

# 03 Environment

## The Smallest Footprint

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

As a leading communications group transforming and connecting people and communities, we are also a driver and enabler of positive environmental impact. The Singtel Group Environment Strategy guides our focus on climate action and product stewardship (see Figure 1). Please refer to our [website](#) for more details.

Figure 1:  
**Singtel Group's Environment Strategy**



### ADDRESSING CLIMATE CHANGE

#### CLIMATE CHANGE AND CARBON

We adopt an active and 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. Both climate action and environmental sustainability are a journey towards our goals and the Singtel Group has taken progressive steps since FY2015 (see Figure 4 on page 17).

In recognition of our environmental sustainability efforts, Singtel won Singapore's highest environmental accolade, which is the President's Award for the Environment 2019 organised by the Ministry of the Environment and Water Resources.



Vice President of Group Sustainability Andrew Buay receiving on behalf of Singtel the President's Award for the Environment 2019 from Singapore President Halimah Yacob and Minister for the Environment and Water Resources Masagos Zulkifli

## THE TELECOMMUNICATIONS INDUSTRY AS AN ENABLER OF DECARBONISATION

Singtel's active participation in the GSM Association (GSMA) Board and its Climate Action Committee helps to chart the strategic direction of environmental sustainability for the ICT and mobile industry. GSMA is an industry organisation that represents the interests of over 750 mobile network operators worldwide.

In February 2020, we supported the landmark science-based sector-specific decarbonisation pathway to reduce greenhouse gas (GHG) emissions across the ICT industry sector to reach net zero emissions, announced through a collaboration between Science Based Targets initiative (SBTi), GSMA, International Telecommunication Union and Global e-Sustainability Initiative.

This includes emission reduction trajectories for mobile, fixed and data centre operators to meet the Paris Agreement goal of limiting global warming to 1.5°C, designed to substantially reduce the risks and mitigate the effects of climate change.

**“This is a breakthrough and Singtel is pleased to have played a critical role in shaping this global collaboration for a sector pathway to net zero carbon in the ICT sector. We are glad this is now an industry movement which will enable collaboration in energy efficient technologies within the industry and with suppliers.”**

**CHUA SOCK KOONG**  
Singtel Group CEO and  
Deputy Chair of GSMA Board



### Singtel Solar Monitoring Solution supports Singapore's solar targets

During the year, we leveraged our ICT capabilities to help decarbonise HDB public housing flats and meet the national solar target commitment of 540 megawatt-peak (MWp) in Singapore by 2030.

Our Solar Monitoring Solution provides an IoT and diagnostic platform which gives project owners end-to-end, real-time monitoring of the performance of their solar equipment, such as inverters and power meters, to ensure that the solar energy harnessed is fully optimised.

### More aggressive climate targets



Singtel Group CEO shares our environmental sustainability journey with Temasek portfolio companies' leaders

In July 2019, Singtel became the only Southeast Asian company among a pioneer group of 28 global companies to commit to keeping global temperature increase within 1.5°C and net zero emissions by 2050.

This is an extension of our climate action commitment in 2017 when we became the first company in Asia outside of Japan to have our 2030 absolute carbon reduction targets approved by SBTi.

Climate change is a global issue that requires urgent action from all of us, and governments and businesses must lead the charge.

Singtel has proactively implemented initiatives to make the transition to a clean energy future and build resilience in our operations.

We have now deepened our commitment to meet the more aggressive 2050 target. We believe these efforts will drive efficiency, innovation and use of renewable energy within the business, and rally our partners and vendors in the ecosystem to work together to achieve a positive outcome.

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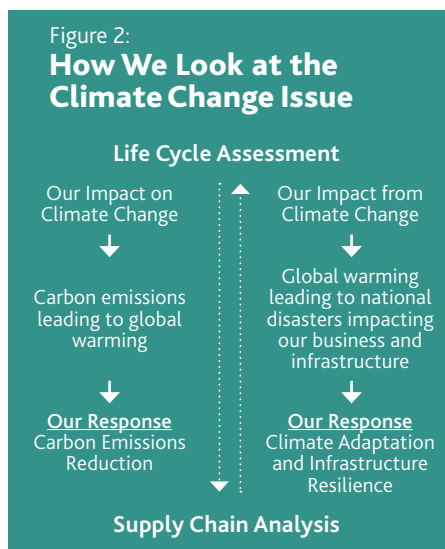


NCS Bedok Data Centre, one of the largest single-roof solar-powered data centres in Southeast Asia

We approach the topic of climate change from two perspectives: impact on climate change from the business' growing carbon footprint and impact from climate change on our business resilience and continuity such as during climate disasters (see Figure 2). We continue to work on both areas to ensure that we increase our positive impact on climate change and reduce its negative impact on our business and the community we serve.

### IMPACT ON CLIMATE CHANGE

We give a progress update of our efforts and results from our ongoing energy efficiency and renewable energy initiatives in this report.



### RENEWABLE ENERGY

In October 2019, we signed our first solar Power Purchase Agreement (PPA) in Singapore which saw the installation of a 1.65 MWp solar power system on the rooftop of our NCS Bedok Data Centre. The system was commissioned in March 2020 and became one of the largest single-roof solar-powered data centres in Southeast Asia.

The system is expected to produce about 2,059 MWh of clean energy per year, enough to power 462 four-room HDB flats for a month. Our carbon emissions are also expected to reduce by 864 tCO<sub>2</sub>e annually. Please refer to our [website](#) for more details.

We continue to explore renewable energy options in Australia, where many projects have been affected by the economic uncertainty caused by COVID-19. PPAs are part of our energy efficiency plans to support Singtel Group's 2030 SBTi and 2050 net zero carbon targets.

### ENERGY PERFORMANCE AND EFFICIENCY

Based on our FY2022 energy roadmap, we have been working on programmes targeting energy reduction across key energy intensive touch-points of our operations in Singapore and Australia, such as network infrastructure, data centres, satellite earth stations and office buildings. Please refer to Figure 3 and our [website](#) for more details.

### BCA Green Mark Award (Platinum) for NCS Hub



NCS Hub was awarded the Green Mark Award (Platinum) by the Building and Construction Authority in 2020. The award rates a building on environmental criteria such as energy and water efficiency, and environmental protection.

#### Key building conservation features:

- Chiller plant with <0.60 kW/tonne efficiency
- 24% improvement in air distribution
- Energy saving T5 lightings/LEDs at offices and common areas
- LEDs with motion and lux sensors in washrooms
- PUB water efficient fittings



Figure 3:

## Examples of Energy Programmes and Achievements



### Retrofitting M&E equipment and energy optimisation

In Singapore, we continue to retrofit our Fan Coil Units to the type using solar thermal to absorb heat from the sun and improve efficiency of the compressor. 32 units were completed from 2017 to 2019. We also perform energy optimisation on our Heating, Ventilation and Air-Conditioning (HVAC) systems.

#### Estimated energy savings and emissions avoidance:

- Kim Chuan 1 Data Centre: 1,058 MWh/year (3,809 GJ/year) or 444 tCO<sub>2</sub>e/year
- NCS Bedok Data Centre: 113 MWh/year (407 GJ/year) or 47 tCO<sub>2</sub>e/year



### Switching to energy-saving lighting

We have made progressive efforts in retrofitting physical architecture with LED lightings in Singapore.

#### Estimated energy savings and emissions avoidance:

- Geylang Telephone Exchange: 120 MWh/year (431 GJ/year) or 50 tCO<sub>2</sub>e/year



### Replacing Uninterruptible Power Supply (UPS)

We replaced two conventional-type UPS to modular units at our data centres in Singapore.

#### Estimated energy savings and emissions avoidance:

- NCS Bedok Data Centre: 126 MWh/year (454 GJ/year) or 53 tCO<sub>2</sub>e/year



### Converting to energy efficient mobile base stations

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

#### Energy efficient mobile base stations:

- 99.64%
- To achieve 100% by end-2020



### Replacing, overhauling and optimising chillers and related equipment

We regularly replace and overhaul chiller units and related Mechanical and Engineering (M&E) equipment which have been in operation for 15 years and more, at our exchanges and office buildings in Singapore. Eight out of 22 chillers have been replaced last year with another six to be upgraded by end-2021.

In Australia, we have an ongoing multi-year Mobile Shelter Cooling Upgrade initiative to replace current fresh air fans with modern DC variable speed fans and larger intake units. This comes with the capability to double the air intake and reduce reliance on air conditioners. During the year, 270 sites were upgraded, bringing the total to 1,100 sites.

#### Estimated energy savings and emissions avoidance:

- Potential reduction of 6,141 MWh (22,108 GJ) annually when all 22 chillers are replaced
- Reduction of carbon footprint by 2,649 tCO<sub>2</sub>e per year in Singapore
- 2,490 MWh/year (8,964 GJ/year) or 2,042 tCO<sub>2</sub>e per year in Australia



### MAKING PROGRESS WITH TCFD

We have adopted a staged approach for Task Force on Climate-related Financial Disclosures (TCFD), starting with our operations in Australia as the country is more exposed to climate risks and disasters compared to Singapore. We can then iterate the learnings for our Singapore operations. During the year, we issued a Request for Information calling for external risks modelling experts to partner us on our TCFD journey.

In FY2021, we plan to work with a consultant on a more targeted and granular assessment of a pilot geographical network location in Australia to help us refine the internal preparatory work we have done in the past two years. We will undertake financial risk modelling aligned with climate scenarios and the associated impact, as well as interdependencies of climate risks for our business operations. This will be done

concurrently with our internal sourcing of all climate-related data and validation of historical financial assessments attributed to the physical and transitional risks of climate change.

Please refer to our [website](#) to see how Singtel applies the TCFD framework against where we believe are our key physical, transition and other climate risks.

# Environment

## Climate Change and Carbon

### IMPACT FROM CLIMATE CHANGE

We prepare our business for climate change impact and mitigate Singtel Group's carbon footprint through renewable and ongoing organic energy efficiency initiatives.

### CLIMATE CHANGE RESILIENCE

Business resilience against climate change is a priority for the Singtel Group as we continue to integrate resilience and adaptation into our business and network operations. We constantly review current and new climate related risks and trends in countries that are prone to natural disasters, like Australia. We can then prepare ourselves and respond to such risks promptly to safeguard our network infrastructure while continuing to serve our customers' communications needs.

As part of the Australian Business Roundtable for Disaster Resilience and Safer Communities (ABR), we continue to work with businesses to build climate and disaster risk reduction knowledge and also influence decisions made by governments, businesses and communities. Through our active involvement in ABR, we help to shape the country's first National Disaster Risk Reduction Framework.



Optus SATCATS trucks provide communication coverage at disaster zones

We further enhanced our climate resilience adaptation during the year with an A\$800,000 investment to buy new equipment and retrofit our power generators.

We are currently exploring 4G-accessible small cells to complement our current disaster management fleet of four SATCATS trucks. If feasible, this will improve our deployment of mobile coverage solutions in affected disaster zones.

### Retrofit

- Equip 37 power generators with:
- Additional 3 phase 415v outlets
  - Remote supervisory system
  - Quick connect fuel inlets to allow connection to long run fuel pods
  - Shelter interconnection lead



### Purchases

- 9 trailer mounted diesel refuelling systems
- 30 long run portable diesel fuel pods
- 5 Tipper Trailers



### Bushfires recovery with Green Shoots programme



Nicole Fosteris, Optus Local Channel Executive Manager (second from left), Tom O'Dea, Optus Territory GM of Central New South Wales (NSW) (first from right), and the RFS brigade from Parkes NSW

The unprecedented devastating bushfires in late 2019 affected more than one billion wildlife, caused an estimated A\$4.4 billion in economic losses, released 350 million tonnes of carbon emissions equivalent to Australia's annual emissions, and destroyed homes, businesses and lives.

We set up the Optus Green Shoots bushfire grants programme to support the rebuilding efforts of regional economies and small businesses adversely affected by the bushfires. Our assistance includes:

- Covering the costs of volunteer firefighters' mobile services for December 2019 and January 2020
- A dedicated customer care hotline for volunteer firefighters and those affected by bushfires
- Giving our people uncapped, paid emergency service and military leave for volunteering efforts related to the disaster
- 2,000 grants, a complimentary tablet, A\$100 monthly credit for 24 months, and technology support for eligible small businesses

**"With the Green Shoots grants, we are committed to working alongside small businesses hardest hit and helping them on the road to recovery."**

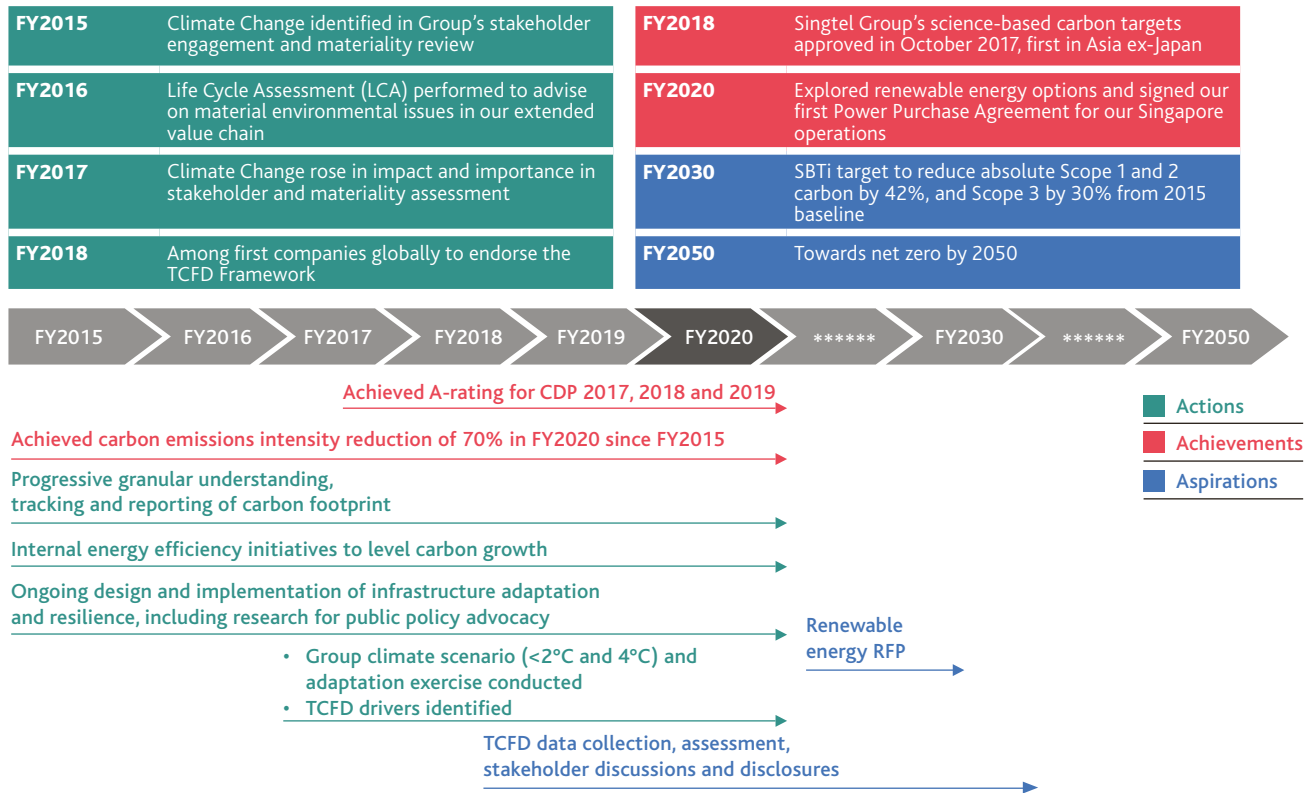
**ALLEN LEW**

CEO of Group Strategy and Business Development and former Optus CEO

# Environment

## Product Stewardship

Figure 4:  
Singtel Group's Climate Action Journey Towards 2050



### WASTE MANAGEMENT

In May 2019, the Australian government committed A\$3 million to support four new recycling education and resource recovery projects to increase recycling rates and reduce waste to support its 2025 National Packaging Targets.

As part of Singapore's Zero Waste Masterplan, the government passed the Resource Sustainability Act in September 2019. The Mandatory Packaging Reporting and Extended Producer Responsibility (EPR) e-waste frameworks will become effective on 1 January 2021 and 1 July 2021 respectively.

Electronic, packaging and corporate wastes such as paper are key sources of wastes generated across our operations and value chain. Hence we focus on reducing and recycling our waste by 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 July 2021 and Singtel is committed to playing our part and contributing towards this national environmental 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.

ReCYCLE, our e-waste recycling programme with SingPost, saw a 580% compounded growth in collection rates since its launch on World Environment Day in 2017. Our effort has recovered over 46,300 kg of mobile phones, batteries and accessories to date.

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 store. We diverted 3,728 kg of e-waste or 50,182 handsets and batteries from landfills in Australia in 2019, saving 8.3 tonnes of carbon emissions and conserved 42.2 tonnes of mineral resources.

### PAPER WASTE

We encourage our customers in Singapore to go paperless by promoting e-billing services. We have also switched to FSC-certified photocopying paper at our offices in Singapore since September 2012. With our paperless strategy, we reduced paper use by 49% during the year compared to FY2016 usage levels.