



# KEY ENVIRONMENTAL STATISTICS 2015



Ministry of the Environment  
and Water Resources

# Clean Air

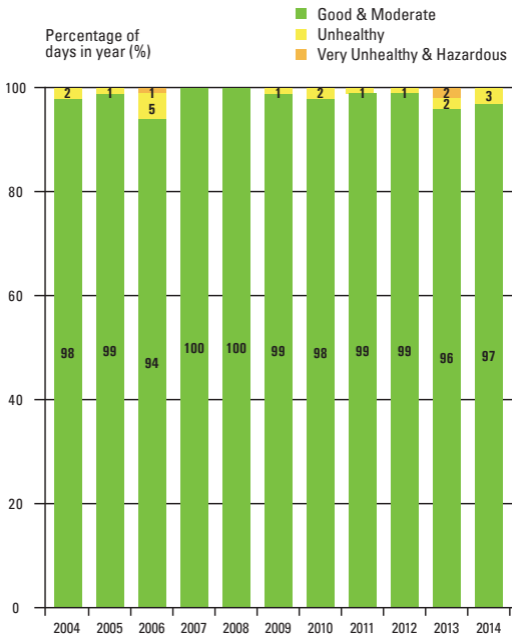
Pollutant	Averaging Time	Unit	2012	2013	2014	2020 Air Quality Target for Singapore <sup>1</sup>
Sulphur Dioxide (SO <sub>2</sub> )	24-hour <sup>2</sup>	µg/m <sup>3</sup>	98	75	83	50
	Annual	µg/m <sup>3</sup>	13	14	12	15
Nitrogen Dioxide (NO <sub>2</sub> )	1-hour <sup>2</sup>	µg/m <sup>3</sup>	154	132	121	200
	Annual	µg/m <sup>3</sup>	25	25	24	40
Carbon Monoxide (CO)	1-hour <sup>2</sup>	mg/m <sup>3</sup>	2.4	7.5	2.7	30
	8-hour <sup>2</sup>	mg/m <sup>3</sup>	1.9	5.5	1.8	10
Ozone	8-hour <sup>2</sup>	µg/m <sup>3</sup>	122	139	135	100
Particulate Matter (PM) 10	24-hour <sup>3</sup>	µg/m <sup>3</sup>	57	215	75	50
	Annual	µg/m <sup>3</sup>	29	31	30	20
Particulate Matter (PM) 2.5	24-hour <sup>3</sup>	µg/m <sup>3</sup>	42	176	51	37.5
	Annual	µg/m <sup>3</sup>	19	20	18	12

<sup>1</sup> Singapore's 2020 air quality targets are benchmarked against the World Health Organisation's (WHO) Interim Targets and Air Quality Guidelines. For SO<sub>2</sub> and PM2.5, Singapore's Sustainable Blueprint 2020 annual targets are 15 µg/m<sup>3</sup> and 12µg/m<sup>3</sup> respectively.

<sup>2</sup> Maximum 24-hour, 8-hour or 1-hour

<sup>3</sup> 99th percentile

# Air Quality in terms of PSI<sup>1</sup>



<sup>1</sup> PSI includes Sulphur Dioxide (SO<sub>2</sub>), Particulate Matter (PM<sub>10</sub>), Particulate Matter (PM<sub>2.5</sub>), Nitrogen Dioxide (NO<sub>2</sub>), Carbon Monoxide (CO) and Ozone (O<sub>3</sub>).

# Solid Waste Management

Solid Waste Management	Unit	2012	2013	2014
Total waste generated <sup>1</sup>	Mil tonnes/yr	7.27	7.85	7.51
Total waste recycled <sup>2</sup>	Mil tonnes/yr (%)	4.34 (60%)	4.83 (61%)	4.47 (60%)
Total waste incinerated	Mil tonnes/yr (%)	2.73 (37%)	2.82 (36%)	2.87 (38%)
Total waste landfilled <sup>3</sup>	Mil tonnes/yr (%)	0.20 (3%)	0.20 (3%)	0.17 (2%)
Total domestic waste disposed of	Mil tonnes /yr	1.65	1.70	1.74
Total domestic waste disposed of per capita	Kg a day / person	0.85	0.87	0.87
Domestic recycling rate <sup>2</sup>	%	21%	20%	19%
Total non-domestic waste disposed of	Mil tonnes /yr	1.28	1.32	1.30
Total non-domestic waste disposed of per \$billion GDP <sup>4</sup>	Tonnes a day/ GDP (\$billion)	9.9	9.8	9.4
Non-domestic recycling rate <sup>2</sup>	%	75%	77%	76%
Total energy produced from incineration	MWh	1,250,203	1,263,554	1,260,027
Lifespan of landfill <sup>5</sup>	Years	35-45	35-45	36

<sup>1</sup> Total waste generated = Total waste recycled + Total waste incinerated + Total waste landfilled

<sup>2</sup> Singapore's Sustainable Blueprint target for 2030 is 70% for overall recycling rate, 30% for domestic recycling rate and 81% for non-domestic recycling rate.

<sup>3</sup> 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.

<sup>4</sup> The figures were revised with the rebasing of the national accounts by Department of Statistics.

<sup>5</sup> Measured from the start of the lifespan of Semakau landfill, i.e. 1999.

Waste Stream	Amount of Waste Generated (Mil tonnes/yr) <sup>1</sup>	Amount of Waste Recycled (Mil tonnes/yr) <sup>1</sup>	Recycling Rate (%)
Construction Debris	1.27	1.26	99
Used Slag	0.37	0.36	99
Ferrous Metal	1.45	1.39	96
Scrap Tyres	0.03	0.02	88
Non-ferrous Metals	0.12	0.09	80
Wood/Timber	0.37	0.29 <sup>2</sup>	80
Paper/Cardboard	1.20	0.65	52
Horticultural Waste	0.28	0.16 <sup>2</sup>	59
Glass	0.08	0.02	20
Food	0.79	0.10	13
Textile/Leather	0.16	0.02	11
Plastics	0.87	0.08	9
Others (e.g. e-waste, ceramics, silt etc.)	0.36	0.01	1
Ash and Sludge	0.15	0.02	15
<b>Total</b>	<b>7.51</b>	<b>4.47</b>	<b>60</b>

<sup>1</sup> The figures may not add up to the total due to rounding off.

<sup>2</sup> Includes 0.20 million tonnes used as fuel in biomass power plants.

# Environmental Health

## Vector Control

	2012	2013	2014
No. of local dengue (DF <sup>1</sup> and DHF <sup>2</sup> ) cases per 100,000 population	82.7	404.9	325.7

## Cleanliness and Food Hygiene

	2012	2013	2014
No. of food outlet-related food poisoning outbreaks per 1,000 NEA-licensed food establishments	3.2	3.2	2.1
No. of NEA-licensed food establishments	34,390	34,736	35,522

### Grading issued to Food Shops<sup>3</sup>

- Grade A (% of total)	8,645 (69%)	7,903 (72%)	8,520 (75%)
- Grade B (% of total)	3,563 (29%)	2,855 (26%)	2,745 (24%)
- Grade C (% of total)	279 (2%)	163 (2%)	141 (1%)
- Grade D (% of total)	0 (0%)	0 (0%)	0 (0%)

### Grading issued to Food Stalls<sup>4,5</sup>

- Grade A (% of total)	5,679 (32%)	4,454 (34%)	4,445 (34%)
- Grade B (% of total)	11,066 (63%)	8,219 (63%)	8,241 (64%)
- Grade C (% of total)	730 (4%)	341 (3%)	220 (2%)
- Grade D (% of total)	0 (0%)	0 (0%)	0 (0%)

### Grading issued to Hawker stalls<sup>6</sup>

- Grade A (% of total)	1,303 (27%)	1,724 (30%)	1,733 (31%)
- Grade B (% of total)	3,452 (71%)	4,024 (69%)	3,857 (68%)
- Grade C (% of total)	91 (2%)	62 (1%)	41 (1%)
- Grade D (% of total)	0 (0%)	0 (0%)	0 (0%)

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

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

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

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

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

<sup>6</sup> Hawker stalls refer to smaller compartmentalised units which are housed within NEA-managed hawker centres.

# Water Resource Management

"Water For All"					
	Water Resource Management	Unit	2012	2013	2014
Access	Improved Drinking Water Sources <sup>1</sup>	% access	100	100	100
	Improved Sanitation <sup>2</sup>	% access	100	100	100
System Efficiency	Tests meeting WHO drinking water quality guidelines	%	100	100	100
	Unaccounted for water	%	4.7	5.2	5.2
	No. of leaks per 100 km of potable water pipelines	No.	6.2	5.5	5.4
	No. of disruptions per month per 1,000 km of sewers	No.	13	12	11
	Flood prone areas <sup>3</sup>	Hectares	40	36	34
Supply	No. of reservoirs in Singapore	No.	17	17	17
	Sale of potable water in Singapore				
	-Domestic	Mil m <sup>3</sup>	284.4	286.7	291.2
	-Non-domestic	Mil m <sup>3</sup>	206.5	211.9	215.1
	Sale of NEWater	Mil m <sup>3</sup>	111.4	114.1	117.1
	Sale of Industrial Water	Mil m <sup>3</sup>	25.3	27.6	27.6
	Volume of used water treated	Mil m <sup>3</sup>	575.0	585.2	571.1

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> Figures for 2012 are based on data over a financial year (period from 1<sup>st</sup> Apr of the year to 31<sup>st</sup> Mar of the following year). Figures for 2013 onwards will be based on data over a calendar year (period from 1<sup>st</sup> Jan to 31<sup>st</sup> Dec of the year).

**“Conserve, Value, Enjoy”**

<b>Water Demand and Management</b>	<b>Unit</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
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Domestic water consumption per capita <sup>1</sup>	Litres/day	152	151	150
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<b>Public Outreach</b>	<b>Unit</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
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No. of lifestyle events held at reservoirs and waterways <sup>2</sup>	No.	547	515	465
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No. of ABC waters projects completed by PUB (cumulative) <sup>2</sup>	No.	20 <sup>3</sup>	23 <sup>3</sup>	26
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<sup>1</sup> Singapore’s Sustainable Blueprint target for 2030 is 140 L/day.

<sup>2</sup> Figures for 2012 are based on data over a financial year (period from 1<sup>st</sup> Apr of the year to 31<sup>st</sup> Mar of the following year). Figures for 2013 onwards will be based on data over a calendar year (period from 1<sup>st</sup> Jan to 31<sup>st</sup> Dec of the year).

<sup>3</sup> Figures are revised to include projects carried out by public agencies and exclude test-bedding projects.



# Climate Change and Energy Efficiency

Climate Change / Energy Statistics	Unit	2012	2013	2014
CO <sub>2</sub> emissions from combustion of fossil fuels <sup>1,2</sup>	Kt	44,646	43,201	NA <sup>4</sup>
Energy consumption per dollar GDP (% improvement from 2005 levels) <sup>2</sup>	%	21.3	25.6	NA <sup>4</sup>
Carbon intensity of electricity generation <sup>3</sup>	kgCO <sub>2</sub> /kWh	0.4912	0.4499	NA <sup>4</sup>
Domestic electricity use per capita	MWh	1.27	1.25	1.27
<b>Green Vehicles<sup>5</sup></b>				
-Natural gas vehicles	No.	5,058	4,587	4,222
-Hybrid vehicles	No.	4,810	5,683	7,407
-Electric vehicles	No.	12	7	6

<sup>1</sup> The figures do not include non-CO<sub>2</sub> greenhouse gases and CO<sub>2</sub> emissions from other sources such as waste incineration. The predominant greenhouse gas in Singapore is CO<sub>2</sub> that arises from the combustion of fossil fuels. Bunker fuels are excluded in accordance with United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines.

<sup>2</sup> The figures were revised based on updated natural gas calorific values and more granular natural gas consumption data provided by Energy Market Authority in 2014.

<sup>3</sup> Computed by Energy Market Authority. About 90% of electricity in 2013 is generated by natural gas using efficient combined cycle technology.

<sup>4</sup> Data for 2014 will be available in the last quarter of 2015.

<sup>5</sup> Exclude tax exempted vehicles and vehicles for off-the-road use.

# 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

# Published by the Ministry of the Environment and Water Resources



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and Water Resources**

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ISSN: 1793-4524

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