

Environmental Performance Indicators

ENVIRONMENT	SINGTEL			OPTUS			SINGTEL GROUP		
	2022	2021	2020	2022	2021	2020	2022	2021	2020
Total Greenhouse Gas (GHG) emissions, (tonnes CO₂ equivalent)¹	3,630,397	3,613,093	162,566	4,180,961	4,836,897	427,706	7,811,358	8,449,990	590,272
Scope 1 and Scope 2 (market-based) GHG emissions	100,427	104,403	157,391	394,253	428,458	415,072	494,680	532,861	572,463
(i) Scope 1	4,743	5,749	3,741	1,579	1,894	2,140	6,322	7,643	5,881
Fugitive emissions - refrigerants ²	3,184	4,369	2,545	195	215	134	3,379	4,584	2,679
Fuel combustion - stationary	1,059	828	484	286	364	304	1,345	1,192	788
Fuel combustion - mobile	500	552	712	1,098	1,315	1,702	1,598	1,867	2,414
(ii) Scope 2									
Electricity (location-based) ³	109,535	110,292	168,679	425,015	426,564	412,932	534,550	536,856	581,611
Electricity (market-based) ³	95,684	98,654	153,650	392,674	426,564	412,932	488,358	525,218	566,582
(iii) Scope 3⁴	3,529,970	3,508,690	5,175	3,786,708	4,408,439	12,634	7,316,678	7,917,129	17,809
Category 1: Purchased goods and services	1,776,125	1,649,793	N.A.	2,397,584	3,124,287	N.A.	4,173,709	4,774,080	N.A.
Category 2: Capital goods	687,465	851,233	N.A.	1,193,179	1,055,409	N.A.	1,880,644	1,906,642	N.A.
Category 3: Fuel and energy-related emissions	18,190	18,283	N.A.	43,007	41,981	N.A.	61,197	60,264	N.A.
Category 4: Upstream transportation and distribution ⁵	0	0	N.A.	0	0	N.A.	0	0	N.A.
Category 5: Waste generated in operations	712	694	N.A.	189	183	N.A.	901	877	N.A.
Category 6: Business travel ⁶	337	4	3,040	581	95	4,853	918	99	7,893
Category 7: Employee commute ⁷	297	441	1,731	3,011	4,517	6,643	3,308	4,958	8,374
Category 8: Upstream leased assets ⁸	0	0	N.A.	0	0	N.A.	0	0	N.A.
Category 9: Downstream transportation and distribution ⁹	0	0	254	5,690	9,385	1,138	5,690	9,385	1,392
Category 10: Processing of sold products ¹⁰	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Category 11: Use of sold products	92,295	101,929	N.A.	139,941	168,718	N.A.	232,236	270,647	N.A.
Category 12: End-of-life treatment of sold products	334	376	N.A.	1,027	1,169	N.A.	1,361	1,545	N.A.
Category 13: Downstream leased assets	127,578	113,252	N.A.	0	0	N.A.	127,578	113,252	N.A.
Category 14: Franchises	211	149	150	2,499	2,695	N.A.	2,710	2,844	150
Category 15: Investments	826,426	772,536	N.A.	0	0	N.A.	826,426	772,536	N.A.
GHG emissions intensity (tCO₂e/\$\$million revenue)¹¹	482	483	20	535	592	51	509	540	36
GHG emissions intensity (tCO₂e/TB)¹²	0.0134	0.0165	0.0325	0.0598	0.0778	0.1102	0.0351	0.0450	0.0665

1. GHG emissions are derived in accordance with the requirements of the "GHG Protocol Corporate Accounting and Reporting Standard" and "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). The equivalent CO₂ emissions for electricity used are calculated based on the updated simple operating margin grid emission factors from the National Environment Agency, Energy Market Authority and electricity supplier emission factor in Singapore for the relevant time period and from Australian National Greenhouse Gas Account factors for grid emissions relating to the corresponding states in Australia. Scope 1 direct emissions and Scope 3 indirect emissions are calculated using: Supplier specific emissions factors, updated BEIS (Department for Business, Energy & Industrial Strategy) Greenhouse Gas reporting: conversion factors, National Greenhouse and Energy Reporting Scheme (NGERS), USEPA GHG Emission Factors (April 2022) and Singapore's Fourth Biennial Update Report. Relevant emission factors were sourced from: Life Cycle Assessment (LCA) report on Singapore NEWater, various Australian and international Life Cycle Inventory (LCI) databases (Aus LCI Version 1.31 and Australasian LCI Version 2014.09 databases), and Australian Mobile Telecommunications Association (AMTA)'s End-of-Life Management Options for Mobile Telephones in Australia were applied to consumption category of primary data to calculate Scope 3 indirect emissions. For spend based category data, emissions factors from the LCI database Exiobase (v3.3) implemented in SimaPro 9.1.1.1 were applied by economic sectors and geographic regions to calculate the Scope 3 indirect emissions.
2. Optus uses a combination of air, water and refrigerant cooling systems.
3. Restated and reclassified to Scope 3 Category 13 for Singtel Scope 2 numbers for FY2021. Market-based emissions are reported based on emission factor of electricity suppliers, onsite renewable energy and retired RECs.
4. New reporting of full 15 categories from FY2021.
5. Reported in Scope 3 Category 1 and 2 emissions.
6. The reduction in business air travel is due to travel restriction arising from the COVID-19 pandemic.

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	2022	2021	2020	2022	2021	2020	2022	2021	2020
Total energy use (GJ)¹³	995,848	999,254	1,466,802	1,952,477	1,909,806	1,834,722	2,948,325	2,909,060	3,301,524
Total energy use (MWh)¹³	276,624	277,571	407,445	542,355	530,501	509,645	818,979	808,072	917,090
Energy intensity (GJ/\$million revenue)¹³	132	134	180	250	234	219	192	186	200
Energy intensity (GJ/TB)¹³	0.13	0.16	0.30	0.30	0.35	0.49	0.21	0.25	0.38
(i) Electricity use (GJ) ¹³	966,485	971,968	1,448,584	1,932,128	1,885,253	1,805,476	2,898,613	2,857,221	3,254,060
Electricity use (MWh) ¹³	268,468	269,991	402,384	536,702	523,681	501,521	805,170	793,672	903,905
(ii) Fuel use (GJ)	21,058	18,902	16,748	19,885	24,089	28,782	40,943	42,991	45,530
Fuel use (MWh)	5,849	5,251	4,652	5,524	6,691	7,995	11,373	11,942	12,647
(iii) Solar energy (GJ)	8,305	8,384	1,470	464	464	464	8,769	8,848	1,934
Solar energy (MWh)	2,307	2,329	408	129	129	129	2,436	2,458	537
Purchased Renewable Energy Certificates/Large-scale Generation Certificates (MWh)	2,000	1,000	N.A.	42,000	0	N.A.	44,000	1,000	N.A.
Potable water use (m³)¹⁴	631,230	623,588	683,847	36,234	47,262	57,861	667,464	670,850	741,708
Use of recycled water instead of potable water (m³)¹⁵	280,805	225,453	180,799	5,885	13,027	10,876	286,690	238,480	191,675
Water intensity (m³/\$million revenue)	121	114	106	N.A.	N.A.	N.A.	62	58	56
Total waste (tonnes)	3,325	4,150	7,658	627	771	883	3,952	4,921	8,541
Non-hazardous waste	1,018	1,047	1,567	432	446	690	1,450	1,493	2,257
Hazardous waste	2,307	3,103	6,091	195	325	193	2,502	3,428	6,284
Waste diverted from disposal by recovery operation (tonnes)¹⁶									
Non-hazardous waste: Preparation for reuse/recycle ¹⁷	219	162	N.A.	88	129	N.A.	307	291	N.A.
Hazardous waste: Preparation for reuse/recycle ¹⁷	1,920	2,866	N.A.	190	323	N.A.	2,110	3,189	N.A.
Waste directed to disposal by disposal operation (tonnes)¹⁶									
Non-hazardous waste: Incineration (with energy recovery)	799	885	N.A.	0	0	N.A.	799	885	N.A.
Hazardous waste: Incineration (with energy recovery)	387	237	N.A.	0	0	N.A.	387	237	N.A.
Non-hazardous waste: Landfill ¹⁷	0	0	N.A.	344	317	N.A.	344	317	N.A.
Hazardous waste: Landfill ¹⁷	0	0	N.A.	5	2	N.A.	5	2	N.A.
Customer e-waste recycling (tonnes)	35	47	66	6	3	4	41	50	70

*TB refers to terabyte of data transported across our network.

7. The significant reduction in employee commute is due to the implementation of our work-from-home arrangement from April 2020 to March 2022, in response to the COVID-19 pandemic. Singtel's emissions are reported with employees numbers since FY2020. Optus data updated with new survey conducted in 2019 and applies to Optus Sydney campus for FY2020. Emissions reported is actual employee commute data and applies to Optus Sydney campus since FY2021.
8. Reported in Scope 1, 2 and Scope 3 Category 1 and 2 emissions for any upstream leased assets.
9. Reported in Scope 3 Category 1 and 15 for Singtel.
10. Not applicable as Singtel Group does not manufacture any products or sell products that require additional processing by the customer to use.
11. Restated for Singtel and Singtel Group numbers for FY2021. Covers Scope 1, 2 and 3.
12. Restated for Singtel and Singtel Group numbers for FY2021. Covers Scope 1 and 2 only.
13. Restated for Singtel and Singtel Group numbers for FY2021.
14. All potable water withdrawn from municipal third-party water supplies and categorised as freshwater. Water stress areas are not applicable as the company does not contribute to the country's ability, or lack thereof, to meet the human and ecological demand for water. Covers Optus Sydney campus and Optus Melbourne office for FY2020 and FY2021. Covers all Optus corporate offices in Australian capital cities with the exception of Perth for FY2022.
15. Recycled water consists of NEWater and rainwater harvesting. NEWater is high-grade reclaimed water used mainly for operational activities such as cooling in Singapore. Rainwater harvesting is installed in Optus Sydney campus.
16. New GRI standards indicators tracked from FY2021.
17. Data covers waste directly managed by Optus' contracted waste vendor.