03 Environment
The Smallest Footprint

We are committed to minimising our environmental impact and building operational resilience to the effects of climate change for our business and the communities.

The Singtel Group Environment Strategy guides our focus on climate action and product stewardship (see Figure 1). More information is on our **website**.

Figure 1:
Singtel Group's Environment Strategy

ADDRESSING CLIMATE CHANGE

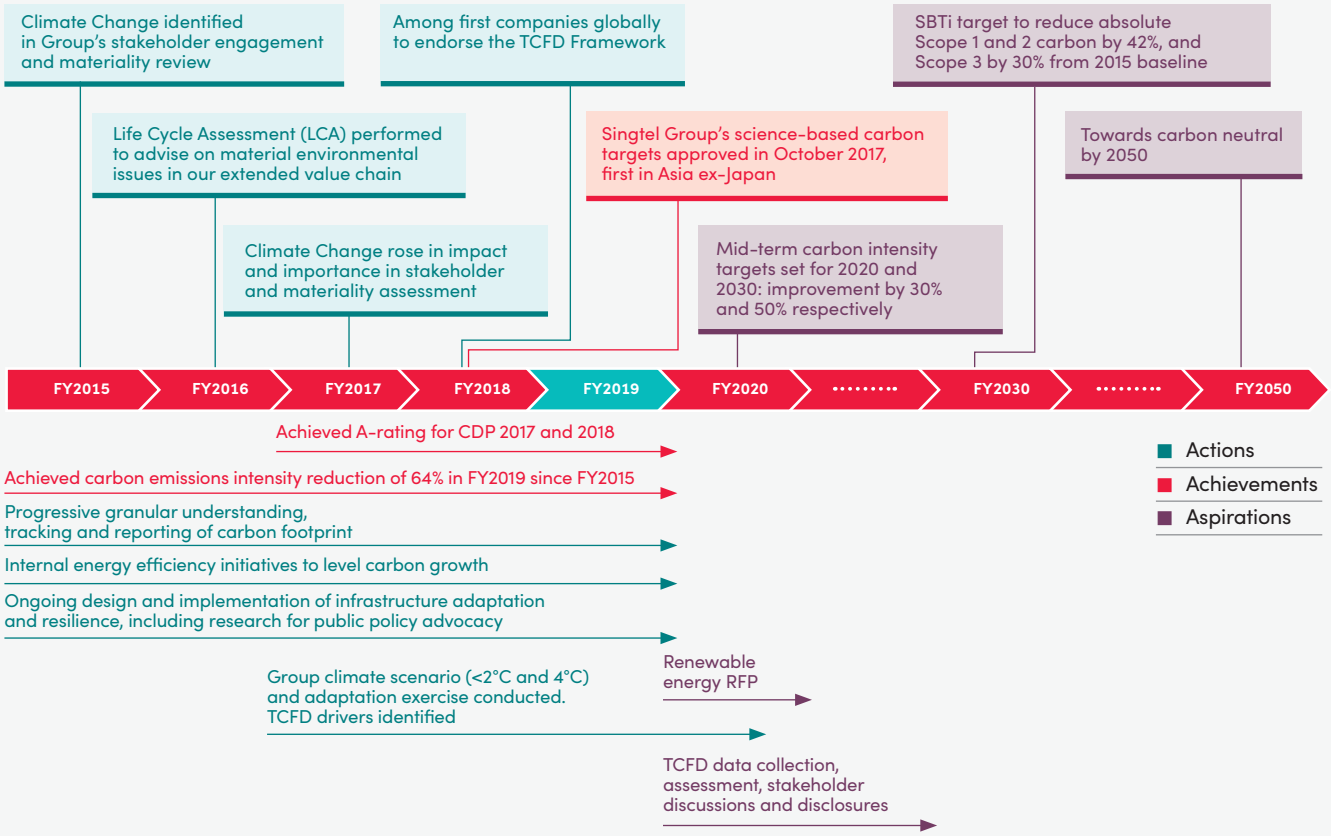
CLIMATE CHANGE AND CARBON

Singapore named 2018 the 'Year of Climate Action' and 2019 the 'Year towards Zero Waste'. In October 2018, the Intergovernmental Panel on Climate Change (IPCC) Report targeted global warming to below 1.5 degrees Celsius by the end of the century, compared to the earlier 2 degrees Celsius. It forewarned disastrous consequences if the target is not met.

Singtel's journey in climate action and environmental sustainability began much earlier, as we recognised that it is not an overnight journey (see Figure 2 and Table 1).

We continue to adopt a holistic approach in addressing the threat of climate change through mitigation and adaptation efforts, focusing on improving our energy performance and efficiency measures, as well as building resilience across our operations.

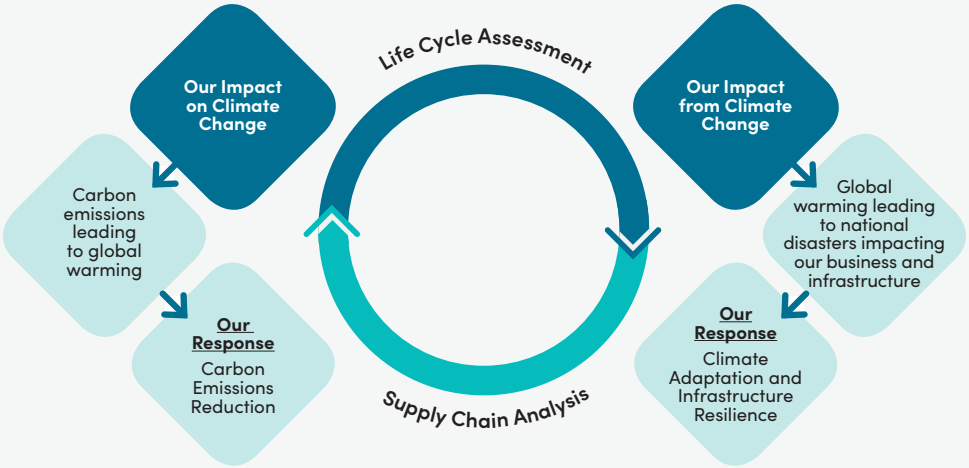
Figure 2:
Singtel Group's Climate Action Journey Towards 2050



In our formal 2015 stakeholder engagement and materiality exercise, climate change emerged as a concern of moderate importance by our stakeholders. They also assessed that its impact to our business is moderate. Energy efficiency was then Singtel Group's key concern given our growing network infrastructure.

We proceeded to embark on a series of investigations and work which proved to be invaluable to our climate strategy and roadmap, helping us to identify the complexities and interdependencies of the issue. In our following 2017 stakeholder engagement and materiality review, our stakeholders assessed that our key impact on climate change was mainly from the business' growing carbon footprint. Our business resilience and continuity during major natural climate disasters were the major business risks we faced from the potential impact of climate change (see Figure 3).

Figure 3:
How We Look at the Climate Change Issue



Environment
Climate Change and Carbon

As it is important to understand our initiatives in the past and how they interrelate to our current focus and strategy going forward, we have summarised the major actions, insights and milestones in our climate strategy and journey (see Table 1).

Table 1:
Major Environmental Initiatives by the Singtel Group

YEAR	INITIATIVES/ MILESTONES	RELEVANT INSIGHTS INTO CLIMATE CHANGE AND CARBON	OUR ACTIONS	REPORT
2010 to present	Progressive depth and breadth of carbon disclosure, reporting and external assurance	Understanding our carbon footprint and drivers.	Continuous refinement and validation to achieve a comprehensive view of our carbon footprint.	Sustainability Reports and CDP
2013 to present	Founding member of the Australian Business Roundtable for Disaster Resilience and Safer Communities (ABR)	Research and insights into social and economic impact of natural disasters. Advocacy of government policy and budget in support of adaptation and building resilience, and address the interdependencies under the topic.	Five research reports.	ABR Reports from 2013 to November 2017
2015	Stakeholder and Materiality Assessment	Climate change emerged as a topic of moderate importance and moderate impact.	Mid-term energy and carbon intensity targets set for 2020 and 2030: improvement by 30% and 50% respectively. Widen depth and scope of carbon reporting to CDP for Singapore and Australia.	SR2016
2016	Life Cycle Assessment	Climate change and carbon were the most material environmental issues of concern. Almost two-thirds of our carbon footprint were in our supply chain. This was highly relevant in setting science-based Scope 3 carbon reduction targets.	Environment strategy updated to strengthen focus on climate change and carbon. Climate risk and carbon assessment updated for our Sustainable Supply Chain Management framework.	SR2016
2016	Climate Scenario Assessment: Undertook <2°C and 4°C climate scenario modelling to understand localised climate and business impact to Singapore and Australian operations	<2°C adopted as main scenario for adaptation planning and subsequent target setting under SBTi. Increased risks of inundation affecting business continuity and operations, from combination of future sea level rise and intensity and frequency of rainfall and cyclonic activity. Impact from major interdependent infrastructure such as power networks (e.g. outage), and transport infrastructure (e.g. diversity routing and facilities access). Bushfire risks only moderate given main impact in lower density regional areas.	Adaptation planning and initiatives such as raising equipment levels, draining and flood management at risk prone sites. Upgrade of power generators for redundancy and longer self-sufficient operations. Self-generating power backup at all major points of interconnection. Transmission diversity to minimise impact from single point of failure.	SR2016 – present

YEAR	INITIATIVES/ MILESTONES	RELEVANT INSIGHTS INTO CLIMATE CHANGE AND CARBON	OUR ACTIONS	REPORT
2017 and 2018	Singtel Group achieved A- (Leadership) for carbon reporting in CDP	Strong environment strategy as well as baseline and external assurance of carbon footprint. Also critical for basis to perform forward projection and modelling for SBTi and TCFD.	Preparatory groundwork for SBTi began in FY2017.	SR2018 and SR2019
2017 and 2018	Early adopter to support recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in June 2017	Structured framework and approach to progressively strengthen Governance, Strategy, Risk Management and Metrics/Performance of climate-related financial risks.	**Governance** Singtel Board approves material topics, including climate change strategy and targets, reviews progress and performance of business. **Strategy** Scenario planning already completed for network adaptation and carbon reduction targets setting. **Risk Management** Climate change updated to Singtel Group's risk register and discussed at Risk Management Committee. **Metrics and Targets** Carbon and energy intensity and SBTi-approved carbon reduction targets. Work-in-progress for climate-related financial drivers and modelling.	SR2018
2017 and 2018	Science Based Targets initiative (SBTi) approved Singtel's absolute carbon reduction target, first in Asia ex-Japan in October 2017	42% absolute reduction in Scope 1 and 2, and 30% reduction in Scope 3 carbon between 2015 and 2030 for Singtel Group's Singapore and Australia operations.	Ongoing initiatives to improve energy and carbon efficiency in the business. Investigation of larger scale renewable energy sources.	SR2018 and SR2019

Singtel's Efforts on SBTi and TCFD

SBTi

We provide a progress update of our ongoing efforts and results from organic energy efficiency initiatives in this report. However, these efforts alone will not be able to move the needle in achieving a significant reduction in our carbon footprint. Hence, we are currently requesting for proposals from suppliers of larger scale sources of renewable energy over a longer period of time leading up to 2030, and aligned with our SBTi targets.

We plan to report on the assessment outcome in next year's report.

In October 2018, the IPCC released an updated report calling for governments and corporates to work towards a more aggressive target of <1.5°C. Singtel was an early adopter of the SBTi in 2016, having our carbon targets based on <2°C approved in 2017. SBTi acknowledged the early work of companies like Singtel and has given us up to five years from the original approval date to update our scenarios and targets.

While this needs to be done before 2022, our current focus and priority are to identify the roadmap and initiatives we can take to exceed our original approved absolute carbon reduction targets. We also plan to work towards a more aggressive aspiration target of being carbon neutral by 2050.

Environment
Climate Change and Carbon

Table 2:
Singtel's Indicative Climate Risk Related Financial Indicators

	INCOME IMPACT	BALANCE SHEET IMPACT
Physical Risks Climate-related natural disasters affecting business performance and network resilience and continuity	■ Revenue impact ■ Market share impact ■ Insurance premiums ■ Operational cost of disaster recovery ■ Supply chain risks ■ Customer revenue from ICT service diversity	■ Asset impairment or write-down from damage ■ Capital investment for adaptation or resilience building ■ Capitalised cost of disaster recovery
Transitional Risks Towards a low carbon economy	■ Carbon tax ■ Energy costs ■ Carbon offsets ■ Renewable energy purchase ■ ICT solutions enabling carbon footprint reduction for customers	■ Investments in energy efficient technologies or upgrades (e.g. chillers and lighting) ■ Renewable energy projects
Liability Risks Contractual and legal obligations	■ Service Level Agreement with enterprise customers	■ Provisions for contingent liabilities

TCFD

We endorsed the TCFD recommended framework in mid-2017 and have made progress towards its adoption. The topic of climate risks has since been embedded in our updated corporate risk register and reviewed at various levels of management and the Board with mid to long-term targets.

During the year, we began our engagement with various parts of the business to identify key indicators and business drivers which may have a direct or indirect financial impact from the long-term effects of climate change. We summarise what some of these climate-related financial risks and opportunities may be, organised by physical, transitional or liability risks that have an impact on Singtel Group's income and balance sheet performance in the long run (see Table 2). Our next steps include verifying the financial data and modelling to validate how material these indicators are to Singtel's long-term financial performance.

Internal: Having identified the relevant indicators, our focus for the next two years is to engage our internal stakeholders in progressively identifying the financial data sources to build, test and refine the historical data allocated to climate-related risks. We believe that baselining historical financial information is critical before we begin overlaying forward-looking assumptions and modelling, which will be based on previous and emerging scenarios as well as sensitivity analysis on the different climate change scenarios.

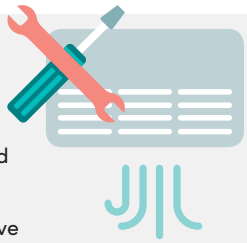
External: We will engage our external stakeholders to test and refine these indicators identified above, especially with the growing interest by investors and major funds. We also recognise that these stakeholders are also starting their own journey of understanding and applying the TCFD guidelines.

ENERGY PERFORMANCE AND EFFICIENCY: INITIATIVES AND OUTCOMES

We have been working on a number of programmes targeting energy reduction across key energy intensive touchpoints of our operations in Singapore and Australia, such as network infrastructure, data centres, satellite earth stations and office buildings (see Figure 4). For more details on our approach, please refer to our **website**.

Figure 4:

Examples of Energy Programmes and Achievements



Replacing, overhauling and optimising chillers and related equipment

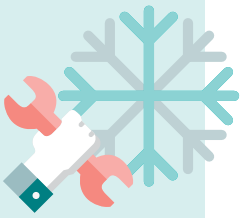
Over the years, we have been regularly replacing and overhauling chiller units and related Mechanical and Engineering (M&E) equipment at our exchanges and office buildings in Singapore, targeting those that have been in operation for 15 years or more.

PROGRESS IN FY2019
(Estimated Energy Savings and Emissions Avoidance)

(a) Optimisation of chillers at Pickering Operations Complex and 1 Serangoon North: 2,746 MWh/year (9,886 GJ/year) or 1,151 tCO_2e/year

(b) Replacement of older and less efficient air cooled chiller to water cooled chiller at NCS Bedok: 1,949 MWh/year (7,015 GJ/year) or 817 tCO_2e/year

(c) New chiller and 13 AHUs replacement at NCS Hub: 546 MWh/year (1,965 GJ/year) or 229 tCO_2e/year



Retrofitting M&E equipment

We have made concerted efforts to retrofit our Mechanical and Engineering (M&E) equipment such as Air Handling Units (AHUs) and cooling towers in Singapore.

PROGRESS IN FY2019
(Estimated Energy Savings and Emissions Avoidance)

(a) Retrofit AHUs with variable speed drives (VSDs) at 1 Serangoon North: 202 MWh/year (725 GJ/year) or 84 tCO_2e/year

(b) Retrofit cooling tower with chemical and power free water treatment system at DC West Data Centre: 46 MWh/year (167 GJ/year) or 20 tCO_2e/year

Switching to energy saving lighting

Concerted efforts made to retrofit to LED lightings in Singapore and Australia.

PROGRESS IN FY2019
(Estimated Energy Savings and Emissions Avoidance)

(a) Pickering Operations Complex: 234 MWh/year (844 GJ/year) or 98 tCO_2e/year

(b) NCS Hub: 540 MWh/year (1,944 GJ/year) or 226 tCO_2e/year

(c) Optus Offices: 1,857 MWh/year (6,685 GJ/year) or 1,560 tCO_2e/year

Upgrading of fresh air cooling

Multi-year initiative to replace current fresh air fans with modern DC variable speed fans and larger intake units with the capability to double the air intake and reduce reliance on air conditioners in Australia.

PROGRESS IN FY2019
(Estimated Energy Savings and Emissions Avoidance)

4,097 MWh/year (14,749 GJ/year) or 3,441 tCO_2e/year

FY2019: Installation completed at 470 sites

Cumulative: 730 sites

Mobile remote shutdown (C-SON)

Vendor software has been deployed to shut down mobile equipment in Australia during periods of low traffic to reduce energy consumption.

PROGRESS IN FY2019
(Estimated Energy Savings and Emissions Avoidance)

430 MWh/year (1,548 GJ/year) or 361 tCO_2e/year in Australia

Converting to energy efficient mobile base stations

We continue to upgrade our mobile networks in Singapore and convert to energy efficient mobile base stations.

PROGRESS IN FY2019
(Estimated Energy Savings and Emissions Avoidance)

Energy efficient mobile base stations: 99.21% in Singapore

Electricity use per cell carrier: Improved to 3,097 kWh from 3,238 kWh last year

CREATING AN IMPACT: OUR TEN-YEAR JOURNEY WITH NPARKS

Singtel has been working with National Parks Board (NParks) in the past ten years for our annual Plant-A-Tree Day in Singapore. We engage staff to get close to nature by planting local tree species at various national parks to raise their awareness of the importance of environmental conservation and minimising our environmental footprint to reduce adverse impact on Mother Nature.

For our tenth Plant-A-Tree Day, 200 staff volunteers and 20 APSN Tanglin School students planted 100 tree saplings along the Changi Coastal Park Connector Network.

In support of 2018 as the Year of Climate Action in Singapore and celebration of our tenth anniversary, we collaborated with WWF to reforest Rimbang Baling, which is part of the UNESCO Tropical Rainforest Heritage of Sumatra, Indonesia. Home to the critically endangered Sumatran Tigers, as well as 170 plant and 50 mammal species, Rimbang Baling has been vanishing at the rate of three football fields a minute. Every Singtel staff volunteer pledged support through WWF Forest Cards and each adopted tree was planted by WWF in Rimbang Baling.

10 years of Plant-A-Tree Day

- **1,205** trees planted
- **2,320** staff volunteers
- **85** APSN Tanglin School students
- **S$331,000** donated to the Garden City Fund

CLIMATE CHANGE RESILIENCE

Climate change resilience is important to the Singtel Group as we continue to integrate resilience and adaptation into our business and network operations. It is critical for us to review current and new climate related risks and trends in countries such as Australia that are prone to major cyclones and inundations so we can take the necessary steps to prepare and respond to these risks.

We continue to contribute as a founding member of the Australian Business Roundtable for Disaster Resilience and Safer Communities (ABR). We are pleased that ABR's previous research and policy recommendations have been recognised with the Australian Government's formation of the National Resilience Taskforce in 2018 and development of the National Disaster Risk Reduction (NDRR) Framework launched in April 2019, a copy of which can be viewed **online**. ABR will continue to be actively involved in the NDRR Industry Advisory Forum, which an ABR representative will chair and shape the implementation of the NDRR framework.

During the year, we continued to upgrade mobile sites with power generators and batteries to last up to seven days without utilising the public grid in cyclone prone regions in Australia, as the public power grid is often adversely affected during cyclones and inundations. We also invested in transmission and last-mile diversity and redundancy paths for other cyclone prone areas. To strengthen our network diversity and redundancy, we invested A$2.14 million in another diverse transmission path along the critical Brisbane-Sydney-Melbourne route to reduce any impact if both Optus coastal and inland routes are simultaneously cut.

We spent another A$600,000 on two new SATCATS (mobile cell on wheels) to support communities affected by bushfires in New South Wales and Western Australia and cyclones in Queensland. These provide extra network capacity and coverage during disaster response efforts.

Our climate adaptation and resilience efforts are not only limited to our infrastructure. During times of natural disasters, we deploy Optus Trucks which enable the public to charge their mobile phones during extended power outages in their communities, as we recognise how important it is to stay in touch with loved ones when natural disasters strike.

GIVING A HELPING HAND

The Optus Truck at Huon Valley in Tasmania

In early 2019, bushfires burned in the Huon Valley, south of Hobart in Tasmania, depicting contrasting disaster scenes in Australia. At its peak, more than 700 residents were living at the bushfire evacuation centre in Huonville. Our team drove one of our ten Optus Trucks down to the centre to lend a helping hand to the local community.

The Optus Regional LED Screen Truck is a 5,100 kg Fuso Canter 615 wide cab decked out with 3.5m x 1.7m screen. We set it up in the neighbouring showground area to provide charging stations for mobile devices, free Optus prepaid handsets and prepaid vouchers as well as water, bags and battery packs. We also live-streamed 16 channels of emergency service updates on TV screens and broadcast updates about the bushfire situation from a local radio station. For the young ones, we played a daily movie on the TV screen and handed out sweet treats.

Environment
Product Stewardship

WASTE MANAGEMENT

Electronic, packaging and corporate waste such as paper are the key sources of waste generated from across our operations and value chain. We focus on reducing and recycling our own waste, collaborating with partners and suppliers, and redesigning our product offerings to minimise our impact in this area.

E-waste

The Singapore Government is tackling e-waste with the Extended Producer Responsibility (EPR) scheme to be implemented in 2021. Singtel is committed to playing our part in contributing towards this effort.

E-waste is the most material waste stream in our sector, due to the potential pollutive nature of metal, plastic and battery from mobile phones. Our focus is on increasing the recovery and recycling of mobile phones from our customers.

In Australia, we recycle over 98% of our own e-waste and continue to support the Mobile Muster programme, a national industry-wide collaboration stewardship scheme that allows customers to recycle their old mobile phones at any Optus retail store.

We also promoted the Planet Ark National Recycling Week 2018 together with Optus Sport host Mel McLaughlin to encourage customers to recycle their old mobile phones at Mobile Muster collection points.

Optus Sport host Mel McLaughlin championing e-waste recycling effort to benefit the environment, equivalent to planting 259 trees

Through these efforts, we diverted more than four tonnes of e-waste or 53,437 handsets and batteries from landfill in Australia in 2018, saving 10 tonnes of carbon emissions and conserving 50 tonnes of mineral resource.

As a member of Mobile Muster, we also support its 'Take 3 for the Sea' campaign, which aims to raise awareness of plastic pollution and simple solutions to prevent it. Take 3 targets coastal litter reduction through the education of consumers by delivering education programmes in schools, surf clubs and communities around Australia.

FIRST ANNIVERSARY OF ReCYCLE

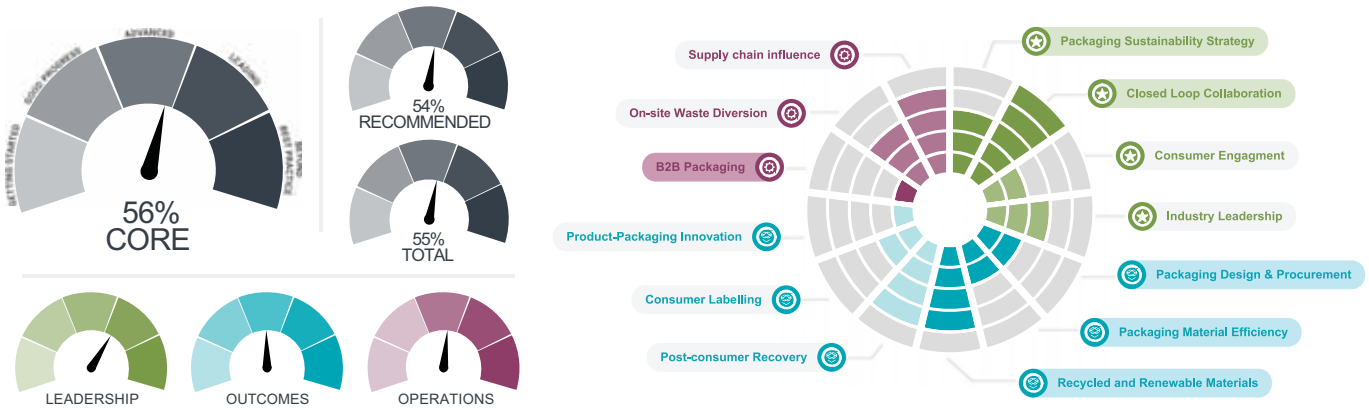
On World Environment Day in 2017, we launched ReCYCLE, a national mobile phone recovery and recycling project with SingPost. Customers can drop off their unwanted phones at our retail outlets or mail them using special postage-waived envelopes via any of Singapore's 700-plus letter boxes.

To mark the first anniversary of ReCYCLE, we conducted a lucky draw to encourage consumers to recycle their e-waste. We saw a 500% increase in number of envelopes received during the campaign period.

Since its launch, we have seen a 400% compounded growth in collection rates. Our effort has recovered over 24,000 kg of mobile phones, batteries and accessories.

Environment
Product Stewardship

Figure 5:
APCO's Optus Performance Report 2018



Optus was placed in the 'Advanced' category based on our sustainable packaging achievements. Figure 5 shows our performance report by APCO, indicating areas where we do well and their recommendations.

During the year, we also received the APCO Award for our sustainable packaging achievements and efforts in the telecommunications sector. Optus was used as a best practice response case study in APCO member material for Criteria 2.3 Recycled & Renewable Materials for our efforts in this area.

Paper waste

We estimated that we print more than a million pages of paper across Singtel every month. Working with Group IT, we launched the PrintLess campaign by going digital and reducing traditional printing. This helps us to lower our environmental footprint and reduce paper and ink costs from printing and copying, while enhancing information security and management.

In FY2019, we digitised about 18,000 personnel files, totalling three million pages. We have also digitised the signing of 100% of all employee-related contracts and letters. This paperless strategy has helped us reduce monthly printing volume for HR-related matters by 47%.

OPTUS' COMMITMENT TO SUSTAINABLE PACKAGING

Strategy, targets, governance:
Developed a new four-year Sustainable Packaging Strategy 2018-2021 to explore the viability of more than 50 aspirational targets to reduce packaging waste in line with the new APCO framework in the 13 focus areas.

Governance:
Created a new Sustainable Packaging Checklist for our internal stakeholders to align packaging best practices for existing and new products.

Key achievements:

- Recall un-sold SIMs close to expiry and then push them out to quicker-selling channels. Those SIMs that cannot be redistributed or already expired are recycled. A total of 490,000 SIM cards was recycled as part of this initiative, preventing about 1.47 tonnes of material entering landfill and saved A$2 million per annum.
- Developed a new retail bag made from renewable paper which is 100% recyclable, biodegradable and also uses soy-based inks, which are renewable and low in volatile organic compounds (VOC), diverting 110 tonnes of material from landfill per annum and resulting in savings of about A$120,000 in printing costs.

Goal:
By 2025, we aspire to make all packaging 100% reusable, recyclable or compostable by working with industry partners for design and material innovation.

Environment

Environmental Performance Indicators

Environment

	SINGTEL			OPTUS			SINGTEL GROUP		
	2019	2018	2017	**2019**	2018	2017	**2019**	2018	2017
Total energy use (GJ)	**1,347,094**	1,395,100	1,404,843	**1,749,622**	1,724,106	1,702,440	**3,096,716**	3,119,206	3,107,283
Energy intensity (GJ/S$million revenue)	**161**	169	177	**194**	191	194	**178**	181	186
Energy intensity (GJ/TB*)	**0.35**	0.43	0.53	**0.59**	0.71	0.92	**0.46**	0.55	0.69
(i) Electricity Use (GJ)	**1,323,825**	1,372,809	1,385,099	**1,719,144**	1,692,773	1,665,694	**3,042,969**	3,065,582	3,050,793
Electricity Use (MWh)	**367,729**	381,336	384,750	**477,540**	470,215	462,693	**845,269**	851,551	847,443
Electricity Intensity (GJ/S$million revenue)	**158**	167	175	**191**	187	190	**175**	178	183
Electricity Intensity (GJ/TB)	**0.35**	0.42	0.52	**0.58**	0.70	0.90	**0.45**	0.54	0.67
Electricity Intensity (kWh/TB)	**97**	118	144	**160**	195	251	**125**	151	187
(ii) Fuel use from non-renewable sources (GJ)	**22,877**	21,935	19,369	**30,014**	30,869	36,282	**52,891**	52,804	55,651
(iii) Fuel use from renewable sources (GJ)	**392**	356	375	**464**	464	464	**856**	820	839
Solar energy (MWh)	**109**	99	104	**129**	129	129	**238**	228	233
Total carbon emissions (tonnes CO_2 equivalent)[1]	**164,629**	174,391	173,811	**418,060**	418,760	418,269	**582,689**	593,151	592,080
(i) Scope 1	**4,085**	3,367	1,992	**2,567**	2,725	2,495	**6,652**	6,092	4,487
Refrigerants	**2,455**	1,828	643	**470[2]**	589[2]	N.A.[2]	**2,925**	2,417	643
Fuel combustion	**733**	587	582	**291**	329	397	**1,024**	916	979
Company fleet	**897**	952	767	**1,806**	1,807	2,097	**2,703**	2,759	2,864
(ii) Scope 2	**154,152**	164,470	165,943	**402,290**	399,257	397,785	**556,442**	563,727	563,728
(iii) Scope 3	**6,392**	6,554	5,876	**13,203**	16,778	17,989	**19,595**	23,332	23,865
Contractor fleet	**411**	687	733	**1,264**	1,168	1,119	**1,675**	1,855	1,852
Air travel	**4,000**	3,845	3,113	**5,738**	8,004	8,551	**9,738**	11,849	11,664
Employee commute[3]	**1,821**	1,821	1,821	**6,201**	7,606	8,319	**8,022**	9,427	10,140
Retail franchisees	**160**	201	209	**N.A.**	N.A.	N.A.	**160**	201	209
Carbon Intensity (tCO_2e/S$ million revenue)	**20**	21	22	**46**	46	48	**34**	34	35
Carbon Intensity (tCO_2e/TB)[4]	**0.04**	0.05	0.06	**0.14**	0.17	0.22	**0.08**	0.10	0.13
Total Water Use (m^3)	**753,238[5]**	752,207	814,447	**78,774[6]**	74,235	82,111	**832,012**	826,442	896,558
Water Intensity (m^3/S$million revenue)	**91**	90	103	**N.A.**	N.A.	N.A.	**48**	47	54
Total Waste: hazardous and non-hazardous (tonnes)	**7,538**	6,289	4,613	**2,294[7]**	2,197[7]	1,853[7]	**9,832**	8,486	6,466
Total Non-Hazardous Waste by disposal method (tonnes)	**2,130**	2,227	2,194	**1,683[7]**	1,972[7]	1,177[7]	**3,813**	4,199	3,371
Incineration with energy recovered	**1,972**	1,968	2,116	N.A.	N.A.	N.A.	**1,972**	1,968	2,116
Landfill	**0**	0	0	**1,476**	1,720	517	**1,476**	1,720	517
Recycle / Reuse	**158**	259	78	**207**	252	660	**365**	511	738
Total Hazardous Waste by disposal method (tonnes)	**5,408**	4,062	2,419	**611[7]**	225[7]	677[7]	**6,019**	4,287	3,095
Incineration with energy recovered	**282**	388	285	N.A.	N.A.	N.A.	**282**	388	285
Landfill	**776**	593	184	**8**	3	10	**784**	596	193
Recycle / Reuse	**4,350**	3,081	1,950	**603**	222	667	**4,953**	3,303	2,617
Customer E-waste Recycling (tonnes)	**63**	36	21	**4**	4	4	**67**	40	25

Footnotes:

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

1 The carbon emissions reported in the table are based on the reporting requirements of the WRI and WBCSD 'GHG Protocol Corporate Accounting and Reporting Standard'. The equivalent CO_2 emissions for electricity use are calculated based on the updated simple operating margin grid emission factors from the National Environment Agency in Singapore for the relevant time period and from corresponding states in Australia. Scope 1 direct emissions and Scope 3 indirect emissions are calculated using BEIS (Department for Business, Energy & Industrial Strategy) Greenhouse gas reporting: conversion factors 2018. Scope 3 air travel emission factors are derived from WRI.

2 Optus uses a combination of air, water and refrigerant cooling systems. Refrigerants tracked from FY2018.

3 Employee commute carbon emissions data will be updated only when there is a significant change in our company's operations or workforce in Singapore. Employee commute carbon emissions data in Australia applies to Optus Campus in Sydney.

4 Covers Scope 1 and 2 only.

5 Total volume withdrawn from municipal water supplies and includes use of 132,374 m^3 NEWater instead of potable water. Water stress areas are not applicable.

6 Total volume withdrawn from municipal water supplies and includes rainwater harvesting of 15,513 m^3 instead of potable water. Water use for Optus Sydney campus only.

7 Data covers waste directly managed by Optus' contracted waste vendor.