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Please see the attached Singtel Group Sustainability Report 2022 and Task Force on Climate-related Financial Disclosures 2022.

Additional Details

Period Ended

31/03/2022

Attachments

[Singtel Sustainability Report 2022.pdf](#)

[Singtel TCFD Report 2022.pdf](#)

Total size = 15987K MB

EMPOWER EVERY GENERATION

SUSTAINABILITY REPORT 2022



About this report

This is the eighth annual Group Sustainability Report (SR2022) by Singapore Telecommunications Limited (Singtel) for the financial year 1 April 2021 to 31 March 2022 (FY2022), and published on 30 June 2022. It covers the Group's strategies, initiatives and performance in relation to Environmental, Social and Governance (ESG) topics of our operations in Singapore, where Singtel is headquartered, and Optus, our wholly-owned subsidiary in Australia. All data, statistics and targets are in relation to the Group's operations in Singapore and Australia unless stated otherwise. Group-level figures are in Singapore dollars, using the exchange rate of A\$1 to S\$0.99722.

No restatements were made from the previous report except electricity and Scope 2-related figures for Singtel and Singtel Group in 2021 in the Environmental Performance Indicators (page 25-26). We however retained key methodologies on our stakeholder engagement and materiality to provide context on our ambitions and actions that have not changed since our strategic reset in 2021. During the year, we made investments in four IT and digital services companies in Australia. There were no significant changes to our supply chain.

This report captures the highlights and achievements of FY2022 and should be read together with the [Singtel Annual Report 2022](#), [Singtel Sustainability](#) and [SR2022](#) webpages, and [Optus Sustainability Report](#), which contain our corporate sustainability information and additional annexes like the GRI Index and EY [assurance statement](#), as well as our inaugural standalone [TCFD Report 2022](#).

GRI, SASB and TCFD

This report has been prepared to be in line with the updated GRI Universal Standards 2021. It complies with SGX Listing Rule 711 (A) and (B) and incorporates SGX's enhanced disclosures on climate-related information which was released in 2021 where applicable. It also contains our disclosures recommended by SASB based on the Telecommunications Services (Industry Standard, Version 2 18-10).

We endorsed the TCFD framework in 2017 and our [TCFD Report 2022](#) presents a detailed discussion of our approach to climate-related governance, strategy, risk management, metrics and targets.

External Assurance

We have engaged Ernst & Young LLP to independently assure a selection of our key ESG disclosures. The independent limited assurance statement (page 67-73) can be read [here](#).

The assurance statement has details on material topics assured, assurance standards used and our procedures, methodologies and assumptions.

Feedback

We are fully committed to listening to our stakeholders and we welcome feedback on this report and any aspect of our sustainability performance. Please address all feedback to the Group Chief People and Sustainability Officer at sustainability@singtel.com.

Key Highlights FY2022 02

Message from Chairman and Group CEO 03

Our Sustainability Approach 05

Climate Change and Environment

Climate action	12
Product stewardship	22

People and Future of Work

Workforce safety and well-being	28
Diversity, equity and inclusion	32
Building a future-ready workforce	34

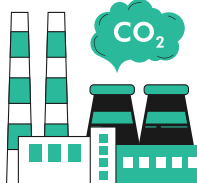
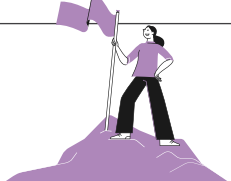
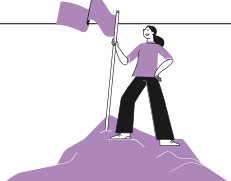
Community Impact

Bridging the digital divide	41
Online safety and well-being	43
Unlocking digital growth opportunities	44
Equity and inclusion	46

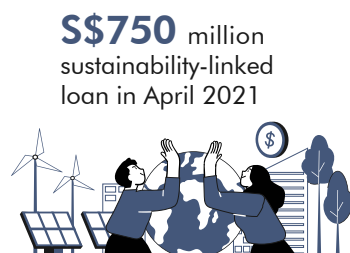
Sustainable Value Creation

Responsible business practices	49
Responsible supply chain management	54
Customer experience	56
Driving innovation	56

KEY HIGHLIGHTS FY2022

Achieved A- score in CDP 2021 	Piloted an internal carbon price at \$S\$50 per tonne of CO₂e on selected Singapore energy-intensive investments	Completed nationwide TCFD analysis for Singapore and Australia	Achieved improvement in GHG emissions intensity of 0.035 tCO₂e/TB from 0.045 tCO₂e/TB last year
APCO Award for our Optus sustainable packaging achievements and efforts in the telecommunications sector for the 5th consecutive year 	Achieved 7.2% Scope 1 and 2 absolute GHG emissions reductions from last year through energy efficiency initiatives and purchase of Renewable Energy Certificates 		
Recognised by the 2022 Bloomberg Gender Equality Index for the 4th consecutive year 	Published our Singtel Group Human Rights Statement 	Launched iCare programme to Singapore employees to raise greater awareness of the importance of mental well-being	Training investment of \$S\$19.2 million in Singapore and Australia, with \$S\$7.8 million focused on future skills
Social Enterprise Champion of the Year at the President's Challenge Social Enterprise Awards 2021 	Community investment of \$S\$33.4 million in Singapore and Australia	Singtel Group's Digital Enablement programmes have supported >740,000 beneficiaries since 2015 	
	Singtel Touching Lives Fund has raised >\$S\$50 million since it was set up in 2002	Launched GOMO Donate Your Data and Optus Donate Your Device	
Completed and externally assured our Scope 3 baseline assessment of all 15 categories indirect GHG emissions in accordance with the Greenhouse Gas Protocol 	Launched our 5G standalone network, which offers customers early access to the most advanced 5G connectivity 		

Successful completion of sustainability-linked financing:



Launched Singtel Group **Sustainability-Linked Bond Framework**, the first such framework for a telco in Asia Pacific



\$A\$300 million Optus sustainability-linked bond, the first telco in Australia to do so

Message from Chairman and Group CEO

2021 was a year of transformation and continuous adaptation. While competitive pressures accelerated in our key markets of Singapore and Australia, COVID-19 made the operating and business environment all that more challenging. As lingering COVID risks remain, we are also seeing the Ukraine conflict impact the global economy, people, businesses and supply chains.

In these tumultuous times, our new corporate purpose, Empower Every Generation, has guided us as we move beyond the current disruption and reinvent ourselves for the 5G era. Introduced last October alongside a set of refreshed core values, it underpins our strategy and reflects our focus on harnessing technology to empower people and businesses and create a more sustainable digital future.

Since we embarked on a reset of our business priorities as well as purpose, we have doubled down on efforts to build our digital core, optimise capital use and unlock value from our assets. We further built on our 5G leadership to reinvigorate our consumer and enterprise businesses, which will place us at the front and centre of this hyper-connected world. Our strategic reset also elevates the importance of people and sustainability, ensuring no one gets left behind, and sustainability is integrated across our network infrastructure and operations. We want to create sustained, purpose-driven impact and value as we embark on our growth areas.

In this eighth Singtel Group Sustainability Report 2022, endorsed by the Singtel Board and Management, we highlight efforts taken as we embraced our new purpose and sustainability framework and executed our digital strategy, and take stock of our progress and achievements against our five-year sustainability 2025 targets.

Taking climate action

The Singtel Group continues to enhance and embed climate action and deliverables into our

business plans. We were the first telco in Asia Pacific to establish a sustainability-linked bond framework in October last year to further align our financing approach with our sustainability strategy. The framework outlines individual Key Performance Indicators (KPIs) and Sustainability Performance Targets (SPTs) that are core to our business, such as emissions reduction targets by 2025, which line up to our previously approved 2030 SBTi targets to achieve net-zero emissions by 2050. These KPIs are also aligned to our management's short and long-term incentive plans. Sustainability-linked financing, such as the A\$300 million Optus sustainability-linked bond issued in November last year, provides investors with the opportunity to participate in our sustainability journey.

During the year, we also mobilised key business units including Networks, Property and Finance to further minimise our environmental footprint.

In February this year, we announced that we will be redeveloping the Comcentre building, our corporate headquarters since 1979. The building design and construction of this site will be guided by sustainability principles and an end-to-end carbon neutral development, in support of our vision to forge a greener, sustainable future.

Renewable energy is an area of focus for the Singtel Group, and we appointed a sub-committee within our Management Committee to oversee our renewable energy and decarbonisation strategy. During the year, we awarded a contract for onsite solar photovoltaic deployment at up to eight of our Singapore facilities. The sites, which will be operational by end-2022, will bring our renewable energy in Singapore to ~5 GWh per annum. Energy sources for our Australian operations will also be backed by 100% renewable energy by end-2025. In addition, we retired 44 GWh of renewable energy certificates to lower our Scope 2 emissions across the Group, with more renewable plans in the pipeline to achieve our emissions targets.

To ensure the business continues to reduce emissions from our operations and factor in externalities such as carbon taxes, we piloted an internal carbon price at S\$50 per tonne of carbon dioxide, which was applied to selected energy-intensive projects and business case analyses for our Singapore operations.

Climate risk assessment is an important part of our environmental strategy and the publication of the Group's inaugural Task Force on Climate-related Financial Disclosures (TCFD) report demonstrates our commitment to provide transparency to stakeholders on how we are managing climate risk and addressing the transition to net-zero within our business. Singtel is one of a handful of progressive Singapore companies to publish a TCFD report, which includes findings from our detailed study on the physical and transition risks from different climate change scenarios in both Singapore and Australia and their financial impact on our business. You can read the report [here](#).

Community impact

Community impact is a key pillar of our sustainability framework, and we have built on our efforts to do more to support our communities.

In support of our customers' interest to engage in both social and environmental actions, we built on the success of Optus' unique Donate Your Data programme that enables our customers to provide vulnerable people with mobile data access. During the year, we introduced a new Donate Your Device programme that provides vulnerable segments in Australia with devices.

We also extended Donate Your Data to Singapore through our all-digital mobile brand GOMO. We launched this in March 2022 and engaged our GOMO customers to contribute their unused data to support digitally excluded seniors in Singapore, and will expand this to the rest of our Singtel mobile customers. Donate Your Data complements our Singtel Digital Silvers programme, where our staff volunteers teach seniors how to go online safely.

Supporting our people, creating sustainable value

The pandemic has accentuated the importance of employee well-being and staying resilient. Our priority is to help our people remain healthy, both physically and mentally, at work and home. We introduced blended ways of working (B-WoW) during the year to allow more flexibility in work arrangements for our people, even in a post-pandemic world.

Our people are critical to Singtel's success, and we instil positive qualities and high ethical standards among them through our six refreshed core values. These values reflect our commitment to excellence, innovation and sustainability and serve as the foundation for how we operate our business as we harness the power of technology to enrich the lives of our customers and the broader community. We want our people to develop and grow with the company, advocating for our stakeholders as responsible corporate citizens and sustainability stewards.

Our first Singtel Group Human Rights Statement published in November 2021 reaffirms our commitment to upholding and protecting the human rights of all individuals through a culture of respect, trust and inclusion in our organisation and supply chains, and to doing no harm to any individual or community.

Keeping the momentum

The Singtel Group Sustainability Report 2022 is an opportune time to take stock of how far we have come. Our disclosures published in the report are testament to our good progress and achievements as we continue to be a responsible sustainability steward that positively impacts the diverse communities in the markets where we operate.

On behalf of the Singtel Board and Management, we thank you for your support.

Lee Theng Kiat
Chairman

Yuen Kuan Moon
Group CEO

Our Sustainability Approach

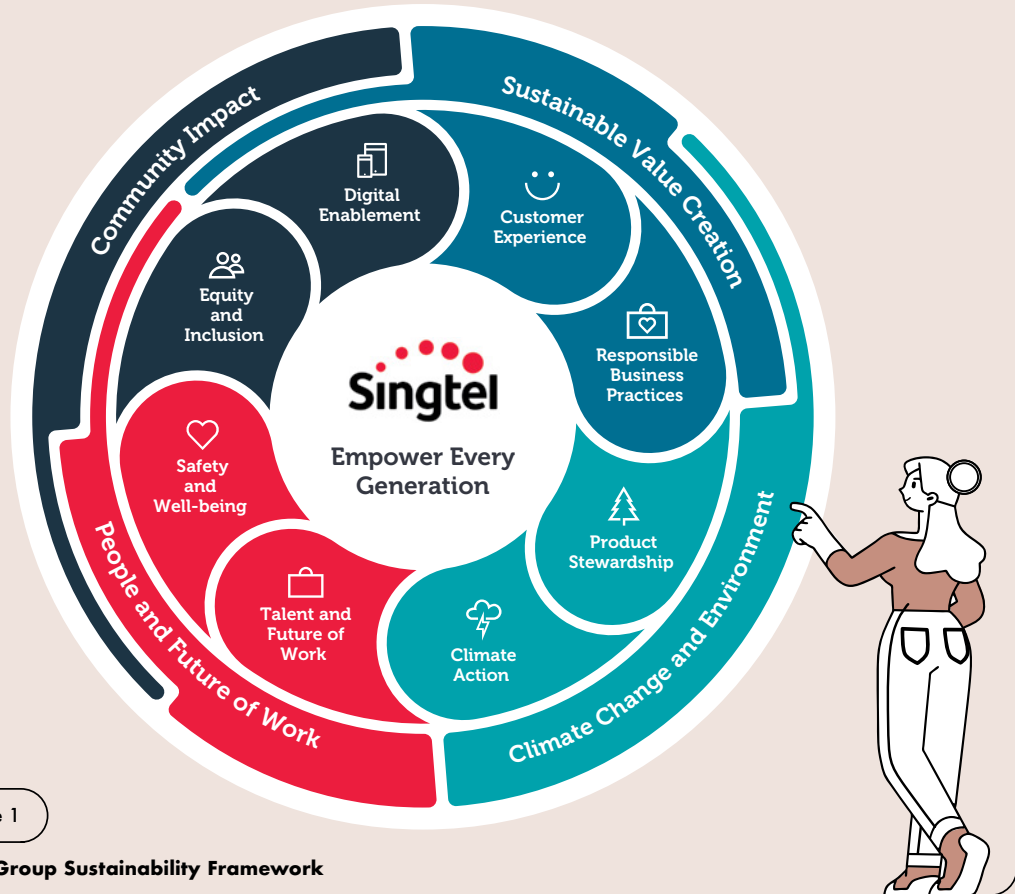


Figure 1

Singtel Group Sustainability Framework

As Asia's leading communications technology company, the Singtel Group aims to create sustainable value for all our stakeholders. We want to attract, develop and retain our people, connect and enrich the lives of our customers and community through innovation, and create a positive impact on our environment.

Under our strategic reset last year, we refreshed our sustainability framework comprising four sustainability pillars of Climate Change and Environment, People and Future of Work, Community Impact and Sustainable Value Creation to better align sustainability with our business strategies and how we engage our key stakeholders (see Figure 1).

Our Group purpose, Empower Every Generation, guides Singtel's sustainability framework and our four sustainability pillars (see Figure 2).

Underpinning this is our focus on empowering our stakeholders, including our employees, customers, communities and suppliers, to create sustainable value and an equitable and inclusive future for all. This is supported by our six corporate values: Cultivate a growth mindset; Operate with integrity; Make customers first; Maximise teamwork; Innovate with a challenger spirit; and Take ownership, which form the mnemonic COMMIT, demonstrating our commitment to excellence, innovation and sustainability.

Our Group purpose and values serve as a compass to guide our strategy, governance, programmes and performance so that we deliver long-term business growth and value creation for stakeholders while delivering purpose and care for our people and the environment.

At the workplace, we want to empower our people to create sustainable and positive impact through the work they do. These refreshed core values will guide their daily

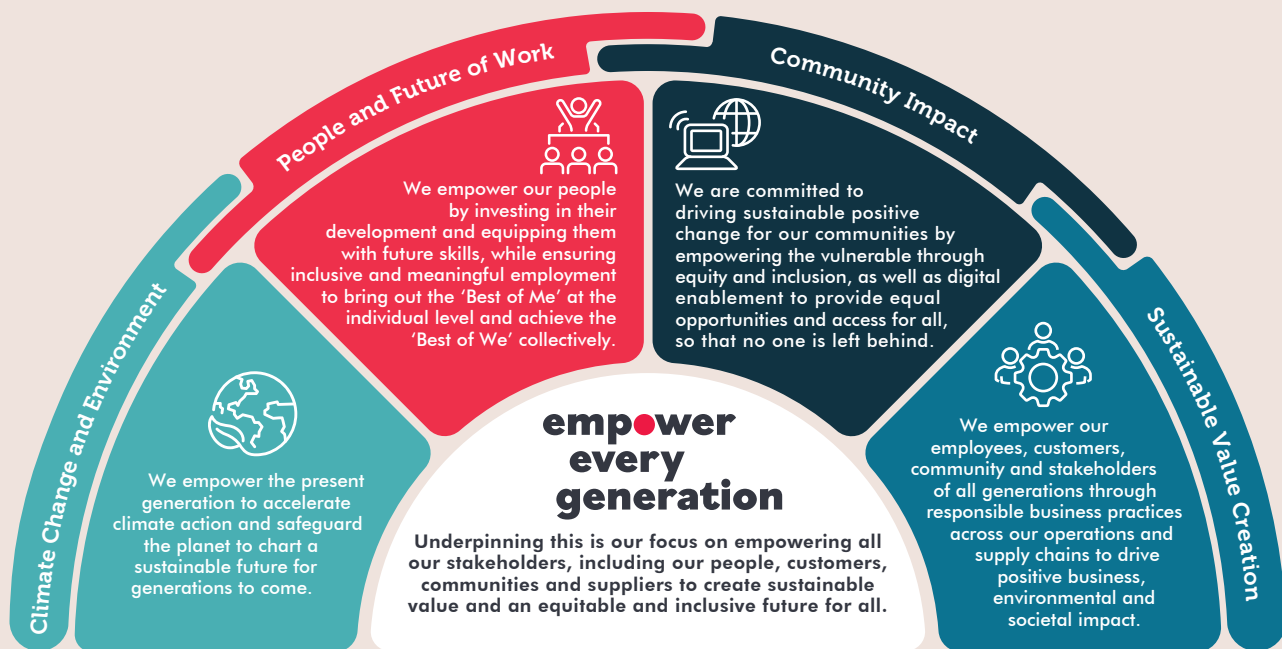


Figure 2: Singtel Group Purpose and Sustainability Framework

actions and support the development of a purpose-driven culture. For example, in alignment to our core value of operating with integrity, our people and workforce across our value chain are expected to behave responsibly and ethically. This is critical for building trust with stakeholders like customers, partners, communities and fellow colleagues. We also cultivate a growth mindset among our people by encouraging them to keep on learning so that they can perform effectively while adapting to the complexities in this ever-changing operating environment.

Our sustainability framework supports the ten principles of the United Nations Global Compact (UNGC) which Singtel has been a signatory since 2007, our priority 2030 UN Sustainable Development Goals (SDGs) and the global and local initiatives that Singtel Group is committed to. For example, we are a member of The Valuable 500 and a founding member of the Singapore Business Network on DisAbility (SBNoD) to advance the equitable inclusion of persons with disabilities.

STAKEHOLDER ENGAGEMENT AND MATERIALITY

We engage our internal and external stakeholders through regular dialogue on an extensive range of topics using various platforms and feedback mechanisms. This is on top of our regular interim and formal materiality assessments. With a deep understanding of all our stakeholders – their changing needs and interests as

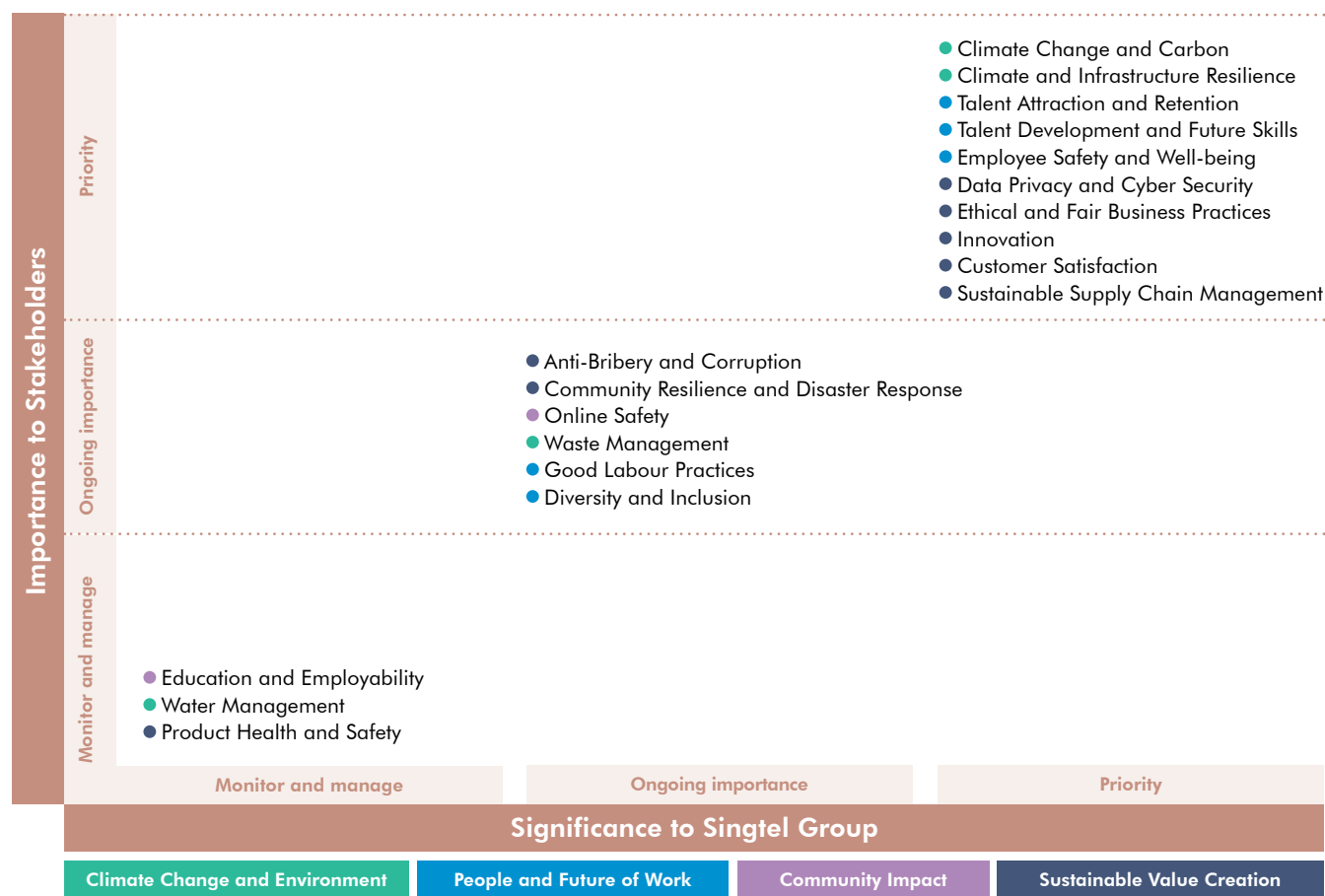
well as emerging concerns – we ensure the relevance of our sustainability strategy and programmes to deliver the intended outcome and impact. For example, as Environmental, Social and Governance (ESG) considerations become increasingly important investment criteria for investors, we engage them regularly to communicate our sustainability goals, plans and progress.

These sessions help us understand their views on sustainability and how it influences their investment decisions. For example, our investors are very interested to understand what Singtel is doing to address environmental impact and climate change, data protection, sustainable supply chain management and digital inclusion for underserved communities.

Through our sustainability-linked financing, we also give investors an opportunity to participate in our sustainability journey. More details of our stakeholder engagement and expectations can be found on our Sustainability [webpage](#).

We conducted our last formal stakeholder engagement and materiality assessment in 2021 across Singapore and Australia. This exercise identified a list of material topics and issues that our stakeholders are most concerned with (see Figure 3). These key topics formed our areas of focus from FY2021 to FY2025.

Figure 3: Singtel Group materiality matrix



Materiality methodology overview

Our materiality assessment aimed to identify and assess the ESG issues, risks and opportunities in areas that mattered most to our stakeholders and the Singtel Group. It adopted a rigorous data-driven approach that evaluated both internal and external perspectives, using extensive landscape research and in-depth stakeholder insights, and involved four phases:

1. Risk sensing

We analysed a wide range of global and industry studies on current and future sustainability trends to identify long-term sustainability success factors. This included literature guidance from internationally recognised standards and resources like the Science Based Targets Initiative (SBTi) and the GSMA Sustainability Assessment Framework.

We conducted competitive benchmarking of global telecommunication peers' sustainability goals and supported SDGs.

2. Stakeholder engagement

We obtained a detailed view of the ESG topics our stakeholders expected of the Singtel Group through direct engagement and feedback. We consulted close to

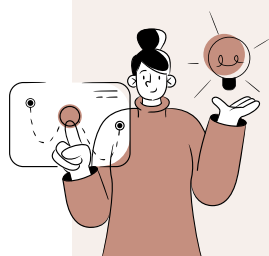
2,500 individuals from ten key stakeholder groups through online surveys and one-on-one interviews. Both internal and external stakeholders also evaluated our ESG performance and suggested areas for improvement.

3. Materiality workshop

The risk sensing and stakeholder engagement identified 19 material topics which were grouped into four main sustainability themes. These were validated at a materiality workshop with the sustainability teams at Singtel and Optus to ensure topic relevance and significance, and subsequently with the Singtel Management Committee and Board. In addition, we conducted supply chain sustainability and organisational life cycle assessments to identify direct and indirect environment and social impact as well as risks and opportunities across our business operations and value chain.

4. Material topic prioritisation

The 19 topics were plotted onto a materiality matrix based on the importance to stakeholders and significance to the Singtel Group. This gave us strategic clarity in responding to opportunities and risks, which we grouped into three clusters: Priority, Ongoing importance, Monitor and manage.



SUSTAINABILITY GOVERNANCE AT SINGTEL

Singtel Group is committed to implementing an effective governance structure to ensure that the entire business is aligned to sustainability and creating positive, long-term impact, guided by our Group purpose and sustainability framework. The various committees, including Board committees, oversee various aspects of our sustainability efforts to ensure that our actions are robust and rooted in integrity (see Figure 4).

Singtel Group complies with SGX's new requirement for Directors to undergo mandatory sustainability training. Some of our Board of Directors have attended and the rest will be attending sustainability training courses on ESG Essentials and Sustainability E-Training for Directors offered by the Singapore Institute of Directors and Institute of Singapore Chartered Accountants respectively.

Management ESG KPIs

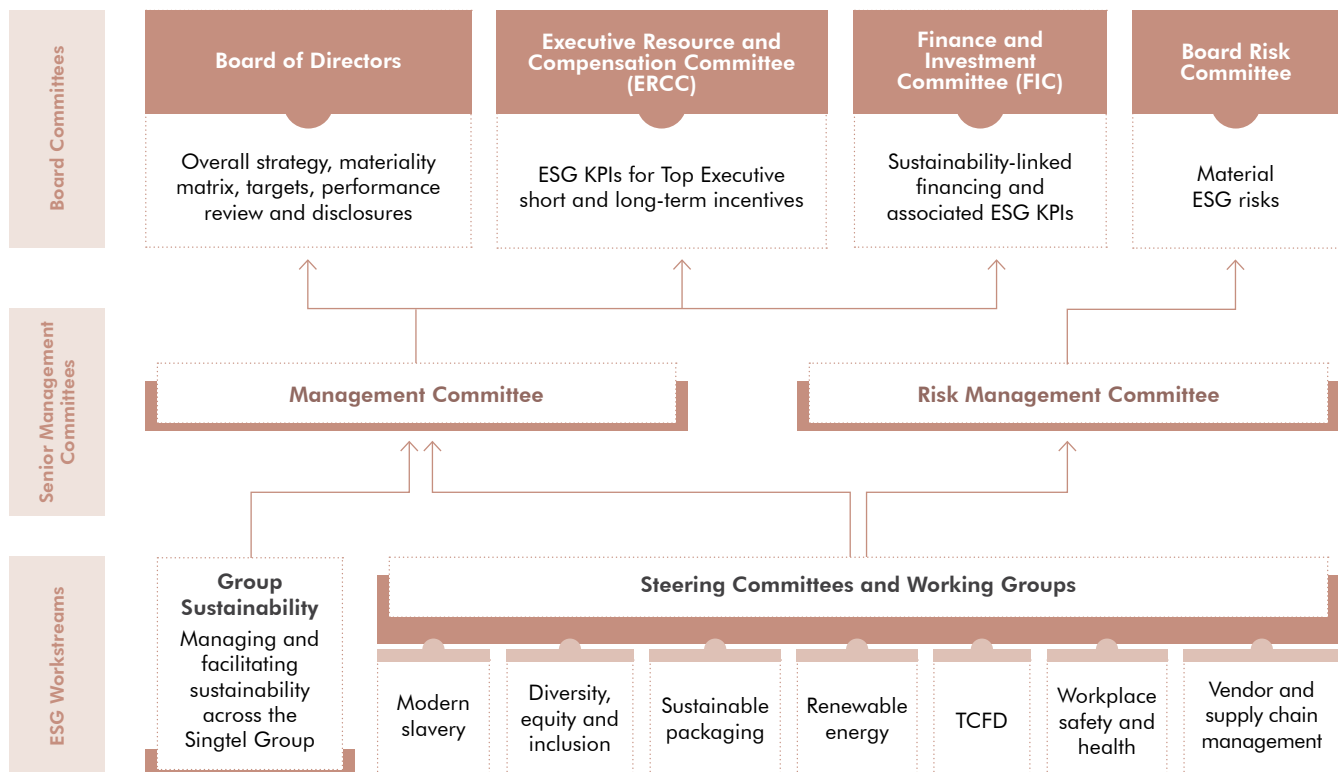
Given that many sustainability issues cannot be addressed overnight, our Top Executives have collective and common ESG targets representing 20% of their long-term incentive plans. These targets cut across key sustainability themes like climate change and

environment as measured by CDP, reputation and responsible business practices as measured by MSCI, community impact in terms of our digital inclusion and enablement targets, and talent and people including diversity and talent retention. They include specific, time-bound key performance indicators (KPIs) such as reaching 32% of female employees in management by FY2025. This is to advance the sustainability agenda and embed deeper accountability and ownership across the company.

In addition, our Management Committee members have related ESG targets for their short-term incentive plans, which comprise 10% of their annual balance scorecard performance. While they relate to common sustainability themes, the focus and weightage may vary for each executive given their different levels of influence and impact on these ESG KPIs.

The Management Committee's KPIs are also cascaded down to their business units, departments and employees, whose performance bonus and other incentives are tied to their KPIs. The Singtel Board is the highest governance body. For more information on our Board and Board Committee roles in sustainability governance, refer to our [website](#).

Figure 4: Singtel Group sustainability governance structure



2025 SUSTAINABILITY GOALS AND PROGRESS

We have set five-year 2025 sustainability targets for these ten most material topics for the Singtel Group and we report our plans, achievements and progress towards these targets in our annual sustainability reports. We also disclose our efforts for the remaining nine material topics in the reports.

Material Topic	2025 Targets	FY2022 Progress
Climate Change and Environment		
 Climate Change and Carbon	Reduce absolute Greenhouse Gas (GHG) emissions by 25% for Scope 1 and 2 by 2025, using 2015 as baseline, in line with our 2030 SBTi targets and 2050 net-zero ambitions	494,680 tCO ₂ e GHG emissions in FY2022 (page 25) or 3.3% reduction from 2015 (page14). Reduced emissions intensity (tCO ₂ e/TB) by 22% from the prior year. Maintained A- in CDP 2021.
 Climate and Infrastructure Resilience	Continue to invest in network adaptation and resilience, while disclosing long-term climate change risks and mitigation in line with the TCFD framework	Total capital investment of S\$2.2 billion in our networks. Completed nationwide TCFD analysis for Singapore and Australia, with a standalone TCFD report published.
People and Future of Work		
 Talent Attraction and Retention	Attrition of high performers at no more than 60% of normal attrition	58.9% of normal attrition rate in FY2022.
 Talent Development and Future Skills	Training investment of S\$90 million from 2021 to 2025	Training investment of S\$19.2 million (page 35). Cumulative S\$36 million of training investment since 2021.
 Employee Safety and Well-being	Zero fatality Well-being score above 80%	Zero fatality in FY2022 (page 38). Well-being score of 82% as measured in annual Your Voice Survey (page 29).
Sustainable Value Creation		
 Data Privacy and Cyber Security	Uphold the highest standards of customer data privacy protection and cyber security measures in adherence to data protection laws – Personal Data Protection Act (PDPA) in Singapore and the Privacy Act and Telecommunications Act in Australia – with zero major incident	We conduct our business in strict adherence to data protection laws in Singapore and Australia. There have been minor lapses due to IT, process or human errors. We continue to educate our employees, and improve practices and processes to reduce the recurrence of data breaches (page 49-51).
 Ethical and Fair Business Practices	Uphold the highest standards of responsible business practices with no major controversies that result in regulatory fines, sanctions and/or doubled monthly customer churn rate	We strive to uphold the highest standards of responsible business practices. We did not have any major controversy during the year (page 52-54).
 Innovation	Continue to develop new digital business and services to meet customers' changing needs	We continue to drive and embed innovation in our consumer, enterprise and digital businesses and operations, with 5G as an enabler for our customers, community and the environment (page 56-58).
 Customer Satisfaction	Continue to uplift customer experience and remain as service provider of choice	We continue to lead in customer experience and maintain our market leadership position. As of March 2022, we were leading the market with our Net Promoter Score in Singapore (page 56).
 Sustainable Supply Chain Management	No major human rights incident in our supply chain	We published the Singtel Group Human Rights Statement during the year, reaffirming our commitment to upholding and protecting the human rights of all individuals, including those in our supply chain. There were no human rights incidents in FY2022 (page 54-56).

We also mapped our ten priority material topics and their relevance within our value chain, according to the impact we contributed or caused. This allowed us to visualise areas of impact that we could make within our business and supply chain. We also undertook a Sustainable Development Goals (SDGs) prioritisation exercise for Singtel Group using a weighted scoring system. The six priority SDGs (see Table 1) reflect where we can best contribute and create impact, aligned to our key focus areas and programmes.

Building a sustainable future for all requires the commitment and effort of all stakeholders in the ecosystem. SDG 17 – Partnerships for the Goals – therefore underpins our sustainability strategy as we seek to collaborate with our stakeholders to create shared value and positive impact.

Table 1: Six priority UN SDGs for Singtel Group

UN SDGs	Description	Singtel Group's Position	Examples of Singtel Group's Efforts
	Goal 3: Good Health and Well-being Ensure healthy lives and promote well-being for all at all ages	The Singtel Group strives to ensure good physical and mental health for our people in the workplace and in our community, including online safety and cyber wellness	- Launched the iCare programme to our Singapore employees to raise greater awareness of the importance of mental well-being - Continued with our Optus Digital Thumbprint programme and partnered leading organisations like DQ Institute and TOUCH on outreach to students and parents on staying safe online
	Goal 8: Decent Work and Economic Growth Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	The Singtel Group is committed to developing our people and the community and creating a vibrant work environment across our global operations that enables individual, business and market success	- Formalised and published the Singtel Group Human Rights Statement, covering critical human rights topics including child rights - Partnered the Union of Telecom Employees (UTES) in Singapore and enhanced employees' remuneration and benefits packages, as well as worked closely through the Company Training Committee to accelerate reskilling of unionised employees and co-create pathways to help them transform their roles - Renegotiated the Optus Employment Partnership Agreement (EPA) with enhancements focused on diversity - A founding member of the Singapore Business Network on DisAbility and partnered Australian Network on Disability in Australia to advance equitable employment opportunities for persons with disabilities and improve staff awareness
	Goal 9: Industry, Innovation and Infrastructure Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation	The Singtel Group innovates continuously to bring the best services to our customers and collaborates with change makers to build an effective and sustainable ecosystem	- Continued to support and empower impact start-ups that leverage technology to address social and environmental issues in the community through Singtel Group Future Makers, our regional social innovation accelerator and capacity building programme - Invested in our 5G network and the Optus Living Network
	Goal 11: Sustainable Cities and Communities Make cities and human settlements inclusive, safe, resilient and sustainable	The Singtel Group leverages our ICT competence to develop solutions that improve quality of living and societal inclusion, and focuses on building a resilient network infrastructure	- A founding member of the Australian Business Roundtable for Disaster Resilience and Safer Communities (ABR) to build nation's climate resilience and helped to shape Australia's first National Disaster Risk Reduction Framework - Supported small and medium enterprises to transform their operations with digital solutions in order to operate with agility, efficiency and productivity
	Goal 12: Responsible Consumption and Production Ensure sustainable consumption and production patterns	The Singtel Group actively monitors and improves our resource and waste practices to increase circularity in our business operations and supply chain	- Submitted our inaugural report on packaging, including plans for reducing, reusing and recycling, as part of the National Environment Agency's Mandatory Packaging Reporting requirements in Singapore - Committed to the principles of the Australian Packaging Covenant Organisation since 2007
	Goal 13: Climate Action Take urgent action to combat climate change and its impacts	The Singtel Group is committed to minimising our environmental footprint in our business operations and value chain and meet our carbon reduction targets	- Played an active role on the GSMA Board and its Climate Action Committee to lead the industry in embarking on a landmark science-based sector-specific decarbonisation pathway to reduce GHG emissions and achieve net-zero emissions by 2050 - Completed nationwide TCFD analysis for Singapore and Australia, with a standalone TCFD report published

Climate Change and Environment

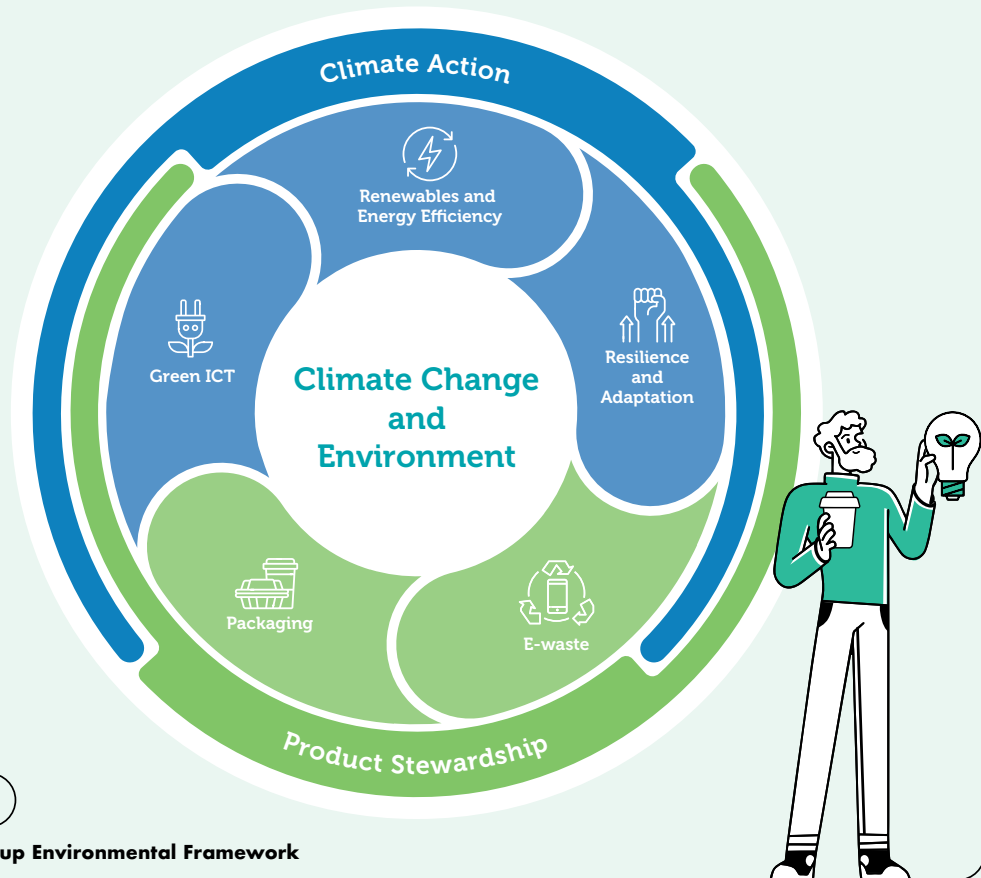


Figure 1

Singtel Group Environmental Framework

The Singtel Group is committed to minimising our environmental impact and building operational resilience to deliver long-term value to our business, stakeholders and communities. Figure 1 outlines the Singtel Group Environmental Framework. We are also guided by our Environmental Management System and Environment Policy to manage and minimise our impact. Please refer to our [website](#) for more information.

During the year, we also aligned our approach with our Group purpose and mapped the values and behaviours against our sustainability framework. We want to empower the present generation to accelerate climate action and safeguard the planet to chart a sustainable future for generations to come. We aim to achieve the smallest environmental

footprint and support communities adversely affected by climate-related disasters, collaborating with our partners and stakeholders in the ecosystem.

The world continues to witness the effects of climate change in the form of frequent extreme weather events like droughts, floods and heatwaves. Concerned with the reliability and resilience of our network infrastructure, our stakeholders are interested in our network adaptation measures for mitigating these risks.

This is particularly relevant in Australia which is prone to natural disasters. We are committed to ensuring that our network infrastructure remains resilient before and during a severe weather event. We also provide additional support to affected customers and communities.



Maximising value creation with Singtel Group core values

Values		Climate Change and Environment
C	Cultivate a Growth Mindset	We learn, unlearn and relearn in an everchanging environment brought about by climate change, which poses increasing complexities and uncertainties.
O	Operate with Integrity	We operate sustainably and with integrity, as we have a moral obligation to meet the needs of the present generation without jeopardising the ability of future generations to meet their own needs.
M	Make Customers First	We empower our customers to engage in positive environmental actions, and build resilience into our networks and operations to keep people connected and safe during times of natural disasters.
M	Maximise Teamwork	We collaborate among our business units and work closely with partners in our ecosystem to minimise our environmental impact.
I	Innovate with a Challenger Spirit	We recognise that innovation is critical for the transition to net-zero and the importance of evaluating our business model, value proposition and operational practices to manage climate risks and opportunities through our decarbonisation and adaptation strategy.
T	Take Ownership	We are committed to minimising our environmental footprint and building operational resilience for the long-term benefit of our business, communities and customers.

For example, during the year, we responded promptly to the extensive floods that affected New South Wales and Queensland to maintain the availability of our network. Where our mobile sites were affected, we worked swiftly to restore services and deployed our portable infrastructure to boost mobile coverage at areas such as evacuation centres. We also provided additional free mobile data to customers in affected areas, set up a dedicated support hotline and contributed to flood relief efforts.

We recognise stakeholders' concern with our greenhouse gas (GHG) emissions from powering communication and connectivity through our telecommunications network and data centres. Hence we are putting a strong focus on reducing emissions through energy efficiency initiatives and are actively sourcing electricity that is backed by renewable energy sources and attributes.

We pay strong attention to how we manage our waste. For our business, the biggest waste stream is e-waste given the increased use of digital devices driven by ICT, IoT solutions and the pandemic. With heightened expectations from stakeholders on resource optimisation, companies are increasingly required to ensure product stewardship from 'cradle to cradle', that is, upstream resource to end-of-life management and/or beginning of new life with the aim of improving circularity.

The subsequent sections describe how we intend to meet these expectations and ambitions.

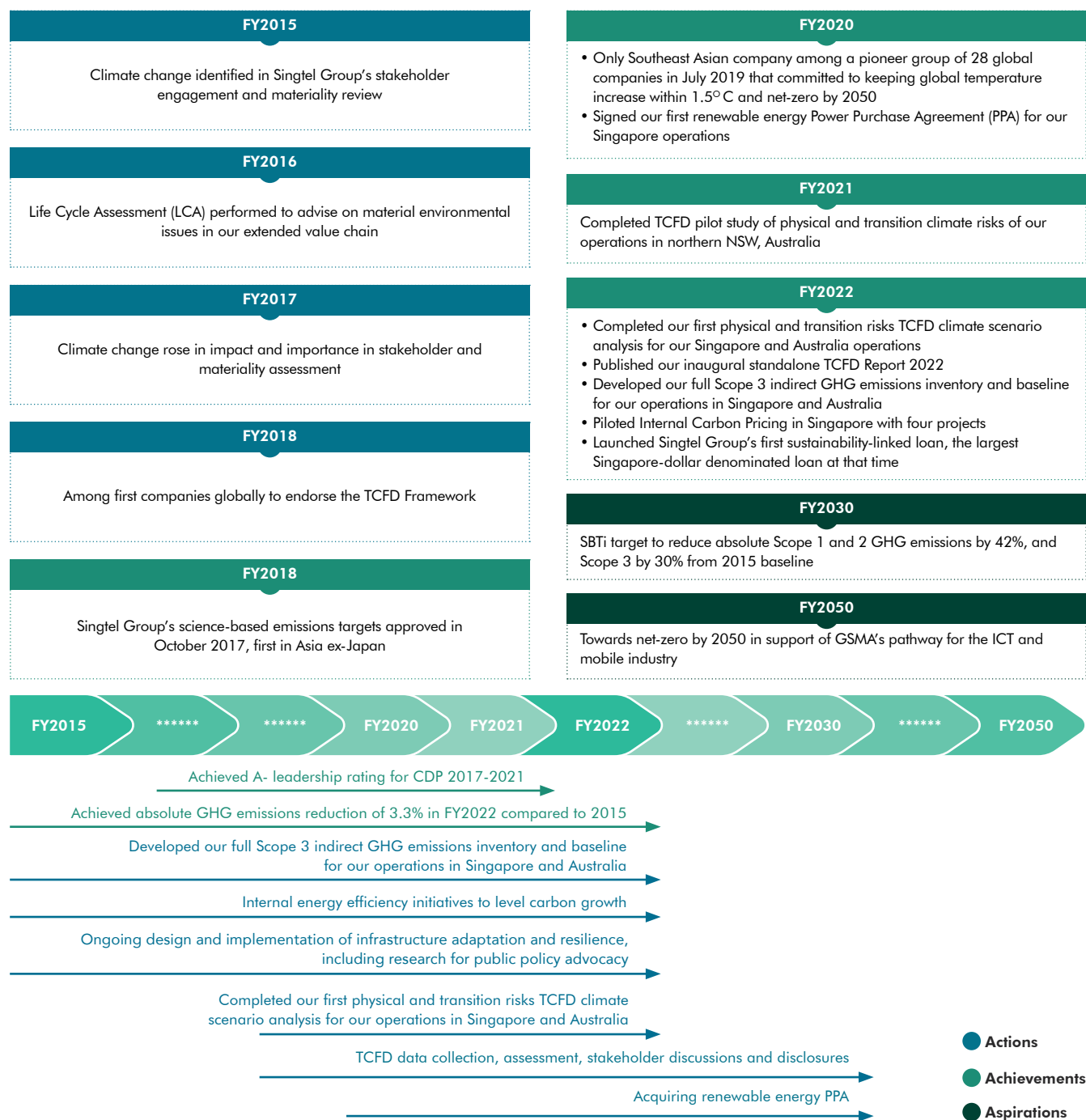
CLIMATE ACTION

The topic of climate change and environment is an important agenda for the Singtel Group. We have been refining our approach in tackling both risks and opportunities of climate change over the years.

Since 2017, our climate strategy and targets have been developed and aligned with internationally recognised frameworks such as Task Force on Climate-related Financial Disclosures (TCFD) and the Science-based Targets initiative (SBTi). The various studies, analyses and exercises that we have conducted have been key to guiding our strategy in managing these risks and opportunities as the global climate agenda evolves (see Figure 2 on the next page).

We recognise the importance of communicating how we manage our climate-related risks and opportunities to maintain stakeholder trust and confidence. In 2017, we endorsed the TCFD framework which aims to help financial institutions and investors understand the financial implications of climate risks on businesses. We recently completed our climate scenario analysis as part of our TCFD efforts and have published our inaugural standalone TCFD Report 2022.

In this section, we articulate our efforts to support our vision to drive long-term business environmental sustainability through our climate action plan (see Figure 3 on the next page).

Figure 2: Singtel Group climate action journey towards net-zero by 2050**Figure 3: Singtel Group climate action plan**

Our climate action journey during the year

Given the many interdependent yet specific dimensions of climate action, we took reference from the Corporate Climate Mitigation Blueprint published by WWF and BCG (2020) to guide us in developing our climate action plan.

1. Actively managing our value chain emissions towards net-zero

We have set rigorous corporate decarbonisation goals and targets. Our sustainability efforts are driven towards achieving a climate conscious future as we recognise our role and responsibility in tackling climate change. Our SBTi targets were aligned to a well below 2°C pathway when it was approved in October 2017 (see Figure 4). In May 2022, MSCI further assessed the implied temperature rise of Singtel Group's targets as 1.59°C.

Given that it has been five years and coupled with the updated Intergovernmental Panel on Climate Change (IPCC) report information, we are working on reviewing our SBTi targets for alignment with a 1.5°C pathway, the most ambitious goal of the Paris Agreement. In addition, we will develop a roadmap for our net-zero target by 2050 which we announced in 2019.

During the year, we completed our first full Scope 3 indirect GHG emissions assessment for FY2021 (see Figure 6 on next page) and FY2022. Our top 3 categories out of the 15 categories within Scope 3 indirect GHG emissions are purchased goods and services, capital goods and investments. Collectively they comprise 94.14% of our Scope 3 indirect GHG emissions (see Figure 5).

Figure 4: Singtel Group Scope 1 and Scope 2 baseline, performance and targets

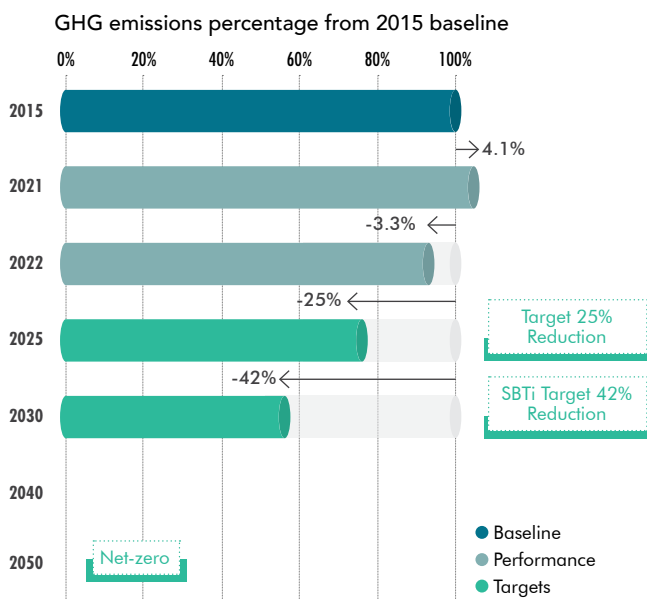
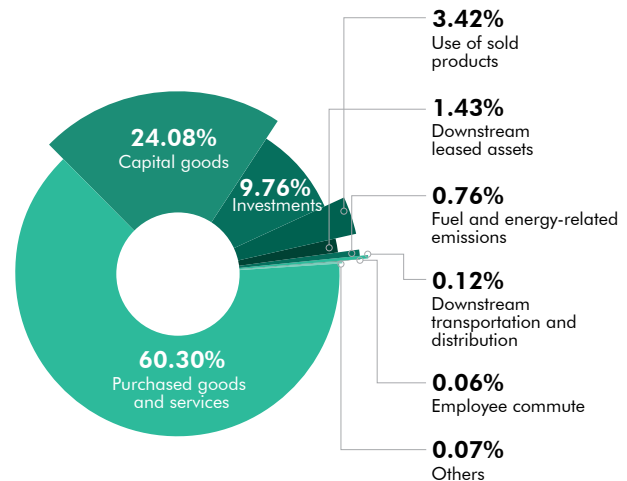


Figure 5: Singtel Group Scope 3 indirect GHG emissions profile FY2021



We will continue to refine our Scope 3 emissions through direct engagement with our key suppliers over the coming years.

Reduce value chain emissions in line with our SBTi 1.5°C ambition

We have developed the Singtel Group decarbonisation hierarchy to guide us in our reduction efforts. Our options and priorities for decarbonisation in order of preference are summarised in Figure 7 on page 17.

Through the various efforts outlined below, in 2022 we reduced absolute Scope 1 and Scope 2 emissions by 7.2% from 2021, and by 3.3% from our SBTi baseline of 2015. The following initiatives are undertaken.

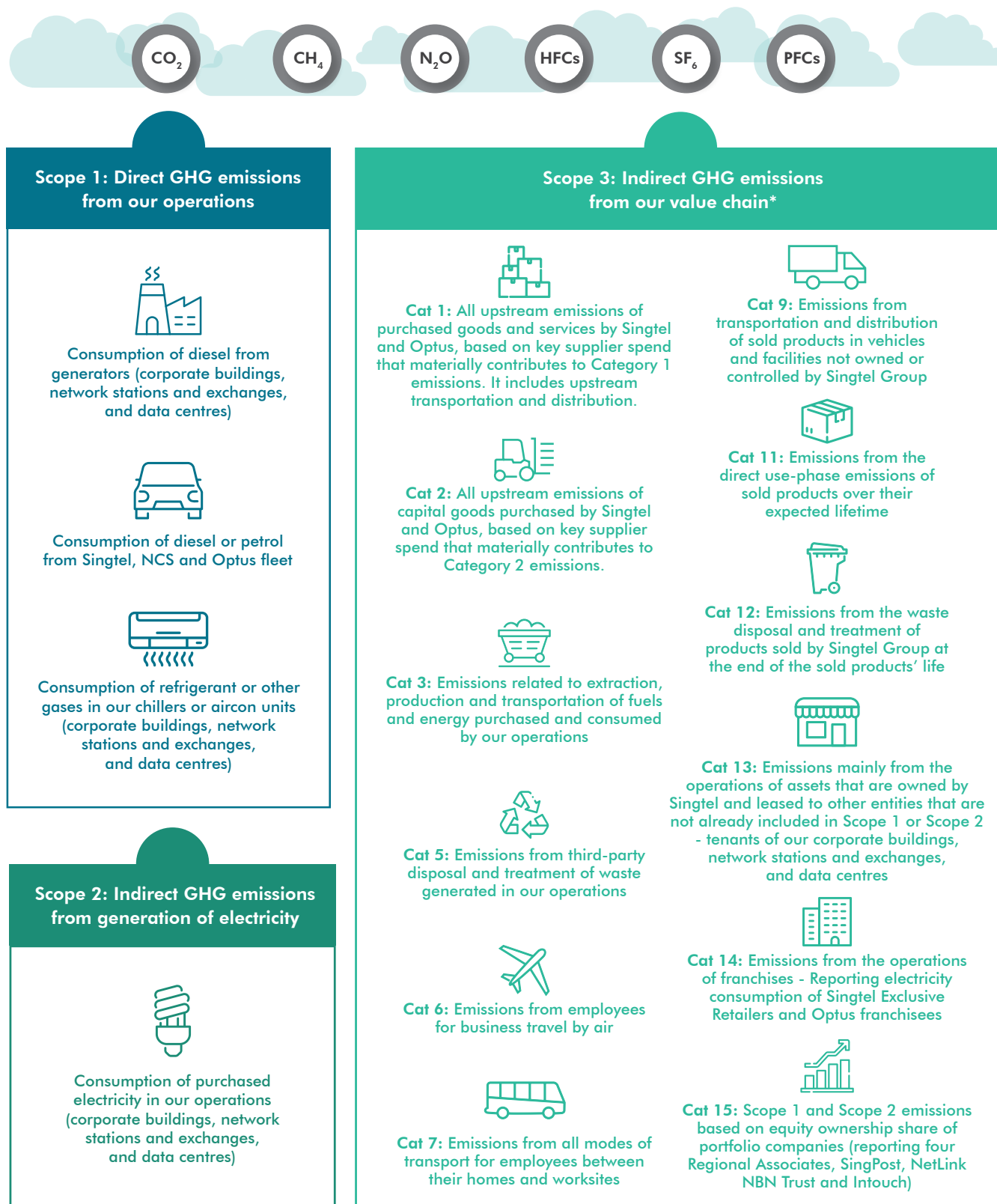
a) Reducing Scope 1 emissions through electrification

Singtel embarked on an electrification journey during the year, as we committed to switching over 21 units of our Outside Plant Engineering fleet to electric vehicles, with the aim of converting the entire Singtel and NCS fleet of 187 vehicles progressively.

b) Improving energy efficiency

We continuously look at improving our energy use and efficiency. Several of our programmes in Singapore and Australia target energy reduction across key energy-intensive touch points, such as network infrastructure, data centres, satellite earth stations and office buildings (see Table 1 on page 16). More details on our approach can be found at our [website](#).

Figure 6: Singtel Group GHG emissions inventory



*Cat 4: Upstream transportation and distribution have been included in Cat 1 and Cat 2

Cat 8: Reported in Scope 1, 2 and Scope 3 Cat 1 and 2 emissions for any upstream leased assets

Cat 10: Not applicable as Singtel Group does not manufacture any products or sell products that require additional processing by the customer to use

Table 1: Energy saving efforts in Singapore and Australia

Programme	Nature of programme	Progress in FY2022
Replacing, overhauling, and optimising chillers and related equipment in Singapore	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. Our energy roadmap has been updated and extended until next year, and we will replace 28 units of older chillers and related M&E equipment located at our exchanges and office buildings.	Estimated energy savings and GHG emissions avoidance: To date, we have replaced 25 out of 28 chillers, with nine completed during the year. As part of the ongoing initiative, we target to upgrade the last batch of three chillers by the end of next year. 1,244 MWh/year (4,480 GJ/year) or 508 tCO ₂ e/year
Replacing Uninterruptible Power Supply (UPS) in Singapore	We replaced ten conventional-type UPS to modular units at our data centres in Singapore. This is a change from conventional UPS to Modular UPS where depending on the load, the UPS will determine the number of power modules in operation. The rest of the power modules will be in energy saving mode.	Estimated energy savings and GHG emissions avoidance: 767 MWh/year (2,762 GJ/year) or 313 tCO ₂ e/year
Converting to energy efficient mobile base stations in Singapore	We continue to upgrade our mobile networks in Singapore and convert them to energy efficient mobile base stations. We also activated power saving features in the 4G mobile base stations – Enhanced cell sleep mode and AI (Artificial Intelligence) powered MIMO (Multiple Input Multiple Output) sleep mode.	Estimated energy savings and GHG emissions avoidance: 99.73% in Singapore. 1,012 MWh/year (3,645 GJ/year) or 413 tCO ₂ e/year
HFC Decommissioning in Australia	Power down of obsolete HFC (Hybrid Fibre Coaxial) fixed network infrastructure.	Estimated energy savings and GHG emissions avoidance: 10,350 MWh/year (37,260 GJ/year) or 8,177 tCO ₂ e/year
Exchange Power System Upgrades in Australia	Replacement of existing power system with a 91% efficiency with equipment that has a 96% efficiency.	Estimated energy savings and GHG emissions avoidance: 131 MWh/year (473 GJ/year) or 104 tCO ₂ e/year
LED Upgrades (4 Exchanges) in Australia	Replacement of fluorescent tube lighting with LED.	Estimated energy savings and GHG emissions avoidance: 669 MWh/year (2,407 GJ/year) or 528 tCO ₂ e/year

We certify our business to external environmental standards where relevant. Three of our facilities obtained the Singapore BCA-IMDA Green Mark for Data Centres Platinum Certification in 2021: Choa Chu Kang Telecommunications Exchange, Kim Chuan Telecommunications Complex 2 and DC West. In addition, Kim Chuan Telecommunications Complex 1 and 2, NCS Bedok Data Centre and DC West are also certified to SS564 Green Data Centres and ISO 50001 Energy Management System.

Moving forward, we remain committed to developing our new facilities sustainably with the lowest possible carbon impact, highest possible energy efficiency as well as superior and innovative environmentally sustainable designs.

c) Increasing deployment of onsite renewable energy

We have further enhanced our renewable energy strategy during the year to inform and guide us as we progress (see Figure 8 on page 18).

**New Singtel electric vehicle**

In line with our decarbonisation strategy, Singtel Group seeks to maximise solar deployment at our premises. Since our first installation of photovoltaic panels at our Pasir Ris Telephone Exchange in 2009, we progressively increased the use of renewable energy in our network infrastructure. In the year, our renewable energy including RECs accounted for 5.8% of our energy consumption. With the installation of a 1.65 MWp solar power system on the rooftop of our NCS Bedok Data Centre under a Power Purchase Agreement (PPA) arrangement, it has generated 2,249 MWh which accounted for 13% of the data centre's consumption during the year. The solar power system, commissioned in March 2020, was one of the largest single-roof solar-powered data centres in Southeast Asia at that time.

We completed a feasibility study on all our properties during the year to assess their solar potential. We have since awarded an Engineering, Procurement and Construct (EPC) contract to deploy more renewable energy projects at up to eight Singtel sites including NCS Hub, Bukit Timah and Seletar Satellite Earth Stations, Hougang Exchange and One Serangoon North. The total capacity of these projects when completed will potentially reach 5 MWp and is expected to generate 5.4 GWh/year of renewable energy for our Singapore operations.

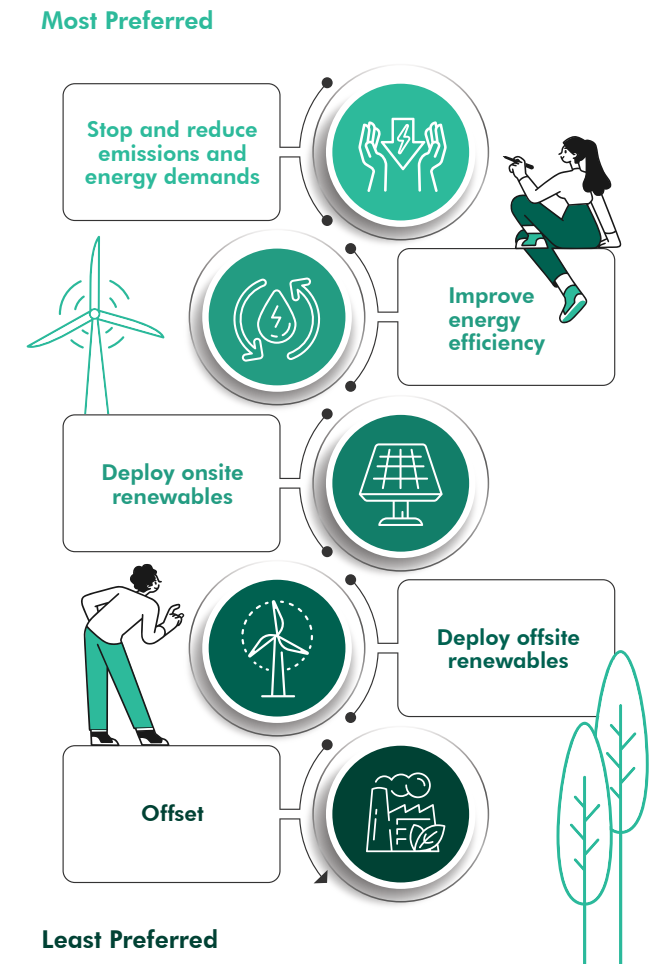
4G base station power saving features

We implemented energy saving features on our 4G mobile base stations to reduce electricity usage during low traffic hours for both outdoor and inbuilding sites.

- Enhanced Cell Sleep Mode:** Without this feature, cells are constantly turned on at all hours. Now, these capacity cells can detect low traffic conditions and power down to save energy.
- AI Powered MIMO Sleep Mode:** Based on machine learning, this feature can reduce power consumption in radios by automatically reconfiguring to a smaller MIMO (4x4 MIMO to 2x2 MIMO) and SIMO (Single Input Multiple Output) (2x2 MIMO to SIMO) configuration during low traffic hours. The feature is activated round the clock.



Figure 7: Singtel Group decarbonisation hierarchy



d) Sourcing of offsite renewable energy and attributes

Given the land and roof constraints of our property and facilities, the onsite renewable deployment will be limited for our decarbonisation efforts. It is essential for Singtel to adopt offsite renewable energy PPAs as a means to achieve our emissions reduction targets and ambition. However, Singapore has limited local renewable energy supply and Australia has certain risks linked to accelerated PPAs deployment.

We are looking to develop a portfolio of renewable energy certificates (RECs) to offset our Scope 2 emissions. In 2022, we secured 13.8 GWh of local Singapore RECs per annum from 2022 until 2025 and will start to retire these certificates from next year. We bought 2,000 I-RECs to lower our Scope 2 emissions in Singapore. We are also working to secure imported renewable energy in the coming years for our Singapore operations. In Australia, we retired 42 GWh of large-scale generation certificates (LGCs) during the year.

We are currently working on a national tender for renewable energy procurement to have 100% of our electricity requirements backed by renewable energy sources by end-2025 for our Australia operations. We will proactively seek renewable energy potential in the markets where we operate to secure renewables PPAs for our operations and buy RECs as near to our operations as possible where local RECs are limited.

e) Investing in high-quality carbon offsets

After exhausting our first four options to decarbonise our Scope 1 and 2 emissions, we will look to carbon offsets as a last resort to manage our emissions that are hard to abate. While we have not acquired any carbon credits to date, we are preparing ourselves by monitoring the standards, accounting treatment, government recognition and other developments closely.

2. Linking emissions to financing to quantify carbon and drive changes

We recognise the importance of linking sustainability and finance to include carbon considerations in business decision making processes to drive change. This includes making low-emission choices for the business and making investments in climate-related projects.

a) Sustainable finance

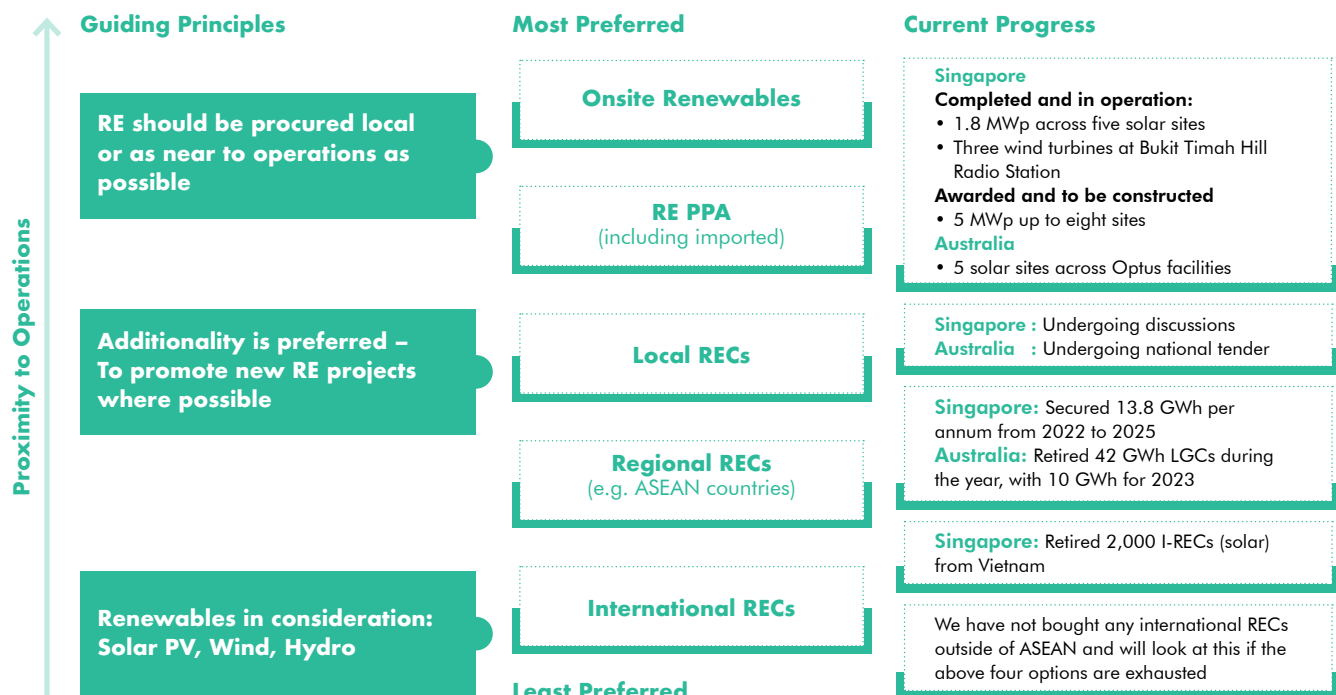
We are committed to linking our financing approach to our progress in achieving mid to long-term sustainability goals that will enable us to reach net-zero by 2050.

In April 2021, we launched our first sustainability-linked revolving credit facility of S\$750 million, which was the largest Singapore-dollar denominated sustainability-linked loan in Singapore at that time. The launch marked Singtel Group's foray into sustainable financing under our new programme called Olives, that is linked to our sustainability targets. This three-year loan, provided by three local banks, features interest rate discounts pegged to pre-determined ESG targets in areas such as climate action and risk management, emissions management and workplace safety and health metrics.

Under Olives, we published the **Singtel Group Sustainability-Linked Bond Framework** in October 2021, which was a first for a telecommunications company in Asia Pacific. The framework outlines individual Key Performance Indicators (KPIs) and Sustainability Performance Targets (SPTs) for two different issuers, Singtel and Optus, and allows both to issue sustainability-linked bonds (SLBs) under a single framework.

This framework affirms our commitment to net-zero emissions by 2050 and allows our investors to participate in our sustainability journey. Subsequently in November 2021, Optus priced an A\$300 million seven-year fixed rate SLB, committing to reduce our Scope 1 and Scope 2 GHG emissions in Australia by 25% by 2025, compared to a 2015 baseline. This is in line with our SBTi approved 2030 targets of a 42% absolute reduction compared to the 2015 baseline.

Figure 8 : Singtel Group renewable energy strategy and approach



b) Internal carbon pricing

We conducted an internal carbon pricing (ICP) pilot for our Singapore operations where we used a shadow price of S\$50 per tonne of CO₂e for energy-intensive business cases. We applied this hypothetical price for GHG emissions as a guide for business and investment decisions. With this approach, we took the first step of incorporating ICP for large capital expenditure projects that are energy intensive as a pilot, as energy consumption is a material topic for the Singtel Group.

Next year, we plan to incorporate ICP into our business processes, allowing Singtel Group to incorporate climate considerations in our decisions to incentivise investments

in energy efficiency and low-carbon innovation. This will be a major step towards achieving our sustainability goal to become more resilient to regulatory climate policies and our commitment to emission reductions.

3. Address physical risks through network adaptation and advocate for climate action

Since our physical risk climate scenario analysis in 2015, we have been undertaking numerous adaptations across our Singapore and Australia operations to build resilience to natural disasters and long-term climate scenarios. We have progressively adapted our infrastructure design and

Full TCFD climate scenario assessment highlights

In 2021, we conducted a TCFD pilot in the Northern Rivers Region of New South Wales, Australia. This exercise was to assist us with identifying and narrowing down the most material physical and transition risk drivers. Drawing on the initial assessment, we performed further analysis on transition risks for insights and material financial drivers. This year, we conducted a full TCFD climate scenario analysis using three material transition levers and physical risks for both Singtel and Optus nationwide.

Physical Risk Assessment:

- >1,900 mobile sites assessed for Australia
- 82 key Singapore assets assessed, further narrowed to ten high-risk locations for financial impact analysis
- Our conclusion was that the financial impact from climate physical risks was deemed less material as the business continued to undertake proactive planning and adaptation of the infrastructure to mitigate the long-term physical effects of climate change under the different scenarios

Transition Risks:

- Key risks for Singtel are limited availability and cost of local/imported renewable energy, and market competition for low-emission ICT services like data centre
- Key risks for Optus are activism, introduction/increase of carbon taxes and volatile energy prices

Please refer to our inaugural standalone [TCFD Report 2022](#) for a fuller discussion and disclosure on our climate scenario analysis of physical and transition risks and opportunities.

Singtel Group TCFD Journey

Governance	Strategy	Risk Management	Metrics and Targets
Singtel Board: Oversight and approval of sustainability-materiality register, SR disclosures on company's climate change strategy, plans and performance Risk Management and Board Risk Committee: Oversight of material ESG risks Singtel Management Committee: Appointed Group Chief People and Sustainability Officer in the MC with Group Sustainability team supporting the management Renewable Energy MC Sub-Committee Various Working Groups to address specific issues such as TCFD and renewables	FY2016 formal climate adaptation and resilience planning exercise: Inundation risks FY2017 SBTi targets FY2021 Optus CSIRO Bushfire prediction and adaptation exercise 2°C scenario as base with 4°C and 6°C global temperature rise by 2050 modelling for the adaptation review Updated target to meet 1.5°C trajectory Net-zero strategy and roadmap to be developed in FY2023	Process of Life Cycle Assessment, Climate Adaptation Mapping and SBTi External stakeholder and government engagement in Singapore and Australia: ABR, TCFD, RC100 Risk Register updated with climate change. But not in Top 10 as standalone risk and comes under business interruption	Comprehensive disclosures in SR leading to standalone climate risk assessment and disclosure Carbon intensity and SBTi targets established in 2017 and undergoing review for refreshed targets in FY2023 Financial driver and materiality modelling completed in FY2022

standards to long-term climate scenarios like increased inundation risks, stronger cyclonic activities, rising temperature and higher bushfire frequency in Australia.

a) Collaborating with research and industry partners

The Singtel Group recognises that tackling climate change requires cross-industry partnerships to address complex issues. We collaborate with partners on innovation and technology to build resilience and capabilities against catastrophic events. We embark on research collaboration and engage subject matter experts at industry and national levels to gather intelligence and build resilience to manage climate risks and impact.

One of the major projects that we undertook in the year was the Optus 2022 Transmission Hub Resiliency project in partnership with Delta Electronics (Australia). The first stage of this project included the launch of Yes! CPX (Critical Power eXtender), a battery solution which ensures our transmission hubs can continue to operate for an extra ten to 20 hours following a failure of the main power grid. This creates an extended buffer period for power authorities to restore services or for Optus to access a site safely with a portable generator, particularly where the area has been impacted by extreme weather or natural disaster.

We formed a partnership with Redflow to deploy their battery system across 56 black spot sites under the Federal Government's Mobile Network Hardening Program (MNHP) and Strengthening Telecommunications Against Natural Disasters (STAND) programme. The batteries will increase the resilience of our network, particularly in bushfire-prone areas.

In parallel, we implemented a Phase Four upgrade of Australia's national emergency warning system to keep Australians safe by enabling access to real-time updates and emergency warnings. The system now has the capacity to reach over 500 emergency service agencies across Australia and will provide more reliable and prompt emergency messaging in communities that need it.

We actively monitor and engage in regulatory developments relating to reporting and carbon emission taxes, as well as provide annual comprehensive energy reporting to the National Green Energy Regulator (NGER). In 2020, we set up the Australian National University-Optus Bushfire Research Centre to develop a national system to detect bushfires early using an autonomous ground-based and aerial fire detection system. A constellation of satellites complements the fire detection system to spot and track fires and deploy extinguishing technologies. The programme will run until 2024.

Case study: Our ICP pilot in Singapore

During the year, we completed a pilot launch of our ICP framework on energy-intensive projects to assess its administrative feasibility and effectiveness.

One of the projects that has undergone this pilot analysis is the building of a new data centre. The proposed internal shadow carbon price was applied to the business case, using different energy consumption levels in the design for comparison. The less energy-efficient design appeared to be more economical in the original analysis. However, the inclusion of internal carbon price steered the conclusion towards the design with better power usage effectiveness (PUE) and consequently reduced the overall power consumption of the project by 7.5% over its useful life. PUE is a ratio that describes how efficiently the data centre equipment uses energy.

It was also proven that this framework has considerable potential to increase understanding, motivation and actions for reducing energy use, costs and GHG emissions at Singtel. We retrospectively applied our ICP framework on the selection of 5G network equipment. The inclusion of ICP further enhanced the decision to pursue more energy efficient equipment, which reduces overall power consumption of the equipment over its useful life by 20% while improving the total cost of ownership by 1%.

Project 1: New Data Centre (DC)

Without ICP

Decision to go with **less energy efficient DC (PUE 1.4)** with 10% lower upfront capex investment

With ICP

Decision shift to **more energy efficient DC (PUE 1.3)** resulting in 7% reduction in utilities consumption across 20 years of useful life

Project 2: 5G Antenna Integrated Radio Equipment

Without ICP

Decision to go with **more energy efficient equipment** despite 16% higher upfront capex investment

With ICP

Widen the cost benefit and **strengthen the business case for lower-carbon option**

We play a leading role on the GSMA Board and Climate Action Committee, helping to chart the strategic direction in tackling climate change for the ICT and mobile industry. GSMA is an industry organisation that represents the interests of over 750 mobile network operators. During the year, we participated in the development of GSMA strategy paper on a circular

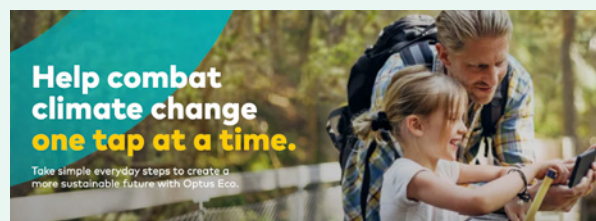
economy for network equipment and shared our climate journey with fellow members at GSMA events. At the country level, we actively partner governments and national agencies to understand emerging risks, policies and regulations. In Singapore, we engage the National Climate Change Secretariat (NCCS), Ministry of Sustainability and the Environment (MSE), National Environment Agency (NEA), IMDA and Centre for Liveable Cities (CLC). We are represented in the Pro-Tem Committee for E-waste Management Standard under the Environment and Resources Standards Committee of the Singapore Standardisation Programme. We also actively participate in business roundtables to share and discuss climate risks, TCFD and SBTi.

b) Demonstrating thought leadership

We actively share our experience to support and motivate others to start their own climate journey. Some of the notable events that Singtel was represented during the year include UNFCCC Climate Neutral Now Initiative - Panel on net-zero and carbon neutral roadmap, challenges and opportunities; GSMA Asia Conference; 2021 Shared Value Summit Asia Pacific - Disasters Resilience Track Voices from COP26: Why it matters to businesses in Singapore by WWF Singapore; and Sustainability Reporting for the Future Seminar by PwC Singapore and Centre for Governance and Sustainability of National University of Singapore. Our TCFD effort was also featured as a case study for the Institute of Singapore Chartered Accountants Climate Disclosure Guide - Taking First Steps Towards Climate-related Disclosures.

c) Engaging with our employees

Earth Hour is not about reducing energy or carbon, but a powerful symbol of unity and hope in collective action. We continue to collaborate with WWF Singapore and fulfilled our commitment to Earth Hour 2022. On 26 March this year, we turned off and dimmed non-essential lighting at our properties and retail stores for an hour from 8.30pm to 9.30pm. We also encouraged our employees to pledge their support by turning off their lights at home, as well as adopt environmentally conscious habits to 'Go Beyond The Hour'.



We launched Optus Eco which provides our customers in Australia with opportunities to reduce their own environmental footprint with simple and easy steps using My Optus App.

• Reduce

Switch to paperless billing, recycle old device, modem or accessories through Mobile Muster, donate new or unwanted phone through Donate Your Device or connect with an Optus eSIM

• Offset

Offset device and usage emissions to support a range of high quality and high integrity Australian carbon offset projects

d) Enabling customers to contribute to climate action

With a customer base of more than 15 million in Singapore and Australia, there exists huge opportunities for us to engage them to join us and play our part for the planet (see boxed-up story above).

Green ICT

We are constantly exploring smart mobile technologies to reduce energy consumption and emissions beyond our industry to benefit other sectors of the economy. Technology innovation in the areas of connectivity, low PUE data centres, cloud solutions, big data and IoT enable the development of energy efficient solutions that can be applied across industries and help advance decarbonisation efforts in other sectors. During the year, we focused on our 5G network rollout in Singapore and Australia to empower our customers by delivering greater speed, higher device capacity and ultra-low latency.

During network planning and implementation, we used network analytic tools to analyse traffic trending and roll out 5G with precision to meet performance demands at lower costs and greater energy efficiency. We implemented dynamic spectrum sharing to run 4G and 5G services simultaneously on the same frequencies to avoid the need of adding new energy-consuming hardware.

We also built a dual-mode core network to support both 4G and 5G services instead of operating two separate core networks.

4G transmissions require big cell towers to transmit longer frequency waves. 5G however is built to optimise data transmission and has leaner infrastructure, using small cell base stations with beamforming to coordinate transmissions. 5G is also a more energy-aware standard and will enable smart sleep modes more effectively as well as extend coverage using lower bands while increasing capacity and speed with carrier aggregation. Fast and effective data transmission enables the system to return to a low-load state faster with corresponding energy usage. We will activate this energy-saving feature on our network when available.

Benefits of 5G in the corporate world

Leveraging our new 5G networks, companies can increase the energy efficiency of delivering data to their customers. They can also develop innovative green technologies and help reduce the carbon footprint of their operations and customers globally.

- Our reliable network and ICT services and solutions allow corporate customers to maintain productivity while lowering emissions from reduced transportation.
- Our 5G Multi-access Edge Compute (MEC) platform enables low latency monitoring of campuses, environments and facilities through IoT applications that are connected to autonomous systems like robots and drones, leading to a reduction of emissions from reduced number of field trips taken by the operational teams while improving productivity.
- Video analytics enabled by our MEC platform can identify faulty products at the assembly line for Industry 4.0 scenarios and take them out before hitting the supply chain, thereby saving emissions from customers returning faulty products to the manufacturer who will need to ship replacement products.
- IoT applications for smart buildings can optimise space utilisation, energy and cooling efficiency based on real-time occupancy. Such IoT sensors can leverage our MEC through inbuilding 5G coverage or WiFi which can be reached from any fixed or cellular network. This multi-network capability allows existing brown field IoT deployments to optimise energy consumption of devices by shifting all data processing to the edge, therefore increasing battery life of devices and also lowering emissions from reduced field trips to replace batteries.



PRODUCT STEWARDSHIP

Our approach to product stewardship considers the impact of our products and services before they reach our stores, during our operations and after their useful life. We manage our waste resulting from Singtel and Optus branded products, and also review waste data to glean insights that help to improve the recyclability, reusability and reduction of our waste.

Effective waste management

Electronic, packaging and corporate wastes such as paper are key sources of wastes generated across our operations and value chain. We are committed to reducing, reusing and recycling wherever possible and support national waste management targets under Singapore Green Plan 2030 and Australia's Recycling and Waste Reduction Act 2020. There are global concerns around e-waste being a fast-growing category of waste, given the increasingly digital lifestyle which has been further accelerated by the pandemic. Within our operations, we have put in place an e-waste recycling process to ensure proper management of our used equipment and track the recycling rate.

Under the Extended Producer Responsibility (EPR) scheme introduced by NEA in July 2021, Singtel Group bears the responsibility for collecting and treating our products when they reach the end of life, based on our market share. In Singapore, we contribute to this new regulated e-waste management system and retired ReCYCLE, our e-waste recycling programme in partnership with SingPost launched in 2017. From January to December 2021, we put 181.6 tonnes of products to market for both our consumer and enterprise segments. From July 2021 to March 2022, we collected 2.7 tonnes of consumer e-waste and were responsible for 2.3 tonnes of all the consumer e-waste collected island-wide under the scheme.

In Australia, we have been partnering Mobile Muster since 1998 to facilitate the recycling of mobile devices and accessories via our Optus stores. During the year, we diverted 5.61 tonnes of e-waste from landfills, saving 12.45 tonnes of emissions while conserving 63.55 tonnes of mineral resources through the programme. We also have a modem recycling programme to supplement Mobile Muster for customers to recycle their old modems at any of our retail stores in Australia.

Enabling sustainable packaging

Sustainable packaging directly and indirectly contributes to our carbon footprint and environmental impact across our value chain, from resource utilisation to product packaging and management of these waste streams.

Reducing plastic waste with GOMO's half-sized SIM card

Our all-digital mobile brand GOMO launched its half-sized SIM card in December 2021, which reduced plastic waste, and introduced environmentally friendly materials to the packaging:

- Packaging Envelope (holds the backing card) – 140gsm Enviro wove, 100% recyclable and FSC certified
- Backing Card (SIM card is pasted on this) – 300gsm Woodfree card, 100% recyclable and FSC certified

Comparing the dimensions between the old and new packaging, we reduced the total area of the main envelope and additional manual by approximately 30%, from 182,810 mm² to 126,800 mm².

By 31 March 2022, we saved 42.95 kg of acrylonitrile butadiene styrene plastic (ABS plastic) and polyvinyl chloride (PVC), a 7% reduction in materials for all GOMO SIM cards, full and half. Through these initiatives, we hope to nudge consumers and our retailers to be conscious of their packaging waste. We will continue to collaborate with suppliers to explore alternative materials such as recycled materials to be used in our packaging.

Old packaging (full SIM)		Total Area	182,810 mm ²
	Main Envelope 285 mm x 466 mm = 132,810 mm² (open size)	Additional manual Lotus card: 5 x 100 mm x 100 mm = 50,000 mm² (estimation as the card is irregularly shaped)	
New packaging (half SIM)		Total Area	126,800 mm ²
	Main Envelope 560 mm x 190 mm = 106,400 mm² (open size)	Backing card 170 mm x 120 mm = 20,400 mm²	
Total Reduction			30%

Under the Resource Sustainability Act, Singtel is required to report our packaging waste as part of the Mandatory Packaging Reporting. The list of regulated products and our reporting obligations are categorised into three packaging categories: primary packaging for Singtel branded products, service packaging used by all Singtel retail channels, and all packaging used for products exclusively imported for our business.

We report our packaging data and 3R (reduce, reuse and recycle) plans to NEA annually, starting from this year. We submitted our first report and 3R plans in March 2022 for calendar year 2021. During that year, the total amount

of packaging used by Singtel and NCS was 147.14 tonnes, with paper being our top material (see Figure 9). We will focus on packaging reduction and increasing the use of recycled content in our packaging materials. We will also take a targeted approach to tackle each type of unique waste that we are responsible for, such as bags and SIM cards.

In Australia, we have been committed to the principles of the Australian Packaging Covenant Organisation (APCO) since 2007 to drive systemic change in the way we create, collect and recover our product packaging. For the fifth consecutive year, Optus was awarded the APCO Award

for our sustainable packaging achievements and efforts in the telecommunications sector.

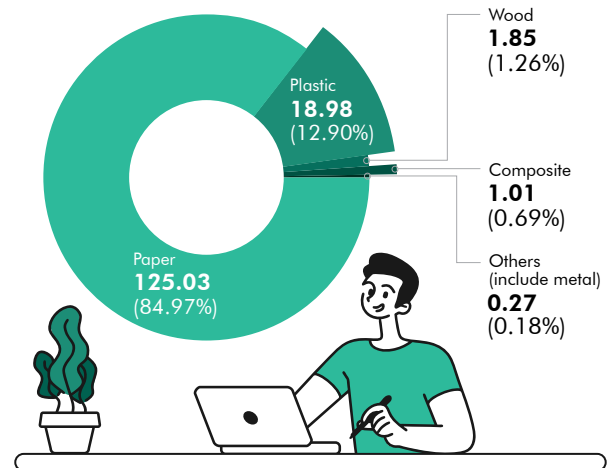
We are also committed to continuous improvement and are working hard to remove single-use plastics from packaging design and enhance the uptake of Australasian Recycling Label (ARL) to reduce recycling confusion. We have introduced a new sustainable packaging checklist for all new Optus-branded devices.

Environmental performance

During the year, there was no environmental legislation related fine or non-monetary sanction, as well as legal action against Singtel or Optus.

We publicly disclose our environmental targets and metrics aligned with the latest GRI standards and our performance data is externally assured. Our stakeholders can therefore better understand our efforts and progress in this area. We will also communicate any material driver and impact on the company's income statement, cashflows or balance sheet using the TCFD framework.

Figure 9: Singtel and NCS packaging materials by weight (tonnes)



Solar panels on the rooftop of NCS Bedok Data Centre

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

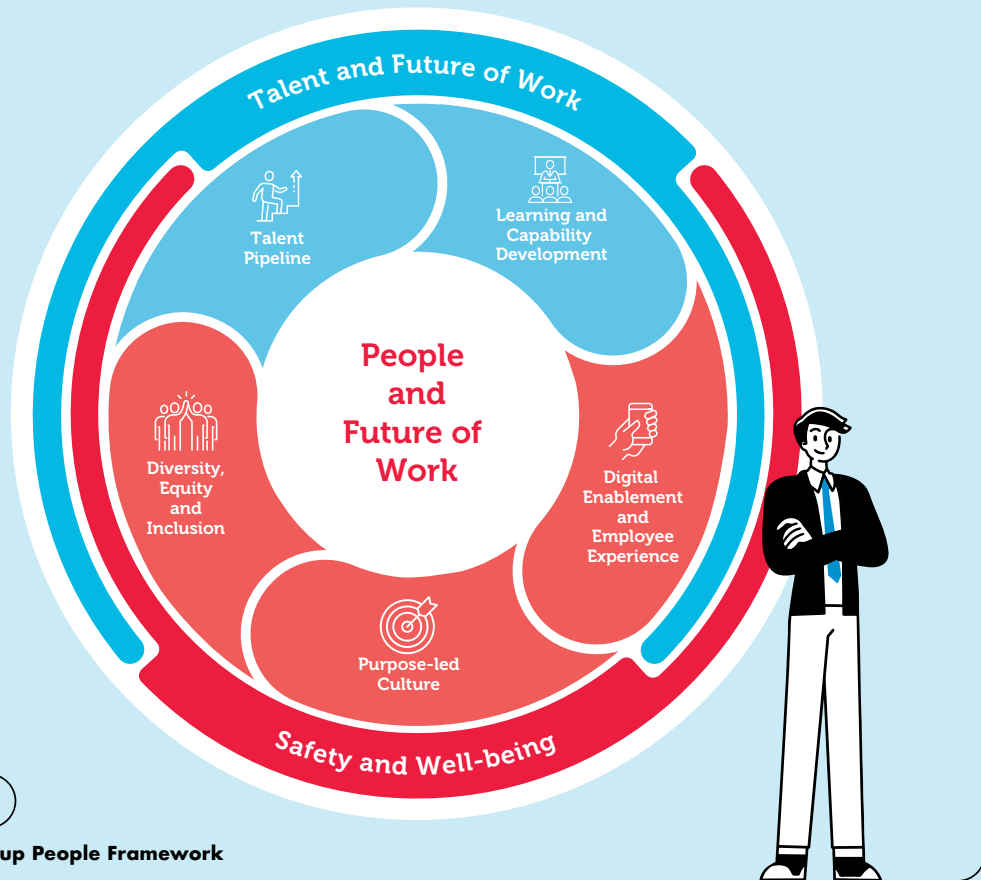
1. GHG emissions are derived in accordance with the requirements of the "GHG Protocol Corporate Accounting and Reporting Standard" and "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). 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.

ENVIRONMENT	SINGTEL			OPTUS			SINGTEL GROUP		
	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.

PEOPLE AND FUTURE OF WORK



The Singtel Group wants to create a highly engaged and dedicated workforce as our people are key to the Group's long-term growth and success. Our efforts are guided by our People Framework (see Figure 1) which focuses on Safety and Well-being as well as Talent and Future of Work.

We empower our people by investing in their professional and personal development, and equipping them with future skills. We also ensure inclusive employment and work environment, as well as meaningful work that allow them to grow and have a rewarding career with us.

As the world recovers from the pandemic, we will continue to focus on our employees' safety and well-being. During the year, we announced our

Group purpose, Empower Every Generation, and refreshed our core values which we will integrate into every aspect of our business. It reflects our intention to bring everyone along into a more sustainable digital future, while advancing the world for our future generations through stewardship and innovation.

We drive and reinforce positive employee behaviours at work through our six refreshed core values: Cultivate a growth mindset; Operate with integrity; Make customers first; Maximise teamwork; Innovate with a challenger spirit; and Take ownership. They form the mnemonic COMMIT, demonstrating our commitment to excellence, innovation and sustainability.

Maximising value creation with Singtel Group core values

Values		People and Future of Work
C	Cultivate a Growth Mindset	We build collective capacity, leverage diverse perspectives, backgrounds and strengths of individuals while empowering employees to lead the change for a digital future.
O	Operate with Integrity	We incorporate integrity into our processes and decision making to ensure our people and workforce across our value chain behave responsibly and ethically, which is critical to building trust with our stakeholders, such as customers, fellow colleagues, partners and communities.
M	Make Customers First	We equip our people with future-ready skills to meet changing customer needs and deliver unparalleled customer experience.
M	Maximise Teamwork	We want to create a vibrant workforce, one with diverse backgrounds and experiences that thrives on great teamwork, through our diversity and inclusion policies and practices.
I	Innovate with a Challenger Spirit	We empower our diverse workforce to bring creativity and fresh perspectives to develop new ideas, promote innovation and drive performance.
T	Take Ownership	We want our employees to take ownership of their actions and decisions at work, as well as their growth through our learning and development programmes.

They are the foundation of how we operate our business as we harness the power of technology to enrich the lives of our customers and the broader community, help our people develop and grow with the company in the new economy, and live up to all our stakeholders' expectations as a responsible corporate citizen and sustainability steward. We also mapped these behaviours against our sustainability framework (see table above).

WORKFORCE SAFETY AND WELL-BEING

Promoting employee health and well-being

The pandemic has accentuated the importance of employee well-being and staying resilient. At Singtel Group, our priority is for our employees to remain healthy, both physically and mentally, at work and home. During the year, we also officially introduced blended ways of working (B-WoW) to allow more flexibility in work arrangements to cater to the work-life integration needs of our people, even in a post-pandemic world.

Throughout the year, we conducted regular employee pulse surveys and polls to explore areas of well-being that mattered most to our people. Based on their

responses, we launched the iCare programme to our Singapore employees in October 2021 to raise greater awareness of the importance of mental well-being.

A series of initiatives and programmes was organised to encourage and empower our people to look after their own mental health and take care of one another as we continue with a hybrid work arrangement.

In three months, about 4,500 employees attended weekly iCare mental, physical and financial well-being webinars that we conducted. They learnt tips from experts and heard experiences of fellow colleagues, who shared how they coped with situations, such as the loss of a loved one overseas while borders were closed.

We introduced a monthly iCare newsletter with various themes addressing concerns close to the hearts of our people, such as tackling burnout and easing them back into work at the office. We also sent fortnightly staff emails on a variety of wellness topics and featured Singtel and NCS role models who shared their personal well-being journey (see boxed-up story on the next page).

We partnered a mental healthcare company to offer a digital mental well-being app as a virtual buddy for all employees across the Singtel Group. The self-care mobile app includes a range of programmes to support employees' emotional well-being, resilience and personal development proactively. Employees can access personalised support from a behavioural health coach to build self-awareness, learn how to manage daily stress and work on personal goals.



A family-friendly work culture

Koh Wee Liang is a project manager with Group Enterprise and is happily married with three children. Before 2020 prior to COVID-19, he weighed close to 100kg, suffered from hypertension for 18 years and had pre-diabetic symptoms. Two years later, flexible work arrangements have given Wee Liang the time to kickstart his fitness journey while he collaborated with our onsite clinic doctor who created a personalised health plan targeting his chronic illnesses. This helped Wee Liang lose 30kg and stop the need for hypertension medication.

With hybrid work arrangements and Singtel's family-friendly policies, Wee Liang has been able to work from home more often and grow closer to his children. Time saved from not commuting means more quality time spent with family. He can also bring his wife, children and elderly parents for their medical appointments, tapping on the company's flexible family leave scheme. Wee Liang said that our family-friendly work culture is one of the key factors that motivates him to stay on as an employee.



Wee Liang (second from right) with his family

iCare has garnered strong support within months of its launch. Our people also expressed interest in other topics such as creating a culture of openness and learning how to deal with stress more effectively.

In our latest annual Your Voice Survey, 82% of our people felt strongly supported by the organisation and their managers in their overall well-being. Given the importance of this topic, we have introduced an additional 2025 well-being target of 84% as measured in our annual Your Voice Survey, under the material topic of employee safety and well-being (see page 9).

At the same time, we strongly encourage our people to speak to their leaders and colleagues, and use our Employee Assistance Programme (EAP) should they feel stressed especially in these challenging times. Our EAP offers services such as clinical counselling, support for financial and legal matters, and trauma management. The programme also provides medical insurance to immediate family members.

In line with building more inclusion and awareness around chronic illnesses, our annual health screening package for Operations and Support employees was enhanced to include additional tests to better detect significant conditions. iConnect, our all-in-one employee services app, was further upgraded to include clinic appointment bookings for improved experience at our onsite clinic.

We will continue to support employee resilience with a holistic well-being strategy based on five pillars: mental, physical, financial, social well-being and professional development. We will address the concerns raised by our people, such as chronic illness disease management and looking after young children or elderly parents while carving out time for self-care (see Figure 2).

In Australia, employees take part in monthly webinars on topics across six pillars of health: emotional, physical, social, vocational, financial and environmental. They also have access to Health Risk Assessments which help our people learn more about their health and lifestyle factors which can improve their well-being.

The health and well-being of our people is paramount, as we continue to create a work environment that promotes employee wellness and mindfulness, both physical and mental, so that our people can be the 'Best of Me' individually and the 'Best of We' together.

Building a workforce committed to WSH

Workplace safety and health (WSH) is our top priority. We strive to inculcate good safety and security habits and practices among our people, encouraging them to take ownership of the risks and hazards associated with their work activities and appropriate measures to prevent accidents.

We launched the WSH tool in iConnect to empower our people to report any safety hazards or concerns at the workplace by snapping a picture and providing details of what they observe. The report is routed to our WSH team for investigation and rectification before any accident occurs. Read more about our Health, Safety and Security Policy [here](#).

To generate greater WSH awareness and educate employees, we publish quarterly bulletins on our staff portal Espresso on topics like slip, trip and fall prevention as well as fire prevention. See Table 1 for staff injury cases during the year.

We also adopted the concept of Gemba Walk, a WSH practice mainly used in the manufacturing industry. We conducted the walk for nine work sites during the year, which involved our employees, relevant third-party like



Figure 2: Employee well-being pillars

facilities management personnel, and WSH team. The intent is to make observations on processes and identify safety lapses in work areas or activities, thus allowing all parties to address safety-related issues proactively and collaboratively.

Good employment practices

The Singtel Group employed 22,105 people, comprising 12,196 in Singapore, 7,268 in Australia and the rest based around the world as at 31 March 2022.

In Singapore, we abide by the Ministry of Manpower's (MOM) Employment Act and ensure that employment practices are aligned with the Tripartite Guidelines on Fair Employment Practices set out by the Tripartite Alliance for Fair and Progressive Employment Practices (TAFEP). Singtel is also a signatory of the Singapore Employers' Pledge of Fair Employment Practices.

We have fostered a very strong and collaborative partnership with the Union of Telecom Employees (UTES) in Singapore since its inception in 1982. In July 2021, Singtel renewed the Collective Agreement for Singapore-

based Operations and Support employees, certified by the Industrial Arbitration Court for the next three years. In partnership with UTES, the remuneration and benefits packages were enhanced to be more competitive with the market, including a new service recognition award category for employees who have completed 50 years of service, up to three days of non-consecutive sick leave during each calendar year without a medical certificate, and up to two days of skills advancement leave for any SkillsFuture course.

As at 31 March 2022, we had 3,141 bargainable employees (26%) in Singapore covered by collective agreement. We ensure timely consultation and discussion with the union on significant operational changes and engage our employees before implementing these changes.

We also support the National Trades Union Congress (NTUC) U Care Fund with an annual donation of S\$100,000. During the year, we disbursed S\$21,296 to 36 schooling children of our staff under the joint Singtel-UTES Bursary Awards scheme.

Table 1: Staff injury types by number and gender

Entity	Slip, trip and fall	Hit by falling object	Laceration	Muscle Stress
Singtel	5 cases Male: 3 Female: 2	1 case Female: 1	1 case Male: 1	0 case
Optus	5 cases Male: 2 Female: 3	0 case	0 case	3 cases Male: 2 Female: 1



In addition, we contributed S\$1 million to the NTUC Education and Training Fund over a five-year period from 2017 to 2021 to support NTUC's efforts to advance the professional development of the workforce.

In Australia, our industrial relations frameworks comply with the requirements of the Fair Work Act. In March 2022, we successfully renegotiated the Optus Employment Partnership Agreement (EPA), with 93% of employees voting in agreement with the EPA. Enhancements to the EPA focus on supporting the diverse lives of employees and account for market practices, such as recognition of kinship for our Indigenous employees for compassionate leave, and an annual Connected Day for our people to take one paid day off to connect with what matters most to them.

We treat our employees fairly and with respect and provide them with equal opportunities based on meritocracy. The Singtel Group is committed to providing employees with a work environment that is conducive, physically and psychologically safe and free from discrimination, harassment and retaliation. We take workplace grievances seriously and our Grievance Reporting Policy applies to the entire Group of companies. Every employee is expected to comply with our grievance procedures, which also apply to business relationships and activities where our people are involved.

This is communicated to all our employees, who can raise concerns and report any bias or discrimination that happens at the workplace without fear of reprisal. They can do so through our independent grievance reporting tool that is readily available on Espresso, our employee portal. We have established clear guidelines for managing grievance cases. Reported cases are handled with urgency and in confidence, thoroughly investigated

and tracked through to closure. We engage all affected stakeholders in two-way dialogues and ensure proper follow-up on resolution and satisfactory closure. During the year, we logged 12 grievance cases in Singapore and 27 in Australia (see Table 2 and 3).

We offer various benefits to our employees to help them stay healthy and manage professional and personal demands. These include insurance and medical coverage, free annual health screenings, disease management programmes and flexible benefit dollars which is an annual cash payment catered to meet lifestyle needs.

We also accord our eligible employees with paid parental leave: 16 weeks maternity and two weeks paternity leave. In Australia, we have paid parental leave and support for stillbirth and pregnancy loss as well as family and domestic violence entitlements.

Our friendly family policies include flexible work schedules, telecommuting and various forms of family leave arrangements, such as childcare and family care leave. We also provide employees the opportunity to continue working at the company beyond their retirement age.

Driving a purpose-led culture

The Singtel Group is committed to organisational growth and developing our people. Our Group purpose and values underpin this and are embedded into our business strategy and work culture. We constantly reinforce the purpose and values through regular staff communication and messaging by leaders.

To drive a purpose-led culture, we ran an eight-week long *Purpose* campaign and held webinars for our employees in Singapore to deepen their understanding of their job roles and behaviours that support Singtel's purpose which is to *Empower Every Generation*.

Table 2: Number of staff grievance cases

	Singtel	Optus	Singtel Group
Received	12	27	39
Substantiated	8	9	17
Not substantiated	4	12	16
Under investigation as at 31 March 2022	0	6	6

Table 3: Breakdown of nature of substantiated cases

Nature of grievance	Singtel	Optus	Singtel Group
Supervisor management style	4	2	6
Bullying and harassment	1	7	8
Performance management	1	0	1
Employment terms and conditions	2	0	2

We also designed a programme to deepen employees' understanding of the Group purpose and core values, and equip them with practical frameworks to apply and exhibit the expected COMMIT behaviours in their work.

We target to train up to 4,000 employees in the new year. So far, over 1,000 employees have completed training. We endeavour to place purpose and our values at the core of our people practices by integrating it into our business and people processes, such as recruitment, leadership assessment and performance management. Other than equipping our employees with skills, we introduced the Group CEO Empower Awards, which recognises employees who embody the purpose and are exemplary in demonstrating COMMIT core values.

DIVERSITY, EQUITY AND INCLUSION (DEI)

DEI is core to our purpose at Singtel as we commit to Empower Every Generation through the collective experiences and collaborative capabilities of our diverse workforce (see Figure 3). We have a diverse workforce with close to 100 nationalities over four generations: Baby Boomer (1946-1964), Gen X (1965-1980), Millennials (1981-1996) and Gen Z (1997-2012). Millennials, or Gen Y, make up about half of our workforce. Comprising a wide range of experiences and voices, our people represent the markets and communities in which we operate.

We achieve equity by providing access to opportunities for everyone through fair and respectful policies and actions. We also aspire to build an inclusive culture that inspires innovation and progress where everyone belongs, and our people share a common purpose and can succeed as their best, authentic selves.

We respect the rights of individuals and do not discriminate based on their backgrounds, beliefs and abilities. During the year, we formalised and published the [Singtel Group Human Rights Statement](#), covering critical human rights topics including child rights. We are committed to providing employees with a work environment that is conducive, safe and free from discrimination and harassment. We also prohibit any form of retaliation against any person for making reports in good faith concerning allegations of discrimination, harassment, violation of our [Code of Conduct](#) or any other allegation of improper behaviour.

As a strong advocate of fair and merit-based employment practices, we regularly review our practices to ensure no discrimination such as in our hiring process.

For example, we have reviewed our job application forms and removed questions with implied bias, such as whether candidates have a disability or medical condition that might affect their ability to carry out the job role or require work adjustments.

Across the Group, female employees account for a third of our total workforce, comprising 35% in Singapore and 32% in Australia. They represented 32% of top executives and 28% executives (previously known as middle management) in the Group. Together, we had 28% of female executives across the Group as at 31 March 2022, against our target of reaching 32% of female employees in management by FY2025. We also have 31% and 40% of female Board members and Management Committee members, with two female CEOs, who head Consumer Singapore and Optus (see Figure 4 to 6).

Through inclusive hiring practices and investments in the science, technology, engineering and math (STEM) ecosystem with the creation of the Singtel-Singapore University of Technology and Design (SUTD) Women in Tech Scholarship, we are making progress in increasing our female representation in technology roles. As at 31 March 2022, women represented 29% in technological roles at various functions like IT and Networks across the Singtel Group.

By embracing diversity, we gain a better understanding of the various needs of our customers and communities, thus forging stronger connections and delivering greater impact for them. Our efforts on DEI were recognised for the fourth consecutive year by 2022 Bloomberg Gender-Equality Index for our commitment to gender equality.

We ensure our processes for employee performance evaluation, promotion and talent identification have no inherent gender bias. Our employees also perceive DEI in the organisation very positively, with a high 81% Your Voice score in our recent employee engagement survey.

We commemorated [International Women's Day 2022](#) with a month-long of activities. We organised panel discussions featuring female leaders, employees and women making ripples in the community. We also curated two courses on #CURIOUS, our mobile digital learning platform, on what unconscious bias means and developing an inclusion mindset.

In Australia, we launched Employee Networks, which aim to create an inclusive culture for women, persons with various abilities and disabilities, people with different culture and heritage, LGBTQ+ individuals and veterans.

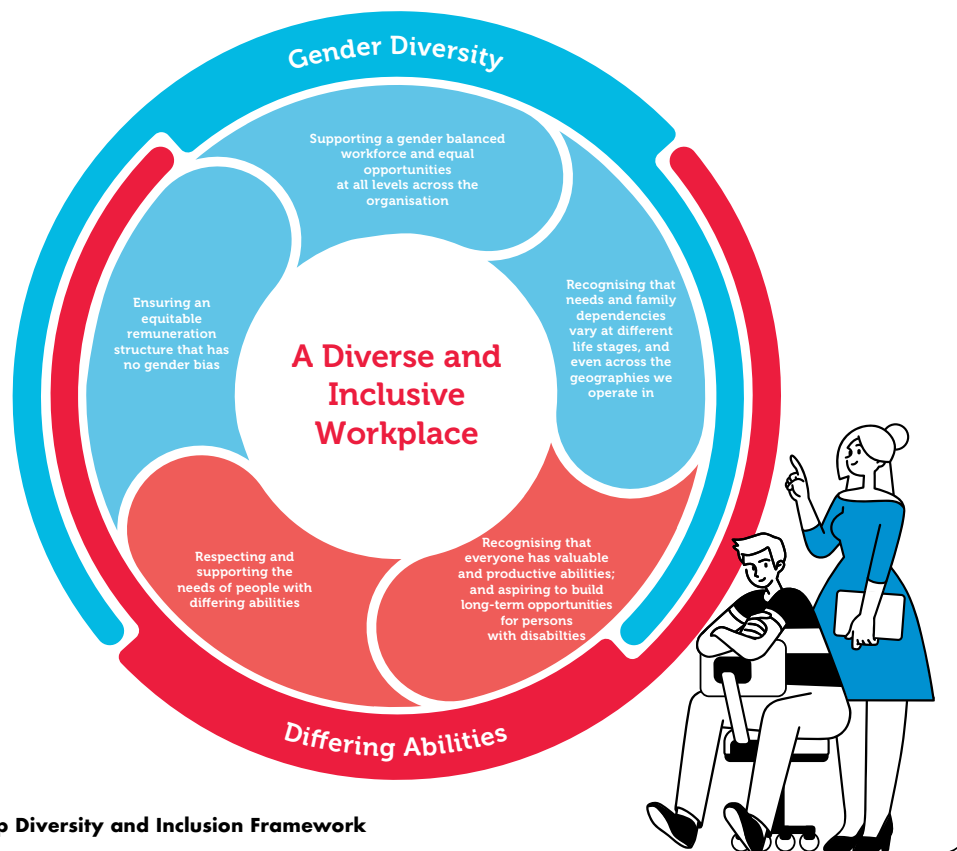


Figure 3

Singtel Group Diversity and Inclusion Framework

Each network is sponsored by a member of Optus Executive team, who ensures that recommendations are heard by the business. In line with our commitment to be a disability confident employer in Australia, our [Optus Accessibility and Inclusion Action Plan 2020-2023](#) will continue to guide us in building an inclusive and accessible workplace for our people, customers and the communities we serve.

The DOs for a discrimination-free workplace

All managers are constantly reminded of the following key principles, which cover shortlisting and interviewing candidates and how they manage their team members after hire:

1. Recruit and select candidates on the basis of merit (such as skills, experience or ability to perform the job), regardless of age, race, nationality, gender, sexual orientation, religion, family status or disability.
2. Treat employees fairly and respectfully, and implement progressive human resource management systems.
3. Provide employees with equal opportunity to be considered for training and development based on their strengths and needs, to help them achieve their full potential.
4. Reward employees fairly based on their ability, performance, contribution and experience.
5. Abide by local labour laws.



Figure 4: Female executives in the Singtel Group

● Singtel ● Optus ● Singtel Group

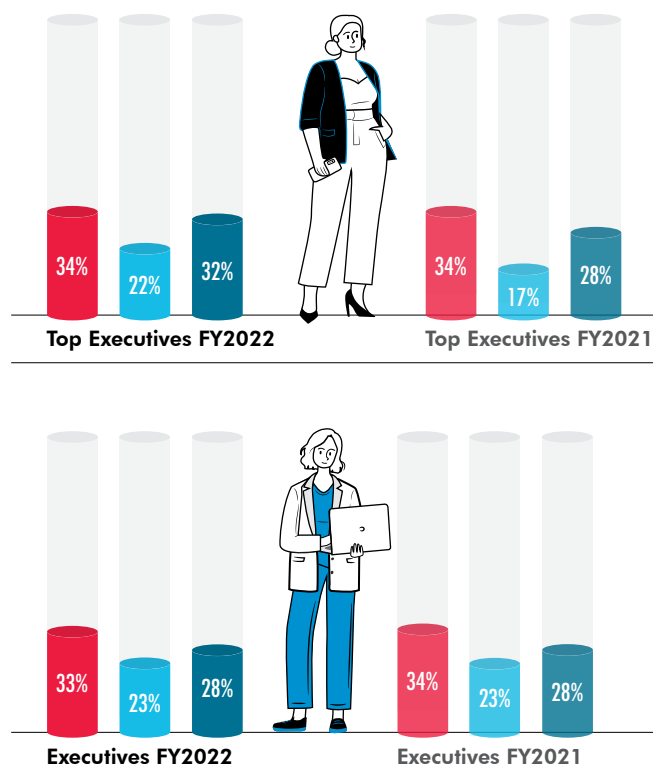


Figure 5: New hires by gender
(Total 3,966)

● Singtel ● Optus ● Singtel Group

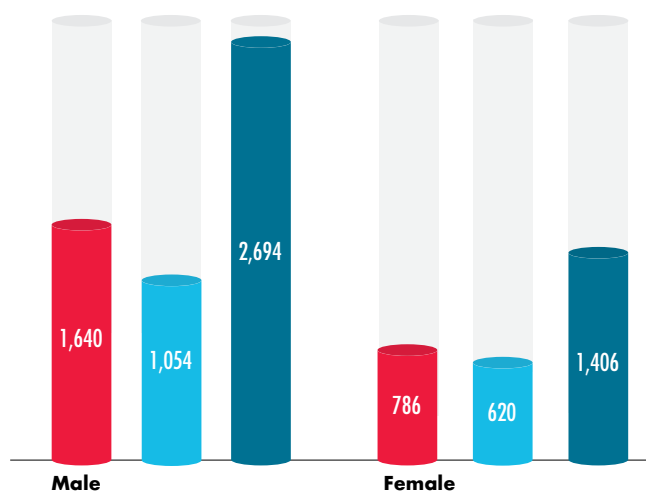
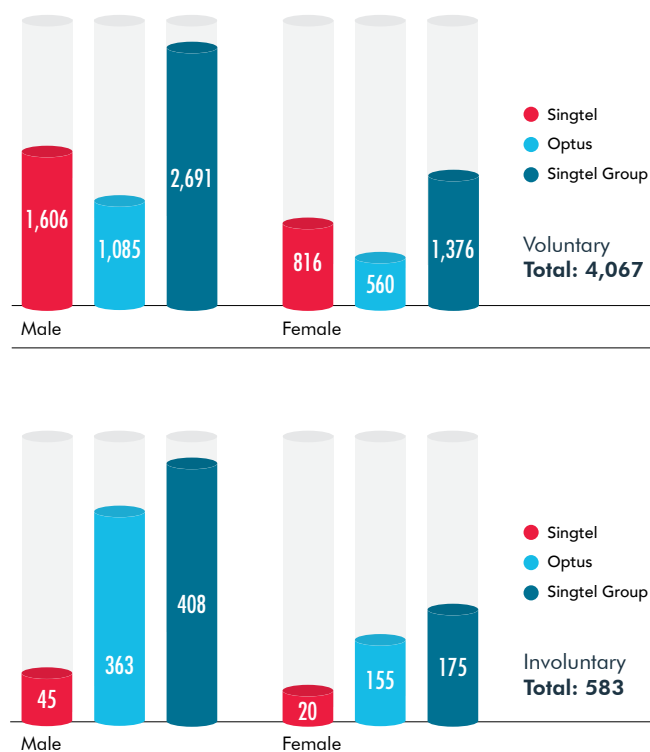


Figure 6: Voluntary and involuntary turnover by gender



BUILDING A FUTURE-READY WORKFORCE

Talent attraction and retention

In the current economy living with COVID-19 and the associated Great Resignation wave faced by companies globally, it has become even more challenging to attract and retain, especially tech talent. Due to the rapid digitisation and e-commerce adoption across all sectors worldwide, companies demand technical specialists and customer service professionals to address their escalating needs for maintaining online platforms and managing customer experience.

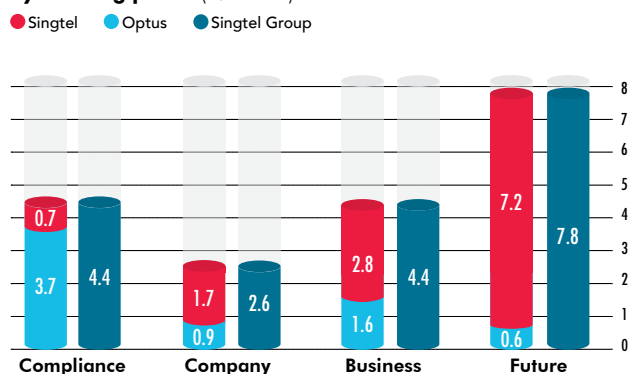
Companies therefore need to differentiate themselves to attract the right talents. We do so by building a purpose-led organisation, creating an inclusive culture, and developing meaningful and impactful careers for our employees.

The Singtel Group focuses on building our talent pipeline and employees' career progression, while investing in their long-term development. This will bolster both retention and overall development of the organisation, and help to entrench our position as employer of choice. Our young talents are nurtured under various programmes, such as internships and the Management Associate Programme (MAP). During the year, 143 students from polytechnics and universities in Singapore joined our SHINE internship programme across various business functions. We also onboarded 52 MAs who will each have at least two job rotations during their first two years, with high performers put on an accelerated career path.

We launched a people transformation programme at NCS focused on culture, skill specialisation and becoming an organisation built on learning. Based on individual preferences, performance and aptitude, our tech professionals have opportunities to move across specialisations, work in different regions and industries, and with different clients and partners to gain a wider range of experience.

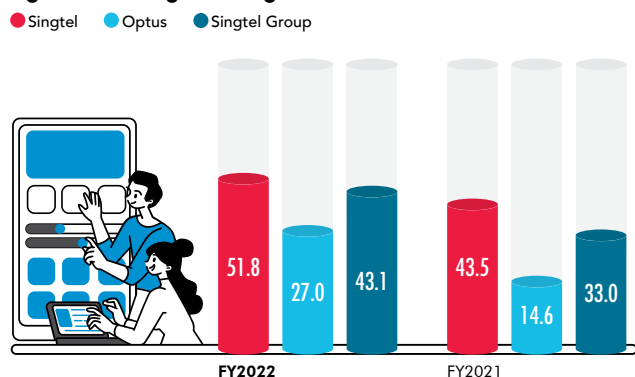
Fresh graduates who join NCS can participate in our Nucleus programme, where we provide a holistic and structured foundation to kickstart their career in technology. The programme encompasses structured training, a progressive career roadmap, job rotations, reward and benefits, career coaching and industry recognised certifications. During the year, 219 graduates joined our programme. In September 2021, we held a virtual celebration for those who completed their first Graduate Certificate as part of the National University of Singapore's Institute of Systems Science's (NUS-ISS) Master of Technology.

Figure 7: Training and development investment* breakdown by learning pillars (\$ million)



*Figures converted from AUD to SGD at exchange rate of A\$1 = S\$0.9972

Figure 8: Average training hours



Training and development investment

Singtel

FY2022: S\$12.5 million

FY2021: S\$11.8 million

Optus

FY2022: A\$6.7 million

FY2021: A\$5.0 million

Singtel Group

FY2022: S\$19.2 million

FY2021: S\$16.8 million



Talent development and future skills

The shift to a digital economy means that building a vibrant and agile workforce is more important than ever. Singtel Group will continue to invest in our people – skilled employees, subject matter experts and exceptional leaders (see Figure 7 and 8). Our people development philosophy comprises four essential components: expertise, exposure, experience and engagement.

The Singtel Group's people development ecosystem is made up of three corporate academies in Singtel, NCS and Optus and we have formed partnerships with a wide range of institutes of higher learning, consulting

firms, think tanks, knowledge platforms and leadership institutes. It is critical to continuously develop and nurture our employees with skills and competencies to stay relevant. We invest heavily in our people and provide ample opportunities for their professional and personal development. We believe in cultivating a growth mindset across the Group and are committed to harnessing the power of technology to create a sustainable and inclusive future for everyone.

For our popular annual Singtel Group Learning Fiesta (SGLF), we organised a series of webinars and development sessions, including topics on sustainability, 5G, career development and core values over two months instead of one. We encouraged employees across the Singtel Group and geographies to set aside one day a week – branded as We.Learn.Day and usually on a Wednesday – for their development and learning. Apart from attending webinars, we introduced our first Learning Fiesta Challenge where employees were encouraged to keep fit and clock 200,000 steps while learning through #CURIOUS, our mobile digital learning platform with curated channels and topics.

SGLF 2021 had a 30% increase in learning places compared to the previous year and format, with more than 9,000 unique participants. To date, over 4,900 modules have also been completed and the average number of learning hours per employee per month in #CURIOUS increased 23% compared to last year.

To support our 5G network expansion plans and capabilities, we collaborated with tertiary institutions and training partners. We designed role-based training and broad-based curriculum and expanded our 5G-related learning content in our #CURIOUS library.



This also supported the goal of training 2,500 employees in 5G-related skills over two years, set by our 5G Workforce Transformation Committee (WTC) last year. Since then, more than 700 employees have undergone 5G training and another 1,020 employees have benefited from our curated 5G curriculum.

We also enhanced the way we discuss talent mobility and development. To support our talents in their day-to-day growth, we launched an improved playbook for managers describing a framework and process on how to equip talents with the right knowledge and skills to progress. We also introduced virtual coaching to pair talents with certified coaches to bridge any development gaps and unlock potential. We encourage everyone to take charge of their own learning and career development and challenge their capabilities.

During the year, we set up NCS Dojo, an immersive learning academy and platform that is anchored on business and people transformation priorities. NCS Dojo focuses on providing leadership programmes and building the company into a learning organisation where we bring people together to learn.

In Australia, we have Optus U, our micro-credential programme, where we partner leading universities to provide employees with relevant and future skills such as data analytics. Our people participate in lectures and talks by guest speakers, as well as workshops and projects delivered by our education partners La Trobe University, Macquarie University and Curtin University. During the year, 300 Optus employees graduated from the programme.

We continue to reinforce and promote a vibrant learning and innovative culture geared towards empowered and continuous learning. This will allow our employees to be deployed in a manner that meets evolving business priorities, as well as remain relevant with the right skills and knowledge in this ever-changing operating environment.

Upskilling and reskilling for a future-ready workforce

We continue to build collective capacity to lead the change for a digital future. We support the TechSkills Accelerator (TeSA), a SkillsFuture initiative by Infocomm Media Development Authority (IMDA) in partnership with agencies like Workforce Singapore (WSG) and SkillsFuture Singapore (SSG), as well as collaborate with industry partners and hiring employers.

TeSA offers various programmes to support current infocomm technology (ICT) professionals and non-ICT

Company Training Committee

In 2019, Singtel signed a Memorandum of Understanding (MOU) on the formation of a Company Training Committee (CTC) with UTES. We committed a S\$45 million training investment over three years from 12 September 2019 to 11 September 2022 to boost the digital skills of our people.

The CTC is committed to supporting employees in upskilling, equipping them with adaptive technological and technical skillsets critical in enabling them to be future-ready, with a focus on:

1. **Accelerate** employees' skill acquisition with #CURIOUS
2. **Co-create** skills pathways through certifications and qualifications
3. **Transform** the roles of employees to become future-ready

Through the CTC, we achieved 17% more learning hours and a 22% increase in monthly unique learners during the year, despite the limited face-to-face classes due to the pandemic and safe management measures.

The continued conversion of physical classes to virtual-live sessions and self-paced learning via digital learning platforms like #CURIOUS has also resulted in cost savings in the past two years. We are on track to deliver on our S\$45 million training investment commitment.



professionals to upgrade and acquire new skills and domain knowledge that are in demand, and to stay competitive and meet the challenges of a fast-moving digital landscape. During the year, we onboarded 225 trainees from the TeSA Mid-Career Advance programme, which provides reskilling opportunities for Singapore citizens above 40.

In addition, we actively engage our people in professional conversion. Through the Professional Conversion Accelerator programme, we successfully converted 1,201 employees into new positions for various roles, including 5G-related ones.

People Performance Indicators

PEOPLE	SINGTEL			OPTUS			SINGTEL GROUP		
	2022	2021	2020	2022	2021	2020	2022	2021	2020
Total employees by gender									
Male	7,901	8,003	7,842	4,936	5,287	5,307	12,837	13,290	13,149
Female	4,295	4,388	4,303	2,332	2,400	2,356	6,627	6,788	6,659
Total employees	12,196	12,391	12,145	7,268	7,687	7,663	19,464	20,078	19,808
Total employees by employment contract and gender									
Regular employees (Male)	7,042	6,937	6,650	4,856	5,172	5,236	11,898	12,109	11,886
Contract employees (Male)	859	1,066	1,192	80	115	71	939	1,181	1,263
Regular employees (Female)	3,732	3,726	3,743	2,286	2,333	2,307	6,018	6,059	6,050
Contract employees (Female)	563	662	560	46	67	49	609	729	609
Total regular employees by employment type and gender									
Full time (Male)	7,896	7,995	6,643	4,420	4,740	4,675	12,316	12,735	11,318
Part time (Male)	5	8	7	516	547	632	521	555	639
Full time (Female)	4,281	4,377	3,734	1,885	1,893	1,779	6,166	6,270	5,513
Part time (Female)	14	11	9	447	507	577	461	518	586
Casual employees¹									
Total number of casual employees	30	-	-	286	-	-	316	-	-
Total man hours worked	7,920	-	-	122,402	-	-	130,322	-	-
Total employees by age group									
<30 years old	18%	19%	20%	20%	20%	23%	18%	19%	21%
30-49 years old	61%	62%	61%	58%	60%	59%	60%	61%	60%
≥ 50 years old	21%	20%	19%	22%	20%	18%	21%	20%	19%
Gender mix by employee category (% female)									
Operations and Support	43%	43%	41%	39%	40%	39%	42%	42%	41%
Professional	32%	31%	32%	32%	30%	29%	32%	31%	30%
Executives and Top Executives ²	33%	34%	34%	23%	22%	22%	28%	28%	28%
- Executives	33%	34%	34%	23%	23%	22%	28%	28%	28%
- Top Executives	34%	34%	33%	22%	17%	10%	32%	28%	26%
Mean salary ratio (female:male)³									
Operations and Support	0.99 : 1	1 : 1	0.99 : 1	1 : 0.94	1 : 0.94	1 : 0.95	1 : 0.97	1 : 0.97	1 : 0.97
Professional	0.94 : 1	0.96 : 1	0.96 : 1	0.93 : 1	0.94 : 1	0.95 : 1	0.93 : 1	0.95 : 1	0.95 : 1
Executives	0.95 : 1	0.95 : 1	0.96 : 1	1 : 1	0.99 : 1	0.97 : 1	0.97 : 1	0.97 : 1	0.97 : 1
Median salary ratio (female:male)⁴									
Operations and Support	0.98 : 1	-	-	1 : 0.98	-	-	1 : 1	-	-
Professional	0.91 : 1	-	-	0.91 : 1	-	-	0.91 : 1	-	-
Executives	0.94 : 1	-	-	1 : 1	-	-	0.97 : 1	-	-
Mean bonus ratio (female:male)⁵									
Operations and Support	1 : 1	1 : 0.99	1 : 0.96	1 : 0.81	1 : 0.94	0.99 : 1	1 : 0.92	1 : 0.97	1 : 0.98
Professional	0.94 : 1	0.98 : 1	0.99 : 1	0.87 : 1	0.89 : 1	0.93 : 1	0.91 : 1	0.95 : 1	0.96 : 1
Executives	1 : 0.89	1 : 0.94	1 : 0.87	0.96 : 1	0.95 : 1	0.95 : 1	1 : 0.95	1 : 0.97	1 : 0.98
Median bonus ratio (female:male)⁴									
Operations and Support	0.99 : 1	-	-	0.99 : 1	-	-	0.99 : 1	-	-
Professional	0.95 : 1	-	-	0.86 : 1	-	-	0.91 : 1	-	-
Executives	1 : 0.92	-	-	1 : 0.94	-	-	1 : 0.93	-	-
New employee hires	19.9%	15.5%	14.1%	23.0%	15.2%	23.1%	21.1%	15.3%	17.6%
New employee hires by age group									
<30 years old	6.6%	6.4%	6.2%	11.4%	6.0%	11.5%	8.4%	6.2%	8.3%
30-49 years old	11.7%	7.9%	7.4%	10.0%	7.7%	10.2%	11.1%	7.8%	8.5%
≥ 50 years old	1.6%	1.2%	0.5%	1.6%	1.6%	1.4%	1.6%	1.3%	0.8%
New employee hires by gender									
Male	13.5%	5.0%	9.5%	14.5%	9.5%	15.5%	13.8%	10.1%	11.8%
Female	6.4%	10.5%	4.6%	8.5%	5.7%	7.6%	7.2%	5.2%	5.8%
Employee voluntary turnover	19.9%	13.2%	15.7%	22.6%	12.5%	15.3%	20.9%	12.9%	15.5%

PEOPLE	SINGTEL			OPTUS			SINGTEL GROUP		
	2022	2021	2020	2022	2021	2020	2022	2021	2020
Employee turnover by age group									
<30 years old									
Voluntary	4.9%	3.8%	4.0%	9.6%	6.0%	8.1%	6.6%	4.6%	5.5%
Involuntary	0.1%	0.04%	0.6%	2.1%	0.8%	2.8%	0.8%	0.3%	1.4%
30-49 years old									
Voluntary	12.5%	7.8%	9.5%	11.1%	5.5%	6.3%	12.0%	6.9%	8.3%
Involuntary	0.3%	0.2%	0.9%	3.2%	2.0%	5.3%	1.4%	0.9%	2.6%
≥ 50 years old									
Voluntary	2.5%	1.6%	2.2%	1.9%	1.0%	0.9%	2.3%	1.4%	1.7%
Involuntary	0.2%	0.1%	0.6%	1.8%	0.9%	2.5%	0.8%	0.4%	1.3%
Employee turnover by gender									
Male									
Voluntary	13.2%	9.0%	10.6%	14.9%	8.0%	9.4%	13.8%	8.6%	10.1%
Involuntary	0.4%	0.2%	1.4%	5.0%	2.5%	6.9%	2.1%	1.1%	3.5%
Female									
Voluntary	6.7%	4.2%	5.1%	7.7%	4.5%	5.9%	7.1%	4.3%	5.4%
Involuntary	0.2%	0.1%	0.7%	2.1%	1.3%	3.7%	0.9%	0.6%	1.8%
Total training investment (\$million)	S\$12.5	S\$11.8	S\$14.6	A\$6.7	A\$5.0	A\$7.8	S\$19.2	S\$16.8	S\$21.9
Average training hours per employee	51.8	43.5	40.2	27.0	14.6	19.6	43.1	33.0	32.7
Average training hours by gender									
Male	56.3	48.3	44.2	25.8	13.7	19.1	45.1	34.8	34.3
Female	43.4	34.8	33.1	29.8	17.0	20.9	39.1	29.1	29.4
Average training hours by employee category⁶									
Operations and Support	27.2	20.9	29.7	34.8	28.6	30.4	28.7	22.7	29.9
Professional	62.7	55.3	47.7	26.8	12.2	17.7	49.3	38.5	35.8
Executives and above	50.3	39.6	28.6	22.2	10.9	14.8	35.7	24.4	21.4
Employee health and safety⁷									
Total man hours worked (per million)	27.0	27.6	-	12.3	13.1	-	39.3	40.7	-
Workplace injury incidence rate (per 1,000 employees)	0.6	0.8	0.8	1.1	2.6	2.3	0.8	1.5	1.4
Workplace injury frequency rate (per million hours worked)	0.3	0.4	0.4	0.7	1.5	1.4	0.4	0.7	0.7
Workplace injury frequency rate (Male)	0.2	0.4	0.2	0.5	1.6	1.6	0.3	0.8	0.7
Workplace injury frequency rate (Female)	0.3	0.3	0.6	1.1	1.3	0.8	0.5	0.6	0.7
Workplace injury severity rate	6.0	10.0	7.9	11.9	19.0	8.9	7.9	12.9	8.2
Workplace injury severity rate (Male)	0.8	13.0	4.6	9.1	23.7	11.9	3.5	16.6	7.1
Workplace injury severity rate (Female)	15.7	4.5	14.1	18.3	8.0	1.7	16.5	5.5	10.6
Absenteeism rate	0.02	0.014	0.022	0.02	0.013	0.017	0.02	0.014	0.020
Absenteeism rate (Male)	0.017	0.011	0.019	0.015	0.012	0.014	0.016	0.011	0.017
Absenteeism rate (Female)	0.029	0.019	0.029	0.020	0.017	0.024	0.026	0.019	0.027
Total occupational disease cases	0	0	-	0	0	0	0	0	-
Total occupational disease cases (Male)	0	0	-	0	0	0	0	0	-
Total occupational disease cases (Female)	0	0	-	0	0	0	0	0	-
High consequence injury rate (per million hours worked)	0	0.04	-	0	0	-	0	0.02	-
Fatalities	0	0	0	0	0	0	0	0	0

1. This is the first year we are reporting on casual workers, who are mainly employed as retail sales consultants in Singapore and Australia.

2. Previously known as Middle Management and Top Management. Heads, previously included under Middle Management, are now considered as Top Executives.

3. Based on average monthly salary of regular employees.

4. This is the first year we are reporting on median salary and bonus ratios.

5. Based on average annual bonus of regular employees.

6. Singtel excludes contract staff who have a tenure of less than one year, while Optus excludes all contract staff and casual workers in their data.

7. Workplace health and safety metrics are based on the International Labour Organization (ILO) definitions, subject to country definition of lost work shifts e.g. Optus excludes weekends from medical leave when calculating these rates.

COMMUNITY IMPACT

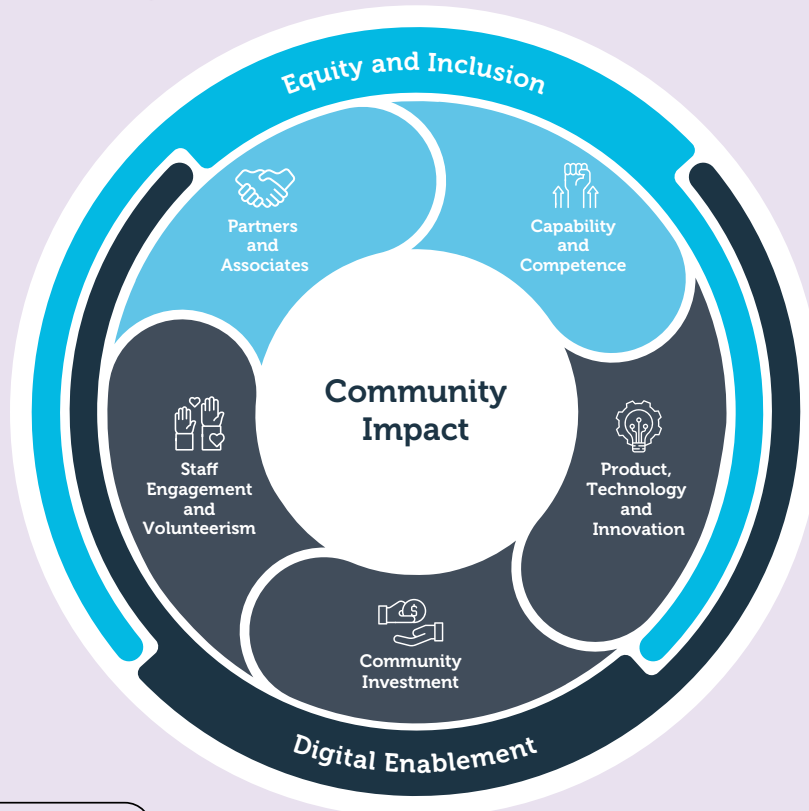
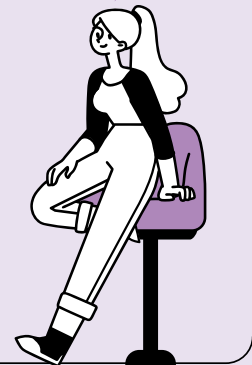


Figure 1

Singtel Group Community Impact Framework

To enable the inclusion and well-being of people, and help our communities realise their potential through digital enablement



Aligned with our purpose, Empower Every Generation, the Singtel Group is committed to driving sustainable change by empowering communities through equity and inclusion as well as digital enablement to provide equal opportunities and access for all. So that no one is left behind.

Digital enablement is at the core of our community impact strategy (see Figure 1). We recognise that our ICT capability and competence, product technology, expertise and innovation have created positive and lasting impact on generations of people through the years. And we aim to continue to advance the world for future generations to come.

We believe that digital enablement addresses several community material topics – including online safety, digital access and inclusion, as well as fostering education and employability – identified in our materiality review and stakeholder engagement exercise.

Our focus on equity and inclusion demonstrates the company's commitment to support the vulnerable – children, youth and seniors, disadvantaged families and communities, and persons with disabilities. Our initiatives aim to uplift them with resources to thrive and build community resilience including exposure to natural disaster risks and impacts.

We are represented in global, national and industry committees such as GSMA working groups, National Council of Social Service (NCSS)



Maximising value creation with Singtel Group core values

Values		Community Impact
C	Cultivate a Growth Mindset	We work with partners to leverage our ICT competence to digitally enable social service agencies, charitable organisations, seniors and other vulnerable segments.
O	Operate with Integrity	We support vulnerable communities with our programmes governed by our community impact framework and policies.
M	Make Customers First	We address the needs of communities and vulnerable segments through shared value and our digital enablement programmes.
M	Maximise Teamwork	We foster collaboration with diverse partners in the ecosystem to empower our communities for a better future.
I	Innovate with a Challenger Spirit	We drive social innovation to empower communities and the social service sector to use technology for social good.
T	Take Ownership	We are committed to being a responsible corporate citizen in all the markets where we operate, driving positive and sustainable change for our communities.

Strategic Thrusts steering committee, Business for Societal Impact (B4SI) steering group and the Enabling Technology Advisory Group jointly chaired by the Agency for Integrated Care (AIC) and SG Enable in Singapore. We play an active role in contributing our corporate expertise to shape digitally inclusive communities and understanding how we can positively shape our community programmes.

Together with our partners, we develop and implement programmes and staff engagement initiatives that leverage the company's collective resources of digital services, corporate competence and staff expertise to create meaningful impact in the community.



Empower Every Generation is simple yet powerful, aptly encapsulating the role we have played since our founding more than 140 years ago. It also reflects our intention to make sure we bring everyone along into a more sustainable digital future and advance the world for future generations to come with new ideas and innovations.

Yuen Kuan Moon, Singtel Group CEO

Community Impact Pillars	Objectives	Key Singtel Group Initiatives	Target Segments	2025 Target	Progress Towards 2025 Target
Digital Enablement	Bridging the digital divide through digital access and inclusion (page 41-43)	- Singtel Digital Silvers - Donate Your Data and Device - Migrant Worker Outreach	Vulnerable seniors, migrant workers and low-income families	One million digitally enabled persons and SMEs (between 2015 and 2025)	>740,000 (between 2015 and 2022)
	Online safety and well-being (page 43-44)	- Help123 - Optus Digital Thumbprint - Singtel Digital Silvers	Children, youth, parents and caregivers		
	Unlocking digital growth opportunities (page 44-45)	- Singtel Group Future Makers - SME Digitisation Initiatives	SMEs, non-governmental organisations (NGOs), social impact start-ups and Social Service Agencies (SSAs)		
Equity and Inclusion	Supporting the education of vulnerable groups (page 46-47)	- Singtel Touching Lives Fund - Race Against Cancer - ABCN and KARI Foundation	Persons with disabilities, disadvantaged communities and vulnerable youth		
	Advancing employability of disadvantaged population (page 47)	- Pathways 2 Employment - SBNod			

Table 1: Singtel Group community impact efforts and goals

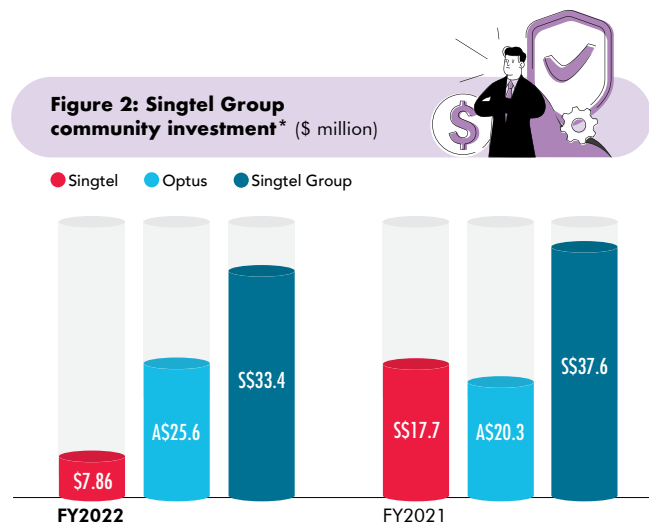
We are committed to digitally enabling one million persons and small and medium sized enterprises (SMEs). Our efforts are also aligned with our material topics of Online Safety and Well-Being, Community Resilience and Disaster Response, and Education and Employability (see Table 1). During the year, the Singtel Group invested S\$33.4 million in our communities (see Figure 2).

BRIDGING THE DIGITAL DIVIDE

Digital access is critical for people to participate meaningfully within society today, such as fixed and mobile data and voice communication, and online commerce and banking. However, segments of the population such as seniors, low-income families and migrant workers risk getting left behind due to lack of resource, knowledge or skill.

The Singtel Group works closely with national agencies and charity partners to narrow the digital divide. We tap on our ICT strengths to support the underserved population, providing them with digital access and skills to improve their lives and livelihood.

In Singapore, our programmes are aligned with IMDA's Digital for Life movement which affirms our commitment to build a digitally inclusive society where all Singaporeans are empowered to realise their fullest potential. In Australia, our programmes Donate Your Data and Donate Your Device address the digital divide by supporting disadvantaged students, families as well



*Our community investment, which includes direct financial support, in-kind charitable sponsorship and staff volunteering hours, has been verified by the Business for Societal Impact (B4SI).

as individuals in crisis with data access and connectivity. These programmes are supported by our generous customers who donate their excess data and new or unwanted devices.

Enabling customers and employees to build an inclusive digital future

Optus Donate Your Data

Since 2018, we have been bridging the digital divide for disadvantaged and vulnerable young Australians through Optus' **Donate Your Data** programme. We empower our customers to donate their mobile data to those who need it most.

The connectivity provided enables disadvantaged students to continue to learn and have access to online lessons and resources especially when more learning moved online during the pandemic. Amid the pressure and isolation brought about by the pandemic, we expanded our programme to cover families and people experiencing crisis. We provide SIM plans to the homeless and those experiencing domestic violence and affected by natural disasters.

Donated data is pooled and shared with young people, their families and other Australians supported by our charity partners such as Australian Business and Community Network (ABCN), KARI Foundation and The Smith Family. During the year, we onboarded more than 10,000 participants, bringing the total number of beneficiaries to over 27,000. Since December 2019, our customers have donated over 40 million GB of data through this programme. In recognition of our programme and its meaningful impact, we received the 2021 Australian Communications Industry Awards for Innovation by a large company.

Digital Inclusion Benchmark 2021

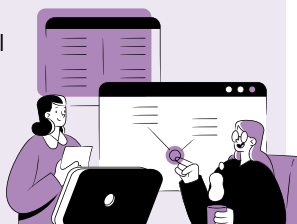
Singtel Group's commitment to advancing digital inclusion has been recognised by the World Benchmarking Alliance's Digital Inclusion Benchmark (DIB) 2021.

DIB ranks the world's most influential 150 technology companies on their responsibility to advance a more inclusive digital society and enable the achievement of the UN SDGs. Singtel Group ranked 20th out of the 150 tech companies and the second best performing company headquartered in Southeast Asia, demonstrating strong performance in digital inclusion.

We also ranked third among all benchmarked companies in the 'Access' category, in recognition of our programmes like Donate Your Data and Singtel Digital Silvers that make digital technologies more widely available, affordable and accessible.

This affirms our commitment to cultivating a more inclusive digital society through our core business and competence.

Visit [Digital Inclusion Benchmark](#) for more information.



Taking collective action on domestic and family violence

As part of the Telco Together Foundation, Optus is proud to contribute to the **Domestic and Family Violence Action Plan Framework**, an industry-first framework that will improve how we support Australians experiencing domestic and family violence. Communication devices and services can be a lifeline in these situations but can also be tools for control and abuse. The framework includes a comprehensive and standardised set of guidelines to train employees of participating telcos on how to best support victims and ultimately reduce instances of domestic and family violence.

At Optus, we took our commitment a step further by expanding our Donate Your Data and Donate Your Device to include such victims who needed to re-establish safe connectivity to other trusted parties and loved ones.

Optus Donate Your Device

Through the digital inclusion roundtables that we organised, we garnered further insights from our Australian community partners. While our Donate Your Data programme was highly successful, many vulnerable people lacked devices to take advantage of the availability of free mobile data. Hence, we launched Donate Your Device during the year to encourage customers to help bridge the digital divide by donating preloved or brand new devices to people who cannot afford a device or mobile data access. Working with our charity partner Good360 Australia, customers can drop their phones at our stores, which will then be checked, cleaned, data wiped and repackaged with a new charger, ready for donation to someone in need. In addition to a donated handset, beneficiaries receive an Optus prepaid SIM loaded with data donated by our customers.

Our programme also has a positive environmental impact as we keep unused devices out of the Australia landfill by giving them a new lease of life. Mobile phones deemed unsuitable for donation are recycled through our Optus' in-store Mobile Muster programme.

Empowering seniors to go digital

In Singapore, we introduced the Singtel Digital Silvers programme in September 2020, under our digital enablement strategy and efforts, to address the challenges posed by the pandemic as many live-alone seniors in Singapore were isolated from community and social support.

We sponsor WiFi broadband connection and Singtel TV ethnic content channels (Chinese, Malay, and Indian) at the Senior Activity Centres (SACs) run by NTUC Health, Thye Hua Kwan and Fei Yue, transforming them into digital hubs. ICT has become integral to promoting active



We are expanding our digital inclusion efforts to help seniors reap the benefits of the digital world, ensuring they are not only equipped with essential digital literacy skills but also have access to reliable connectivity.

Anna Yip, CEO, Consumer Singapore

ageing and facilitating virtual engagement especially during the pandemic. Our staff volunteers conduct weekly one-on-one sessions with seniors at SACs to help them pick up basic digital skills, such as smartphone functions like camera and voice messaging, useful apps like YouTube, surfing the internet, using digital payment and protecting themselves from online dangers. These Wednesday sessions are currently conducted at all our Singtel Shops before opening hours, as well as SACs in the afternoon.

During the year, we empowered more than 7,000 seniors with such digital knowledge under the guidance of more than 250 dedicated Singtel staff volunteers. Our survey found that more than 65% of the seniors now have more confidence using mobile phones and apps to navigate in the digital world.

In August 2021, we launched **Singtel Digital Silvers' Journey**, a series of instructional videos on digital skills produced in-house. They are made simple for seniors to follow, learn and revise independently. Each video focuses on different digital skills that are vital for everyday use in an increasingly tech-savvy world. We also collaborated with popular media personalities like Jin Jie to launch '**Jin Jie Goes Digital**'. This social media campaign aimed to raise seniors' awareness on how they could upgrade their digital skills to enhance their lives and stay connected. The campaign attracted over 200,000 views in two months and further bridged the digital divide for the silver generation in a fun and engaging manner.



Yuen Kuan Moon, Singtel Group CEO, and our staff volunteers guiding seniors on using digital devices and services at a weekly session

GOMO Donate Your Data

Encouraged by the results of our Singtel Digital Silvers Programme where seniors were able to pick up the necessary digital skills and knowledge to stay safe online, we piloted in February 2022 our **Donate Your Data** programme in Singapore with NTUC Health on our all-digital mobile brand GOMO. Launched as part of GOMO's #DataForGood campaign, the movement rallies customers to make the online space a better one and encourage better mental and digital well-being for everyone. Complementing the Singtel Digital Silvers programme, GOMO customers who are mainly youth can now play a role in digital inclusion for seniors by donating their data to vulnerable seniors at their fingertips via the GOMO mobile app.

We consolidate and credit donated data every month into the Singtel prepaid hi! cards which we sponsor for the vulnerable seniors across the 13 NTUC Health SACs. We plan to extend the programme to all our customers and scale the programme to reach 10,000 seniors and beneficiaries across more SSAs. This will also enable our customers to play their part in building an inclusive digital society and draw more people into the Digital for Life national movement.



Engaging migrant workers to stay digitally connected

There are more than one million migrant workers in Singapore. Together with the Migrant Workers' Centre (MWC) and Centre for Domestic Employees (CDE), Singtel organised regular activities to engage and uplift their spirits during the pandemic. Online events had an entertaining line-up of artiste performances and games with prizes, and saw an average 120,000 viewership. These workers also received regular information on work safety, health, mental wellness and remittance.

Workers using our hi! prepaid mobile service enjoy free ethnic content movies and TV shows from their home countries when they top up their account. We also made mobile remittance hassle-free with Dash Remit on our mobile wallet service Singtel Dash via the hi! app.

This gives our migrant worker customers a convenient, safe and digital alternative to visiting physical retail stores especially during the pandemic.

ONLINE SAFETY AND WELL-BEING

The proliferation of devices and social media has enabled people to stay in touch wherever they are, with instant access to information. But it also brought about challenges like increased instances of cyber bullying, access to inappropriate content and digital addiction to mobile devices and gaming. Increased digital learning since the pandemic also comes with more unregulated screen time and content access, thereby exacerbating online risks especially for the younger ones.

The Singtel Group recognises these unintended consequences in our industry. As a responsible corporate citizen and market leader, we play a proactive role in mitigating such risks through education and promotion of responsible digital citizenship and online safety among our customers, children and youths. Since 2015, our Digital Thumbprint programme has equipped more than 600,000 students, educators and parents in Singapore and Australia with skills and knowledge to stay safe online.

As part of our continuous improvement efforts, we assess ourselves based on internationally recognised frameworks and benchmarks such as Global Child Forum and the GSMA-UNICEF MO-CRIA: Child Rights Impact Self-Assessment Tool for Mobile Operators to keep abreast with the latest best practices in child online safety and what we as a telco can and should do in this space. We also work closely with national agencies in Singapore and the Office of the e-Safety Commissioner in Australia to ensure that our programmes meet changing needs and align with regulatory landscapes in our respective markets to keep online spaces safe, especially for the vulnerable children.

Helping families manage digital risk in Singapore

Help123 is an integrated cyber wellness and digital parenting platform by TOUCH Community Services that is supported by Singtel. First launched as a pilot supported by NCSS in 2017, Help123 has since adapted to the growing needs of parents and caregivers to focus on providing comprehensive digital resources to help them manage cyber wellness issues faced by their young ones. The full suite of Help123 services offered covers a one-stop hotline (1800 6123 123) and email, knowledge and resource, and digital parenting webinars. Since its inception, Singtel has invested over S\$1 million into this platform and its offering.

Since the onset of the pandemic, we have noticed increased traffic to the Help123 website and email enquiries from parents who mostly sought help for their children's excessive device usage. TOUCH has been organising online digital parenting webinars to equip parents with the knowledge and skills to protect and keep their children safe online. During the year, we reached over 5,500 parents and children, with more than 55% feeling that the sessions were better than other similar ones they attended. We also enhanced the website by integrating a chatbot to provide real-time support for parents, catering to the 1.5 times increased website traffic compared to previous year.

We also expanded our outreach efforts and worked with like-minded partners to reach out to more parent groups. For example, we collaborated with the People's Association to increase the reach of our webinars to more parents and caregivers as well as **Quality Check!** to improve the quality of screen time for preschool children in Singapore.

Empowering young Australians to be responsible digital citizens

We are committed to empowering young people to be safe and responsible while online, so that they can embrace digital technology, maximise its benefits, and achieve their full potential. Since 2013, our **Optus Digital Thumbprint** programme in Australia has been providing young people the tools they need for positive and responsible online experiences. Our programme is endorsed by the eSafety Commissioner as a Trusted eSafety provider and offered free to primary and secondary schools.

With young children spending more time online for school and recreation, the need for online safety education has never been greater. During the year, we expanded support for primary school children with facilitator-led workshops for students aged ten to 11, and new interactive workshops for children aged eight to nine.



These gamified workshops offer students badges for correct answers and completion. The current topics are 'Staying safe on apps and games' and 'Keeping information safe online', with more in the pipeline.

The expanded programme can be delivered to all Australian states via digital platforms or in-person sessions. This ensures young Australians have free and accessible digital citizenship education throughout primary and secondary schooling years, thereby improving their digital literacy to navigate safely in the digital world. Parents are also supported through facilitator-led workshops and free online resources which help them understand online safety issues and reinforce lessons their children have learnt. During the year, we reached more than 80,000 students.

UNLOCKING DIGITAL GROWTH OPPORTUNITIES

Besides access, it is equally important that people and businesses possess the right skills and knowledge to effectively harness the benefits of digital technology. However, not all of them are equipped to do so. The media cited a survey which found that only two of five Singapore SMEs perceived their digital efforts to be successful, implying a lack of digital skills and knowledge hindering businesses' digital transformation plans. Many SSAs also identified digital transformation as their top challenge. More than half of them wanted to continue digitising their operations beyond what they had implemented due to COVID-19. With our comprehensive suite of ICT solutions, Singtel is well placed to support these SMEs and SSAs and meet their digital needs.

Catalysing social innovation

Singtel Group Future Makers, our regional social innovation and capacity building programme, supports promising social impact start-ups with innovative technology solutions that help address social and healthcare challenges faced by the vulnerable in our communities. First started in Australia then Singapore, we have since expanded our local programmes and are working with our regional associates Airtel (India), AIS (Thailand), Globe (Philippines) and Telkomsel (Indonesia) to build collective impact in the social innovation space.

Since 2016, we have invested over S\$5 million to support 72 local and regional start-ups through grants, capacity building and access to our ecosystem of partners and networking opportunities. In addition, employees who are subject matter experts in areas like digital marketing, HR, legal and strategy have been involved as mentors, coaches and judges as part of our skilled volunteering

efforts to empower the start-ups. Read more about our Future Makers programme in Singapore [here](#) and Australia [here](#).

In 2021, our **programme** sought to foster shared value opportunities with our regional associates to create impactful social and business solutions for our markets. Aligned with the SDGs, the programme showcased 20 regional start-ups that address key issues related to economic growth (SDG 8) and health and well-being (SDG 3) to impact investors, government agencies, NGOs and corporate partners. Our employees and partners across the Group also supported the start-ups through mentorships and workshops as part of their capacity building. Six start-ups subsequently secured a total grant pool of S\$150,000 to support their regional shared value proposals to drive social and business impact. Moving ahead, we will work closely with high potential start-ups to catalyse shared value opportunities and help scale their solutions.

Empowering SMEs to go digital

To support SMEs in Singapore on their digitisation journey, we launched a series of SME digitisation initiatives that offers ICT service consultation and support at no charge. During the year, more than 7,000 SMEs took part in the programme, with over 500 of them receiving one-on-one guidance from our digital specialists.

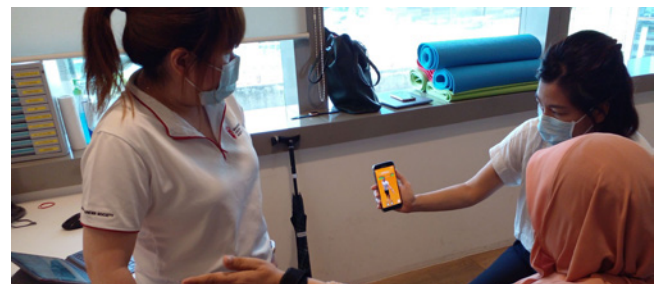
We guided SMEs on adopting IT solutions that supported secure and collaborative work processes while working from home, which was a norm during the pandemic. One such company is Yeng Management Services, an audit consultancy firm, which could not physically meet their clients and had to find alternative means to engage both clients and staff due to the safe management

measures. Mr P G Wee, owner of Yeng Management Services, said that “these solutions enhanced the company’s efficiency through improved knowledge sharing and strengthened staff capabilities”.

Singtel Group Future Makers alumni creating shared value

As one of Singapore’s leading remote rehabilitation start-ups, XCLR8 Technologies, our 2018 Singapore programme alumni and Singtel Group Future Makers 2021 regional finalist, partnered our long-time charity partner Singapore Cancer Society to co-develop a remote rehabilitation programme for cancer survivors. Through remote rehabilitation, patients are empowered to take control of their recovery and reduce the inconvenience brought about by commuting to clinics especially in their less-than-ideal physical condition.

Optus Future Maker Virtual Psychologist (2017) offers mental health and psychological counselling by text and chat with trained counsellors and psychologists. Challenged by staff experiencing anxiety during the pandemic, our Philippine associate Globe launched Hope Chat with Virtual Psychologist in the second quarter of 2021 to its 8,000 employees. It received a 97% satisfaction rate. Find out more about their work and other Singtel Group Future Makers 2021 start-ups [here](#).



Singtel is honoured to be recognised for our support of the social enterprise sector in Singapore through Singtel Group Future Makers. Since our founding, we have strongly believed in harnessing the power of technology to empower generations of Singaporeans. We look forward to continue growing the programme with the help of our partners such as **raiSE to support more social enterprises that share our vision.**

Aileen Tan, Group Chief People and Sustainability Officer, Singtel

Social Enterprise Champion of the Year

In recognition of our significant contributions made in helping social enterprises build capacity in Singapore, Singtel was named Social Enterprise Champion of the Year at the biennial President’s Challenge Social Enterprise Awards 2021.

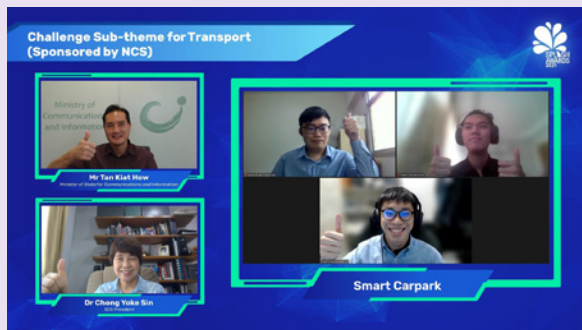


Aileen Tan, Group Chief People and Sustainability Officer, receiving the award from the President of Singapore Halimah Yacob



Supporting the next generation for innovative tech solutions

As part of NCS' commitment to nurturing future IT talents, we supported Splash Awards 2021, a national student tech innovation competition organised by the Singapore Computer Society to inspire innovative ICT solutions in a fun and creative way. We adopted a challenge sub-theme where a senior leader served as a judge to assess the proposed solutions. We also organised the NCS Thinkathon where over 80 tertiary students put their heads together to create innovative solutions to tackle challenges faced by our communities.



EQUITY AND INCLUSION

The Singtel Group is dedicated to advancing vulnerable segments of society, including persons with disabilities, disadvantaged youths and Indigenous Australians so that they are empowered to reach their full potential. We continue to engage our people to make positive contributions by getting involved in our community programmes through fundraising, volunteerism and sharing their knowledge and expertise.

In Singapore, our community programmes and approach are aligned with NCSS' Strategic Thrusts where every person is empowered to live with dignity in a caring and inclusive society. In recognition of our support for the sustainable progress in the development and inclusion of vulnerable groups in Singapore, Singtel was presented with the Community Chest Charity Platinum and Volunteer Partner Award 2021. We were also Singapore's sole private sector representative that received recognition at the inaugural ASEAN Outstanding Social Welfare and Development Awards which recognises organisations with noteworthy contributions in the field of social welfare and development.

In Australia, our social impact initiatives focus on improving educational outcomes and employment pathways for disadvantaged and vulnerable youth. Optus has been a founding member company of the ABCN since 2005 and a partner of KARI Foundation.

We also work with a wide range of charities and organisations through our flagship programmes like Donate Your Data, Donate Your Device and Pathways 2 Employment.

Supporting the education of vulnerable groups

Singtel Touching Lives Fund (STLF), our flagship corporate philanthropy programme, supports the education of children and youth with special needs in Singapore.

Our six beneficiary schools are APSN Chaoyang School, APSN Tanglin School, APSN Delta Senior School, Cerebral Palsy Alliance Singapore School, Eden School and MINDS Lee Kong Chian Gardens School. They collectively support more than 3,000 students annually and provide customised curriculum to equip them with the knowledge and skills to integrate into the community and live independently. STLF has raised more than S\$50 million since it was set up in 2002.

We recognise that play is important for children to grow and thrive but are also mindful of their health and safety. Due to safe management measures, we were unable to organise our annual mega Singtel Carnival for all the special education (SPED) schools in the past two years. However, before the year-end school holidays, we brought mini versions of the carnival to four of our STLF beneficiary schools for the younger children. We also made drawstring bags and reusable masks sporting an artwork design by an APSN Tanglin School budding student artist Shannon Kaur, and distributed them to every student in all the SPED schools in Singapore.

We have been supporting NTUC's U Care Fund, since its establishment in 2009, to better the welfare of union members and their families.



For the last few years, it's been difficult for us to get our students to go to a carnival like this. I'd like to say a very big thank you to Singtel for bringing the carnival to us and allowing our students to expend their pent-up carnival excitement and have fun in a safe environment. Thank you for your continued contribution to the school and for serving the needs of all our students."

Gerald Vaz, Principal, MINDS Lee Kong Chian Gardens School



Aileen Tan, Group Chief People and Sustainability Officer, with the students from SPED schools at our decentralised Singtel Carnival 2021

Last year, we contributed S\$100,000 to various assistance programmes like discount vouchers for groceries, back-to-school vouchers, funding support for bursaries and scholarships, and family recreation packages. This brings our total contribution to S\$1.02 million since 2009.

In Australia, we work closely with ABCN and KARI Foundation to support high-needs schools by providing skills and work experience to help students grow their confidence and set career goals. During the year, about 250 Optus staff mentors supported more than 2,000 students across five states. We work within state-based COVID-19 restrictions and pivoted to virtual delivery where necessary to ensure continued reach and rapport with these students. Our ongoing partnership with the KARI Foundation provides scholarships and mentoring support for Indigenous students living in low socio-economic areas, who are entering their final years of high school.

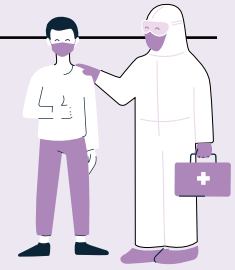
Advancing employability of disadvantaged population

As one of the founding members and current co-chair, Singtel participates actively in the Singapore Business Network on DisAbility. The network meets regularly to share expertise, experiences and resources to help advance the equitable inclusion of persons with disabilities in all aspects of business. We also support national disability agency SG Enable's mentorship and internship programmes for tertiary students with

Supporting pandemic recovery efforts

Singtel

40 staff volunteers supported Temasek Foundation's Stay Prepared Programme to assist Singapore households in collecting their free disposal surgical and N95 masks. Singtel was also among a group of corporate donors in the Singapore business community to donate 3,000 oxygen concentrators to Indonesia in July 2021. The oxygen concentrators were used by hospitals to expand their oxygen care and treatment.



NCS

In appreciation for the tireless efforts of our healthcare workers in Singapore during the pandemic, our NCS Healthcare team visited Tan Tock Seng Hospital to distribute 400 care packs to healthcare workers, nurses and doctors.

Optus

We supported CARE Australia to raise funds to set up temporary hospitals in worst affected regions in India. Optus matched all staff donations one-for-one and provided a range of employee support for those personally impacted or have family and friends in India.

disabilities, as well as career fairs and CV clinics. Through our annual Pathways 2 Employment programme in Australia, we support disadvantaged youths in their transition from school to employment and improve their future employment prospects.

This initiative provides disadvantaged and vulnerable high school students with retail and employability skills, and the confidence to find and keep a job, both within Optus and the broader retail sector. During the year, we delivered eight workshops – reaching 300 students and placing 20 students in Optus retail employment opportunities.

Engaging our people

Keeping our people actively engaged in the community is a key driver of our staff engagement and community impact strategy. We recognise our employees possess skills, networks and resources to empower vulnerable segments in the community. Employee volunteerism not only helps our communities but also contributes to the holistic development of our people in terms of empathy, perspective and character building.

During the year, we received the Community Cares Award from the Ministry of Social and Family Development, which recognised the efforts of Singtel and our staff volunteers who spent time during the pandemic to connect with vulnerable groups, checking in on their well-being. Optus was also recognised by Good Company Top 10 Best Workplaces in Australia for giving back to the community.

Fundraising

Our annual flagship STLF event, Singtel Charity Golf, returned after a skip year in 2020 due to the pandemic. Despite a much pared down affair due to safe management measures and restrictions, we raised S\$700,000 for children and youth with special needs, thanks to the generosity of our business partners.

As the title sponsor of Race Against Cancer (RAC) since 2009, employees were encouraged to participate in RAC 2021 virtual race and set up their own fundraising campaign to support Singapore Cancer Society's Help the Children and Youth Programme. Singtel makes an annual S\$250,000 donation to this programme, which provides support and financial assistance to children and youth who are cancer patients or whose family members are cancer patients. Our senior management teams in Singtel and NCS also took part in RAC 2021 and raised an additional S\$200,000-plus.

In Australia, yes4good our online giving and volunteering platform helps our employees support causes close to their hearts through volunteering, donations and fundraising. We match staff donations and fundraising up to \$300 per person per year. During the year, we conducted three fundraising campaigns and supported 288 charities through yes4good, with over A\$300,000 in donations.

Volunteering

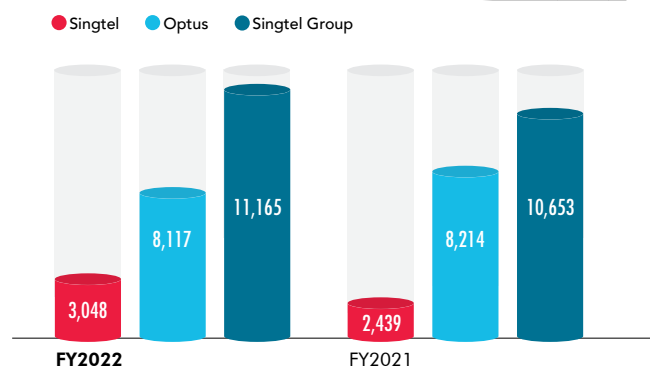
With the transition towards living with COVID-19, our colleagues have gradually resumed their volunteering activities abiding by safe management measures (see Figure 3). This includes conducting a mix of small groups in-person and virtual volunteering activities

mainly through our Singtel Digital Silvers programme in Singapore and ABCN mentoring roles in Australia.

The Singtel Recreational Club mobilised colleagues to support coastal clean-up efforts organised by SportSG. 111 staff volunteers supported the activity to keep our beaches free from trash and safe for marine life.

In Australia, our Agile coaches came together to share their knowledge and skills, and upskilled multiple charities to help them improve their operational and communication strategies. During the year, they worked with ten charity partners to introduce agile ways of working and delivered a major project with Royal Far West, a children health charity, to build the clinical capacity of their supervision programme and ultimately help more children in need.

Figure 3: Staff Volunteering Hours



VolunTeaming at Singtel Digital Silvers

In Singapore, we encourage our people to volunteer individually or as a team by offering paid volunteer leave, and encouraging business units to adopt VolunTeaming, our concept of department teambuilding with a volunteering element.

More than 40 colleagues from our Group Corporate Office participated in the Singtel Digital Silvers Programme to educate 80 seniors on digital literacy.

James Tran, Senior Director of Transformation, together with his Group Procurement colleagues, signed up for a session to connect with seniors at the MacPherson Senior Activity Centre. James was paired with Shirley, a 75-year-old grandmother who lives on her own.

He advised Shirley on how to avoid scams and better connect with her friends through different apps and functions, among others. Through the experience, James was grateful for the opportunity to make a difference to the seniors. It also enabled him and his colleagues to live out Singtel's purpose to Empower Every Generation simply yet meaningfully.



James (far right) with his team at the Macpherson Senior Activity Centre guiding seniors

SUSTAINABLE VALUE CREATION

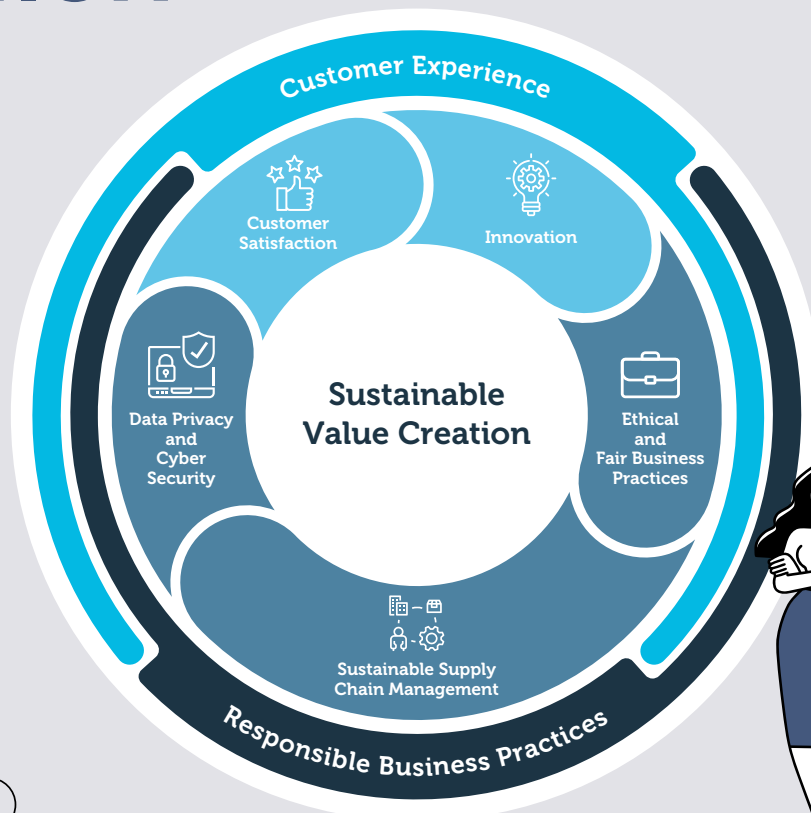


Figure 1

Singtel Group Sustainable Value Creation Framework

The Singtel Group is committed to being a responsible and innovative leader in the markets where we operate. We empower our employees, customers, community and stakeholders of all generations through responsible business practices across our operations and supply chains to drive positive business, environmental and societal impact (see Figure 1).

We want to help address the pressing needs of the environment and society as infocomm technology (ICT) continues to influence the way people connect, work and play. We also recognise stakeholder expectations of us to be a responsible and sustainable company. We look to our purpose to guide us in this and have mapped our value-driven behaviours against our sustainability framework.

RESPONSIBLE BUSINESS PRACTICES

We serve more than 14 million consumer and enterprise customers to meet their daily communication and connectivity needs. Stakeholder trust and confidence is important to us, and we aim to mitigate the unintended negative impact of our products and services for our stakeholders.

Data privacy and cyber security

The Singtel Group upholds the highest standards of customer data privacy and cyber security, as protecting our customer data is paramount. Singtel's Data Protection Policy and Optus' Privacy Policy provide transparency on how we collect, use, share and protect our customers' personal data.

Maximising value creation with Singtel Group core values

	Values	Sustainable Value Creation
C	Cultivate a Growth Mindset	We continuously look at how we can improve our business operations and service offerings while upholding responsible business practices to deliver value and positive impact.
O	Operate with Integrity	We embed responsible, ethical and fair business practices, such as adopting zero tolerance towards fraud, corruption and unethical behaviours, as well as upholding human rights and the highest standards of data privacy and cyber security.
M	Make Customers First	We are committed to delivering unparalleled customer experience with our innovative service offerings, reliable networks and quality customer care.
M	Maximise Teamwork	We collaborate with key stakeholders like industry players to deliver value and positive impact.
I	Innovate with a Challenger Spirit	We continuously innovate and push boundaries to meet changing customer needs while taking advantage of new technology capabilities like 5G.
T	Take Ownership	We recognise our stakeholders' expectations of us to drive greater business, environmental and societal impact and we take full ownership and accountability of our business decisions and actions.

We strictly adhere to data protection laws, such as the Personal Data Protection Act (PDPA) in Singapore and the Privacy Act and Telecommunications Act in Australia. We have safeguards in place to protect the personal data stored with us, and constantly monitor and review risks to ensure security is adequate and effective in today's rapidly evolving cyber risk landscape. We regularly conduct vulnerability assessments and security tests on our corporate information systems and network infrastructure to identify, reduce and rectify security weaknesses (see Figure 2).

We continue to educate our people and improve processes to reduce the recurrence of data breaches. Employees must complete an annual mandatory online privacy training which covers their responsibility to safeguard data. Phishing email simulation exercises are conducted regularly to improve their knowledge on phishing email identification. We periodically publish security tips to raise employees' awareness and vigilance level. Targeted training is also conducted for our customer service teams and offshore contact centres.

Figure 2: Managing customer data privacy and protection

a. Managing data governance

Our Group Chief Information Officer is also our Data Protection Officer and provides strategic oversight, implementation and direction across the Singtel Group to ensure compliance with data protection laws. He reports directly to the Board Risk Committee on risks associated with personal data and solutions to mitigate these risks.



b. Staff education and training

All employees are required to undergo annual mandatory online training and tested on their subject knowledge. We conduct data privacy and security refresher training and share data handling tips regularly through various outreach channels to strengthen our people's cyber security awareness and the importance of data privacy and protection in their daily work.

We carry out phishing email simulation exercises and training throughout the year to improve employees' knowledge on identifying phishing emails. We also regularly update the content of our phishing programme to reflect emerging and evolving phishing tactics and scams.



c. Business risk assessments

We conduct data protection compliance assessments regularly to help identify and mitigate our data protection risks. We also run regular compliance checks on our business processes to ensure they adhere to the relevant data privacy and protection laws. As part of our internal controls system and governance process, all application systems are subjected to regular testing and security reviews before they go into production and their launch.

Our Internal Audit department also conducts regular audits on the IT systems and telecommunications infrastructure underpinning the Singtel Group. These audits focus on providing independent assurance on the control environment, considering cyber security, data privacy and operational risks. Management is responsible for acknowledging the identified areas of improvement and establishing mitigation plans. Internal Audit also provides control advisory reviews to support management in the assessment of controls design for new programmes and initiatives.

In addition, we have a Third-Party Service Provider Security Risk Governance Programme that assesses our third-party vendors' cyber security practices. These reviews ensure that their cyber security practices adhere to Singtel's cyber security requirements and regulations. To protect data, we limit staff access to information residing on our systems and vendor systems. There are also strict verification processes in place to prevent unauthorised information access.



d. Customer empowerment

Cyber crimes are on the rise globally. To protect our customers, we send regular scam alerts to remind customers to stay vigilant and protect themselves against scams.

We conduct our marketing activities in accordance with the Do Not Call provisions of the PDPA and the Spam Control Act in Singapore. Customers who wish to opt out of receiving promotional messages or marketing calls can contact our customer hotline at 1688 or manage their preferences via our customer portal, Singtel My Account. In Australia, we meet our obligations under the Privacy Act and Privacy Provisions of the Telecommunications Act, the Spam Act and Do Not Call Register. We continuously enhance our processes and internal controls to protect customer data.



In FY2022, we recorded seven privacy incidents in Singapore, of which one was referred by the Personal Data Protection Commission (PDPC). These incidents were mainly due to human and process errors, as well as not following standard operating procedures. Employees involved have been coached and process lapses rectified.

We send regular reminders to our customer care officers on proper and careful management of customer data to prevent recurrence of such incidents. During the year, PDPC did not impose fines

or non-monetary sanctions against Singtel. In May 2022, PDPC found that Singtel was not in breach of the PDPA in relation to a third-party file sharing system data incident in 2021 which we reported in SR2021.

In Australia, there were 130 customer data complaints that have been categorised as privacy incidents. Of this, four cases were referred by the Telecommunications Industry Ombudsman (TIO) and one case from the Office of the Australian Information Commissioner (OAIC). We met the threshold to notify the OAIC on one occasion and reported a Notifiable Data Breach during the year.



Ethical and fair business practices

Ethical and fair business practices are critical to building trust and loyalty with our customers. We hold ourselves to the highest standards of business conduct and this is supported by our two core values — Operate with Integrity and Make Customers First — which we expect employees to embrace and demonstrate in their work to ensure that we operate responsibly, ethically and with integrity in everything we do. We also incorporate these values into our processes and decision making.

Upholding human rights

We are committed to upholding and protecting the human rights of all individuals through a culture of trust, respect and inclusion in our company, supply chains and the markets where we operate, regardless of backgrounds, beliefs and abilities. During the year, we officially published our [Singtel Group Human Rights Statement](#). As a signatory to the UN Global Compact since 2007, we conduct business in line with its Ten Principles and the UN Guiding Principles on Business and Human Rights.

We are also guided by international human rights principles set out in the International Bill of Human Rights and the International Labour Organization's (ILO) Declaration on Fundamental Principles and Rights at Work. This applies to how we operate and shape positive sustainable change for our business, employees, customers, communities and the environment.

Singtel Group is committed to providing our people with a work environment that is conducive, physically and psychologically safe and free from discrimination, harassment and retaliation. We take workplace grievances seriously and our Grievance Reporting Policy applies to the entire Group of companies.

We also remain committed to addressing modern slavery across our supply chains. In Australia, we published our second [Modern Slavery Statement](#) and supported the Telco Together Foundation in publishing an Industry Statement on human rights and modern slavery.

In partnership with Supply Nation, we now have access to more than 3,000 Indigenous suppliers, allowing us to explore opportunities to support Indigenous businesses across Australia. Internally, we continue to build staff awareness through modern slavery training modules, highlighting the role Optus plays in reducing modern slavery risks in our supply chains.

In view of the new Singtel Group Human Rights Statement, we revised our [Supplier Code of Conduct](#) (SCC) to improve the clarity of our corporate governance policies and requirements of suppliers in the areas of

human rights, business ethics and data privacy. We plan to roll out early next year an SCC e-learning module for suppliers to understand our requirements and expectations of them as we endeavour to collaborate with transparent, ethical as well as environmentally and socially responsible suppliers. These statements provide an overview of our approach to human rights, the standards we set for ourselves, and the people who work for us and on our behalf. We will review them annually to continuously improve our approach to human rights and modern slavery.

Fair marketing communications

We are committed to fair marketing practices and being clear and transparent in the way we communicate with customers, which can build trust and loyalty. To achieve this, we have incorporated a marketing code into the Singtel Code of Conduct. The marketing code sets out the requirements that Singtel organisations and representatives must follow to ensure that all marketing activities comply with various laws and guidelines such as the Singapore Code of Advertising Practice and PDPA.

There were no cases of non-compliance with regulations and voluntary codes concerning marketing communications during the year. However, the Advertising Standards Authority of Singapore (ASAS) raised four cases from customers who felt that our advertised promotions were not clear or could be misleading. We explained our position to ASAS, and were reminded to be mindful of presenting key Terms and Conditions (T&Cs) to customers in an upfront and accessible manner.

We took our customer feedback onboard and will ensure that details of future campaigns, including T&Cs, are placed clearly on our website and app. The same information will be disseminated to our customer care officers who can clarify with customers who enquire.

Anti-bribery and corruption

The Singtel Group does not tolerate fraud, corruption and unethical behaviour in any form. We manage our exposure to corruption risks through good corporate governance and applying robust internal controls. Our management of fraud risk is supported by various policies and programmes applied across the Group. Our employees, contractors and business partners are expected to comply with these policies. For example, our [Anti-Bribery and Corruption Policy](#), together with the various Code of Conduct in place at all Group entities, mandates that Singtel Board members, management, employees and third parties who represent us, such as suppliers, contractors and business partners, observe our approach to bribery and corruption.

Table 1: Breakdown of nature of substantiated cases in FY2022

Types/Nature of cases	Singtel	Optus	Singtel Group
1. Breach of policy including IT security policy	6	13	19
2. Corruption	1	0	1
3. Employee fraud	2	15	17
4. Employee misconduct, undeclared conflict of interest and inappropriate behaviour	4	25	29
5. Identity theft	0	23	23

Our Whistleblower Programme, comprising an independent whistleblower hotline operated by external service providers in Singapore and Australia and supported by relevant Group policies such as the Singtel Group Investigation Policy and [Singtel Group Whistleblower Policy](#), strengthens our internal control environment. Please refer to our Corporate Governance [website](#) for more information.

Every year, employees undergo mandatory online refresher courses on Code of Conduct, Fraud Awareness and Anti-Bribery and Corruption Policy, and are required to declare any conflict of interest. We review these courses periodically to ensure content relevance. Regular communications and case studies are also sent for staff awareness, reminder and compliance.

If an allegation of corrupt conduct is received, a specialist team will conduct an independent investigation. Should an incident involving corrupt or fraudulent conduct by an employee be substantiated, we will take appropriate disciplinary action, including termination of employment, and report the matter to the relevant law enforcement authority as necessary.

All vendors must comply with our Supplier Code of Conduct. If we establish that a vendor is involved in corrupt or fraudulent activity, we will terminate the contract and bar the vendor from future procurement activity.

During the year, we received 85 reports via our whistleblower channels regarding various allegations, including employee misconduct. We also received 119 allegations of fraud-related and similar matters via other channels, such as compliance checks and investigations by law enforcement agencies (see Table 1 and 2).

In total, 66 cases were substantiated, while another 72 were not. 59 cases remained under investigation as at 31 March 2022. In addition, we closed 33 matters received

in the prior year that were still under investigation as at 31 March 2021, of which 22 cases were substantiated. There were no investigations into matters that took place outside Singapore and Australia.

Responsible tax management

We recognise that tax contributions are important to public finances and the social programmes they fund, and the Singtel Group is committed to complying with applicable tax laws of the jurisdictions where we operate.

The Board is responsible for risk governance and assisted by the Audit Committee in the oversight of tax matters. As part of sound tax governance, we have in place a Tax Risk Management Framework which is aligned to our Group's risk management philosophy and approach. This framework formalises our tax risk management practices and guides our management and tolerance of tax risks. It sets a coordinated approach in our identification, management and mitigation of tax risks and promotes responsible tax management. The Group Chief Financial Officer, under the appointment by the Audit Committee and supported by Vice President of Group Tax, supervises the framework practices and effectiveness. For more information, please refer to our [Responsible Tax Management Statement](#).

Optus is categorised as a Key Taxpayer for income tax by the Australian Tax Office and is subject to its annual Pre-lodgement Compliance Review. Optus is a signatory of the Board of Taxation's voluntary Tax Transparency Code and has been publishing Tax Transparency Reports since 2018. The latest [Optus Tax Transparency Report 2021](#) outlines the policy, strategy and governance for our Australian operations.

It also highlights our contribution to corporate income tax, effective tax rate and reconciliations of accounting profit to income tax expense and tax payable in Australia. In December 2021, the Group's wholly-owned subsidiary

Table 2: Number of cases received in FY2022



	Singtel		Optus		Singtel Group	
	Whistleblower channels	Other channels	Whistleblower channels	Other channels	Whistleblower channels	Other channels
Received	23	14	62	105	85	119
Substantiated	4	6	20	37	24	43
Not substantiated	18	5	28	24	46	29
Under investigation	1	3	14	44	15	47



	Singtel		Optus		Singtel Group	
	Whistleblower channels	Other channels	Whistleblower channels	Other channels	Whistleblower channels	Other channels
Number of cases under investigation as at 31 March 2021	5	1	11	16	16	17
Substantiated	2	1	7	12	9	13
Not substantiated	3	0	4	4	7	4

Actions taken for corruption cases during the year:	Singtel*	Optus	Singtel Group
Number of cases where employees were dismissed or disciplined	1	0	1
Number of cases where contracts with business partners were terminated or not renewed due	1	0	1

*Same corruption case resulting in employee dismissal and vendor termination

Singapore Telecom Australia Investments Pty Ltd (STAI) received an unfavourable judgement from the Federal Court of Australia with respect to its action against the Commissioner of Taxation. The court case relates to the amended assessments from the Australian Taxation Office (ATO) received in 2016 and 2017 for STAI's acquisition financing of Optus in 2001.

The amended assessments amounted to A\$393 million, of which STAI has paid A\$134 million. It is estimated that STAI's holding company, Singtel Australia Investment Ltd, would be entitled to a corresponding interest withholding tax refund of approximately A\$89 million. STAI lodged a court appeal on 19 April 2022.

RESPONSIBLE SUPPLY CHAIN MANAGEMENT

Sustainable supply chain management

The Singtel Group has an extensive supply chain ranging from mobile and network equipment, and infrastructure suppliers to content providers, security and managing agents.

During the year, the Singtel Group engaged 5,628 suppliers to procure products and services across our businesses. With a wide footprint spanning multiple countries and the complex nature of our supply chain, we recognise the importance of sourcing responsibly

to minimise negative impact to the environment while contributing positively to the markets we operate in. We continue to execute our sustainable supply chain strategy while adapting to an evolving business environment amid the ongoing impact of COVID-19 and the Ukraine conflict on our supply chain.

We enhanced our sustainability risk assessment framework that was developed in FY2020, based on the strategic importance of suppliers and key factors such as spend, tenure and country and category risks. The enhanced framework now has added focus on greenhouse gas emissions and renewable energy as well as data privacy. We considered the results from our supplier sustainability and life cycle assessments in FY2021. We will be implementing targeted intervention programmes based on the assessment outcome and internal risk mitigation considerations. Our objective is to support our suppliers in integrating sustainable practices into their business processes. Next year, we plan to implement a platform to automate the way we engage suppliers and build on that to include our supplier assessment, intervention and education programme, as well as improve transparency of supplier risks. We also plan to expand our assessment scope by incorporating elements of third-party validation and external risk assessment platforms.

On the climate front, we completed a baseline assessment of our Scope 3 carbon footprint, which is the aggregated indirect GHG emissions from our entire value chain and classified into 15 categories like 'Purchased goods and services' and 'Transportation and distribution' based on the Greenhouse Gas Protocol. This exercise helped us to understand the primary drivers of GHG emissions in our business operations and value chain, and prioritise carbon reduction areas.

In the area of responsible sourcing, we continue to integrate sustainability considerations in our sourcing requirements especially for critical spend areas with significant environmental impact. For example, in building and designing our new data centres, we have

incorporated comprehensive end-to-end sustainability criteria in our infrastructure and technology, as well as operations and maintenance, which are benchmarked against global standards. We have also begun pilot reviews for establishing a framework in the new year to incorporate shadow carbon pricing in our sourcing evaluation and decision-making. All new suppliers are assessed against ESG criteria through our sustainability questionnaire as part of their onboarding tender process. This is applied to tenders above \$200,000 across the Singtel Group. 100% of such new suppliers were assessed against the criteria during the year.

Workplace safety and health

Workplace safety and health (WSH) is our top priority and we strive to inculcate good safety habits and practices among our suppliers and contractors to ensure that all work activities are carried out safely. We engage only qualified contractors who meet our stringent safety requirements during the tender process and ensure that they maintain high WSH standards for all their activities (see Table 3).

We also maintained our ISO 45001 certification, an international ISO standard that provides the framework for organisations to improve workers' health and safety, reduce risks and create safer working conditions.

Fostering partnerships and collaboration

We collaborate with internal and external stakeholders on WSH risks and opportunities. To address fall from height risks of our contractors appointed to install 5G equipment on rooftops, we collaborated with Ericsson to test a new remote monitoring system during the year. A compact camera system was deployed at one of the work sites, with footage streamed live and recorded. This system, which can support multiple locations and users, will be deployed to more sites. Benefits of this technology solution include improvements to remote site surveillance and productivity since our WSH teams do not need to be physically present when contractors are carrying out work.

Table 3: FY2022 WSH indicators of third-party contractors¹

Contractor safety and health	Singtel		Optus		Singtel Group	
	2022	2021	2022	2021	2022	2021
Workplace injury incidence rate (per 1,000 employees)	7.83	13.7	11.80	5.3	9.70	Not available
Workplace injury frequency rate (per million hours worked)	2.71	4.4	18.99	5.9	5.31	
Workplace injury severity rate (per million hours worked)	15.34	61.1	14.24	11.7	15.16	
High consequence injury rate	0	Not available	0	Not available	0	
Fatalities	0	0	0	0	0	

¹ Cleaners and security guards

Singtel Safe Contractor Accreditation (SCA) Scheme

We introduced SCA scheme in 2016, a set of Singtel WSH standards for contractors who perform high-risk technical or physical work to mitigate safety risks. During the year, 81 accredited contractors successfully maintained the validity of their accreditation. Those who failed were barred from future contracts with Singtel.



FY	2017	2018	2019	2020	2021	2022
Number of contractors accredited	48	62	68	98	77	81

We received continued certification of the Australian Standard for Safety Management AS4801 for our operations in Australia to meet a high standard of safety management system. We have established a Workplace Health and Safety Critical Incident Hotline to report critical incidents immediately. During the year, five incidents were reported.

CUSTOMER EXPERIENCE

Making customers first remains our top priority. We are committed to delivering unparalleled customer experience with our innovative service offerings, reliable networks and quality customer care.

Customer satisfaction

Building on our market leadership in customer experience, we innovate constantly to improve the quality of our products and services and apply new technology to enhance customer care. We were leading the market with our Net Promoter Score in Singapore as of March 2022.

We are committed to enhancing the reach, reliability and quality of our networks in Singapore and Australia. Our 5G network now covers over two-thirds of Singapore, with over 1,000 sites both indoors and outdoors. Our mobile network speed has also been named the fastest in the country by **Ookla**, which provides data-backed insights and analysis on mobile and fixed broadband networks.

With our customer insights drawn from constant research and customer feedback, we innovate continuously to engage customers and enhance our retail experience, operations and customer service while improving productivity.

There was no fine, non-monetary sanction or legal action regarding anti-competitive behaviour or violation



WSH team and contractors installed new remote monitoring system on a rooftop which houses our 5G equipment

of anti-trust legislation, against Singtel during the year. We did not receive any fines from either the Australian Competition and Consumer Commission (ACCC) or the Australian Communications and Media Authority (ACMA). However, ACMA issued three non-monetary sanctions: a formal warning to conduct identify verification prior to porting mobile services; a direction to comply with billing accuracy obligations under the Telecommunications Consumer Protection Code; and a remedial direction to undertake line capability testing on NBN lines.

DRIVING INNOVATION

Innovating for a digital era

The Singtel Group harnesses the latest technology to provide unparalleled service and experiences that meet the changing needs of consumers and enterprises in today's digital economy.

Together with strategic partners, we expanded our financial services portfolio and introduced a robo-advisory investment option with sustainable investing solutions. We also launched new Unified Communications services for enterprises to help them better connect with employees and customers as remote working continues during the pandemic.

Through Singtel Innov8, our corporate venture capital fund, we are making strategic investments in companies with technologies and solutions that have the potential to enhance our capabilities to deliver impactful solutions to customers. With our experience and strong industry network, Singtel Innov8 helps companies at every stage of their growth, from early product development to eventual commercialisation in the various markets. Find out more about our portfolio [here](#).



Singapore's first underwater 5G livestream of S.E.A Aquarium at UNBOXED, Singtel's 5G-powered self-service kiosk

New services that meet customer needs

a. Home Priority

We launched Home Priority, Singapore's first customised fibre broadband service for larger homes. Customers enjoy an end-to-end solution that provides high-speed, lag-free connectivity with simple installation and quick support.

b. Customer security

To further secure customer interaction and enhance convenience, we added SingPass login as a secure method for customers to access their Singtel OnePass account and manage their services with us.

c. 5G experience

We set up 5G experience zones at selected Singtel shops, UNBOXED and UNBOXED Lite, our unmanned retail stores, that offer customers a glimpse of our 5G enhanced services and experiences aimed at driving 5G adoption. We also rolled out complimentary 5G features like augmented reality (AR) Instagram filters in partnership with WWF and a TikTok AR paint filter.

d. Integrated service

We further integrated our services to improve user accessibility and ease of use. For example, Dash Remit is now available on Singtel hi!App, allowing our prepaid customers to manage their accounts and remit funds overseas easily. Remittance is an essential financial service for the migrant workers community, and over half a million of them are our active hi!App users.



Building our 5G leadership and driving industry adoption

5G will have a profound impact on our lives, as it forms the backbone of the digital economy as well as smart cities and nations. As a key pillar of our strategic reset, the Singtel Group aims to leverage the potential of 5G to transform business models and deliver enhanced products and services on an unprecedented scale, creating positive impact for our communities.

In May 2021, we launched our 5G standalone network, offering customers early access to the most advanced 5G connectivity with twice the responsiveness, faster uploads, strengthened authentication and encryption capability. In collaboration with Ericsson, we became the first in Southeast Asia to achieve download speeds of 5.4 Gbps.

We collaborated with National Gallery Singapore to deliver cultural and art experiences leveraging our 5G standalone network. Artists now have a wider platform to share their work, thus helping to develop the arts and culture scene in Singapore.

To spur adoption and further innovation in 5G technologies, we collaborate with public and private sector partners to develop and trial solutions. Together with Government Technology Agency and Sentosa Development Corporation, we launched 5G@Sentosa.

This programme leverages our 5G network and Multi-access Edge Compute (MEC) to convert the island into

a testbed for promising public sector use cases. These include deploying fully autonomous robots for tracking of construction progress and drones for site inspection, which have the potential to enhance worker safety.

We also introduced GENIE, the first portable 5G platform in the world to enable enterprises to experience 5G capabilities and test use cases on their own premises, without the need for any equipment installation. We will continue to expand our 5G ecosystem and help enterprise customers to innovate low-latency 5G solutions on our MEC infrastructure, and drive industry adoption.

Singtel Paragon

In February this year, Singtel launched Paragon, a revolutionary platform developed in-house that enables our corporate customers to tap into our 5G network to activate network slices on demand, deploy mission critical applications on Singtel MEC, as well as access a robust ecosystem of partner applications, offering them unparalleled control and choices.



Singtel Paragon brings together IoT devices

●●●●●
We understand the challenges and complexities that enterprises face in managing the various networks, edge cloud applications and services with the required cyber security, resiliency and demanding service assurances required, cost-effectively. Paragon was conceived, developed and delivered to help enterprises meet these needs through a single platform.

Bill Chang, CEO, Group Enterprise

The platform empowers enterprises to securely deploy applications in a hybrid fashion across the edge at Singtel MEC and a public cloud of their choice. It significantly reduces the complexity and time needed to adopt 5G MEC and low latency applications and services – lowering the barriers to entry for enterprises, enabling faster deployment of use cases while removing considerable operational and cost overheads.

Optus Living Network

In May 2021, we introduced the **Optus Living Network**, a network that adapts to our customers' changing needs by offering them flexibility and control with on-demand network features that can be accessed and switched on anytime via the My Optus app.

- **Donate Your Data:** Allows customers to donate their mobile data to our social impact programme
- **Optus Call Translate:** Translates phone conversations between two different language speakers in real time (currently on beta trial)
- **Optus Pause:** Enables customers to take a digital breather by pausing their Optus mobile and home WiFi connections, for example, during family mealtimes
- **Optus WiFi Secure:** Actively monitors WiFi connections and protects against online threats by protecting the devices connected to customers' compatible modems
- **Optus Call Notes:** Captures calls in writing
- **Optus Eco:** Shows customers simple ways to reduce their environmental footprint and impact

Singtel and UOB Asset Management:



Singtel, in partnership with UOB Asset Management (UOBAM), launched UOB Asset Management Robo-Invest, Singapore's first robo-advisor on a mobile wallet. The robo-advisor aims to optimise and generate stable long-term portfolio returns through a hybrid investment strategy, empowering consumers with convenient access to affordable wealth management solutions using technology. It also offers a Global Impact portfolio exclusively designed to provide customers with investment opportunities in companies that integrate ESG considerations into their strategies and operations.

Unified Communications (UC) Direct Connect for Microsoft Teams:

Singtel was the first operator based in Singapore to offer UC Direct Connect service for Microsoft Teams. This collaboration helps businesses on their digitisation journey, providing an all-in-one solution and platform that supports hybrid work arrangements. The service allows them to continue to operate and stay connected with employees, customers and partners no matter where they are.

Glossary

List of Key Abbreviations

ABCN	Australian Business and Community Network
ABR	Australian Business Roundtable for Disaster Resilience & Safer Communities
ACCC	Australian Competition & Consumer Commission
ACMA	Australian Communications and Media Authority
ASAS	Advertising Standards Authority of Singapore
AND	Australian Network on Disability
APCO	Australian Packaging Covenant Organisation
EPR	Extended Producer Responsibility
ESG	Environmental, social and governance
GHG	Greenhouse gas
GRI	Global Reporting Initiative
GSMA	Global System for Mobile Communications Association
HFC	Hybrid Fibre Coaxial
ICP	Internal carbon pricing
ICT	Infocomm Technology
IMDA	Infocomm Media Development Authority
IPCC	Intergovernmental Panel on Climate Change
MEC	Multi-access Edge Compute
MIMO	Multiple Input Multiple Output
MNHP	Mobile Network Hardening Program
NDRR	National Disaster Risk Reduction
NEA	National Environment Agency
NGO	Non-Governmental Organisation
OAIC	Office of the Australian Information Commissioner
PDPA	Personal Data Protection Act
PDPC	Personal Data Protection Commission
PPA	Power Purchase Agreement
PUE	Power usage effectiveness
REC	Renewable Energy Certificate
SASB	Sustainability Accounting Standards Board
SBN _o D	Singapore Business Network on DisAbility
SBTi	Science Based Targets initiative
SLB	Sustainability-linked bond
SLL	Sustainability-linked loan
SME	Small and medium-sized enterprise
STAND	Strengthening Telecommunications Against Natural Disasters
STLF	Singtel Touching Lives Fund
TCFD	Task Force on Climate-related Financial Disclosures
UNFCCC	United Nations Framework Convention on Climate Change
UNGC	United Nations Global Compact
UN SDGs	United Nations Sustainable Development Goals
UPS	Uninterruptible power supply
WSH	Workplace safety and health

Reference: Policies and Statements

Optus Human Rights Statement	https://www.optus.com.au/content/dam/optus/documents/about-us/sustainability/governance/human-rights-statement_fa1_v2.pdf
Optus Modern Slavery Statement	https://www.optus.com.au/content/dam/optus/documents/about-us/sustainability/governance/2021-optus-modern-slavery-statement.pdf
Optus Privacy Policy	https://www.optus.com.au/about/legal/privacy
Singtel Group Human Rights Statement	https://www.singtel.com/content/dam/singtel/about-us-singtel/company/governance/singtel-group-human-rights-statement.pdf
Singtel Data Protection Policy	https://www.singtel.com/data-protection
Singtel Whistleblower Policy	https://www.singtel.com/about-us/company/corporate-governance/whistleblower-policy
Singtel Responsible Tax Management Statement	https://www.singtel.com/content/dam/singtel/corporate/responsible-tax-management.pdf
Singtel Group Anti-Bribery and Corruption Policy	https://www.singtel.com/content/dam/singtel/corporate/anti-bribery-and-corruption-policy.pdf
Singtel Group Code of Conduct	https://www.singtel.com/content/dam/singtel/corporate/Code_of_conduct.pdf
Singtel Group Environment Policy	https://www.singtel.com/about-us/sustainability/sustainability-at-singtel/environment
Singtel Group Health, Safety and Security Policy	https://www.singtel.com/about-us/sustainability/sustainability-at-singtel/people
Singtel Group Supplier Code of Conduct	https://www.singtel.com/content/dam/singtel/about-us-singtel/tender/singtel-group-supplier-code-of-conduct.pdf

Key Environmental and Social Performance Indicators

	SINGTEL			OPTUS			SINGTEL GROUP		
	2022	2021	2020	2022	2021	2020	2022	2021	2020
Environmental Performance									
Total energy use (GJ) ¹	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 Greenhouse Gas (GHG) emissions (tonnes CO ₂ equivalent) ²	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	4,743	5,749	3,741	1,579	1,894	2,140	6,322	7,643	5,881
Scope 2 (market-based) ²	95,684	98,654	153,650	392,674	426,564	412,932	488,358	525,218	566,582
Scope 3	3,529,970	3,508,690	5,175	3,786,708	4,408,439	12,634	7,316,678	7,917,129	17,809
GHG emissions intensity (tCO ₂ e/TB) ³	0.0134	0.0165	0.0325	0.0598	0.0778	0.1102	0.0351	0.0450	0.0665
Potable water use (m ³) ⁴	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 (m ³)	280,805	225,453	180,799	5,885	13,027	10,876	286,690	238,480	191,675
Total hazardous and non-hazardous waste (tonnes) ⁵	3,325	4,150	7,658	627	771	883	3,952	4,921	8,541
Social Performance: People									
Total employees	12,196	12,391	12,145	7,268	7,687	7,663	19,464	20,078	19,808
Male	7,901	8,003	7,842	4,936	5,287	5,307	12,837	13,290	13,149
Female	4,295	4,388	4,303	2,332	2,400	2,356	6,627	6,788	6,659
New employee hires	19.9%	15.5%	14.1%	23.0%	15.2%	23.1%	21.1%	15.3%	17.6%
Employee voluntary turnover	19.9%	13.2%	15.7%	22.6%	12.5%	15.3%	20.9%	12.9%	15.5%
Mean salary ratio (female:male)¹									
Operations and Support	0.99 : 1	1 : 1	0.99 : 1	1 : 0.94	1 : 0.94	1 : 0.95	1 : 0.97	1 : 0.97	1 : 0.97
Professional	0.94 : 1	0.96 : 1	0.96 : 1	0.93 : 1	0.94 : 1	0.95 : 1	0.93 : 1	0.95 : 1	0.95 : 1
Executives ²	0.95 : 1	0.95 : 1	0.96 : 1	1 : 1	0.99 : 1	0.97 : 1	0.97 : 1	0.97 : 1	0.97 : 1
Median salary ratio (female:male)³									
Operations and Support	0.98 : 1	-	-	1 : 0.98	-	-	1 : 1	-	-
Professional	0.91 : 1	-	-	0.91 : 1	-	-	0.91 : 1	-	-
Executives	0.94 : 1	-	-	1 : 1	-	-	0.97 : 1	-	-
Mean bonus ratio (female:male)⁴									
Operations and Support	1 : 1	1 : 0.99	1 : 0.96	1 : 0.81	1 : 0.94	0.99 : 1	1 : 0.92	1 : 0.97	1 : 0.98
Professional	0.94 : 1	0.98 : 1	0.99 : 1	0.87 : 1	0.89 : 1	0.93 : 1	0.91 : 1	0.95 : 1	0.96 : 1
Executives	1 : 0.89	1 : 0.94	1 : 0.87	0.96 : 1	0.95 : 1	0.95 : 1	1 : 0.95	1 : 0.97	1 : 0.98
Median bonus ratio (female:male)³									
Operations and Support	0.99 : 1	-	-	0.99 : 1	-	-	0.99 : 1	-	-
Professional	0.95 : 1	-	-	0.86 : 1	-	-	0.91 : 1	-	-
Executives	1 : 0.92	-	-	1 : 0.94	-	-	1 : 0.93	-	-
Total training investment (\$m)	\$12.5	\$11.8	\$14.6	A\$6.7	A\$5.0	A\$7.8	\$19.2	\$16.8	\$21.9
Average training hours per employee	51.8	43.5	40.2	27.0	14.6	19.6	43.1	33.0	32.7
Employee health and safety⁵									
Workplace injury incidence rate (per 1,000 employees)	0.6	0.8	0.8	1.1	2.6	2.3	0.8	1.5	1.4
Workplace injury frequency rate (per million hours worked)	0.3	0.4	0.4	0.7	1.5	1.4	0.4	0.7	0.7
Total occupational disease cases	0	0	-	0	0	0	0	0	-
High consequence injury rate (per million hours worked)	0	0.04	-	0	0	-	0	0.02	-
Fatalities	0	0	0	0	0	0	0	0	0
Social Performance: Community									
Community investment (\$m/A\$m) ¹	\$7.9	\$17.7	\$8.6	A\$25.6	A\$20.3	A\$14.7	\$33.4	\$37.6	\$22.3
Total volunteering hours	3,048	2,439	11,487	8,117	8,214	16,739	11,165	10,653	28,226
Digital enablement reach	22,791	18,009	54,776	90,736	76,667	59,189	113,527	94,681	113,965

Environmental

1. Restatement of Singtel and Group (FY2021).
2. Covers Scopes 1, 2 and 3 (FY2021 and FY2022 full Scope 3 15 categories). Restatement of Singtel and Group (FY2021).
3. Covers Scopes 1 and 2 only. Restatement of Singtel and Group (FY2021).
4. 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.
5. Data covers waste directly managed by Optus' contracted waste vendor.

Community

1. Includes direct financial support, in-kind charitable sponsorship and staff volunteering hours. This has been verified by the Business for Societal Impact (B4SI).

People

1. Based on average monthly salary of regular employees.
2. Previously known as Middle Management and Top Management. Heads, previously included under Middle Management, are now considered as Top Executives.
3. This is the first year we are reporting on median salary and bonus ratios.
4. Based on average annual bonus of regular employees.
5. Workplace safety and health metrics are based on the International Labour Organization (ILO) definitions, subject to country definition of lost work shifts e.g. Optus excludes weekends from medical leave when calculating these rates.

GRI CONTENT INDEX

GENERAL DISCLOSURES		
GRI STANDARD	DISCLOSURE	PAGE NUMBER
GRI 1: Foundation 2021	Sustainability Report 2022	
GRI 2: General Disclosures 2021	The organisation and its reporting practices	
	2-1	Organisational details About this report, Website
	2-2	Entities included in the organisation’s sustainability reporting About this report
	2-3	Reporting period, frequency and contact point About this report
	2-4	Restatements of information About this report
	2-5	External assurance About this report
	Activities and workers	
	2-6	Activities, value chain and other business relationships 56-57, Annual Report 2022, Website
	2-7	Employees 33-34, 37-38
	2-8	Workers who are not employees 37
	Governance	
	2-9	Governance structure and composition 8, Annual Report 2022, Corporate Governance , Website
	2-10	Nomination and selection of the highest governance body Annual Report 2022, Corporate Governance
	2-11	Chair of the highest governance body Annual Report 2022, Corporate Governance
	2-12	Role of the highest governance body in overseeing the management of impacts 8, 19, Annual Report 2022, Corporate Governance
	2-13	Delegation of responsibility for managing impacts 8, 19, Annual Report 2022, Corporate Governance
	2-14	Role of the highest governance body in sustainability reporting 8, Annual Report 2022, Corporate Governance
	2-15	Conflicts of interest 52-54, Annual Report 2022, Corporate Governance
	2-16	Communication of critical concerns 5-8, Annual Report 2022, Corporate Governance
	2-17	Collective knowledge of the highest governance body 8
	2-18	Evaluation of the performance of the highest governance body Annual Report 2022, Corporate Governance
	2-19	Remuneration policies Annual Report 2022, Corporate Governance
	2-20	Process to determine remuneration Annual Report 2022, Corporate Governance
	2-21	Annual total compensation ratio 39 : 1 (Group CEO total compensation to median annual total compensation for Singtel Group, excluding GCEO)
	Strategy, policies and practices	
	2-22	Statement on sustainable development strategy 3-4
	2-23	Policy commitments Disclosed throughout Sustainability Report 2022 across all four sustainability pillars, Website
	2-24	Embedding policy commitments Disclosed throughout Sustainability Report 2022 across all four sustainability pillars
	2-25	Processes to remediate negative impacts Disclosed throughout Sustainability Report 2022 across all four sustainability pillars
	2-26	Mechanisms for seeking advice and raising concerns 31, 52-54, Website
2-27	Compliance with laws and regulations 24, 49-56	
2-28	Membership associations 6, 9-10, 20-21, 39-40, 46-47	
Stakeholder engagement		
2-29	Approach to stakeholder engagement 5-7	
2-30	Collective bargaining agreements 30	
GRI 3: Material Topics 2021	3-1	Process to determine material topics 5-7, Website
	3-2	List of material topics 7, 9-10

MATERIAL TOPICS				
GRI STANDARD		DISCLOSURE	PAGE NUMBER	LEVEL OF EXTERNAL ASSURANCE
Climate Change and Carbon				
GRI 3: Material Topics 2021	3-3	Management of material topics	12-24	
GRI 302: Energy 2016	302-1	Energy consumption within the organisation	26	Singtel Group
	302-3	Energy intensity	26	Singtel Group
	302-4	Reduction of energy consumption	16	Singtel
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	25	Singtel Group
	305-2	Energy indirect (Scope 2) GHG emissions	25	Singtel Group
	305-3	Other indirect (Scope 3) GHG emissions	25	Singtel Group
	305-4	GHG emissions intensity	25	Singtel Group
	305-5	Reduction of GHG emissions	16, 25	Singtel Group
Climate and Infrastructure Resilience				
GRI 3: Material Topics 2021	3-3	Management of material topics	12-24	
GRI 203: Indirect Economic Impacts 2016	203-1	Infrastructure investments and services supported	12-24	
	203-2	Significant indirect economic impacts	12-24	
GRI 2: General Disclosures 2021	2-27	Compliance with laws and regulations	24	Singtel Group
Talent Attraction and Retention				
GRI 3: Material Topics 2021	3-3	Management of material topics	30-36	
GRI 401: Employment 2016	401-1	New employee hires and employee turnover	34, 37-38	Singtel Group
Talent Development and Future Skills				
GRI 3: Material Topics 2021	3-3	Management of material topics	35-36	
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	35, 38	Singtel Group
	404-2	Programmes for upgrading employee skills and transition assistance programmes	35-36	
Employee Safety and Well-being				
GRI 3: Material Topics 2021	3-3	Management of material topics	28-30, 55-56	
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	28-30, 55-56	
	403-2	Hazard identification, risk assessment and incident investigation	28-30, 55-56	
	403-3	Occupational health services	28-30, 55-56	
	403-4	Worker participation, consultation and communication on occupational health and safety	28-30, 55-56	
	403-5	Worker training on occupational health and safety	28-30, 55-56	
	403-6	Promotion of worker health	28-30, 55-56	
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	28-30, 55-56	
	403-9	Work-related injuries	38, 55	Singtel Group
	403-10	Work-related ill health	38, 55	Singtel Group

MATERIAL TOPICS			
GRI STANDARD		DISCLOSURE	PAGE NUMBER
LEVEL OF EXTERNAL ASSURANCE			
Data Privacy and Cyber Security			
GRI 3: Material Topics 2021	3-3	Management of material topics	49-51
GRI 418: Customer Privacy 2016	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	51
			Singtel Group
Ethical and Fair Business Practices			
GRI 3: Material Topics 2021	3-3	Management of material topics	52-54
GRI: 417: Marketing and Labeling 2016	417-3	Incidents of non-compliance concerning marketing communications	52
Innovation			
GRI 3: Material Topics 2021	3-3	Management of material topics	56-58
GRI 203: Indirect Economic Impacts 2016	203-1	Infrastructure investments and services supported	56-58
	203-2	Significant indirect economic impacts	56-58
Customer Satisfaction			
GRI 3: Material Topics 2021	3-3	Management of material topics	56
GRI 2: General Disclosures 2021	2-27	Compliance with laws and regulations	56
			Singtel Group
Sustainable Supply Chain Management			
GRI 3: Material Topics 2021	3-3	Management of material topics	54-55
GRI 308: Supplier Environmental Assessment 2016	308-1	New suppliers that were screened using environmental criteria	55
			Singtel Group
GRI 414: Supplier Social Assessment 2016	414-1	New suppliers that were screened using social criteria	55
			Singtel Group
Anti-Bribery and Corruption			
GRI 3: Material Topics 2021	3-3	Management of material topics	52-54
GRI 205: Anti-corruption 2016	205-3	Confirmed incidents of corruption and actions taken	53-54
Community Resilience and Disaster Response			
GRI 3: Material Topics 2021	3-3	Management of material topics	39-48
GRI 201: Economic performance 2016	201-1	Direct economic value generated and distributed	41
GRI 203: Indirect Economic Impacts 2016	203-1	Infrastructure investments and services supported	39-48
GRI 413: Local Communities 2016	413-2	Operations with significant actual and potential negative impacts on local communities	39-48
Online Safety			
GRI 3: Material Topics 2021	3-3	Management of material topics	43-44
GRI 413: Local Communities 2016	413-2	Operations with significant actual and potential negative impacts on local communities	43-44

MATERIAL TOPICS				
GRI STANDARD		DISCLOSURE	PAGE NUMBER	LEVEL OF EXTERNAL ASSURANCE
Waste Management				
GRI 3: Material Topics 2021	3-3	Management of material topics	12, 14-15, 22-24	
GRI 306: Waste 2020	306-1	Waste generation and significant waste-related impacts	12, 14-15, 22-24	
	306-2	Management of significant waste-related impacts	12, 14-15, 22-24	
	306-3	Waste generated	26	Singtel Group
	306-4	Waste diverted from disposal	26	Singtel Group
	306-5	Waste directed to disposal	26	Singtel Group
Good Labour Practices				
GRI 3: Material Topics 2021	3-3	Management of material topics	30-31	
GRI 402: Employment 2016	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	30-31	
Diversity and Inclusion				
GRI 3: Material Topics 2021	3-3	Management of material topics	32-33	
GRI 405: Diversity and Equal Opportunity 2016	405-2	Ratio of basic salary and remuneration of women to men	37	
Education and Employability				
GRI 3: Material Topics 2021	3-3	Management of material topics	46-48	
GRI 201: Economic Performance 2016	201-1	Direct economic value generated and distributed	46-47	
GRI 413: Local Communities 2016	413-2	Operations with significant actual and potential negative impacts on local communities	46-48	
Water Management				
GRI 3: Material Topics 2021	3-3	Management of material topics	Website	
GRI 303: Water and Effluents 2018	303-1	Interactions with water as a shared resource	Website	
	303-2	Management of water discharge-related impacts	Website	
	303-3	Water withdrawal	26	Singtel Group
Product Health and Safety				
GRI 3: Material Topics 2021	3-3	Management of material topics	Website	
GRI 416: Customer Health and Safety 2016	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	51	
GRI 2: General Disclosures 2021	2-27	Compliance with laws and regulations	56	

SUSTAINABILITY ACCOUNTING STANDARDS BOARD (SASB) INDEX

SASB Activity Metrics

Topic	SASB Code	Activity Metric	Unit Measure	Remark
Telecommunication Services				
Number of wireless subscribers	TC-TL-000.A	Number of customers that contract with the entity for mobile services, which include cellular phone service and/or wireless data service	Number	14,159,000
Number of wireline subscribers	TC-TL-000.B	Number customers that contract with the entity for fixed line phone services	Number	> 1 million
Number of broadband subscribers	TC-TL-000.C	Number of customers that contract with the entity for fixed line cable and internet services, which include WiFi connections	Number	1,970,000
Network traffic	TC-TL-000.D		Petabytes	14,097

SASB Accounting Metrics

Topic	SASB Code	Activity Metric	Unit Measure	Remark
Environment				
Environmental Footprint of Operations	TC-TL-130a.1	1. Total energy consumed 2. Percentage grid electricity 3. Percentage renewable	- Gigajoules (GJ) - Percentage (%)	1. 2,948,325 2. 98.3 3. 5.8 including RECs See Environmental Performance Indicators (page 26)
Social Capital				
Data Privacy	TC-TL-220a.1	Description of policies and practices relating to behavioural advertising and customer privacy	N/A	Refer to Singtel Data Protection Policy and Optus Privacy Policy
	TC-TL-220a.2	Number of customers whose information is used for secondary purposes	Number	Singtel does not have these specified metrics. Our Data Protection Policy describes the customer information we collect and how we use it
	TC-TL-220a.3	Total amount of monetary losses as a result of legal proceedings associated with customer privacy	Reporting currency	Refer to Sustainable Value Creation chapter (page 51)
	TC-TL-220a.4	1. Number of law enforcement requests for customer information 2. Number of customers whose information was requested 3. Percentage resulting in disclosure	- Number - Percentage (%)	We do not disclose unless required by law
Data Security	TC-TL-230a.1	1. Number of data breaches 2. Percentage involving personally identifiable information (PII) 3. Number of customers affected	- Number - Percentage (%)	1. 7 2. 71.4 3. 5 customers affected (incidents that involved PII) Refer to Sustainable Value Creation chapter (page 51)
	TC-TL-230a.2	Description of approach to identifying and addressing data security risks, including use of third-party cyber security standards	N/A	Refer to Sustainable Value Creation chapter (page 49-51)
Product End-of-life Management	TC-TL-440a.1	1. Materials recovered through take back programmes, percentage of recovered materials that were (2) reused (3) recycled and (4) landfilled	- Metric ton (t) - Percentage (%)	1. 2,502 2. 0 3. 84.3 4. 0.2 See Environmental Performance Indicators (page 26)

Topic	SASB Code	Activity Metric	Unit Measure	Remark
Leadership and Governance				
Competitive Behavior and Open Internet	TC-TL-520a.1	Total amount of monetary losses as a result of legal proceedings associated with anticompetitive behaviour regulations	Reporting currency	Nil Refer to Sustainable Value Creation chapter (pages 53-54)
	TC-TL-520a.2	Average actual sustained download speed of 1. owned and commercially-associated content and 2. non-associated content	Megabits per second (Mbps)	Singtel does not have these specified metrics. We publish our 4G speed on our website, presented as a range of speed for 'Stationary' state and 'Mobility' state
	TC-TL-520a.3	Description of risks and opportunities associated with net neutrality, paid peering, zero rating, and related practices	N/A	Singtel complies with IMDA's Net Neutrality Policy Singtel does not have these specified metrics
Managing Systemic Risks from Technology Disruptions	TC-TL-550a.1	1. System average interruption frequency 2. Customer average interruption duration	- Disruptions per customer - Hours per customer	Refer to Sustainable Value Creation chapter (page 56)
	TC-TL-550a.2	Discussion of systems to provide unimpeded service during service interruptions	N/A	Refer to Climate Change and Environment chapter (pages 21-22) and Sustainable Value Creation chapter (pages 56-57)

UN GLOBAL COMPACT PRINCIPLES

Principle	Description	Page reference
Human Rights		
Principle 1	Businesses should support and respect the protection of internationally proclaimed human rights; and	32, 52, Website
Principle 2	Make sure that they are not complicit in human rights abuses	32, 52, Website
Labour		
Principle 3	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;	30
Principle 4	The elimination of all forms of forced and compulsory labour;	30-33, 52
Principle 5	The effective abolition of child labour; and	30-33, 52
Principle 6	The elimination of discrimination in respect of employment and occupation.	30-33, 46-48, 52
Environment		
Principle 7	Businesses should support a precautionary approach to environmental challenges;	3-4, 11-24, 56-58
Principle 8	Undertake initiatives to promote greater environmental responsibility; and	3-4, 11-24, 56-58
Principle 9	Encourage the development and diffusion of environmentally friendly technologies.	11-24, 56-58
Anti-Corruption		
Principle 10	Businesses should work against corruption in all its forms, including extortion and bribery.	52-54, Website

INDEPENDENT LIMITED ASSURANCE STATEMENT



Independent Limited Assurance Statement in connection with the Subject Matter included in the Sustainability Report of Singapore Telecommunications Limited ("Singtel Group") for the financial year ended 31 March 2022

Scope

We have been engaged by Singtel Group to perform a 'limited assurance engagement', as defined by International Standards on Assurance Engagements, here after referred to as the engagement, to report on the Sustainability Report of Singapore Telecommunications Limited ("Singtel") and Singtel Optus Pty Ltd ("Optus") (Collectively referred to as "Singtel Group") as set out in the Subject Matter and Criteria section (the "Subject Matter") as below as of 24 June 2022 financial year ended 31 March 2022 ("FY2022") ("the Sustainability Report").

Subject Matter and Criteria

In preparing the Subject Matter, Singtel applied the Global Reporting Initiative ("GRI") Standards ("the Criteria") as set out in the table below:

GRI Standards Disclosures

* Pertains to only Singtel's Sustainability Performance Data

** Pertains to Singtel Group's Sustainability Performance Data

+ Pertains to only Optus' Sustainability Performance Data for Large-scale generation certificates (LGCs)

ESG Topics	GRI Topic-Specific Disclosure	"Shall" requirements under each disclosure
Climate change and carbon; Climate and infrastructure resilience; Water management (non-material)	GRI (2016) 302-1**	Energy consumption within the organisation - Total fuel consumption within the organisation from non-renewable sources, in joules or multiples, and including fuel types used. - Total fuel consumption within the organisation from renewable sources, in joules or multiples, and including fuel types used. - In joules, watt-hours or multiples, the total: - Electricity consumption - Heating consumption - Cooling consumption - Steam consumption - In joules, watt-hours or multiples, the total: - Electricity sold - Heating sold - Cooling sold - Steam sold - Total energy consumption within the organisation, in joules or multiples. - Standards, methodologies, assumptions, and/or calculation tools used. - Source of the conversion factors used. 2.1 When compiling the information specified in Disclosure 302-1, the reporting organisation shall: - avoid the double-counting of fuel consumption, when reporting self-generated energy consumption. If the organisation generates electricity from a non-renewable or renewable fuel source and then consumes the generated electricity, the energy consumption shall be counted once under fuel consumption; - report fuel consumption separately for non-renewable and renewable fuel sources; - only report energy consumed by entities owned or controlled by the organisation; - calculate the total energy consumption within the organisation in joules or multiples using the following formula: Total energy consumption within the organisation = Non-renewable fuel consumed + Renewable fuel consumed + Electricity, heating, cooling, and steam purchased for consumption + Self-generated electricity, heating, cooling, and steam, which are not consumed (see clause 2.1.1) – Electricity, heating, cooling, and steam sold.
	GRI (2016) 302-3**	Energy intensity - Energy intensity ratio for the organisation. - Organisation-specific metric (the denominator) chosen to calculate the ratio. - Types of energy included in the intensity ratio; whether fuel, electricity, heating, cooling, steam, or all. - Whether the ratio uses energy consumption within the organisation, outside of it, or both. 2.5 When compiling the information specified in Disclosure 302-3, the reporting organisation shall: - calculate the ratio by dividing the absolute energy consumption (the numerator) by the organisation-specific metric (the denominator); - if reporting an intensity ratio both for the energy consumed within the organisation and outside of it, report these intensity ratios separately.

ESG Topics	GRI Topic-Specific Disclosure	"Shall" requirements under each disclosure
Climate change and carbon; Climate and infrastructure resilience; Water management (non-material)	GRI (2016) 302-4*	Reduction of energy consumption a. Amount of reductions in energy consumption achieved* as a direct result of conservation and efficiency initiatives, in joules or multiples. (*reported, by Singtel, as estimated annualised energy savings and emissions avoidance) b. Types of energy included in the reductions; whether fuel, electricity, heating, cooling, steam, or all. c. Basis for calculating reductions in energy consumption, such as base year or baseline, including the rationale for choosing it. d. Standards, methodologies, assumptions, and/or calculation tools used. 2.7 When compiling the information specified in Disclosure 302-4, the reporting organisation shall: 2.7.1 exclude reductions resulting from reduced production capacity or outsourcing; 2.7.2 describe whether energy reduction is estimated, modelled, or sourced from direct measurements. If estimation or modelling is used, the organisation shall disclose the methods used.
	GRI (2018) 303-3**	Water withdrawal a. Total water withdrawal from all areas in megalitres, and a breakdown of this total by the following sources, if applicable: i. Surface water; ii. Groundwater; iii. Seawater; iv. Produced water; v. Third-party water. b. Total water withdrawal from all areas with water stress in megalitres, and a breakdown of this total by the following sources, if applicable: i. Surface water; ii. Groundwater; iii. Seawater; iv. Produced water; v. Third-party water, and a breakdown of this total by the withdrawal sources listed in i-iv. d. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumptions used. 2.1 When compiling the information specified in Disclosure 303-3, the reporting organisation shall use publicly available and credible tools and methodologies for assessing water stress in an area.
	GRI (2016) 305-1**	Direct (Scope 1) GHG emissions a. Gross direct (Scope 1) GHG emissions in metric tons of CO₂ equivalent. b. Gases included in the calculation; whether CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃, or all. c. Biogenic CO₂ emissions in metric tons of CO₂ equivalent. d. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. e. Source of the emission factors and the global warming potential ("GWP") rates used, or a reference to the GWP source. f. Consolidation approach for emissions; whether equity share, financial control, or operational control. g. Standards, methodologies, assumptions, and/or calculation tools used. 2.1 When compiling the information specified in Disclosure 305-1, the reporting organisation shall: 2.1.1 exclude any GHG trades from the calculation of gross direct (Scope 1) GHG emissions; 2.1.2 report biogenic emissions of CO₂ from the combustion or biodegradation of biomass separately from the gross direct (Scope 1) GHG emissions. Exclude biogenic emissions of other types of GHG (such as CH₄ and N₂O), and biogenic emissions of CO₂ that occur in the life cycle of biomass other than from combustion or biodegradation (such as GHG emissions from processing or transporting biomass).
	GRI (2016) 305-2**	Energy indirect (Scope 2) GHG emissions a. Gross location-based energy indirect (Scope 2) GHG emissions in metric tons of CO₂ equivalent. b. If applicable, gross market-based energy indirect (Scope 2) GHG emissions in metric tons of CO₂ equivalent. c. If available, the gases included in the calculation; whether CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃, or all. d. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. e. Source of the emission factors and the global warming potential ("GWP") rates used, or a reference to the GWP source. f. Consolidation approach for emissions; whether equity share, financial control, or operational control. g. Standards, methodologies, assumptions, and/or calculation tools used.

ESG Topics	GRI Topic-Specific Disclosure	"Shall" requirements under each disclosure
Climate change and carbon; Climate and infrastructure resilience; Water management (non-material)	GRI (2016) 305-2**	Energy indirect (Scope 2) GHG emissions 2.3 When compiling the information specified in Disclosure 305-2, the reporting organisation shall: 2.3.1 exclude any GHG trades from the calculation of gross energy indirect (Scope 2) GHG emissions; 2.3.2 exclude other indirect (Scope 3) GHG emissions that are disclosed as specified in Disclosure 305-3; 2.3.3 account and report energy indirect (Scope 2) GHG emissions based on the location-based method, if it has operations in markets without product or supplier-specific data; 2.3.4 account and report energy indirect (Scope 2) GHG emissions based on both the location-based and market-based methods, if it has any operations in markets providing product or supplier-specific data in the form of contractual instruments.
	GRI (2016) 305-3**	Other indirect (Scope 3) GHG emissions a. Gross other indirect (Scope 3) GHG emissions in metric tons of CO ₂ equivalent. b. If available, the gases included in the calculation; whether CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃ , or all. c. Biogenic CO ₂ emissions in metric tons of CO ₂ equivalent. d. Other indirect (Scope 3) GHG emissions categories and activities included in the calculation. e. Base year for the calculation, if applicable, including: i. the rationale for choosing it; ii. emissions in the base year; iii. the context for any significant changes in emissions that triggered recalculations of base year emissions. f. Source of the emission factors and the global warming potential ("GWP") rates used, or a reference to the GWP source. g. Standards, methodologies, assumptions, and/or calculation tools used. 2.5 When compiling the information specified in Disclosure 305-3, the reporting organisation shall: 2.5.1 exclude any GHG trades from the calculation of gross other indirect (Scope 3) GHG emissions; 2.5.2 exclude energy indirect (Scope 2) GHG emissions from this disclosure. Energy indirect (Scope 2) GHG emissions are disclosed as specified in Disclosure 305-2; 2.5.3 report biogenic emissions of CO ₂ from the combustion or biodegradation of biomass that occur in its value chain separately from the gross other indirect (Scope 3) GHG emissions. Exclude biogenic emissions of other types of GHG (such as CH ₄ and N ₂ O), and biogenic emissions of CO ₂ that occur in the life cycle of biomass other than from combustion or biodegradation (such as GHG emissions from processing or transporting biomass).
	GRI (2016) 305-4**	GHG emissions intensity a. GHG emissions intensity ratio for the organisation. b. Organisation-specific metric (the denominator) chosen to calculate the ratio. c. Types of GHG emissions included in the intensity ratio; whether direct (Scope 1), energy indirect (Scope 2), and/or other indirect (Scope 3). d. Gases included in the calculation; whether CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃ , or all. 2.7 When compiling the information specified in Disclosure 305-4, the reporting organisation shall: 2.7.1 calculate the ratio by dividing the absolute GHG emissions (the numerator) by the organisation-specific metric (the denominator); 2.7.2 if reporting an intensity ratio for other indirect (Scope 3) GHG emissions, report this intensity ratio separately from the intensity ratios for direct (Scope 1) and energy indirect (Scope 2) emissions.
	GRI (2016) 305-5**	Reduction of GHG emissions a. GHG emissions reduced as a direct result of reduction initiatives, in metric tons of CO ₂ equivalent. b. Gases included in the calculation; whether CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ , NF ₃ , or all. c. Base year or baseline, including the rationale for choosing it. d. Scopes in which reductions took place; whether direct (Scope 1), energy indirect (Scope 2), and/or other indirect (Scope 3). e. Standards, methodologies, assumptions, and/or calculation tools used. 2.9 When compiling the information specified in Disclosure 305-5, the reporting organisation shall: 2.9.1 exclude reductions resulting from reduced production capacity or outsourcing; 2.9.2 use the inventory or project method to account for reductions; 2.9.3 calculate an initiative's total reductions of GHG emissions as the sum of its associated primary effects and any significant secondary effects; 2.9.4 if reporting two or more Scope types, report the reductions for each separately; 2.9.5 report reductions from offsets separately.
Waste management	GRI (2020) 306-3**	Waste generated a. Total weight of waste generated in metric tons, and a breakdown of this total by composition of the waste. b. Contextual information necessary to understand the data and how the data has been compiled. 2.1 When compiling the information specified in Disclosure 306-3-a, the reporting organisation shall: 2.1.1 exclude effluent, unless required by national legislation to be reported under total waste; 2.1.2 use 1000 kilograms as the measure for a metric ton

ESG Topics	GRI Topic-Specific Disclosure	"Shall" requirements under each disclosure
Waste management	GRI (2020) 306-4**	Waste diverted from disposal a. Total weight of waste diverted from disposal in metric tons, and a breakdown of this total by composition of the waste. b. Total weight of hazardous waste diverted from disposal in metric tons, and a breakdown of this total by the following recovery operations: i. Preparation for reuse; ii. Recycling; iii. Other recovery operations. c. Total weight of non-hazardous waste diverted from disposal in metric tons, and a breakdown of this total by the following recovery operations: i. Preparation for reuse; ii. Recycling; iii. Other recovery operations. d. For each recovery operation listed in Disclosures 306-4-b and 306-4-c, a breakdown of the total weight in metric tons of hazardous waste and of non-hazardous waste diverted from disposal: i. onsite; ii. offsite. e. Contextual information necessary to understand the data and how the data has been compiled. 2.2 When compiling the information specified in Disclosure 306-4, the reporting organisation shall: 2.2.1 exclude effluent, unless required by national legislation to be reported under total waste; 2.2.2 use 1000 kilograms as the measure for a metric ton.
	GRI (2020) 306-5**	Waste directed to disposal a. Total weight of waste directed to disposal in metric tons, and a breakdown of this total by composition of the waste. b. Total weight of hazardous waste directed to disposal in metric tons, and a breakdown of this total by the following disposal operations: i. Incineration (with energy recovery); ii. Incineration (without energy recovery); iii. Landfilling; iv. Other disposal operations. c. Total weight of non-hazardous waste directed to disposal in metric tons, and a breakdown of this total by the following disposal operations: i. Incineration (with energy recovery); ii. Incineration (without energy recovery); iii. Landfilling; iv. Other disposal operations. d. For each disposal operation listed in Disclosures 306-5-b and 306-5-c, a breakdown of the total weight in metric tons of hazardous waste and of non-hazardous waste directed to disposal: i. onsite; ii. offsite. e. Contextual information necessary to understand the data and how the data has been compiled. 2.4 When compiling the information specified in Disclosure 306-5, the reporting organisation shall: 2.4.1 exclude effluent, unless required by national legislation to be reported under total waste; 2.4.2 use 1000 kilograms as the measure for a metric ton.
Sustainable supply chain management	GRI (2016) 308-1**	New suppliers that were screened using environmental criteria a. Percentage of new suppliers that were screened using environmental criteria
	GRI (2016) 414-1**	New suppliers that were screened using social criteria a. Percentage of new suppliers that were screened using social criteria
Talent attraction and retention	GRI (2016) 401-1**	New employee hires and employee turnover a. Total number and rate of new employee hires during the reporting period, by age group, gender and region. b. Total number and rate of employee turnover during the reporting period, by age group, gender and region.

ESG Topics	GRI Topic-Specific Disclosure	"Shall" requirements under each disclosure
Employee safety and well-being	GRI (2018) 403-9**	Work-related injuries a. For all employees: i. The number and rate of fatalities as a result of work-related injury; ii. The number and rate of high-consequence work-related injuries (excluding fatalities); iii. The number and rate of recordable work-related injuries; iv. The main types of work-related injury; v. The number of hours worked. e. Whether the rates have been calculated based on 200,000 or 1,000,000 hours worked. g. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumption used. 2.1 When compiling the information specified in Disclosure 403-9, the reporting organisation shall: 2.1.1 exclude fatalities in the calculation of the number and rate of high-consequence work-related injuries; 2.1.2 include fatalities as a result of work-related injury in the calculation of the number and rate of recordable work-related injuries; 2.1.3 include injuries as a result of commuting incidents only where the transport has been organised by the organisation; 2.1.4 calculate the rates based on either 200,000 or 1,000,000 hours worked, using the following formulas: Rate of fatalities as a result of work-related injury = $\frac{\text{Number of fatalities as a result of work-related injury}}{\text{Number of hours worked}} \times [200,000 \text{ or } 1,000,000]$ Rate of high-consequence work-related injuries (excluding fatalities) = $\frac{\text{Number of high-consequence work-related injuries (excluding fatalities)}}{\text{Number of hours worked}} \times [200,000 \text{ or } 1,000,000]$ Rate of recordable work-related injuries = $\frac{\text{Number of recordable work-related injuries}}{\text{Number of hours worked}} \times [200,000 \text{ or } 1,000,000]$
	GRI (2018) 403-10**	Work-related ill health a. For all employees: i. The number of fatalities as a result of work-related ill health; ii. The number of cases of recordable work-related ill health; iii. The main types of work-related ill health. e. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies, and assumption used. 2.3 When compiling the information specified in Disclosure 403-9, the reporting organisation shall include fatalities as a result of work-related ill health in the calculation of the number of cases of recordable work-related ill health.
Talent development and future skills	GRI (2016) 404-1**	Average hours of training per year per employee a. Average hours of training that the organisation's employees have undertaken during the reporting period, by: i. gender; ii. employee category.
Data privacy and cyber security	GRI (2016) 418-1**	Substantiated complaints concerning breaches of customer privacy and losses of customer data a. Total number of substantiated complaints received concerning breaches of customer privacy, categorised by: i. complaints received from outside parties and substantiated by the organisation; ii. complaints from regulatory bodies. b. Total number of identified leaks, thefts, or losses of customer data. c. If the organisation has not identified any substantiated complaints, a brief statement of this fact is sufficient. 2.1 When compiling the information specified in Disclosure 418-1, the reporting organisation shall indicate if a substantial number of these breaches relate to events in preceding years.
General Disclosures	GRI (2021) 2-27**	Compliance with laws and regulations a. Report the total number of significant instances of non-compliance with laws and regulations during the reporting period, and a breakdown of this total by: i. instances for which fines were incurred; ii. instances for which non-monetary sanctions were incurred; b. Report the total number and the monetary value of fines for instances of non-compliance with laws and regulations that were paid during the reporting period, and a breakdown of this total by: i. fines for instances of non-compliance with laws and regulations that occurred in the current reporting period; ii. fines for instances of non-compliance with laws and regulations that occurred in previous reporting periods; c. Describe the significant instances of non-compliance; d. Describe how it has determined significant instances of non-compliance.

Management's and Board of Director's responsibilities

The Management is responsible for selecting Criteria, and for presenting the Subject Matter in accordance with that Criteria, in all material respects. This responsibility includes establishing and maintaining internal controls, maintaining adequate records and making estimates that are relevant to the preparation of the subject matter, such that it is free from material misstatement, whether due to fraud or error.

EY's responsibilities

Our responsibility is to express a limited assurance conclusion on the Subject Matter based on the procedures we performed and evidence we obtained. We conducted our engagement in accordance with the International Standard for Assurance Engagements Other Than Audits or Reviews of Historical Financial Information ('ISAE 3000'), International Standard for Assurance Engagements on Greenhouse Gas Statements ('ISAE3410') and the terms of reference for this engagement as agreed with Singtel Group on 8 April 2022, supplemental to the principal agreement dated 1 April 2020. Those standards require that we plan and perform our engagement to obtain limited assurance about whether, in all material respects, the Subject Matter is presented in accordance with the Criteria, and to issue a report. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risk of material misstatement, whether due to fraud or error. We believe that the evidence obtained is sufficient and appropriate to provide a basis for our limited assurance conclusions.

Our independence and quality control

We have maintained our independence and confirm that we have met the requirements of the Accounting and Corporate Regulatory Authority ("ACRA") Code of Professional Conduct and Ethics for Public Accountants and Accounting Entities ("ACRA Code"), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

EY also applies Singapore Standard on Quality Control 1, Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance and Related Services Engagements, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Description of procedures performed

Procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Our procedures were designed to obtain a limited level of assurance on which to base our conclusion and do not provide all the evidence that would be required to provide a reasonable level of assurance.

Although we considered the effectiveness of management's internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls. Our procedures did not include testing controls or performing procedures relating to checking aggregation or calculation of data within IT systems.

The GHG quantification process is subject to scientific uncertainty, which arises because of incomplete scientific knowledge about the measurement of GHGs. Additionally, GHG procedures are subject to estimation (or measurement) uncertainty resulting from the measurement and calculation processes used to quantify emissions within the bounds of existing scientific knowledge.

A limited assurance engagement consists of making enquiries, primarily of persons responsible for preparing the Subject Matter and related information, and applying analytical and other appropriate procedures.

1. Inquiries with Singtel Group's Sustainability team to
 - a. Understand principal business operations,
 - b. Appreciate key sustainability issues and developments,
 - c. Map out information flow for sustainability reporting and the relevant controls,
 - d. Identify data providers with their responsibilities, and
 - e. Recognise the likelihood of possible manipulation of sustainability information and data
2. Virtual and face-to-face meetings with Singtel Group's data stakeholders and management.
3. Process walk-through of systems and processes for data aggregation and reporting, with relevant personnel to understand the quality of checks and control mechanisms, assessing and testing the controls in relation to the relevant Subject Matter in the Sustainability Report.
4. Interviews with employees and management based in Singapore (Group Sustainability, Group Procurement, Group Data Strategy, Human Resources, Energy Management, Facilities Management, Workplace Safety & Health, Regulatory & Interconnect, Mobile Networks, Supply Chain Management, Consumer Finance, Business Strategy and Marketing Intelligence and Product Development) and Australia (People and Culture, Infrastructure Services, Corporate Property, Facilities Management, Networks Supply Chain, Optus Procurement and Supply Chain as well as third parties (e.g. Australian Post) to understand key sustainability issues related to the select indicators and processes for the collection and accurate reporting of performance information.
5. Undertook analytical review procedures to support the reasonableness of the data.
6. Tested, on a sample basis, underlying source information to check accuracy of the data in relation to the relevant Subject Matter in the Sustainability Report.
7. Identified and checked assumptions supporting disclosures related to select sustainability performance disclosure.
8. Obtained third-party reports and confirmations in relation to the relevant Subject Matter in the Sustainability Report.
9. General desktop research on the relevant Subject Matter.
10. Checked that data and statements in relation to the relevant Subject Matter had been correctly transcribed from corporate systems and / or supporting evidence, into the Sustainability Report
11. Relying on Singtel Group's management representation letter on the relevant Subject Matter in the Sustainability Report.

We also performed such other procedures as we considered necessary in the circumstances.

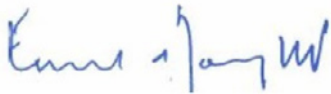
Conclusion

Based on our procedures and the evidence obtained, we are not aware of any material modifications that should be made to the Subject Matter as of 24 June 2022 for the year ended 31 March 2022, in order for it to be in accordance with the Criteria.

Restricted use

This report is intended solely for the information and use of the Management of Singtel Group and is not intended to be and should not be used by anyone other than those specified parties.

Ernst & Young LLP



Signed for Ernst & Young LLP by

Simon Yeo

Partner, Climate Change and Sustainability Services Singapore

24 June 2022



Singapore Telecommunications Limited
(CRN: 199201624D)

31 Exeter Road, Comcentre
Singapore 239732
T +65 6838 3388

www.singtel.com

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EMPOWER EVERY GENERATION

to Accelerate Climate Action

Task Force on Climate-related Financial Disclosures 2022
for Singtel Group Operations in Singapore and
Optus Operations in Australia



Table of Contents

Overview

About this report	02
Group CEO Message	03
Progress on our climate journey	04
Summary of our response to TCFD disclosure recommendations	07

01. Governance

Board oversight and expertise	09
Management structure	09

02. Strategy

Climate change and environment framework and strategy	12
i. Climate resilience and adaptation	12
ii. Renewables and energy efficiency	13
iii. Green ICT	14
Material risks and opportunities	15
Climate scenario analysis	16
Physical risks modelling and analysis	17
Transition risks modelling and analysis	21

03. Risk Management

Our enterprise risk management framework	31
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04. Metrics and Targets

Metrics	33
Targets	33

05. Summary and Next Steps

06. Appendix

Front and back cover photo credit: **Andrew Buay**

Front Cover: Mount Kaputar, NSW Australia, showing signs of regrowth two years after the devastating bushfires of October 2019. Over 17,000 hectares of the national park were destroyed.

Back Cover: Early morning fog mixed with bushfire smoke created spectacular sunrise that concealed the terror experienced by many living along the south coast of NSW Australia during the summer bushfires of 2019.

About this report

This is the Singtel Group’s inaugural standalone climate-related financial report prepared in accordance with the framework recommended by the Task Force on Climate-related Financial Disclosures (TCFD). The report presents a detailed discussion of our approach to all 11 disclosure recommendations of the TCFD framework under the four core elements: climate-related governance, strategy, risk management, and metrics and targets.

This report builds on the TCFD information previously disclosed in our sustainability reports and covers the period 1 April 2021 to 31 March 2022 (FY2022). The report should be read in tandem with the **Singtel Group Sustainability Report (SR) 2022**, which details our approach to our material sustainability topics across our operations in Singapore and Australia. All references to figures in dollars are in Singapore Dollars (SGD) unless otherwise indicated.

Given that TCFD is an emerging practice using climate scenario analysis and incorporating management opinion, assumptions and financial analysis to assess and understand the materiality of climate-related risks and opportunities to the business, there are limited external assurance standards available.

Hence, in this report, there is only limited assurance given on the metrics disclosures which originated from the Singtel Group SR2022. This includes key metrics such as energy and greenhouse gas emissions which are reported and externally assured in accordance with Global Reporting Initiative (GRI) standard as part of our sustainability reporting disclosures.

This report will form the basis of our subsequent assessments, reviews and updates, should there be material changes in the externalities and underlying assumptions.

We are fully committed to listening to our stakeholders and we welcome feedback on this report. Please address all feedback to the Group Chief People and Sustainability Officer at sustainability@singtel.com.



Message from Group CEO

Government and business leaders are increasingly focusing their attention on building the resilience of assets and communities and accelerating decarbonisation efforts because the effects of climate change are highly visible today.

A critical component in this effort is data and sense-making – of the risks, how various actions impact the climate, and whether our efforts are making a difference to business sustainability. As investors increasingly consider climate risk a material financial issue, we have seen heightened expectations from government, regulators, investors and customers for climate-related disclosures. One of the ways the global corporate community is working to address these stakeholder expectations and information needs is through adopting harmonised data disclosure framework such as the TCFD framework for reporting.

For the Singtel Group, climate action is an area that resonates strongly with our purpose to Empower Every Generation. We believe that the timely and transparent disclosure of climate-related information is important to help our stakeholders understand the financial implications of climate risks on our business and provide them the confidence that we are continually assessing and managing the challenges and opportunities. This is why the Singtel Group was one of the first companies globally to endorse the TCFD framework in 2017 and commit to the Business Ambition for 1.5°C Pledge in 2019 to reach net-zero emissions by no later than 2050.

This year, we reached two important milestones in our climate journey towards net-zero emissions. First, we have completed our full greenhouse gas (GHG) emissions inventory and baseline for all three scopes under the GHG protocol. This enables us to further develop and refine our roadmap for more aggressive decarbonisation action both internally and externally with our value chain stakeholders.

Second, we have published our inaugural standalone TCFD Report – one of a handful of progressive Singapore companies to issue a comprehensive TCFD report. It incorporates all 11 disclosure recommendations of the four core elements in the TCFD framework. Through our climate scenario analysis, the Singtel Group gained additional insights on the potential extent of climate-related risks to our business as well as potential opportunities presented to our business. These understandings are valuable and beneficial for us as we embed climate action into our future strategy.



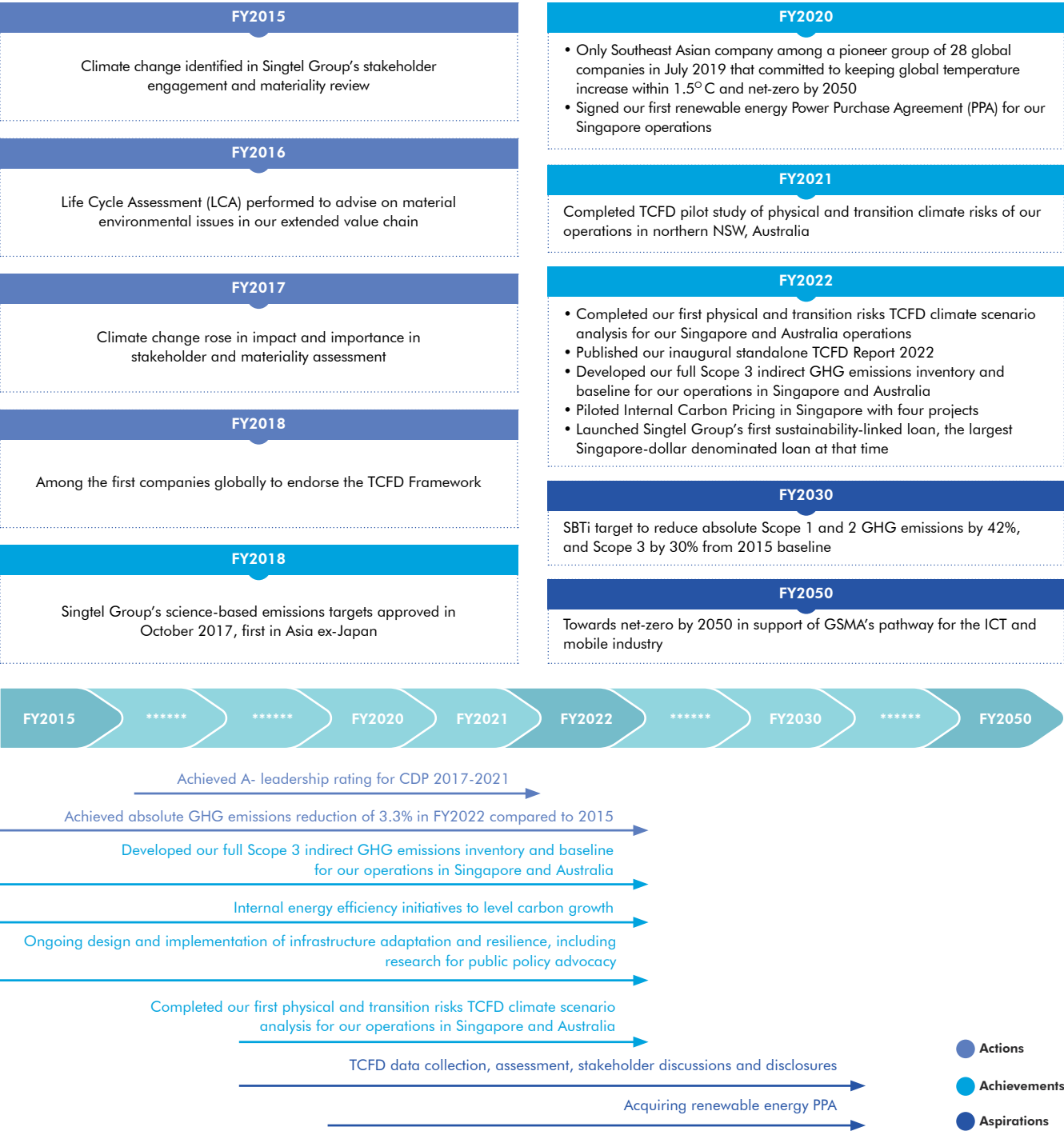
The Singtel Group is at the beginning of our climate-related financial disclosure journey alongside the global corporate community and will contribute to this movement as it evolves to be more informative. We are committed to further incorporating the climate change agenda into our strategy, decision-making and enterprise risk management approach, to empower the present generation to accelerate climate action and safeguard the planet.

We welcome your feedback on this inaugural report as it will help us to improve on what matters most in our climate-related disclosures.

Yuen Kuan Moon
Singtel Group CEO
30 June 2022

Progress on our climate journey

Figure 1: Singtel Group climate action journey towards net-zero by 2050



Ever since climate change first emerged as a material topic for Singtel Group in 2014, we have been working consistently to develop and refine our approach to understanding and tackling the risks and opportunities that it presents to our business (see Figure 1). Equipped with this knowledge, we have been able to make informed business decisions, set goals and targets, and focus on critical climate actions in the last few years. Figure 2 outlines the Singtel Group Environmental Framework. We are also guided by our Environmental Management System and Environment Policy to manage and minimise our impact. Please refer to our [website](#) for more information.

Since 2017, our climate strategy and targets have been developed and aligned with internationally recognised frameworks such as TCFD, Science Based Targets initiative (SBTi) and the Paris Agreement.

The various studies, analyses and exercises that we have conducted have been key to guiding our strategy in managing these risks and opportunities as the global climate agenda evolves. We recognise the importance of communicating how we manage our climate-related risks and opportunities to maintain stakeholder trust and confidence. Figure 3 and 4 depict our emissions trajectory since 2015.

Figure 3: Singtel Group Scope 1 and Scope 2 baseline, performance and targets

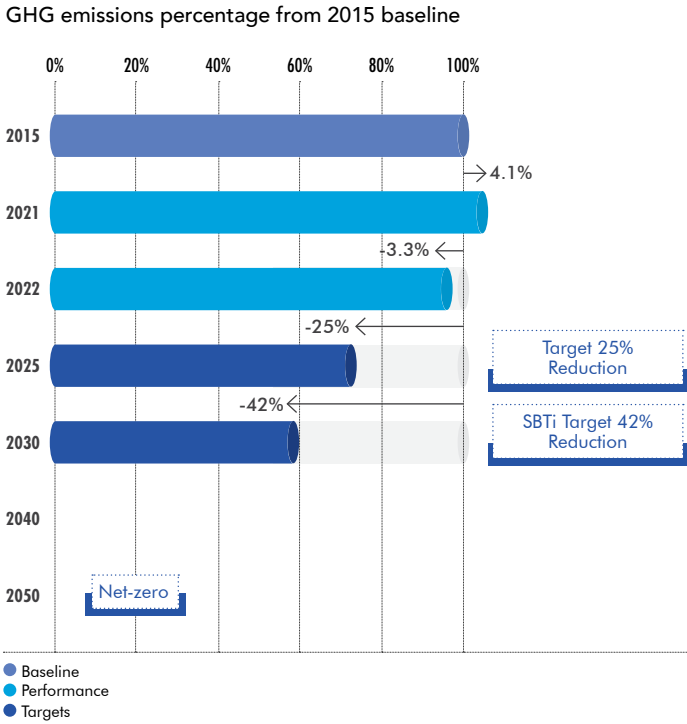


Figure 2: Singtel Group Environmental Framework

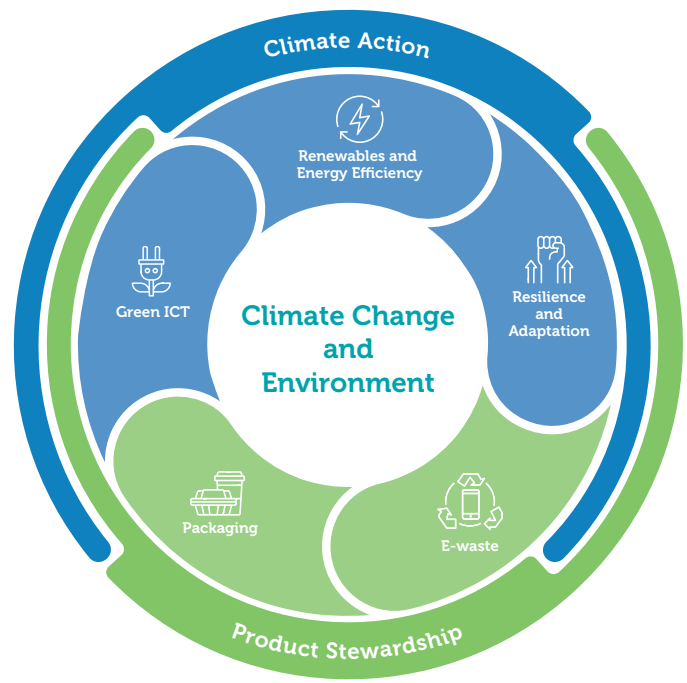
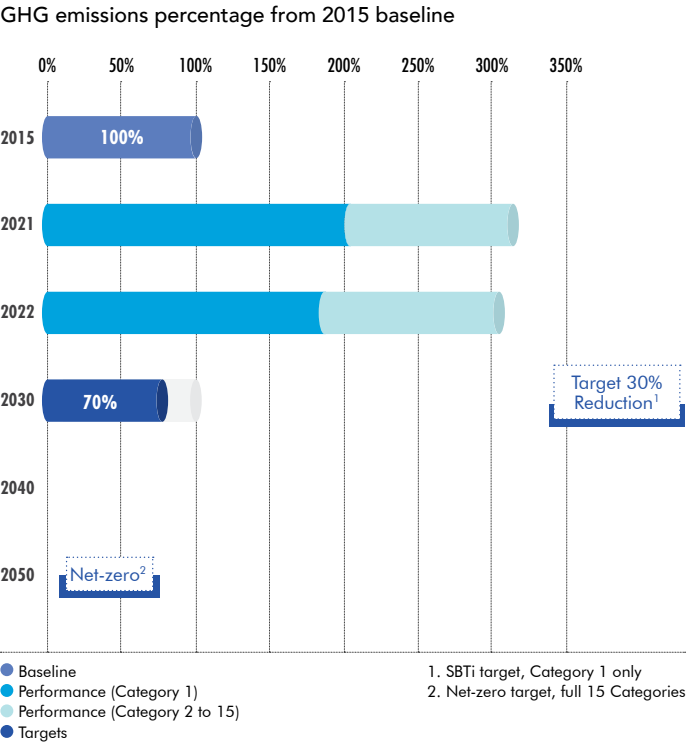


Figure 4: Singtel Group Scope 3 baseline, performance and targets



TCFD progress

Singtel Group has been working towards aligning with the TCFD framework since 2017. Our progress in each respective core element of the framework is summarised in Table 1, with details of each area captured in the subsequent sections of this report.

Table 1: Our TCFD progress

Actions	Pre-FY2021	FY2021	FY2022
Governance			
Endorse the TCFD framework	Completed		
Establish oversight and accountability for climate risk and carbon reduction strategy at Board and management levels	Completed	Reviewed and enhanced	Reviewed and enhanced
Formalise climate-related key performance indicators (KPIs) into executives' long term incentive plans and management's short term incentive plans		Completed	Reviewed and revised
Introduction of Renewable Energy Management Sub-Committee (RESC) comprising four senior key executives of the Management Committee to oversee the company's renewable energy strategy			Completed
Capability building for Board and management levels			Ongoing
Strategy			
Reduce absolute GHG emissions and emissions intensity throughout our business	Ongoing	Ongoing	Ongoing
Invest in network adaptation and resilience	Ongoing	Ongoing	Ongoing
Innovate smart mobile technology solutions to advance climate progress	Ongoing	Ongoing	Ongoing
Set one, three and five-year carbon and renewable energy targets to shape our renewable energy Power Purchasing Agreement (PPA) tenders		Completed	Reviewed and revised
Undertake physical climate scenario analysis to identify material drivers and indicators affecting our networks		Piloted	Completed
Undertake transition climate scenario analysis to understand both short and long term risks to our business		Piloted	Completed
Undertake sustainability linked financing with climate-related sustainability performance targets (SPTs)		Completed	Reviewed and enhanced
Develop an internal carbon price and pilot assessment framework to assist in energy intensive CAPEX decisions			Piloted
Risk management			
Incorporate climate-related risk into Singtel Group Risk Management Framework (RMF)	Ongoing	Ongoing	Ongoing
Use risk management process to map climate-related risks	Ongoing	Ongoing	Ongoing
Metrics and targets			
Established science-based targets for 2030 approved by SBTi in alignment with the Paris Agreement of a well-below 2°C scenario	Completed		Review and enhance in FY2023
Established net-zero ambition by 2050 aligned to 1.5°C scenario			
Publicly disclose climate-related metrics and targets, and performance data	Completed	Completed	Ongoing
Measure our GHG footprint for Scope 1 and 2 emissions across operations	Completed	Completed	Ongoing
Measure our GHG footprint for all 15 categories of Scope 3	Partial Scope 3	Completed full Scope 3	Ongoing
Achieve and maintain A- leadership score for CDP	Achieved	Achieved	Ongoing
Establish other key climate-related metrics and targets (apart from GHG reduction)		Ongoing	Ongoing

Summary of our response to TCFD disclosure recommendations

Recommendations	Key Points
Governance: Disclose the organisation’s governance around climate-related risks and opportunities	
a) Describe the Board’s oversight of climate-related risks and opportunities	Singtel Board provides oversight of the company’s sustainability strategy and initiatives, and approves the sustainability-materiality register, targets and disclosures which include climate-related risks and opportunities. The Board is updated on the strategy, plans and performance at least twice a year, and officially signs off on the annual sustainability report which includes comprehensive disclosures on the company’s climate change agenda, climate-related risks and opportunities, targets and performance.
	Board Risk Committee (RC) reviews the company’s ESG risks including climate-related strategies and mitigation. At least one session per year is dedicated solely to discussing climate-related issues affecting the company operations in addition to regular updates, including specific discussions on overall climate strategy and targets.
	Board Executive Resource and Compensation Committee (ERCC) reviews and approves senior as well as top executives compensation structure with long and short term incentives related to sustainability KPIs and performance.
	Board Finance and Investment Committee (FIC) approves sustainability-linked financing framework and associated ESG KPIs.
b) Describe management’s role in assessing and managing climate-related risks and opportunities	Designated members of the Singtel Management Committee (MC) provide oversight and stewardship on the company’s GHG reduction strategy and climate-related investments.
	Risk Management Committee (RMC) reviews key climate-related risks, including emerging risks, mitigation plans and progress against targets, and makes recommendations to the RC.
	Renewable Energy Management Sub-Committee (RESC) comprises four key senior executives of the MC to provide oversight and guidance to the company’s renewable energy strategy.
	Group Chief People and Sustainability Officer (GCPSO) has the overall accountability for the management of sustainability and is supported by the Vice President of Group Sustainability who oversees sustainability strategy, programmes, execution, performance and disclosures across the company operations in Singapore and Australia, including climate-related risks and opportunities. GCPSO makes recommendations to the Group Chief Executive Officer and MC.
Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation’s businesses, strategy and financial planning where such information is material	
a) Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term	Opportunities: Development of enabling green and low emissions ICT solutions; first mover advantage as a climate leader; brand recognition as a reliable and resilient telecommunications service provider during extreme weather events
	Risks: Material transition risks include carbon pricing, capital allocation and risk of stranded assets and counterparty risk. Physical risks include surface water flooding across years 2030, 2050 and 2100; bushfires across years 2030, 2050 and 2100; riverine flooding in the long term (specifically for control rooms) and extreme heat by year 2100.
b) Describe the impact of climate-related risks and opportunities on the organisation’s businesses, strategy and financial planning	We looked at the possible impact over the short (2030), medium (2040) and long term (2050) horizons. The outcome of the scenario modelling has been summarised as climate-related risks and opportunities, organised by physical and transition risks that potentially influence the financial impact on the company’s income and balance sheet performance in the long run as well as our strategies to drive GHG emissions reduction and increase climate resilience (see Figure 10). Management of climate-related risks and opportunities is aligned with our business strategies, operations and it forms an integral part of the annual business planning and budgeting (financial planning) process.

Recommendations	Key Points
c) Describe the resilience of the organisation’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	Selected three climate-related scenarios for analysis to understand the potential implications of climate-related physical and transition risks to the company’s strategy over the short (2030), medium (2040) and long term (2050). Scenario 1 (warming to 1.5°C) and 2 (warming to 1.8°C) are used for transition risks while Scenario 1 (warming to 2°C) and 3 (warming to 4°C) are modelled for physical risks. Overall, Singtel Group has relatively low risk after mitigations. Two areas for improvement are: a) Accelerate the renewable energy (RE) transitioning b) Develop the competitiveness of data centres(DC) from an environmental sustainability-perspective. We build climate resilience into the core of our corporate strategy and operations. We are resilient and well prepared for climate-related risks based on the outcomes of the scenario analysis. Refer to page 20 for more information on our resilience efforts.
Risk Management: Disclose how the organisation identifies, assesses and manages climate-related risks	
a) Describe the organisation’s processes for identifying and assessing climate-related risks	We identify, assess and manage risks to reduce the uncertainty associated with executing our business strategies, and mitigate potential adverse impacts on our business. We have established a comprehensive Risk Management Framework (RMF) at the enterprise level, which sets out our governance structure for managing risks, risk philosophy, risk appetite and tolerance levels, management approach and risk factors. In addition, through stakeholder engagement and materiality assessments, we regularly review and assess ESG risks that exist or emerge in our broader value chain, and we address them with various corporate sustainability initiatives. We have undertaken a Life Cycle Assessment (LCA) and climate scenario analysis, and set SBTi targets as part of the methodology to identify climate-related risks.
b) Describe the organisation’s processes for managing climate-related risks	
c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation’s overall risk management	Our risk register has been updated with climate-related risks. Climate change poses a range of strategic and operational risks to the company. They can include financial risks as a result of stranded assets in the transition to a low carbon economy, disruption of business activities and damage to network infrastructure due to extreme weather events, as well as impact to people’s livelihoods. The approach is for each business unit to identify, assess and manage risks within their own risk register, plan actions, and include it as part of annual business planning and budgeting process.
Metrics and Targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material	
a) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process	Refer to Table 7 for our key material metrics, which include GHG emissions, energy consumption, capital deployment, internal carbon price and management remuneration relating to ESG KPIs.
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	We report Scope 1, 2 and 3 GHG emissions (see Table 7).
c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	Established absolute GHG reduction emissions science-based targets for 2030 approved by SBTi in alignment with the Paris Agreement of a well-below 2°C scenario. Committed to net-zero ambition by 2050 aligned to 1.5°C scenario.

01.

Governance

Climate change is a priority issue for the highest level of governance within the Singtel Group. We have a sustainability governance structure (see Figure 5) and robust processes to effectively engage the Board, management and working groups in managing climate-related risks and opportunities. This ensures that all material issues across operating geographies are addressed in line with our strategy, commitments and targets.

Board oversight and expertise

The Board oversees the overall sustainability and climate-related strategies, approves the materiality matrix which has climate-related topics, reviews the progress and performance of the Group’s climate commitments and strategy, and approves disclosures in the Annual Report and Sustainability Report including climate-related disclosures and metrics.

Separately, the Board Risk Committee (RC), on behalf of the Board, reviews our material ESG risks including climate risks, strategies and mitigation. The RC has at least one session per year dedicated solely to discussing climate issues affecting our operations in addition to regular updates, including specific discussions on overall climate strategy and targets.

For remuneration tied to ESG including climate-related topics, the Executive Resource and Compensation Committee (ERCC) is the approving body. The Board Finance and Investment Committee (FIC) approves sustainability-linked financing and associated ESG KPIs.

The Board comprises directors from a diverse range of industries and geographies, with a variety of interests and skills. We select Board members who can bring unique perspectives to the business, which is crucial to ensure that we have a well-rounded view of issues, especially climate change risks and opportunities.

The current chairman is from Temasek Holdings, which places a significant focus on sustainability and corporate stewardship and takes a proactive approach towards climate actions, including setting emissions reduction targets for their portfolio companies, emissions tracking as well as physical climate risk assessments. Other directors have led companies that are recognised leaders in corporate sustainability and from time to time also facilitate climate knowledge sharing with the boards and companies they sit on. The Board is briefed regularly by Singtel Group Sustainability, and all Board members are also required to

attend formal training in sustainability organised by accredited parties by the Singapore Exchange. In the coming year, the company intends to augment Board knowledge on climate matters by providing external perspectives from climate experts.

The composition and experience of the Singtel Board and Management Committee can be found [here](#).

Management structure

The Management Committee (MC), comprising all C-level senior executives, plans, reviews and approves Singtel Group’s climate strategy and other ESG decisions including investments across Singapore and Australia operations. Specifically, climate-related risks are managed by the Risk Management Committee (RMC).

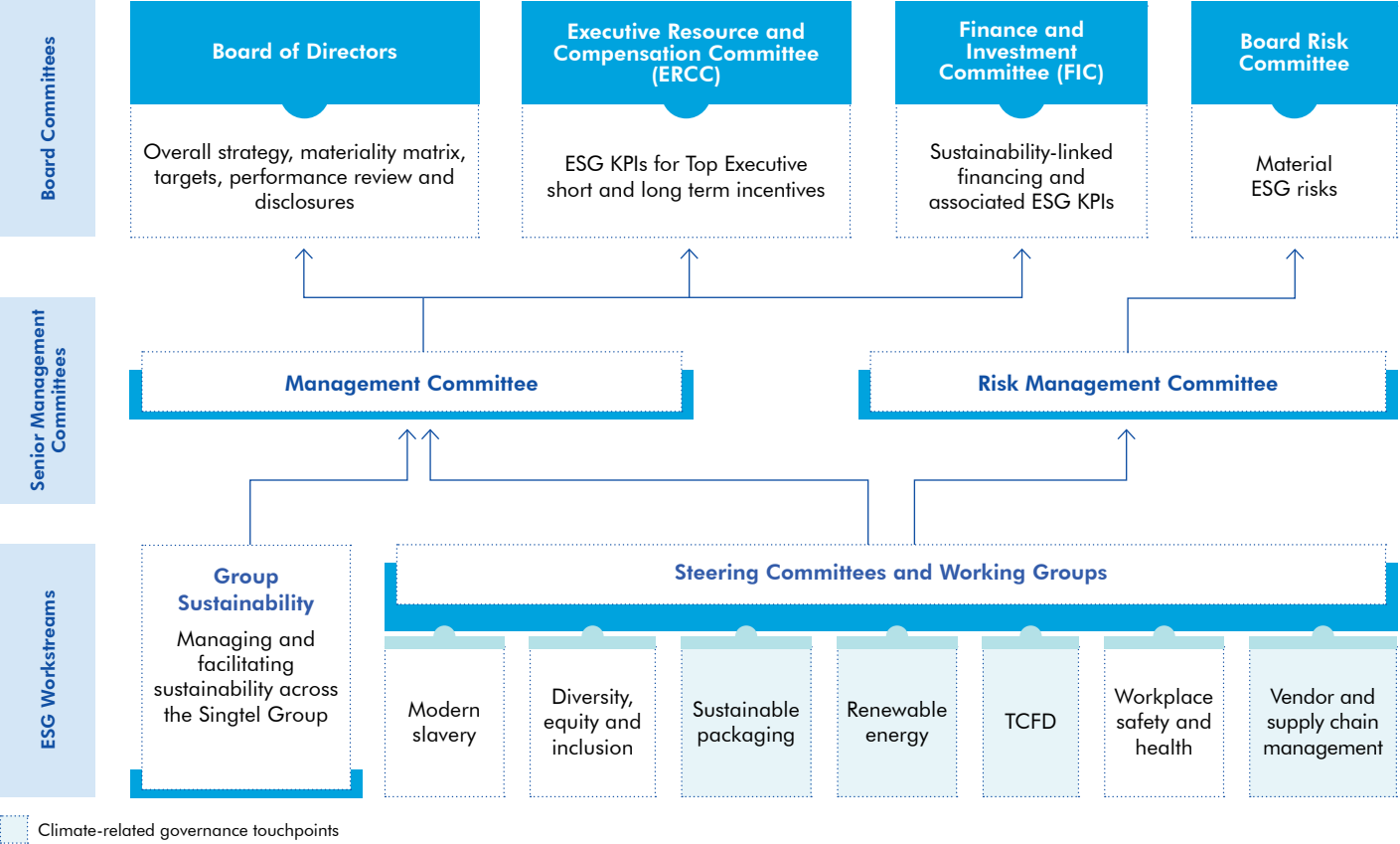
RMC reviews key climate risks, including emerging risks, mitigation plans and progress against targets, and makes recommendations to the RC. The RMC also reviews the Group’s progress to ensure that it is in alignment with TCFD framework and disclosures.

Our dedicated Group Sustainability function, including an environmental sustainability team of specialists, is responsible for managing climate change and the broader sustainability issues for the Singtel Group.

It collaborates with strategy and risk management functions, and other business units such as networks and energy teams to ensure alignment in strategy and governance across the business as well as report progress against agreed action plans.

Given the importance of renewable energy to the emissions reduction strategy of the Group and the complexity and volatility of the renewable energy and energy markets, in FY2022, we established a Renewable Energy Management Sub-Committee (RESC) to provide oversight and guidance on the Group’s renewable energy procurement strategy.

Figure 5: Singtel Group sustainability governance structure



RESC comprises the Group Chief Corporate Officer, Group Chief Technology Officer, Group Chief People and Sustainability Officer and Optus CEO, supported by various stakeholders who have an impact on the company’s emissions reduction strategy, including Energy procurement, Networks, Finance and Group Sustainability.

Our comprehensive climate-related governance is detailed in Table 2 (page 11), describing the roles, responsibilities and meeting frequency for each governance body.

KPIs and incentives

Climate-related issues require long-term commitment and actions. In FY2021, the Singtel Group introduced common ESG-linked KPIs for the long-term incentives (LTI) plan of all top

executives (Heads and above), and annual short-term incentives (STI) for MC members. These ESG KPIs comprise 20% of LTI and 10% of STI, with climate-related targets representing one of five ESG-related KPIs for both executives (4% of total LTI KPIs) and MC (2% of total STI KPIs). For MC members, the focus and weightage of KPIs is dependent on their role and how closely they are linked to climate change.

For example, energy efficiency and decarbonisation targets carry more weightage for members with energy intensive functions or a stronger role in influencing the company’s decarbonisation strategy.

MC KPIs are then cascaded down to their business units, departments and employees, whose performance bonus and other incentives are tied to their KPIs.

Table 2: Singtel Group sustainability governance climate-related roles and responsibilities

Governance body	Climate-related roles and responsibilities	Meeting and reporting cadence
Board of Directors	The Board oversees the overall sustainability and climate-related strategies, approves the materiality matrix which includes climate-related topics, reviews the progress and performance of the Group’s climate commitments and strategy, and approves disclosures in the Annual Report and Sustainability Report including climate-related disclosures and metrics.	Twice a year for ESG matters
Executive Resource and Compensation Committee (ERCC)	ERCC reviews and approves executive and management’s compensation structure, and long and short term incentives. ESG KPIs comprise 20% of these incentives, with climate-related KPIs representing one in five targets for both groups.	Once a year to review KPIs and performance
Board Finance and Investment Committee (FIC)	FIC approves sustainability-linked financing and associated ESG KPIs.	Up to twice a year for ESG-related topics, as required
Board Risk Committee (RC)	RC reviews key climate risks, including emerging risks, mitigation plans and progress against targets, and reviews recommendations from the RMC.	At least twice a year for ESG-related risks, and once a year for climate-related risks
Group Chief Executive Officer (GCEO)	GCEO, a Board member and Chairperson of the Management Committee, is responsible for making climate-specific recommendations to the Board, related to strategy, performance, risks and disclosures.	Participates in meetings with Board and Management Committee
Management Committee (MC)	MC, comprising all C-level senior executives, plans, reviews and approves Singtel Group’s climate strategy and other ESG decisions and investments across our Singapore and Australia operations.	Monthly to quarterly for different ESG topics
Risk Management Committee (RMC)	RMC reviews key climate risks, including emerging risks, mitigation plans and progress against targets, and makes recommendations to RC. RMC also ensures the Group’s progress is in alignment with TCFD framework and disclosures.	Up to twice a year for ESG-related risks, and at least once a year for climate-related risks
Group Chief People and Sustainability Officer (GCPSO)	GCPSO has overall accountability for the management of sustainability. This role is supported by the Vice President of Group Sustainability who oversees sustainability strategy, programmes, execution, performance and disclosures across the Singtel Group operations in Singapore and Australia, including climate-related issues. GCPSO makes recommendations to GCEO and MC.	Monthly
Renewable Energy Management Sub-Committee (RESC)	RESC, by delegation from MC, is responsible for specific renewable energy strategy across our Singapore and Australia operations. The four RESC members are: i) Group Chief Corporate Officer, who oversees risk and energy procurement and is RESC Chairperson; ii) GCPSO, who is accountable for overall sustainability management; iii) Group Chief Technology Officer, who oversees the infrastructure network which has large energy consumption and is highly exposed to both physical and transition risks; and iv) Optus CEO, who leads Optus which constitutes about two-thirds of the current Group emissions and experiences climate-related natural disasters on a regular basis.	Monthly to bi-monthly
TCFD Task Force	The TCFD Task Force comprises team members from the Singapore and Australia operations such as Data Centre, Networks, Finance, Procurement, Risk and Group Sustainability. It undertakes climate-related scenario analysis, risk and materiality assessment in alignment with TCFD framework.	Project based

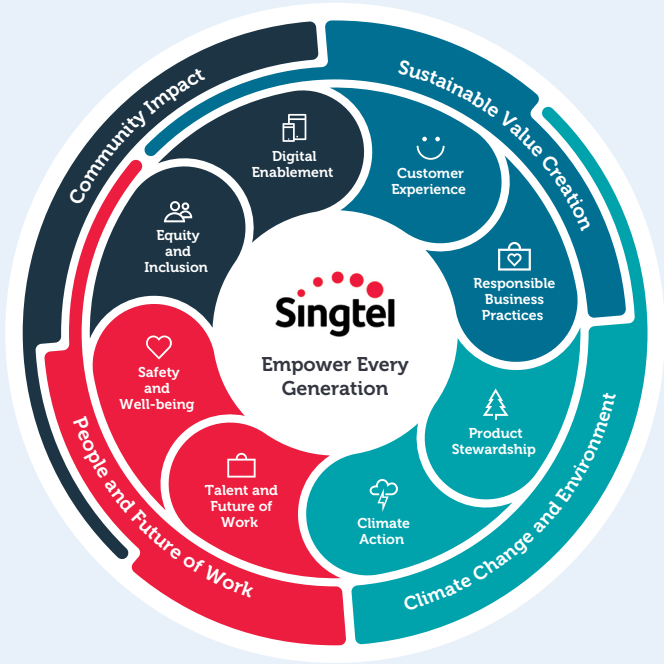
02. Strategy

As Asia’s leading communications technology company, Singtel Group aims to create sustainable value for all our stakeholders. We want to attract, develop and retain our people, connect and enrich the lives of our customers and community through innovation, and create a positive impact on our environment. Under our strategic reset in 2021, we refreshed our sustainability framework comprising four sustainability pillars of Climate Change and Environment, People and Future of Work, Community Impact and Sustainable Value Creation to better align sustainability with our business strategies and how we engage our key stakeholders (see Figure 6).

Climate Change and Environment framework and strategy

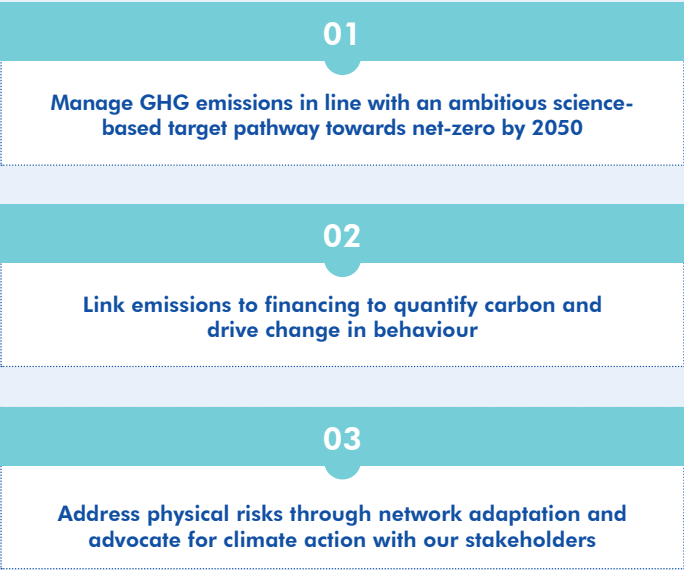
Climate Change and Environment is a strategic pillar under the Singtel Group Sustainability Framework (Figure 6). We also align our approach with our Group purpose, Empower Every Generation, where we want to empower the present generation to accelerate climate action and safeguard the planet to chart a sustainable future for generations to come. We are committed to minimising our environmental footprint in our business operations and value chain and meet our carbon reduction targets, while building resilient networks and communities to deliver long term value to our business and stakeholders.

Figure 6: Singtel Group Sustainability Framework



Under Climate Action, we are concerned with climate resilience and adaption, renewables and energy efficiency, as well as green ICT. These three aspects are elaborated in the following paragraphs. They are then translated into our climate action plan as shown in Figure 7.

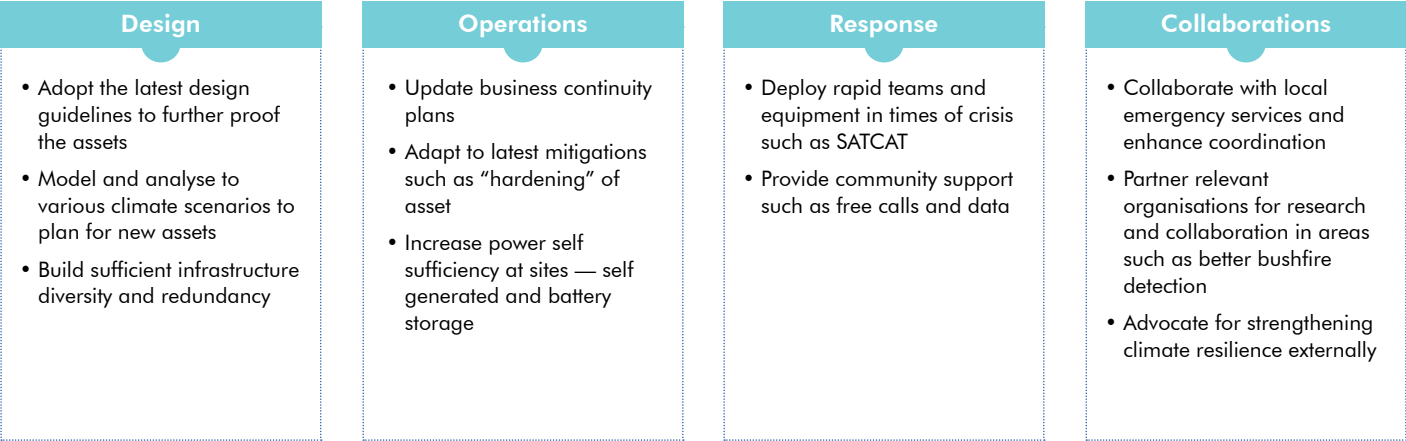
Figure 7: Singtel Group climate action plan



a) Climate resilience and adaptation

Climate-related extreme weather events have become increasingly severe and frequent in the past few years and this trend is forecast to continue. In FY2022, we saw bushfires and damaging floods in Australia, which impacted thousands of people and businesses. The first and most critical response to these events is for governments and businesses to push harder to mitigate climate change.

Figure 8: Approach to climate resilience



It also calls for greater focus on business resilience and adaptation in parallel. Singtel Group is therefore committed to increasing our climate resilience through proactively taking steps to reduce the physical impacts of climate-related extreme weather on our network infrastructure to ensure that we can serve the communication needs of our customers and communities. We will continue to invest in network adaptation and resilience, while stress testing and disclosing long term climate change risks and mitigation based on various scenarios and aligned with TCFD framework. Figure 8 illustrates our approach to climate resilience.

With this approach, we have undertaken various initiatives under our climate action plan to address physical risks through network adaptation and advocate for climate action with our stakeholders. These include:

- Incorporating climate adaptation activities within our \$2.2 billion investment in our network to improve its resilience to physical risks, so that we can continue to serve our communities in the long-run and in times of critical need, as we have done during the recent bushfires and floods in Australia.
- Supporting customers affected by physical climate events such as the recent floods in Australia where we set up a dedicated customer hotline for flood victims which offered a range of support options depending on our customer needs, such as bonus data boost, call diversion, service suspension, free prepaid credit or bill waiver.
- Completing our GHG emissions inventory (including all Scopes) and conducting scenario modelling to understand the challenges that climate change presents, so that we can mitigate the negative impacts of, and on, our business and

undertake adaptation activities to ensure that we are resilient to the impacts we are likely to face.

- Disclosing climate-related information in this report, our Sustainability and Annual Reports, to communicate vital information to our stakeholders and being accountable for our actions.
- Engaging external and internal stakeholders in Singapore and Australia to foster a collaborative approach to address climate change and its impacts at national and global levels, including governments and other organisations.

Past examples include the now-defunct Australian Business Roundtable on Disaster Resilience and Safer Communities (ABR), Singapore’s National Climate Change Secretariat (NCCS), TCFD Secretariat and Resilient Cities Network 100.

Current examples include engagement with NCCS on climate policy, Commonwealth Scientific and Industrial Research Organisation (CSIRO)-Optus study on building resilient telecommunications infrastructure, and the ongoing programme to research and develop hi-tech solutions to predict, detect and extinguish bushfires under the Australian National University-Optus Bushfire Research Centre of Excellence.

b) Renewables and energy efficiency

On the back of global movement towards a climate conscious future, we have set rigorous corporate decarbonisation goals and targets in recognition of our role and responsibility in tackling climate change. Our SBTi targets were aligned to the Paris Agreement with a well-below 2°C pathway when it was approved in October 2017.

We took a further step and became the first Southeast Asian company to pledge net-zero by 2050 among the pioneering group of companies. In May 2022, MSCI assessed the implied temperature rise of Singtel Group’s targets to be 1.59°C. We are in the process of strengthening our emissions reduction commitment in FY2023 by updating our interim SBTi target to a 1.5°C scenario to align to our net-zero commitment by 2050.

With the ambitious goals set, we recognise the imperative to accelerate our decarbonisation efforts. We want to actively manage our GHG emissions towards net-zero throughout our value chain. We develop the decarbonisation hierarchy as shown in Figure 9 to guide us in reducing our emissions.

These are the key efforts that Singtel Group has embarked on:

- Progressively enhancing governance and accountabilities across the business.
- Disclosing climate-related information in this report, our Sustainability and Annual Reports, to communicate vital information to our stakeholders and being accountable for our actions.
- Mapping and tracking all scopes of our emissions footprint.
- Adopting renewable energy and implementing energy efficiency measures across our Singapore and Australia operations to minimise the emissions associated with running a large network of mobile base stations.
- Implementing an internal carbon price mechanism to enable the business to assess the external impact of policies such as carbon taxes.
- Collaborating with customers and partners, and engaging our suppliers in alignment to our 1.5 °C pathway above pre-industrial levels, the most ambitious goal of the Paris Agreement.

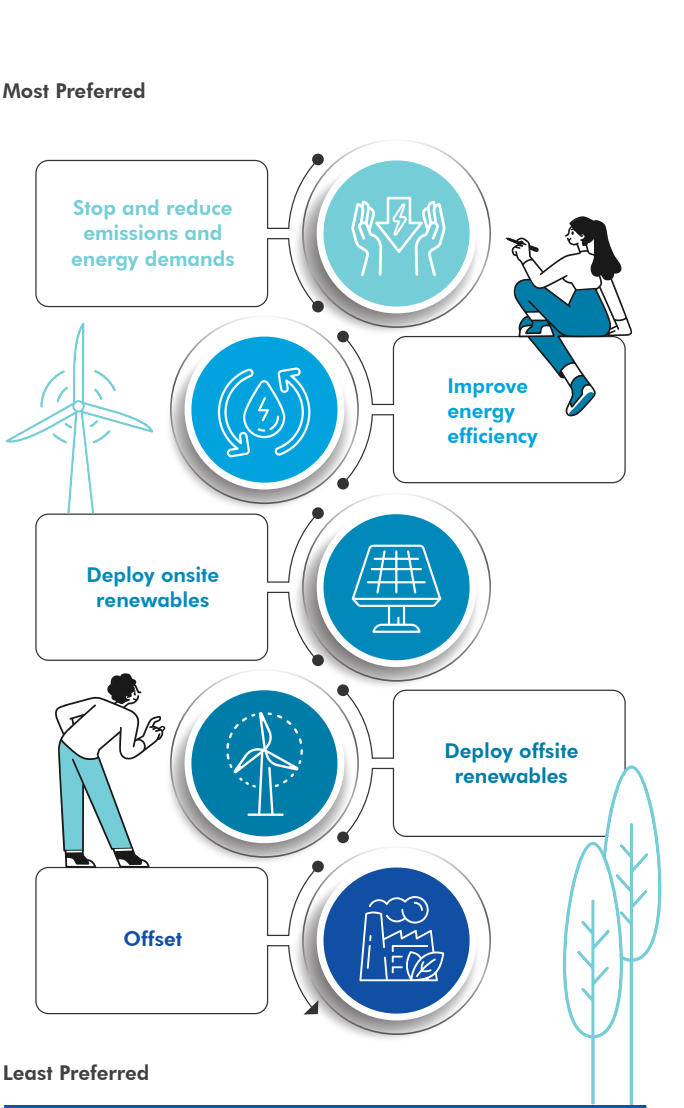
For more details on our emissions-related efforts, please refer to our Singtel Group SR2022 page12-22.

c) Green ICT

Being in the ICT sector, Singtel Group believes that we are well-positioned to enable a transition to a low-carbon economy by providing innovative products and services to customers.

We are constantly exploring smart mobile technologies to reduce energy consumption and emissions beyond our industry to benefit other sectors of the economy.

Figure 9: Singtel Group decarbonisation hierarchy

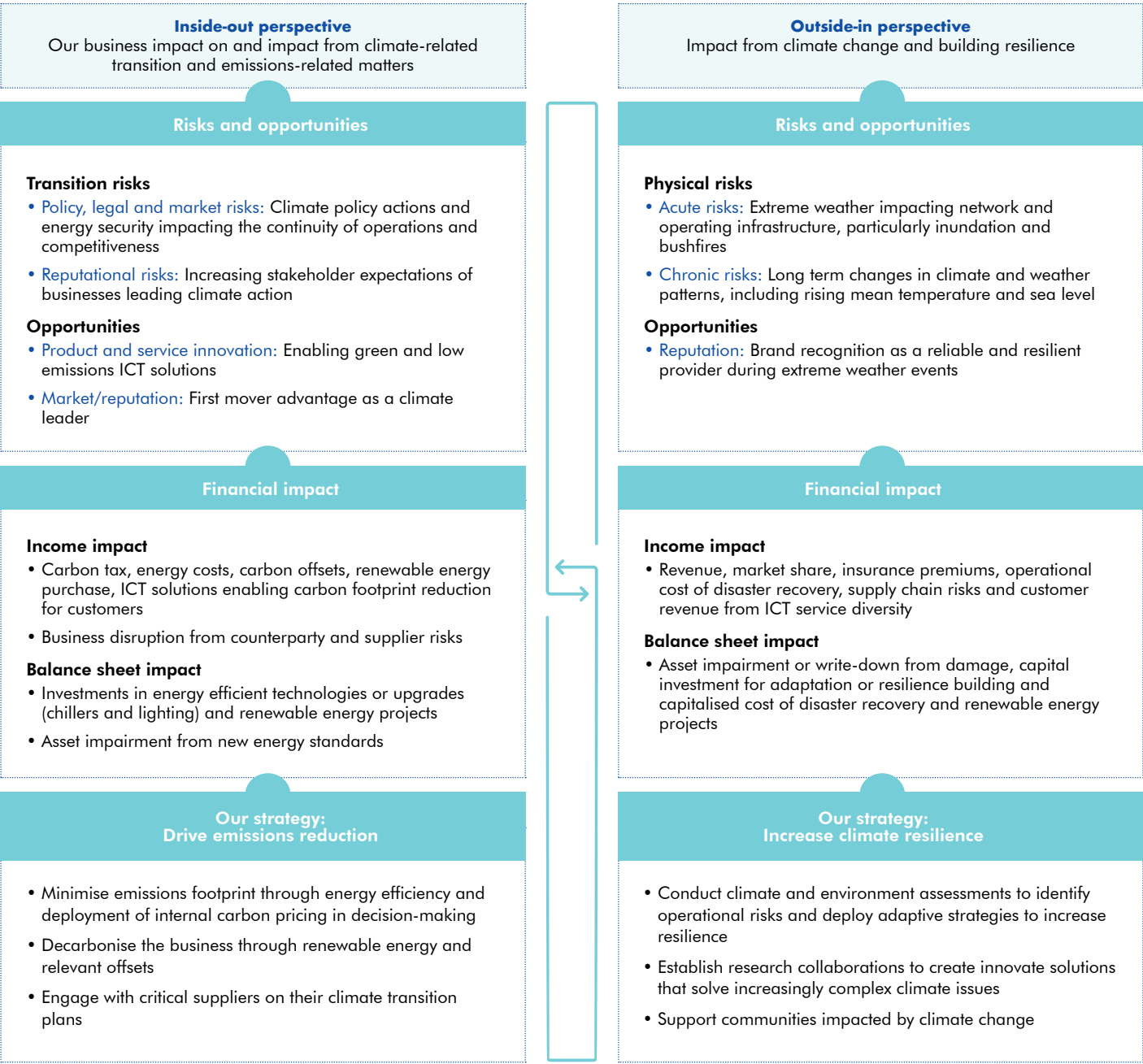


Technology innovation in the areas of connectivity, low PUE data centres, cloud solutions, big data and IoT enable the development of energy efficient solutions that can be applied across industries and help advance decarbonisation efforts in other sectors. During the year, we focused on our 5G network rollout in Singapore and Australia to empower our customers by delivering greater speed, higher device capacity and ultra-low latency.

Material risks and opportunities

Singtel Group takes a comprehensive and proactive approach to anticipate and manage climate change impacts on our business, which includes building climate resilience into the core of our corporate strategy and operations. We use climate risk assessments, including scenario modelling, to identify events that can potentially affect our business operations or be a business opportunity. In this section, we present our view of climate risks, the associated opportunities and financial impact, and our response to these risks in Figure 10 below.

Figure 10: Singtel Group double materiality of climate-related risks and opportunities



Climate scenarios analysis

Singtel Group conducted two smaller scale climate scenario analysis in the years prior to FY2022 for physical risks and ran a pilot in New South Wales, Australia for transition risks in FY2021 (refer to our [Sustainability Report 2021](#)). This report is the first organisation-wide climate scenario analysis for Singtel Group on our material climate-related risks built on previous studies.

Figure 11 shows the process of how we conducted both types of risk analyses.

Figure 11: Summary of our physical and transition risks analysis process

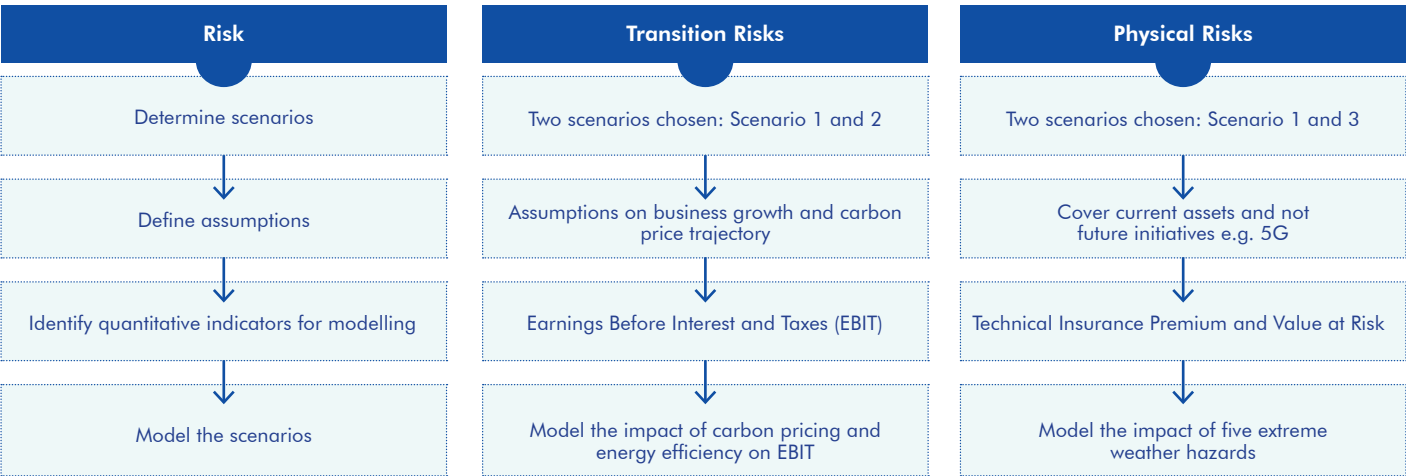


Figure 12: Climate scenarios¹

	 Policy ambition	 Policy reaction	 Technology change	 Carbon dioxide removal (CDR)	 Regional policy variation	
+1.5°C	Scenario 1: 1.5°C aligned orderly transition Warming limited to 1.5°C by 2100 (transition risk) Warming limited to 2°C by 2100 (physical risk)	1.5°C	Immediate and both	Fast change	Medium use	Medium variation
	Scenario 2: Delayed or disturbed transition Warming limited to 1.8°C by 2100	1.8°C	Delayed	Slow/fast change	Medium use	High variation
+4°C	Scenario 3: Business-as-usual (BAU) Warming exceeds to +4°C by 2100	4°C+	Non-current policies	Slow change	Low use	Low variation

¹ These scenarios were developed with reference to Network for Greening the Financial System.

We have selected three climate scenarios to analyse in this modelling. See Figure 12.

Scenario 1 and 2 are used for transition risks while Scenario 1 and 3 are modelled for physical risks. After we have identified and selected the risks for analysis, the various business units are engaged to understand more about the current business and operations in order to reflect as close as possible the business plans in the modelling. Both qualitative and quantitative modelling are applied. The following sections detail the analysis for both chosen physical and transition risks.

Physical risks modelling and analysis

Singtel Group faces both chronic and acute physical risks in our business, particularly in Australia due to its geography. To assess the extent of physical climate risk to our business, we modelled how vulnerable our assets are to extreme weather conditions. These results show us the potential extent of the financial impact from hazards at sites across Singapore and Australia. They also inform us where the highest physical risks are, and where we need to focus our mitigation and adaptation efforts to ensure the continuity, reliability and resilience of our network and services to local communities and our customers. See page 20 for more information on our resilience efforts.

Hazard definitions

	Riverine flooding	Increased frequency and intensity of rainfall alter the frequency and intensity of river flooding, which can damage low-lying equipment and infrastructure assets.
	Surface water flooding	Increased frequency of extreme rainfall leading to floods including flash flooding, which can damage low-lying equipment and infrastructure assets.
	Extreme heat	New extremes of high temperatures, more frequent hot days and longer-lasting heatwaves, which can result in the loss of use or failure of equipment and infrastructure.
	Coastal inundation	Rising sea levels and higher incidence of extreme sea events including sea water flooding due to high tides, low air pressure and waves, which can damage coastal assets.
	Bushfires	Increased incidence of fire weather due to confluence of days with higher temperatures, high wind speeds and drier conditions. Flames and heat from burning vegetation can damage equipment and infrastructure.

We modelled the climate impacts on assets under two opposing Representative Concentration Pathway (RCP) scenarios taken from the Intergovernmental Panel on Climate Change (IPCC). These are outlined in Figure 13 as Scenario 1 and Scenario 3.

The IPCC has recently released updated Shared Socioeconomic Pathways (SSPs) scenarios with its 6th Assessment Report. As its required data is not available, we have used data from the 5th Assessment Report for our scenario modelling. We will update our analysis when the 6th Assessment Report data is available.

We conducted the assessment over three time horizons: short term (2030), medium term (2050) and long term (2100). The model overlays localised climate hazards with asset costs to produce a financial output of Technical Insurance Premium (TIP).

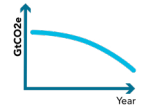
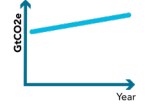
Technical Insurance Premium (TIP)

TIP is a risk indicator expressed as an absolute dollar number, derived by multiplying three elements:

- 01An asset’s full replacement cost
- 02The proportion of that full asset replacement cost assigned to each element that might get damaged
- 03The probability of that damaging event occurring in a given year

More information on the modelling methodology, assumptions and limitations is in Appendix 1.

Figure 13: Physical risk scenarios

Physical risk scenario	Description
 Scenario 1: RCP 2.6 Warming limited to 2°C by 2100	The global community agrees on the need to decarbonise. Global harmony limits warming to 2°C in an orderly transition. This glidepath, which is the least-cost option, will best protect economically sensitive regions from the physical and financial implications of climate change.
 Scenario 3: RCP 8.5 Warming exceeds 4°C by 2100	No policy implementation or intervention to support an economical transition towards decarbonisation. Physical impact of climate change and natural disasters are the most prominent under this BAU scenario.

Selecting hazards and assets

Our physical risk analysis commenced with identifying hazards and assets most relevant to our business, and for the specific climate conditions in Singapore and Australia.

For Singapore, we determined these hazards and assets through a high-level qualitative analysis of 82 Singtel assets across seven hazards (riverine flooding, coastal inundation, fire weather stress, drought stress, extreme heat, precipitation stress and tropical cyclone). These 82 assets are located in flood-prone areas and hotspots identified by the Public Utilities Board. The rest of our assets are excluded from the analysis as they are housed in buildings or not critical.

Figure 14 showed that of the 82 assets:

- All have very high exposure to precipitation stress
- All have high exposure to extreme heat
- Three assets have high to very high exposure to coastal inundation (sea level rise)
- Two assets have very high exposure to riverine flooding

We then identified ten assets that are the most vulnerable to the range of hazards but core to our business (comprising mobile base stations, equipment cabinets and exchanges) with distinct geographic locations. They are then included together with the highest risk hazards in our subsequent quantitative modelling. Given precipitation stress typically manifests as flash floods in Singapore, we narrowed the focus of precipitation hazard to surface water flooding in this model.

For Australia, the hazards selected were based off the pilot project we conducted in Northern Rivers region in northern New South Wales in FY2021. Through this study, we found that bushfires, riverine flooding and extreme heat present the highest

Figure 14: Result of Singapore physical climate risk assessment

82 assets	 Tropical Cyclone	 Riverine Flooding	 Sea Level Rise	 Fire Weather Stress	 Draught Stress	 Heat Stress	 Precipitation Stress
Exposure Rating							
 Very High	0	2	1	0	0	0	82
 High	0	0	2	0	0	82	0
 Medium	0	0	5	0	0	0	0
 Low	0	0	0	59	3	0	0
 Very Low	82	80	74	23	79	0	0

risk to our assets. Given the large geographic spread of our network operations in Australia, we included a larger number of assets – 1,909 in total (covering core assets like controlled environmental vaults (CEV), towers, fibremux and macrocells) – in this quantitative model to provide an accurate representation of climate hazards and their associated costs.

We also assessed each asset’s dependencies on power supply, looking at the failure probability of their nearest electrical substation and whether a hazard event may cut power supply to our assets. These inputs were used to derive the associated financial impact in the form of TIP.

The results from this work inform our strategy to increase the resilience of our assets.

Results

For Singapore, we found that without proactive and adaptive network design and deployment, surface water flooding is the hazard which will potentially cause the highest financial impact on capital expenditure for asset repair or replacement under both RCP scenarios and across all years. Table 3 provides key findings from the modelling outcomes.

The results suggest that in the near to medium term, we should continue to focus our capital expenditure on raising the height of equipment rooms at our exchanges at low-lying flood-prone sites, installing flood gates at the entrance of our equipment

rooms, and using sandbags to mitigate the impacts from flash flooding. Long term flood mitigation plans are also currently under discussion, with a range of options from installing a detention tank to collect flood water, to relocating any existing low-level power points to a higher location.

We will continue to ensure adequate cooling for our exchanges to prevent functional failure from extreme heat. In the long term, we will focus our capital expenditure on ensuring the resilience of energy supply that powers our exchanges and mobile base stations through onsite renewable energy generation as much as we can.

Table 3: Key results for Singapore and Australia

Items	Key results for Singapore	Key results for Australia
Critical hazards with highest potential financial impact	Without proactive and adaptive network design and deployment, we found the following hazards to potentially have the highest financial impact on capital expenditure for asset repair or replacement in 2030 and 2050: Surface water flooding: Highest financial impact due to a combination of factors, including proximity of assets to bodies of water, increased heavy rainfall events and drainage infrastructure in an urbanised landscape. Extreme heat: Expected to slightly increase between 2030 and 2100, with heat-related failure occurring once every 1.4 years for exchanges by 2100 due to this asset type's low temperature thresholds for heat failure. Contrary to our expectations, the modelling found that the risk of sea level rise is low, as all coastal assets are currently sufficiently elevated.	Without proactive and adaptive network design and deployment, we found the following hazards to potentially have the highest financial impact on capital expenditure for asset repair or replacement in 2030 and 2050: Bushfires: Highest financial impact across 2030, 2050 and 2100, due to increased vulnerability of Australia's native vegetation to hotter and drier conditions Riverine flooding: Highest financial impact in the long term for control rooms, with moderate impact in near to mid term; but low impact for all other assets Extreme heat: Significantly increases between 2050 and 2100, with heat-related failure expected to occur once every 1.2 to 1.8 years for control rooms and fibremux assets by 2100.
Asset type likely to incur highest average TIP	We found that without proactive and adaptive network design and deployment, exchanges are the asset type likely to incur the highest average TIP due to physical impacts from climate change. Specifically, the average TIP could potentially increase from \$433,020 to \$476,475 per asset from 2030 to 2050 in the BAU scenario, due to their high replacement costs in Singapore.	Optus' macrocell assets have the highest average hazard TIP figures in both scenarios and all analysed years. This can be attributed to their greater VAR* than the other asset types, with NSW being the state with the highest average maximum VAR. We found that the average TIP for macrocells could potentially increase from about A\$4,898 to A\$5,508 per asset from 2030 to 2050, due to the high volume of macrocell assets at risk across Australia.
Critical sites at risk	As surface water flooding is our most significant physical risk, our critical sites found to be at risk are in low-lying, flood-prone areas such as the Central Catchment and Lower Seletar Reservoir.	We found New South Wales to be the state at highest critical risk of facing negative physical impacts from climate change (see Figure 15). These individual assets are also at risk: Broulee (New South Wales), Caboolture (Queensland) and Green Head (Western Australia).
Asset dependencies	We found that by 2100, all ten assets analysed could be at high risk of failure without adaptation due to physical climate events interrupting electricity supply.	We found that by 2100, without adaptation and mitigations, 27% of assets analysed could be at high risk of failure due to physical climate events interrupting electricity supply, up from less than 1% in 2050.

* Value at Risk percentage (VAR) is an asset's TIP expressed as a percentage of its replacement cost.

For Optus, we found that bushfires present the highest financial impact across all timeframes (2030, 2050 and 2100) and under both RCP scenarios, due to the impacts that hotter and drier conditions have on Australia's native vegetation.

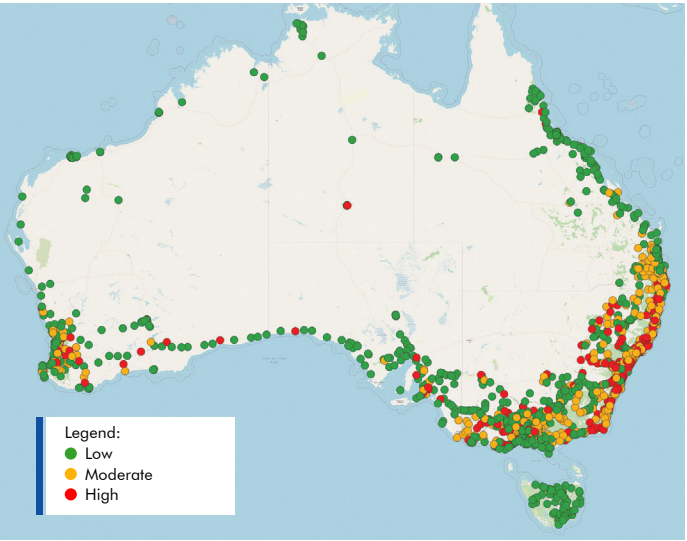
We also found bushfires to be the dominant hazard for all asset types in all years, except CEVs, where riverine flooding is expected to be more significant in the 2100 timeframe. The key findings from our modelling outcomes are summarised in the Table 3.

The results suggest that in the near to medium term, we should focus capital expenditure on minimising the vulnerability of all assets, in particular macrocells to bushfires, and on adaptive design for CEVs to ensure they are resilient to riverine flooding.

This could include the addition of fire-resistant filters, replacement of treated pine retaining walls with durable concrete-based retaining walls, and examining vegetation in close proximity of our assets for any dead part removals, which would be particularly vulnerable to trapping embers, and raising the height of our equipment at our CEVs.

In the long term, we will focus our capital expenditure on providing adequate cooling for our CEVs and fibremux assets, and strengthening the resilience of our energy supply to physical climate events through onsite renewable energy generation.

Figure 15: Results of modelling on our assets in Australia



Bushfire prediction exercise

Australian bushfires have impacted mobile coverage during disaster events when communities are most in need of reliable telecommunications services. Since 2021, we have been working with Australia's national science agency CSIRO to conduct a research investigation to understand the vulnerability of our assets and improve the bushfire resilience of critical telecommunications infrastructure.

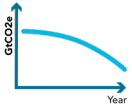
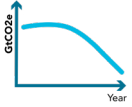
We assessed the potential and nature of impacts of embers, radiation and flame on and around Optus sites with telecommunications equipment. We then developed maps using information on topography, fuel load, vegetation type and local bushfire weather severity to assess which sites are most at risk, to inform our risk mitigation strategy. This strategy included deploying capital to effectively plan for hazards and making design changes to our sites.

From this study, we have implemented mitigation activities at two sites in Victoria to demonstrate the potential of larger, longer term resilience programmes. Examples of threats identified and how we have addressed them are detailed in Table 4 on the next page.

Table 4: Addressing vulnerabilities to bushfire threats

Threats	Vulnerabilities	Solutions
Ember attack and surface fire threats	- Shelter gaps allow embers to collect - Exposed generator inlet - Door filter and mat vulnerability	- Bury metal skirting attached to shelter surroundings (with 2mm perforations to allow ventilation) - Install generator inlet shielding (letter box) - Replace door filter and mat
	- Various shelter cooling inlets with poor or no filtering - Exposed cable ways to nearby surface fires or that allow embers to collect - Flammable debris (bark, leaves, twigs, weeds etc.) on cable way, shelter roof or compound surface	- Add fire resistant filters - Fully enclose open cable ways up to a height above exposure area - Regularly remove debris, especially during times of high fire threat - Weeding and sealing the compound surface
	Plastic lids or inspection hole covers with flammable debris in close proximity	- Replace with fire-proof material, e.g. concrete - Regularly remove debris
Consequential fire threats	Treated pine retaining walls act as a consequential threat and are a health and safety risk	Build concrete retaining walls, which are more durable
Tree damage	Trees located close to infrastructure could potentially fall and damage infrastructure during storms or bushfires	Engage an arborist to assess trees on asset sites on a regular basis and remove dead parts of the tree and any surrounding debris

Figure 16: Transition risk scenarios

Transition risk scenario	Description
 Scenario 1: net-zero aligned orderly transition Warming limited to 1.5°C by 2100	The global community agrees on the need to decarbonise and limit warming to 1.5°C through stringent climate policies reaching net zero emissions around 2050. This glide path is the least-cost option, and will best protect economically sensitive regions from the physical and financial implications of climate change.
 Scenario 2: Delayed or disruptive decarbonisation Warming limited to 1.8°C by 2100	Decarbonisation occurs in the same timeframe as the orderly transition scenario. However, the path is different, less cost-effective, more delayed and more disruptive. More drastic policies introduced from 2030 in an effort to expedite the global economy's alignment with net zero emissions.

Transition risks modelling and analysis

Based on the previous TCFD-related work undertaken in the FY2021 pilot, we refined and expanded our climate scenario analysis and adaptation exercise across our Singapore and Australian operations to quantify the potential financial impact of capital risk and risk of stranded assets, carbon pricing and counterparty risk under two net-zero 2050 transition scenarios.

We maintained the same three time-horizons: short (2030), medium (2040) and long term (2050), and adjusted parameters from FY2021, such as the degree of warming ambition, to

reflect the global uptake of net-zero 2050 targets aligned with keeping global warming to 1.5°C or well below 2°C by 2100. More information on the scenario narratives used for stress testing transition risk, as well as our two-step process for the stress testing exercise, are presented in Figure 16.

Further information on the modelling methodology, assumptions and limitations is in Appendix 1.

Qualitative analysis

We began our assessment with qualitative analysis to identify the transition risks that could impact our business, which involved identifying a range of universal levers relevant for Singtel

Group’s climate scenario analysis, then agreeing upon five first order levers for a preliminary investigation.

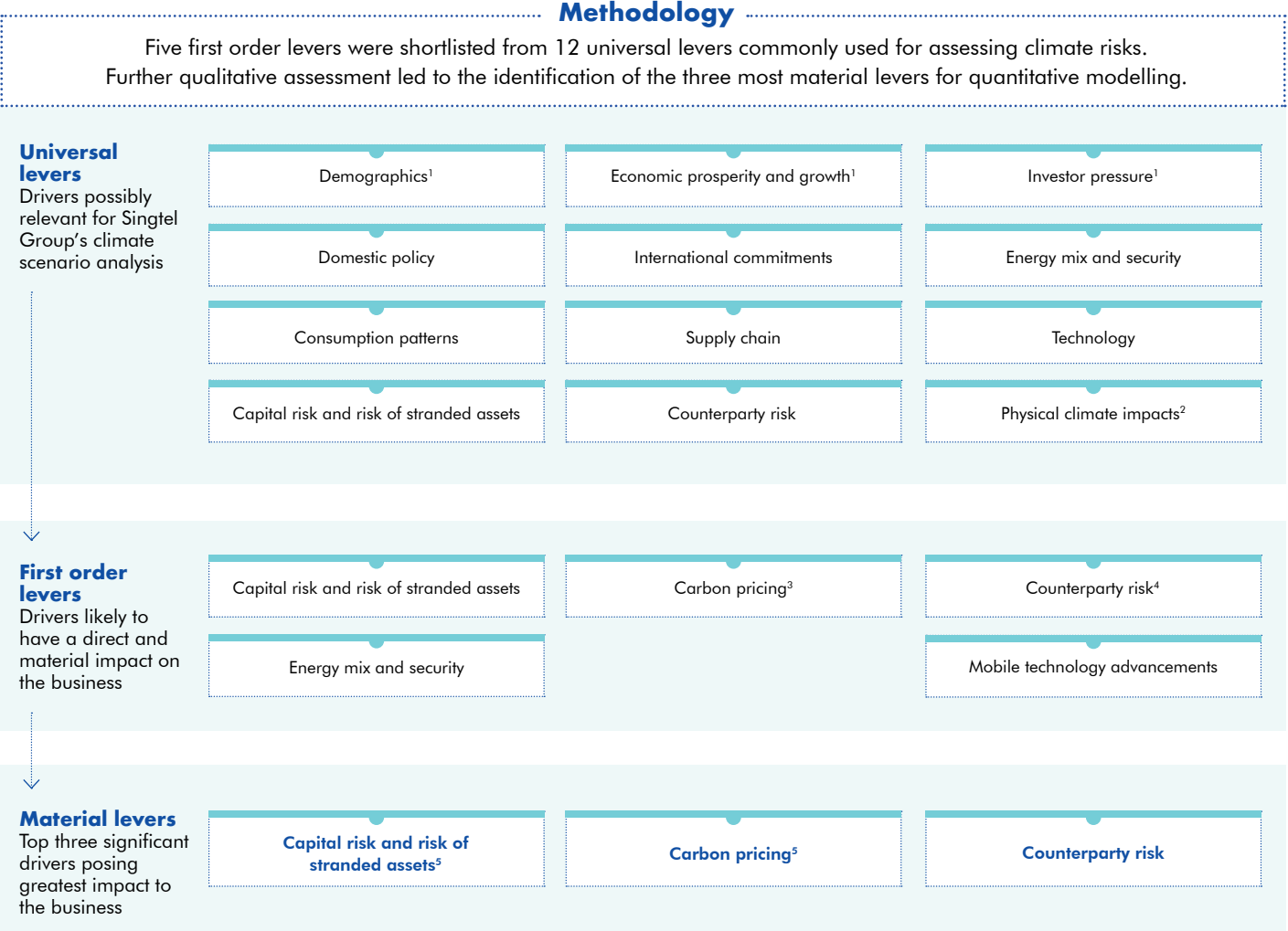
We assessed the risks and opportunities for each of these levers through desktop research with reference to the Cambridge Institute for Sustainability Leadership ClimateWise Transition Risk framework and the Singtel Group risk criteria. Through this review, we identified the three levers that pose the greatest impact to our business, which were then used in the quantitative modelling in step 2.

Figure 17 depicts our process for narrowing down the most material levers and the definition of these levers. Our FY2022 analysis was informed by the modelling and hypothesis

developed in the FY2021 pilot phase conducted in Australia (see SR2021 page 20-21). We initially used the same three material levers for our Australian operations that pose sufficiently significant impact for our Singapore operations that warrant in-depth analysis.

However, we have since refined the definition of our material levers to capture more accurately the nature of each risk, and we are currently working to refresh the qualitative analysis for our Singapore and Australia operations. We expect this refresh may identify new material levers for quantitative modelling in future years.

Figure 17: Risk selection process of qualitative assessment



1. Not shortlisted due to difficulties establishing causal linkages between these levers and climate change for quantitative modelling, or the organisation’s ability to control these factors
2. Addressed separately in physical risk modelling
3. Combines the universal levers of ‘domestic policy’ and ‘international commitments’
4. Includes aspects of ‘consumption patterns’ and ‘supply chain’
5. Quantitative modelling includes certain aspects of ‘energy mix and security’

Three most material levers identified from the FY2021 TCFD pilot conducted in Australia

- 1. **Carbon pricing:** Impact due to carbon pricing, an instrument that levies a cost to companies for their carbon emissions.
- 2. **Capital risk and risk of stranded assets** (previously 'capital allocation'): Impact due to early retirement of our network assets (for Optus) and increase expenditure to meet data centres carbon reduction (PPAs and energy efficiency (EE)) expectations rather than retirement (for Singtel).
- 3. **Counterparty risk:** Impact on business continuity due to critical suppliers' business no longer viable in a low-carbon economy, and customers defaulting on their contractual obligations.

Quantitative modelling

With the three most material levers identified, we then commenced the quantitative modelling. We have refined our scenario modelling methodologies and assumptions from the FY2021 exercise, including a focus shift from quantifying potential financial impact on the Earnings Before Interest and Tax (EBIT) metric, to a broader range of financial impacts including capital expenditure and operating expenditures.

Our FY2022 analysis found that carbon pricing risk as well as capital risk and risk of stranded assets are interdependent and have an impact on the security and mix of Singtel Group's renewable energy procurement. As a result, we included volume and pricing of renewable Power Purchase Agreements (PPAs) in the modelling for these two levers. We also adjusted the modelling focus to account for differences in the operating context between Singapore and Australia.

In Singapore, there are more advanced regulatory measures and market demand around energy efficiency of data centres. Hence our modelling of capital risk and risk of stranded assets focused exclusively on data centres, given the energy intensity of data centres as well as building and technology upgrade cycle is longer compared to other elements of our network, where technology is constantly refreshed. In Australia, where our customer base includes regions where some local economies may be heavily reliant on fossil fuel industries, we extended the modelling of counterparty risk to include the risk of default from individual consumers.

This was based on the premise that certain employment sectors are expected to face challenges in the transition to a low carbon economy. While significant for our Australian operations, this particular risk was deemed insignificant in the Singapore context due to the country's small geographic spread and workforce mobility.

Results from modelling and analysis of key transition risk

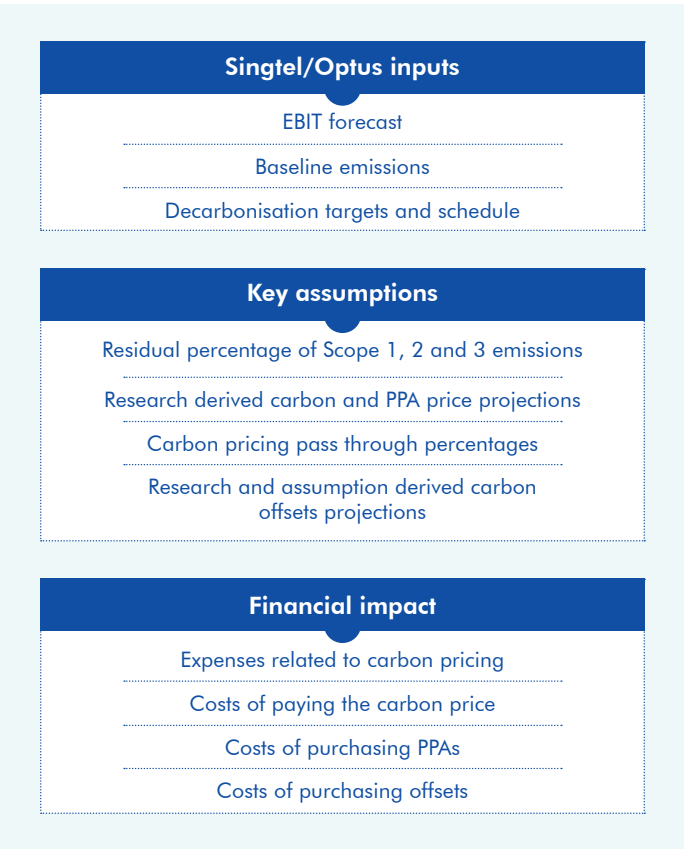
a. Carbon pricing

The modelling approach for carbon pricing risk for Singtel and Optus combined business inputs and key assumptions to derive expenses relating to carbon pricing. See Figure 18 and Appendix 1 for further detail on the modelling approach and methodology.

Across both scenarios and geographies, carbon pricing was found to have a minor financial impact on EBIT ranging from less than -1% to -2% in 2030, and increasing to a more material financial impact ranging between -1% and -8% by 2050 (see Figure 19). This impact was found to be more severe in the delayed or disruptive decarbonisation scenario due to higher carbon prices (see Figure 20), where it acts as a significant instrument to decarbonise rapidly in the disorderly scenario. This financial impact in 2050 is driven by the following assumptions:

- High carbon prices aligned with the Network for Greening the Financial System (NGFS) scenarios, which act as an extreme penalty on carbon in a net-zero economy (see Figure 20).

Figure 18: Modelling approach for carbon pricing risk



The carbon prices we have chosen for the stress testing are far higher than in the International Energy Agency (IEA) World Energy Outlook (WEO).

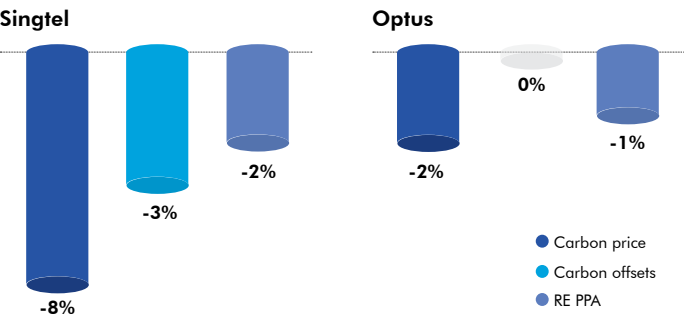
- The application of a conservative lens by including Category 13 (Downstream leased assets) and 15 (Investments) of Scope 3 emissions in our carbon liability and by assuming there would be a small amount of residual emissions across all scopes of emissions despite our current strategy to achieve our 2030 SBTi targets and 2050 net-zero ambitions. Nonetheless, as the majority of Singtel's emissions inventory used for this analysis arise from Scope 2 rather than Scope 1 sources, the expected decarbonisation of the electricity grid due to technology advancements across both scenarios is anticipated to result in lower residual emissions in 2050. Refer to Appendix 2 for details.

Under both scenarios, purchasing a combination of renewable energy (PPAs) and carbon offsets as mitigating measures for the residual emissions is likely to present a lower impact on EBIT (about 3% less by 2050 under the delayed or disruptive decarbonisation scenario) to Singtel Group than directly incurring a carbon price over time. See Figure 19 where a combination of PPAs and carbon offsets would impact EBIT by 5% compared to 8% if carbon price is incurred directly.

Given these modelling outcomes, our mitigation strategy is to explore advancing and increasing procurement of a greater portion of our electricity needs through PPAs in addition to the ongoing use of credible offsets. This solution presents its own challenges, particularly in Singapore where land for

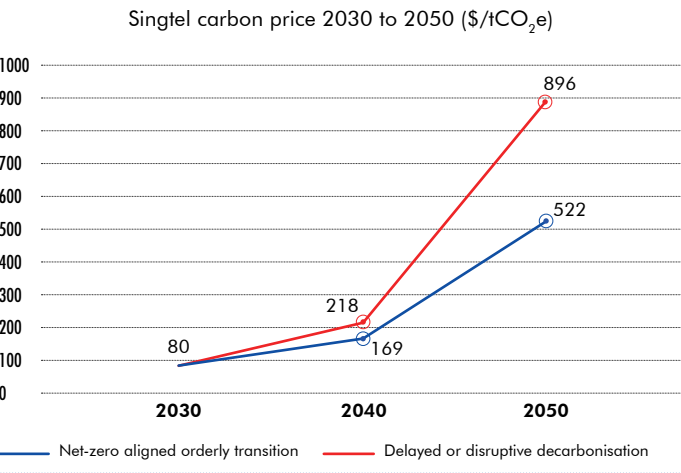
Figure 19: Singtel and Optus percentage EBIT impact from carbon pricing analysis under the disorderly net-zero scenario

Delayed or disruptive decarbonisation: Singtel and Optus potential financial impact (% of EBIT) in 2050 of carbon pricing from a carbon price over Scope 1, 2 and 3 vs carbon offsets over Scope 1 and 3 and PPAs over Scope 2.



¹Similar magnitude of carbon prices is used for our Australia operations across all time horizons, with the main difference being the source of the 2030 carbon pricing (Singapore: latest Government announced pricing; Australia: NGFS)

Figure 20: Singtel carbon price trajectories



installation of solar panels is scarce and likely to lead to PPA supply constraints in the face of increased market demand from corporates seeking to meet their own net-zero targets in future.

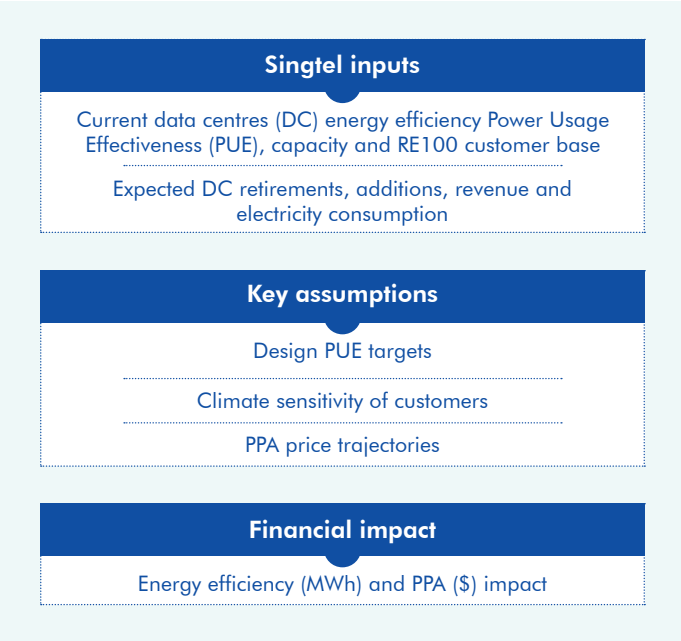
b. Capital risk and risk of stranded assets

For the capital risk and risk of stranded assets, the modelling approach was tailored to each business due to the differences in asset composition between Singtel and Optus. For Singapore, the modelling approach for capital risk and risk of stranded assets combined business inputs and key assumptions to derive energy efficiency and PPA impacts. See Figure 21 and Appendix 1 for further details on the modelling approach and methodology.

Capital risk and risk of stranded assets from the transition to net-zero are found to be more relevant for our Singapore operations than Australia given the different business and asset mix. While we have a large network infrastructure in Singapore, most of our network and equipment exchanges had been depreciated, and mobile networks are upgraded regularly to the latest energy efficient standards. However, data centres for enterprise customers which tend to be more energy intensive continue to be in expansion mode as part of our corporate growth strategy.

Given the longer asset life of data centres, they are at higher risks of exposure due to major changes in regulations or energy efficiency standards and other competitive considerations. Hence the analysis for our Singapore operations focused on data centre assets. In Australia where the bulk of investments is in mobile network infrastructure, upgrades of the electronics and technology tend to be undertaken more regularly hence leaving less risk of stranded assets from energy-related regulations.

Figure 21: Modelling approach for capital risk and risk of stranded assets for Singtel



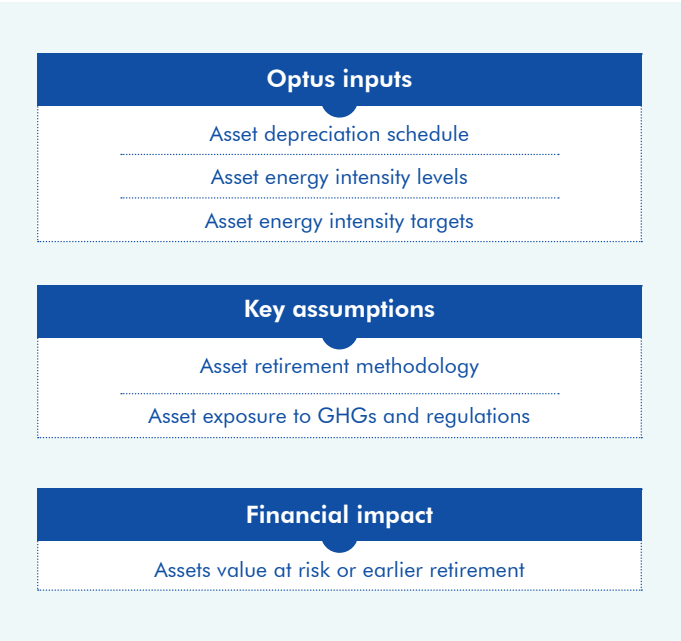
In Singapore, there is a high likelihood that national energy efficiency targets for data centres will be introduced, in line with Singapore's ambition to cut its emissions and become a global hub for data centres. In addition, as customers' understanding of climate issues increases, we expect demand for green data centres to grow.

Should our data centres fail to meet these requirements, we risk losing our market share to more progressive service providers. As several of our incumbent data centres were built many years ago, our analysis has found that the majority of our capital expenditure on energy efficiency improvements needs to take place between now and 2030, to meet internal design Power Usage Effectiveness (PUE) targets.

However, our modelling has also found that emissions abatement on data centres would be primarily driven by renewable energy procurement rather than energy efficiency improvements (see Figure 23), costing us less than 1% of EBIT per year¹ to abate emissions from remaining electricity usage. This is due to the fact that more than 90% of the power consumed in data centres are attributed to running and to cool servers deployed in data centres by tenants. As part of our data centre strategy review, we undertook an initial Marginal Abatement Cost Curve (MACC) analysis for our data centres, as a first step to allow us to better quantify the potential cost impacts for energy efficiency against emissions offset abatement opportunities.

¹This figure is a subset of the amount representing the impact on EBIT from PPA and offsets procurement under the carbon pricing lever.

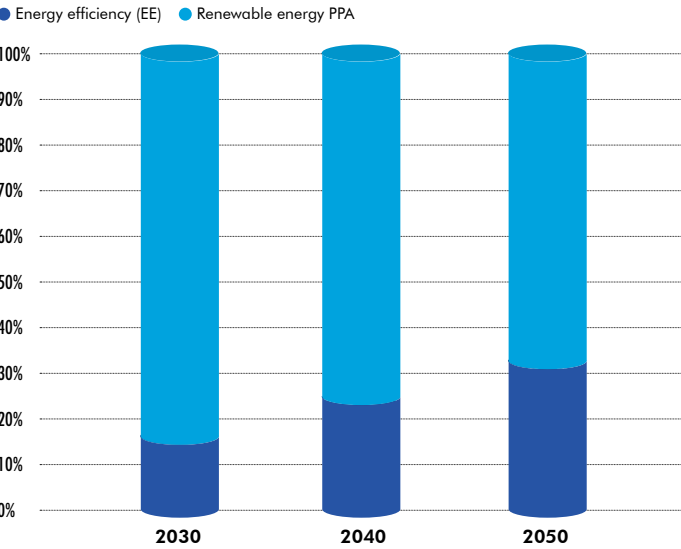
Figure 22: Modelling approach for capital risk and risk of stranded assets for Optus



Capital risk and stranded assets for other infrastructure such as mobile assets are deemed a lower risk and less material because technologies such as 4G and 5G tend to be refreshed in shorter cycles compared to data centres. We are also working with global network vendors who place energy efficiencies central to their technology roadmaps.

Figure 23: Singtel capital risk and risk of stranded asset proportion of energy required to be sourced through a RE PPA

Proportion of energy reduced by EE and sourced through PPAs to meet design PUE targets under the disorderly scenario while achieving net-zero emissions electricity



In Australia, our modelling approach for capital risk and risk of stranded assets combined business inputs and key assumptions to derive asset value at risk of earlier retirement for a small sample of assets. See Figure 22 and Appendix 1 for further details on the modelling approach and methodology.

Our portfolio of network assets reflects our large mobile carrier network business. Given the pace of grid decarbonisation is expected to be faster from current levels in Australia than in Singapore (due to supply constraints for renewables), we deem it unlikely that the Australian Government will introduce any significant energy efficiency targets on electricity-reliant assets to achieve its net-zero goals.

In addition, the retirement of assets in our Australia portfolio will more likely be due to BAU technology upgrades rather than any specific energy efficiency requirements. Notwithstanding, increasing the sourcing of electricity linked to renewable energy is one way for us to offset residual emissions resulting from the energy intensity of our network in Australia.

c. Counterparty risk

Counterparty risk refers to risks in our customer base and supply chain. These parties' actions are outside our control, which makes it difficult to precisely model the overall financial impact on our business in Singapore and Australia.

However, the assessment has improved our understanding of the inherent risk profiles of our suppliers and customers. We have used the exposure to, or relative share of, spend or revenue attributed to sectors with more transition risks (example: transportation and industrials) to represent these inherent risk profiles.

Supplier risk

For our suppliers, the modelling approach (see Figure 24) for counterparty risk combined business inputs and key assumptions to derive exposure of supplier contracts at Moderate and High risk due to an inability to transition. See Appendix 1 for further detail on the modelling approach and methodology.

From our pilot exercise in FY2021, we noted the relative maturity of climate action among our suppliers of major spend. This year's bottom-up deep dive focused on the credibility of the net-zero transition plans of suppliers who were most critical to the business continuity of our services.

The results highlighted that more than half of our most critical suppliers (representing over \$750 million annually in contract value) appeared to be ready for the transition, largely due to their own ambitious emissions reduction targets supported by feasible action plans (see Figure 25 - supplier names and expenditure not disclosed for confidentiality).

Figure 24: Modelling approach for counterparty risk (supplier)

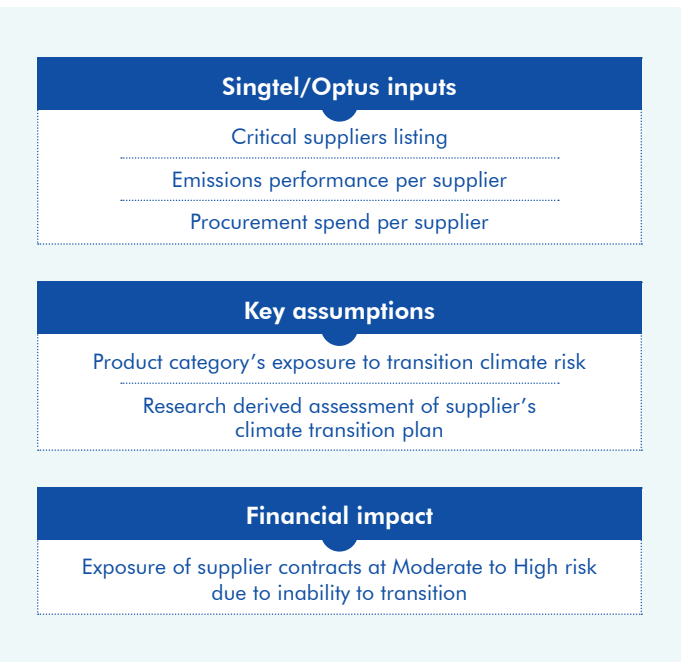
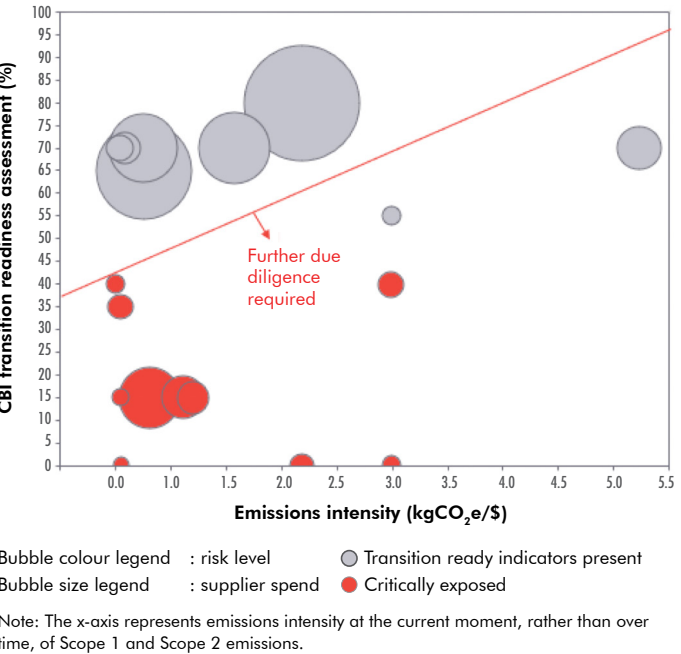
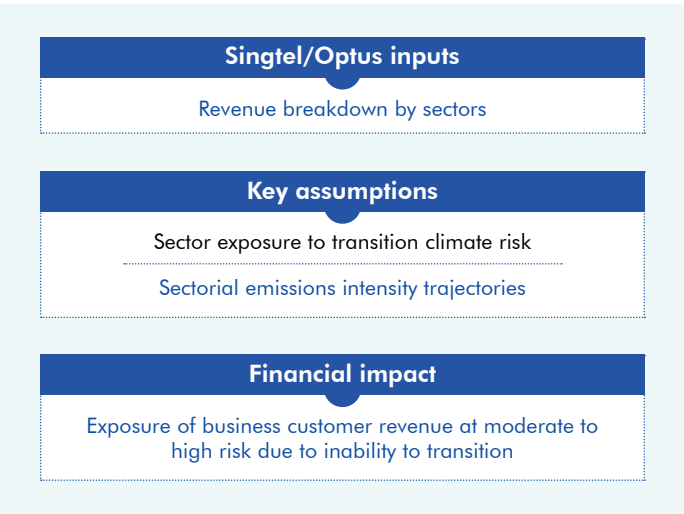


Figure 25: Critical supplier deep dive into credibility of their net-zero transition plans



The results from this assessment have identified opportunities for further engagement with other suppliers on their decarbonisation strategies.

Figure 26: Modelling approach for counterparty risk (enterprise customer)



Customer risk

For our enterprise customers, the modelling approach for counterparty risk combined business inputs and key assumptions to derive exposure of enterprise customer revenue at Moderate and High risk due to an inability to transition. See Figure 26 and Appendix 1 for further detail on the modelling approach and methodology.

We performed an analysis of our enterprise customers using a top-down sector-level approach. Our assessment showed that approximately 5% of our revenue from Singapore and Australia enterprise customers are in high emitting sectors. This number is projected to decline over time as the sectors transition across both scenarios.

The exposure is slightly higher for our Australia operations due to a small portion of higher risk revenue streams – livestock and coal – in Australia’s agriculture and electricity generation sectors (see Table 5). This is a contrast to Singtel’s higher risk industries which centre around energy and resources, transport and industrials.

For our retail customers in Australia, the modelling approach for counterparty risk combined business inputs and key assumptions to derive exposure of retail customer revenue at moderate and high risk due to an inability to transition. See Figure 27 Appendix 1 for further detail on the modelling approach and methodology.

Figure 27: Modelling approach for counterparty risk (retail customer)

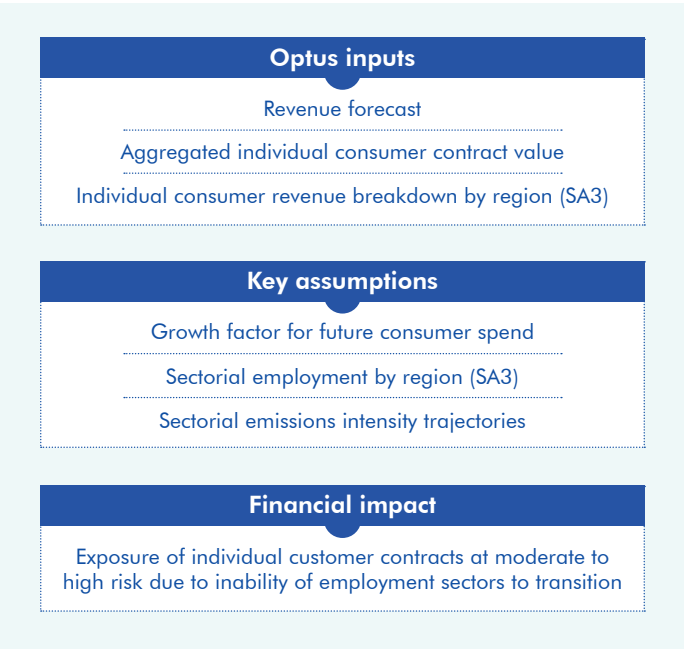


Figure 28: Inherent risk of Optus revenue from individual customers

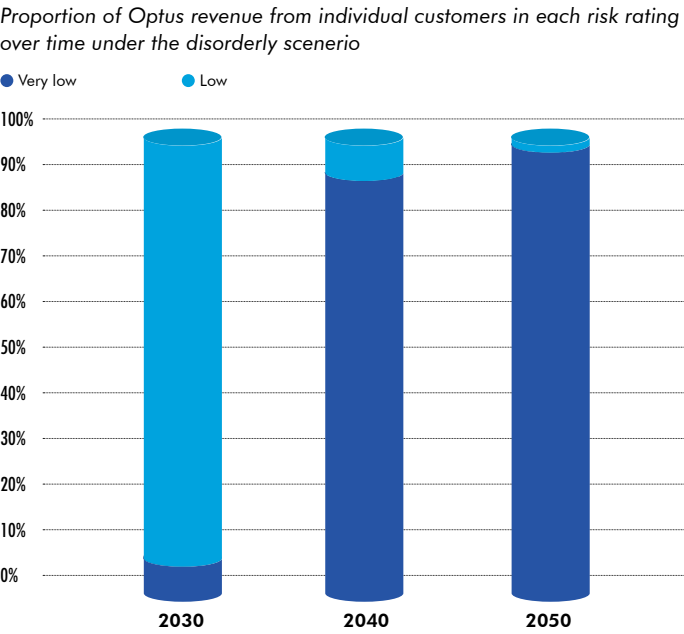


Table 5: Sector-based counterparty customer inherent risk assessment

Industry		2030	2040	2050	High level explanation of inherent risk rating overtime
Singapore	Energy and Resources	High	High	Low	High inherent risk in 2040 and 2050 due to the prominence of oil and gas exports in the Singapore economy with Singapore aiming to build an liquefied natural gas (LNG) hub.
	Transportation and Logistics	High	Moderate	Low	High risk declining to low in 2050 due to the inherent dependency on fossil fuels and difficulty to decarbonise aviation and shipping – both of which are strategic to Singapore’s transport industry. The sudden shock in 2030 under a disorderly scenario corresponds to the high inherent risk rating with moderate inherent risk in 2040 as the aviation and shipping component of this sector continue to decarbonise.
	Industrials	High	Moderate	Low	High and moderate inherent risk in 2030 and 2040 respectively due to the emissions intensive nature of this sector and the challenge it faces in decarbonising, which prolongs its critical period of transition past 2030.
Australia	Agriculture, Forestry and Fishing	Very high	High	High	Very high to high inherent risk across all time horizons due to high methane and nitrogen emissions from livestock and fertiliser with well proven decarbonisation options yet to be developed.
	Electricity, Gas and Water Supply	Very high	High	Low	Very high risk in 2030 due to the large proportion of coal-fired electricity. High risk in 2040 as some coal may remain and gas may take on a larger role in the Australian Government’s gas-led recovery plan. Low in 2050 once the electricity grid reaches net-zero emissions.
	Mining	High	Low	Low	High in 2030 when coal and gas extraction are expected to be strong under Australian Government policy before a sudden and rapid shift away from these commodities and a decarbonisation of other mineral mining in 2040 and 2050.

Our assessment of individual consumer default risk in Australia showed there is insignificant exposure due to the high diversification of industries within each region, with overall risk profiles aligned with the overall decarbonisation trajectory of the Australian economy (see Figure 28).

This is further supported by the fairly inelastic nature of telecommunications demand, and the strong societal, business and government support for a just transition for workers and communities.

The potential risks are assessed to be greater where changing consumer preferences for companies with sustainable products and stronger climate commitments could influence purchasing preferences.

Transition and physical opportunities

Climate change presents a range of physical and transition impacts. Our qualitative and quantitative assessments to-date have focused on understanding the potential negative impacts on our business.

However, we believe that mitigative actions can also enable a range of opportunities, including:

- 

First mover advantage from achieving net-zero emissions and carbon neutral data centres, hence attracting more customers as preference shifts towards green service providers and enabling corporate customers to achieve their net-zero targets
- 

Price premium or increase in market share as a result of being a reliable and resilient telecommunications brand supporting the community in the face of extreme weather events
- 

Cost effectiveness from more energy-efficient operations due to energy savings and emissions avoidance
- 

Innovative ICT solutions can minimise resource consumption in various sectors of the economy, including smart grid solutions and precision agriculture digital solutions

As we further develop and refine our climate risk analysis and mitigations, we have the opportunity to carry out quantitative modelling on key opportunities in future. A summary of key results from the quantitative transition (Top 3 risks) and physical (Top 5 risks) climate risk modelling covered in this strategy section of this report is in Table 6.

These results are inherent rather than residual risk assessment, and do not consider the impacts of current and planned mitigation effort.

Table 6: Summary of key results of transition and physical climate risk modelling

Risk type	Risk	Risk description	Risk trend
Transition	Carbon pricing	Impact on Singtel and Optus EBIT as a result of the introduction of or increase in carbon price, an instrument that applies a cost to GHG emissions for emitters.	Increasing
	Capital risk and risk of stranded assets	Singtel: Energy efficiency (MWh) and PPA (\$) impact on Singtel’s data centres to meet potential regulatory and market expectations of energy efficient and low carbon data centres. Optus: Value of assets that would be at risk as a result of assets being retired earlier than their natural capital depreciation schedule due to the transition to a low carbon economy.	Singtel: Increasing Optus: Decreasing
	Counterparty risk	Impact on our business continuity due to disruptions to critical suppliers because of the economy’s decarbonisation transition, as well as causing business and individual consumers to default on contractual obligations.	Decreasing
Physical	Riverine flooding	Increased frequency and intensity of rainfall changing the frequency and intensity of river flooding, which can damage low-lying equipment or infrastructure assets.	Increasing
	Surface water flooding	Increased frequency of extreme rainfall leading to floods including flash flooding damaging low-lying equipment or infrastructure assets.	Increasing
	Extreme heat	New extremes of high temperatures, more frequent hot days and longer lasting heatwaves which can result in the loss of use or failure of equipment and infrastructure.	Increasing
	Coastal inundation	Rising sea levels and higher incidence of extreme sea events including sea water flooding due to high tides, low air pressure and waves which can damage coastal assets.	Increasing
	Bushfires	Increased incidence of fire weather due to confluence of days with higher temperatures, high wind speeds and drier conditions. Flames and heat from burning vegetation can damage equipment and infrastructure.	Increasing

Modelling performed	Implications for Singtel	Implications for Optus
Projected EBIT and emissions based on internal financial and decarbonisation plans, leading climate scenarios and national government policies. Assessed the financial impact of carbon pricing, carbon offset and renewable electricity power purchase agreements (REPPAs) by applying prices for these costs derived from leading climate scenarios, national government research and market knowledge.	Singtel and Optus are both able to mitigate the risks related to potential future carbon pricing risk due to: 1. Strong decarbonisation strategies including science-based emissions reduction targets and strategies to achieve these targets 2. Rigorous quantitative analysis into the potential financial impacts in line with leading climate scenario data and TCFD best practice Renewable energy generation and procurement will be a key focus to mitigate this risk and deliver on our commitments given that over 90% of emissions under our operational control comes from scope 2 emissions (and therefore likely to be liable under current or future carbon taxes).	
Singtel: Projected data centre electricity consumption based on revenue projections and data centre capacity. Estimated energy efficiency improvements needed for data centres to reach design PUE targets. Projected the cost of REPPAs to account for the residual energy consumption using REPPA price trajectories. Optus: Co-optimised energy intensity and remaining asset value by site type for a sample of higher energy intensive locations with smart meters to reduce average sample energy intensity.	Singtel may face capital risk and risk of stranded asset from market and regulatory forces, but is well prepared for this by committing to: 1. Continuously improving energy efficiency of existing data centres, and building new data centres to highest energy efficiency standards 2. An action plan to procure electricity backed by renewable energy	Optus’ capital risk and risk of stranded assets is low due to: 1. Our action plan to procure electricity backed by renewable energy; our main asset being mobile networks are updated frequently to keep up with technology 2. The relatively fast decarbonisation of the Australian electricity grid and availability of renewable energy reducing the likelihood of future regulations on asset energy intensity
Exposure to transition risk of critical suppliers was assessed individually based on their (Scope 1 and 2) emissions intensity and preparedness for decarbonisation (according to the CBI Transition Principles). Disruption from transitional risk to enterprise customers was determined based on sector exposure and emissions intensity trajectories. Disruption from transition risk to individual consumers was determined based on the sectoral employment of the region of the consumer, and the sectoral emissions intensity trajectories.	The progressive climate and emissions preparedness of our major suppliers deemed critical imply low disruption risk to our business continuity. This inherent risk is further reduced by mitigation efforts that we can take, such as selecting suppliers in sectors of high transition risk such as transport and logistics which have extensive decarbonisation strategies in place.	
Each hazard was modelled under two IPCC scenarios, RCP2.6 and RCP8.5 over three time horizons: short term (2030), medium term (2050), long term (2100). To determine the vulnerability of our assets, the model overlays localised climate hazards with asset costs to produce a financial output, technical insurance premium (TIP). We also assessed each asset’s dependencies on its power supply, by looking at the failure probability of their nearest electrical substation and whether a hazard event may cut power supply to our assets.	Surface water flooding was the hazard with the highest potential financial impact, while extreme heat presents a risk in the long term through functional failure to assets with low heat thresholds. We will therefore continue our risk mitigation efforts including: 1. Raising the height of our equipment rooms at our exchanges at low-lying flood-prone sites 2. Installing flood gates at the entrance of our equipment rooms 3. Using sandbags to mitigate the impacts from flash flooding 4. Ensuring implementation of adequate cooling technology to facilitate equipment functioning Contrary to our expectations, the modelling found that the risk of sea level rise is low, as all coastal assets are currently sufficiently elevated.	Bushfires present the highest financial impact, while extreme heat presents a risk in the long term through functional failure to assets with low heat thresholds. In addition, by 2100,without further adaptation and mitigation 27% of assets analysed could be at high risk of failure due to physical climate events interrupting electricity supply from the public grid. Our efforts to mitigate these risks include: 1. Removal of vegetation overhanging our assets 2. Raising the height of our equipment 3. Replacing wood shelter structures with concrete or steel-based materials 4. Installing fire-resistant cladding and air filters 5. Implementing adequate cooling technology for our equipment 6. Onsite energy generation and batteries to strengthen the resilience of our energy supply

03.

Risk management

Our enterprise risk management framework

This section covers the overall risk management approach of the company related to climate and other enterprise risks. Our risk management processes facilitate alignment of our strategy and annual operating plan with the management of key risks.

The Singtel Group identifies, assesses and manages risks to reduce the uncertainty associated with executing our business strategies, and mitigate potential adverse impacts on our business.

We have established a comprehensive Risk Management Framework (RMF) at the enterprise level, which sets out our governance structure for managing risks, risk philosophy, risk appetite and tolerance levels, management approach and risk factors. The RMF also includes our risk management policy, guidelines and risk register, and is detailed in our Annual Report.

The Board is responsible for determining the Group’s risk appetite, tolerance and profile, overseeing the RMF, reviewing the Group’s key risks and mitigation strategies and ensuring the effectiveness of risk management policies and procedures. The Risk Committee (RC) and the Audit Committee (AC) review the management of these risks and effectiveness of mitigation strategies and controls.

The Risk Management Committee (RMC) supports the Board and RC in terms of risk governance and oversight and sets the direction and strategies for corporate risk management to be in line with the Group’s risk appetite and tolerance thresholds. Management is responsible for ensuring that the RMF is effectively implemented within the business units, which are supported by specialised functions such as Legal, Regulatory, Cyber Resilience, Insurance, Credit Management, Tax, Treasury and Group Sustainability in the management of risks.

In addition, through stakeholder engagement and materiality assessments, we regularly review and assess the ESG risks that exist or emerge in our broader value chain, and we address them with various corporate sustainability initiatives.

Climate change poses a range of strategic and operational risks to Singtel Group. These can include risks such as financial risks as a result of stranded assets in the transition a low carbon economy, disruption of business activities and damage to network infrastructure due to extreme weather events as well as impact to people’s livelihoods, and others described on Figure 10 on page 15.

Our approach is for each business unit to identify, assess and manage risks within their own risk register, action plan, annual business planning and budgeting process. For example, natural disaster risk is considered from the perspective of infrastructure damage, such as from bushfires and flooding, and sits within the remit of the Networks business unit.

Moving forward, we are working towards formalising the integration of climate risk into our RMF by leveraging our recent climate risk assessments described in the previous chapter. We intend to scale and formally incorporate these activities into decision-making processes to better manage climate risks within our business, for example by ensuring our infrastructure is resilient to physical risks and by mitigating the financial risks from the transition to a low carbon economy.

We also review climate risks in our broader supply chain and address these risks through various sustainability initiatives. Our risk management processes, summarised in Figure 29, facilitate alignment of our strategy and annual operating plan with the management of key risks.

Figure 29: Singtel Group risk management process



Risk process stages	Status	How are climate risks being managed?
Stage 1: Establishing the Context Defining the business environment within which the entity undertaking the risk assessment operates, providing context for the assessment and the criteria against which risks will be assessed later in the process.	Completed	The climate risks related to Singtel Group are elaborated on page 15.
Stage 2: Risk Identification Identifying Business Unit material risks using inputs from top and senior executives, and research of external and internal information sources.	Completed	The various risk stakeholders and owners are identified within the organisations. They are involved in the risk assessment process.
Stage 3: Risk Analysis Understanding the root causes and factors that contribute to the occurrence of the identified risks and making an evaluation of the likelihood of occurrence, financial or non-financial impact of risks. The overall risk rating is determined using a set of assessment rating scale to provide a consistent way to evaluate and rate risks across specified dimensions.	Completed	The material climate risks, both physical and transition, have been analysed and modelled under selected climate scenarios on page 16.
Stage 4: Risk Evaluation Evaluating the residual risk (remaining risk after considering the effectiveness of the existing controls we have implemented for risk mitigation) to determine whether further actions are required to mitigate the risk further.	Partially completed	Some of the residual risks are elaborated in the climate scenario analysis. However, as we are only at the beginning stage of implementing some of the risk mitigations, the full evaluation of all the residual risks can only be carried out later.
Stage 5: Risk Treatment Determining risk treatment strategies that can be applied to mitigate the identified risks.	Partially completed	For similar reason as risk evaluation, risk treatment can only be completed when we have a comprehensive risk evaluation done.
Stage 6: Monitoring and Review Monitoring risks to ensure that they remain within acceptable levels.	To be carried out	With the completion of the TCFD climate analysis work, the next step is to incorporate the monitoring of climate risks within the current monitoring regime.
Stage 7: Communication and Consultation Consolidating key information gathered throughout the risk profiling process and reporting it to the appropriate level of management and to the Board.	Ongoing	This will be done once the above six steps are completed.
The final stage is Recording and Reporting as a Risk Register to management and the Board.		

04.

Metrics and targets

Realising our climate ambitions requires setting targets, measuring and improving related climate-related metrics. The TCFD framework forms the basis for our disclosure of any material climate-related drivers and impacts on Singtel Group. We disclose a range of metrics to give our stakeholders a better understanding of our efforts and progress in managing our key climate-related risks and opportunities.

Metrics

Our key metrics, including emissions, energy consumption, capital deployment, internal carbon price and remuneration, are detailed in Table 7. We have set our targets according to our strategic priorities and roadmap towards TCFD alignment.

More information on the initiatives that have contributed to our performance across these areas is on page 12 to 15. Other environmental metrics can be found in our Sustainability Report 2022.

Targets

Singtel Group has set ambitious sustainability targets including climate-related ones.

We have also set sustainability performance targets (SPTs) KPIs for emissions intensity and absolute emissions reduction for our sustainability-linked loans and bonds as part of our Sustainability-Linked Bond Framework which can be found [here](#). These targets are aligned to various mid term 2025 sustainability targets committed by the Group.

Here is a summary of our climate-related targets:

Focus areas	Targets and commitments	FY22 progress
Driving decarbonisation in our business	Reduce absolute carbon emissions by 25% for Scope 1 and 2 by 2025, using 2015 as baseline, in line with our 2030 SBTi targets of 42% reduction and 2050 net-zero ambitions Achieve 100% of electricity use to be backed by renewable sources in Australia by 2025	494,680 tCO₂e carbon emissions in FY2022 or 3.3% reduction since FY2015, and 7.2% reduction since FY2021
Increasing our climate resilience	Continue to invest in network adaptation and resilience, while stress testing and disclosing long term climate change risks and mitigation based on various scenarios and in line with the TCFD framework	Total capital investment of \$2.2 billion in our networks
Driving accountability within organisation	Obtain a CDP rating of A-	Maintained A- in CDP rating for FY2022

Table 7: Singtel Group Metrics

Metrics	Performance	
	FY2022	FY2021
Greenhouse gas (GHG) emissions		
Total GHG emissions (tCO ₂ e) ¹	7,811,358	8,449,990
Scope 1	6,322	7,643
Fugitive emissions - refrigerants	3,379	4,584
Fuel combustion - stationary	1,345	1,192
Fuel combustion - mobile	1,598	1,867
Scope 2		
Electricity purchased (location-based)	534,550	536,856
Electricity purchased (market-based)	488,358	525,218
Scope 3	7,316,678	7,917,129
Cat 1: Purchased goods and services	4,173,709	4,774,080
Cat 2: Capital goods	1,880,644	1,906,642
Cat 3: Fuel- and energy-related emissions	61,197	60,264
Cat 4: Upstream transportation and distribution ²	0	0
Cat 5: Waste generated in operations	901	877
Cat 6: Business travel	918	99
Cat 7: Employee commute	3,308	4,958
Cat 8: Upstream leased assets ³	0	0
Cat 9: Downstream transportation and distribution	5,690	9,385
Cat 10: Processing of sold products ⁴	Not applicable	Not applicable
Cat 11: Use of sold products	232,236	270,647
Cat 12: End-of-life treatment of sold products	1,361	1,545
Cat 13: Downstream leased assets	127,578	113,252
Cat 14: Franchises	2,710	2,844
Cat 15: Investments	826,426	772,536
GHG emissions intensity (tCO ₂ e/\$million revenue)	509	540
GHG emissions intensity (tCO ₂ e/TB) ⁵	0.035	0.045
Avoided GHG emissions (tCO ₂ e)	10,042	73,226
Energy		
Total energy use (MWh)	818,979	808,072
Electricity use	805,170	793,672
Fuel use	11,373	11,942
Solar energy	2,436	2,458
Building energy intensity (kWh/m ²)	1,466	1,445
Climate-related opportunities		
Key data centres certified to SS564 Green Data Centre Standard, ISO 50001 Energy Management System and BCA-IMDA Green Mark Platinum Award for existing Data Centres	Kim Chuan Telecommunications Complex 2 and DC West in 2021	
Capital deployment		
Investment in climate adaptation and resilience measures (total capital investment in our networks)	\$2.2b	\$2.2b
Investment in climate mitigation measures (2015 to 2022)	\$126.84m	-
Internal carbon price		
Internal carbon price (\$/tCO ₂ e)	50	-
Management Remuneration relating to ESG KPIs		
Weighting of all ESG-related KPIs on long (LTI) and short (STI) term incentive scorecards for executives and management	LTI: 20% STI: 10%	LTI: 20% STI: 10%
Weighting of Climate-related KPIs on long (LTI) and short (STI) term incentive scorecards for executives and management	LTI: 4% STI: 2%	LTI: 4% STI: 2%

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. Reported in Scope 3 Category 1 and 2 emissions.

3. Reported in Scope 1, 2 and Scope 3 Category 1 and 2 emissions for any upstream leased assets.

4. Not applicable as Singtel Group does not manufacture any products or sell products that require additional processing by the customer to use.

5. Covers Scope 1 and 2 only.

Note: GHG Emissions and Energy indicators are subjected to external assurance by EY in the [Singtel Group SR2022](#)

05.

Summary and next steps

This report marks the first comprehensive TCFD report for Singtel Group where all 11 aspects of the four core elements are disclosed, since we started supporting TCFD in 2018. Completing our first climate scenario analysis for both physical and three material transition risks on organisation-wide basis allows Singtel Group to identify areas to focus and mitigate the materials risks further while leveraging on the opportunities presented in offering ICT solutions to enable a low carbon transition.

This also sets the basis for us to continue to sharpen our approach and strengthen our integration of climate-related matters into our core strategic focus.

This is only the beginning and we will continue to build on it. We will review and update at least on an annual basis our TCFD progress with progressive iteration and refinement of scenarios as well as financial impact analysis. We aspire to accelerate our pace where possible towards net-zero. Some of our next steps are listed below:

01.

Develop a roadmap to net-zero and review our SBTi near term targets to align to 1.5°C scenario
02.

Continue to build climate knowledge at all levels of Board and management through introduction of formalised ESG and climate-related training for them
03.

Refine respective term of reference (TOR) of relevant governing bodies in relation to climate matters for more clarity
04.

Conduct further analysis of climate opportunities for our business
05.

Enable deeper integration of climate risk assessment and management into the Group Risk Management Framework
06.

Engage value chain stakeholders on climate-related risks and opportunities



06.

Appendix

Appendix 1: Methodology, assumptions and limitations

Transition risk modelling

The modelling was based on best available information; however, the results are subject to certain assumptions and limitations set out below:

	Carbon pricing	Capital risk and risk of stranded assets	Counterparty risk
Methodology	We modelled a set of carbon prices against our projected emissions trajectory and decarbonisation targets, including a combination of mitigating measures such as Power Purchase Agreements (PPAs) for renewable energy and purchase of carbon offsets for a more holistic picture of cost impacts.	Singapore: We modelled the scale of abatement measures required between overall energy efficiency improvements and PPA procurement for each data centre. Australia: We modelled the retirement of network assets failing to meet our energy intensity targets.	Suppliers: We assessed the climate transition readiness of each of our critical suppliers against the Climate Bonds Initiative’s Principles for Transition. Enterprise customers: We assessed the exposure of enterprise customers at risk based on the climate transition pathway of their sector. Individual consumers: We assessed the exposure of individual consumers at risk based on the current makeup of economic activities within each area, and the climate transition pathway of those employment sectors.
Key assumptions	A linear emission reduction pathway was assumed to achieve 2030 and 2050 targets, with a small amount of residual emissions in 2050 across all scopes of emissions despite our current strategy to achieve our 2030 SBTi targets and 2050 net-zero ambitions. A further breakdown of the residual emission assumptions is provided in Appendix 2. We obtained carbon prices from the Network for Greening the Financial System (NGFS), International Energy Agency (IEA) and Singapore legislation. To be conservative, the model assumed Category 13 (Downstream leased assets) and 15 (Investments) of Scope 3 emissions would be taxed, and there was no ability to pass the carbon pricing onto customers. Other Scope 3 categories are currently not assumed to be subject to carbon tax, as these are related to imported goods and services, and market acceptable standards around the issue of double counting are evolving.	The model assumed that any capital upgrades implemented in future as part of our business-as-usual technology migration would be aligned with energy efficiency targets or benchmarks.	Our selection of critical suppliers for the analysis was based on factors of Singtel Group’s total spend, the supplier’s emissions intensity and product category. We prioritised suppliers who have critical business model dependence on fossil fuels (example: transportation and power generation) and commodities expected to be in high demand in a net-zero economy (example: electronics).
Limitations	We kept future electricity prices at a constant due to significant uncertainty and a range of other non-climate-related influences in the market. Lack of reliable projections on carbon offset pricing for a range of offset projects resulted in a simplistic assumption of aligning offset pricing with carbon pricing levels.	Singapore: We have only conducted a high level Marginal Abatement Cost Curve (MACC) analysis for our data centres to estimate the potential cost impacts for each energy efficiency abatement opportunity. Australia: Energy intensity was tracked on the basis of the site, rather than the asset (limited smart meter coverage).	The analysis was based on inherent risk and relied on public disclosures, which are not always available. Individual consumers: Sector adjacencies and knock-on effects have not been considered in the analysis.

Physical risk modelling

The physical risk modelling is subject to certain assumptions and limitations described in the table below.

Methodology	The assessment modelled both direct (relating to damage and loss of real assets) and indirect (relating to insurance premiums) physical impacts on two elements of an asset cost: 1. Technical Insurance Premium (TIP) – a risk indicator expressed as an absolute dollar number, derived by multiplying three elements: a) an asset’s full replacement cost, b) the proportion of that full asset replacement cost assigned to each element that might get damaged and, c) the probability of that damaging event occurring in a given year. 2. Value at Risk percentage (VAR) – an asset’s TIP expressed as a percentage of its replacement cost. The climate contribution to the VAR was overlaid with our internal dependencies on the asset to understand our overall exposure to risk for that asset.
Key assumptions	Controlled Environmental Vaults (CEVs) in Singapore were modelled using a default prototype for control rooms. Due to the relatively low heat thresholds assumed for control rooms, the probability of heat failure was deemed to be significant in Singapore.
Limitations	The assessment focused on current assets and did not account for planned assets as a result of the 5G rollout.

Appendix 2: Residual emissions approach

The residual carbon liability for each emissions scope in 2050 for Singtel and Optus as a proportion of 2021 emissions and rationale is outlined below:

	Singtel		Optus	
	Residual emissions (% of FY2021 emissions)	Rationale	Residual emissions (% of FY2021 emissions)	Rationale
Scope 1 emissions	<=5%	Despite our net-zero target, a small proportion of residual Scope 1 emissions has been included in the modelling to be conservative.	<=5%	Despite our net-zero target, a small proportion of residual Scope 1 emissions has been included in the modelling to be conservative.
Scope 2 emissions	<=5%	Residual proportion of Scope 2 emissions in 2050 is derived from the 2022 Singapore Energy Market Authority (EMA) report stating the aim of the Singapore electricity grid to be powered by 95% renewable energy by 2050.	<=15%	Residual proportion of Scope 2 emissions in 2050 is derived from the Australian electricity generation mix from the NGFS.
Scope 3 emissions	<=40%	Residual proportion of Scope 3 emissions in 2050 is derived from Singapore’s National Climate Change Secretariat emission targets which state that total national emissions will be 33 MTCO ₂ e in 2050 after peaking in 2030 at 65 MTCO ₂ e.	<=15%	Residual proportion of Scope 3 emissions in 2050 is derived from Australia’s 2021 Long Term Emissions Reduction Plan which relies on purchasing offsets for 10-20% of total emissions in 2005(610 MTCO ₂ e) to achieve net-zero in 2050.



Singapore Telecommunications Limited
(CRN: 199201624D)

31 Exeter Road, Comcentre
Singapore 239732
T +65 6838 3388

www.singtel.com

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