



Ministry of the Environment
and Water Resources



KEY ENVIRONMENTAL STATISTICS 2017



Clean Air

Pollutant	Averaging Time	Unit	2014	2015 ⁴	2016	2020 Air Quality Target for Singapore ¹
Sulphur Dioxide (SO ₂)	24-hour ² Annual	µg/m ³ µg/m ³	83 12	75 12	61 13	50 15
Nitrogen Dioxide (NO ₂)	1-hour ² Annual	µg/m ³ µg/m ³	121 24	99 22	123 26	200 40
Carbon Monoxide (CO)	1-hour ² 8-hour ²	mg/m ³ mg/m ³	2.7 1.8	3.5 3.3	2.7 2.2	30 10
Ozone	8-hour ²	µg/m ³	135	152	115	100
Particulate Matter (PM) 10	24-hour ³ Annual	µg/m ³ µg/m ³	75 30	186 37	61 26	50 20
Particulate Matter (PM) 2.5	24-hour ³ Annual	µg/m ³ µg/m ³	51 18	145 24	40 15	37.5 12

¹ Singapore's 2020 air quality targets are benchmarked against the World Health Organisation's (WHO) Interim Targets and Air Quality Guidelines. For SO₂ and PM2.5, Sustainable Singapore Blueprint 2020 annual targets are 15µg/m³ and 12µg/m³ respectively.

² Maximum 24-hour, 8-hour or 1-hour

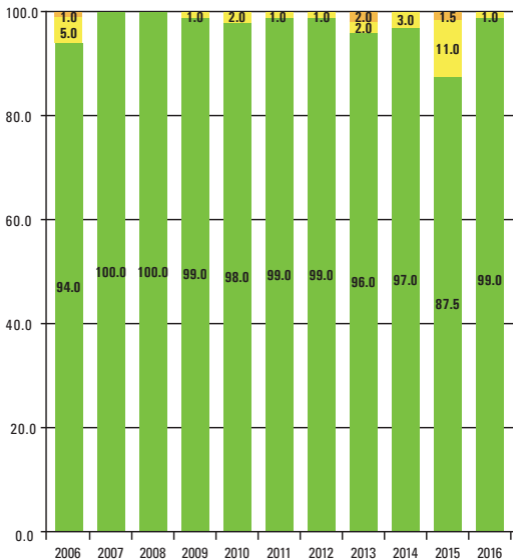
³ 99th percentile

⁴ PM10, PM2.5 and CO levels in 2015 were severely affected by transboundary haze from the overseas land and forest fires

Air Quality in terms of PSI¹

- Very Unhealthy & Hazardous
- Unhealthy
- Good & Moderate

Percentage of days in year (%)



¹ PSI includes Sulphur Dioxide (SO₂), Particulate Matter (PM₁₀), Particulate Matter (PM_{2.5}), Nitrogen Dioxide (NO₂), Carbon Monoxide (CO) and Ozone (O₃). Figures are rounded to the nearest 0.5.

Solid Waste Management

Solid Waste Management	Unit	2014	2015	2016
Total waste generated ¹	Mil tonnes/yr	7.51	7.67	7.81
Total waste recycled ²	Mil tonnes/yr (%)	4.47 (60%)	4.65 (61%)	4.77 (61%)
Total waste incinerated	Mil tonnes/yr (%)	2.87 (38%)	2.83 ⁶ (37%)	2.83 ⁶ (36%)
Total waste landfilled ³	Mil tonnes/yr (%)	0.17 (2%)	0.19 (2%)	0.22 (3%)
Total domestic waste disposed of ⁴	Mil tonnes /yr	1.65	1.65 ⁶	1.66 ⁶
Total domestic waste disposed of per capita ⁴	Kg a day / person	0.83	0.83	0.83
Domestic recycling rate ^{2,4}	%	20%	20%	21%
Total non-domestic waste disposed of ⁴	Mil tonnes /yr	1.39	1.37 ⁶	1.39 ⁶
Total non-domestic waste disposed of per \$billion GDP ⁴	Tonnes a day/ GDP (\$billion)	9.9	9.7	9.8
Non-domestic recycling rate ^{2,4}	%	75%	76%	76%
Total energy produced from incineration	MWh	1,260,027	1,265,567	1,200,456
Lifespan of landfill ⁵	Years	36	36	36

¹ Total waste generated = Total waste recycled + Total waste incinerated + Total waste landfilled

² Sustainable Singapore Blueprint target for 2030 is 70% for overall recycling rate, 30% for domestic recycling rate and 81% for non-domestic recycling rate.

³ Total waste landfilled includes non-incinerable waste such as construction and demolition waste, used slag and treated sludge etc. and excludes incineration ash generated from waste disposed through incineration.

⁴ The figures were revised due to a waste vehicle reclassification exercise.

⁵ Measured from the start of the lifespan of Semakau landfill, i.e. 1999.

⁶ Figures exclude metals recovered from Incineration Bottom Ash.

Waste Stream	Amount of Waste Generated (Mil tonnes/yr)	Amount of Waste Recycled (Mil tonnes/yr)	Recycling Rate (%)
Construction Debris	1.60	1.59	99
Used Slag	0.25	0.25	98
Ferrous Metal	1.36	1.35	99
Scrap Tyres	0.03	0.03	91
Non-ferrous Metals	0.10	0.10	99
Wood/Timber	0.53	0.41	78
Horticultural Waste	0.32	0.21	65
Paper/Cardboard	1.18	0.61	51
Glass	0.07	0.01	20
Food	0.79	0.11	14
Ash and Sludge	0.23	0.03	12
Textile/Leather	0.15	0.01	7
Plastics	0.82	0.06	7
Others (e.g. stones, ceramics, silt etc.)	0.38	0.01	2
Total	7.81	4.77	61

The figures may not add up to the total due to rounding off.

Wood and horticultural waste recycled include 0.36 million tonnes used as fuel in biomass power plants.

Environmental Health

Vector Control	2014	2015	2016
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No. of local dengue (DF ¹ and DHF ²) cases per 100,000 population	325.6	196.1	229.9
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Cleanliness and Food Hygiene	2014	2015	2016
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No. of food outlet-related food poisoning outbreaks per 1,000 NEA-licensed food establishments	2.1	0.7	2.0
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No. of NEA-licensed food establishments	35,522	36,311	37,246
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Grading issued to Food Shops³

- Grade A (% of total)	8,520 (75%)	9,245 (77%)	9,798 (78%)
- Grade B (% of total)	2,745 (24%)	2,652 (22%)	2,714 (22%)
- Grade C (% of total)	141 (1%)	94 (1%)	71 (1%)
- Grade D (% of total)	0 (0%)	0 (0%)	0 (0%)

Grading issued to Food Stalls^{4,5}

- Grade A (% of total)	4,445 (34%)	4,749 (36%)	4,920 (37%)
- Grade B (% of total)	8,241 (64%)	8,368 (63%)	8,291 (62%)
- Grade C (% of total)	220 (2%)	150 (1%)	108 (1%)
- Grade D (% of total)	0 (0%)	0 (0%)	0 (0%)

Grading issued to Hawker stalls⁶

- Grade A (% of total)	1,733 (31%)	1,901 (34%)	2,609 (36%)
- Grade B (% of total)	3,857 (68%)	3,606 (65%)	3,638 (63%)
- Grade C (% of total)	41 (1%)	26 (1%)	23 (1%)
- Grade D (% of total)	0 (0%)	0 (0%)	0 (0%)

¹ Dengue Fever (DF) is caused by infection with a dengue virus [Source: Ministry of Health].

² Dengue Haemorrhagic Fever (DHF) is a severe form of dengue fever that could result in death [Source: Ministry of Health].

³ Food shops refer to establishments which are licensed to retail food (e.g. food court).

⁴ Food stalls refer to smaller compartmentalised units which are housed within a food shop.

⁵ The percentages for the figures may not add up to 100 percent due to rounding off.

⁶ Hawker stalls refer to smaller compartmentalised units which are housed within hawker centres owned by MEWR and the Housing and Development Board.

Water Resource Management

	Water Resource Management	Unit	2014	2015	2016
Access	Improved Drinking Water Sources ¹	% access	100	100	100
	Improved Sanitation ²	% access	100	100	100
System Efficiency	Tests meeting WHO drinking water quality guidelines	%	100	100	100
	Unaccounted for water	%	5.2	5.0	5.0
	No. of leaks per 100 km of potable water pipelines	No.	5.4	5.7	4.6
	No. of disruptions per month per 1,000 km of sewers	No.	11	10.6	10.5
	Flood prone areas	Hectares	34	32	30.5
Supply	No. of reservoirs in Singapore	No.	17	17	17
	Sale of potable water in Singapore				
	-Domestic	Mil m ³	291.2	297.1	301.4
	-Non-domestic	Mil m ³	215.1	217.6	215.6
	Sale of NEWater	Mil m ³	117.1	124.8	126.6
	Sale of Industrial Water	Mil m ³	27.6	25.0	21.0
	Volume of used water treated	Mil m ³	571.1	574.8	594.6

¹ As defined by the World Health Organisation (WHO), i.e. water sources that, by nature of construction or through active intervention, are protected from outside contamination. These include piped water into premises, protected dug well etc.

² As defined by WHO, i.e. sanitation facilities that hygienically separate human excreta from human contact. These include flush/pour flush toilets or latrines connected to a sewer, septic tank etc.

Water Demand and Management	Unit	2014	2015	2016
Household water consumption per capita ¹	Litres/day	150	151	148
Public Outreach	Unit	2014	2015	2016
No. of lifestyle events held at reservoirs and waterways	No.	465	398	419
No. of completed ABC Waters projects (cumulative) ²	No.	26	31	36

¹ From 2016 onwards, indicator has been revised from “Domestic water consumption per capita” to “Household water consumption per capita”, which refers to water consumption within household premises only (i.e. usage in purpose built dormitories and common areas are excluded). The actual performances in 2014 and 2015 based on the revised formula are 149. Sustainable Singapore Blueprint target for 2030 is 140 L/day.

² Figures include projects carried out by public agencies and exclude test-bedding projects.

Climate Change and Energy Efficiency

Climate Change / Energy Statistics	Unit	2014	2015	2016
Total greenhouse gas emissions ^{1,2}	KtCO ₂ e	49,975	51,432	NA ⁴
Energy consumption per dollar GDP (% improvement from 2005 levels) ²	%	25.8	25.5	NA ⁴
Grid emissions factor ³	kgCO ₂ /kWh	0.4332	0.4313	NA ⁴
Domestic electricity use per capita	MWh	1.27	1.30	1.35

¹ Estimated using Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories. International Bunker fuels are excluded in accordance with United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines.

² Figures may be periodically updated as more accurate data becomes available. For the latest figures, please visit: <http://www.mewr.gov.sg/grab-our-research/climate-change-and-energy-efficiency>.

³ Computed by Energy Market Authority. About 95% of electricity in 2016 was generated by natural gas.

⁴ Data will be available in 2018.

Regional and International Collaboration

Environmental agreements that Singapore has ratified / acceded to	Date of ratification / accession
Comprehensive Safeguards Agreement with a Small Quantities Protocol	18 Oct 77
Vienna Convention for the Protection of the Ozone Layer	5 Jan 89
Montreal Protocol on Substances that Deplete the Ozone Layer	5 Jan 89
1990 London Amendment to Montreal Protocol	2 Mar 93
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	2 Jan 96
United Nations Framework Convention on Climate Change	29 May 97
Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency	15 Jan 98
Convention on Early Notification of a Nuclear Accident	15 Jan 98
Convention on Nuclear Safety	15 Mar 98
1992 Copenhagen Amendment to Montreal Protocol	22 Sep 00
1997 Montreal Amendment to Montreal Protocol	22 Sep 00
ASEAN Agreement on Transboundary Haze Pollution	13 Jan 03
Stockholm Convention on Persistent Organic Pollutants	24 May 05
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	24 May 05
Kyoto Protocol of the United Nations Framework Convention on Climate Change	12 Apr 06
1999 Beijing Amendment to the Montreal Protocol on Substances That Deplete the Ozone Layer	10 Jan 07
Additional Protocol for the Application of Safeguards	31 Mar 08
Modified Small Quantities Protocol for the Application of Safeguards	31 Mar 08
Convention on the Physical Protection of Nuclear Material (CPPNM)	22 Oct 14
Paris Agreement of the United Nations Framework Convention on Climate Change	4 Nov 16

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