

Key Environmental Statistics 2021



Ministry of Sustainability
and the Environment
— SINGAPORE —

The COVID-19 pandemic in 2020 has led to prevalent work from home arrangements and overall decline in economic activities. Indices affected are indicated with an * in the following sections:

- **Clean Air**
- **Solid Waste Management**
- **Environmental Health**
- **Food Safety and Supply Resilience**
- **Water Resource Management**
- **Climate Change and Energy Efficiency**

Clean Air

Pollutant	Averaging Time	2018	2019	2020	2020 Air Quality Target for Singapore ¹
Sulphur Dioxide (SO₂)* (µg/m ³)	24-hour ²	65	57	30	50
Nitrogen Dioxide (NO₂)* (µg/m ³)	1-hour ² Annual	147 26	156 23	118 20	200 40
Ozone (O₃) (µg/m ³)	8-hour ²	150	125	145	100
Particulate Matter PM10* (µg/m ³)	24-hour ³ Annual	59 29	90 30	43 25	50 20
Particulate Matter PM2.5* (µg/m ³)	24-hour ³ Annual	32 15	62 16	24 11	37.5 12
Carbon Monoxide (CO)* (mg/m ³)	1-hour ² 8-hour ²	2.5 2.0	2.3 1.7	1.6 1.2	30 10

Air Quality in terms of PSI⁴

Percentage of days in a year when Pollutant Standards Index (PSI) is in the	2018	2019 ⁵	2020
Good & Moderate range	100%	97%	100%
Unhealthy range	0%	3%	0%

¹ Singapore's 2020 air quality targets are benchmarked against the World Health Organisation's (WHO) Interim Targets and Air Quality Guidelines, except for the PM2.5 annual targets. Our PM2.5 annual target is more stringent than WHO's interim target.

² Maximum 24-hour, 8-hour or 1-hour

³ 99th percentile

⁴ PSI includes Sulphur Dioxide (SO₂), Particulate Matter (PM10), Particulate Matter (PM2.5), Nitrogen Dioxide (NO₂), Carbon Monoxide (CO) and Ozone (O₃). Figures are rounded to the nearest 0.5.

⁵ Air quality was affected by transboundary smoke haze from land and forest fires in 2019.

Solid Waste Management*

	Unit	2018	2019	2020
Total waste generated¹	Mil tonnes/yr	7.70	7.23	5.88
Total waste recycled²	Mil tonnes/yr %	4.73 ⁶ 61%	4.25 59%	3.04 52%
Total waste incinerated³	Mil tonnes/yr %	2.74 ⁶ 36%	2.74 38%	2.62 44%
Total waste landfilled⁴	Mil tonnes/yr %	0.23 3%	0.24 3%	0.22 4%
Total domestic waste disposed of³	Mil tonnes/yr	1.56	1.55	1.53
Total domestic waste disposed of per capita	Kg a day /person	0.79	0.78	0.75
Domestic recycling rate²	%	22%	17%	13%
Total non-domestic waste disposed of³	Mil tonnes/yr	1.41 ⁶	1.44	1.31
Total non-domestic waste disposed of per \$billion GDP	Tonnes a day/GDP (\$billion)	9.1 ⁶	8.9	8.2
Non-domestic recycling rate²	%	75% ⁶	73%	68%
Total energy produced from incineration	MWh	1,162,408	1,173,202	1,060,607

Lifespan of landfill⁵

36 years

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 Figures exclude metals recovered from Incineration Bottom Ash.

⁴ 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.

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

⁶ Figures were revised following a review of the waste and recycling statistics in 2019.

Solid Waste Management*

Waste Stream	Amount of Waste Generated (Tonnes/yr)	Amount of Waste Recycled (Tonnes/yr)	Recycling Rate 2020 (%)	Change from 2019 Recycling Rate (%)
Paper/Cardboard	1,144,000	432,000	38	-6
Ferrous metal	934,000	930,000	99	0
Plastics	868,000	36,000	4	0
Construction & Demolition	825,000	822,000	99	0
Food	665,000	126,000	19	1
Horticultural	313,000	249,000	80	7
Wood	304,000	195,000	64	-2
Ash & sludge	228,000	16,000	7	-3
Textile/Leather	137,000	6,000	4	0
Used slag	106,000	104,000	99	1
Non-ferrous metal	75,000	73,000	98	-1
Glass	66,000	7,000	11	-3
Scrap tyres	23,000	22,000	95	1
Others (stones, ceramics, rubber etc.)	193,000	21,000	11	4
Overall	5,880,000	3,040,000	52	-7

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

Metal recovered from incineration bottom ash for recycling is excluded from waste disposed of.

Wood and horticultural waste recycled include 406,000 tonnes sent to facilities (e.g. biomass power plants and Sembcorp's Energy from Waste plant) for use as fuel.

Environmental Health

Vector Control	2018	2019	2020
No. of local dengue (DF¹ and DHF²) cases per 100,000 population*	54.4	275.4	620.4

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].

Food Safety and Supply Resilience

Food Safety	2018	2019	2020
Foodborne illness cases related to foodborne outbreak# per 100,000 population*¹ (#≥15 people affected per outbreak)		21.6 ²	7.8
No. of SFA-licensed local farms (land-based and sea-based)	223	222	238
No. of SFA-licensed food establishments³ (non-retail and retail)	36,175	36,957 ⁴	37,421
No. of SFA-licensed hawkers (hawker stalls⁵ and street hawkers)	13,921	13,882	13,958

Food Supply Resilience	2018	2019	2020
No. of the 5 most commonly consumed food items (fish, eggs, chicken, pork and leafy vegetables) that has less than 50% of supply from a single country	3	3	3

¹ This food safety indicator harmonises former AVA and NEA's food safety indicators, to cover foodborne illnesses across the whole food supply chain from farm-to-fork, including retail.

² 2019 figures have been updated to include the count of cases from four foodborne outbreak incidents that were pending conclusion of investigations as of 25 June 2020.

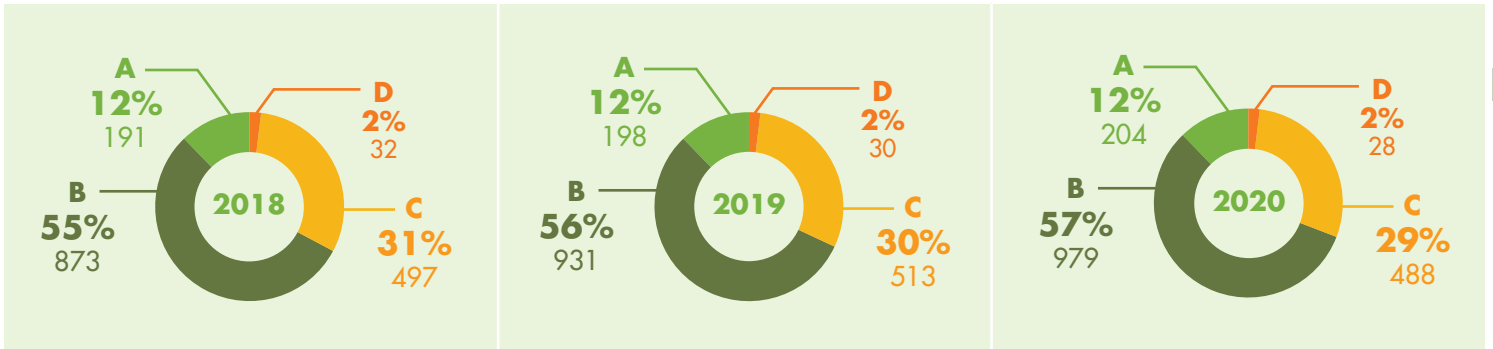
³ Comprises non-retail food establishments (e.g. food manufacturers, cold stores, slaughterhouses); and retail food establishments (e.g. coffee shops, restaurants, cafes, takeaway shops, supermarkets, and food caterers).

⁴ Data reported for 2019 had duplicate counts in food shops, food stalls and private markets. Adjustments have been made to rectify the duplicate counts.

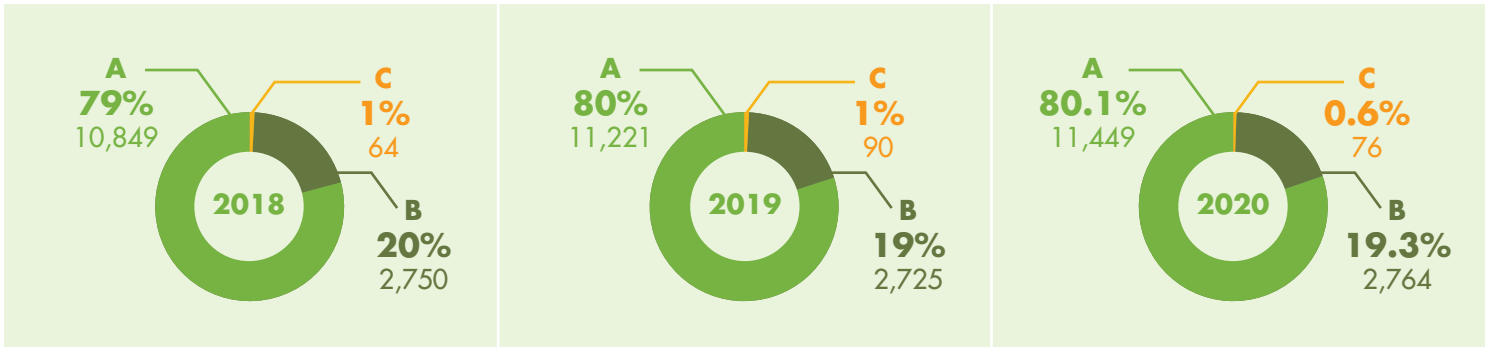
⁵ Hawker stalls refer to smaller compartmentalised units which are housed within markets/food centres owned by MSE and HDB (excludes private markets/food centres of other Statutory Boards, e.g. SLA's Lau Pa Sat and JTC's Jurong Port Road Food Centre).

Grading Issued to Food Establishments and Hawkers⁶

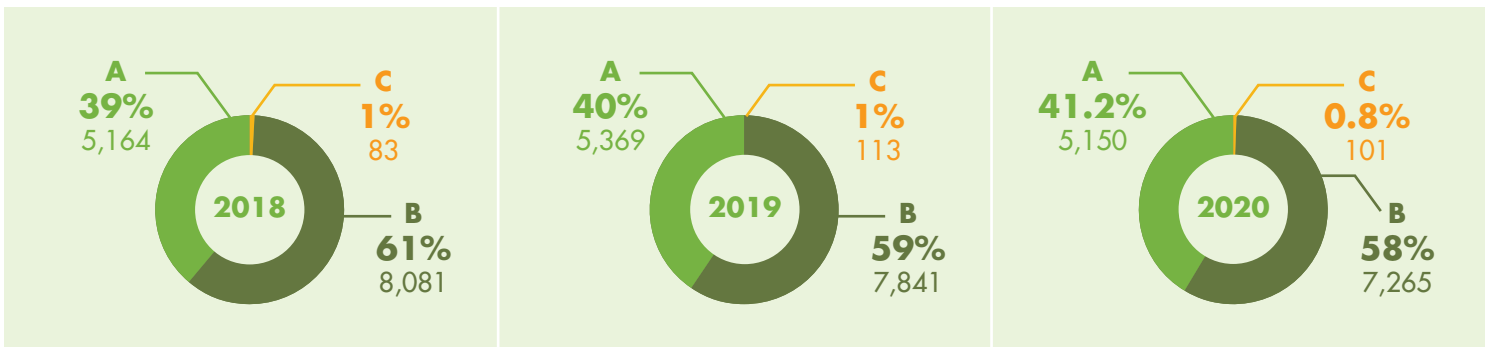
Non-retail Food Establishments⁷



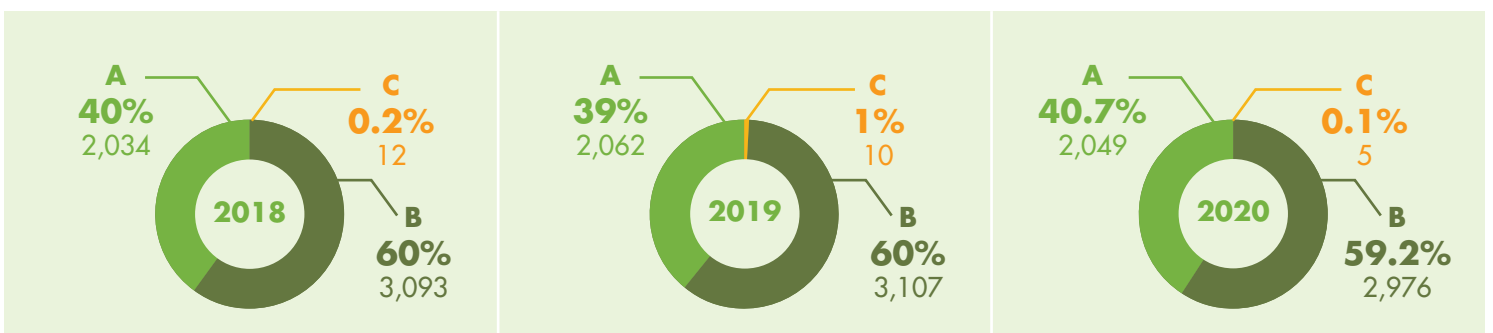
Food Shops⁸



Food Stalls⁹



Hawker Stalls



⁶ There is no grading for private markets, supermarkets and street hawkers. Percentages for the figures may not add up to 100 percent due to rounding off.

⁷ Non-retail food establishments refer to food processing establishments where food is manufactured, processed, prepared or packed for the purpose of distribution to wholesalers and retailers.

⁸ Food shops refer to establishments which are licensed to retail food businesses (e.g. food court).

⁹ Food stalls refer to smaller compartmentalised units which are housed within a food shop.

Water Resource Management

Access	2018	2019	2020
Improved Drinking Water Sources ¹	100%		
Improved Sanitation ²			
Tests meeting WHO drinking water quality guidelines			

System Efficiency	2018	2019	2020
Distribution Losses (%)	8.3%	8.2%	8.0%
No. of leaks per 100 km of potable water pipelines*	4.6	5.3	3.8
No. of disruptions per month per 1,000 km of sewers (average over a year)	10.3	10.4	10.0
Flood prone areas (Hectares)	29.0	29.0	28.0

Supply	2018	2019	2020
No. of reservoirs in Singapore	17		
Sale of potable water in Singapore (Mil m ³)			
• Domestic*	294.2	297.6	320.7
• Non-domestic*	201.3	202.6	180.5
Sale of NEWater* (Mil m ³)	140.5	145.5	141.1
Sale of Industrial Water* (Mil m ³)	20.6	17.9	13.0
Volume of used water treated* (Mil m ³)	585.8	577.6	608.1

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 Resource Management

Water Demand and Management	2018	2019	2020
Per Capital Household Water Consumption*¹ (Litres/Day)	141	141	154

Public Outreach	2018	2019	2020
No. of lifestyle events held at reservoirs and waterways*	366	244	16
No. of ABC Waters projects completed by PUB (Cumulative)²	41	44	47



¹ A new target of 130 L/day by 2030 was set in 2018.

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

Climate Change and Energy Efficiency

Climate Change/Energy	Unit	2018	2019	2020
Total greenhouse gas emissions ^{1,2}	KtCO ₂ e	52,178	51,570	NA ³
Energy consumption per dollar GDP (% improvement from 2005 levels) ²	%	35.1%	36.0%	NA ³
Grid emissions factor ^{2,4}	kgCO ₂ /kWh	0.4206	0.4085	NA ³
Domestic electricity use per capita ^{*4,5}	MWh	1.28	1.35	1.45

¹ Estimated using 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories and Global Warming Potential values from the IPCC 5th Assessment Report. 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 (e.g. from the refrigeration and air-conditioning sector) are made available.

³ Data will be available in 2022.

⁴ Data obtained from Energy Market Authority.

⁵ Data obtained from Department of Statistics.

Regional & International Collaboration

Environmental agreements that Singapore has ratified / acceded to

10 Mar 1976

- ▶ Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

5 Jan 1989

- ▶ Vienna Convention for the Protection of the Ozone Layer
- ▶ Montreal Protocol on Substances that Deplete the Ozone Layer

2 Jan 1996

- ▶ Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

22 Sep 2000

- ▶ 1992 Copenhagen Amendment to Montreal Protocol
- ▶ 1997 Montreal Amendment to Montreal Protocol

14 Jan 2003

- ▶ ASEAN Agreement on Transboundary Haze Pollution

12 Apr 2006

- ▶ Kyoto Protocol to the United Nations Framework Convention on Climate Change

31 Mar 2008

- ▶ Additional Protocol for the Application of Safeguards
- ▶ Modified Small Quantities Protocol for the Application of Safeguards

2014

- 22 Sep** ▶ Convention on the Physical Protection of Nuclear Material (CPPNM)
- 23 Sep** ▶ Doha Amendment to the Kyoto Protocol

22 Oct

- ▶ Amendment to the Convention on the Physical Protection of Nuclear Material

22 Sep 2017

- ▶ Minamata Convention on Mercury

18 Oct 1977

- ▶ Comprehensive Safeguards Agreement with a Small Quantities Protocol

2 Mar 1993

- ▶ 1990 London Amendment to Montreal Protocol

1997

29 May

- ▶ United Nations Framework Convention on Climate Change

15 Dec

- ▶ Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency
- ▶ Convention on Early Notification of a Nuclear Accident
- ▶ Convention on Nuclear Safety

10 Nov 2001

- ▶ Comprehensive Nuclear Test-Ban Treaty (CTBT)¹

24 May 2005

- ▶ Stockholm Convention on Persistent Organic Pollutants
- ▶ Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

10 Jan 2007

- ▶ 1999 Beijing Amendment to the Montreal Protocol on Substances That Deplete the Ozone Layer

12 Jul 2012

- ▶ ASEAN Plus Three Emergency Rice Reserve Agreement

21 Sep 2016

- ▶ Paris Agreement under the United Nations Framework Convention on Climate Change

30 Oct 2018

- ▶ Protocol to amend ASEAN Plus Three Emergency Rice Reserve Agreement

¹ This agreement is not yet in force

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