	-	0.03	0.04
				2008	0.008	-	0.029	0.038
2009		0.004		-	0.007	0.011		
2010		0.003		-	0.006	0.008		
2011		0.002		-	0.002	0.004		
2012		0.001		-	0.005	0.006		
2013		-		-	0.001	0.001		
2014		-		-	-	-		
Amount of destruction (ton)		2005		556	1,623	608	2,788	
		2006		590	1,821	772	3,183	
		2007		479	2,095	1,036	3,611	
		2008		376	2,439	1,346	4,161	
	2009	271	2,164	1,505	3,941			
	2010	271	2,284	1,596	4,152			
	2011	226	2,362	1,528	4,116			
	2012	218	2,393	1,829	4,440			
	2013	181	2,349	1,940	4,470			
	2014	155	2,305	2,034	4,495			

## Notes:

- 1) Because of rounding fractions, the figures in "Total" column may not be consistent with the sums of each figure.
- 2) Collection of car air conditioners has been transferred to control of the Automobile Recycling Law since January 2005. However, as for the specific second-class products handed over to the second-class Fluorocarbons collectors by December 31, 2004, those products collected under transitional measures are included in "Law concerning the Recovery and Destruction of Fluorocarbons."

Sources: materials of Ministry of the Environment and Ministry of Economy, Trade and Industry, and Japan Automobile Recycling Promotion Center

## 2.18 Japan's contribution to the Montreal Protocol Multilateral Fund

( Unit: million dollars )

Period	Total contributions (including carryover)	Japan's contribution
First period 1991 - 1993	240	33
Second period 1994 - 1996	510	65
Third period 1997 - 1999	540	85
Fourth period 2000- 2002	476	99
Fifth period 2003 - 2005	573	104
Sixth period 2006 - 2008	470	88
Seventh period 2009 - 2010	490	81
Eighth period 2012 - 2014	450	64
Ninth period 2015 - 2017	508	66

Source: material of Ministry of Foreign Affairs, the Government of Japan, Web page of Ministry of Foreign Affairs : <http://www.mofa.go.jp/mofaj/gaiko/kankyo/jyoyaku/ozone.html>



2.19 Trends in emissions of sulfur dioxide (SO<sub>x</sub>) by country

( Unit : 1,000 t )

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Japan	1183.6	1181.1	1153.9	1108.9	1084.1	1057.5	1031.8	989.99	956.95	951.21	942.24	936.84	695.43
Australia	2,600	2,784	2,769	2,509	2,514	2,478	2,440	2,618	2,595	2,381	2,356	2,334	2,309
Austria	33	31	32	27	27	28	25	22	17	19	18	17	16
Belgium	166	157	153	157	143	133	124	96	74	60	53	48	44
Canada	2,345	2,289	2,250	2,241	2,187	2,046	1,968	1,790	1,538	1,375	1,287	1,288	1,206
Czech Republic	251	237	232	227	219	211	216	174	173	170	169	158	138
Denmark	29	27	34	27	25	28	25	20	15	15	14	12	13
Finland	90	89	102	84	68	84	82	68	59	67	61	52	48
France	563	522	503	482	460	435	424	359	311	288	246	232	218
Germany	616	551	522	485	460	471	454	454	407	430	424	427	410
Greece	504	515	553	548	541	533	538	445	426	265	262	245	141
Hungary	342	277	248	151	43	41	36	37	31	32	35	32	29
Iceland	38.6	41.0	37.6	32.6	38.3	44	58.0	74.3	68.7	73.4	80.2	83.9	71
Ireland	134	101	79	72	72	61	55	45	32	26	25	23	25
Italy	701	620	523	485	406	383	340	285	233	214	194	178	145
South Korea	487.73	474.08	469.15	446.8	408.46	446.49	402.53	417.98	387.73	401.74	433.96	...	...
Luxembourg	3.9	2.8	2.7	2.5	2.4	2.8	2.4	2.3	2.2	2.2	1.7	2.0	1.6
Mexico	...	...	...	...	3,102	...	...	2,241	...	...	...	...	...
Netherlands	73	67	62	65	63	63	59	50	37	34	34	34	29
New Zealand	76	78	91	87	94	90	82	86	74	73	74	78	75
Norway	25	23	23	25	24	21	20	20	15	19	18	17	17
Poland	1,436	1,331	1,287	1,249	1,217	1,292	1,229	1,007	868	936	898	853	847
Portugal	250	249	191	193	195	170	163	114	79	70	64	59	53
Slovakia	131	103	105	96	89	88	71	69	64	69	68	59	53
Spain	1,446	1,572	1,307	1,334	1,279	1,168	1,136	513	460	425	459	408	259
Sweden	41	41	41	37	36	36	32	30	30	32	29	28	27
Switzerland	18	16	16	16	16	15	13	14	12	12	11	11	9
Turkey	2,075	1,965	1,888	1,879	2,105	2,269	2,646	2,560	2,664	2,559	2,653	2,739	1,931
UK	1,134	1,015	993	833	708	667	588	490	397	415	385	426	386
USA	14,413	13,564	13,361	13,146	13,145	11,854	10,563	9,302	8,224	7,017	5,853	4,695	4,538

Source: "Air Emissions by source, OECD Environmental Statistics"

## 2.20 Trends in emissions of nitrogen oxide (NOx) by country

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Japan	2,097	2,151	2,134	2,063	2,039	2,014	1,957	1,870	1,778	1,730	1,675	1,627	1,310
Canada	1,545	1,586	1,601	1,617	1,597	1,610	1,660	1,668	1,658	1,670	1,678	1,707	2,531
Mexico	215	221	233	231	236	221	217	205	189	193	183	178	160
USA	2,546	2,529	2,567	2,471	2,405	2,315	2,273	2,184	2,076	2,062	1,964	1,862	201
South Korea	302	291	289	295	285	272	261	231	205	212	198	190	1,938
Australia	332	318	324	328	278	282	283	261	251	239	226	211	222
New Zealand	204	201	210	193	185	186	172	154	136	132	125	115	122
Austria	211	208	217	203	174	192	183	168	154	166	155	146	149
Belgium	1,537	1,509	1,473	1,444	1,403	1,330	1,269	1,168	1,086	1,066	1,000	982	963
Czech Republic	1,841	1,761	1,706	1,638	1,563	1,554	1,477	1,402	1,303	1,325	1,289	1,269	1,271
Denmark	382	383	393	399	417	413	414	392	380	319	296	259	249
Finland	202	211	203	198	165	168	163	160	154	152	137	122	121
France	26	27	27	27	26	25	26	24	25	22	21	21	21
Germany	139	129	129	130	129	123	121	109	87	80	72	74	77
Greece	1,406	1,352	1,328	1,285	1,219	1,163	1,112	1,042	970	952	928	849	820
Hungary	1,219	1,242	1,362	1,378	1,307	1,275	1,188	1,045	1,014	1,061	1,040	...	...
Iceland	45.1	45.1	48.1	57.9	61.3	55.8	51.6	49.7	43.3	45.6	47.6	45.4	32
Ireland	...	...	...	...	2,784	...	...	3,207	...	...	...	...	...
Italy	363	351	344	329	317	303	288	279	255	254	238	227	240
Luxembourg	148.0	151.0	160.1	154.9	163.7	162.4	160.5	161.9	151.8	150.6	152.8	157.9	160.0
Netherlands	204	199	199	200	201	199	202	190	180	182	174	166	153
Norway	839	806	828	855	851	855	860	830	809	862	846	817	798
Poland	273	280	257	263	268	247	242	216	204	189	179	170	167
Portugal	108	100	98	99	102	96	96	94	84	89	85	81	80
Slovakia	1,371	1,412	1,412	1,449	1,434	1,380	1,369	1,180	1,044	966	959	928	824
Spain	199	191	188	181	176	172	164	156	147	149	139	132	139
Sweden	105	99	96	94	92	88	85	82	77	75	71	69	72
Switzerland	817	795	821	836	884	926	1,039	989	968	938	1,116	1,088	1,044
Turkey	1,758	1,687	1,659	1,603	1,587	1,534	1,468	1,318	1,147	1,113	1,040	1,057	1,032
UK	19,394	21,632	20,446	19,249	18,381	17,358	16,335	15,253	14,316	13,497	13,045	12,258	11,691

Source: Air Emissions by source, OECD Environmental Statistics

## 2.21 Acid deposition in Europe (Annual average of pH in precipitation)

Country	Station name	1985	1990	1995	2000	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Iceland	Irafoss	5.41	5.38	5.55	5.58	5.45	5.49	5.59	5.41	5.44	5.50	5.50	5.36	5.33	5.48	-
Ireland	Valentia	5.38	5.20	5.04	-	5.28	5.18	5.37	5.13	5.27	5.25	5.30	5.30	5.36	5.28	5.32
Italy	Montelibretti	5.09	-	4.83	4.60	5.86	5.65	5.84	5.20	5.62	5.21	5.56	5.92	-	6.02	5.87
UK	Yarner Wood	-	4.88	4.84	-	4.63	4.86	4.81	4.84	4.96	4.90	4.99	5.11	5.12	5.04	5.07
Austria	Illmitz	4.38	4.50	5.06	5.30	5.21	4.83	4.96	4.92	5.09	5.85	5.47	-	-	-	-
Netherlands	Kollumerwaard	-	-	5.14	5.25	5.42	-	5.29	-	5.39	5.53	5.48	5.54	-	-	-
Switzerland	Payerne	4.77	4.93	5.10	5.37	5.51	5.32	5.37	5.48	5.43	5.42	5.40	5.37	5.67	5.59	5.64
Sweden	Vavihill	4.29	4.41	4.46	4.56	4.82	4.72	4.80	4.87	4.96	4.83	4.98	4.91	5.16	4.88	4.91
	Bredkalen	4.47	4.60	4.81	4.81	4.91	5.09	5.03	5.06	5.09	5.04	5.04	-	-	-	5.06
Spain	Niembro	-	-	-	4.89	4.98	4.36	4.23	4.69	5.10	4.91	5.07	3.09	4.88	4.57	4.61
Slovakia	Chopok	4.27	4.27	4.67	4.55	4.57	4.71	4.85	4.75	4.93	4.93	4.83	5.00	5.04	4.74	4.99
Czech Republic	Svratouch	4.46	4.34	4.54	4.75	4.81	4.68	4.73	4.80	4.92	4.93	4.73	4.94	5.10	4.89	4.92
	Kosetice	-	4.36	4.47	4.68	4.93	4.78	4.84	4.79	4.91	4.92	4.88	4.91	5.33	5.22	5.01
Denmark	Keldsnor	4.32	4.66	4.62	4.85	4.96	5.02	4.94	5.33	5.08	5.11	4.96	-	-	-	-
Germany	Deuselbach	4.37	4.64	4.76	4.82	5.08	4.61	4.83	4.98	4.87	5.24	5.12	5.11	5.10	5.45	5.17
	Zingst	-	-	4.59	-	4.79	4.75	4.75	4.93	4.93	4.92	5.02	-	5.25	5.33	5.25
Norway	Birkenes	4.24	4.37	4.48	4.56	4.59	4.69	4.68	4.70	4.75	4.77	4.72	4.69	4.86	4.86	4.97
	Skreadalen	4.48	4.61	4.75	4.90	4.89	5.07	5.20	-	-	-	-	-	-	-	-
Hungary	K-Pusztá	5.08	4.99	4.83	5.79	5.94	5.53	5.67	5.58	5.53	5.75	5.50	5.63	5.82	5.77	5.66
Finland	Ahtari	4.55	4.57	4.61	4.73	4.73	4.75	4.78	4.72	4.79	4.79	4.79	4.87	4.88	4.86	4.86
France	La Hague	4.41	4.68	5.05	5.04	5.14	-	-	-	-	-	-	-	-	-	-
Poland	Jarczew	4.16	4.33	4.43	4.61	4.80	4.61	4.63	4.71	4.71	4.85	5.05	4.98	4.90	4.93	4.82
Portugal	Braganca	5.12	5.41	5.92	5.52	5.75	5.68	5.76	5.78	5.79	5.35	5.50	-	-	-	-

Note:

Skreadalen, La Hague and Braganca stations suspended their operations in February 2005, December 2003, and December 2009 respectively.

Source : EMEP ccc Reports <<http://www.nilu.no/projects/ccc/reports.html>>

## 2.22 Acid Deposition in Japan (Annual Average of pH in Precipitation)

Monitoring site	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Rishiri	4.85	4.86	4.73	4.66	4.59	4.94	4.67	4.75	4.67	4.70	4.69	4.76
Sapporo	4.76	4.75	4.70	4.54	4.57	4.62	4.87	4.86	4.76	4.69	4.65	4.73
Tappimisaki	4.56	4.61	4.59	4.60	4.58	4.89	4.72	4.68	4.61	4.72	4.71	4.72
Obanazawa	4.72	4.65	4.65	4.83	4.72	4.73	-	-	-	-	-	-
Sado	-	-	-	-	-	-	-	-	-	-	-	-
Sado seki misaki	4.65	4.69	4.59	4.65	4.51	4.59	4.72	4.70	4.66	4.75	4.70	4.72
Niigata	-	-	-	-	-	-	-	-	-	-	-	-
Niitsu	-	-	-	-	-	-	-	-	-	-	-	-
Niigata maki	4.60	4.65	4.47	4.61	4.48	4.57	4.63	4.68	4.60	4.62	4.65	4.67
Tateyama	-	-	-	-	-	-	-	-	-	-	-	-
Wajima	-	-	-	-	-	-	-	-	-	-	-	-
Echizenmisaki	4.54	4.61	4.49	4.57	4.48	4.62	4.58	4.59	4.63	4.57	4.60	4.64
Happo one	4.90	4.86	4.78	4.96	4.78	4.88	5.03	5.07	5.04	4.93	5.00	5.02
Kyoto yawata	-	-	-	-	-	-	-	-	-	-	-	-
Oki	4.80	4.76	4.55	4.69	4.69	4.63	4.67	4.66	4.68	4.66	4.61	4.67
Matsue	-	-	-	-	-	-	-	-	-	-	-	-
Masuda	-	-	-	-	-	-	-	-	-	-	-	-
Banryuko	4.65	4.67	4.55	4.64	4.53	4.52	4.70	4.69	4.58	4.51	4.63	4.59
Ochiishimisaki	4.88	4.70	4.82	4.86	4.79	4.89	5.01	4.81	4.87	4.83	5.00	5.19
Hachimantai	4.75	4.70	4.75	4.73	4.81	4.77	4.92	4.94	4.86	4.73	4.83	-
Nonodake	4.77	4.75	4.54	4.92	4.70	4.76	4.81	4.95	5.02	4.93	4.98	5.05
Sendai	-	-	-	-	-	-	-	-	-	-	-	-
Oze	-	-	-	-	-	-	-	-	-	-	-	-
Tsukuba	4.61	4.64	4.56	4.89	4.71	4.85	-	-	-	-	-	-
Kashima	-	-	-	-	-	-	-	-	-	-	-	-
Nikko	-	-	-	-	-	-	-	-	-	-	-	-
Akagi	4.59	4.69	4.51	4.80	4.83	4.82	4.76	4.82	4.84	4.74	4.85	4.85
Ichihara	-	-	-	-	-	-	-	-	-	-	-	-
Ogasawara	5.04	5.02	4.84	4.99	4.99	5.06	5.18	5.22	5.34	5.37	5.22	5.07
Kawasaki	-	-	-	-	-	-	-	-	-	-	-	-
Tanzawa	-	-	-	-	-	-	-	-	-	-	-	-
Tokyo	-	-	-	-	4.77	4.62	4.76	4.95	4.79	4.88	5.03	4.83
Ijirako	4.40	4.65	4.53	4.46	4.54	4.78	4.65	4.78	4.72	4.70	4.74	4.70
Inuyama	4.63	4.62	4.50	4.57	4.64	4.58	-	-	-	-	-	-
Nagoya	-	-	-	-	-	-	-	-	-	-	-	-
Ushiomisaki	4.74	4.85	4.49	4.62	4.54	4.76	4.80	4.86	4.81	4.76	4.81	-
Ashurimisaki	-	-	-	-	-	-	-	-	-	-	-	-
Yusuhara	4.76	4.92	4.67	4.83	4.78	4.68	4.78	4.83	4.87	4.83	4.77	4.93
Ebino	4.73	4.82	4.59	4.69	4.69	4.83	4.61	4.72	4.71	4.67	4.73	4.70
Kyotoyawata	4.67	4.84	4.47	4.65	4.60	4.64	4.68	4.73	4.73	4.66	4.77	-
Osaka	-	-	-	-	-	-	-	-	-	-	-	-
Amagasaki	4.71	4.85	4.56	4.57	4.63	4.63	4.74	4.84	4.84	4.71	4.79	4.65
Kurashiki	-	-	-	-	-	-	-	-	-	-	-	-
Kurahashijima	4.48	4.63	4.52	4.64	4.55	4.54	-	-	-	-	-	-
Ube	-	-	-	-	-	-	-	-	-	-	-	-
Oitakujyu	4.59	4.70	4.58	4.74	4.79	4.69	4.66	4.66	4.66	4.69	4.66	4.40
Kitakyusyu	-	-	-	-	-	-	-	-	-	-	-	-
Chikugoogoori	4.85	4.83	4.67	4.49	4.82	4.76	4.74	4.80	4.67	4.65	4.66	4.69
Omuta	-	-	-	-	-	-	-	-	-	-	-	-
Tsushima	4.83	4.78	4.62	4.59	4.51	4.49	4.53	4.77	4.65	4.66	4.75	4.72
Goto	4.82	4.90	4.56	4.62	4.60	4.67	-	-	-	-	-	-
Yakushima	4.67	4.78	4.54	4.53	4.42	4.65	4.50	4.66	4.56	4.68	4.59	4.59
Amami	-	-	-	-	-	-	-	-	-	-	-	-
Okinawakunigami	-	-	-	-	-	-	-	-	-	-	-	-
Hedomisaki	4.83	4.84	4.88	4.95	4.98	5.07	5.03	5.21	4.91	5.12	4.93	5.14
Maximum	5.04	5.02	4.88	4.96	4.99	5.07	5.18	5.22	5.34	5.37	5.22	5.19
Minimum	4.40	4.61	4.47	4.46	4.48	4.48	4.50	4.59	4.56	4.51	4.59	4.40
Average	4.71	4.75	4.61	4.69	4.67	4.71	4.76	4.82	4.77	4.76	4.78	4.78
Standard deviation	0.14	0.11	0.12	0.14	0.14	0.15	0.17	0.16	0.17	0.18	0.16	0.20

## Notes:

- - : Not measured.
- Data of the shaded area: Rejected annual average by the year criterion

Source: Transboundary air pollutions and acid deposition monitoring Report (2014), MOE, the Government of Japan.

## 2.23 Annual average pH at monitoring sites of East Asia acid deposition monitoring network (EANET)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Cambodia	Phnom Penh	—	—	5.32	6.32	6.72	6.69	5.84	6.19	5.97	5.96	6.16	6.18	6.21	
China	Xian	Han Cisne	6.24	6.00	6.30	5.41	5.56	5.52	6.40	6.53	6.68	6.27	6.26	6.93	6.61
		Vishuiyan	6.03	6.11	5.98	5.15	5.84	—	—	—	—	—	—	—	—
		Dabago	—	—	—	—	—	—	—	—	—	—	—	—	—
		Jiwozi	6.00	6.05	6.11	6.20	5.87	6.85	6.94	6.10	5.54	5.95	7.12	6.20	6.98
	Chongqing	Guaninchao	4.60	4.49	4.59	4.95	4.86	4.65	—	—	—	—	—	—	—
		Nan Shan	—	—	—	—	—	—	—	—	—	—	—	—	—
		Jinyunshan	4.36	4.30	4.59	4.62	4.69	4.52	4.36	4.33	3.94	4.04	4.09	4.20	4.39
	Xiamen	Hongwen	4.79	4.46	4.71	4.70	4.83	4.79	4.59	4.52	4.57	4.65	4.51	4.88	5.08
		Xiaoping	4.47	4.38	4.61	4.78	4.78	4.60	4.55	4.47	4.58	4.82	4.80	5.00	4.71
	Zhuhai	Xiang Zhou	5.11	5.10	4.78	4.56	4.87	4.63	4.93	4.87	4.85	5.05	5.11	5.23	5.00
Zhuxiandong		4.89	5.10	4.63	4.61	4.82	—	4.88	4.75	4.95	4.78	—	—	—	
Indonesia	Kototabang	5.31	5.30	4.67	4.68	4.53	5.27	5.22	4.65	4.80	5.04	5.01	4.97	4.82	
	Jakarta	4.77	5.16	4.69	4.31	4.38	4.56	4.65	4.63	4.73	4.55	4.76	4.77	4.71	
	Serpong	4.65	4.62	4.68	4.59	4.60	4.59	4.62	4.71	4.76	4.70	4.91	5.06	5.14	
	Bandung	4.46	5.00	5.03	5.03	5.15	4.93	5.17	5.30	5.10	5.40	5.46	5.40	5.21	
	Maros	—	—	—	—	—	—	5.63	5.33	5.21	5.35	5.62	5.47	5.23	
Japan	Rishiri	4.82	4.88	4.84	4.74	4.67	4.58	4.91	4.74	4.73	4.70	4.70	4.67	4.73	
	Tappimisaki	4.68	4.57	4.59	4.60	4.58	4.62	4.59	4.74	4.69	4.61	4.69	4.80	4.66	
	Ogasawara	5.09	5.04	5.13	4.81	4.99	5.03	5.00	5.17	5.25	5.30	5.33	5.25	5.08	
	Sadozekimisaki	4.64	4.67	4.70	4.56	4.70	4.50	4.55	4.75	4.70	4.68	4.73	4.74	4.70	
	Happo one	4.93	4.91	4.86	4.80	4.97	4.79	4.83	4.97	5.10	5.04	4.88	5.00	5.01	
	Ijirako	4.52	4.41	4.65	4.51	4.51	4.53	4.45	4.64	4.76	4.75	4.69	4.75	4.71	
	Okii	4.73	4.76	4.80	4.56	4.73	4.64	4.60	4.71	4.66	4.73	4.58	4.61	4.65	
	Banryuko	4.69	4.63	4.70	4.49	4.69	4.49	4.53	4.66	4.70	4.66	4.48	4.64	4.55	
	Yusuhara	4.76	4.73	4.97	4.64	4.84	4.81	4.67	4.77	4.79	4.93	4.77	4.78	4.88	
	Hedomisaki	4.95	4.90	4.78	4.83	4.99	4.99	5.00	5.11	5.20	4.90	5.13	4.96	5.02	
Laos	Ochiishimisaki	—	4.91	4.68	4.84	4.86	4.78	4.87	5.02	4.83	4.88	4.82	5.03	—	
	Tokyo	—	—	—	—	—	4.79	4.60	4.75	4.95	4.83	4.84	5.05	4.83	
	Vientiane	—	6.51	5.65	6.32	6.49	5.67	6.01	5.48	—	—	6.46	—	6.54	
	Tanarata	4.97	4.90	4.86	4.84	4.95	4.95	5.10	5.08	5.06	5.01	4.96	4.95	4.86	
	Petaling Jaya	4.23	4.28	4.33	4.37	4.42	4.56	4.43	4.35	4.26	4.16	4.21	4.42	4.42	
	Malaysia	Danang Valley	—	—	—	4.98	5.05	5.10	5.22	5.22	5.22	5.21	5.18	5.27	5.31
		Kuching	—	—	—	—	—	—	5.26	5.26	5.28	5.43	5.32	5.29	5.34
	Mongolia	Ulan Bator	6.38	5.72	6.46	5.99	6.45	6.26	6.28	6.11	5.88	5.44	5.88	5.98	—
		Terenuji	5.75	5.40	5.78	5.26	5.16	5.22	5.43	6.22	5.61	5.26	5.74	4.91	—
	Myanmar	Yangon	—	—	—	—	—	5.57	6.41	6.46	6.42	6.46	6.49	6.45	6.70
Philippines	Metro Manila	5.09	4.44	5.18	4.95	5.30	5.27	5.55	5.23	5.65	5.64	5.22	5.55	6.13	
	Los Banos	5.74	4.49	5.26	5.14	5.61	5.54	4.95	5.58	5.88	5.57	5.66	5.85	—	
	Mt. Sto. Tomas	—	—	—	—	6.32	5.53	5.49	5.83	6.70	5.35	5.95	5.29	6.14	
Korea	Kanghwa	4.65	4.67	4.57	4.25	4.68	4.62	4.55	4.59	4.41	—	4.61	4.58	4.87	
	Imsil	5.69	5.08	4.93	6.00	5.19	5.73	4.88	5.09	4.87	—	5.11	5.22	5.29	
	Cheju	4.61	4.83	4.74	4.55	4.34	4.51	4.67	5.11	5.04	—	5.31	5.38	5.79	
Russia	Mondy	5.39	5.35	5.34	5.36	5.39	5.52	5.17	5.48	5.55	5.54	5.62	5.32	5.33	
	Irkutsk	5.02	5.37	4.91	5.12	5.15	4.93	4.77	5.41	5.13	5.02	4.93	5.01	5.06	
	Listvyanka	4.88	5.01	4.92	4.83	4.64	4.67	4.63	4.84	4.76	4.73	4.78	4.80	4.90	
Thailand	Primorskaya	5.20	4.88	4.84	5.06	4.83	4.84	4.79	4.98	4.97	4.63	5.07	5.06	5.47	
	Chiang Mai (Mae Hia)	5.72	5.61	5.59	5.23	5.70	5.95	5.98	5.92	6.17	5.29	6.10	6.04	6.28	
	Kanchanaburi	5.64	5.46	6.07	5.54	5.75	5.78	5.66	5.66	5.69	5.49	6.02	5.33	5.79	
	Bangkok	5.10	4.53	5.19	4.89	5.16	5.05	5.28	5.09	5.07	5.05	5.68	5.60	7.03	
	Samut Prakan	—	—	5.47	5.47	5.87	5.61	5.29	5.13	5.32	5.90	6.17	5.98	6.51	
	Pathum Thani	5.33	4.86	4.87	4.89	4.89	4.81	5.03	5.15	5.24	5.00	5.44	5.41	5.51	
Vietnam	Nakhon Ratchasima	—	—	—	—	5.12	5.08	5.03	4.87	4.75	5.00	5.07	5.24	4.82	
	Hanoi	5.55	5.81	5.65	6.15	5.73	5.58	5.84	5.67	5.93	5.30	5.62	5.66	5.74	
	Hua Hin	5.19	5.38	5.60	5.69	5.59	5.06	5.49	5.29	5.37	5.44	5.63	6.04	5.44	
	Cuc Phuong	—	—	—	—	—	—	—	4.99	5.23	5.04	5.43	5.42	5.52	
Da Nang	—	—	—	—	—	—	—	4.77	5.11	4.98	5.44	5.58	5.52		

Note:

Data of the shaded area: Rejected annual average was by the year criterion.

Source: "Data Report on the Acid Deposition in the East Asian Region(2000 ~ 2005)," "EANET Data Report(2006 ~ 2014)"

## 2.24 Water quality in rivers

( Unit : mg-O<sub>2</sub>/L )

Country (region)	River	Biochemical oxygen demand (BOD)						
		1985	1990	1995	2000	2005	2010	2012
<b>Asia</b>								
Japan	Ishikarigawa	1.5	1.2	1.3	1.0	0.9	...	...
	Chikugogawa	2.2	1.7	1.5	1.5	1.4	...	...
	Tonegawa	2.6	2.3	1.9	1.7	1.6	...	...
	Yodogawa	3.4	2.5	2.3	1.5	1.3	...	...
South Korea	Geumgang	...	...	4.5	3.5	...	...	...
	Nakutongan	...	3.0	5.1	2.7	2.6	2.4	2.4
	Hangang	...	3.4	3.8	2.7	3.1	3.2	2.6
	Yonsangan	...	6.7	7.0	6.5	5.3	4.3	4.6
Turkey	Gediz River	2.3	10.6	...	3.7	...	...	...
	Sakarya River	3.6	2.7	4.1	3.1	...	...	...
	Porsuk River	2.0	1.1	1.6	1.1	...	...	...
<b>North America</b>								
USA	Delaware River	2.1	1.2	2.6	3.7	3.2	...	...
	Mississippi River	1.2	1.9	1.1	1.5	1.9	...	...
Mexico	Grijalva River	1.5	2.2	2.0	1.8	2.2	4.3	16.6
	Bravo River	2.5	3.6	3.1	2.2	...	8.3	8.9
	Lerma River	...	13.5	...	30.0	4.2	10.6	5.9
<b>Europe</b>								
Ireland	River Clare	...	...	...	1.5	0.6	0.6	0.8
	River Barrow	...	...	...	1.5	1.4	1.2	1.8
	River Blackwater	...	...	...	2.0	2.1	1.4	1.6
	River Boyne	...	...	...	2.1	1.5	1.7	2.3
UK	Clyde River	3.2	3.5	2.9	2.3	...	...	...
	Severn River	1.7	2.8	2.4	...	...	...	...
	Thames River	2.4	2.9	1.8	1.7	...	...	...
Austria	Inn River	...	...	2.8	0.8	0.6	0.8	1.2
	Danube River	...	...	2.1	0.4	0.4	0.6	0.6
Netherlands	Meuse River (Maas)	2.9	1.6	2.0	2.2	...	...	...
	Rhein River	2.3	1.6	1.9	...	...	...	...
Spain	Ebro River	...	4.0	9.2	8.1	2.3	...	...
	Guadalquivir River	...	9.8	77.1	5.9	3.9	...	...
	Douro River	...	3.0	5.4	3.1	2.5	...	...
Czech Republic	Oder River	10.1	5.9	7.1	5.8	4.3	3.5	...
	Morava River	...	...	4.6	2.9	3.0	...	...
	Rabe River	6.6	6.8	3.7	3.9	2.9	2.8	...
Denmark	Gudena River	2.5	2.0	2.4	1.9	1.5	1.2	...
	Sukyan River	5.5	2.3	...	1.2	0.8	1.0	...
Germany	Danube River	...	...	...	...	1.7	1.6	1.6
Hungary	Tisza River	...	3.3	3.8	2.5	3.0	...	...
	Danube River	...	3.8	3.1	2.7	3.1	...	...
	Doraba River	...	3.4	3.3	2.9	2.1	...	...
France	Seine River	4.3	5.6	4.4	3.2	...	1.1	...
	Rhone River	5.0	1.4	1.3	2.0	...	1.0	...
	Loire River	6.0	7.0	4.0	4.3	...	1.7	...
Belgium	Schelde River	...	...	...	...	...	...	...
	Meuse River (Maas River)	...	...	1.6	2.2	1.0	1.0	1.0
Poland	Oder River	...	...	...	5.2	5.5	3.1	3.5
	Vistula River	...	...	...	4.7	4.3	2.9	4.1
Luxemburg	Syre River	...	...	2.7	3.2	1.2	1.9	1.5
	Moselle River	...	...	...	...	...	2.5	...

## Notes:

- Rivers: Measurement was conducted at the estuary of major rivers with large basin areas, or downstream points of within the borders.
- Biochemical oxygen demand (BOD): An index showing to which extent river water is polluted, indicating the oxygen amounts needed for decomposing organic matter by microorganisms (bacteria) in water. The higher annual average value is, the further pollution is indicated. Each country or region uses a different measuring method.

Source: "Lake and river quality, OECD Environmental Statistics

## 2.25 Water quality in lakes

Country (region)	Lakes and marshes	Total phosphorus (mgP/l)			Total nitrogen (mgN/l)		
		1990	2000	2012	1990	2000	2012
<b>Asia</b>							
Japan	Kasumigaura	0.050	0.110	...	0.93	0.97	...
	Biwako (North)	0.007	0.006	...	0.29	0.29	...
	Biwako (South)	0.020	0.020	...	0.38	0.39	...
South Korea	Lake Chungju	0.044	0.025	0.023	0.62	2.27	3.04
	Chuncheon Lake	0.014	0.015	0.020	0.60	1.43	2.02
	Paltang Lake	0.048	0.029	0.039	1.36	1.96	2.27
Turkey	Lake Altun-apa	0.110	...	...	...	...	...
	Lake Gala	0.680	...	...	...	...	...
	Lake Sapanca	0.030	...	...	...	...	...
<b>North America</b>							
Canada	Lake Ontario	0.010	...	0.007	1.59	...	1.77
	Lake Superior	0.003	...	...	1.48	...	...
	Lake Huron	0.005	0.004	0.004	1.52	1.53	1.45
Mexico	Laguna Catemaco	...	0.070	0.048	0.08	0.22	2.00
	Lake Chapala	0.240	0.570	0.400	0.15	0.20	0.95
<b>Europe</b>							
UK	Lake Neagh	...	...	...	...	...	...
	Lake Lomond j	0.019	...	...	0.13	...	...
Italy	Lake Garda	...	...	...	...	...	...
	Lake Como	...	...	...	...	...	...
	Lake Maggiore	...	...	...	...	...	...
Austria	Lake Ossiach	...	0.011	0.011	...	...	...
	Lake Mondsee	...	0.008	0.006	...	...	...
Switzerland	Lake Geneva	0.055	0.036	...	0.69	0.68	...
Sweden	Lake Vanern	0.009	0.006	0.006	0.79	0.82	0.61
	Lake Vattern	0.007	0.003	0.003	0.69	0.73	0.67
	Lake Malaren	0.025	0.024	0.022	0.58	0.66	0.52
Denmark	Lake Arreso	0.514	0.194	0.094	3.50	2.61	1.39
	Lake Fureso	0.169	0.097	0.074	0.97	0.82	0.68
Germany	Lake Bodensee	0.021	0.011	...	...	...	...
Norway	Lake Mjosa	...	...	...	...	...	...
	Fjordland	...	...	...	...	...	...
Hungary	Lake Balaton	0.036	0.086	...	0.78	0.79	...
Finland	Lake Parr	0.027	0.024	...	0.93	0.89	...
	Lake Päijänne	0.014	0.013	...	0.62	0.78	...
	Lake Yli-Kitka	0.017	0.014	...	0.45	0.54	...
France	Lake Annecy	0.010	...	...	0.07	...	...
	Lac de Biscarrosse et de Parentis	...	...	...	...	...	...
Luxemburg	Lake Echternach	...	...	...	...	...	...
<b>Oceania</b>							
New Zealand	Lake Taupo	...	0.007	...	...	0.07	...

## Notes:

• The annual averages of concentrations of phosphorus and nitrogen in each lake. Use the figures with caution because measuring methods may differ from countries or regions, and surveyed years.

Total Phosphorus: The total amount of phosphorus in inorganic and organic phosphorus compounds existing in water.

Total Nitrogen: The total of inorganic nitrogen and organic nitrogen existing in water. Inorganic nitrogen is classified into ammonium nitrogen, nitrite nitrogen and nitrate nitrogen.

Source: OECD Environmental Statistics / Lake and river quality

## 2.26 Population accessible to sewage treatment facilities

(Unit : %)

Country (region)	Primary treatment only					Secondary treatment					Tertiary treatment					Total					
	2000	2005	2010	2010	2013	2000	2005	2010	2010	2013	2000	2005	2010	2010	2013	2000	2005	2010	2010	2013	
Canada	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mexico	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	59.2	67.6	70.6	...	...	...
USA	2.3	...	...	...	...	32.0	...	...	...	...	36.6	...	...	...	...	75.4	...	...	...	...	...
Japan	0.0	0.0	0.0	0.0	0.0	54.0	55.3	54.9	53.9	52.8	8.0	14.0	20.2	22.4	24.2	62.0	69.3	75.1	76.3	77.0	...
South Korea	1.1	0.7	0.0	0.0	0.0	68.0	64.7	35.5	31.1	10.0	0.8	17.6	54.1	59.9	82.1	70.5	83.5	90.1	91.6	92.1	...
Australia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
New Zealand	14.0	...	...	...	...	26.0	...	...	...	...	40.0	...	...	...	...	...	...	...	...	...	...
Austria	...	...	0.0	0.0	...	...	...	1.3	1.0	...	...	...	92.6	93.5	...	85.4	...	93.9	94.5	...	...
Belgium	0.0	0.0	0.0	0.0	0.0	5.5	7.7	8.6	9.8	10.8	35.6	46.7	66.4	71.5	73.4	79.1	84.0	...	...	...	...
Czech Republic	...	0.2	0.1	0.1	0.2	...	16.9	8.7	8.6	8.2	...	55.9	68.2	69.4	71.6	72.4	76.7	82.3	83.0	84.7	...
Denmark	0.7	...	2.4	2.3	0.8	4.4	...	2.4	1.8	1.9	82.7	...	85.6	86.6	88.2	87.8	...	90.3	90.7	90.8	...
Finland	0.0	...	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	80.0	...	83.0	83.0	83.0	80.0	...	83.0	83.0	83.0	...
France	...	...	...	0.8	0.9	...	...	...	33.6	33.3	...	...	...	22.5	22.1	...	...	...	81.5	81.5	...
Germany	...	...	0.0	...	0.0	...	...	3.0	...	2.5	...	...	92.6	...	92.8	...	...	96.4	...	96.8	...
Greece	...	...	0.0	0.0	...	...	...	7.8	6.3	...	...	...	79.6	85.8	...	...	...	87.3	92.0	...	...
Hungary	16.2	18.9	2.3	0.1	0.1	24.3	20.4	36.4	17.9	16.1	5.5	21.3	33.1	54.9	56.5	51.0	64.8	72.4	74.0	75.0	...
Iceland	33.0	55.0	65.0	...	...	0.0	2.0	0.0	...	...	0.0	0.0	1.0	...	...	90.0	89.0	91.0	...	...	...
Ireland	...	...	...	...	1.2	...	...	...	...	46.5	...	...	...	...	17.8	...	...	...	...	...	68.6
Italy	...	2.3	...	3.3	...	...	18.3	...	22.4	...	...	35.9	...	35.2	...	...	...	...	...	...	...
Luxembourg	...	...	4.4	2.0	1.9	...	...	62.0	27.3	26.5	...	...	29.3	68.8	69.8	...	...	97.1	100.0	100.0	...
Netherlands	0.0	0.0	0.0	0.0	...	16.5	5.0	1.3	0.7	...	81.6	94.0	98.1	98.7	...	98.2	99.0	99.3	99.4	...	...
Norway	22.1	20.6	21.9	19.1	19.3	0.9	1.4	1.6	1.4	1.4	51.1	56.6	57.6	61.2	61.2	79.9	83.6	85.1	85.2	85.3	...
Poland	3.4	2.1	0.1	0.2	0.1	30.1	20.8	14.9	13.9	14.2	20.1	37.3	49.6	54.6	56.0	53.6	60.2	64.7	68.7	70.3	...
Portugal	...	10.9	...	...	...	...	27.4	...	...	...	...	15.2	...	...	...	...	74.0	...	...	...	...
Slovakia	10.0	5.0	0.5	0.5	0.5	10.9	21.2	36.3	34.9	33.2	1.4	10.9	16.2	19.3	21.7	62.6	62.6	62.6	62.7	62.6	...
Spain	1.0	1.0	3.0	0.6	...	65.0	...	33.0	28.1	...	15.0	...	60.0	66.7	...	93.0	...	98.0	99.1	...	...
Sweden	0.0	0.0	0.0	0.0	0.0	5.0	5.0	4.0	4.0	4.0	81.0	81.0	82.0	83.0	83.0	86.0	86.0	86.0	87.0	87.0	...
Switzerland	0.0	0.1	0.0	...	0.0	22.0	19.7	19.8	...	11.0	74.0	77.0	77.5	...	87.0	96.0	96.8	97.3	...	98.3	...
Turkey	8.0	13.6	14.4	16.3	...	14.6	18.5	19.8	20.2	...	3.7	10.0	17.8	21.8	...	63.0	68.8	78.7	83.8	...	...
UK	3.6	0.1	0.0	...	...	64.0	56.4	49.6	...	...	27.0	42.9	49.9	...	...	96.6	99.3	100.0	...	...	...

Source: OECD Environmental Statistics / Waste Water Treatment (as of March 2016)



## 2.27 Amount of water intake and fresh water resources by country

Country	Water resource		Annual amount of water intake				
	Domestic water flow (km <sup>3</sup> )	Per person (m <sup>3</sup> )	Total ( km <sup>3</sup> )	Shares in water resources(%)	Agriculture (%)	Industry (%)	Life (%)
	2014	2014			2014		
<b>World</b>	42,801	5,925	3,908.5	9.1	60.0	22.0	18.0
<b>Asia</b>							
Japan	430	3,382	81.5	18.9	67.0	14.0	19.0
Afghanistan	47	1,491	20.3	43.0	99.0	1.0	1.0
Yemen	2	80	3.6	169.8	91.0	2.0	7.0
Israel	1	91	2.0	260.5	58.0	6.0	36.0
Iraq	35	1,011	66.0	187.5	79.0	15.0	7.0
Iran	129	1,644	93.3	72.6	92.0	1.0	7.0
India	1,446	1,116	761.0	52.6	90.0	2.0	7.0
Indonesia	2,019	7,935	113.3	5.6	82.0	7.0	12.0
South Korea	65	1,286	29.2	45.0	55.0	15.0	24.0
North Korea	67	2,677	8.7	12.9	76.0	13.0	10.0
Kuwait	0	0	0.9	..	54.0	2.0	44.0
Saudi Arabia	2	78	23.7	986.3	88.0	3.0	9.0
Syria	7	322	16.8	235.0	88.0	4.0	9.0
Sri Lanka	53	2,542	13.0	24.5	87.0	6.0	6.0
Thailand	225	3,315	57.3	25.5	90.0	5.0	5.0
China	2,813	2,062	554.1	19.7	65.0	23.0	12.0
Turkey	227	2,990	40.1	17.7	74.0	11.0	15.0
Nepal	198	7,035	9.5	4.8	98.0	0.0	2.0
Pakistan	55	297	183.5	333.6	94.0	1.0	5.0
Bangladesh	105	660	35.9	34.2	88.0	2.0	10.0
Philippines	479	4,832	81.6	17.0	82.0	10.0	8.0
Vietnam	359	3,961	82.0	22.8	95.0	4.0	1.0
Malaysia	580	19,397	11.2	1.9	22.0	43.0	35.0
Myanmar	1,003	18,770	33.2	3.3	89.0	1.0	10.0
Mongolia	35	11,959	0.6	1.6	44.0	43.0	13.0
Jordan	1	103	0.9	138.0	65.0	4.0	31.0
Laos	190	28,463	3.5	1.8	91.0	5.0	4.0
Lebanon	5	1,056	1.3	27.3	60.0	11.0	29.0
<b>Oceania</b>							
Australia	492	20,963	19.8	4.0	66.0	13.0	22.0
New Zealand	327	72,510	5.2	1.6	62.0	23.0	16.0
Papua New Guinea	801	107,321	0.4	0.0	0.0	43.0	57.0
<b>North &amp; Latin America</b>							
USA	2,818	8,838	478.4	17.0	40.0	46.0	14.0
El Salvador	16	2,559	2.1	13.6	68.0	10.0	22.0
Canada	2,850	80,183	38.8	1.4	12.0	80.0	14.0
Guatemala	109	6,818	3.3	3.0	57.0	18.0	25.0
Costa Rica	113	23,751	2.4	2.1	57.0	11.0	32.0
Jamaica	11	3,977	0.8	7.5	55.0	9.0	35.0
Dominican Republic	24	2,258	7.2	30.5	80.0	8.0	12.0
Nicaragua	156	25,973	1.5	1.0	77.0	5.0	19.0
Haiti	13	1,231	1.5	11.1	83.0	4.0	13.0
Panama	137	35,320	1.0	0.8	43.0	1.0	56.0
Honduras	91	11,387	1.6	1.8	73.0	7.0	20.0
Mexico	409	3,262	80.3	19.6	77.0	9.0	14.0
<b>South America</b>							
Argentina	292	6,794	37.8	12.9	74.0	11.0	15.0
Uruguay	92	26,963	3.7	4.0	87.0	2.0	11.0
Ecuador	442	27,819	9.9	2.2	81.0	6.0	13.0
Colombia	2,145	44,883	11.8	0.5	54.0	19.0	27.0
Chile	885	49,824	35.4	4.0	83.0	13.0	4.0
Paraguay	117	17,856	2.4	2.1	79.0	6.0	15.0
Brazil	5,661	27,470	74.8	1.3	60.0	17.0	23.0
Venezuela	805	26,227	22.6	2.8	74.0	4.0	23.0
Peru	1,641	52,981	13.7	0.8	89.0	2.0	9.0
Bolivia	304	28,735	2.1	0.7	92.0	2.0	7.0
<b>Europe</b>							
Ireland	49	10,616	0.8	1.5	15.0	7.0	83.0
Albania	27	9,294	1.3	4.9	39.0	18.0	43.0
Italy	183	3,002	53.8	29.5	44.0	36.0	17.0
Ukraine	55	1,215	14.9	27.0	30.0	48.0	22.0
Ukraine	145	2,246	10.8	7.5	9.0	32.0	58.0
Austria	55	6,436	3.7	6.6	3.0	79.0	18.0
Netherlands	11	652	10.7	97.0	1.0	87.0	11.0
Greece	58	5,336	9.5	16.4	89.0	2.0	9.0
Switzerland	40	4,934	2.0	4.9	10.0	54.0	36.0
Sweden	171	17,636	2.7	1.6	4.0	63.0	34.0
Spain	111	2,393	33.5	30.2	64.0	21.0	16.0
Slovakia	13	2,325	0.7	5.5	3.0	50.0	47.0
Slovenia	19	9,054	0.9	5.0	0.0	82.0	18.0
Czech Republic	13	1,249	1.8	14.0	2.0	63.0	35.0
Denmark	6	1,064	0.7	10.9	25.0	20.0	55.0
Germany	107	1,321	33.0	30.9	1.0	84.0	15.0
Norway	382	74,364	2.9	0.8	29.0	43.0	28.0
Hungary	6	608	5.1	84.2	6.0	79.0	14.0
Finland	107	19,592	6.6	6.1	1.0	93.0	6.0
France	200	3,020	33.1	16.6	9.0	74.0	17.0
Bulgaria	21	2,907	6.1	29.1	16.0	68.0	16.0
Belgium	12	1,068	6.2	51.5	1.0	88.0	11.0
Poland	54	1,410	11.5	21.4	10.0	73.0	18.0
Portugal	38	3,653	9.2	24.1	79.0	13.0	11.0

## 2.27 Amount of water intake and fresh water resources by country

Country	Water resource		Annual amount of water intake				
	Domestic water flow (km <sup>3</sup> )	Per person (m <sup>3</sup> )	Total ( km <sup>3</sup> )	Shares in water resources(%)	Agriculture (%)	Industry (%)	Life (%)
	2014	2014	2014				
Romania	42	2,129	6.9	16.2	17.0	61.0	22.0
Russia	4,313	29,989	66.2	1.5	20.0	60.0	20.0
<b>Africa</b>							
Algeria	11	289	8.4	74.9	59.0	5.0	36.0
Angola	148	6,109	0.7	0.5	21.0	34.0	45.0
Uganda	39	1,032	0.6	1.6	41.0	8.0	51.0
Egypt	2	20	68.3	3,794.4	86.0	6.0	8.0
Ethiopia	122	1,258	5.6	4.6	94.0	0.0	6.0
Eritrea	3	548	0.6	20.8	95.0	0.0	5.0
Ghana	30	1,131	1.0	3.2	66.0	10.0	24.0
Cameroon	273	11,988	1.0	0.4	76.0	7.0	17.0
Guinea	226	18,411	0.6	0.2	53.0	9.0	38.0
Kenya	21	461	3.2	15.5	59.0	4.0	37.0
Ivory Coast	77	3,468	1.5	2.0	38.0	21.0	41.0
Democratic Republic of Congo	900	12,020	0.7	0.1	11.0	21.0	68.0
Zambia	80	5,101	1.6	2.0	73.0	8.0	18.0
Sierra Leone	160	25,334	0.2	0.1	22.0	26.0	52.0
Zimbabwe	12	804	4.2	34.3	79.0	7.0	14.0
Sudan	4	102	26.9	673.3	96.0	0.0	4.0
Senegal	26	1,758	2.2	8.6	93.0	3.0	4.0
Somalia	6	570	3.3	55.0	99.0	0.0	0.0
Tanzania	84	1,621	5.2	6.2	89.0	0.0	10.0
Chad	15	1,104	0.9	5.9	76.0	12.0	12.0
Central Africa	141	29,349	0.1	0.1	1.0	17.0	83.0
Tunisia	4	381	3.3	78.8	80.0	5.0	15.0
Togo	12	1,616	0.2	1.5	45.0	2.0	53.0
Nigeria	221	1,245	13.1	5.9	54.0	15.0	31.0
Namibia	6	2,564	0.3	4.7	70.0	5.0	25.0
Niger	4	183	1.0	28.1	67.0	3.0	30.0
Burkina Faso	13	711	0.8	6.5	51.0	3.0	46.0
Burundi	10	930	0.3	2.9	77.0	6.0	17.0
Benin	10	972	0.1	1.3	45.0	23.0	32.0
Botswana	2	1,081	0.2	8.1	41.0	18.0	41.0
Madagascar	337	14,297	16.5	4.9	98.0	1.0	1.0
Malawi	16	967	1.4	8.4	86.0	4.0	11.0
Mali	60	3,512	5.2	8.6	98.0	0.0	2.0
South Africa	45	830	12.5	27.9	63.0	6.0	31.0
Mauritania	0	101	1.4	337.5	91.0	2.0	7.0
Mozambique	100	3,685	0.9	0.9	78.0	3.0	19.0
Morocco	29	855	10.4	36.0	88.0	2.0	10.0
Libya	1	112	4.3	618.0	83.0	3.0	14.0
Rwanda	10	838	0.2	1.6	68.0	8.0	24.0
Lesotho	5	2,480	0.0	0.8	9.0	46.0	46.0

Source: "The World Development Indicators 2016"

## 2.28 Oil spill accident from tankers 1975 - 2003

Year	Date	Vessel name	Registry	Damaged country	Runoff ( t )	Compensation (Estimated amount) ( million US dollar )	
1975	1.4	Shell Barge No2	USA	USA	..	5.7	
	1.6	Showa Maru	Japan	Singapore	3,800	10.9	
	1.10	British Ambassador	UK	Japan	45,000	..	
	1.29	Jakob Maersk	Denmark	Portugal	84,000	2.8	
	1.31	Corinthos/E.M.Queeny	USA	USA	40,000	5.9	
	4.4	Spartan Lady	Liberia	USA	25,000	..	
	4.17	Mitsu Maru 3	Japan	Japan	500	5.7	
1976	5.13	Epic Colocoltroni	Greece	Dominican Republic	57,000	..	
	2.6	Saint Peter	Liberia	Colombia	33,000	0.9	
	5.12	Urquiola	Spain	Spain	101,000	19.7	
	6.23	Nepeco 140	USA	Canada-USA	1,200	11.1	
	7.12	Cretan Star	Cyprus	Indian Ocean	28,600	..	
	10.14	Boehlen	East Germany	France	11,000	20.3	
	12.15	Argo Merchant	Liberia	USA	28,000	2.5	
1977	1.7	Borag	Liberia	East China Sea	4,000	15.6	
	1.18	Irenes Challenge	Liberia	Pacific	34,000	..	
	2.25	Hawaiian Patriot	Liberia	Honolulu	99,000	..	
	5.27	..	Panama	Nicaragua	30,000	..	
	12.16	Venoil/Venpet	Liberia	South Africa	26,000	5.4	
	12.30	Grand Zenith	Panama	USA	29,000	..	
	1978	3.16	Amoco Cadiz	Liberia	France	228,000	..
5.6		Eleni V	Greece	UK	3,000	10.6	
7.7		Cabo Tamar	Chile	Chile	60,000	4.2	
10.12		Christos Bitas	Greece	UK	5,000	13.1	
12.30		Esso Bernica	UK	UK	1,160	9.8	
12.31		Andoros Patria	Greece	Spain	47,000	6.4	
1979		1.8	Betelgeuse	France	Ireland	27,000	36.2
	2.28	Antonio Gramsci	Soviet Union	Sweden, Finland, Soviet Union	6,000	54.1	
	3.2	Messlaniki Frontis	Liberia	Greece	6,000	11.5	
	3.15	Kurdistan	UK	Canada	7,000	5.1	
	4.28	Gino	Liberia	France	42,000	0.8	
	6.28	Aviles	Liberia	Arabian Sea	25,000	..	
	7.29	Atlantic Express	Greece	Tobago	276,000	1.5	
	8.16	Ionnis Angelicoussis	Greece	Angola	30,000	..	
	9.1	Chevron Hawaii	USA	USA	2,000	12.0	
	11.1	Burmah Agate	Liberia	USA	40,000	11.5	
	11.15	Independenta	Romania	Turkey	94,600	17.2	
	1980	1.28	Princess Anne Marie	Greece	Cuba	6,000	51.7
		2.24	Irenes Serenade	Greece	Greece	102,000	12.5
3.7		Tanio	Madagascar	France, UK	13,500	40.0	
12.29		Juan A.Lavalleja	Uruguay	Algeria	40,000	..	
1981	1.7	Jose Marti	Soviet Union	Sweden	6,000	6.7	
	3.3	Ondina	Dubai	Germany	5,000	7.0	
1983	1.7	Assimi	Greece	Oman	51,431	..	
	8.6	Castillo de Bellver	Spain	South Africa	255,525	1.0	
	9.27	Sivand	Iran	UK	6,000	5.0	
	11.25	Feoso Ambassador	China	China	4,000	10.0	
	12.10	Pericles GC	Greece	Qatar	46,631	..	
	1985	2.14	Neptunia	Liberia	Iran	60,000	..
12.6		Nova	Liberia	Iran	71,120	..	
1988	11.10	Odyssey	Liberia	Canada	132,000	..	
1989	3.24	Exxon Valdez	United States of America	USA	35,000	2,000.0	
	12.19	Kharg 5	Iran	Morocco	70,000	37.0	
	12.29	Aragon	Spain	Portugal	25,000	..	
1991	4.9/11	Le Haven	Cyprus	Italy	30,000	..	
	5.28	ABT Summer	Liberia	Angola	260,000	..	
1992	1.21	Maersk Navigator	Singapore	Sumatra	>25,000	..	
	4.17	Katina P	..	Mozambique	72,000	50.0	
	12.3	Aegean Sea	Greece	Spain	74,000	22.0	
1993	1.5	Braer	Liberia	UK	84,000	..	
1994	1.6	Red Star	..	Portugal	..	14.0	
	2.8	Albinoni	Bahamas	Caribbean	..	50.0	
1995	1.21	Maersk Navigator	Denmark	Indonesia	..	33.0	
1996	2.15	Sea Empress	Liberia	UK	72,000	30.0	
1997	1.2	Nakhodka	Russia	Japan	3,700	1,233.0	
	10.15	Evoikos	Cyprus	Singapore	>25,000	100.0	
1999	12.12	Erika	Malta	France	19,800	155.0	
2002	11.13	Prestige	Bahamas	Spain, Portugal, France	>60,000	12,000.0	
2003	7.27	Tasman Spirit	..	Pakistan	29,000	1,000.0	

## Notes:

- Accidents with more than 25,000 tons runoff, or more than 5 million U.S. Dollars of compensation in the world are listed.
- There was no outbreak of over 25,000 tons of serious spill in 1986 and 1987.
- "> ~" indicates that the runoff volume is larger than "~", but the exact value is unknown.

Source: "OECD Environmental Data Compendium 2004".

## 2.29 Ocean-dumping of Waste

(Unit: 10,000 t)

	Industrial waste	Non-industrial waste	Dredged soil	Total
1996	347	247	1,187	1,781
1997	333	240	647	1,220
1998	320	219	705	1,244
1999	292	189	663	1,144
2000	314	171	543	1,027
2001	285	149	627	1,061
2002	263	127	559	949
2003	284	100	658	1,042
2004	292	87	968	1,346
2005	272	77	425	774
2006	255	64	507	827
2007	255	4	369	628
2008	264	0	304	568
2009	208	0	236	444
2010	183	0	255	438
2011	178	0	203	381
2012	173	0	251	424
2013	129	0	223	352
2014	102	0	254	356

## Note:

- "Total" may not be consistent with a sum of each column due to rounding at the first decimal place.
- Ocean dumping of non-industrial waste has been prohibited since April 1st, 2007.

Sources: Japan Coast Guard (up to March, 2007), Ministry of the Environment (from April, 2007)

## 2.30 Consumption of fertilizer by country

( Unit ; 1,000 t )

Country (region)	Nitrogen fertilizer ( N )			Phosphatic fertilizer ( P <sub>2</sub> O <sub>5</sub> )			Potash fertilizer ( K <sub>2</sub> O )		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
<b>World</b>	<b>98,367</b>	<b>98,698</b>	<b>99,572</b>	<b>38,750</b>	<b>39,617</b>	<b>38,182</b>	<b>28,618</b>	<b>27,794</b>	<b>28,841</b>
<b>Asia</b>									
Japan	440	433	437	443	408	375	258	260	275
Iran	243	308	261	197	131	210	34	22	17
India	17,368	* 16,860	* 16,732	8,410	* 6,947	* 5,941	2,597	* 1,989	* 2,058
Indonesia	2,934	2,947	2,825	579	681	783	1,150	1,200	1,200
South Korea	220	303	238	139	213	151	140	216	151
Saudi Arabia	266	438	360	197	685	535	6	4	7
Thailand	1,505	1,561	1,633	459	500	602	554	439	583
China	23,814	23,999	23,942	8,192	9,286	8,306	6,051	6,177	6,274
Turkey	1,458	1,477	1,584	601	669	652	106	99	100
Pakistan	3,188	2,487	3,235	653	669	866	28	20	20
Bangladesh	1,284	1,131	756	417	578	473	381	430	373
Philippines	518	443	287	146	119	73	120	55	40
Vietnam	966	917	1,134	433	482	644	595	502	617
Malaysia	513	480	444	290	342	402	982	734	802
<b>North America</b>									
USA	11,619	12,090	12,007	3,409	3,462	3,607	3,945	4,082	4,415
Canada	2,490	2,503	2,893	822	737	809	350	350	350
Mexico	1,101	1,291	1,290	390	321	307	184	203	212
<b>South America</b>									
Argentina	857	721	772	725	638	622	36	45	41
Colombia	609	619	569	299	294	287	274	266	235
Brazil	4,418	4,251	3,954	4,129	4,343	4,676	4,680	4,601	4,721
<b>Europe</b>									
UK	1,000	999	* 1,060	188	194	* 201	259	267	* 284
Italy	517	685	* 600	199	208	* 171	187	181	* 110
Ukraine	899	928	1,041	195	220	236	169	194	213
Spain	847	843	962	363	377	433	315	321	355
Czech Republic	248	338	331	43	39	40	27	21	29
Germany	1,640	1,649	1,675	247	284	284	386	421	457
Hungary	303	303	340	50	62	72	56	63	70
France	1,944	1,915	2,005	242	253	259	396	337	310
Belarus	601	557	535	292	221	208	787	720	683
Poland	1,095	1,179	1,368	371	374	327	418	390	485
Russia	1,263	1,180	1,167	427	422	438	280	276	256
<b>Africa</b>									
Egypt	1,345	1,206	1,406	313	373	290	28	32	47
South Africa	419	430	417	186	190	184	121	124	121
<b>Oceania</b>									
Australia	1,099	1,099	1,315	880	810	823	180	197	215
New Zealand	290	301	457	512	518	307	37	42	99

Note:

\* indicates a provisional or estimated value.

Source: "World Statistics 2016" Statistics Bureau, Ministry of Internal Affairs and Communications.

## 2.31 Changes in land-use by country

( Unit : 1,000 ha )

Country	Arable land, permanent cropland							Permanent meadows						
	1995	2000	2005	2010	2011	2012	2013	1995	2000	2005	2010	2011	2012	2013
Japan	5,038	4,830	4,692	4,593	4,561	4,549	4,537	405	428					
China	130,880	130,027	125,439	122,538	122,533	122,527	122,524	392,834	392,834	392,834	392,831	392,834	392,834	392,834
India	169,911	170,130	169,674	169,234	169,369	169,346	170,000	11,034	10,845	10,452	10,339	10,301	10,296	10,280
South Korea	1,985	1,918	1,824	1,715	1,698	1,730	1,711	63	55	57	58	58	58	58
Australia	40,300	47,600	49,742	42,968	48,078	47,493	46,611	423,048	407,900	395,407	355,612	361,595	357,981	350,004
New Zealand	1,625	1,550	488	570	542	580	618	13,350	13,863	11,224	10,838	10,829	10,629	10,488
Canada	52,312	52,178	52,139	48,418	47,894	50,746	50,651	15,682	15,435	15,430	14,851	14,703	14,600	14,600
Mexico	24,952	25,378	25,903	26,158	25,658	25,808	25,668	81,243	80,952	80,667	80,547	81,047	80,897	81,037
USA	184,139	178,068	167,815	158,526	154,269	157,708	154,437	236,000	236,331	243,969	249,900	250,400	250,999	251,000
Austria	1,492	1,453	1,447	1,429	1,425	1,420	1,419	1,940	1,920	1,810	1,756	1,756	1,745	1,735
Belgium		883	866	857	847	826	838		507	519	500	489	507	498
Czech Republic	3,378	3,319	3,286	3,248	3,240	3,233	3,225	902	961	974	986	989	992	994
Denmark	2,328	2,289	2,339	2,426	2,503	2,424	2,414	398	358	368	200	187	200	195
Finland	2,146	2,192	2,241	2,259	2,255	2,253	2,228	98	26	33	33	32	32	31
France	19,348	19,494	19,485	19,315	19,281	19,287	19,302	10,802	10,366	10,076	9,578	9,597	9,559	9,472
Germany	12,061	12,020	12,102	12,045	12,075	12,034	12,076	5,282	5,048	4,929	4,655	4,644	4,630	4,621
Greece	3,904	3,854	3,775	3,704	3,700	3,676	3,677	5,260	4,675	4,580	4,490	4,480	4,470	4,460
Hungary	5,031	4,803	4,806	4,580	4,578	4,579	4,581	1,148	1,051	1,057	763	759	759	759
Iceland	135	129	129	123	122	121	121	1,764	1,760	1,753	1,751	1,751	1,751	1,751
Ireland	1,033	1,079	1,187	1,013	1,063	1,171	1,114	3,356	3,333	3,115	3,555	3,492	3,362	3,363
Italy	10,928	11,284	10,334	9,630	9,241	9,560	9,087	4,405	4,353	4,402	4,698	4,612	4,169	4,543
Netherlands	916	944	1,143	1,059	1,042	1,047	1,075	1,048	1,012	795	813	816	795	773
Norway	992	884	867	830	822	816	811	135	158	169	176	177	177	176
Poland	14,575	14,330	12,519	11,219	11,488	11,323	11,204	4,047	4,083	3,387	3,230	3,291	3,206	3,206
Portugal	2,900	2,397	2,052	1,847	1,840	1,836	1,825	1,024	1,433	1,769	1,830	1,827	1,822	1,817
Russia	129,400	126,238	123,581	120,650	121,650	121,350	123,840	87,000	90,924	92,099	93,302	93,000	93,000	93,000
Slovakia	1,606	1,575	1,417	1,417	1,412	1,413	1,415	840	865	524	527	518	515	514
Spain	18,753	18,304	17,844	17,221	16,992	17,539	17,539	10,966	11,462	11,320	10,324	10,022	9,403	9,403
Switzerland	446	433	430	429	428	428	428	1,136	1,133	1,120	1,106	1,104	1,101	1,097
Sweden	2,767	2,706	2,703	2,634	2,619	2,608	2,605	500	447	513	451	447	441	443
Turkey	27,115	26,379	26,606	24,395	23,630	23,790	23,806	12,378	14,100	14,617	14,617	14,617	14,617	14,617
UK	5,993	5,928	5,776	6,016	6,107	6,258	6,310	11,386	11,036	11,180	11,208	11,057	10,924	10,940
World	1,535,390	1,537,435	1,554,219	1,547,095	1,558,350	1,576,659	1,575,263	3,394,084	3,417,599	3,386,769	3,360,287	3,364,138	3,359,913	3,353,666

Note:

Includes estimation.

Source: FAOSTAT, Food and Agriculture Organization ( <http://faostat.fao.org/> ), downloaded in July 2016.

## 2.32 Threatened species in each country

	Mammals	Birds	Reptiles	Amphibians	Fishes	Mollusks	Others	Plants	Total
<b>●Africa</b>									
<b>North Africa</b>									
Algeria	14	11	8	3	35	10	16	17	114
Egypt	18	11	12	0	42	0	55	3	141
Libya	12	4	6	0	27	0	2	3	54
Morocco	17	12	13	2	46	35	17	34	176
Tunisia	13	7	6	1	34	6	9	7	83
Western Sahara	9	2	1	0	24	0	3	0	39
<b>Sub-Saharan Africa</b>									
Angola	17	26	4	0	40	5	4	34	130
Benin	12	10	5	0	28	0	3	16	74
Botswana	8	12	0	0	2	0	0	2	24
Burkina Faso	9	10	2	0	4	1	0	3	29
Burundi	12	13	0	3	17	4	3	8	60
Cameroon	42	25	6	56	108	11	16	433	697
Cape Verde	4	4	5	0	22	12	1	3	51
Central African Republic	13	14	2	0	3	0	0	22	54
Chad	14	12	2	0	1	4	0	5	38
Comoros	5	10	4	0	7	0	73	7	106
Republic of Congo	16	5	4	0	46	5	2	41	119
Congo, The Democratic Republic of the	35	36	5	11	84	43	10	109	333
Côte d'Ivoire	27	20	6	14	46	3	3	107	226
Djibouti	7	10	0	0	17	1	56	3	94
Equatorial Guinea	23	7	7	5	29	0	5	79	155
Eritrea	10	15	6	0	20	1	57	4	113
Ethiopia	33	29	1	12	14	4	11	41	145
Gabon	19	5	5	3	61	0	3	135	231
Gambia	10	10	4	0	24	0	2	5	55
Ghana	20	19	5	11	44	0	5	119	223
Guinea	24	18	8	5	67	1	6	34	163
Guinea-Bissau	14	8	6	0	31	0	2	5	66
Kenya	30	38	10	10	69	17	67	222	463
Lesotho	2	7	0	0	1	0	3	4	17
Liberia	22	13	6	4	53	1	10	49	158
Madagascar	118	35	139	69	85	24	86	409	965
Malawi	8	17	3	4	98	7	9	25	171
Mali	12	14	3	0	2	0	0	8	39
Mauritania	16	13	5	0	32	0	3	0	69
Mauritius	7	9	8	0	17	28	90	90	249
Mayotte	1	3	7	0	4	0	69	0	84
Mozambique	13	29	12	4	59	3	64	84	268
Namibia	13	27	5	1	27	0	4	28	105
Niger	12	10	1	0	4	1	0	3	31
Nigeria	29	19	8	13	58	1	16	189	333
Réunion	5	6	0	0	11	16	71	17	126
Rwanda	23	15	0	4	9	0	2	8	61
St. Helena, Association and Tristan da Cunha	4	19	2	0	12	1	12	30	80
Sao Tome and Principe	5	13	5	3	12	1	4	38	81
Senegal	17	14	7	0	44	10	3	11	106
Seychelles	6	12	11	6	19	36	283	62	435
Sierra Leone	21	14	6	3	48	3	5	58	158
Somalia	14	17	4	0	25	2	60	43	165
South Africa	25	45	21	19	99	22	180	116	527
South Sudan	9	16	1	0	0	0	0	16	42
Sudan	13	20	3	0	21	0	50	16	123
Swaziland	7	12	0	0	4	0	0	11	34
Tanzania, United Republic of	38	45	32	57	174	15	114	602	1,077
Togo	12	10	3	2	24	0	3	12	66
Uganda	27	23	3	3	61	9	10	52	188
Zambia	11	17	1	0	20	13	1	20	83
Zimbabwe	10	16	3	6	3	0	5	17	60
<b>Antarctica</b>									
The Antarctic Continent	2	4	0	0	0	0	0	0	6
Bouvet Island	1	1	0	0	1	0	0	0	3
French Southern Territories	3	12	4	0	3	0	0	0	22
Heard Island and McDonald Islands	1	10	0	0	1	0	0	0	12
South Georgia and the South Sandwich Islands	3	6	0	0	0	0	0	0	9
<b>●Asia</b>									
<b>East Asia</b>									
China	74	85	43	88	130	15	61	544	1,040
Hong Kong	2	20	5	5	13	1	7	7	60
Japan	27	39	14	19	72	33	137	23	364
Korea, Democratic People's Republic of	9	25	2	1	16	0	3	8	64
Korea, Republic of	9	28	2	3	23	0	4	7	76
Macao	0	4	1	0	5	0	1	0	11
Mongolia	11	20	0	0	2	0	3	0	36
Taiwan, Province of China	10	22	9	10	63	1	127	83	325
<b>North Asia</b>									
Belarus	3	6	0	0	2	3	6	1	21
Moldavia	4	8	2	0	8	2	3	2	29
Russian Federation	31	49	9	0	37	8	28	55	217
Ukraine	11	14	1	0	21	6	17	17	87
<b>South and Southeast Asia</b>									
Bangladesh	34	31	23	1	20	0	7	21	137
Bhutan	27	18	3	1	3	0	1	18	71
British Indian Ocean Territory	0	0	2	0	9	0	69	1	81
Brunei Darussalam	35	23	8	3	8	0	8	104	189
Cambodia	37	27	19	4	43	1	76	36	243
Disputed territory (includes Paracel Islands and Spratly Islands)	0	0	0	0	1	0	1	0	2
India	96	82	53	75	214	7	128	384	1,039
Indonesia	186	131	32	32	149	6	284	426	1,246
Lao Peoples Democratic Republic	45	24	17	7	55	16	5	41	210
Malaysia	71	48	28	48	74	35	227	721	1,252
Maldives	2	0	3	0	18	0	46	0	69
Myanmar	47	45	29	0	42	3	74	61	301
Nepal	32	34	9	3	7	1	2	17	105
Philippines	39	89	39	48	76	3	234	239	767
Singapore	11	15	5	0	25	0	173	58	287
Sri Lanka	31	16	11	56	45	0	130	291	580
Thailand	57	48	27	4	98	15	196	150	595
Timor-Leste	4	7	2	0	6	0	1	1	21
Vietnam	54	44	43	23	75	18	109	199	565

## 2.32 Threatened species in each country

	Mammals	Birds	Reptiles	Amphibians	Fishes	Mollusks	Others	Plants	Total
<b>East and Central Asia</b>									
Afghanistan	10	14	1	1	5	0	2	5	38
Armenia	9	12	7	0	3	2	7	71	111
Azerbaijan	7	14	9	1	12	2	5	42	92
Bahrain	3	3	4	0	9	0	13	0	32
Cyprus	5	5	5	0	19	1	7	18	60
Georgia	10	11	7	1	9	4	11	61	114
Iran, Islamic Republic of	17	22	13	4	38	2	22	3	121
Iraq	14	16	3	1	17	1	16	1	69
Israel	15	14	10	2	37	11	63	0	152
Jordan	13	10	6	0	11	6	55	1	102
Kazakhstan	16	22	1	1	15	2	5	16	78
Kuwait	6	8	3	0	12	0	13	0	42
Kirghizstan	6	12	2	0	3	0	4	14	41
Lebanon	10	9	7	0	22	9	7	5	69
Oman	10	10	8	0	25	2	29	6	90
Pakistan	24	30	10	0	35	0	18	12	129
Palestine Territory, Occupied	3	10	4	1	2	2	2	0	24
Qatar	3	5	2	0	12	0	13	0	35
Saudi Arabia	10	15	3	0	29	1	58	3	119
Syrian Arab Republic	16	15	8	0	45	9	11	4	108
Tajikistan	7	12	2	0	5	0	3	12	41
Turkey	17	16	20	11	127	44	32	103	370
Turkmenistan	9	16	2	0	11	1	6	4	49
United Arab Emirates	8	9	3	0	13	0	15	0	48
Uzbekistan	9	16	2	0	7	1	2	17	54
Yemen	9	15	6	1	26	2	66	162	287
<b>Europe</b>									
<b>Europe</b>									
Albania	3	6	4	2	39	49	9	0	112
Andorra	2	1	1	0	0	3	4	0	11
Austria	3	9	1	0	11	43	26	13	106
Belgium	2	4	0	0	10	6	8	0	30
Bosnia and Herzegovina	4	6	3	1	34	17	19	1	85
Bulgaria	7	14	2	0	19	25	12	6	85
Croatia	8	12	3	2	59	45	22	8	159
Czech Republic	2	7	0	0	2	6	18	10	45
Denmark	2	3	0	0	15	5	10	1	36
Estonia	1	5	0	0	5	3	3	0	17
Faeroe Islands	4	1	0	0	9	0	0	0	14
Finland	1	6	0	0	6	3	7	2	25
France	8	9	5	2	46	91	42	33	236
Germany	4	7	0	0	22	31	26	17	107
Gibraltar	5	3	0	0	13	3	2	0	26
Greece	10	12	9	5	75	65	57	58	291
Greenland	7	1	0	0	8	0	0	1	17
Guernsey	0	0	0	0	2	0	0	0	2
Holly See (Vatican City State)	1	0	0	0	0	0	0	0	1
Hungary	2	10	1	0	9	8	27	10	67
Iceland	6	1	0	0	14	0	0	0	21
Ireland	5	3	1	0	23	2	4	1	39
Isle of Man	1	0	0	0	2	0	0	0	3
Italy	7	10	4	9	46	72	64	67	279
Jersey	0	0	0	0	2	0	1	0	3
Latvia	1	6	0	0	6	4	8	0	25
Liechtenstein	0	0	0	0	0	2	2	0	4
Lithuania	2	6	0	0	6	2	5	1	22
Luxembourg	0	1	0	0	1	5	2	0	9
Macedonia, the former Yugoslav Republic of	5	11	2	0	13	61	8	0	100
Malta	3	3	0	0	17	3	1	4	31
Monaco	2	0	0	0	11	0	3	0	16
Montenegro	6	12	3	1	27	20	14	2	85
Netherlands	3	4	0	0	12	5	5	0	29
Norway	7	4	0	0	19	3	7	4	44
Poland	4	8	0	0	7	7	15	10	51
Portugal	12	9	4	1	55	76	18	81	256
Romania	7	14	2	0	19	11	27	5	85
San Marino	0	0	0	0	0	0	1	0	1
Serbia	6	11	1	0	11	5	17	5	56
Slovakia	3	8	0	0	5	6	16	7	45
Slovenia	5	5	1	2	29	32	44	7	125
Spain	16	11	20	6	70	141	74	213	551
Svalbard and Jan Mayen	2	1	0	0	2	0	0	0	5
Sweden	1	4	0	0	11	4	11	5	36
Switzerland	2	3	0	1	9	10	33	4	62
United Kingdom	5	4	1	0	43	5	13	16	87
<b>North and Central America</b>									
<b>Central America</b>									
Belize	9	5	8	5	43	0	12	35	117
Costa Rica	10	23	12	61	56	1	29	131	323
El Salvador	7	6	10	10	14	0	7	29	83
Guatemala	17	14	32	80	33	2	7	97	282
Honduras	8	12	40	56	40	0	18	120	294
Mexico	101	61	97	210	170	7	86	377	1,109
Nicaragua	7	16	9	10	37	2	16	44	141
Panama	16	22	9	49	52	0	22	203	373



## 2.32 Threatened species in each country

	Mammals	Birds	Reptiles	Amphibians	Fishes	Mollusks	Others	Plants	Total
<b>Caribbean</b>									
Anguilla	1	1	7	0	28	0	10	4	51
Antigua and Barbuda	2	2	6	0	28	0	11	4	53
Aruba	2	1	1	0	21	1	1	2	29
Bahamas	6	7	8	0	40	1	11	8	81
Barbados	3	2	4	0	28	0	11	3	51
Bermuda Islands	4	1	3	0	20	0	28	8	64
Bonaire, Saint Eustatius and Saba	3	2	6	0	30	0	11	3	55
Cayman Islands	1	2	4	0	31	1	10	22	71
Cuba	14	18	16	49	41	0	23	176	337
Curaçao	3	2	3	0	28	0	11	2	49
Dominica	3	3	4	2	28	0	11	11	62
Dominican Republic	6	15	14	32	28	0	16	42	153
Grenada	3	1	6	1	27	0	10	3	51
Guadeloupe	5	2	7	3	28	1	15	9	70
Haiti	5	15	15	49	29	0	14	42	169
Jamaica	5	10	10	15	29	0	15	214	298
Martinique	2	4	7	2	19	2	0	9	45
<b>Caribbean</b>									
Montserrat	3	3	3	1	27	0	11	6	54
Puerto Rico	3	9	15	14	29	0	0	57	127
Saint Barthélemy	1	0	2	0	13	0	11	2	29
Saint Kitts and Nevis	2	2	5	1	29	0	10	2	51
Saint Lucia	2	5	6	0	28	0	11	6	58
Saint Martin (French part)	2	1	6	0	29	0	10	3	51
Saint Vincent and the Grenadines	2	2	6	1	28	0	10	5	54
Sint Maarten (Dutch part)	2	1	6	0	28	0	10	2	49
Trinidad and Tobago	2	5	5	8	33	0	10	2	65
Turks and Caicos Islands	2	3	4	0	28	0	10	9	56
Virgin Islands, British	1	2	9	2	27	0	10	10	61
Virgin Islands, U.S.	2	1	10	2	26	0	0	12	53
<b>North America</b>									
Canada	11	13	6	1	37	5	17	7	97
St. Pierre and Miquelon	4	2	0	0	1	0	0	0	7
United States	35	77	37	56	239	301	274	280	1,299
<b>South America</b>									
<b>South America</b>									
Argentina	39	49	6	30	36	0	13	70	243
Bolivia, Plurinational States of	21	55	3	35	0	2	1	99	216
Brazil	81	164	29	36	86	22	32	516	966
Chile	20	32	2	22	22	1	11	72	182
Columbia	56	119	22	215	61	0	33	245	751
Ecuador	46	96	26	174	53	48	17	1,848	2,308
Falkland Islands (Malvinas)	4	9	0	0	5	0	0	5	23
French Guiana	8	7	6	3	27	0	0	16	67
Guiana	11	14	5	5	28	0	1	23	87
Paraguay	9	27	3	0	0	0	0	19	58
Peru	55	121	9	111	21	4	4	318	643
Suriname	9	8	5	1	26	0	1	26	76
Uruguay	10	22	5	5	37	0	2	22	103
Venezuela, Bolivarian Republic of	34	45	14	73	43	1	25	77	312
<b>Oceania</b>									
<b>Oceania</b>									
American Samoa	1	8	6	0	10	5	59	1	90
Australia	56	50	43	47	108	174	340	91	909
Christmas Island	3	3	4	0	8	0	18	1	37
Cocos (Keeling) Islands	2	0	1	0	8	0	20	0	31
Cook Islands	1	15	3	0	11	0	32	11	73
Fiji	6	14	14	1	13	68	97	65	278
French Polynesia	0	31	2	0	30	34	31	47	175
Guam	2	14	5	0	10	6	54	4	95
Kiribati	1	5	2	0	11	1	80	0	100
Marshall Islands	2	3	4	0	13	1	72	0	95
Micronesia, Federation States of	7	10	7	0	20	4	111	4	163
Nauru	1	2	0	0	9	0	68	0	80
New Caledonia	9	16	54	0	30	28	97	259	493
New Zealand	9	69	14	4	34	32	14	21	197
Niue	1	8	3	0	8	0	30	0	50
Norfolk Island	0	10	2	0	5	12	11	1	41
Northern Mariana Islands	4	16	4	0	13	4	53	5	99
Palau	4	5	3	0	15	40	106	4	177
Papua New Guinea	39	38	9	11	49	2	179	151	478
Pitcairn	1	10	0	0	9	5	11	7	43
Samoa	2	6	5	0	13	1	61	2	90
Solomon Islands	20	25	5	2	18	2	149	17	238
Tokelau	0	1	2	0	8	0	35	0	46
Tonga	2	5	4	0	12	4	43	4	74
Tuvalu	1	1	3	0	10	1	77	0	93
United States Minor Outlying Islands	0	10	2	0	12	0	47	0	71
Vanuatu	7	9	4	0	15	4	88	10	137
Wallis and Futuna	0	9	2	0	11	1	64	1	88

Source: "IUCN Red List version 2015.2 (Updated 2015.6)"

## 2.33 Areas of agricultural land by country

(Unit : 1,000 ha)

Country (region)	Land area 2013	Arable land		Permanent crops		Others 2013
		2012	2013	2012	2013	
<b>World</b>	<b>13,009,337</b>	<b>1,395,895</b>	<b>1,407,843</b>	<b>163,893</b>	<b>164,661</b>	<b>11,436,832</b>
<b>Asia</b>		<b>466,924</b>	<b>N/A</b>	<b>85,196</b>	<b>N/A</b>	<b>N/A</b>
Japan	36,456	a 4,246	a 4,237	303	300	a 31,919
India	297,319	156,200	157,000	12,800	13,000	127,319
Indonesia	181,157	23,500	23,500	22,000	22,500	135,157
Kazakhstan	269,970	22,900	29,395	75	132	240,444
South Korea	9,747	1,522	1,496	208	215	8,036
Saudi Arabia	214,969	3,160	3,068	230	227	211,674
Thailand	51,089	16,560	16,810	4,500	4,500	29,779
China	938,821	105,920	105,720	15,800	16,000	817,101
Turkey	76,963	20,577	20,574	3,213	3,232	53,157
Pakistan	77,088	21,185	30,470	855	810	45,808
Bangladesh	13,017	7,675	7,678	850	830	4,509
Philippines	29,817	5,545	5,590	5,350	5,350	18,877
Malaysia	32,855	965	954	6,500	6,600	25,301
<b>North America</b>		<b>235,073</b>	<b>N/A</b>	<b>13,966</b>	<b>N/A</b>	<b>N/A</b>
USA	914,742	155,108	151,837	2,600	2,600	760,305
Canada	909,351	45,915	45,915	4,831	4,736	858,700
Mexico	194,395	23,132	22,975	2,676	2,693	168,727
<b>South America</b>		<b>133,768</b>	<b>N/A</b>	<b>14,174</b>	<b>N/A</b>	<b>N/A</b>
Argentina	273,669	39,291	36,699	1,000	1,000	232,970
Brazil	835,814	72,605	76,008	7,000	6,800	753,006
<b>Europe</b>		<b>274,749</b>	<b>N/A</b>	<b>15,158</b>	<b>N/A</b>	<b>N/A</b>
Iceland	10,025	121	121	...	...	9,904
Ireland	6,889	1,170	1,113	1	1	5,775
UK	24,193	6,212	6,265	46	45	17,883
Italy	29,414	7,118	6,827	2,442	2,260	20,327
Ukraine	57,932	32,518	32,526	894	894	24,512
Estonia	4,239	621	632	6	6	3,601
Austria	8,253	1,355	1,354	65	65	6,834
Netherlands	3,367	1,011	1,038	36	36	2,293
Greece	12,890	2,540	2,547	1,150	1,130	9,213
Switzerland	3,952	404	404	24	25	3,523
Sweden	40,734	2,599	2,596	9	9	38,129
Spain	50,021	12,400	12,570	4,560	4,969	32,482
Slovakia	4,809	1,392	1,394	20	21	3,394
Czech Republic	7,723	3,157	3,149	76	76	4,498
Denmark	4,243	2,418	2,408	6	6	1,829
Germany	34,854	11,834	11,876	200	200	22,778
Norway	36,525	811	806	5	5	35,714
Hungary	9,053	4,397	4,403	182	178	4,472
Finland	30,389	2,249	2,224	4	3	28,162
France	54,756	18,291	18,306	1,002	997	35,454
Belgium	3,028	802	816	24	22	2,190
Poland	30,621	10,925	10,792	398	412	19,417
Portugal	9,160	1,090	1,116	714	709	7,335
Russia	1,637,687	119,750	122,240	1,600	1,600	1,513,847
<b>Africa</b>		<b>237,135</b>	<b>N/A</b>	<b>33,815</b>	<b>N/A</b>	<b>N/A</b>
Egypt	99,545	2,800	2,738	812	1,023	95,784
Nigeria	91,077	35,000	34,000	6,700	6,500	50,577
South Africa	121,309	12,000	12,500	413	413	108,396
<b>Oceania</b>		<b>48,245</b>	<b>N/A</b>	<b>1,584</b>	<b>N/A</b>	<b>N/A</b>
Australia	768,230	47,113	46,219	380	392	721,619
New Zealand	26,331	580	547	71	71	25,713

## Notes:

The definition of land use may differ from each country (region.)

Land area: Total land area, excluding inland water (major rivers and lakes).

Arable land: The land cultivated and harvested with short-term crops (land for successive-cropping is not counted twice).

Includes meadows for pasture grazing and temporary fallow land (for less than 5 years).

Permanent crops: The land cultivated with long-term crops which do not have to be replanted for several years (such as cocoa, coffee and rubber). Including areas of bush, orchards, tree nuts and vine crops. Excluding land planted with trees for timber.

Others: Permanent pasture, woodland, woods, building sites, roads, barren land and other land which is not classified in above items.

a. Permanent pasture is included in arable land.

Source: "World Statistics 2016" Statistics Bureau, Ministry of Internal Affairs and Communications, the Government of Japan

## 2.34 Forest area in each country

Country (region) <sup>1</sup>	Forest ( 1,000 ha )		Percentage of forest in national land (%)	The changes between 2000 ~ 2010 (1,000 ha) 2)
	2000	2010	2010	
<b>World</b>	<b>4,085,168</b>	<b>4,033,060</b>	<b>31</b>	<b>-5,211</b>
<b>Asia</b>	<b>570,164</b>	<b>592,512</b>	<b>19</b>	<b>2,235</b>
China	177,000	206,861	22	2,986
Japan	24,876	24,979	69	10
Mongolia	11,717	10,898	7	-82
Indonesia	99,409	94,432	52	-498
India	65,390	68,434	23	304
Myanmar	34,868	31,773	48	-310
Malaysia	21,591	20,456	62	-114
Thailand	19,004	18,972	37	-3
Laos	16,532	15,751	68	-78
Vietnam	11,725	13,797	44	207
Turkey	10,146	11,334	15	119
Iran	11,075	11,075	7	0
Others	66,831	63,750	-	-308
<b>North America</b>	<b>677,083</b>	<b>678,961</b>	<b>33</b>	<b>188</b>
Canada	310,134	310,134	34	0
USA	300,195	304,022	33	383
Mexico	66,751	64,802	33	-195
Others	3	3	-	0
<b>Central America</b>	<b>21,980</b>	<b>19,449</b>	<b>38</b>	<b>-248</b>
<b>Caribbean islands</b>	<b>6,434</b>	<b>6,933</b>	<b>30</b>	<b>50</b>
<b>South America</b>	<b>904,322</b>	<b>864,351</b>	<b>49</b>	<b>-3,997</b>
Brazil	545,943	519,522	62	-2,642
Peru	69,213	67,992	53	-122
Colombia	61,509	60,499	55	-101
Bolivia	60,091	57,196	53	-290
Venezuela	49,151	46,275	52	-288
Argentina	31,961	29,400	11	-246
Paraguay	19,368	17,582	44	-179
Chile	15,834	16,231	22	40
Guyana	15,205	15,205	77	0
Suriname	14,776	14,758	95	-2
Others	21,371	19,691	-	-168
<b>Europe</b>	<b>998,239</b>	<b>1,005,001</b>	<b>45</b>	<b>676</b>
Russia	809,269	809,090	49	-18
Sweden	27,389	28,203	69	81
Finland	22,459	22,157	73	-30
Spain	16,988	18,173	36	119
France	15,353	15,954	29	60
Germany	11,076	11,076	32	0
Others	95,705	100,348	-	464
<b>Africa</b>	<b>708,564</b>	<b>674,419</b>	<b>23</b>	<b>-3,415</b>
Sudan	70,491	69,949	29	-54
Angola	59,728	58,480	47	-125
Zambia	51,134	49,468	67	-167
Mozambique	41,188	39,022	50	-217
Tanzania	37,462	33,428	38	-403
Zimbabwe	18,894	15,624	40	-327
Madagascar	13,122	12,553	22	-57
Ethiopia	13,705	12,296	11	-141
Botswana	12,535	11,351	20	-118
Republic of the Congo	157,249	154,135	68	-311
Central Africa	22,903	22,605	36	-30
DR Congo	22,556	22,411	66	-15
Gabon	22,000	22,000	85	0
Cameroon	22,116	19,916	42	-220
Mali	13,281	12,490	10	-79
Chad	12,317	11,525	9	-79
Ivory coast	10,328	10,403	33	8
Others	107,555	96,763	-	-1,079
<b>Oceania</b>	<b>198,381</b>	<b>191,384</b>	<b>23</b>	<b>-700</b>
Australia	154,920	149,300	19	-562
Papua New Guinea	30,133	28,726	63	-141
Others	13,328	13,358	-	3

## Notes:

Forest is defined as woodland where 10% or more of its tree-crown area is covered with trees 5m high or higher, including seedlings expected to be that high in the future. Forest includes the national parks, natural conservation areas, other protected areas, and windbreaks which are 0.5 ha or more, and 20m wide or wider, additionally, plantations of rubber and cork oak. Excludes trees for agricultural production such as orchards and trees which were grown as agro-forestry tree.

1. Top 50 countries with the largest forest areas in 2010.

2. A net change after offsetting expansion by plantation against losses and increases in natural forests, calculated from the forest area in 2000 and 2010.

Source: "Global Forest Resources Assessment 2010," Food and Agriculture Organization.

## 2.35 Major causes of soil degradation by region

( Unit: million ha )

Area	Land type	Degradation area by cause					Total degradation area	Non-degradation area	Total land area
		Overgrazing	Forest destruction	Agriculture	Over-exploitation	Biological Industries			
Africa	Drylands susceptible to degradation	184.6	18.6	62.2	54.0	0.0	319.4	966.6	1,286.0
	Others	58.5	48.2	59.2	8.7	0.2	174.8	1,504.9	1,679.7
Asia	Drylands susceptible to degradation	118.8	111.5	96.7	42.3	1.0	370.3	1,301.5	1,671.8
	Others	78.5	186.3	107.6	3.8	0.4	376.6	2,207.5	2,584.1
Australasia	Dry land susceptible to degradation	78.5	4.2	4.8	0.0	0.0	87.5	575.8	663.3
	Others	4.0	8.1	3.2	0.0	0.1	15.4	203.5	218.9
Europe	Drylands susceptible to degradation	41.3	38.9	18.3	0.0	0.9	99.4	200.2	299.6
	Others	8.7	44.9	45.6	0.5	19.7	119.4	531.4	650.8
North America	Dry land susceptible to degradation	27.7	4.3	41.4	6.1	0.0	79.5	652.9	732.4
	Others	10.2	13.6	49.1	5.4	0.4	78.7	1,379.8	1,458.5
South America	Drylands susceptible to degradation	26.2	32.2	11.6	9.1	0.0	79.1	436.9	516.0
	Others	41.7	67.8	51.9	2.9	0.0	164.3	1,087.3	1,251.6
Total		678.7	578.6	551.6	132.8	22.7	1,964.4	11,048.3	13,012.7

## Notes:

- The table is based on GLASOD ( Global Assessment of Human-Induced Soil Degradation.)
- "Dryland susceptible to degradation" in here is dry, semi-arid and dry semi-humid areas. This climatic division is defined by dryness index.
- Australasia refers to Australia, New Zealand and the coastal islands nearby.
- Due to round-up or down, totals may not foot.

Source: "World Atlas of Desertification 2nd Edition 1997," UNEP.

## 2.36 Generated amounts of waste by sectors in each country (latest data after 1993)

(Unit : 1,000 t)

Country (region)	Year	Agriculture and forestry	Mining and quarrying	Manufacturing	Energy-supply	Water supply	Construction	Others	Municipal waste	Total
		01-02 (a)	10-14	15-37	40	41	45		(b)	(c)
Canada	2004	..	..	..	..	..	..	..	13,380	..
Mexico	2006	..	..	..	..	..	..	..	36,090	..
USA	2005	..	..	..	..	..	..	..	222,860	..
Japan	2001	90,430	13,770	122,880	6,970	8,310	76,150	3,860	54,930	455,180
South Korea	2004	..	..	38,330	..	..	54,200	..	18,250	110,780
Australia	2002	..	..	9,470	..	..	13,740	..	8,900	32,380
New Zealand	1999	150	..	800	..	..	800	..	1,540	3,290
Austria	2004	..	..	..	..	1,910	28,600	18,900	4,590	54,000
Belgium	2002	1,150	120	13,650	850	200	10,490	6,300	4,750	36,360
Czech Republic	2005	460	650	6,040	2,310	650	9,110	2,770	2,950	24,940
Denmark	2005	..	..	1,850	1,080	820	5,270	1,850	3,340	14,210
Finland	2004	860	23,820	15,710	1,570	510	20,840	100	2,370	65,790
France	2004	..	..	90,000	..	960	..	..	33,780	128,610
Germany	2004	..	50,450	53,010	..	..	187,480	..	48,430	339,370
Greece	2003	..	..	..	..	..	5,000	..	4,710	..
Hungary	2004	..	13,080	5,200	3,330	..	1,740	2,050	4,590	29,990
Iceland	2004	50	-	50	-	-	20	230	150	490
Ireland	2004	60,170	4,050	5,300	290	60	2,680	..	3,000	57,160
Italy	2004	440	900	37,780	2,800	13,550	46,460	5,530	31,150	138,620
Luxembourg	2004	..	50	730	-	130	6,980	90	310	8,300
Netherlands	2004	2,390	90	16,900	1,430	170	24,000	6,150	10,160	61,290
Norway	2005	160	190	3,800	40	..	1,500	2,260	1,840	9,790
Poland	2005	..	39,620	58,440	19,840	3,280	240	2,740	9,350	133,960
Portugal	2002	..	3,630	8,980	320	50	..	110	4,620	17,710
Slovakia	2004	4,490	..	8,680	..	260	1,690	..	1,400	16,590
Spain	2004	..	21,780	28,510	5,940	..	..	9,510	27,590	..
Sweden	2004	..	58,640	29,470	1,250	920	11,270	..	4,170	105,710
Switzerland	2004	..	..	1,130	..	210	11,900	..	4,910	18,140
Turkey	2004	..	..	17,500	13,890	3,240	..	..	29,740	64,350
UK	2002	540	96,390	45,000	6,180	1,390	109,000	30,320	36,120	323,430

## Notes:

a: The data is data for primary waste, including hazardous waste. Fractions are rounded down. Data before 1998 are not included.

b: General waste: Please refer to the notes of following table "Waste generation amount in each country" for details.

c: The total value may include estimation .

Canada)	General waste: The data of household waste in fiscal year 2004; 27 million tons of non-hazardous waste were generated from homes, public organizations, industrial facilities and commercial facilities (excluding waste from construction and demolition).
Mexico)	General waste: The data in fiscal year 2005.
USA)	General waste: The data in fiscal year 2005.
Japan)	The data in fiscal year 2001. The agriculture and forestry figures include livestock waste. General waste includes separate collections for recycling in the total amounts include sludge waste and refuse disposal.
South Korea)	The data in fiscal year 2004. Manufacturing also includes hazardous waste and is in the range of 01-02, 10-14, 40 and 41 by the classification of ISIC.
Australia)	The data is from fiscal year 2002 to 2003. Manufacturing includes waste from the small industrial sector.
New Zealand)	Includes landfill waste and recycled packing waste (which t is included to general waste) The data is as of fiscal year 1999; General waste: Only household waste.
Austria)	The data is in fiscal year 2004. Including hazardous waste. The classification of Austria is by waste stream, not economic sectors. Therefore, the data may not be able to be compared with the data of other countries.
Belgium)	Water supply: (general and industry) Wet weight of sewage and water treatment. Building industry: Including 22 million tons of excavated soil. Estimate of NSI for the fiscal year 2002 (For agriculture is 2004).
Czech Republic)	The data in 2005 include hazardous waste ( Total 14 million tons ).Others: Including waste from sludge and refuse disposal (ISIC: 12 million tons).
Denmark)	The data in 2005. ISIC (International Standard Industrial Classification) 41: ISIC 90. Others: Waste from various facilities, wholesale and retail business, service industry and others.
Finland)	General waste: Household waste. To avoid double counting with other categories. Total: Partial total that does not include waste from agriculture, industry and crushed stone industry.
France)	The data in 2004 by sectors is according to the Regulations of waste statistics of the European Parliament. The data may also include liquid waste. Building industry: 1.920 tons of surplus soil. ISIC 41: ISIC 90.
Germany)	The data in 2004. However, for water supply (sewage sludge) is 2001. The total is the data from 1999. Manufacturing: Including hazardous waste.
Greece)	The data is by primary waste in 2004. Including hazardous waste. Building industry: Including excavated soil.
Hungary)	The data of 2003. Total production of waste in the 1990s was estimated to be 379 million tons.
Iceland)	The data in 2004 by sectors is according to the Regulations of waste statistics of European Parliament. Excluding 37, 51.57 and 90 of the NACE sector and separated residue.
Ireland)	The data of 2004 include hazardous waste. Manufacturing: Waste from meat processing plants and coastal fresh fish processing plants.
Italy)	Others: Scrap metal, tires and other waste. The classification of Iceland is according to waste stream, not economic
Luxembourg)	The data of 2004. Including International Industrial Classification (ISIC) 01-02: ISIC; ISIC 40: Including arising sewage and waste treatment from ISIC41: ISIC 90. Others: ISIC50-55, 60-85, 91-99.
Netherlands)	Excluding the unspecified NACE from total amount.
Norway)	The data in 2004 by sectors is according to the Regulations of waste statistics of European Parliament. ISIC 41: ISIC 41: ISIC 90. Excluding organic fertilizers, polluted soil, and dredged soil.
Poland)	The preliminary data of 2005 includes hazardous wastes, excluding oil platforms and transport ships which are over total registered tons. Industrial, quarrying industry and building industry, excludes soil, sand gravel, stones. Energy: Including ISIC41.
Portugal)	Others: Waste from the service industry and other unspecified sectors.
Slovakia)	General waste: Household waste (Excluding scraped vehicles as it is included in the National Waste Account).
Spain)	The data of 2005 is by the Catalog of European waste. ISIC41: Excluded waste from sewage and refuse disposal (ISIC 90: 439 thousand tons).
Sweden)	Others: The data is by ISIC/NACE50-52, 74, 93. General waste: collected garbage.
Czech Republic)	The data of 2002 include Portugal and Azores islands. Excluding other islands. The data of general waste includes the Madeira Islands.
Turkey)	The data of 2004.
UK)	The data of 2004 include hazardous waste. Others: Waste from the service sector. However, excludes financial intermediation sector, government agencies, defense organizations, and social security.
	The data in 2004 by sectors are according to the Regulations of waste statistics of the European Parliament. Excluding 37, 51, 57 and 90 of NACE and separation residue. Total amount: Total reported amount.
	The data of 2004.
	Energy production (2002): the data is from of 16 points of 21 thermal plants.
	The data of 2004. Energy production (2002): the data is from of 16 points of 21 thermal plants.
	ISIC 41: ISIC 90 (fiscal year 2000). Subtotal: Total of submitted volume.
	Estimates of 2002. However, excluding general waste (May, 2004), agriculture (Britain), quarrying industry mining and the building industry (2004).
	Energy: Including ISIC4. Water supply : sewage and water treatment ( dry weight ) Others: ISIC50-52, 55, 60-67, 70-75, 80 and 85.

Source: "OECD Environmental Data Compendium 2006"

2.37 Amount of municipal waste in each country ( a )

	Total amount ( Unit : 1 000 t )										Amount per person ( kg/person )									
	municipal waste					Household waste out of municipal waste					municipal waste					Household waste out of municipal waste				
	1985	1990	1995	2000	2005(b)	1985	1990	1995	2000	2005(b)	1985	1990	1995	2000	2005(b)	1985	1990	1995	2000	2005(b)
Canada	..	18,110	..	..	..	..	8,925	7,030	11,279	13,375	..	640	..	..	..	..	310	240	370	420
Mexico	..	21,062	30,510	30,733	36,088	..	16,850	24,407	23,641	27,785	..	250	330	310	340	..	200	270	240	260
USA	149,189	186,167	193,869	215,578	222,863	..	115,423	116,321	129,347	133,718	630	750	730	760	750	..	460	440	460	450
Japan	43,450	50,441	50,694	52,362	51,607	..	..	..	34,372	34,798	360	410	400	410	400	..	..	..	270	270
South Korea	20,994	30,646	17,438	16,950	18,252	..	..	15,411	14,375	15,175	510	710	390	360	380	..	..	340	310	320
Australia	..	12,000	..	13,200	..	..	7,000	..	7,660	8,903	..	690	..	690	..	..	400	..	400	450
New Zealand	..	..	..	..	..	..	1,140	1,431	1,541	1,541	..	..	..	..	..	..	340	390	400	400
Austria	..	3,204	3,476	4,250	4,588	1,727	2,504	2,644	3,236	3,419	..	420	430	520	560	230	320	330	400	420
Belgium	3,055	3,436	4,615	4,783	4,847	2,630	2,884	3,646	3,863	3,724	310	340	460	470	460	270	290	360	380	360
Czech Republic	2,600	..	3,200	3,434	2,954	..	2,600	..	..	..	..	250	..	310	330	290	..	250	..	..
Denmark	2,430	..	2,960	3,546	3,990	1,900	..	2,610	3,084	3,337	480	..	570	660	740	370	..	500	580	620
Finland	..	..	2,109	2,600	2,450	..	..	870	1,040	1,201	..	..	410	500	470	..	..	170	200	230
France	..	26,220	28,253	31,232	33,963	18,700	20,420	20,009	21,130	22,000	..	450	480	510	540	340	350	340	350	350
Germany	..	..	44,390	50,132	49,563	..	..	35,129	37,667	39,886	..	..	540	610	600	..	..	430	460	480
West Germany	..	27,972	27,332	..	..	19,387	21,721	16,638	..	..	..	..	440	420	..	..	320	340	250	..
Greece	3,000	3,000	3,200	4,447	4,853	..	..	..	..	..	300	300	300	410	440	..	..	..	..	..
Hungary	..	5,500	4,752	4,562	4,632	..	2,468	2,543	2,674	2,677	..	530	460	450	460	..	240	250	260	270
Iceland	..	..	114	130	153	..	..	..	..	..	..	..	620	460	520	..	..	..	..	..
Ireland	1,100	..	1,848	2,279	3,050	..	..	1,325	1,333	1,746	310	..	510	600	740	..	..	370	350	420
Italy	15,000	20,000	25,780	28,959	31,677	..	..	..	..	..	270	350	450	510	540	..	..	..	..	..
Luxembourg	131	224	240	285	321	..	98	193	239	273	360	580	580	650	710	..	250	470	550	600
Netherlands	6,933	7,430	8,469	9,769	10,180	5,177	6,195	7,320	8,650	9,102	480	500	550	610	620	360	410	470	540	560
Norway	1,968	2,000	2,722	2,755	3,498	655	800	1,174	1,452	1,844	590	550	640	620	760	200	220	270	330	400
Poland	11,087	11,098	10,985	12,226	9,354	7,223	7,253	7,645	8,480	6,496	300	290	280	320	250	190	190	200	220	170
Portugal	2,350	3,000	3,855	4,531	5,009	..	..	..	..	..	230	300	390	440	470	..	..	..	..	..
Slovakia	1,901	1,600	1,620	1,707	1,468	..	..	995	953	1,248	360	300	300	320	270	..	..	190	180	230
Spain	..	..	20,076	26,505	27,593	10,013	12,611	15,107	18,925	22,735	..	..	510	660	650	260	320	380	470	530
Sweden	2,650	3,200	3,555	3,796	4,347	..	..	..	..	..	320	370	400	430	480	..	..	..	..	..
Switzerland	3,398	4,101	4,200	4,728	4,855	2,265	2,734	2,800	3,262	3,237	530	610	600	660	650	350	410	400	450	440
Turkey	18,000	22,315	27,234	30,617	31,352	..	..	..	..	..	360	390	440	450	440	..	..	..	..	..
UK	..	27,100	28,900	33,954	35,077	17,000	20,000	27,000	29,911	30,429	..	470	500	580	580	340	350	470	510	510
North America	183,000	230,000	242,000	272,000	285,000	..	..	..	..	..	540	630	630	660	660	..	..	..	..	..
Europe (OECD members)	159,000	185,000	219,000	246,000	261,000	..	..	..	..	..	380	430	490	540	560	..	..	..	..	..
EU-15	135,000	156,000	184,000	208,000	222,000	..	..	..	..	..	380	430	490	550	570	..	..	..	..	..
OECD countries	397,000	479,000	526,000	586,000	614,000	..	..	..	..	..	440	510	540	580	580	..	..	..	..	..

Notes:

a ) municipal waste is collected by municipalities. This includes household waste, waste from commercial activities, office buildings, small business, buildings like schools or government offices, and this waste is treated in the same facilities as waste from municipalities collection. Household waste is generated by home activities and by home activities and includes scrap, large-size refuse, and separately collected waste. The definitions in each country may be different. The volume per person is rounded down.

b ) The available data for latest year.

Canada) Data of 1990, 1995, 2005 are from 1992, 1996, 2004 respectively. Time series between 1992 and 1996 are not continuous partially.

Mexico) 27 million tons of non-hazardous waste generated in 2002 from home, facilities, commercial facilities and industry (excluding building and demolition waste).

The data of 1990 is by the data of 1991. The time series were interrupted between 1991 and 1995.

The latest fiscal year: The data of 2006; Household waste: Estimates are by the secretariat.

Japan) In 2005: The data of 2003. Household waste: The data of 2001.; municipal waste: Collected municipal waste, delivered waste, and waste treated at home.

Excluding collected waste for recycling by mainly private sector. (28 million tons).

South Korea) In 2005: The data of 2004. The measuring method was changed in 1992; Household waste in 1995: The data of 1996.

Australia) Data of 1980, 1990, 2000 are from 1978, 1992, the later half of 1990 respectively, estimated by the secretariat.

municipal waste: It may be included a quite large amount of commercial and industrial waste; Household: In 2005: Fiscal year 2002 - 2003.

New Zealand) The data of 1980, 1990 and 2000 are by the data of 1982, 1986-1991 and 1999;

The data of 1995, 2000 and 2005 are included land filled household waste and recycled packing waste.;

The data of 1995 and 2000: Excluding 150,000 tons of building and demolition waste, which are included in the definition of the country.

Austria) municipal waste: Excluding those definition by the country, includes waste from building sites, plant waste from onsite compost treatment from municipal business, waste from general kitchen and dining rooms.

In 2005: The data of 2004; Household waste: Including a small amount of waste from commercial and trade source; The data of 1980 and 1985 are by the data of 1979 and 1984.

Belgium) The data estimates of NSI. Household waste is included waste from small business a.; For 2005 is the data of 2003.

Czech Republic) In 1985, 1995: The data 1987 and 1996. Before 2000: It is an incomplete estimate because the survey was in trial stage.

Denmark) The data of 1980 and 1985 are a survey of treatment facilities. Household waste: It is by the Danish classification of life waste, large-size refuse, garden waste, packing waste and others.

Finland) The data of 1995 is by the data of municipal waste in 1994.; Before 2000: Collection amount; After 2000: Estimates amount is included compost; Estimated amount of household waste in 2005.

France) The data of 1990 is by the data of 1989.; The data is included DOM.; municipal waste ( estimates of 2005 ) : Including household waste from commercial, trade and similar sources, large-size refuse and collected waste from municipalities.; Household waste ( for 2005 is the data of 2004 ) : Excluding similar waste to waste from commercial, trade and large-size refuse.

Germany) For 1995 is the data of 1996.; In 2000, 2005 (estimate). There is the interrupted time serial. From 2000; Waste is by the catalog of European waste.;

Household waste: Household waste and similar waste, large-seize refuse, compost waste from bio-containers, collected waste by separate collection; In 2005: Estimates by the secretariat.

West Germany) The data of 1985, 1995 are by the data of 1984 and 1993. Household waste: Excluding separate collection for the purpose of recycling by non-public sector (about 5 million tons in 1993).

Hungary) municipal waste (pre-data of 2005): Including estimates of population that do not receive municipal collection of waste; Household waste: Only collected waste. In 2005: Estimates by the secretariat.

Ireland) In 1985: It is by the data of 1984. The measuring method was changed between 2002 and 2005. Household waste: Include the calculations of rise of the waste collection domestic service.

Luxembourg) In 2005: Estimates. municipal waste after 1995: Including separate collection; Household waste in 1990: It is by the data of 1992.

Netherlands) municipal waste (pre-data in 2005): Including separate collection for the purpose of recycling. In 1980: The data of 1981. Household waste: Including collected paper by schools, churches and sports clubs. In 2005: Estimates by the secretariat.

Norway) municipal waste : Before 1995 : Excluding waste from areas that do not receive municipal collection of waste. Including small amount of building demolition waste ; Excluding glass that is not process and waste treatment. ; After 1995: Including about 90,000 tons of building demolition waste. ; Household waste in 1980 and 1985 ( excluding scraped cars which are included in the National Waste Account ) : The data of 1982 and 1983. ; Waste amount per person : It is adapted to the population which receive, municipal waste collection services.

Poland) The data is for collected waste in 1980, 1985: Includes sewage tanks and liquid waste from other containers.

Portugal) Including the Azores and Madeira Islands.

Slovakia) In 1985 and 1990: It is he data of 1987 and 1992. municipal waste until 2000 include the waste of sewage tank (in 2000: 367,200 tons). After 2000, halted.

Spain) In 2005: The data of 2004. Including Balearic and Canary Islands. ; municipal waste: Including household waste, similar waste from small business a, large-size refuses and waste from collection services of municipal and separate collections. ; The measuring method was changed in 2004.

Switzerland) municipal waste: Including separate collected waste for the purpose of re-cycling.

Turkey) The data of 1990 is by the data of 1991. The data included estimates of population that do not receive waste services. After 2004 The measuring methods changed.

Household waste : ( in 2005 : estimates by the secretariat ) : Including organic waste from home, medical waste, street cleaning and garbage ;

1990: estimated amount of waste collected mainly from households plus 5,000,000 tons of waste from Civic Amenity Center (Household Waste Recycling Center)

The volume until 1985 is only England and Wales, so there is not the credibility as of the estimate of 1990.

Total) It is estimates and is different to the total of reported data from each country. Excluding Czech, Poland and South Korea.

Source: "OECD Environmental Data Compendium 2006"

## 2.38 Breakdown ratios of municipal waste in each country

( Unit: % )

	Paper and paperboard					Organic substances					Plastic					Glass					Metal					Textiles and others					
	85	90	95	00	05	85	90	95	00	05	85	90	95	00	05	85	90	95	00	05	85	90	95	00	05	85	90	95	00	05	
Canada	37	28	44	52	47	..	34	11	17	24	5	11	2	3	3	7	7	5	6	6	7	8	32	17	13	..	13	6	5	8	
Mexico	..	14	14	14	15	..	52	52	52	51	..	4	4	4	6	..	6	6	6	6	..	3	3	3	3	..	20	20	20	18	
USA	37	35	38	37	34	..	26	27	24	24	25	7	8	9	11	12	8	6	6	5	5	9	8	7	8	8	13	15	15	16	
Japan	33	38	..	33	..	34	32	..	34	..	12	11	..	13	..	8	7	..	5	..	6	6	..	3	..	7	7	..	12	..	
South Korea	9	14	23	26	24	23	31	36	25	28	8	8	5	7	8	3	3	5	4	5	4	5	8	9	7	53	39	23	29	28	
Australia	..	..	21	..	23	..	..	50	..	47	..	..	7	..	4	..	..	9	..	7	..	5	..	5	..	..	..	8	..	13	
New Zealand	..	..	..	..	..	..	..	56	..	..	..	..	8	..	..	..	..	3	..	..	..	7	..	..	..	..	..	5	..	..	
Austria	34	27	27	23	22	25	27	30	23	25	7	8	14	10	11	10	8	11	7	8	4	7	7	7	5	20	23	12	30	19	
Belgium	..	30	16	18	17	..	45	41	39	39	..	8	5	4	5	..	8	6	7	7	..	4	3	3	3	..	5	29	28	29	
Czech Republic	10	..	8	..	..	..	..	18	..	..	6	..	4	..	..	8	..	4	..	..	6	..	2	..	..	..	63	..	..	..	
Denmark	22	..	23	21	27	55	..	26	33	29	4	..	0	1	1	2	..	6	5	5	3	..	2	2	6	14	..	42	38	32	
Finland	..	26	33	40	..	..	32	33	33	..	..	..	3	10	..	..	6	2	5	..	..	3	5	5	..	..	35	23	7	..	
France	25	30	23	21	20	37	25	30	31	32	9	10	10	9	12	12	11	11	10	7	6	4	3	3	10	17	22	26	26	26	
Germany	..	36	41	37	34	..	23	23	18	14	..	1	3	10	22	..	28	22	18	12	..	5	8	2	5	..	8	3	16	12	
Greece	19	..	20	20	..	58	..	49	47	..	7	..	9	9	..	3	..	5	5	..	4	..	5	5	..	9	..	14	16	..	
Hungary	16	20	17	14	15	39	32	35	41	29	3	5	4	11	17	6	5	3	3	2	4	6	4	2	2	32	32	37	30	35	
Iceland	..	..	..	29	26	..	..	..	29	26	..	..	..	16	17	..	..	..	4	4	..	..	..	..	3	..	..	..	..	20	24
Ireland	25	..	33	36	31	..	..	29	22	25	14	..	9	10	11	8	..	6	5	5	3	..	3	3	4	..	21	23	23	23	
Italy	22	..	23	28	28	43	..	15	28	29	7	..	3	4	5	6	..	22	16	13	3	..	0	5	2	19	..	37	19	22	
Luxembourg	17	..	24	26	22	44	..	35	40	45	6	..	1	1	1	7	..	16	14	12	3	..	7	4	4	23	..	16	16	16	
Netherlands	23	25	34	32	26	54	52	38	32	35	7	8	11	12	19	7	5	4	5	4	3	3	4	4	4	6	7	9	15	12	
Norway	31	..	36	36	33	18	..	30	30	30	7	..	9	9	9	..	..	3	3	4	8	..	4	4	4	36	..	18	18	20	
Poland	..	10	..	..	..	38	..	..	..	..	10	..	..	..	12	..	..	..	..	..	8	..	..	..	..	23	..	..	..	..	
Portugal	19	25	23	24	21	..	..	35	36	34	3	9	12	11	11	3	3	5	6	7	4	3	3	2	4	..	..	23	21	23	
Slovakia	14	..	15	13	13	16	..	28	38	38	7	..	8	7	7	9	..	6	8	8	7	..	9	3	3	48	..	35	31	31	
Spain	15	20	21	21	21	52	49	44	49	49	6	7	11	12	12	6	8	7	8	8	3	4	4	4	4	19	12	13	7	7	
Sweden	..	44	..	74	68	..	30	..	..	..	7	..	2	2	..	8	..	13	11	..	2	..	1	2	..	9	..	10	17	..	
Switzerland	..	29	29	..	20	..	22	38	..	29	..	15	15	..	15	..	3	3	..	4	..	3	3	..	3	..	28	12	..	29	
Turkey	..	..	6	..	..	..	64	..	..	..	..	3	..	..	..	..	2	..	..	..	..	1	..	..	..	..	24	..	..	..	
UK	..	37	32	18	..	..	19	21	40	..	..	10	11	8	..	..	9	9	7	..	..	7	8	8	..	..	18	19	19	..	

## Notes:

- Canada) The data in 1990, 1995 and 2005 is according to the data in 1988, 1998 and 2004 respectively. From 1998 to 2004: waste which generated from residential, industrial, commercial and facilities, but excluding one from construction and demolition sites.
- Mexico) The percentage of municipal waste (%); In 1990: The data in 1991; Others: Fine powder, rubber, diapers and others. Latest: The data in 2006.
- USA) Food waste: Food waste and garden pruning branches; Others: Rubber, leather, wood and various inorganic wastes.
- Japan) In 1980 : The average of 4 cities ; Others : Rubber, ceramics ; In 1985 and 1990 : Only in Tokyo area ; In 2000 : The percentage of wet weight ( % ), by the survey of Ministry of the Environment.
- South Korea) There are interruption in the time series between 1990 and 1995. In 2005: The data in 2004.
- Australia) In 1995 : The synthesis results of state research ( South Australia, New South Wales, Tasmania, Australia Special Territory, Victoria, West Australia and Queensland ) ; The data referred to various years of the early 1990s ; Others : Including Concrete ( 3% ) and wood ( 1% ).
- New Zealand) In 1995: The data is only for land filled household waste.
- Austria) In 1995, 2000 and 2005: the data in 1993, 1999 and 2004; Only household waste; Food waste: Including all organic waste. Textiles and other waste in 1999 and 2004: Including bulky refuse.
- Belgium) After 1995: Estimates of NSI; The data in 2005 is by the data in 2003; Textiles and other waste: Including large-size refuse; The data in 1980 and 1990 referred to only household waste.
- Czech Republic) In 1985 and 1995: The data in 1987 and 1996. Including incomplete estimates in trial stage; Others: Minerals, bulky waste, street scrap.
- Denmark) In 1980 ( the data in 1979 ) ; In 1985 : Only household waste ; In 1995, 2000 and 2005 ( The data in 2003 ) : The separate collection waste ( 52% of municipal waste in 2003 ).
- Finland) The data in 1990 and 1995 are substituted by the data in 1992 and 1994.
- France) Household waste excludes bulky waste e; After 1995: Municipal waste: In 1990 and 2005: The data in 1989 and 2002 are used.
- Germany) Only waste separately collected: In 1995: the data in 1993 are used; The time series was interrupted between 2000 and 2005 (the data in 2002).
- Greece) In 2000: The data in 1997 are used; Others: Inert waste and other waste are not referred to.
- Hungary) The data is based on the information of volume from Budapest; Others: Inorganic waste; In 2000 and onward, including hazardous waste.
- Iceland) Household waste; In 2005: The data in 2003 are used; Others: Diapers, waste from electronics, electrical equipment's, minerals, wax candle, etc. and also waste not specified.
- Ireland) In 1980: The data in 1979 are used; in 1995 and onward: By total amount of land filled or collected municipal waste; Others: Waste from wood, electrical and electronic equipment and from street cleaning.
- Italy) The data in 1985 and 1995 are by the data in 1986 and 1996; After 1995: Only separated collection and bulky waste (26% of general waste in 2005).
- Luxembourg) In 1985 : Only household waste ; Others : A mixture of diapers for kids, hazardous waste etc. ; After 1995 : Only separate collected waste ( 42% of general waste in 2003 ) ; In 2005 : The data in 2003 ; Plastic and metal : The volume is incomplete after 1997.
- Netherlands) In 2005: The data in 2004. Only household waste; The data is based on the contents of garbage bags (except separate collections).
- Norway) Metal in 1985: Including glass in 1995: The data in 1996; In 2005: The data in 2001. Only household waste.
- Poland) The data in 1990, 1995 and 2005 are by the data in 1989, 1994 and 2001: In 2000: Only the collection with conventional methods; Others: Wood, fine power and other waste.
- Slovakia) In 1985, 2005: The data in 1987 and 2002; Others: Ash and inert substances.
- Spain) Household waste and similar waste; In 2005: The data in 2002; Others: Batteries, rubber and wood.
- Sweden) In 1980 : Estimates for the period from 1975 - 1980 ; Paper : Including separated construction materials by emission source ; Including plastic-laminated paper ; Food : rotting waste; Fiber and sand others: Including leather and rubber; In 2000, 2005: The separate collection (34% of general waste in 2005). Excluding organic waste. Excluding separately collected waste ; In 1995, 2005 : The data in 1994, 2002 ; Others : Including mixed materials, minerals and fragments smaller than 8mm.
- Switzerland) In 1995: The data is substituted by the ones in 1993; By breakdown of household waste of municipal waste in 58 cities with populations over 20,000. Others: Including Ash, slag etc.
- Turkey) In 1990: Only household waste; The breakdown is based on limited samples; Not compatible with previous data.
- UK) Others: Fragments and mixtures. In 1995: The data in 1997 are used. In 2000: Composted kitchen organic waste, waste from gardens and soil.

## 2.39 Status of municipal waste disposal in each country

( Unit : 1,000 t )

	Year	Total disposal volume (a)	Population that can receive waste disposal services (%)	Recycling	Composting	Incineration		Landfill	Percentage of landfill of disposal (%、1995年)	Others
						Energy recovery of incineration	Total			
Canada	2004	13,375	99.0	3,582	1,669	..	..	..	..	..
Mexico	2006	36,088	90.0	1,175	-	-	-	34,913	98	..
USA	2005	222,863	100.0	52,980	18,643	30,300	30,300	120,939	57	..
Japan	2003	54,367	99.8	9,157	..	37,656	40,237	1,863	11	3,110
South Korea	2004	18,252	99.3	8,975	-	2,113	2,637	6,641	72	..
Australia	2003	8,903	..	2,701	..	..	..	6,202	..	..
New Zealand	1999	1,541	..	236	..	..	..	1,305	89	..
Austria	2004	4,588	100.0	1,218	2,052	969	969	310	36	41
Belgium	2003	4,608	100.0	1,433	1,049	1,453	1,581	533	48	..
Czech Republic	2004	2,841	100.0	36	92	396	397	2,267	..	..
Denmark	2003	3,618	100.0	925	553	1,955	1,955	184	17	..
Finland	2004	2,374	100.0	715	..	184	236	1,423	65	..
France	2005	33,963	100.0	5,380	4,870	10,805	11,475	12,238	45	-
Germany	2004	48,434	100.0	16,052	8,305	12	11,892	8,578	..	3,607
Greece	2003	4,710	100.0	382	-	-	-	4,328	93	..
Hungary	2003	4,387	89.5	117	47	245	245	3,968	91	11
Iceland	2004	147	100.0	23	13	13	13	106	75	-
Ireland	2005	2,847	76.0	964	..	..	..	1,883	92	..
Italy	2005	31,677	100.0	..	10,546	3,781	3,824	17,225	93	..
Luxembourg	2003	306	100.0	71.0	59	119	119	58	31	..
Netherlands	2004	10,161	100.0	2,581	2,387	3,281	3,281	175	30	..
Norway	2004	1,746	99.0	588	267	431	431	453	..	8
Poland	2005	9,354	..	368	318	-	44	8,623	98	..
Portugal	2005	5,009	100.0	430	314	1,057	1,057	3,210	..	..
Slovakia	2005	1,468	100.0	17	21	2	183	1,144	..	103
Spain	2004	22,735	..	2,036	7,433	1,505	1,515	11,752	80	..
Sweden	2005	4,347	100.0	1,474	454	2,182	2,182	210	35	26
Switzerland	2005	4,855	99.0	1,645	770	2,416	2,416	24	13	..
Turkey	2004	24,237	72.8	-	349	-	-	23,714	96	174
UK	2005	35,077	100.0	6,100	3,262	2,933	2,939	22,559	83	217

Notes:

- a) The total disposal amount may be smaller than the volume of all disposal because of some of processing methods (incineration, composting), which reduce emissions of waste, except where noted.
- Canada ) Total disposal amount : Only household waste ; The percentage of population that can receive treatment services : The data in 1996 ; Compost : It is generated from home and outside the home ; 9,800 million ton of household waste was land filled or incinerated in 2004. 98,000,000 tons of household waste in 2004 was incinerated or land filled
- Mexico ) Landfill: Illegal use of landfill: 11 million 528 thousand tons.
- USA ) Incineration: After collection; Landfill: After collection and incineration.
- Japan ) Total disposal amount : Waste is treated by the local government and uses separate collections for recycling by the private sector ; Recycling : Recycled ( including recovered amounts by the private sector) and recovered amount from intermediate treatment ; Incinerated disposal amount with energy recovery : Estimates ; Landfill : Directed disposal amount (excluding 6.6 million tons of residues from other treatment methods) ; Others : Intermediate treatment : Residue recovery amount by intermediate treatment is lower. Percentage of population that can receive treatment services and incineration amount with energy recovery: The data in 2002.
- South Korea ) Percentage of population that can receive treatment services and incineration amount with energy recovery: The data in 2002.
- Australia ) Data according to FY 2002 and 2003.
- New Zealand ) Recycling: Only packing waste; Landfill: Household waste. Excludes construction and demolition waste.
- Austria ) Composting: Including disposal amount by mechanical-biological facilities; Landfill: Direct transport without pre-treatment.
- Belgium ) Estimates of NSI; Recycling, landfill: Including remnants from incineration disposal.
- Czech Republic) Total disposal amount: Including the selected amount that be taken before treatment or disposal.
- Finland ) Total disposal amount: The amount that is being managed; Recycling: Including composting.
- Germany ) Incineration with energy recovery: Including energy consumption of the incineration itself; Others: other materials in recycling and the chemical treatment of waste.
- Greece ) Landfill in 1995: It is the data in 1992.
- Hungary ) Total disposal amount: Total collection amount; Landfill: Excluding remnants from other treatment methods (54,000 tons in 2003).
- Ireland ) Total disposal amount: Landfill of waste and recovery (including waste from streets); Recycling: Including composting. Percentage of population that can receive treatment: Percentage of household waste.
- Italy ) Composting: Including physical and biological treatment; Incineration: Including fuel which is derived from waste.
- Luxembourg ) Total disposal amount: Disposed domestically. (Excludes exported items).
- Netherlands ) The difference between total disposal amount and collection amounts are the amounts that are performed before treatment or disposal.
- Norway ) Only household waste; Recycling: waste from separate collection (excluding food, park and waste from garden in composting amount) Incineration: Excluding land filled remnants.
- Portugal ) Landfill: Including uncontrolled dumping place.
- Slovakia ) Group 20 of European waste list.
- Spain ) Household waste and similar waste; Recycling: separate collection.
- Sweden ) Others: Hazardous waste.
- Switzerland ) Recycling: Excluding batteries (2,400 tons) and electrical and electronic equipment (82,500 tons).
- Turkey ) Total disposal amount: Only collected amounts. Others: Dumping into lakes, oceans and rivers and incineration of waste in open areas.
- UK ) Others: Includes the process of making general waste into RDF pellets (used as fuel in power plants later).

Source: "OECD Environmental Data Compendium 2006"



## 2.40 Recycling rate of waste in each country (paper and paperboard) (a)

( Recycling rate (%): consumption (domestic production + imports - exports) ratio )

	1980	1985	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Canada	20	23	..	28	32	35	38	39	41	44	45	44	42	42	40	42	43	45	46
Mexico	..	..	..	..	..	7	7	7	7	7	7	7	7	7	7	..	7	7	7
USA	21	21	..	28	32	33	33	36	40	41	40	41	41	43	46	46	48	47	50
Japan	48	50	49	50	51	51	51	52	51	52	54	56	56	59	63	65	66	..	..
South Korea	..	..	42	44	43	44	46	51	53	55	57	58	59	60	62	64	66	69	..
Australia	..	..	..	..	..	..	..	40	42	44	49	48	51	44	49	50	48	53	53
New Zealand	..	..	..	..	..	..	..	42	47	52	55	52	52	56	53	61	69	72	72
Austria	30	37	..	52	54	56	68	66	66	71	69	65	66	64	65	61	62	63	70
Belgium	..	..	..	33	33	33	38	36	37	43	45	48	55	52	51	48	53	61	60
Czech Republic	..	..	..	..	..	..	..	..	..	38	33	38	39	42	43	45	44	43	47
Denmark	26	31	30	35	35	36	46	43	44	52	51	52	52	48	45	56	53	57	60
Finland	35	39	40	43	46	48	49	43	56	62	61	63	65	67	74	72	73	71	70
France	30	35	34	34	34	34	36	36	39	42	41	43	46	47	49	51	53	54	55
Germany	34	43	44	44	47	50	55	59	67	70	71	71	73	72	75	72	72	73	..
Greece	22	25	..	28	29	32	31	33	32	29	33	21	31	35	30	34	33	37	..
Hungary	..	..	..	..	44	36	24	36	43	45	40	43	42	42	45	45	56	50	50
Iceland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	12	13
Ireland	..	..	..	..	..	12	12	13	11	11	22	21	18	19	27	34	38	77	78
Italy	..	25	26	27	28	28	30	28	28	31	32	33	35	37	44	45	47	49	50
Luxembourg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Netherlands	46	50	48	50	54	51	55	55	59	65	58	58	57	45	64	65	69	70	72
Norway	..	..	..	29	32	38	38	41	46	49	53	54	65	57	66	68	68	72	71
Poland	34	34	33	46	48	42	14	13	28	32	34	32	32	32	32	32	35	34	34
Portugal	38	37	39	40	39	39	38	40	37	39	40	42	43	45	44	45	46	36	50
Slovakia	..	..	34	35	33	32	30	26	32	33	34	34	42	40	39	40	48	49	50
Spain	39	44	39	39	38	37	37	36	41	41	42	43	46	48	55	52	51	55	59
Sweden	34	..	..	46	46	50	50	65	70	61	69	71	71	66	68	67	..	74	..
Switzerland	35	39	47	49	51	54	54	58	61	67	63	65	64	63	69	70	70	70	74
Turkey	..	..	..	26	29	29	30	36	34	33	36	36	35	40	44	41	42	..	..
UK	32	28	31	33	34	34	32	35	35	39	41	40	40	41	44	48	50	56	..
EU-15	..	..	..	..	..	40	42	44	46	48	49	49	51	51	55	56	58	61	64

## Notes:

- a ) Recycling is defined as re-use of substance in the production process of waste treatment process, except recycling in industrial plants and thermal recycling.  
Recycling rate is ratio of the collected amount for recycling for the nominal consumption (domestic production + imports – exports). Equivalent to the collection rate of CEPI.
- Canada ) The consumption of recycled paper / paper and cardboard; The data of pulp and paper products council.  
Mexico ) Recycling rate is based on production of general waste.  
USA ) The data is the generation of substance from treatment process of general waste; Recycling rate is based on the generated amount .  
Australia ) The data of newspapers, cardboard and paper packing material; The percentage of collected paper waste for domestic paper consumption. The data is based on the information supplied from 6 major paper manufacturing companies in Australia.  
New Zealand ) The data of packing waste.  
France ) The ratio of recycled amount in the country against gross consumption.  
Germany ) From 1980 to 1989 : Only west Germany  
Iceland ) The data is based on the amount of packing waste.  
EU ) Excludes Luxembourg. In 2005: Excludes Greece.

Source: Compiled from data by OECD, CEP, and FAO.

## 2.41 Recycling rate of waste in each country (glass) (a)

( Recycling rate(%) : consumption(domestic production + imports - exports)ratio )

	1980	1985	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Canada	12	12	..	..	..	17	..	..	..	..	..	..	..	..	..	..	..	..	..
Mexico	..	..	..	..	..	13	13	13	13	13	13	13	13	13	13	..	13	13	13
USA	5	8	..	20	20	22	22	23	24	26	24	23	23	23	19	19	21	22	22
Japan	35	47	48	48	52	56	56	56	61	65	67	74	79	78	82	83	90	..	..
South Korea	..	..	49	46	45	43	44	46	57	60	68	66	66	67	69	74	70	72	..
Australia	..	..	..	..	..	36	..	..	42	..	..	..	..	40	..	..	..	38	..
New Zealand	..	..	..	..	..	..	..	36	30	35	37	40	42	42	45	45	48	50	49
Austria	..	38	..	60	60	64	68	76	..	..	88	86	84	84	83	87	86	88	83
Belgium	..	42	..	..	55	54	55	67	67	66	75	..	..	87	88	95	88	90	92
Czech Republic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Denmark	..	19	..	..	35	48	64	67	63	66	70	63	63	65	65	76	71	75	70
Finland	10	21	..	36	31	44	46	50	50	63	62	69	78	89	91	92	73	72	72
France	..	26	..	..	41	44	46	48	50	50	52	55	55	55	55	55	58	58	62
Germany	23	43	53	54	61	60	65	75	75	79	79	81	81	83	87	90	88	91	86
Greece	15	15	..	15	22	20	27	29	35	29	26	27	25	26	27	27	30	24	17
Hungary	..	..	..	..	..	..	..	..	..	..	..	..	14	..	..	..	..	..	..
Iceland	..	..	..	..	..	..	..	..	..	..	..	..	..	80	80	85	85	85	..
Ireland	8	7	..	23	23	27	29	31	39	46	38	37	35	35	40	49	67	69	81
Italy	20	25	..	..	53	53	52	54	53	53	34	37	41	40	55	52	59	61	62
Luxembourg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Netherlands	17	49	55	67	70	73	76	77	80	81	82	84	80	78	78	78	76	76	78
Norway	..	..	..	..	22	44	67	72	75	75	76	81	83	85	88	88	86	90	90
Poland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Portugal	..	10	30	27	29	31	29	32	42	42	44	42	42	41	34	35	38	39	41
Slovakia	..	..	..	..	..	..	..	..	..	..	40	..	..	..	..	..	..	..	..
Spain	..	26	24	27	27	27	29	31	32	35	37	41	40	31	33	36	38	41	45
Sweden	..	20	22	..	44	58	59	56	61	72	76	84	84	86	84	88	92	96	96
Switzerland	..	46	55	65	71	72	78	84	85	89	91	91	93	91	92	94	96	96	95
Turkey	..	33	33	31	28	40	29	26	24	25	32	31	32	31	33	36	32	..	..
UK	5	12	17	21	21	25	27	27	26	26	25	26	31	36	36	37	42	48	..
EU-15	..	..	..	..	49	51	52	52	..	..	53	..	..	54	58	59	60	63	65

## Notes:

a ) Recycling is defined as re-use of substances in the production process of waste treatment process, except recycling in industrial plants and thermal recycling. Recycling rate is a ratio of the collected amount for recycling for nominal consumption (domestic production + imports – exports).

Canada ) Only packing glass

Mexico ) Recycling rate is based on the amount of municipal waste generated.

USA ) The data is that of the substances generated from the treatment process of municipal waste; Recycling rate is on the generation basis .

Japan ) Excluding returnable bottles; The data are ratios of recycled glass as cullet for the domestic product of glass bottles.

New Zealand ) Only packing glass

France ) The percentage of collection for nominal consumption (FEVE)

Germany ) From 1980 to 1990: Only West Germany; After 1990: Total of Germany; Recycling rate is based on total sales.

Netherlands) The percentage of collected glass at the collection place for product sales of disposable glass in the domestic market.

Norway) Excludes the volume equivalent to that of glass collected before processing of waste treatment.

UK Only Great Britain; Glass collected from bottle-collection stations from industrial sources (bottling business and the packers) and board glass.

EU ) Excludes Luxembourg.

Source: "OECD Environmental Data Compendium 2006"

## 2.42 Generation and movement of hazardous waste in each country

(Unit: 1 000 t)

	Year	(b)	Occurrence			Export (c)	Management	Management and disposal (d)						
			A	B	C			A + B - C	Recovery	Biological and physicochemical treatment	Heat treatment	Landfill	Releases to water	Others
Canada	1996	-	..	467	198	..	..	..	..	..	..	..	..	..
	2000	-	..	560	324	..	..	..	..	..	..	..	..	..
	2001	-	..	500	313	..	..	..	..	..	..	..	..	..
	2002	-	..	423	340	..	..	..	..	..	..	..	..	..
	2003	-	..	417	321	..	..	..	..	..	..	..	..	..
	2004	-	..	416	308	..	..	..	..	..	..	..	..	..
	2005	-	..	476	328	..	..	..	..	..	..	..	..	..
Mexico	1999	N	3,183	265	33	3,415	1,583	1,583	..	..	..	..	..	..
	2000	N	3,706	277	97	3,886	86	86	135	..	..	..	..	..
	2001	..	..	254	1,876	..	132	132	20	..	..	..	..	..
	2002	..	..	326	864	..	311	811	7	..	..	..	..	..
	2003	..	..	295	63	..	1,013	1,013	36	..	..	..	..	..
	2004	..	..	303	309	..	416	416	13	..	..	..	..	..
	2005	..	..	510	150	..	408	408	..	..	..	..	..	..
USA	1997	N	36,901	..	..	34,222	4,808	4,808	1,503	26,301	..	..	..	..
	1999	N	36,312	..	..	23,868	3,521	3,521	1,319	17,771	..	..	..	..
	2001	N	37,033	..	..	41,211	5,023	5,023	1,493	23,829	..	..	..	2,137
	2003	N	27,376	..	..	38,189	4,108	4,108	1,155	17,719	..	..	..	7,027
	2005	N	34,788	..	..	39,848	4,481	4,481	1,305	24,786	..	..	..	3,830
Japan	1995	N	2,583	1	3	2,581	..	..	..	..	..	..	..	..
	1996	N	3,158	9	2	3,165	..	..	..	..	..	..	..	..
	1997	N	2,994	8	6	2,996	..	..	..	..	..	..	..	..
	1998	N	2,653	0.8	2	2,652	..	..	..	..	..	..	..	..
	1999	N	3,306	2	3	3,305	..	..	..	..	..	..	..	..
	2000	..	..	4	2	..	..	..	..	..	..	..	..	..
	2001	..	..	4	2	..	..	..	..	..	..	..	..	..
	2002	..	..	3	2	..	..	..	..	..	..	..	..	..
	2003	..	..	5	7	..	..	..	..	..	..	..	..	..
	2004	..	..	4	14	..	..	..	..	..	..	..	..	..
	2005	..	..	5	7	..	..	..	..	..	..	..	..	..
	2006	..	..	4	17	..	..	..	..	..	..	..	..	..
	2007	..	..	6	49	..	..	..	..	..	..	..	..	..
	2008	..	..	4	54	..	..	..	..	..	..	..	..	..
	2009	..	..	4	85	..	..	..	..	..	..	..	..	..
South Korea	1995	N	1,622	2	..	1,624	781	..	252	80	181	..	509	..
	2000	N	2,779	17	..	2,796	1,400	..	603	336	..	..	269	..
	2001	N	2,858	14	..	2,872	1,471	..	648	332	92	..	329	..
	2002	N	2,915	15	..	2,930	1,702	..	488	506	..	..	219	..
	2003	N	2,913	44	..	2,957	1,695	..	501	519	..	..	198	..
Australia	2000	-	..	..	25	..	..	..	..	..	..	..	..	..
	2001	-	649	2	17	634	..	..	..	..	..	..	..	..
	2002	-	642	..	..	..	..	..	..	..	..	..	..	..
New Zealand	2001	-	..	..	2	..	..	..	..	..	..	..	..	..
	2002	-	..	2	6	..	..	..	..	..	..	..	..	..
	2003	-	..	15	6	..	..	..	..	..	..	..	..	..
	2004	-	..	39	..	..	..	..	..	..	..	..	..	..
Austria	1996	N	608	20	40	588	..	..	106	..	..	..	..	..
	1997	N	629	27	56	600	..	..	..	..	..	..	..	..
	1998	N	979	15	68	926	..	..	..	..	..	..	..	..
	1999	N	1,021	16	109	928	..	..	110	..	..	..	..	..
	2000	N	1,035	..	..	..	..	..	..	..	..	..	..	..
	2001	N	1,026	..	..	..	..	..	..	..	..	..	..	..
	2002	N	920	..	..	..	..	..	..	..	..	..	..	..
	2004	N	1,014	59	236	837	443	190	186	..	..	..	..	18
Belgium	1999	N	..	437	748	..	634	634	129	631	..	631	..	..
	2000	-	..	476	849	..	..	..	..	..	..	..	..	..
	2001	-	..	605	746	..	..	..	..	..	..	..	..	..
	2003	-	..	868	792	..	..	..	..	..	..	..	..	..
Czech Republic	2000	-	2,630	..	1	2,630	1,008	754	6	299	..	..	199	..
	2001	-	2,817	..	5	2,812	1,003	824	5	394	..	..	148	..
	2002	-	1,311	..	4	1,307	323	300	24	135	..	..	525	..
	2003	N	1,219	..	7	1,212	392	428	38	200	..	..	86	..
	2004	N	1,447	..	9	1,438	412	521	31	152	..	..	39	..
	2005	N	1,372	..	9	1,363	430	658	32	72	..	..	46	..
Denmark	1999	N	231	86	153	347	230	..	..	117	..	..	..	..
	2000	N	183	116	225	287	184	..	..	103	..	..	..	..
	2001	N	200	117	344	346	195	..	..	161	..	..	..	..
	2002	N	248	95	268	333	159	..	..	175	..	..	..	..
	2003	N	328	161	521	416	200	..	..	216	..	..	..	..
	2004	N	342	125	429	426	212	..	..	217	..	..	..	..
	2005	N	340	147	464	423	182	..	..	241	..	..	..	..
Finland	2001	N	827	..	..	827	189	..	75	563	..	..	..	..
	2002	N	1,188	18	60	1,188	200	..	77	911	..	..	..	..
	2004	N	2,349	32	81	2,300	169	..	242	1,818	..	..	..	71
France	1995	N	..	479	49	..	172	324	1,193	747	..	..	..	7
	1996	N	..	569	88	..	171	301	1,288	689	..	..	..	1
	1997	N	..	410	203	..	209	288	1,238	707	..	..	..	1
	1998	N	..	514	146	..	222	302	1,361	803	..	..	..	..
	1999	N	9,000	573	168	9,405	..	..	..	722	..	..	..	..
	2000	N	9,150	769	192	9,727	..	..	1,600	809	..	..	..	..
	2004	N	..	824	664	..	..	..	..	..	..	..	..	..
Germany	1995	N	..	241	740	..	..	..	..	..	..	..	..	..
	1996	N	12,128	254	822	11,559	3,511	1,823	1,351	4,198	..	..	1,255	..
	2000	N	14,937	665	278	15,324	2,991	2,500	1,582	4,686	..	..	3,178	..
	2001	N	15,830	799	270	16,051	3,536	2,474	1,510	4,678	..	..	3,632	..
	2002	-	19,636	1,089	224	20,501	5,056	2,865	1,875	5,545	..	..	4,295	..
	2003	N	19,515	1,244	186	20,572	5,373	2,797	2,117	5,035	..	..	4,192	..
	2004	N	18,401	1,635	195	19,841	8,954	3,678	1,075	3,515	..	..	1,178	..
Greece	2002	N	353	..	..	..	53	..	..	..	..	..	..	242
	2003	N	354	..	..	..	60	..	..	..	..	..	..	235
Hungary	1997	-	601	..	..	..	..	..	..	..	..	..	..	..
	1998	-	908	..	..	..	..	..	..	..	..	..	..	..
	1999	-	914	..	..	..	..	..	..	..	..	..	..	..
	2000	-	951	..	..	..	..	..	..	..	..	..	..	..
	2001	-	893	..	..	..	..	..	..	..	..	..	..	..
	2002	-	543	..	..	..	..	..	..	..	..	..	..	..
Iceland	1999	-	8	..	2	6	6	..	..	..	..	..	..	..
	2000	-	7	..	1	6	6	..	..	..	..	..	..	..
	2001	-	8	..	2	6	6	..	..	..	..	..	..	..
	2002	-	8	..	2	6	6	..	..	..	..	..	..	..
	2003	-	8	..	4	4	4	..	..	..	..	..	..	..
	2004	-	8	..	4	4	4	..	..	..	..	..	..	..
Ireland	1996	N	328	..	52	276	139	7	46	33	..	..	..	..
	1998	N	370	..	100	271	153	13	66	41	..	..	..	..
	1999	..	..	..	145	..	..	..	..	..	..	..	..	..
	2000	..	..	..	137	..	..	..	..	..	..	..	..	..
	2001	..	492	..	275	216	317	22	64	35	..	..	..	3
	2004	..	674	..	470	204	208	292	102	23	..	..	..	1
Italy	2000	N	3,911	..	..	4,954	1,815	1,415	475	601	..	..	649	..
	2001	N	4,279	..	..	5,949	1,853	1,886	456	803	..	..	952	..
	2002	N	5,025	..	..	6,706	1,756	3,141	493	626	..	..	689	..
	2003	N	5,440	..	..	7,006	2,126	3,029	424	756	..	..	671	..
	2004	N	5,365	..	..	6,996	1,659	2,977	500	875	..	..	385	..
Luxembourg	1998	N	201	23	184	40</								

## 2.42 Generation and movement of hazardous waste in each country

(Unit: 1 000 t)

	Year	( b )	Occurrence			Management	Management and disposal ( d )					
			A	B	C		A + B - C	Recovery	Biological and physicochemical treatment	Heat treatment	Landfill	Releases to water
Netherlands	1996	..	1 016	259	202	..	153	234	162	117	..	..
	1997	..	1 277	243	298	..	138	355	149	146	..	..
	1998	..	1 600	246	267	..	278	601	246	372	..	..
	1999	..	1 500	200	314	..	283	532	290	353	..	..
	2000	..	1 785	144	478	..	339	627	389	390	..	..
	2001	..	..	237	435	..	..	..	..	..	..	..
	2002	..	2 160	..	..	..	557	78	215	593	739	..
Norway	1999	N	594	62	56	600	110	293	..	110	..	61
	2000	N	673	56	26	..	..	..	..	..	..	62
	2001	N	655	204	38	..	..	..	..	..	..	51
	2003	N	825	..	77	..	125	..	..	546	..	77
	2004	N	940	..	81	..	76	..	..	672	..	80
	2005	N	939	..	66	..	64	..	..	722	..	87
Poland	1998	N	1 105	..	..	..	367	..	..	160	..	..
	2000	N	1 601	..	..	..	491	..	..	96	..	..
	2001	N	1 308	..	..	..	406	..	..	63	..	..
	2002	N	1 029	..	..	..	491	..	..	150	..	..
	2003	N	1 339	..	..	..	525	..	..	254	..	..
	2004	N	1 349	..	..	..	508	..	..	234	..	..
Portugal	2001	N	1 779	..	..	..	541	..	..	317	..	..
	2002	N	254	74	48	279	..	..	..	..	..	..
	2002	N	205	13	74	144	..	..	..	..	..	..
	2003	..	..	0.9	89	..	..	..	..	..	..	..
	2004	..	..	0.7	112	..	..	..	..	..	..	..
Slovakia	2000	N	1 627	..	..	1 627	239	985	89	195	..	119
	2001	N	1 663	0.6	..	1 663	283	842	94	179	..	235
	2002	N	1 441	1	0.8	1 441	230	918	61	135	..	34
	2003	N	1 258	4	2	1 259	354	468	40	208	..	21
	2004	N	1 021	0.6	3	1 019	288	471	49	118	..	10
Spain	2000	N	3 063	205	59	3 209	1 300	1 090	84	1 472	..	..
	2001	N	3 223	206	60	3 369	..	..	..	..	..	..
	2002	N	3 223	152	141	3 235	..	..	..	..	..	..
	2003	N	3 223	234	43	3 414	..	..	..	..	..	..
	2004	N	3 534	..	..	..	2 306	..	124	1 237	..	..
Sweden	2001	..	..	123	111	..	..	..	..	..	..	..
	2002	N	..	..	..	676	..	..	..	..	..	..
	2003	..	..	189	140	..	..	..	..	..	..	..
	2004	N	1 354	..	..	..	..	..	..	..	..	..
Switzerland	1996	N	874	14	124	764	47	246	298	173	..	..
	1997	N	948	21	122	847	46	246	334	221	..	..
	1998	N	1 044	20	123	940	74	277	371	219	..	..
	1999	N	999	18	113	903	70	234	366	234	..	..
	2000	N	1 115	..	136	989	63	228	417	282	..	..
	2001	N	1 134	..	131	1 013	78	267	425	243	..	..
	2002	N	1 112	14	122	1 004	78	245	415	266	..	..
	2003	..	..	15	138	..	..	..	..	..	..	..
	2004	..	..	29	154	..	..	..	..	..	..	..
	2004	N	..	..	..	..	..	..	..	..	..	..
UK	1995	N	2 160	55	7	2 208	..	..	..	..	..	..
	1996	N	2 677	111	12	2 776	..	..	..	..	..	..
	1997	N	5 101	137	18	5 220	..	..	..	..	..	..
	1998	N	5 069	91	14	5 146	558	1 585	98	2 324	..	345
	2000	N	5 419	..	..	..	1 026	1 556	100	2 041	..	473
	2001	N	5 526	..	..	..	1 045	1 576	102	2 054	..	436
	2002	N	5 370	..	..	..	1 163	1 330	95	1 986	..	485
	2003	N	4 991	..	..	..	1 041	1 335	89	1 801	..	506
	2004	N	5 285	..	..	..	985	1 410	98	2 294	..	499

## Notes:

- a: Hazardous wastes are referred to the flow of waste by Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and their Disposal ("a complete definition and administrative" and "movements and disposal methods" are referred the Basel Convention Annex IV). These values must be dealt carefully with because the definition of countries may be differ.
- b: "-" is by the definition of the Basel Convention. "N" is includes the waste catalog of each country or Europe by other definitions.
- c: Import, export: It should be actual movements, but it may be total reported amount.
- d: The landfill includes land management, high depth injection, surface disposal and special management of landfills. Including the released estimates in addition to injection into seabed, inland and seawater areas.  
Others includes disposal methods, such as other management and permanent storage.
- Canada ) The management and disposal methods in 1991: Only Ontario (about 32% of total generation). Release to water is only after proper treatment; Others: It is included permanent storage (280,800 t). 1.1 million tons of hazardous waste were treated and destroyed in 2000.
- Mexico ) The generated amounts in 1990, 1992 and 2000: Estimates; The data in 1996, 1999 and 2000 are based on the survey in 1996 (an investigation of 3000 companies in 1996, 12,514 companies Recovery; Recycling and reuse.
- USA ) The interrupted time series ; Excluding waste water for the data after 1997 ( in 1997 : 40,765.3 million tons ) ; The interrupted time series in 2001 : Because reporting requirements changed. Including wastewater; Management volume: Excluding the managed volume of only storage.
- South Korea ) The interrupted time series in 1991 and 1994; Transfers: It is by defined in the Basel Convention.
- Australia ) In 1992: Only Victoria.
- New Zealand ) Copper ammonium chloride was imported 160,000 liters more in 2004.
- Austria ) The amount is the amount of waste in early stages.
- Belgium ) The management and disposal: The state's estimates based on various administrative articles. Including all of the hazardous waste (defined by region).
- Czech Republic ) The time series interrupted by new waste law in 1998 and 2002. After 1998, it included hazardous waste of the living system.
- Denmark ) The data of hazardous waste is by the catalog of Europe waste. ; Amount: The amount of movement waste of early development. ; By enforcement notice; Management volume: Waste amount of early stage and second stage. ; For recovery, including physical and chemical treatment before incineration with energy recovery.
- Finland ) The management amount after 1997 and 2000: Amount of yield and reported, except pre-treatment (92,000 tons in 1997, 124,000 tons in 2000) 2000 and 2002: each amount of 600,000 tons and 400,000 tons of waste were newly classified as being hazardous. Transfers: The waste was regulated by 259/93/EC of regulation.
- France ) Amount generated: The total estimate amount of substances defined as special industrial waste by the legislative of France. ; Amount of treatment and waste: Excluding internal treatment by The data is interrupted time series by change classification in law in 1996.
- Germany ) It is a hazardous waste from management of site damage ( It was needed a power of attorney until 2003 ) ; measuring method was changed in 2004 ; Others : Temporary storage ; Transportation : in 1990 - 1993 and January to May in 1994 : It is only the final disposal of waste ; The data is based on domestic law ; In 1994 (July to December) and in 1995 - 2004 : The PCB in 1997 - 2003: Waste is by the catalog of European waste; Heat treatment in 2000: Including the burning of medical waste. ; Others in 1998 - 2000: Temporary storage preceded the final disposal.
- Hungary ) Occur: The time series was interrupted in 1995 and 1996; In 1990. Including red clay. In 1995: Excluding red clay.
- Ireland ) Amount: Including the reported waste and non-reported waste, contaminated soil (307,000 tons in 2004) and on-site treatment. ; Treatment: Including on-site treatment, treatment outside country (470 tons of exported waste in 2004) and contaminated soil; Excluding non-reported waste.
- Italy ) The definition ( country ) of hazardous waste is based on the catalog of European waste : After 1997 : The management volume is more than the generated amount because it included stored In1990 - 2002 : All converted waste to European waste list ( 2002 ) as special waste by the laws of the Netherlands ; amount in 1990: includes contaminated soil ; In1992 - 2002 : Excluding contaminated soil ; The imports are occupied contaminated soil mainly until 1999 ; Management and disposal : Including the amount treated abroad ; Before 1997 : Excluding temporary storage.
- Norway ) The data in 1990 is the estimate based on conducted statistics in 1998. Excluding on-site treatment. ; Transfers: Excluding slag of aluminum salt; Import in 1996: Mostly the ash is imported from Denmark. ; In 1998 - 1999: The total amount does not match the national movement and management and management It was treated by the pre-treatment to remove water by burning small amount of waste oil and lipophilic waste before burning. Physical and chemical treatment: Landfill which is utilizing the special technology forinorganic hazardous waste. In 2003: A new type of waste is defined as hazardous waste by the law of country. The data contain special waste, which is not included in the Basel Convention; After 1998: The data is by new classification based on the catalog of European waste. In 1994: It is estimates volume.
- Poland ) Amount generated: The data in reference to the catalog of European waste; In 2004: It is a provisional data; Landfill: Including permanent preservation.
- Portugal ) Management amount in 1998: The time series is interrupted; The data: It is by reported amount.
- Spain ) Amount: All of waste is defined as special waste by the Swiss law.
- Sweden ) Amount before 1997 : It is defined by the Control Pollution ; After 1997 : It is by the defined special waste of the Control Pollution in 1996 and the hazardous waste list ( EC, 904 in 1994 ) ; In 1996 : The definition has changed in the year, and the data is by new and old regulations ; Transfers before 1995: It is based on "Tran frontier Shipment of Waste Regulation" in 1998. ; After 1995: It is based on "Tran frontier Shipment of Waste Regulation" in 1994; In1994 is based on legal reported amount of England and Wales (until 2003); Others: Short term storage and long term storage.

Source: Compiled from OECD materials

## 2.43 Performance records of Environment-related ODA

### Performance records in line with aid form

( Based on aid commitments, unit: million dollar &amp; % )

	Grant aid		Government aid, etc.		Technical aid		Total
2010	989.07	(27.1)	7,395.19	(68.3)	210.96	(6.0)	8,595.21 (47.7)
2011	1,044.35	(27.4)	4,039.98	(47.3)	240.57	(6.2)	5,324.91 (32.8)
2012	450.54	(13.5)	5,824.26	(56.5)	373.29	(10.1)	6,648.08 (38.4)
2013	524.46	(9.2)	6,552.38	(49.8)	265.26	(9.3)	7,342.10 (33.8)
2014	270.81	(10.0)	6,665.68	(61.2)	251.60	(9.5)	7,188.09 (44.3)

## Notes:

- The data are based on DAC\_CRG statistics.
- The figures in ( ) under the column of types of aids indicate the ratio of each type to the total.
- ( ) under the total column is percentage of total environment-related ODA in the grand total ODA amount..
- Includes aids for graduated countries.

Source: "ODA reference handbook 2015," Ministry of Foreign Affairs.

### Small classification of aid between the two countries.

( Based on aid commitments, unit: million dollar &amp; % )

Year	Conservation of environment in general		Biodiversity		Climate change		Combat Desertification		Total
					Alleviation	Adaptation			
2010	29.76	(0.3)	1,082.74	(12.6)	6,609.80 (76.9)	2,257.15 (26.3)	273.85	(3.2)	8,595.21
2011	25.27	(0.5)	1,476.98	(27.7)	3,827.78 (71.9)	2,368.74 (44.5)	585.09	(11.0)	5,324.91
2012	22.55	(0.3)	450.10	(6.8)	4,486.03 (67.5)	2,479.20 (37.3)	367.89	(5.5)	6,648.08
2013	18.33	(0.2)	109.11	(1.5)	5,278.82 (71.9)	2,224.54 (30.3)	116.64	(1.6)	7,342.10
2014	19.45	(0.2)	1,124.00	(15.6)	4,787.22 (66.6)	2,329.02 (32.4)	147.36	(2.1)	7,188.09

## Notes:

- The data are based on DAC\_CRG statistics (however, the data includes Eastern Europe and graduated countries).
- ( ) are the rate (%) to the total each year.
- Biodiversity, Climate change and Combat Desertification comprise overlapping data in line with multiple conventions, totals do not foot.
- Includes aids for graduated countries.

Source: "ODA reference handbook 2015," Ministry of Foreign Affairs.

### Breakdown of Technical Aid (Number of persons)

	Accepted trainees	Dispatched experts	Dispatched Japan Overseas Cooperation Volunteers
2010	2,558	1,867	158
2011	2,497	1,012	167
2012	6,289	2,911	158
2013	4,316	3,352	131
2014	2,869	2,886	73

## Note:

- The data are based on DAC\_CRG statistics (including graduated countries.)
- "Dispatched Japan Overseas Cooperation Volunteers" do not include other volunteers such as Overseas cooperation senior volunteers and the like.

Source: "ODA reference handbook 2015," Ministry of Foreign Affairs.