

A photograph of a wind farm at sunset. The sky is a gradient of blue and orange, with the sun low on the horizon. Several wind turbines are visible, silhouetted against the bright sky. In the foreground, there is a field of dry, harvested crops. A small piece of machinery is visible near the base of one of the turbines.

Climate Change Report 2022





Acknowledgement

We recognise and acknowledge the existing, original and ancient connection Aboriginal and Torres Strait Islander peoples have to the lands and waterways across the Australian continent. We pay respect to the past and present Traditional Owners and Elders of this nation. At Telstra we are enriched by Aboriginal and Torres Strait Islander peoples' contribution to our organisation, and we commit to working with you to build a prosperous and inclusive Australia.



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Cover image: Murra Warra Wind Farm, Victoria

Forward-looking statement disclaimer

This report includes forward-looking statements based on assumptions and information known by Telstra at the date of this report. The forward-looking statements contained within this report are provided as a general guide only and are not guarantees. Telstra believes the expectations reflected in these statements are reasonable as at the date of this report, but acknowledge they involve known and unknown risks, uncertainties and other factors, many of which are beyond the control of Telstra, which may cause Telstra's actual results, performance and achievements to differ materially from those expressed in, or implied by, the forward-looking statements.

These factors include:

- general economic conditions in Australia
- exchange rates
- competition in the markets in which Telstra will operate
- the inherent regulatory risks in the businesses of Telstra
- electricity grid decarbonisation
- the substantial technological changes taking place in the telecommunications industry
- the ongoing impacts of the COVID-19 pandemic
- the geopolitical environment (including the impacts of sanctions and trade controls and broader supply chain impacts)
- the continuing growth in the data, internet, mobile and other telecommunications markets where Telstra operates
- future changes to Telstra's products and services
- the extent, nature and location of physical impacts of climate change and their impacts on our assets, service continuity and supply chain
- changes to forecast supply chain emissions including but not limited to failure of third parties to achieve contractual environmental targets or milestones that have direct or indirect impact on our environmental modelling.

A number of these risks, uncertainties and other factors are described in the 'Chairman & CEO Message', 'Our material risks' and 'Outlook' sections of our Operating and Financial Review (OFR).

The OFR is set out in Telstra's financial results for the year ended 30 June 2022 which were lodged with the ASX on 11 August 2022 and are available on Telstra's Investor Centre website telstra.com.au/aboutus/investors.

In addition, there are particular risks and uncertainties in connection with the implementation of the Telstra's T25 strategy (T25). Detailed business plans have not been developed for the entirety of the strategy and the full scope and cost of T25 may vary as those plans are developed. Further there are risks associated with the Telstra Group's ability to execute and manage the elements of T25 in a sequenced, controlled and effective manner and realise the planned benefits, cost savings and growth opportunities. There are also risks and uncertainties in connection with the proposed legal restructure announced on 22 March 2021. Any restructure is a complex process and we are navigating a range of existing commercial, regulatory, operational and other requirements. There may therefore be delays in implementing some parts of the restructure, or they may not be implemented.

Telstra does not provide financial guidance beyond the current financial year. Telstra's financial ambitions to FY25 and growth ambitions across our portfolio are not guidance and there are greater risks and uncertainties in connection with these ambitions.

Due to the inherent uncertainty and limitations in measuring or quantifying greenhouse gas (GHG) emissions under the calculation methodologies used in the preparation of such data, all GHG emissions data or references to GHG emissions volumes (including ratios or percentages) in this report are estimates. There may also be differences in the manner that third parties calculate or report GHG emissions data compared to Telstra, which means that third party data may not be comparable to our data.

Investors should not place undue reliance on the forward-looking statements. To the maximum extent permitted by law, Telstra gives no representation, warranty or other assurance in connection with the currency, accuracy, reliability and completeness of any forward-looking statements, whether as a result of new information, future events or otherwise.

Telstra assumes no obligation to update any forward-looking statements, and to the maximum extent permitted by law, disclaims any obligation or undertaking to release any updates or revisions to the information contained in this document to reflect any change in expectations and assumptions.

We capture emissions from our majority-owned investments and joint venture interests in our scope 1 and scope 2 emission targets. We capture emissions from our non-majority owned investments and joint venture interests in our scope 3 emission targets.

No offer, invitation or advice

This report is not intended to (nor does it) constitute an offer or invitation by or on behalf of Telstra, its subsidiaries, or any other person to subscribe for, purchase or otherwise deal in any equity, debt instrument or other securities, nor is it intended to be used for the purpose of or in connection with offers or invitations to subscribe for, purchase or otherwise deal in any equity, debt instruments or other securities. Information in this report, including forward-looking statements, should not be considered as investment, tax, legal or other advice. You should make your own assessment and seek independent professional advice in connection with any investment decision.

Unaudited information

All forward-looking figures in this report are unaudited and based on A-IFRS unless otherwise indicated. Certain figures may be subject to rounding differences. All market share information in this report is based on management estimates having regard to internally available information unless otherwise indicated.

Other information

All amounts are in Australian Dollars unless otherwise stated.

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1. A message from the CEO



If ever there was a time for bolder and more significant action on climate change, it is now.

Even a cursory look at the steady drumbeat of scientific reports makes for alarming reading. In Australia, the last decade was the hottest on record. Every decade since 1950 was hotter than the one before. And every year the consequences of inaction compound, with increasing threats of worse heatwaves, unprecedented flooding and bushfires, and shifts in rainfall patterns that will leave some parts of the country drier and others more flood prone.

It is important to be crystal clear about the scale of the challenge we are facing. Climate change is the biggest threat to our economy, our environment, our health, our way of life, our future. It is the defining challenge of the 2020s.

The latest climate reports from the Intergovernmental Panel on Climate Change (IPCC) make plain that this is the critical decade for both emissions reduction and adaptation. In practical terms, to limit warming to 1.5°C we must reach peak global emissions by 2025 and reduce them by at least 43 per cent by 2030¹.

The good news is we have already seen a fundamental change in community attitudes to climate change and the need to put in place measures to protect our planet and the environment. Public sentiment towards the climate has changed, investors are evaluating companies by their exposure – and response – to climate change and many businesses are now stepping up by reducing their own impacts and those of their stakeholders.

As major emitters of greenhouse gases, business has a major role to play. As this report shows, Telstra's approach is to be open about the energy we use, our impact on the climate and transparent about what we are doing to actively reduce it. Our target, to reduce our emissions by 50 per cent by 2030, is consistent with the IPCC's recommendations and measures to achieve it are part of our business strategy, our operational decision making and our approach to market.

I'm proud that Telstra has taken a leadership position by setting bold and ambitious targets to reduce greenhouse gas emissions, investing in renewable energy and maintaining carbon neutral status in our global operations since 2020. These are significant steps, but they are just the start. We are also using our voice and influence to advocate on climate issues, demonstrating our climate and environmental leadership through our actions, and wherever possible enabling and accelerating the action of others. Climate change is everybody's business and there are no sidelines for any of us to sit on when it comes to taking meaningful action. Of all the risks we face from climate change – and there are many – the largest is that this is somebody else's to fix. It is our problem, we all need to be part of the solution and there is not a minute to waste.

Andrew Penn - Telstra CEO

¹ <https://www.ipcc.ch/2022/04/04/ipcc-ar6-wgiii-pressrelease>

2. Executive summary



This Climate Change Report summarises Telstra's climate-related governance, planning, strategy and activities for the financial year 2022. The report aligns with the Task Force on Climate-related Financial Disclosures (TCFD) framework², addressing the four key categories of:

Governance

Our governance around climate-related risks and opportunities, from our environmental risk groups up to the leadership team and board level.

Strategy

The actual and potential impacts of climate-related risks and opportunities on our strategy and financial planning. This includes a deep dive into specific risks through scenario analysis to understand the impacts over time, and how we embed climate-related risks and opportunities into our future decision making.

Risk Management

The processes used by us to identify, assess, and manage climate-related risks.

Metrics and Targets

The metrics and targets we use to assess and manage climate-related risks and opportunities, the initiatives we have implemented and how we are tracking towards reaching these targets.

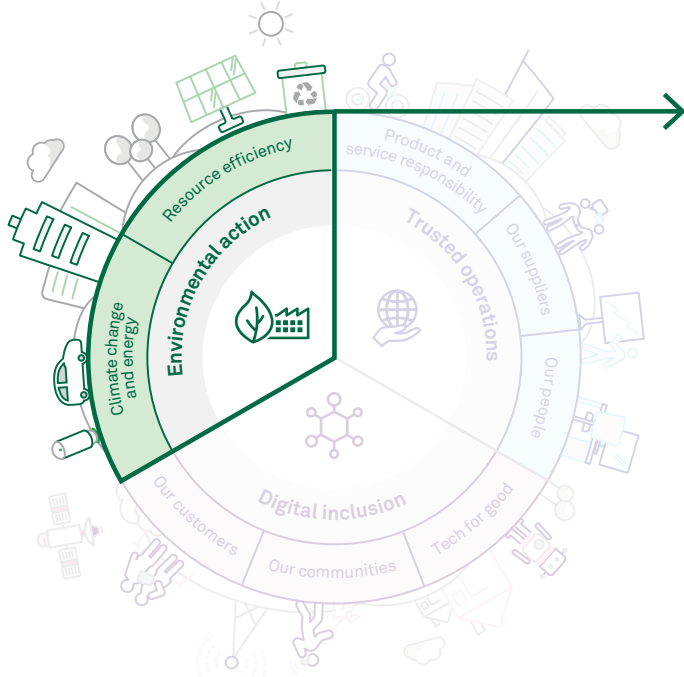
2.1 Supporting the transition to net zero emissions

Telstra's purpose is to build a connected future so everyone can thrive and our [Environment Strategy](#) is a key enabler to achieving this. Our Environment Strategy focuses on using technology to address environmental challenges while also helping our suppliers, customers, and the communities we serve to do the same. Our Sustainability and Environment Strategy (depicted on page 5) goes beyond simply managing our own environmental footprint and encourages innovation in digital products and services that create environmental solutions to monitor, protect and improve the environment.

Doing business responsibly is a key part of our [T25 Strategy](#) which includes the actions we are taking in relation to the environment. We achieved carbon neutral status for our global operations in 2020 and our remaining two climate targets – to reduce absolute emissions by at least 50 per cent by 2030 (from a FY19 baseline) and to enable renewable energy generation equivalent to 100 per cent of our consumption by 2025 – are part of our T25 Scorecard against which management performance is assessed.

² <https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf>

The three pillars of our sustainability strategy help us build a connected future so everyone can thrive



Our environmental solutions are built on the foundations of managing environmental risks and compliance, reporting and disclosure across two key areas

Climate change and energy use

Goals

1. Carbon neutral in our operations from 2020
2. Enable 100% renewable energy generation equivalent to our consumption by 2025
3. Reduce our absolute emissions by at least 50% by 2030 (from FY19 baseline)

Activities

- Decarbonise Telstra
- Decarbonise Grid
- Decarbonise Economy
- Adapt to Climate Impacts

Resource efficiency

Goals

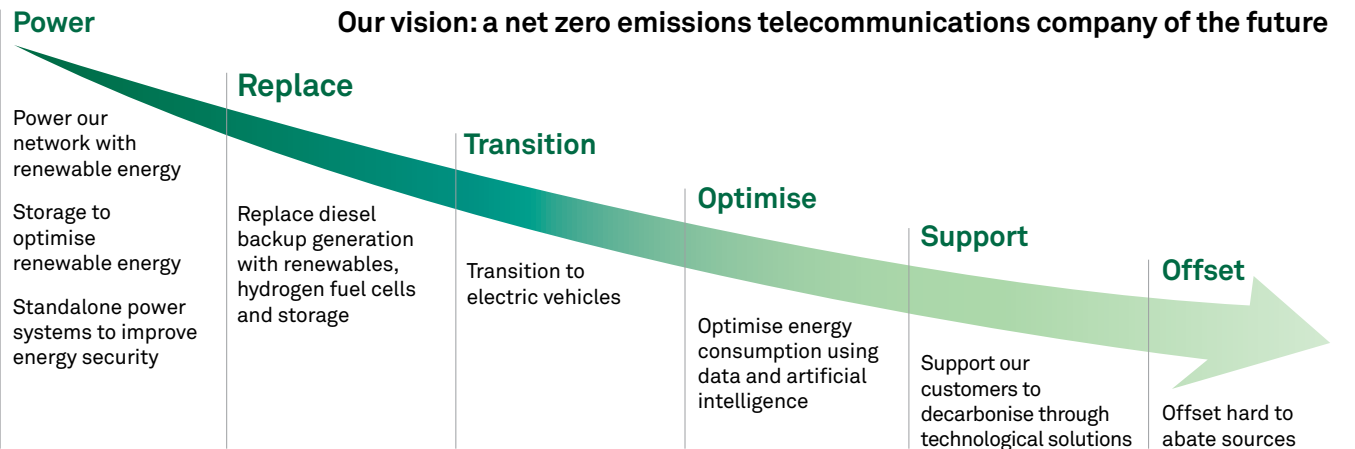
1. Reuse or recycle 500,000 mobile phones, modems and other devices each year to FY25
2. 100% of Telstra branded packaging is made of renewable or recycled material and fully recyclable by 2022
3. Increase our network waste recycling rate to 85% by 2025

Activities

- Create more sustainable products
- Create more sustainable packaging
- Recover network technology
- Improve waste & recycling

Telstra Sustainability and Environment Strategy

In February 2021 Telstra became a signatory to the United Nations Business Ambition for 1.5°C with the goal of setting Science-Based Targets to accelerate action to halve emissions by 2030 and achieve net zero emissions by 2050 in line with the Paris Agreement³. In December 2021 Telstra's 2030 emissions reduction target was verified by the Science-Based Targets initiative (SBTi)⁴. Looking beyond our 2030 target, our 2050 vision for a net zero emissions telecommunications company of the future is shown on the right.



³ <https://www.unglobalcompact.org/take-action/events/climate-action-summit-2019/business-ambition>

⁴ <https://sciencebasedtargets.org/companies-taking-action>

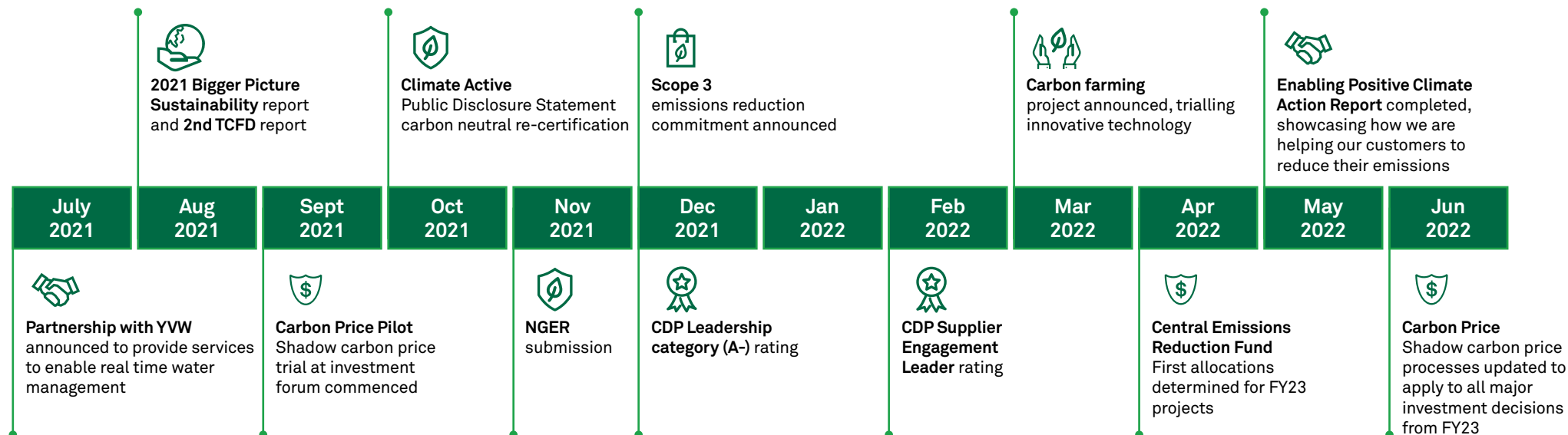
We are committed to leading by example, using our scale and voice to help drive better environmental outcomes on the pathway to net zero emissions. We collaborate on climate issues through our industry associations, including the Business Council of Australia (BCA), Ai Group, GSMA (Global System for Mobile Communications Association), Global e-Sustainability Initiative (GeSI) and the Carbon Market Institute. We have also actively participated in conferences, with speakers at events such as the Carbon Farming Industry Forum in April 2022. A comprehensive list of the industry associations we collaborate with can be found in our 2022 Bigger Picture Sustainability Report.

2.2 What we did in FY22

Highlights of our progress over the last year towards our climate goals are outlined below.

FY22 | Progress and achievements

FY22 Progress against achievements



CDP – formerly Carbon Disclosure Project
 NGER – National Greenhouse and Energy Reporting
 TCFD – Task Force on Climate-related Financial Disclosures
 YVW – Yarra Valley Water

Invested **\$13.7 million** in **energy reduction** projects, saving **13,494 tCO₂e***

Reduced our **scope 1 & 2 GHG emissions** by **14%** from FY19 baseline

Reduced our **scope 3 GHG emissions** by **31%** from FY19 baseline

Reused or recycled **>500K** mobile phones, modems and other devices

Delivered the third **Power Purchase Agreement** we announced in FY21 to build **Crookwell stage 3 windfarm** in NSW

Invested **\$7.5 million** in **decommissioning old network equipment**, saving **46,085 tCO₂e**

Maintained certification as a **carbon neutral** organisation

* tCO₂e: tonnes of carbon dioxide equivalent




3. Metrics and Targets

3.1 Reduce our absolute scope 1, 2 and 3 emissions⁵ by 50% by 2030

In 2020, we set a target to reduce our global scope 1 and 2 emissions by 50 per cent by 2030 (from a FY19 baseline). As part of our commitment to set relevant and industry leading targets, we extended this target to include our scope 3 emissions in December 2021. Our targets have been validated by the Science Based Targets initiative (SBTi) as consistent with a 1.5°C trajectory⁶. Key assumptions to achieving our 2030 emissions reduction target include the rate of decarbonisation of the Australian electricity grid, exiting legacy technology, as well as further reductions in energy consumption requirements for customer devices such as modems.

We are assessing the impact of retail energy growth in relation to our scope 3 emissions profile, and will provide an update once this has been completed. We are also confirming the implications of our recently completed Digicel acquisition in relation to our emissions reduction target, and we will provide an update should there be any material impact once this analysis has been completed.

FY22 progress against targets

Headline targets	SDG priorities alignment	Progress
Reduce our absolute emissions by at least 50% by 2030	Goal 13	 Reduced our Scope 1 & 2 GHG emissions by 14% and Scope 3 GHG emissions by 31% from FY19 baseline
Enable renewable energy generation equivalent to 100% of our consumption by 2025	Goal 13	 Achieved renewable energy generation of 31% towards the target
Carbon neutral in our operations from 2020	Goal 13	 Maintained certification as a carbon neutral organisation



⁵ Scope 1 refers to all direct greenhouse gas (GHG) emissions, these occur from sources that are owned or controlled by the company. Scope 2 refers to indirect GHG emissions from the consumption of purchased electricity, heat or steam. Scope 3 refers to all other indirect emissions not covered in Scope 2 that occur in the value chain of the reporting company, including both upstream and downstream emissions: World Resources Institute and World Business Council for Sustainable Development, [The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard \(Revised Edition\), March 2004](#).

⁶ Targets validated by SBTi on 4 December 2021.

Scope 1 and 2 emissions profile

Our network includes more than 25,000 infrastructure locations including mobile base stations, fixed network sites and data centres located across Australia. Internationally, we have a significant subsea cable network and access to more than 2,000 points of presence globally. Where these sites consume energy (fuel or electricity) they are included in scope 1 and 2 emissions data in addition to energy consumption from offices, retail and vehicles.

Electricity consumption makes up 97 per cent of our total scope 1 and 2 emissions. We have reduced scope 1 and 2 emissions by 182,616 tonnes of carbon dioxide equivalent gases (tCO₂e) (14 per cent) since FY19. Our focus is on reducing these emissions by consuming greener electricity, and through energy efficiency and decommissioning programs. These programs are covered below in 'Decarbonisation plan for scope 1 and 2 emissions'.

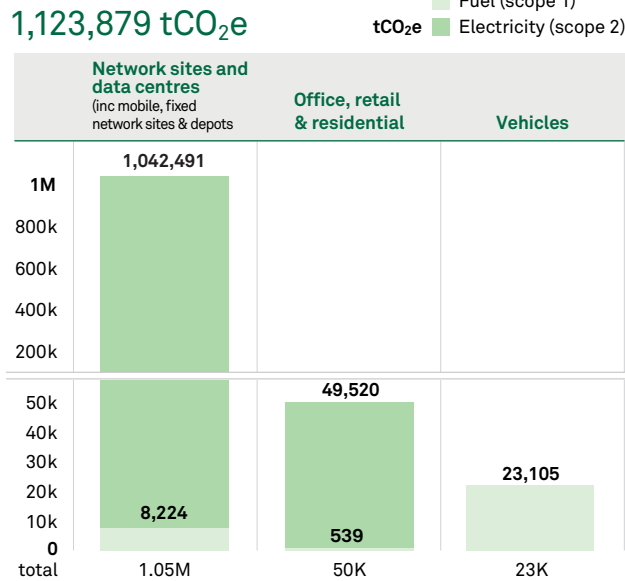


New roof top air conditioning plant



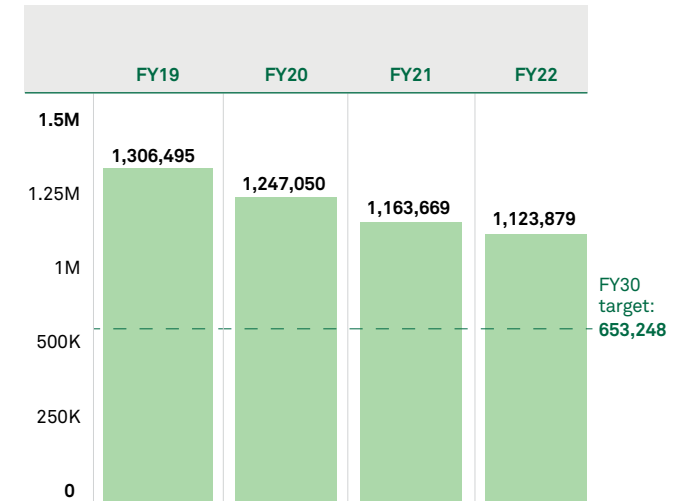
Flemington Exchange site improvements

Scope 1 and 2 emissions FY22



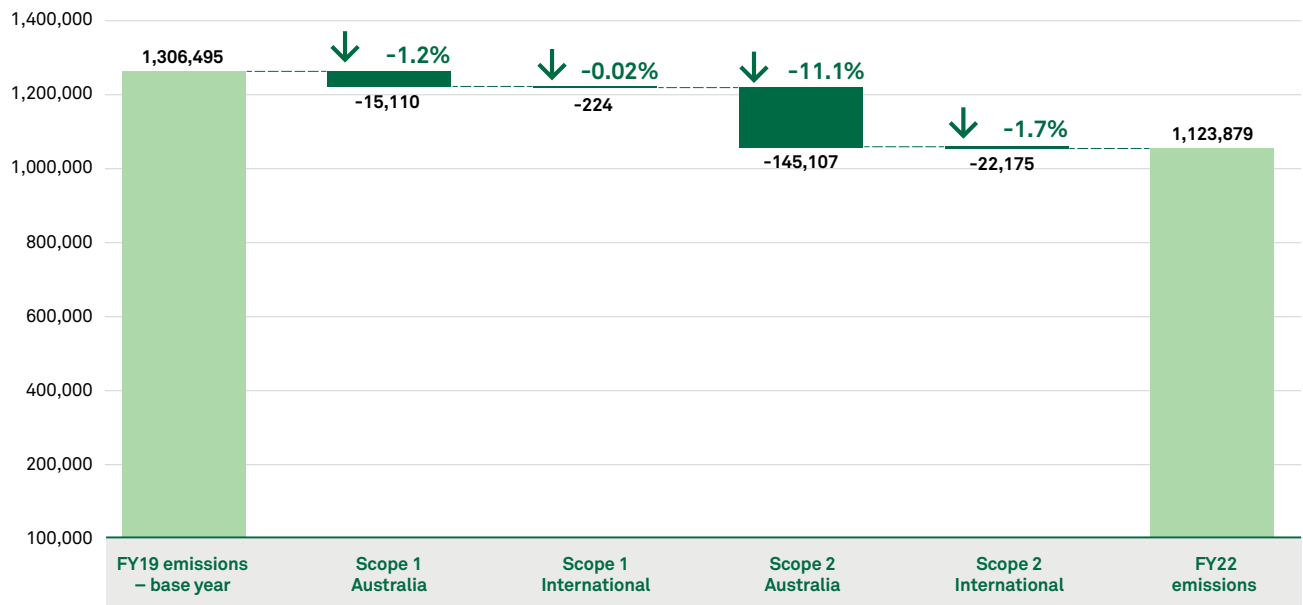
Progress against target

14% reduction since FY19



Scope 1 and 2 emissions (tCO₂e) by location

↓ % contribution to the total FY22 emissions reduction of 14% (compared to FY19 baseline)

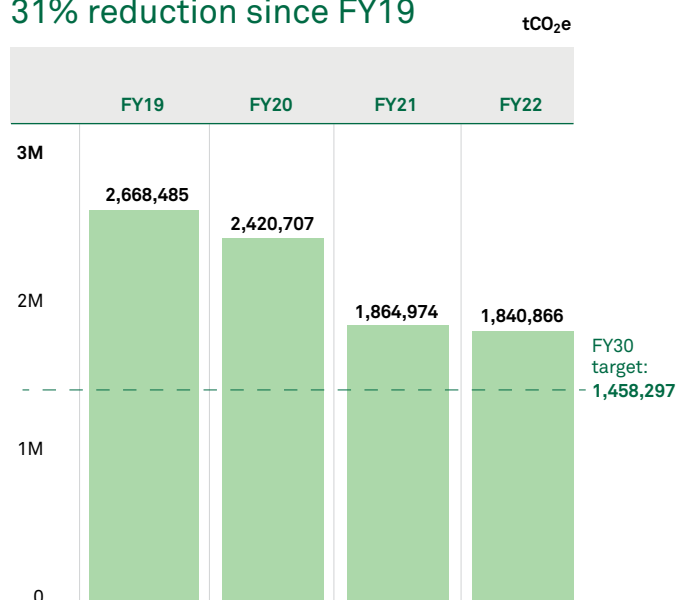


Scope 3 emissions profile

Scope 3 emissions are the indirect upstream and downstream emissions from supply chain activities required to operate our business. As a major telecommunications and technology company, Telstra relies on a large and complex supply chain to support our customers. Telstra's scope 3 emissions, our largest emissions source, are roughly three times greater than our combined scope 1 and 2 emissions. Consequently, the decision to include scope 3 emissions in our 50 per cent reduction target is expected to deliver a significant reduction in our total footprint. Since FY19 we have reduced our scope 3 emissions by 31 per cent. The largest contributors have been reductions in emissions reported by our suppliers and from customer use of our modems.

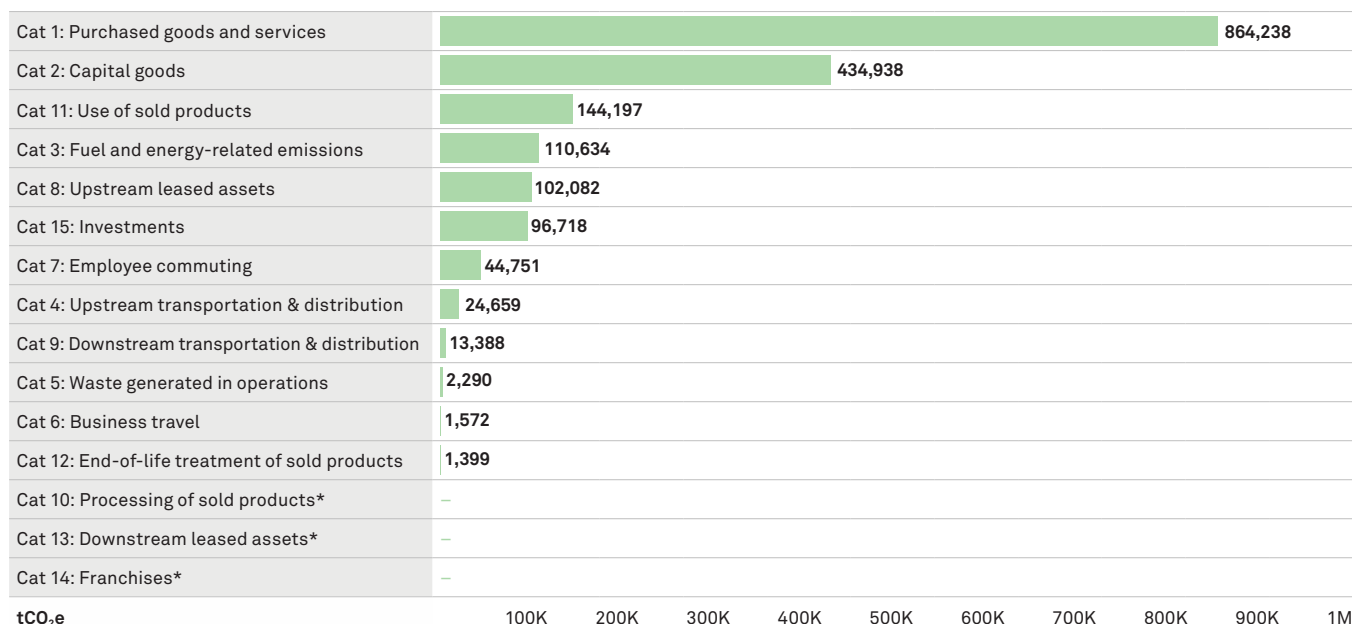
Progress against target

31% reduction since FY19



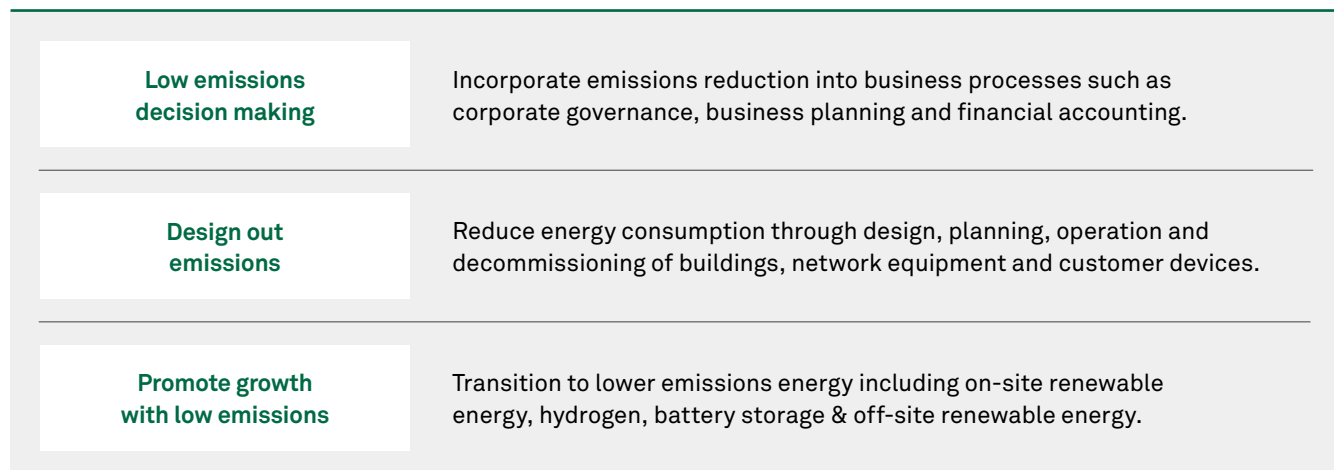
FY22 scope 3 greenhouse gas emissions by category

Total = 1,840,866 tCO₂e






* Not applicable or material. For more information, please refer to our Sustainability Report Data Pack.

Decarbonisation plan



Decarbonisation plan for scope 1 and 2 emissions

Our decarbonisation plan is built on three pillars: low emissions decision making, designing out emissions, and promoting growth with low emissions.

PRINCIPLES	1 Low emissions decision making	2 Design out emissions	3 Promote growth with low emissions
FOCUS AREAS	 Business processes <ul style="list-style-type: none"> • Incorporate emissions impact into operational and financial decision making • Align management performance measures to climate goals 	 Buildings and infrastructure <ul style="list-style-type: none"> • Improve energy efficiency of network building infrastructure • Optimise office buildings • Upgrade backup power generation & storage 	 Network equipment <ul style="list-style-type: none"> • Design future network technology to be low emissions • Optimise network equipment energy consumption in use • Decommission energy intensive technology
FY22 ACTIVITIES	<ul style="list-style-type: none"> • Integrated climate targets into T25 strategy • Aligned company objectives and key results (OKRs) which ensures resources are prioritised for emissions reduction activity • Piloted an internal shadow carbon price to align emissions reduction with financial decision making • Central emissions reduction fund created to support FY23 decarbonisation projects 	<ul style="list-style-type: none"> • Continued executing our network building energy efficiency program, including upgrades to heating, ventilation and cooling (HVAC), lighting, and AC/DC rectifiers • Accelerated building footprint rationalisation • Investigated use of green hydrogen-based fuel cells to reduce diesel generator emissions and increase reserve power capacity 	<ul style="list-style-type: none"> • Continued our targeted program to accelerate decommissioning of legacy energy intensive technology • Engaged network equipment suppliers to integrate energy efficiency into future technology • Leveraged data analytics and remote monitoring to reduce energy load



What we did in FY22

Low emissions decision making - Internal carbon price pilot

In FY22 we trialled a shadow carbon price, recognising that aligning emissions reduction with financial decision making is critical to achieving our target. The pilot focused on understanding the emissions and energy costs associated with our capital investment decisions. Different carbon price options were considered, and a shadow carbon price of \$40/tonne⁷ was applied to investments considered at our Company Investment Forum over Q2 and Q3. The objective was to show the impact on net present value and other financial metrics as a consideration in decision making. The pilot has informed our decision to include a carbon price as part of major investment decisions from FY23. We have also established a central budget to prioritise the funding of emissions reduction capital and operational projects for FY23.

Designing out emissions

To design a net-zero emissions network of the future, we are using a lifecycle approach aimed at reducing energy consumption and emissions across three stages:

- **Design and planning** – taking account of the energy and emissions of future product and network design including customer end equipment.
- **Operate** – optimising products, customer equipment and infrastructure to improve energy efficiency.
- **Decommissioning** – closing legacy product offerings, allowing decommissioning of energy intensive network infrastructure and technology and sites faster.

For our operating assets one of our biggest challenges is to manage the energy efficiency of complex Heating, Ventilation and Air Conditioning (HVAC) systems across a large portfolio of autonomous sites. Our existing alarm infrastructure was able to detect if a facility exceeded the target temperature range, but it couldn't detect a

Reducing energy and emissions

Our activity to improve energy efficiency is across five areas:



Audit & optimise

We undertake energy audits on 360+ facilities each year to ensure assets are operating efficiently.



We have skilled energy managers identifying and implementing optimisation opportunities. These enabled us to **reduce emissions by 1,531 tCO₂e**; or 1,749MWh of electricity savings per annum.



Upgrade building services assets

We have an energy and emissions reduction program, and an energy efficiency framework to ensure new assets are planned, designed and built efficiently.



In FY22 we invested approximately **\$13.7m in energy efficiency projects** that delivered an **emissions reduction of 11,201 tCO₂e**; or 13,236 MWh of electricity savings per annum.



Network facilities efficiencies

Network efficiency opportunities were identified at 131 wireless facilities.



We invested a further **\$1m in energy efficiency opportunities at wireless network facilities**, saving 762 tCO₂e and 718 MWh per annum.



Network decommissioning

Network equipment is removed as customers are migrated off legacy services.



In FY22 we **saved an additional 46,085 tCO₂e and 52,934 MWh** per annum through decommissioning network equipment.



Monitoring & data analytics

Developing capabilities to understand how our assets are performing.



Through the Telstra Helix program, we ran a Data Swarm Environment hackathon to find the ways we can use data and analytics to reduce our emissions.

decrease in energy efficiency. As a result, our engineers have developed an “Energy Monitoring and Alarming System”. This has already been integrated into HVAC controls at 24 high priority sites with new energy sub-metering and is programmed to identify the common faults that we see in our facilities that impact energy efficiency. We now have remote visibility of how the system is operating at those sites, which provides us with a clearer understanding of where and when energy is being consumed allowing us to quickly dispatch technicians to address any identified faults. It will also allow us to identify opportunities to reduce energy consumption. This program is being scaled with the intention of 230 high energy consuming sites being monitored by the end of FY23 and potentially further sites over subsequent years.

Decarbonisation plan for scope 3 emissions

Although we have less control over scope 3 emissions, we aim to influence and support our suppliers and customers to decarbonise. We have already completed a significant program of work to understand our key emissions-generating activities and suppliers. We are also working with our suppliers to include our climate commitments in commercial agreements, set ambitious targets, and consider emissions reduction opportunities in the delivery of their goods and services to us.

⁷ During the pilot, we applied a static price to enable consistency in the data being reported. This figure was based on carbon price benchmarking of selected technology, telecommunication and Australian companies and the carbon price and market outlooks such as CDP, World Bank and Reputex in mid-2021. Telstra intends to periodically review our carbon price to ensure it remains appropriate.

CDP supply chain program

To better understand our suppliers' climate risks, opportunities and metrics, we've partnered with the Carbon Disclosure Project (CDP). Through our 3-year partnership with the CDP (launched in April 2020), we've become their first Supply Chain Program member in Australia and have joined 200+ leading companies with combined annual procurement spend of US\$5.5 trillion⁸. This partnership enables us to deliver training, tools and support to our top 113 suppliers (covering over 78 per cent of our spend), to help them disclose their environmental impacts to Telstra via the CDP⁹.

In October 2021 we hosted a forum with some of our largest suppliers. At this forum we discussed our strategic ambition, how this supports responsible business, the standards we expect from our suppliers and how we can work together towards a low carbon future. Since then, 94 per cent of the suppliers we engaged have disclosed their environmental impacts via the CDP, well above the global average rate. As a result of our engagement, we were recognised in 2022 as a CDP [Supplier Engagement leader](#): one of only two Australian companies recognised and part of the 7 per cent of companies recognised globally. We're now using the information collected from our suppliers to help us further understand the volume of their emissions, and to develop strategies to improve supplier emissions performance. Currently over 75 per cent of our disclosing suppliers have set targets to reduce their emissions¹⁰.



Driving emissions reduction in our supply chain

To help make more informed purchasing decisions, we have a Supplier Governance Framework, which assesses suppliers against twelve categories of risk including environmental risks. We assess these risks as part of our selection and contract renewal process using a combination of due diligence reports, questionnaires, documentary review and, where warranted, onsite audits. Our Supplier Code of Conduct (SCOC) sets out the minimum standards we expect from our suppliers and forms part of our standard purchasing terms. The SCOC has been updated to include

⁸ <https://www.cdp.net/en/supply-chain>

⁹ <https://www.cdp.net/en/supply-chain>

¹⁰ Bigger Picture 2021 Sustainability Report, page 31: <https://www.telstra.com.au/aboutus/community-environment/reports#archive>

PRINCIPLES	1 Low emissions decision making	2 Design out emissions	3 Promote growth with low emissions
FOCUS AREAS	 Supply chain <ul style="list-style-type: none"> Contractual emissions reduction targets in supplier agreements Suppliers transition to using renewable energy Capacity building 	 Customer products and services <ul style="list-style-type: none"> Design modems to improve energy efficiency Design future products to be low emissions Design products to enable emissions reduction 	
FY22 ACTIVITIES	<ul style="list-style-type: none"> Running education workshops with key suppliers to upskill them on climate change Including emissions reduction targets into supplier contracts Encouraging suppliers to disclose their climate action via the CDP Supply Chain program Central emissions reduction fund created to support FY23 decarbonisation 	<ul style="list-style-type: none"> Setting energy reduction requirements in the design of future modem technology Supporting standards like energy efficient ethernet and allowing users to disable features they do not use such as Wi-Fi or mobile backup, which will reduce energy use 	

Historical emissions data

Tonnes of carbon dioxide equivalent (tCO ₂ e)	FY22	FY21	FY20	FY19
Scope 1 total	31,869	33,085	36,905	47,204
Scope 2 total	1,092,011	1,130,584	1,210,145	1,259,292
Scope 3 total	1,840,866	1,864,974	2,420,707	2,668,485

For more detail refer to the 2022 Bigger Picture Sustainability Report Data Pack at our [report website](#). The data pack is a separate document to the Sustainability Report.

enhanced requirements in relation to climate change and resource efficiency. A copy of the updated SCOC was communicated in June 2021 to around 4,900 suppliers engaged in FY21. Suppliers engaged subsequently received the updated SCOC as part of our standard purchasing terms.

We consider suppliers' ability to meet or exceed standards detailed in the SCOC when making procurement decisions.

In addition to the SCOC, we may also include more specific environment requirements in our contract terms based on the risks and opportunities identified. As part of a pilot from FY22, six suppliers signed up to contract terms to reduce their absolute emissions, which will in turn reduce our scope 3 emissions. In FY23 we will continue to roll out these contract terms to more suppliers.

3.2 Enable renewable energy generation equivalent to 100% of our consumption by 2025

Direct investments in renewable energy

Since 2017 Telstra has been underwriting the development of utility scale solar parks and wind farms, to accelerate the decarbonisation of the grid. Telstra's long-term renewable energy contracts now include the Murra Warra Wind Farm in Victoria and the Emerald Solar Park in Queensland, both of which have been operating for a few years. Our newest investment, the Crookwell Stage 3 wind farm in New South Wales will come online in 2023.

In addition to being the principal consumer of the Murra Warra contract, Telstra established a syndicate that enabled ANZ, Coca-Cola Amatil, Monash University and the University of Melbourne to secure long term supply of renewable energy. All of Telstra's offtake agreements underwrite new projects that become permanent generators that inject renewable energy into the grid and displace fossil-fuelled electricity generation over the life of their operation.

To put their size in context, the energy that Telstra sources from these projects was equivalent to approximately 30 per cent of Telstra's own electricity consumption at end of FY22. Our investment in Crookwell Stage 3 will deliver further volumes when it comes online in 2023. Telstra has committed to expanding these investments to enable renewable energy generation equivalent to 100 per cent of our own consumption by 2025.

Energy

Renewable offtake and energy storage are core to our long term energy strategy to manage the risks associated with volatile energy prices.

Current conditions in the energy market (including volatility and regulatory intervention) are unprecedented, but our strategy on energy price risk had already been focused



Murra Warra Wind Farm, Victoria

on protecting against extreme intra-year and increasing inter-year price volatility, including through the use of Power Purchase Agreements (PPAs). Surging energy costs for industrial users who do not have longer term hedging may increase competition for quality PPA opportunities. However, the supply of project opportunities may be expanded as the overall returns available from a project increase in line with rising spot prices.

Our scope 1 and 2 carbon footprint is largely a function of our volume of electricity consumption and grid emissions intensity. Grid emissions intensity will depend partly on the national and global response to energy market dislocation. However, that dislocation does not fundamentally change our views of grid emissions intensity in the medium to long term, and if anything, conditions may drive more uptake of renewables and decrease grid emissions intensity. As such, we do not believe that the current energy market dislocation will significantly increase our medium-long term carbon footprint.

Telstra is also helping customers to access more renewable energy, even if they do not have their own rooftop solar supply. In a pilot project called Shape Shifters, Telstra helped 300 customers to shift their energy consumption from periods when grid renewable energy generation is low or demand is high, to periods when renewable energy generation is plentiful. The pilot explored the role of technology, economics and customer psychology in reducing household emissions. For example, customers were prompted to complete household chores involving dishwashers, washing machines and vacuum cleaners during low energy demand periods in the middle of the day, rather than at peak demand periods in the evening.

During the pilot, over 60 per cent of participating households shifted their electricity usage to an alternate time of day. At scale, time shifting energy use improves grid stability, and reduces market risk and emissions intensity. This is an exciting field of research in which Telstra can play a pivotal role in testing the potential of connected appliances and artificial intelligence.

Supporting the hydrogen economy

Telstra is constantly exploring and trialling new technologies and methods of power generation and reserve for our networks. Recent advances in hydrogen fuel cell technology and hydrogen fuel generation are creating new opportunities to displace fossil fuels, such as diesel. Water is the only byproduct from the use of hydrogen fuel cells to generate electricity. If the fuel cells can be supplied with “green” hydrogen (created using 100 per cent renewable energy), they become a true “zero emissions” technology.

From FY23 Telstra will trial hydrogen fuel cells to provide additional power reserves for our telecommunication sites via a co-investment arrangement with the Victorian Government, and in a pilot with the University of NSW. This will allow Telstra to test the performance and reliability of hydrogen-based power systems, and to better understand the system-wide implications (e.g. for the fuel supply network) of a transition to hydrogen-based solutions.

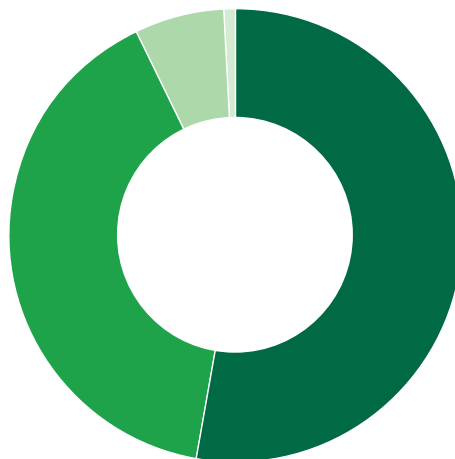
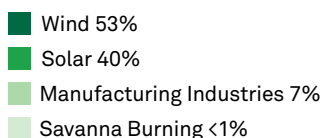
3.3 Carbon neutral in our operations

We were first certified as carbon neutral in July 2020 and are proud to be the largest carbon neutral certified organisation in Australia under the Commonwealth Government’s [Climate Active program](#). Our certification has been achieved by reducing absolute emissions within our operations and offsetting our residual emissions footprint.

Telstra seeks to maximise the global impact of our carbon abatement activity. Our investment in carbon credits is complementary to our decarbonisation activity. Investing in carbon credits accelerates climate action, catalyses community activity, and supports innovation and uptake of emerging breakthrough technologies and practices. With operations in Australian and international markets, we recognise the importance of developing a robust and mature market for sequestration in Australia, and the

value of channelling capital from developed to developing countries in support of climate resilience. In Australia, our offset purchases have been focused on investments in First Nations-led projects in savannah burning, as well as reforestation projects with biodiversity outcomes in Queensland, Northern Territory and [Western Australia](#). This work also complements the Telstra Foundation’s investment in the “[Healthy Country Training AI](#)” initiative.

Our offsets have been sourced from projects that avoid or reduce greenhouse gas emissions. All of the credits purchased are consistent with the Australian Government’s Climate Active program guidelines and our [annual product disclosure statements](#) provide details around our portfolio and the projects. In FY22 we have purchased 2.81 million carbon offsets from wind, solar, and energy efficient manufacturing processes in India and savanna burning projects in Australia.



Telstra’s FY22 carbon offset purchases by project type:

In FY22 Telstra purchased 11,000 Australian Carbon Credit Units (ACCUs) from a First Nations southern Aurukun savannah burning project in Cape York, Queensland. This made up less than one per cent of our total carbon credit purchases in FY22, with the remainder sourced from international projects. Telstra is working not just to acquire carbon credits but to improve the supply of Australian Carbon Credit Units (ACCUs) through our investments and partnerships in carbon sequestration.

Robust carbon offset criteria and standards are critical to ensure the environmental integrity and liquidity of carbon credits and markets. We have a mature governance framework, underpinned by corporate policies, which includes carbon principles, an assessment framework and approvals of credits purchased. Our framework for project assessment aligns to global standards¹¹ for quality carbon credits in the voluntary market. When sourcing carbon credits our overarching objectives include:

- robust determination of the project’s emissions impact (additionality) and governance around the carbon credit program
- avoid double counting of emissions reduction
- address non permanence and carbon leakage issues
- alignment to Telstra corporate policies, commitments, and brand
- enhancing adoption of low, zero or negative emissions technology and practices
- improving environmental and social impact.

Telstra’s carbon credit assessment framework considers not only the project proponent but also risks associated with project partners. Our evaluation assesses any risk associated with human and labour rights or bribery and corruption. It also considers any social, economic or political opposition and assesses the risk of harm to the project partners and their owners.

11 The Oxford Principles for Net Zero Aligned Carbon Offsets and voluntary carbon programs such as the Emissions Reduction Fund and Verified Carbon Standard.

Early in FY22, we worked with existing project partners and entered forward contracts to mitigate against rising prices, without compromising on the quality of credits purchased. We have also reviewed our carbon offset acquisition framework to reflect the policy and market changes that have occurred during the year. By maintaining a carbon neutral certification Telstra capitalises on the opportunity to be the preferred supplier for environmentally conscious customers.

We are confirming the implications of our recently completed Digicel acquisition in relation to our carbon neutral target, and we will provide an update should there be any material impact once this analysis has been completed.

Innovation in carbon sequestration

We believe that Australia has the potential to become a global leader in nature based carbon sequestration, exploiting natural advantages in terms of land mass, political stability and sophisticated markets. To harness this opportunity Telstra is directly underwriting projects that can unlock new supply and accelerate the maturity of Australia's carbon market. As a first trial, we are establishing a permanent forest in Yarrowyck in northern NSW, located within the traditional lands of the Anaiwan, Kamilaroi/ Gomeroi First Nations people. This project aims to restore the land to its natural state and build resilience in the landscape to better withstand exacerbated drought and flood conditions. We will plant around 158,000 native trees and shrubs, which are expected to store approximately 160,000 tCO₂e over the next 25 years. The project is also expected to contribute to an important wildlife corridor between the Gwydir River and the Northern Tablelands.

In FY23 we will be testing a wide range of technologies including aerial drones, telemetry and artificial intelligence. These technologies will be applied to every aspect of sequestration, including seeding, pest and weed management, environmental condition monitoring, weather prediction, carbon storage estimation, finance and risk management.



Telstra carbon farm located at Yarrowyck, NSW

In a world first, our carbon farming trial is also exploring the use of a probiotic fertiliser produced by maggots in the digestion of food waste, which avoids methane emissions otherwise arising from food waste decay. We are hopeful that these pilots will expose the opportunities and risks in this space, helping other companies to increase their involvement in the Australian carbon market.

Key climate-related metrics

In section 5.2 we discuss the strategy Telstra uses to identify and manage key climate-related physical and transition risks and opportunities. Appendix 2 further details the key metrics we use to measure these risks and monitor trends over time using our scenario analysis.

This analysis informs our Environment Strategy and targets, including the decision to expand our emission reduction target to include scope 3 emissions. Key metrics linked to identified climate risks include:

- The proportion of our physical network assets which are subject to one or more climate hazard exposures (as outlined in section 5.2). This is a key indicator of our exposure to acute physical climate risks.
- Our progress towards our three climate targets (as outlined in section 3). This is important to managing our policy and legal, technology, market and reputation transition risks.

4. Risk Management

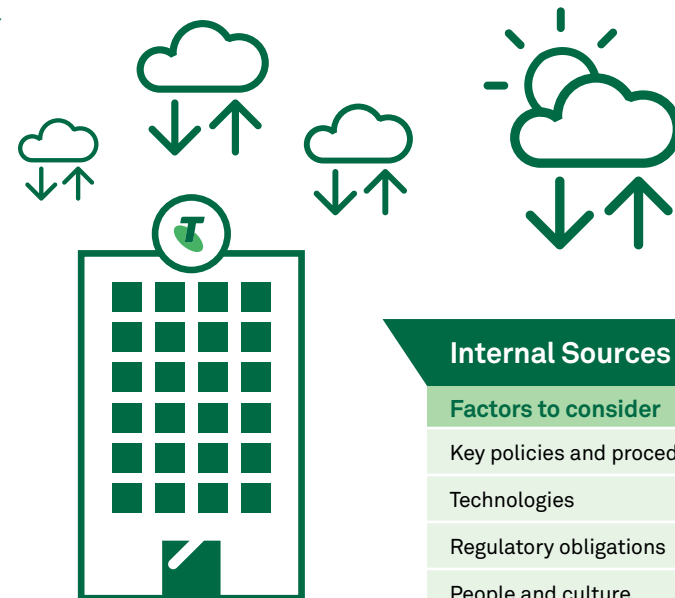
4.1 Identifying, assessing, and managing climate-related risks

Climate and other environmental risks are identified, assessed, and managed using our risk management framework. This is consistent with the way we manage other material risks that may impact delivery of our strategic objectives. Our enterprise risk framework is a five-step process to identify, manage, treat and review risks in line with the international standard (ISO 31000:2018). We maintain a comprehensive register of climate-related risks and opportunities which we have refined over time with reference to the TCFD recommendations. Our risk registers are living documents and – depending on the severity – all risks are reviewed on a 6 to 12 monthly basis.

Climate risk management at Telstra is integrated into our overall ‘three lines of defence’ risk management model (pictured below). Once risks are identified, they are analysed and rated based on likelihood and consequence of the risk occurring in the short to medium term. We rate risks as both inherent (without control measures) and residual (incorporating controls). Where controls are insufficient to reduce the risk to a tolerable level we also identify treatments, or new controls, which need to be implemented. Risks are assigned to an owner who has the authority to make decisions to manage the risk and is accountable if the risk materialises.

New and emerging climate-related risks are typically first identified from regular monitoring of external drivers:

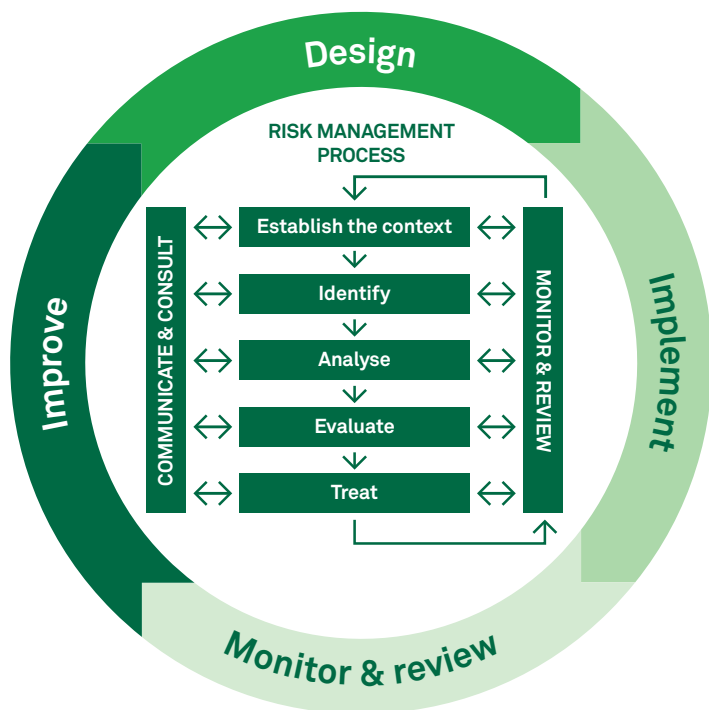
External Sources
Factors to consider
Regulatory/political environments
Supply chain factors
Competition factors
Completion factors
Macro-economic factors
Industry drivers and trends
Stakeholder perceptions and expectations



Internal Sources
Factors to consider
Key policies and procedures
Technologies
Regulatory obligations
People and culture
Stakeholders and governance
Events or changes to the environment

Telstra's Risk Management Framework

↓↑ Mandate & Commitment ↓↑



Our risk management framework is underpinned by our “three lines of defence” accountability model, which comprises the following:

First Line	Business stakeholders and operational management who are responsible for identifying, assessing and managing their risks.
Second Line	The Chief Risk Office who work together with risk management teams in each business area and other second line oversight functions (e.g Health, Safety, Wellbeing and Environment, Cyber Security, Supplier Governance and Group Compliance), which are responsible for our risk and compliance frameworks, oversight and monitoring.
Third Line	Our Group Internal Audit function, which is responsible for providing independent assurance on governance, risk management and internal control processes.

Climate-related risks are prioritised in the first instance using Telstra’s Enterprise Risk framework, with additional guidance from the Board, Audit and Risk Committee (ARC), CEO Leadership Team (CEOLT), Sustainability Executive, Environmental Executive Group (EEG) members and other Executives with relevant accountabilities. Telstra’s Enterprise Risk framework categorises risks by likelihood and consequence (including financial impacts), which when combined create an overall view of exposure and hence materiality. Management also conducts an annual

ESG materiality assessment using a survey of internal and external stakeholders which identifies and prioritises the headline topics of greatest significance from an impact and risk perspective. A summary of this materiality assessment is provided to the Board each year. As part of its risk assessments, Telstra considers all types of climate-related risk, including acute and chronic physical risks and policy and legal, technology, market and reputation transition risks.

The Governance section of this report explains the oversight and reporting for climate-related risk. An overview of the climate-related risks and opportunities identified as having potential financial or strategic impact to our business are summarised in the Strategy section of this report. For more information on our risk management framework and how we manage risk, see the [FY22 Corporate Governance Statement](#).

4.2 Integrating climate-related risks into operational decision making

FY22 adaptation planning

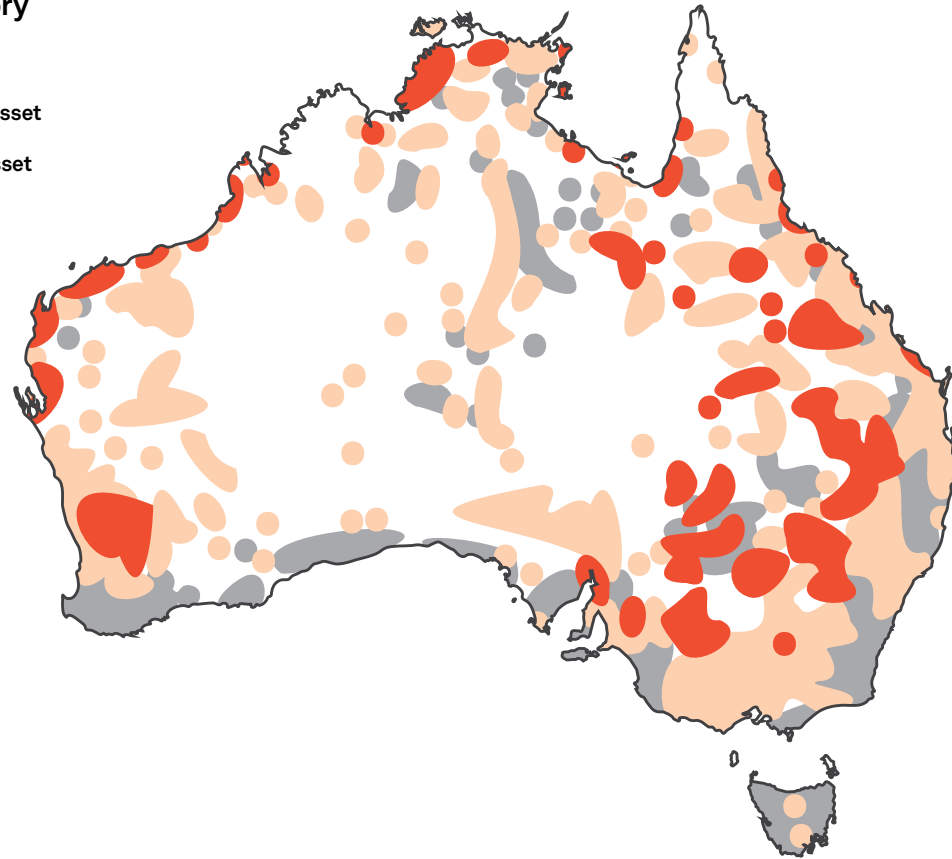
Adaptation planning is a process of adjusting to the current and predicted impacts of climate change. Adaptation planning focuses on areas at risk based on projections, rather than relying on historical data of sites that have previously been impacted. This is a significant shift in traditional modelling. This includes taking actions to reduce the negative impacts of climate change and taking advantage of emerging opportunities. In FY22 Telstra developed and implemented our first adaptation plan. The plan looked at these unpredictable events by a risk analysis approach including:

- assessing the risk exposure of network sites to fire, flood and cyclone
- testing mobile site design standards to improve the resilience of mobile huts
- revising the standards of backup power systems with the aim of providing longer duration power reserves to sites deemed at risk
- using risk assessment data to assist in prioritising lifecycle funding to those sites assessed at risk
- establishing, wherever feasible, remote monitoring and management capability to give better and more timely site performance data
- mapping site transmission dependencies to understand how multiple sites can be impacted by a single event and to expose, and minimise the impacts of, single points of failure in the network.

In FY22 our operations team used climate projections for adaptation planning in our battery lifecycle replacement and reserve power programs. Our software programs use climate projections under different warming scenarios to indicate which sites may be at risk of bushfire, cyclone or flood –

Risk type category

- No risks
- Single risk type asset
- Multi risk type asset

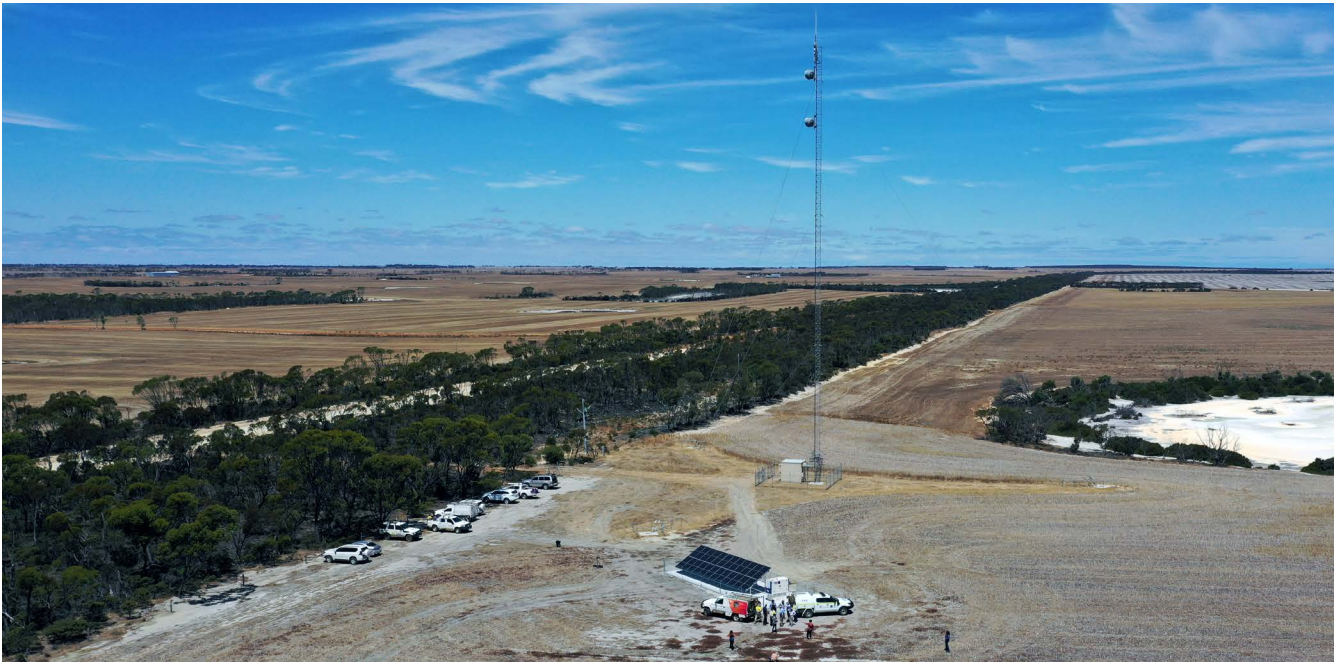


as depicted in the map above. These sites were given increased priority for battery lifecycle replacement with the aim of increasing their reserve capacity above the standard where a standby generator is not on site.

In FY22, power systems or batteries were replaced or upgraded at over three thousand sites. In addition to reinforcing power resilience, another priority is ensuring efficient cooling systems are maintained to prevent network equipment from overheating. In FY22 upgraded natural cooling and mechanical air-conditioning has been deployed to multiple sites to mitigate this risk. Both of these programs will continue into FY23 to further enhance the reserve capacity at sites with greater bushfire, cyclone or flood risk.

The key outcomes of the FY22 adaptation plan included:

- Incorporation of climate risk data into our two of our key planning tools: NetFacility and Waypoint. This includes the current (baseline) at risk sites and a repository for multi-year hazard data in geospatial format (pictured above).
- Integration of future climate risks into existing business risk frameworks.
- Integration of future adaptation planning and reporting into existing operational planning and reporting processes.



Utility-provided Standalone Power System trial at Mount Ney, Western Australia

Power resilience

Telecommunications services, like many essential services, are for the most part dependent on the reliable and sufficient provision of electricity from the grid. Telstra deploys significant reserve power capability to keep services running when there is a grid failure for short periods of time, so the continued investment in utilities such as electricity is essential to keep everyone connected.

Utility-provided Standalone Power System trial at Mount Ney, Western Australia

To enhance resilience Telstra partnered with Horizon Power in Western Australia to trial a standalone power system (SPS). The SPS uses solar cells and batteries to generate and store electricity. We believe that this solution could help ensure vital connectivity to local communities even when mains power supply is impacted (for example, during natural disasters).

Improving resilience in our operations

When deploying portable generators, the current infrastructure at many of our sites requires someone to enter the building and manually switch from mains to generator supply once the generator has been started. This means that if portable generators are deployed in advance of a natural disaster, the mains will be isolated before it has failed, and the site will remain running on the generator until someone returns to manually switch it back to mains power. During this time, we have limited visibility of when the mains power is available, and the generator requires regular refuelling.

An automatic transfer unit has been developed to improve the way portable generators are deployed to Telstra's small network sites. This unit allows backup power to be autonomous by detecting the loss of mains power, starting the generator (if present), and transferring the site load to



Automatic transfer unit located at Powelltown Exchange

the generator once it is stable. On restoration of mains power, the site load will be transferred back to the mains supply. It will also include monitoring functionality connected back through Telstra's alarm network to provide remote visibility of the power supply for the site. This will:

- allow local groups such as emergency services and councils to deploy a generator quickly to assist their local community. This is especially beneficial during mass disruption events when site access from outside the community isn't possible
- reduce fuel consumption and refuelling requirements, which is particularly beneficial when deploying generators in advance of a natural disaster event.

This first trial installation was successfully deployed to Powelltown Exchange in December 2021, with learnings being incorporated into a revised solution.




5. Strategy

At Telstra we set our business strategy in short duration cycles to reflect the speed and nature of change in our industry, and to allow us to be responsive to the changing needs of our customers, business and external stakeholders. Climate is a core component of Telstra's T25 Strategy. For example, our T25 Scorecard includes our emissions reduction and renewable energy generation targets as outlined in section 3.

Concurrently it is critical that we take a long-term view for our infrastructure asset base which needs to be resilient to a range of physical risks now and into the future. Our Environment Strategy focuses on using technology to address environmental challenges while also helping our suppliers, customers, and the communities we serve to do the same. Our strategy goes beyond simply managing our own environmental footprint and encourages innovation in digital products and services that create environmental solutions to monitor, protect and improve the environment.

Currently we are exposed to a range of risks associated with the transition to a low emissions economy and the physical impacts of our changing climate. While we can foresee the types of risks which will eventuate, the impact and timing of those risks is uncertain. The impacts will be influenced by the speed and nature of the transition, and how our climate responds to both rising and falling emissions. While we recognise this uncertainty, we also recognise that our safest pathway forward is to act today to influence our tomorrow. Climate-related issues are a growing input into Telstra's financial planning processes. For example, as outlined in section 3.1, during FY22 Telstra piloted a carbon price to include climate-related issues in financial decision-making at our Company Investment Forum. In addition, \$49M has also been allocated in FY23 for emissions-reduction related projects as part of our financial planning process. In FY22 we have started to specifically collect climate related financial information

5.1 Our climate scenarios

 Accelerated Action Less than 2°C	 Divided World 2-3°C	 Changed Climate Greater than 4°C
<p>Global cooperation to decarbonise</p> <p>In this scenario, the world is characterised by moderate and sustainable economic growth. The global drive to rapidly decarbonise necessitates significant expenditure in low emissions technologies, renewable energy and storage, and a circular economy with optimised resource efficiencies.</p> <p>Market challenges</p> <p>Differentiation is challenging in an environment where competitors all have strong ESG credentials.</p> <p>Customer expectations</p> <p>An expectation of socially and environmentally conscious brands increases scrutiny on these attributes.</p> <p>Cost challenges</p> <p>High carbon costs make building a low carbon brand costly and there is significant expenditure on low emissions technologies.</p>	<p>Fragmented decarbonisation & low economic growth</p> <p>A globally insecure world, with barriers to trade and regional conflict stifling technological innovation. Governments pursue policies driven by security concerns. Innovation, technology and the environment are deprioritised. Customers and businesses become more price sensitive and economic growth slows, with inequality worsening over time.</p> <p>Market challenges</p> <p>Limited capital availability resulting in limited investment in innovation to develop solutions for customers.</p> <p>Customer expectations</p> <p>Customers demand solutions at a low cost.</p> <p>Cost challenges</p> <p>Slower decarbonisation of the grid makes it difficult to meet emissions goals.</p>	<p>Limited decarbonisation & most challenging to adapt</p> <p>This is a world severely disrupted by physical climate change. Economic and social development continue to heavily rely on fossil fuel resources, and customers prefer resource and energy intensive lifestyles. Domestic policies prioritise growth, and technological development is focused on improving the living standards, well-being and adapting to the changed climate.</p> <p>Market challenges</p> <p>Highly competitive market forces innovation to occur at a rapid rate with numerous niche competitors.</p> <p>Customer expectations</p> <p>Customers value global capacity, scale and innovation.</p> <p>Cost challenges</p> <p>In the absence of an emissions budget, sustainable brands are not competitive in a market that does not value ESG principles.</p>
<p>Method</p> <ul style="list-style-type: none"> • Our scenarios have been developed based on credible literature, including the IPCC. • They bring together socio-economic conditions (Shared Socioeconomic Pathways (SSPs)) and emissions projections (Representative Concentration Pathways (RCPs)). • We complement this global academic literature with Australian-specific studies, such as those from the Australian Energy Market Operator (AEMO) and CSIRO. • We also draw on our own observation of the impacts of physical and transition risk on our operations, supply chain, and customers. • These scenarios are not intended to be a forecast or prediction. Instead, they allow us to understand the spread of risk and opportunity. • Appendix 2 contains further information about our method and data sources. 		

as we experience climate events such as floods and bushfires. As this information source matures it will serve as an input into our short and long term financial planning purpose in so far as we need to plan our capital outlays to mitigate service delivery risks from climate events.

We use scenario analysis to understand how these risks might change in the medium to long term. Qualitative and quantitative scenario analysis has provided us with useful insights into the nature, scale, and impact of our climate-related risks. It has also given us valuable information about the current and future dynamic change in these risks, including an understanding of key signposts which might indicate a change in the short term risk.

Uncertainty in a changing climate: the role of scenario analysis

Scenario analysis is a tool used to explore the future trends, risks and opportunities in a changing climate and uncertain future. We have developed three climate-driven scenarios to understand the spread of potential impacts on our infrastructure and assets, supply chain and customers. The outputs allow us to better understand our resilience and vulnerability to climate-related impacts and inform our corporate strategy and infrastructure planning.

5.2 Our climate risks

Our transition and physical climate-related risks in the short term are summarised below. Appendix 2 summarises how these risks may change over time in the short term (within three years), medium term (three to ten years) and long term (beyond ten years).

Physical risks

Risks associated with the physical impacts of climate change can be acute (arising from changes in the severity and frequency of weather events) or chronic (longer term shifts in climatic patterns such as rising sea levels). The physical impacts of climate change have the potential to damage our physical assets, affect our supply chain or disrupt services to our customers.




Risk factor	Risk summary	Inherent risk (short term)
Health and welfare	Potential injury or death – of staff, contractors or community members associated with acute physical climate events, emergency response and restoration of telecommunications services	High
Bushfires	Increase in bushfires – increase in frequency and severity of bushfires leading to infrastructure damage loss, extended service disruption, and reputational impact	High
Policy and regulation	Change in policy and regulations – increasing compliance and regulatory requirements for our products and services, particularly as the physical impacts of climate change become more frequent and extreme, leading to increased cost	High
Customer expectations	Community reliance on continuity of services – inability to meet service demands, particularly in the face of physical climate impacts, leading to negative customer experiences and potential market share loss	High
Brand perceptions	Costs to maintain ESG reputation – inability to meet ESG targets and rising expectations of ESG performance leading to negative brand perceptions and erosion of brand value	High
Compounding risks	Compound risk of multiple events – increase in number of backup power options required, increase in self-insurance costs, prolonged repair times due to site accessibility, resource availability and safety issues, and supply chain disruptions to purchased products and services leading to increased cost, reduced revenue and reputational damage	Medium
Sea level rise	Rising sea levels – increase in sea levels leading to coastal inundation and damage to low-lying infrastructure, increasing costs for relocation or repair	Medium
Flooding	Increase in flooding – increase in flooding frequency and severity leading to infrastructure damage loss, extended service disruption and reputational impact	Medium
Offsets	Carbon offset price increases – increase in carbon offset prices to meet our carbon neutral Climate Active certification, and potential scarcity of high-quality offsets	Medium
Health and welfare	Work restrictions to avoid heat morbidity – increased exposure to heat stress conditions requires more frequent breaks or prolongs essential work resulting in lost productivity, greater risk of prolonged service disruption, and inability to perform scheduled maintenance	Medium
Cyclones	Increase in cyclones – increase in cyclone frequency and severity leading to coastal infrastructure damage, loss, and/or extended service disruption	Medium
Consumer preferences	Changing consumer preferences – changes in demand for existing offerings requiring quick pivots to new offerings reducing competitive advantage and leading to market share loss	Medium
Substitution	Low carbon technology upgrades – products and services substituted or phased out before reaching maturity	Medium
New technologies	Uncertainty of new technologies – large capital outlays with potential for unsuccessful investment returns	Medium
Temperature (chronic)	Increase in annual average temperature – increase in maintenance requirements and associated costs, and higher energy costs from increased heat load	Medium
Precipitation (chronic)	Increase in precipitation – increase in maintenance requirements and associated costs	Medium
Carbon taxation	Price pass through – rise in supply chain pass through costs from an increase in carbon taxes	

Transition risks

Transition risks are those arising from policy, legal, technology, market and reputational changes associated with the transition to a low carbon economy, or the failure to achieve this transition. Decarbonising the global economy is likely to require a world that is more

interconnected, digitised, and decentralised, providing Telstra with opportunities to develop new solutions for customers and support emerging industries.

5.3 Our resilience

	Current and future resilience	Strategic response and investment decision making
 <p>Physical risk</p>	<p>Telstra's operations, network and critical infrastructure are currently resilient to many physical risks due to:</p> <ul style="list-style-type: none"> • the network having a high degree of inherent redundancy • a flexible workforce, replacement parts and standby emergency equipment which enable a swift response during acute events • strong business continuity, emergency planning and disaster response capabilities. <p>Nevertheless, the physical risk profile is shifting. Major natural disasters have and will continue to test our network resilience. Our continuity of service also depends heavily on the continuity of mains power electricity supply which can be disrupted by both extreme and chronic climate impacts, such as bushfires and increasing temperatures. Our response to the 2019-20 Black Summer bushfires totalled around \$44 million in network rebuild, repairs and other costs. While this financial impact is not material to Telstra in isolation, an increase in the frequency and severity of climate impacts could result in these impacts becoming more financially material over time.</p>	<p>The infrastructure assets we operate and build now need to be designed for the climate of the future. Our ongoing focus is on providing simplified and resilient infrastructure, identifying and removing single points of failure where possible, replacing end-of-life equipment and increasing automation. We are combining historical experience, categorisation of our critical assets, and climate projections to understand where the network is most vulnerable (see case study in section 4.2 Integration of climate-related risks into operational decision making). This information is informing our adaptation planning and where we prioritise investment in backup power generation and storage.</p> <p>As part of our Network Resilience Program we:</p> <ul style="list-style-type: none"> • have updated our climate exposure threshold criteria to determine the natural disaster risk exposure for network sites • are testing mobile site design standards to improve the resilience of new mobile huts • have reviewed our battery lifecycle replacement program to better consider disaster prone locations and are increasing stocks of temporary mobile infrastructure. <p>The IPCC recently released their 6th Assessment Report (AR6) which highlighted that climate change is unequivocally caused by human activity. The report called for accelerated action across global economies to reduce emissions by at least 43% by 2030 and achieve full decarbonisation by 2050. Our current 2030 target aims to reduce our scope 1, 2 and 3 emissions by 50% (from a FY19 baseline), however, we appreciate decarbonising our operations is more straightforward than other sectors within the Australian economy. With this in mind, we will aim to accelerate our own decarbonisation and continue to explore how our products and services can facilitate decarbonisation of hard to abate industries.</p> <p>AR6 also described recommendations for new and enhanced climate models and data sets. At present this data is only available on a global scale disaggregated to large regional areas. As more data becomes available, we will review its applicability to the Australasia region and update our climate-related risk modelling as necessary.</p>
 <p>Physical risk – supply chain</p>	<p>Analysis of our key global suppliers found that our supply chain is vulnerable to disruption from the physical impacts of climate change now and into the future. There are locations and products where this risk is concentrated. We mitigate these impacts by requiring our suppliers to have business continuity plans, having backup suppliers in different locations, and holding critical stock on hand.</p>	<p>The physical climate risk analysis we have completed so far allows us to consider supply chain diversification (by location and risk) when engaging new suppliers. We continue to improve our understanding of risks through creating a disaster database to build a baseline view of climate-related events. As part of this, we are seeking more information about the location of suppliers to build a more complete view of our exposure and continue to improve post-event data collection.</p>
 <p>Transition risk</p>	<p>Network reliability, coverage, and speed, particularly in remote and regional areas, are critical attributes of Telstra's brand. In these areas our network is broad but by its nature does not have the inherent redundancy of the deep, interconnected system in metropolitan areas. As the frequency and severity of physical climate impacts increases so does the potential for disruption to our service. This could result in reputational impacts, a decline in our market share and stronger regulatory requirements for backup power and service continuity.</p>	<p>While our infrastructure assets are built for the future, our business strategy is set on short term cycles. Our Environment Strategy envisions that climate and environmental stewardship will continue to be a competitive advantage. This extends from customers, to employees, to investors and other stakeholders. Our targets to reduce our absolute emissions, be carbon neutral, and support the decarbonisation of the grid demonstrate our commitment to being a responsible business. The greatest threat to this strategy arises in the Changed Climate scenario where environmental credentials are not valued within the broader community. While differentiating based on climate credentials might also be a challenge in the Accelerated Action scenario, there is significant opportunity for Telstra to provide products that enable our customers' transition to a low carbon economy. Our agile short term focus positions us well to be responsive to these needs.</p>

How we tested our resilience in FY22

Our physical network assets include telephone exchanges, mobile towers, data centres, fibre network and subsea cables. These are located in city centres as well as urban and regional areas, with many exposed to physical weather conditions. Increased frequency and severity of extreme weather events can damage and disrupt our operations and service delivery.

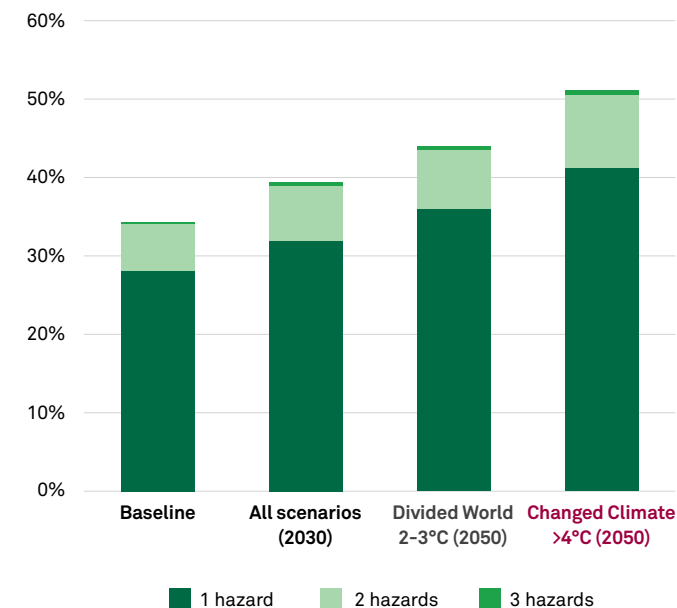
We identified five climate hazards that could cause disruption to our above ground network and operations: bushfires, coastal inundation and flooding, cyclones, chronic increase in average annual temperature and urban flash flooding. These climate hazards are projected to increase over time across all three scenarios with the most change anticipated in the Changed climate (>4 degrees) scenario. Our FY22 analysis showed that as atmospheric emissions increase, a greater number of our assets will become exposed to at least one climate hazard, and that the number of assets exposed to more than one hazard also increases¹².

5.4 Quantifying the financial impacts of extreme physical risks

In FY22 we extended this analysis to consider the potential financial impacts of extreme events from asset loss, asset damage and service disruption. This is a first step towards understanding the scale of impact and financial materiality of these risks¹³. This financial impact analysis includes our above ground assets in Australia vulnerable to bushfires, cyclones, coastal inundation, and urban flooding. We found that, cumulatively over the period to 2050, bushfires are projected to cause the greatest impact to our Australian assets, and that service disruption from physical hazards is projected to be more material than asset damage. These findings are influenced by our historical experience of extreme physical events where:

- Service disruption can be protracted, for example after flooding when damage to key access routes delays critical repairs.
- Service disruption occurs not just from direct impact to Telstra's assets, but also from disruption to the mains electricity network that powers our assets.
- Our assets benefit from mitigation actions taken pre-emptively and/or reactively to reduce asset loss or damage. For example, this includes vegetation clearing in bushfire prone areas, and action from emergency services such as water bombing and fire breaks.

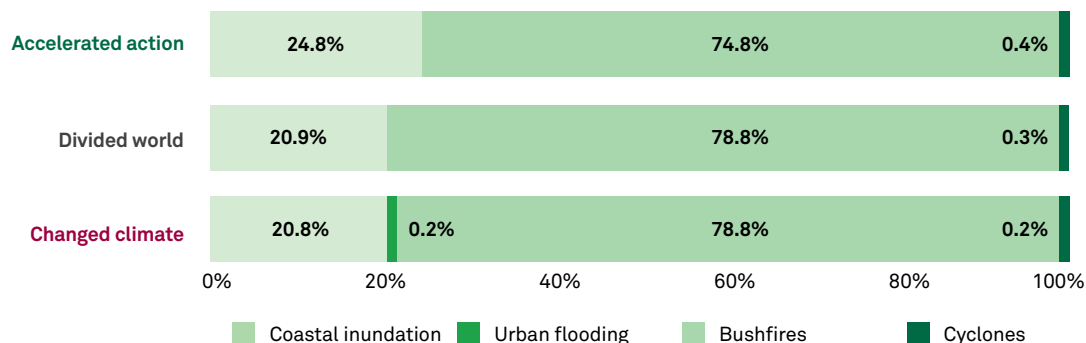
Percentage of assets with multiple hazard exposures



¹² The All scenarios (2030) bar also provides an indication of the exposed assets in 2050 under the Accelerated Action scenario.

¹³ We started with a focus on physical risk as it is immediately relevant and applicable to our long-term infrastructure and adaptation planning. We plan to extend this analysis over time to transition risk aspects. An extension to quantify transition risk impacts will require us to consider in more detail our role in global supply chains, technology developments, and responsiveness of our enterprise, small business, and individual customers to climate concerns and credentials. As we clarify these trends and obtain a better understanding of their potential financial impacts in each scenario we will be in a position to extend our financial analysis beyond our current physical risk assessment.

Bushfires have the most material financial impact



Our wide geographic footprint also includes assets exposed to coastal inundation, including sea level rise, storm surge and coastal erosion. As part of our planning processes, we will need to assess our assets in these areas and may need to undertake proactive relocation of these assets to less vulnerable locations in the coming decades. The impacts of urban flooding and cyclones are not material relative to other impacts, but these findings are also influenced by the scope of this analysis and some of the limitations which are discussed in Appendix 2.

Projected costs vary by scenario between \$1.4bn to \$2.4bn cumulatively to 2050 (see results pictured below). Technology advancements since our legacy infrastructure was built suggest that the replacement cost is lower than the original costs of some network elements. Assumptions which have factored into this analysis are in Appendix 2. There are inherent limitations to such a financial analysis given uncertainties of the events occurring, their timing and impacts. There is little divergence in the scenarios to 2030 because the physical response over that timeframe is driven by greenhouse gas emissions already absorbed by the climate system. As such, the 2030 timeframe is relatively independent of any emissions mitigation actions that may be undertaken, emphasising the need for adaptive measures under all scenarios¹⁴. Historical evidence provides some basis for the assessment but may not reflect the future impacts. This assessment will continually evolve in the future as we incorporate more assumptions and impacts, as we experience actual events and more

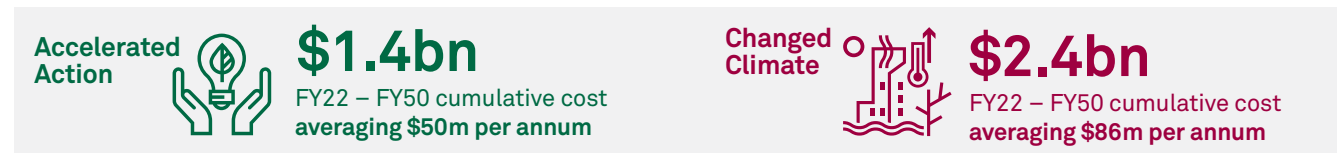
scientific evidence emerges globally. This analysis also includes only a subset of the climate-related risks to which we are exposed, and it excludes the financial impacts of chronic physical risk (such as increase in temperature) and transition risks and opportunities. In addition, it does not include the cost of our mitigation activities.

The materiality of the financial impact depends on how events manifest in the future, including their timing, location, and magnitude. Whilst the average impact per annum is not material, it is possible that the consequences of a particular event or multiple events in a given year, could be material. The events could impact our financial performance in several ways such as increased costs

The impact in the eight year period to FY2030 is the same for all three scenarios

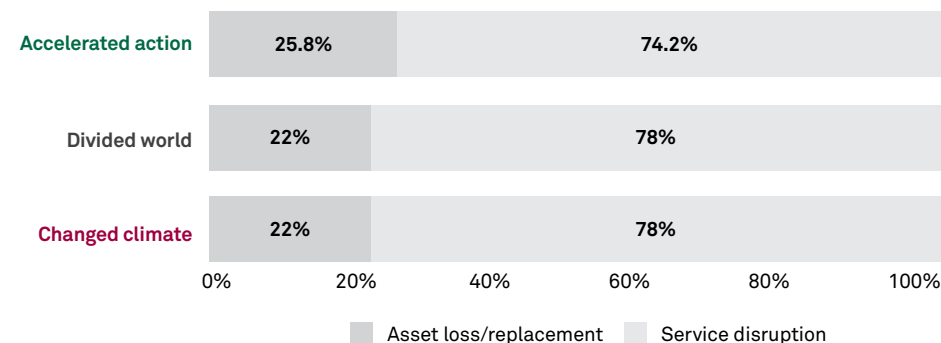


The three scenarios start to diverge between FY2030 and FY2050



This analysis only includes only a subset of the climate-related risks to which we are exposed, it excludes the financial impacts of chronic physical risk (such as increase in temperature) and transition risks.

Service disruption payments are more material than asset damage



from service disruption, impact to Brand perception and reputation, accelerated depreciation and amortisation due to service life changes to our assets, and impairment of assets in the income statement. The headroom in the valuation of our ubiquitous network means that an accounting impairment for climate-related reasons is not anticipated. This will continue to be reassessed over time.

Our analysis drew on projections of physical climate risks from peer reviewed climate data and literature, supplemented by our historical event records and assumptions where required to fill information gaps. More information about our method and assumptions is provided in Appendix 2.

¹⁴ The assessment considers potential outcomes to 2050 for scenario analysis. There is little divergence in the scenarios to 2030 because the physical response over that timeframe is driven by greenhouse gas emissions already absorbed by the climate system. Projected cost divergence from 2030 is influenced by timing of planned adaptation to coastal inundation and sea level rise.

5.5 Mitigation and monitoring

The financial assessment has guided our implementation of the following strategies:

- **Further enhance our monitoring capability:** We are enhancing our business processes to capture more climate-related events and their financial impacts so that we can continually update our financial assessment.
- **Incorporate climate impacts in our financial plans:** Our initial assessment will give us a basis to test the resilience of our financial plans to address any climate-related impacts.
- **Network planning:** The underlying climate risk assessment gives us a clearer view of climate risk relevant to our physical infrastructure and will inform our network planning in the future. These actions could result in reducing the physical exposure to our assets and to mitigate potential service disruptions to our customers.
- **Asset replacement:** With a clearer view of the parts of our network that are more exposed to climate risk we intend to use this information to inform our approach to future technology roadmaps. Given the long legacy of the technology in our network, advancements in technology need to be considered should there be a need to replace our impacted assets.
- **Continue to enhance our reporting capability:** The progress we have made in our financial assessment so far will enable us to provide relevant and meaningful information in meeting the TCFD disclosure recommendations and to address other regulatory and stakeholder expectations.



2022 floods in southern Queensland and northern New South Wales

A record-breaking severe weather system devastated the east coast of Queensland and New South Wales during February and March 2022. Floodwaters peaked at around 14.4 metres high in Lismore and in three days alone Brisbane received 80 per cent of its annual rainfall. The weather event resulted in substantial damage to the commercial power grid supporting our telecommunications infrastructure and network, causing mass disruption to our customer's services. A total of 43 communities were isolated (unable to use fixed or mobile Telstra services), with 315 mobile sites being impacted. Loss of commercial mains power, optic fibre cable washouts, water ingress and hardware failures were all typical impacts throughout these weather events.

Approximately 80 per cent of affected mobile base stations were back online within a week, and approximately

95 per cent in three weeks. However, the events highlighted Telstra's reliance on the power resilience of electricity providers, with outages a significant factor in the service disruptions. Coordination with the power companies and local authorities to access the affected areas to restore services was critical. Due to the nature of the floods, gaining access to affected areas was a very significant factor impacting restoration times.

These unfortunate events have enabled us to test our climate risk modelling and help us understand where we still need to improve and collect more detailed information. The modelling of damage to high priority assets was similar to what was observed in the 2022 floods. Service disruptions and asset damage for medium priority sites were also observed. This event provided us with useful information to inform future analysis for those asset types. We will continue to collect and analyse the latest data from this event to build out our modelling capabilities to be used as inputs into operational planning going forward.

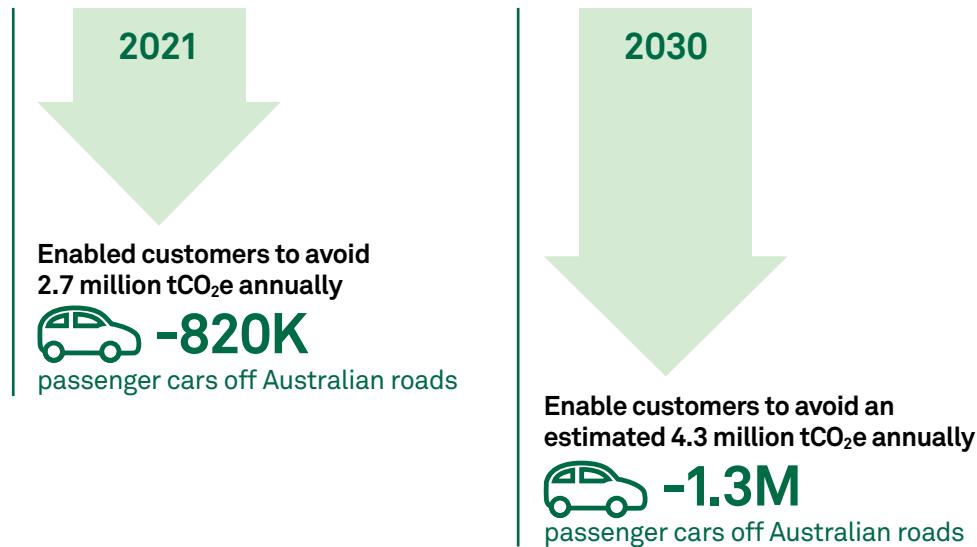
5.6 Climate opportunities - decarbonise economy

Our climate-related opportunities are driven by the increasing demand and investment in sustainable solutions facilitated by the transition to a low-carbon economy. Australia faces a major challenge to achieve its target of net zero emissions by 2050.

Helping our customers avoid emissions

Telstra has a significant opportunity to help its customers and society transition to a lower carbon future. Our mobile network covers over 99 per cent of the Australian population and

Avoided Emissions



as at the end of financial year 2022 we provided:

- 20.8 million domestic mobile retail customer services
- 3.5 retail bundles and standalone fixed data services to customers across the country¹⁵.

Digital technologies provide many opportunities to deliver economic and social improvements while also reducing carbon emissions. In FY22 Telstra commissioned an independent assessment¹⁶ of its contribution to decarbonising the economy through the use of its products and services, both now and projected out to 2030¹⁷. The current results and 2030 projections are outlined below.

Opportunity	Opportunity summary	Rating
Innovation	Increasing innovation – technological development in the ICT sector and increased demand for digitised solutions to enable our customers to reduce their environmental impacts	High
Future business planning	Embedding climate resilience into business decision making – enabling us to make climate-informed decisions to improve enterprise resilience and better serve our customers	High
Demand	Increasing growth of product demand – increase growth in ICT sector for early warning systems and demand for connectivity	Medium
Low-emission technologies	Emerging new technologies – investment and use of new low-emission technologies to improve energy efficiency, decrease emissions profile and reduce sensitivity to changes in the cost of carbon	Medium
Market valuation	Improving market position – higher demand for more sustainable products and services will increase market offerings and innovation in the ICT sector, driving revenue growth for the sector	Medium

¹⁵ This is inclusive of: a) pre-paid and post-paid handheld and mobile broadband; and b) Internet of Things services in operation.

¹⁶ 'Enabling positive climate action. The impact of Telstra's digital technologies' 2022, Deloitte Access Economics. [The Deloitte report](#) was completed in 2022 by using data of the previous year's sales and market share.

¹⁷ [The Deloitte report](#) page iv. The enablement factor is calculated by dividing the total avoided emissions enabled by Telstra's services and products by its own total emissions.

Remote health monitoring improves access to health care and reduces emissions

A range of Telstra Health's virtual health monitoring devices were used at hotel quarantine sites in Tasmania. Returned travellers were asked to perform their own daily health checks including temperature, pulse and oxygen saturation levels using TGA-approved devices. Undertaking these checks within their hotel rooms helped reduce the opportunity for transmission of COVID-19 to clinical staff, hotel employees and other people in quarantine. Telstra Health's MyCareManager app stored data from the devices in a hosted monitoring platform.

Telstra Health's virtual monitoring has implications beyond quarantine walls and COVID-19 use cases. Patient empowerment in monitoring their own health, and connectivity to remote healthcare providers offers an opportunity for patients to undertake care in an environment that supports their personal circumstances. It also reduces the need for both patients and clinical staff to travel for in-person healthcare, especially for people in rural and remote areas where health services can be limited. While in-person care is still imperative in many situations, technology has been playing an increasing role in breaking geographical barriers to healthcare, and thus reducing the environmental impacts of long-distance travel.

The independent assessment estimated that in 2021 Telstra enabled its customers to avoid 37,000 tCO₂e by providing home internet services to rural and remote customers, enabling them to access telehealth services and reduce their need to travel. The telehealth industry is estimated to grow at a rate of 22 per cent per annum on average¹⁸. Assuming this growth rate and Telstra's regional home internet market share remains constant, it is estimated that Telstra's total avoided emissions will increase to 86,000 tCO₂e by 2030. Over the decade to 2030, this reflects an estimated total avoided emissions of 545,000 tCO₂e¹⁹.



¹⁸ [The Deloitte report](#) page 25. Dependencies required to achieve this include realising the projected industry growth rates and projected Telstra market share.

¹⁹ [The Deloitte report](#) page 25.

Remote monitoring of water resources improves usage efficiency and saves travel and emissions

Farmbot is an Australian Agtech company that helps farmers manage their water assets. Telstra is a significant shareholder of Farmbot. Farmbot's monitoring solutions are applied to a range of water storage systems, enabling remote monitoring of water tanks, troughs, pipelines and rainfall.

Isis Downs, a beef cattle station in Southeast Queensland, illustrates the benefits of Farmbot's remote monitoring solutions. The cattle station uses 26 water level monitors, two line pressure sensors and seven rain gauges to ensure its extensive water infrastructure is running efficiently and with minimal wastage. In the absence of monitors to alert bore runners about a problem, it could take up to three days to check and identify the location of any problem. The remote monitoring solutions have reduced the need for physical inspections, which previously cost around \$120,000 annually and required a full-time staff member. With remote monitoring, staff can now focus on other aspects of the station and avoid travelling long distances for physical monitoring, which equate to about 1,200 km on average for the bore runner.

The independent assessment estimated that in 2021 Telstra enabled its customers to avoid 9,000 tCO₂e per year by providing IoT sensors and satellite connectivity to Australian farms. The number of IoT sensors purchased globally is estimated to increase by 19 per cent per annum on average. If the rate of adoption in Australia was to increase at the same rate, it is estimated that by 2030, Telstra's avoided emissions from climate smart agriculture could increase to 33,000 tCO₂e. Over the decade to 2030, this reflects total avoided emissions of 255,000 tCO₂e²⁰.



²⁰ [The Deloitte report](#) page 18. Dependencies required to achieve this include realising the projected industry growth rates and projected Telstra market share.

6. Governance

6.1 Board

The Board reviews the Environment Strategy annually, including both our mitigation and adaptation plans. During FY22, the Board received progress updates on the implementation of our Environment Strategy (including performance against our Environment Strategy goals) and approved our 2021 TCFD reporting and the expansion of Telstra’s emission reduction targets to include Scope 3 emissions.

In FY22 the Board also reviewed and approved T25 Strategy, and received regular performance reporting on it and our T22 Strategy. As outlined in section 5 above, climate is a key part of our T25 Strategy.

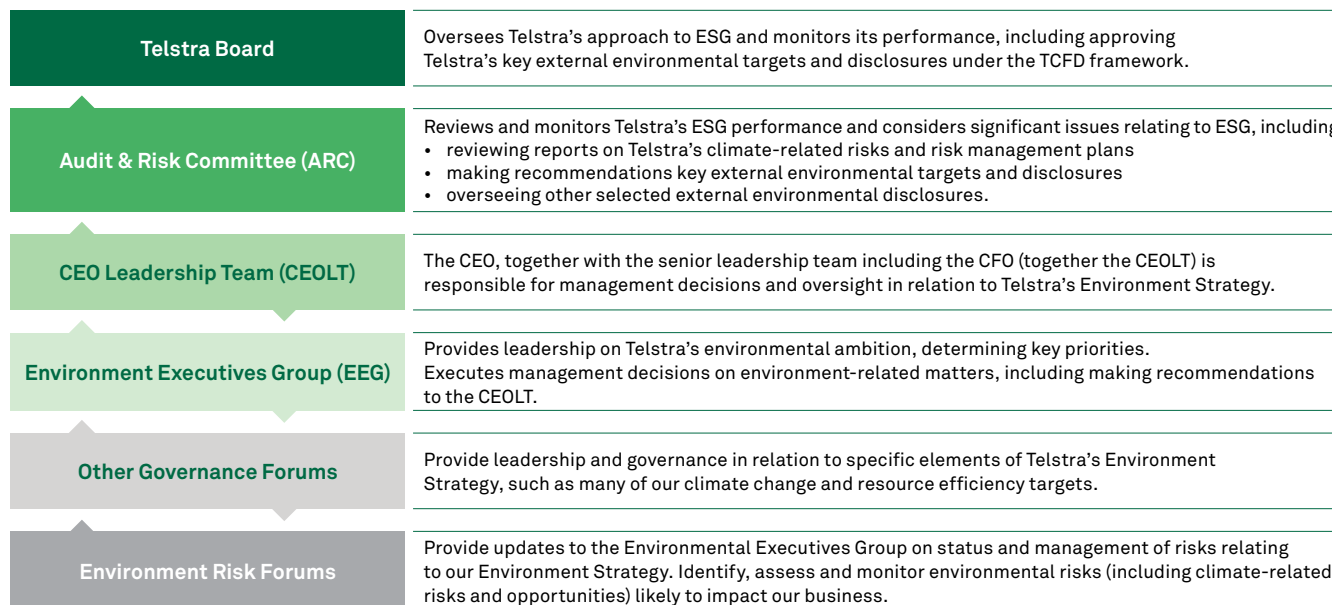
6.2 Audit & Risk Committee

During FY22 the Audit & Risk Committee (ARC) received two scheduled environmental risk updates, which included summaries of performance against our Environment Strategy goals, They were also provided with an update on the progress of our scope 1 and 2 emissions reduction targets and reviewed and endorsed for Board approval our scope 3 emissions reductions target. In addition, the ARC reviewed and endorsed for Board approval our final 2021 TCFD reporting, as well as reviewing our draft 2022 TCFD reporting.

The ARC also received regular updates on key cross-company risks, which included consideration of climate-related risks.

6.3 CEO Leadership Team

The CEO, together with the management team including the Chief Financial Officer (collectively the CEO Leadership Team or CEOLT), provides business leadership and senior



management oversight in relation to the development and implementation of our Environment Strategy.

During FY22 the CEOLT received updates at least quarterly on our Environment Strategy and progress against climate-related objectives, including topics such as carbon credits, scope 1 and 2 emissions, scope 3 emissions, our shadow carbon price pilot and climate change transition opportunities.

6.4 Environment Executives Group

The Environment Executives Group (EEG) is the peak Executive governance forum on environment-related matters (including climate-related subjects) below the CEOLT. It is composed of representatives from across Telstra and met eleven times during FY22, covering regular status updates and special topics including external

developments, our climate commitments and climate-related risks.

Accountability for delivering each of our Environment Strategy targets sits with one or more Executives from across the company. Each of those accountable Executives is a member of the EEG.

Remuneration for our senior executives and the majority of our global employees includes a variable component linked to performance against a range of personal and company objectives. The company objectives are aligned to our three-year strategy and goals which include climate-related metrics. The personal objectives for those executives and staff with specific climate-related accountabilities will also include some or all the climate-related objectives detailed in section 3 (Metrics and Targets).

7. Appendices

7.1 Appendix 1: Task Force on Climate-related Financial Disclosures Index

Our response to the recommendations of the TCFD and the location of these disclosures are summarised in the table below.




TCFD Recommendations	Section reference	
Governance Disclose the organisation's governance around climate-related risks and opportunities	a) Describe the board's oversight of climate-related risks and opportunities	6 -6.2
	b) Describe management's role in assessing and managing climate-related risks and opportunities	6 & 6.3-6.4
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	5, 5.1,5.2, 5.6, Appendix 2
	b) Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning	1, 2.1, 4.2, 5.2, 5.3, 5.4, 5.5
	c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	5.3, Appendix 2
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	4.1
	b) Describe the organisation's processes for managing climate-related risks	4.1, 4.2
	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management	4.2
Metrics & 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	3.3
	b) Disclose Scope 1, Scope 2, and if appropriate, Scope 3 greenhouse gas GHG emissions, and the related risks	3.1
	c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	3.1

7.2 Appendix 2: Using scenario analysis to understand climate impacts to our business

Our approach to scenario analysis

While the transition towards a low-carbon economy is having a transformative effect across many sectors, it is important to understand the range of risks and opportunities it presents for our business. We have used scenario analysis to understand our resilience and vulnerability to climate-related impacts. We have developed three divergent, climate driven scenarios in line with the TCFD recommendations to stress test our business strategy and the resilience of our physical infrastructure across three different time horizons: short-term (up to three years), medium-term (three to ten years), and long term (greater than ten years).

Telstra's three climate scenarios

	Scenario 1	Scenario 2	Scenario 3
	 Global co-operation to decarbonise driving low emissions, innovation and technological solutions	 Fragmented decarbonisation and low economic growth with trade barriers and regional conflict	 Limited decarbonisation most challenging to adapt, economic and social development continue to heavily rely on fossil fuel resources
Associated framework scenarios			
RCP Representative Concentration Pathways	RCP2.6	RCP4.5	RCP8.5
SSP Shared Socio-economic Pathways	SSP1 Sustainability - Taking the Green Road	SSP3 Regional Rivalry - A Rocky Road	SSP5 Fossil-fuelled Development – Taking the Highway
CSIRO CSIRO Australian National Outlook (ANO) 2019	Green and Gold	Slow Decline	Thriving Australia
AEMO Australian Energy Market Operator 2019 forecasting and planning scenarios, inputs, and assumptions	Step Change	Fast Change	Slow Change
Characteristics			
RCPs			
Global temperature range (2100)	<2°C	2-3°C	>4°C
Global emissions	Peak as soon as possible and decrease to net zero by 2050	Global peak by 2040	Continue to increase
Extreme weather events	Consistent across scenarios to 2040 where physical impacts begin to diverge. Exposure stabilises and possibly declines post 2040	Consistent across scenarios to 2040 where physical impacts begin to diverge. Exposure remains static from 2040-2050	Consistent across scenarios to 2040 where physical impacts begin to diverge. Exposure continues to increase beyond 2040
Electricity generation systems	Renewables with batteries, pumped hydro and renewable hydrogen	Renewables with peaking gas	Dominated by fossil fuels, including coal and gas
SSPs			
Digitisation	High uptake of digitisation, automation and energy efficiency measures	Convenience and security drive innovation and is constrained by low economic growth	Globalisation and improvement in living standards drive innovation in the digital world.
AEMO			
Renewable generation by 2050	98%	97%	65%
Scenario challenges			
Key challenges	<ul style="list-style-type: none"> • Fastest decarbonisation with highest carbon price • Physical impacts may impact productivity in localised areas • Competitors with strong ESG credentials make brand differentiation more challenging • Decline in market share for customers with high emissions intensity 	<ul style="list-style-type: none"> • Lowest economic development and globalisation • Lower supply chain resilience and increased severity of shocks exceed the capacity of suppliers to buffer • Workforce productivity impacted by events affecting base human necessities • Limited capital availability resulting in less investment in innovation • Customers demand solutions at low cost, potentially reducing Telstra's market share 	<ul style="list-style-type: none"> • High adaptation cost from physical climate change impacts • Decreased reliability in the supply chain worsening with time • Increased adaptive capacity and high levels of global technological development mitigates some physical impacts. However, worsening physical impacts increase the adaptation challenge over time. • Highly competitive market forces innovation to occur at a rapid rate with numerous niche competitors • Customers expect large investments in technology

Additional information on our scenarios and their impacts can be found in our 2021 Bigger Picture Sustainability Report TCFD Appendix²¹.

²¹ <https://www.telstra.com.au/aboutus/community-environment/reports#archive>

Our climate risks and their change over time²²

Transition risk

The transition to a low emissions economy presents risks to Telstra which will vary depending on how quickly and smoothly the transition occurs. They include policy changes, litigation, technology, market, and reputation impacts. The table below summarises how these risks may change over time under our three scenarios.

Transition risks								
Risk factor	Risk summary	Inherent risk	Accelerated Action (<2°C)		Divided World (2-3°C)		Changed Climate (>4°C)	
		Short term (<3yrs)	Medium term (3-10 years)	Long term (>10 years)	Medium term	Long term	Medium term	Long term
Policy and regulation	Change in policy and regulations – increasing compliance and regulatory requirements for our products and services, particularly as the physical impacts of climate change become more frequent and extreme, leading to increased cost.	High	▲	---	▲	▼	---	▼
Offsets	Carbon offset price increases – increase in carbon offset price to meet our carbon neutral Climate Active certification, and potential scarcity of high-quality offsets.	Moderate	▲	▲	▲	▲	▼	---
Carbon taxation	Price pass through – rise in supply chain pass through costs from an increase in carbon taxes.	Low	---	▲	---	▲	▼	---
Consumer preferences	Changing consumer preferences – changes in demand for existing offerings requiring quick pivots to new offerings reducing competitive advantage and leading to market share loss.	Moderate	---	▲	---	---	▲	▲
Substitution	Low carbon technology upgrades – products and services substituted or phased out before reaching maturity.	Moderate	▲	▲	---	---	▼	---
New technologies	Uncertainty of new technologies – large capital outlays with potential for unsuccessful investment returns.	Moderate	▲	---	---	---	▲	---
Customer expectations	Community reliance on continuity of services – inability to meet service demands, particularly in the face of physical climate impacts, leading to negative customer experiences and potential market share loss.	High	▲	---	▲	---	▲	▲
Brand perceptions	Costs to maintain ESG reputation – inability to meet ESG targets and rising expectations of ESG performance leading to negative brand perceptions and erosion of brand value.	High	▲	▲	---	---	▼	▼

Risk Rating: ■ Critical ■ High ■ Medium ■ Low

Risk Trend: ▲ Increasing --- Unchanged ▼ Decreasing

²² Physical risks are assessed in the long term based on their potential impact in 2050 when divergence between scenarios becomes more apparent.

Physical risk

As a market leader in the telecommunications and technology industry, we own a large range of infrastructure assets across all our operations. This exposes us to physical risks resulting in asset damage or loss and potential service disruptions under all scenarios. Physical risks will be felt across all scenarios, but are most severe under Changed Climate scenario where warming is greater than 4°C.

Physical risks								
Risk factor	Risk summary	Inherent risk	Accelerated Action (<2°C)		Divided World (2-3°C)		Changed Climate (>4°C)	
		Short term	Medium term	Long term ²³	Medium term	Long term	Medium term	Long term
Bushfires	Increase in bushfires – increase in frequency and severity of bushfires leading to infrastructure damage loss, extended service disruption, and reputational impact.	High	▲	▲	▲	▲	▲	▲
Flooding	Increase in flooding – increase in flooding frequency and severity leading to infrastructure damage loss, extended service disruption, and reputational impact.	Medium	▲	▲	▲	▲	▲	▲
Sea level rise	Rising sea levels – increase in sea levels leading to coastal inundation and damage to low-lying infrastructure increasing costs for relocation or repair.	Medium	---	▲	---	▲	---	▲
Cyclones	Increase in cyclones – increase in cyclone frequency and severity leading to coastal infrastructure damage loss and/or extended service disruption.	Medium	---	---	---	---	---	▲
Temperature (chronic)	Increase in annual average temperature – increase in maintenance requirements and associated costs.	Medium	▲	▲	▲	▲	▲	▲
	Increase in annual average temperature – higher energy costs from increased heat load.	Medium	▲	▲	▲	▲	▲	▲
Precipitation (chronic)	Increase in precipitation – increase in maintenance requirements and associated costs.	Medium	---	---	---	▲	---	▲
Health and welfare	Potential injury or death – of staff, contractors, or community members associated with acute physical climate events, the emergency response, and restoration of telecommunications service.	High	▲	▲	▲	▲	▲	▲
	Work restrictions to avoid heat morbidity – increased exposure to heat stress conditions requires more frequent breaks or prolongs essential work resulting in lost productivity, greater risk of prolonged service disruption, and inability to perform scheduled maintenance.	Medium	▲	▲	▲	▲	▲	▲
Compounding risks	Compound risk of multiple events – increase in number of backup power options required and self-insurance costs.	Medium	▲	▲	▲	▲	▲	▲
	Compound risk of multiple events – prolonged repair times due to site accessibility, resource availability and safety issues.	Medium	▲	▲	▲	▲	▲	▲
	Compound risk of multiple events – supply chain disruptions to purchased products and services.	Medium	▲	▲	▲	▲	▲	▲

Risk Rating: ■ Critical ■ High ■ Medium ■ Low

Risk Trend: ▲ Increasing --- Unchanged ▼ Decreasing

²³ Physical risks are assessed in the long term based on their potential impact in 2050 when divergence between scenarios becomes more apparent.

Data sources and method: physical risk assessment

Our assessment is based on best practice guidance (summarised in the physical risk table above) supported by climate science experts at CSIRO and data from the Bureau of Meteorology (BOM). The assessment considers potential outcomes to 2050 for scenario analysis. There is little divergence in the scenarios to 2040 because the physical response over that timeframe is driven by greenhouse gas emissions already absorbed by the climate system. As such, the 2030 timeframe is relatively independent of any emissions mitigation actions that may be undertaken, emphasising the need for adaptive measures under all scenarios. By 2050, there is divergence between scenarios, with RCP2.6 providing the lowest challenge to successfully adapt, and RCP8.5 the highest.

We identified five climate hazards which could cause disruption to our network and operations: bushfires, coastal inundation, cyclones, urban flash flooding and increasing temperature. The appropriateness of these climate hazards was reviewed against the availability of climate projections from Climate Change in Australia (CCiA) datasets²⁴. This formed the basis of our forward-looking physical climate risk assessment.

Climate hazard	Availability of climate data			Selected climate driver	Method overview
	RCP 2.6 (Accelerated Action)	RCP 4.5 (Divided world)	RCP 8.5 (Changed climate)		
Bushfires	✓	✓	✓	Fire line intensity	The fire line intensity for each asset has been determined by applying the Queensland CSIRO Oct 2013 State-wide bushfire prone area mapping methodology to the entirety of Australia. Fire line intensity provides an indication of how intensely a fire will burn and its potential movement through a landscape. This determines the likelihood of a fire being controlled and/or extinguished. This has changed from our FY21 analysis to address limitations associated with State defined bushfire prone areas.
Coastal inundation	✓	✓	✓	Coastal inundation	Based on CMSI projections, exposure to possible impacts from coastal inundation is based on proximity to the coast and elevation above sea-level.
Cyclones ²⁵				Tropical cyclones	Analysis is limited to wind exposure using location of cyclonic regions based on Australian Standard AS1170.2.
Urban flash flooding ²⁶			✓	Change in 1 in 20-year rainfall	Design rainfall standards and CMSI change factors applied to the 1 in 20 year 1hr and 24hr events. Projected 1 in 20 year event values were then compared to current design standards.
Increasing temperature	✓	✓	✓	Chronic increase in ambient air temperature	Equipment exposure to potential impacts of rising temperature when more than 30 days per annum of elevated temperature is experienced.

²⁴ The Climate Change in Australia (CCiA) web portal is the result of a collaboration between CSIRO and the Bureau of Meteorology. The portal provides projections of the Australian climate system through high resolution downscaling based on 40+ global climate models. Data outputs from the portal include data for selected models, years, climate variables and emission scenarios. Projections are presented for 20-year periods, where the year 2030 represents the 20-year average climate between 2020 and 2040. Where data output is represented as a change, climate data from the years 1986 to 2005 is used as the reference climate.

²⁵ Cyclone tracks are expected to remain broadly similar over the period to 2050 with the frequency of events anticipated to remain static or even decrease slightly (Climate Measurement Standards Initiative Technical Summary). There are projections which suggest cyclones may track further south, but these are low confidence and long-term (2090) and as such are not considered in this assessment.

²⁶ Climate data for future extreme rainfall events is low confidence and the analysis was undertaken to give an indicative view of future trends.

Quantification of financial impacts

Climate hazard	Method overview and key assumptions
All hazards	<ul style="list-style-type: none"> Projected costs associated with asset loss and service disruption are included. Other costs (such as deploying temporary equipment) are excluded. Assets at risk were determined using the available climate data referred to above. This results in a change in the number of assets exposed to a hazard over time, and an increase in the number of assets exposed in higher warming scenarios. Replacement costs are based on Telstra's estimate of replacement with current technology and built form. Service disruption costs are based on customer compensation payments.
Bushfires	<ul style="list-style-type: none"> Assets were categorised into risk bands according to their fire line intensity. In the different scenarios a change in the total number of assets exposed, and the number of assets in very high fire line intensity increases over time. Previous bushfires and their impacts to Telstra were used to categorise events by intensity. Given climate data cannot predict where, when, and how intensely a fire will burn, assumptions were used for intensity and frequency based on historical patterns from academic research and Telstra's experienced frequency of impact. In historical cases, asset loss has been relatively low (due to mitigation and adaptation actions taken by both Telstra and emergency services) and service disruption has been more common (influenced by indirect impacts to the electricity network and direct impacts to Telstra's assets). By drawing on historical impact data we implicitly assume this mitigation and adaptation action continues.
Coastal inundation	<ul style="list-style-type: none"> Assets were classified in bands according to their elevation and proximity to sea level. We assumed assets were proactively relocated so that the cost of their replacement only occurs once in the period to 2050. We assume no compensation payments would be payable for service disruption.
Urban flooding	<ul style="list-style-type: none"> Due to the low confidence of climate data this analysis was intentionally limited to high priority assets located in urban areas. Urban flash flooding relates to flooding because of short-duration, high-intensity rainfall events, whereby the volume of water overwhelms drainage systems. Analysis considered varying impacts including full asset loss, partial loss of internal assets, and service disruption. Historical events were used to inform assumptions around frequency and severity of impact. Collecting more event data specific to our assets, and updating the analysis as the climate data matures, will allow us to refine this analysis over time.
Cyclones	<ul style="list-style-type: none"> Cyclone tracks are expected to remain broadly similar to recent history over the period to 2050. Previous cyclones and their impacts to Telstra were used to categorise events by intensity and to develop frequency assumptions. Our records show that service disruption from cyclones (both directly and indirectly from impacts to electricity supply) have historically occurred more frequently than damage to our assets.

7.3 Appendix 3: Cumulative spend on energy efficiency initiatives

Year	Spend on energy efficiency initiatives
FY12-FY19	\$61.2M
FY20	\$3.7M
FY21	\$8.6M
FY22	\$13.7M

