Tech Council of Australia

Stepping Up

The ESG impact of the Australian tech sector

June 2023

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Contents

TechCouncil of Australia

We would like to acknowledge the research undertaken by Toby Brennan that has heavily informed this report and the new areas of work the Tech Council will undertake to support our members in addressing our ESG impact.

Any errors or omissions in figures cited are the author's own.

About the Tech Council of Australia

The Tech Council of Australia is the peak industry body for Australia's tech sector. Providing a trusted voice for Australia's technology industry, with almost 160 members, the Tech Council comprises the full spectrum of tech companies.

We aim to advise and engage with Australian governments, businesses, and the wider community to help support the ongoing creation, development, and adoption of technology across industries. Our vision is for a prosperous Australia that thrives by harnessing the power of technology.

Executive Summary

The Tech Council of Australia (TCA) was founded in August 2021 with goals to have 1.2 million tech jobs in Australia, and a tech sector contributing $250bn in GDP by 2030. To complement the economic contribution of the tech sector to Australia, the TCA will expand our Environmental, Social and Governance (ESG) work with members to ensure the sector contributes to a better environment and society.

We recognise that with the growing role of tech in the Australian economy comes growing responsibility to ensure we're having a positive impact on the Australian community and environment.

A critical first step in addressing ESG impacts across the Australian tech ecosystem is to better understand the current state of impacts and work underway. To this end, this report serves three purposes:

- to identify what ESG means for the Australian tech ecosystem
- to identify the top impacts for organisations operating in our ecosystem
- to explain how the Tech Council and our members are approaching these impacts

What does ESG mean?

ESG, which stands for environmental, social, and governance, encompasses the three key aspects of sustainable and ethical impact. It includes a company's environmental footprint, its social responsibility towards employees and communities, and the effectiveness of its governance processes and transparency. These factors are essential for responsible investing and ethical corporate behaviour.

One of the common challenges for tech companies is that the top ESG impacts in the tech sector – or those generated by tech adopted in the broader economy and society – are still emerging relative to traditional industries. This is particularly relevant in parts of the tech sector where technology has commercialised quickly and companies are younger.

These impacts can be positive where tech provides new tools and opportunities for companies in other industries to have a positive impact on ESG, where the sector provides economic and social opportunity for workers and communities, and where tech helps tackle complex society-wide challenges. This includes developing technology products that can help manage the energy transition, lifting productivity, improving medical care, and providing tools to make our built spaces more accessible to people with disability.

However, impacts can also be harmful where they create negative environmental consequences that must be managed, if working conditions are not fair or opportunity isn't open to the full Australian community, or where the right governance models are not in place for new technologies. By identifying these impacts clearly, this report will help build consensus across the tech sector enabling companies to move forward and collaborate.

What are the tech sector's top ESG impacts?

Across the three ESG domains, this report explores the five top impacts for the global tech sector and what this means in Australia. While the Australian tech ecosystem shares many ESG impacts with the global tech sector, we also have distinct strengths like a comparative advantage in many areas of renewable energy. While our tech ecosystem is already taking significant steps towards managing our impact across these issues, we can still see there is work to do in every area explored.

In the next 12 months, the TCA and its members will focus on three priority ESG impacts for the tech sector:

- **Carbon emissions**, an environmental impact relating to decarbonisation of the tech sector and our capacity to support decarbonisation across the Australian economy.
- **Workforce diversity**, a social impact relating to the inclusion of commonly underrepresented groups in the tech workforce.
- **Trust in technology,** a governance impact that includes addressing community concerns regarding data protection, privacy, safety and wellbeing as well as the ethics around new technologies like AI.

We have identified these three priority impacts by undertaking a double materiality assessment at the industry level and via consultation with members.

A double materiality assessment is used to identify areas for focus in ESG strategies. It is a method of prioritisation which takes individual ESG impacts, such as 'Workforce diversity' or 'E-Waste Management' and rates their materiality from two perspectives:

- **Business Case perspective** which generally identifies how important this impact is to the company's core mission and work. In the Tech Council's case, we have chosen to define this perspective as 'Importance to members' to ensure we're prioritising impacts that are important to our member companies' work.
- **Stakeholder perspective** which identifies how important this impact is to particular stakeholders, such as employees, customers or investors. Multiple stakeholder groups are often combined.

Using these two ratings, we have prioritised impacts that are both highly material to external stakeholders and our members.

How is the Tech Council acting on ESG impacts?

To support the work that our members are already doing, and to build capability across the sector, the Tech Council will lead work in four areas to support the sector to identify and manage ESG impacts.

- **Research** which includes producing and publishing unique, expert insights into tech sector activity and impact in Australia.
- **Policy** which includes developing expert, original and pragmatic policy positions on key impacts for the tech sector.
- **Engagement** which includes engaging with decision-makers, stakeholders and the public via events, consultations and workshops.
- **Ecosystem capability building** including supporting the Australian tech ecosystem to develop and share best practice as well as lift capability.

Greater detail on these areas, including examples of what we're doing, is included in Exhibit 1.

As these impacts evolve, our approach will adapt. We're committed to remaining engaged on these areas and supporting our members in having a positive impact in our communities and environment.

EXHIBIT 1: *The Tech Council's core competencies and work on priority ESG impacts*

Competency	Description	Examples of work we are doing		
		Environment - emissions	Social - workforce diversity	Governance - trust in technology
Research	We produce and publish unique, expert insights into tech sector activity, issues and impact in Australia	> Stepping Up report		
		> Industry benchmarking of practice > Research on areas of comparative advantage in Australia's tech sector and financing trends	> Tech Jobs Opportunity report > Diversity in Tech report > CSIRO place-based innovation > Industry benchmarking of practice	> YouGov community sentiment research > Facial recognition technology expert working group > Artificial Intelligence project with the Human Technology Institute > Industry benchmarking of practice
Policy	We develop expert, original and pragmatic policy positions on key issues impacting the tech sector.	> Advocating for policies that support the growth of the Australian tech ecosystem and responsible tech design and use		
		> NRF and financing policies to support new industries and technologies to support energy transition	> Skills and training policy > STEM Diversity work and review submission > Modern Slavery reforms submission	> AI regulation and policy > Privacy reform > Cybersecurity strategy and policy > Data governance and strategy
Engagement	We engage with decision-makers, stakeholders and the public via events, consultations and workshops.	> National Tech Summit > Annual Tech Showcase > Participation in consultations and roundtables by third parties		
		> Roundtable events with Ministers and stakeholders on financing	> Virtual Work Experience program > Roundtable events with Ministers and stakeholders	> Responsible AI Network > Quad investor network > Roundtable events with Ministers and stakeholders
Ecosystem capability building	We support the Australian tech ecosystem to develop and share best practice as well as to lift capability in them	> ESG Community of Practice		
			> Digital Employmernt Forum > Virtual Work Experience program	> Digital Leaders Forum

The tech sector is committed to having a positive impact in the Australian community and on our environment

We recognise that with our growing role in the Australian economy comes responsibility to ensure we're having a positive impact in the Australian community and environment.

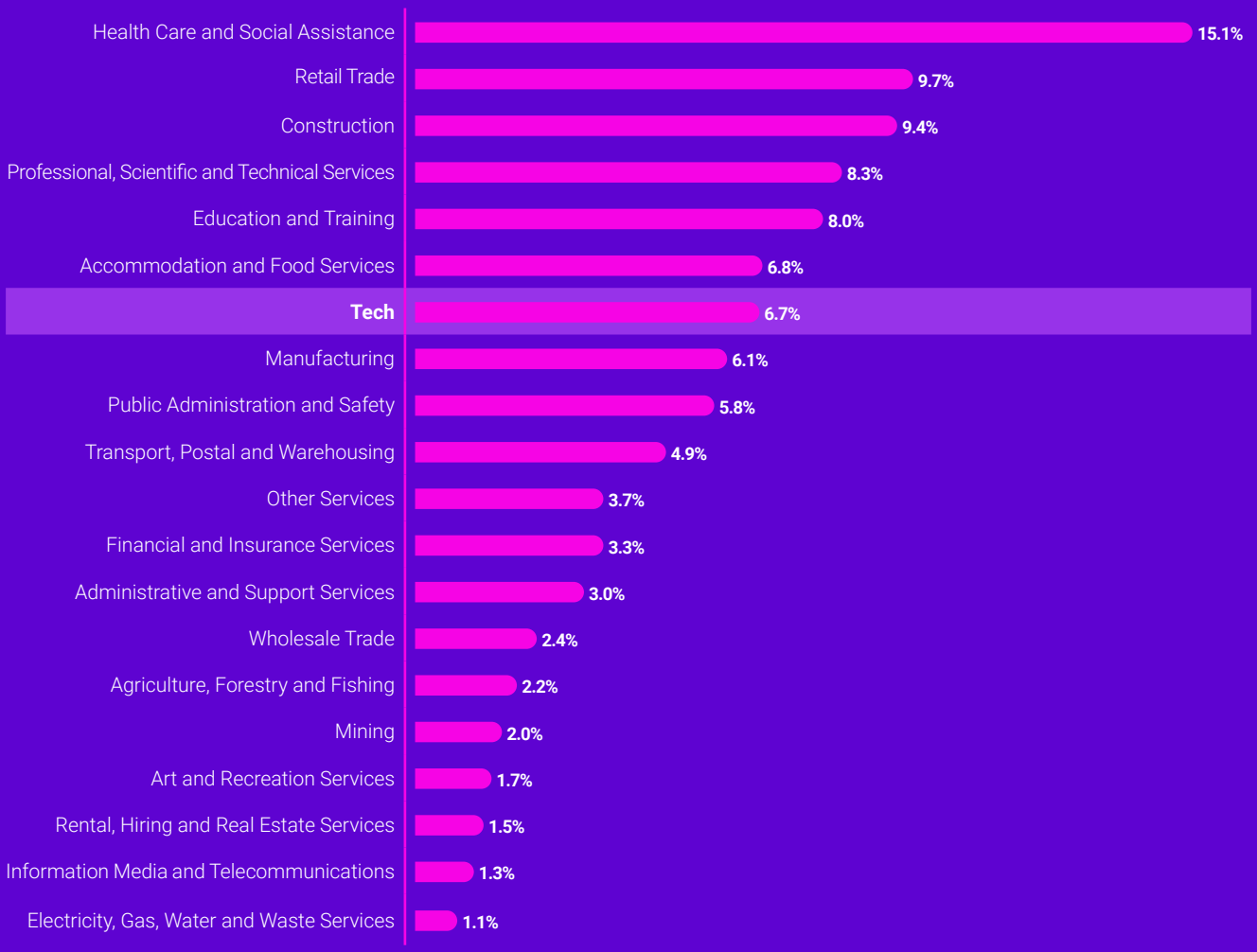
Australia's tech sector is an increasingly important part of our economy

Australia's tech sector is becoming a significant part of the Australian economy. As of May 2023, the tech sector was the seventh biggest employing industry in Australia with over 935,000 workers, representing almost 7% of the Australian workforce as shown in Exhibit 2.

The importance of the tech sector across the Australian economy is demonstrated in the sources of job growth. In the three months to February 2023, the indirect tech sector , comprised of non-tech industries like banking and mining, has added 8,200 jobs. This accounts for 78% of the total 10,500 jobs created during this period.

EXHIBIT 2: *Employment by industry*

%, employed people, February 2023



Source: ABS

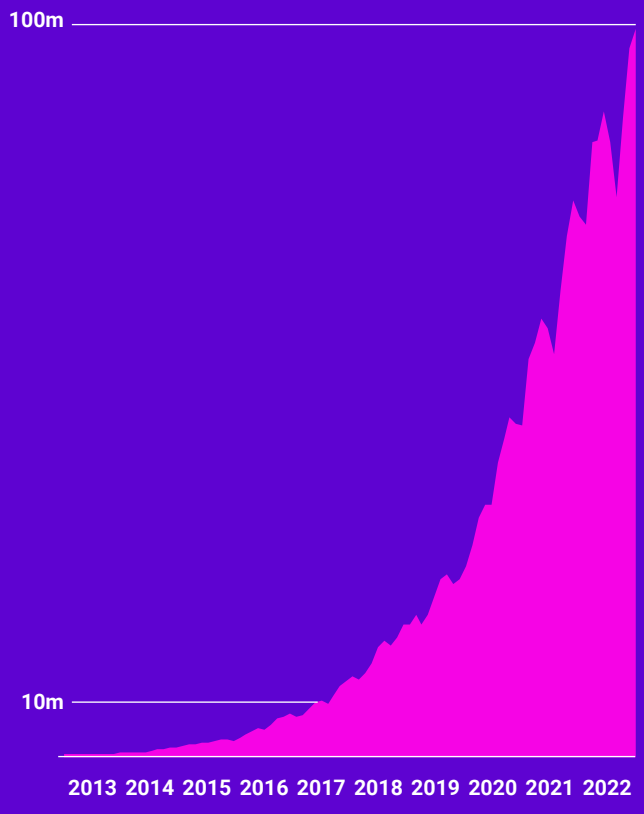
This reflects a long-term structural change in Australia's economy towards increased technology adoption. Since the mid-1980s, tech jobs have grown at four times the rate of other jobs, surviving multiple economic downturns. Now 1 in 14 working Australians are in a tech job, with more Software Engineers than plumbers, hairdressers or baristas.

Recent growth suggests that Australia is on track to reach the national tech jobs target of having 1.2 million people in tech jobs by 2030. This is a joint goal of the Australian Government and the Tech Council of Australia.

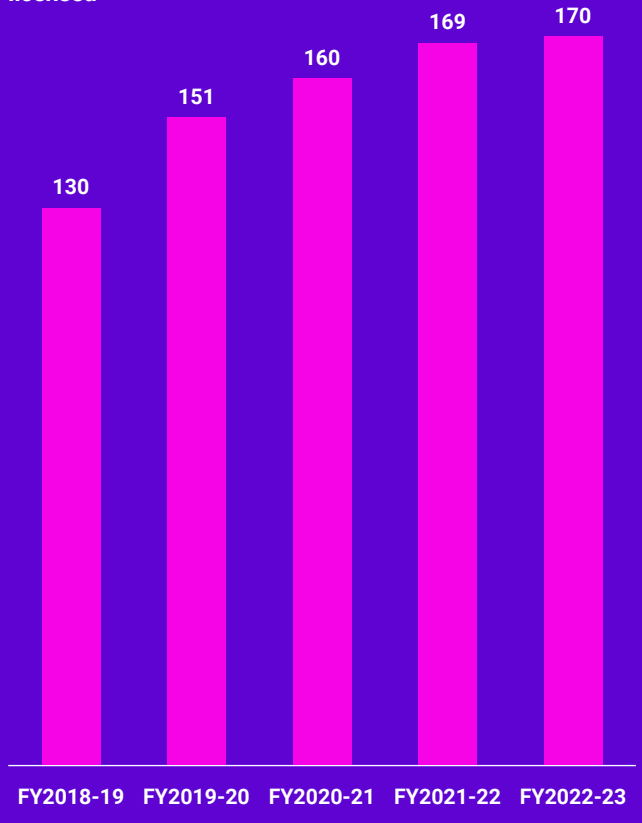
The economic importance of Australia's tech sector can also be seen through the growth of users, illustrated in Exhibit 3. As of late 2022, Canva had over 100 million users, showcasing a 10-fold increase in the last five years. That's equivalent to four times the Australian population. Wisetech Global's software is now used in 170 countries - a 30% increase in the last four years.

EXHIBIT 3: *The growing user base of the Australian tech sector*

Number of Canva users, unique users



Number of countries in which Wistech Global software is licensed



Source: Canva, Wisetech

<?>. The indirect tech sector is comprised of tech-intensive jobs in industries other than the direct tech industry. The direct tech industry includes four ANZSIC sub-industries: Internet publishing and broadcasting; Telecommunications services; Internet Service providers, Web Search Portals & Data Processing Systems; Computer System Design and Related Services

Box 1: How do we define the tech sector?

We define the Australian tech sector as having two major components:

- **the direct tech industry**, which includes firms that develop or sell technology as their primary purpose, as well as investors that primarily or exclusively operate in tech.
- **the indirect tech industry**, which includes those firms and their employees that are tech intensive through being both significant users and developers of technology to support the primary purpose of their business, such as banking, mining or education.

In this report, we explore ESG impacts that relate to technology and the firms which develop and sell this technology. Some firms in the indirect tech industry may also have other ESG impacts which relate to the primary purpose of their business. These non-tech ESG impacts fall outside the scope of this report.

The tech-focused ESG impacts in this report are highly relevant to a range of companies across the Australian economy. For instance, traditional companies that large tech workforces often share the same challenges with diversity that 'direct tech' companies face. This means this report may also be useful to those firms.

There are two main approaches to ESG within Australia's tech sector

Establishing how tech companies are currently working to understand and identify their role in ESG impacts is crucial to understanding how the Tech Council and other stakeholders can support development of responses to these impacts.

There are two main approaches to ESG. The first is the 'ESG mindset'. This is characterised by a focus on mitigating any negative impact on society or the environment that may be created in the normal course of business. For instance, consider a data centre provider that powers their data centres through a connection to electricity grids that are run on non-renewable energy sources. Through an ESG mindset they may offset the resulting carbon emission (the negative environmental impact) by investing in reforestation.

The other way of approaching ESG impacts that is common in the Australian tech sector is the 'impact mindset'. This is characterised by a focus on ensuring the core activities of the business generates a positive impact for society and/or the environment, as well as investors. To extend the example of the data centre provider noted previously, through an impact mindset they may choose to develop new technologies that significantly reduce their energy consumption and place their centres in locations where they can connect to grids that are powered by renewables.

In our research, we have identified that some companies choose to approach ESG impacts with one mindset or the other. However, in some cases it is not possible to exclusively adopt one approach. Across the breadth of the tech sector, the Tech Council will support members to identify and pursue initiatives that could be categorised under either approach to ESG.

What ESG means for the tech sector

Our research has focused on exploring five key ESG areas that are most relevant to the tech sector globally: climate, waste and recycling, trust in technology, workforce & community, and supply chains. We've also investigated how our members are already addressing their impact on these areas. This helps us understand how the Tech Council can support our members in having a positive impact.

The scope of this impact ranges from areas of environment responsibility such as emissions reductions, to areas of social responsibility including the diversity of the workforce and our relationship with customers. It also includes the governance processes that support companies to ensure they are having a positive impact in these two areas above and acting ethically in their core business activities.

'ESG' stands for 'environmental, social and governance'. These three categories are used as measurements of sustainability and ethical impact across many industries. They encompass a wide range of factors that we might consider as part of responsible investing or corporate behaviour.

- **Environmental factors** can include a company's impact on the environment, encompassing things like carbon emissions, waste management, energy efficiency, and the company's effects on biodiversity.
- **Social factors** can include how a company manages relationships with employees, suppliers, customers, and communities. This might involve considerations such as human rights, customer satisfaction, customer data protection, and the health and safety of employees.
- **Governance factors** can include factors related to a company's leadership, audits and internal controls, shareholder rights, and transparency. It refers to the system of rules, practices, and processes by which a company is directed. It includes the practices a company uses to commission, design and manage tech products and services, data and AI governance, and cybersecurity.

There are material environmental, social and governance impacts within the tech sector, although their materiality can vary considerably by subindustry and company type.

We have explored a range of impacts to understand the state of ESG work in the Australian tech sector

To understand the impacts faced by Australia's tech sector and work underway, we've focused on five key areas. These areas are:

Environmental impacts

- **Climate.** This includes reducing emissions of greenhouse gases, across all three scopes of emissions and adoption of renewable energy.
- **Waste & Recycling.** This includes reducing waste in both production and consumption of goods and services, and improving circularity of materials through reuse, re-manufacturing and recycling, such as increasing recycled content.

Social impacts

- **Workforce & Community.** This includes hiring workers fairly and inclusion within the tech workforce, as well as social issues relating to our communities.
- **Supply chains.** This includes being aware of and addressing environmental and social issues in supply chains that support production of technology goods and services.

Governance impacts

- **Trust in technology.** This includes a range of impacts, including trust in data use, responsible use of tech and AI, and secure and safe by design principles.

This section will explore the global tech sector's impact on these areas in greater depth and their relevance in Australia, providing context on the impacts that our members are facing and addressing. We also include case studies to illustrate how our members are approaching some of these impacts.

Environmental impacts

One of the top environmental impacts in the global tech industry revolves around reducing emissions of greenhouse gases across all three scopes of emissions, including those from suppliers. The global tech sector's carbon footprint is primarily driven by energy consumption and the manufacturing processes of electronic devices. Addressing this impact requires a comprehensive approach that involves adopting renewable energy sources to power data centres, manufacturing facilities, and operations.

The environmental impact of tech sectors in different countries varies considerably by the composition of each tech sector. Australia's tech sector, which has a very large share of software firms, has relatively low emissions by virtue of software having a relatively low carbon footprint (particularly in Scopes 1 and 2). In the next section, we explore the climate-related impacts facing the tech sector and how companies are approaching these impacts.

> Climate

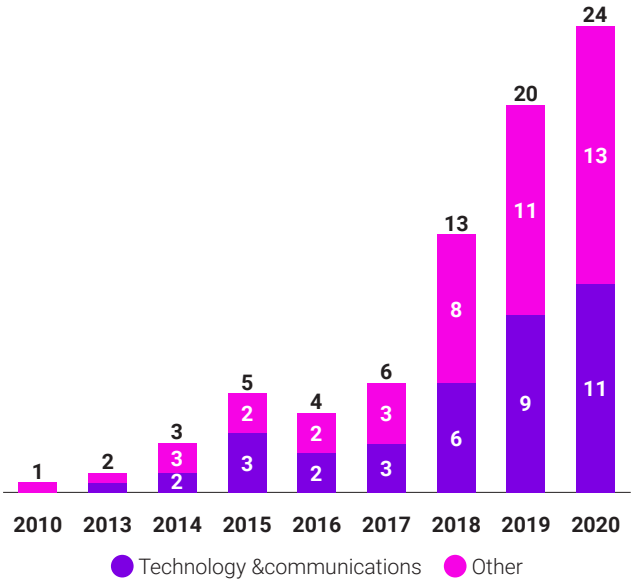
The tech sector is not a major contributor to global emissions, and is addressing its emissions more proactively, relative to other industries. Globally the tech sector represents 2 to 4% of total emissions, with three major sources: data centres, networks, and user devices. Most of these are electricity-related emissions, with a clear abatement pathway.

Tech companies are global leaders in supporting renewables rollout, with major investments in power purchase agreements (PPAs). The scale of these global agreements is illustrated in Exhibit 4. However, increasingly, there is recognition that PPAs are not enough and a shift to 24/7 renewables is required (see Box 2).

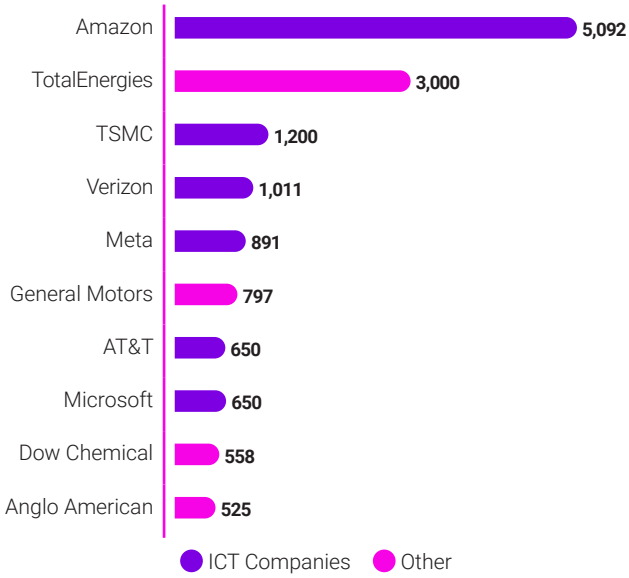
Planning proactively to reduce climate emissions associated with energy usage from digital infrastructure, including data centres and networks, offers a critical opportunity to avoid a recarbonisation of the economy as it both digitises and transitions away from traditional energy sources. Australia's abundance of renewable energy sources, leadership in climate and energy tech, and its strength as a site for data centres are all potential sources of competitive advantage in this area.

EXHIBIT 4: *Purchase power agreements*

Global power purchase agreements volumes by sector, 2010–2020, GWs



Global top corporate renewable energy purchasers, 2020, MWs



Source: IEA; ITU (2022), Greening digital companies: Monitoring emissions and climate commitments; Business Renewables Centre Australia, "BRC Deal Tracker"

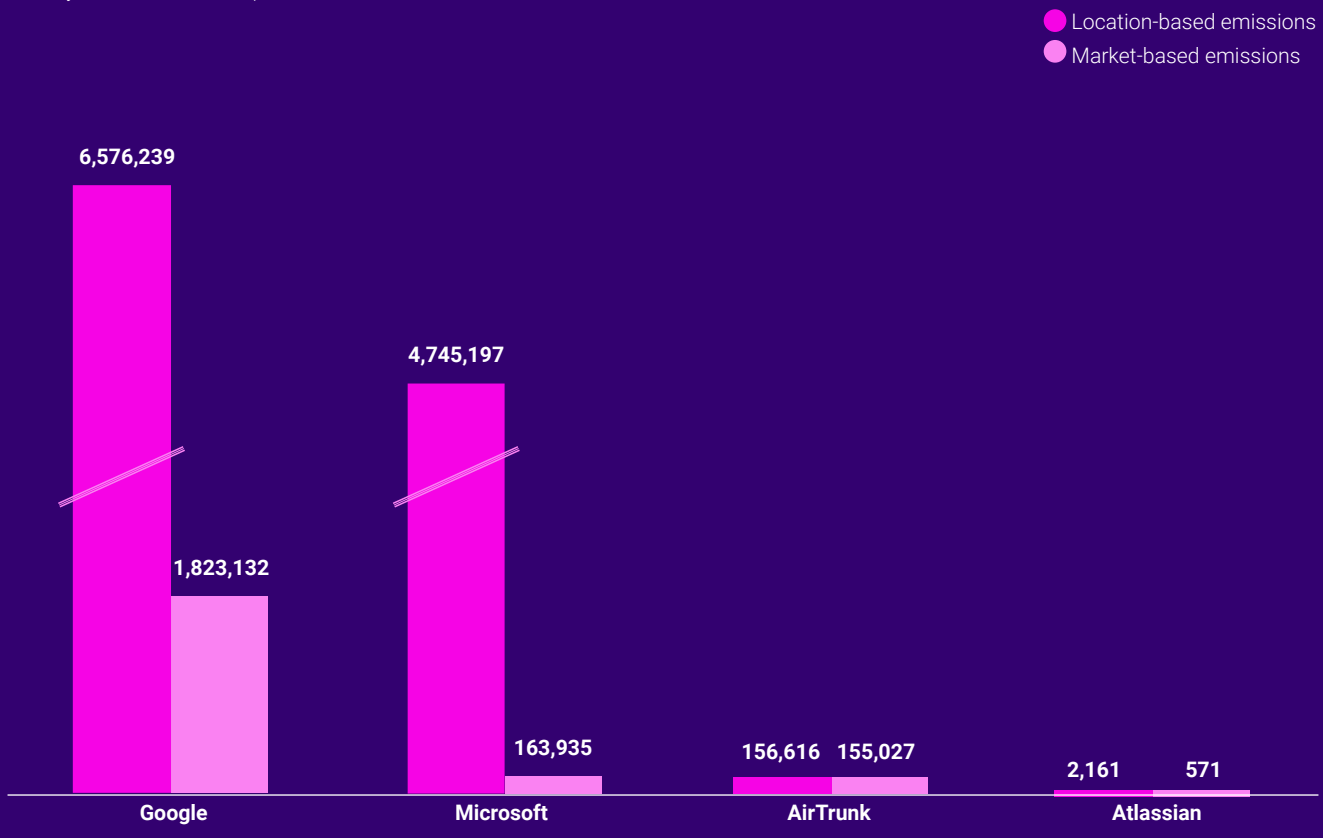
Box 2: Purchase Power Agreements are a positive step but not complete solution

Most companies purchase renewable electricity in many markets in one of two ways – through power purchase agreements, or through purchasing renewable energy certificates that guarantee that renewable electricity is being generated somewhere. However, that is no guarantee that the electricity used by the company is actually renewable because the company is reliant on the mix of renewables in the local grid at the time it draws down the electricity.

The GHG Protocol that governs corporate emissions reporting allows companies to calculate their electricity-related emissions in two ways – location based, which uses the average carbon intensity of their grid, and market based, which allows them to offset carbon based on their purchases. The difference between companies' location-based and market-based scope 2 emissions shows the gap between what is being bought and what is being used (see Exhibit 5).

EXHIBIT 5: *Difference between methods of calculating scope 2 emissions*

Latest year[1], tonnes of CO2 equivalent



Source: ITU (2022), Greening digital companies: Monitoring emissions and climate commitments; company websites and reports

1. Time periods in this figure vary slightly due to differences in timing of company reporting.

> Climate cont.

Tech Council members are not significant emitters because they are mostly software firms. Amazon, Google and Microsoft are all top 20 tech emitters globally, and are all undertaking work to address their impact. In Australia, few Tech Council members are 'regulated' reporters of emissions, such as Telstra, Optus, AirTrunk and Amazon. This reflects the comparatively low emissions intensity of the Australian tech ecosystem.

For most Tech Council members, scope 3 emissions account for a large share of their total carbon emissions (usually greater than 80%) as shown in Exhibit 6. This is typical across most sectors but does highlight the challenges of abatement with long supply chains.

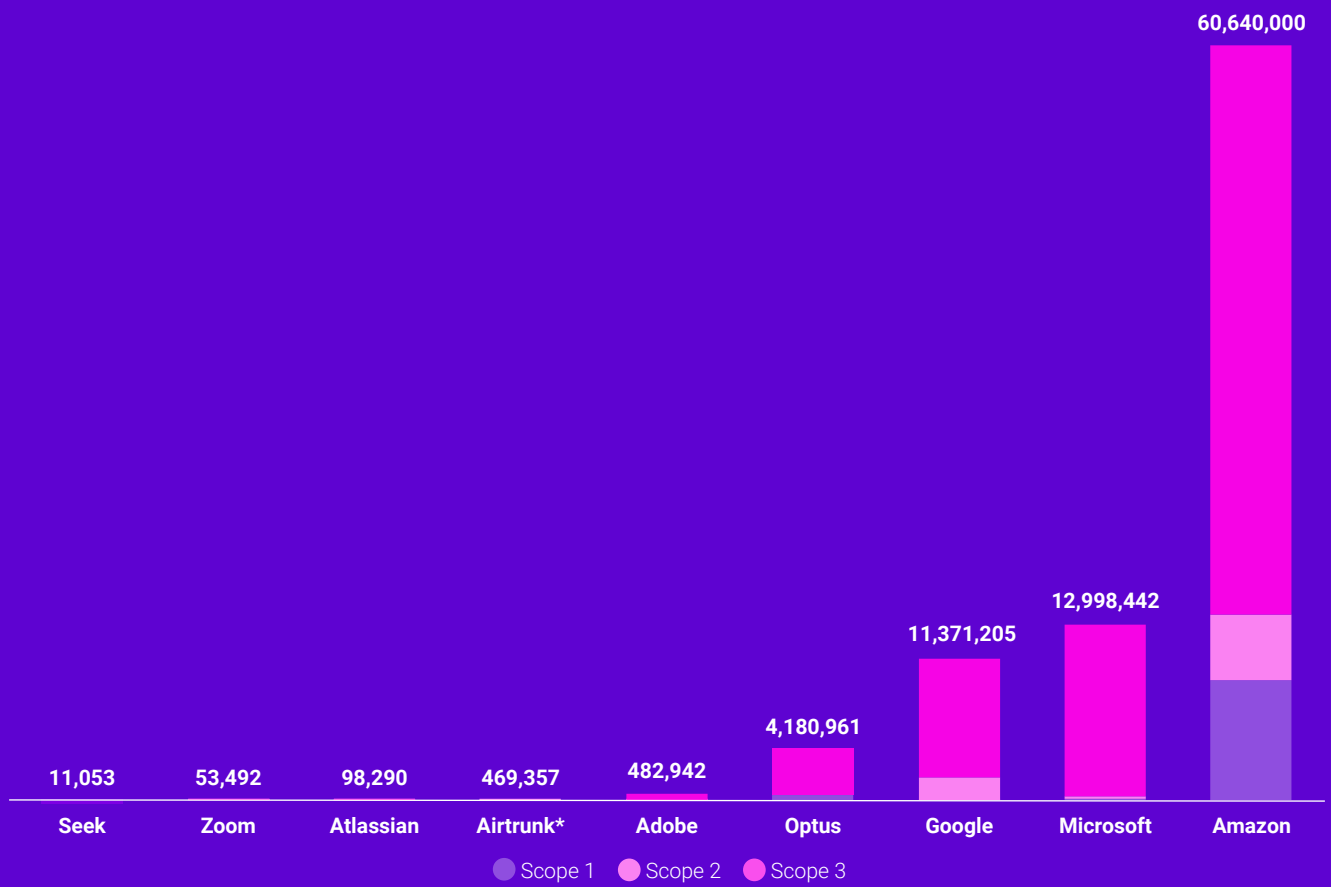
> Waste & Recycling

E-waste in Australia is expected to continue to grow (see Exhibit 7), but tech sector products actually present a shrinking share of this material. As tech products reach market saturation and lifecycles increase, the amount of tech e-waste is expected to decline.

The major driver of e-waste in the next decade is solar PV and batteries. There are existing mandatory and voluntary Extended Producer Responsibility ('EPR') schemes for computers and mobile phones that Tech Council members participate in already. The National Television and Computer Recycling Scheme ('NTCRS') is being strengthened to cover an increasing share of the waste material generated. Many Tech Council members already participate in these kinds of programs and initiatives.

EXHIBIT 6: *Total self-reported emissions across all scopes, selected TCA members*

tonnes of CO_2 equivalent, latest year



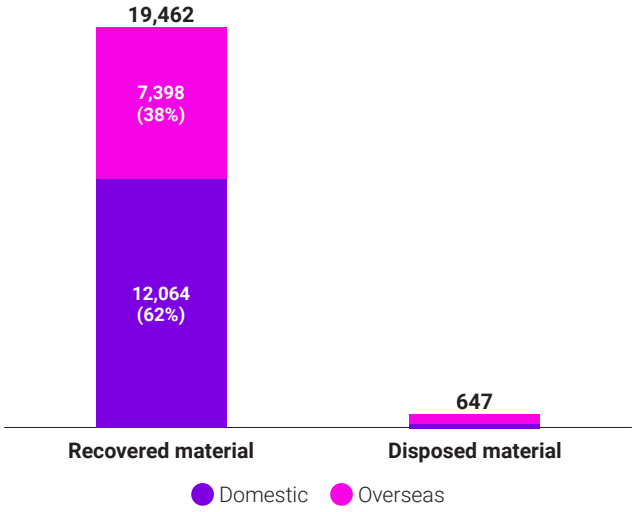
Note: Scope 2 emissions are reported here on a market-based estimate, not location-based, as most members only report that approach

* Scope 3 emissions not yet reported

One outstanding issue with existing schemes is the role of overseas waste processing. Almost 40% of the material recovered from e-waste that is collected was recovered overseas, and more than 70% of the waste disposed occurred overseas (see Exhibit 8). Given the toxicity of some materials used in e-products, there are concerns about the adequacy of health and safety arrangements for workers involved in e-waste processing in countries with less strict regulatory arrangements than Australia.

EXHIBIT 8: *Location of recycling for the Australia and New Zealand Recycling Platform under NTCRS*

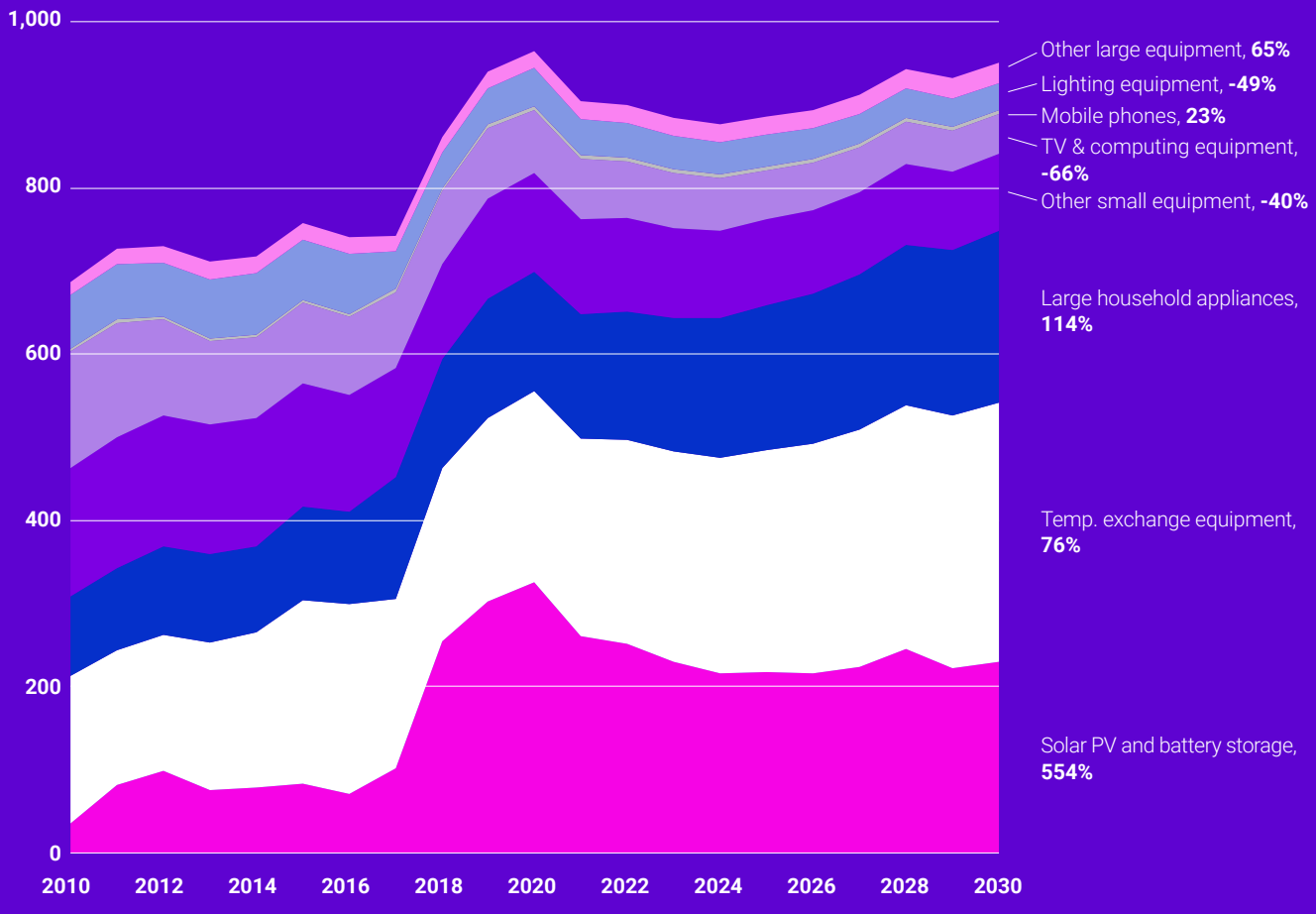
tonnes of material (share), 2020-21



Source: ANZRP

EXHIBIT 7: *E-products placed on market in Australia*

thousands of tonnes, 2010-2030 (2020-30 forecast)

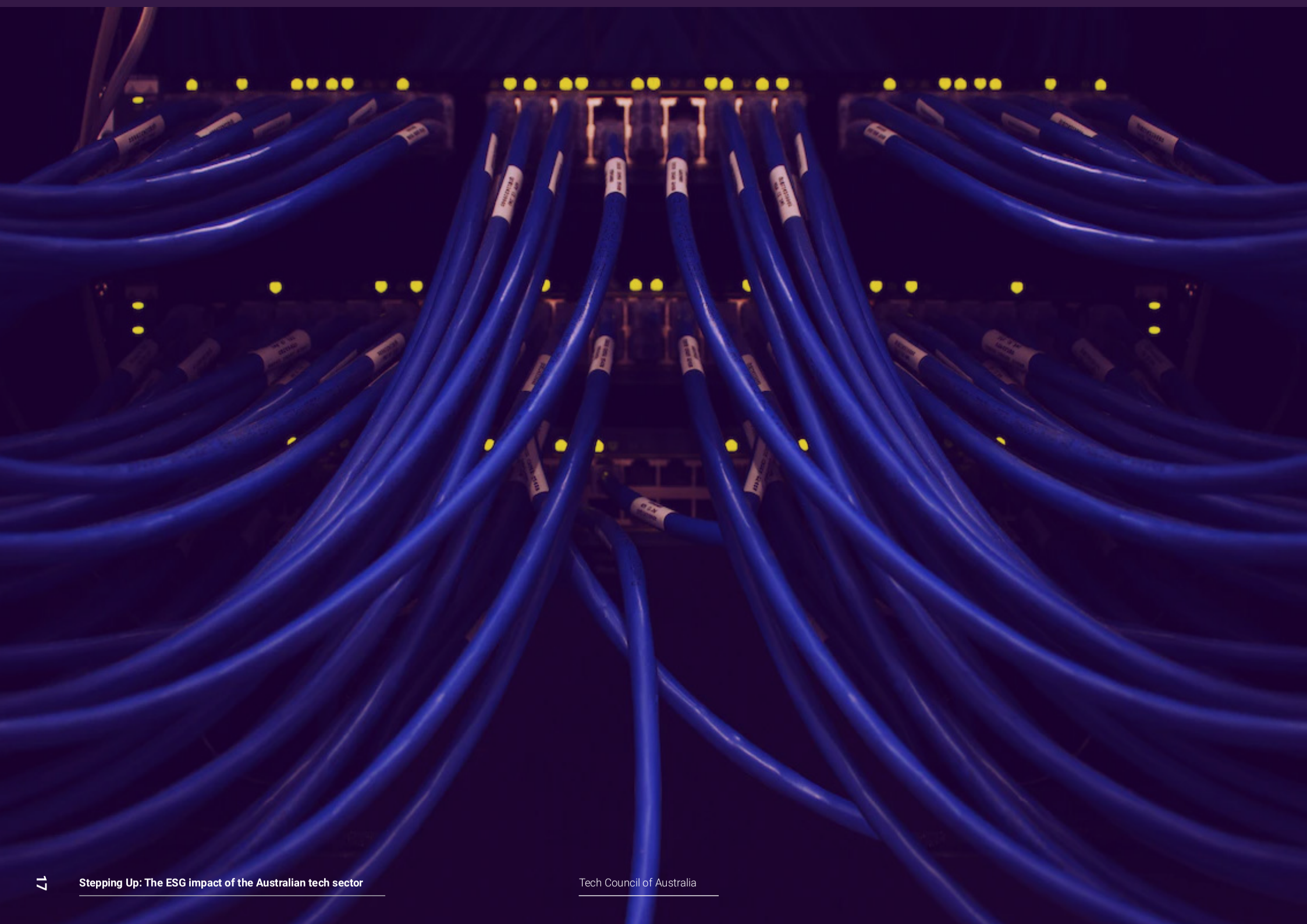


Source: DAWE (2021), E-product stewardship in Australia: Evidence report

Case Study: AirTrunk's approach to net zero by 2030

In 2022, AirTrunk announced its unique approach to managing net zero emissions in hyperscale data centre environments. The approach drives accountability, transparency, zero double counting and clarity across the industry.

- Customer electricity consumption accounts for the majority of carbon emissions associated with AirTrunk's data centres.
- AirTrunk's customers, some of the world's leading technology companies, have their own public climate targets and are global leaders in renewable energy procurement.
- AirTrunk's approach enables customers to take ownership and responsibility for their electricity consumption within AirTrunk data centres and manage the associated emissions under their own emission reduction targets. In this case, AirTrunk will report these emissions under Scope 3.
- AirTrunk recognises that it has a stewardship role for the electricity consumed in its data centres and will report any emissions that are not managed by customers, under Scope 2. AirTrunk plans to achieve Net Zero for these emissions through the procurement of renewable energy.
- AirTrunk commits to safeguarding that 100% of electricity consumed at a data centre is covered under a Net Zero target, whether by AirTrunk or its customers



Social issues

The tech industry provides high-paid, flexible, and fast-growing opportunities for workers, but many parts of the Australian population are not fully included in the tech workforce. Greater diversity is crucial for companies to help improve problem identification and development of solutions. Better representing the diversity in the Australian labour force also ensures equitable sharing of economic benefits from high-wage, high-productivity tech jobs.

> Workforce & Community

Workforce and Community impacts for the Australian tech sector primarily focus on the inclusion of a range of commonly underrepresented groups in the tech workforce. This includes people working in all jobs in the direct tech industry , as well as people working in technology jobs across the economy in firms within non-tech industries like banking, government and mining.

Striving for workforce diversity is critical for social and economic reasons. First, tech jobs are amongst some of the best-paid, fastest growing and most flexible jobs in the Australian economy. Ensuring the opportunity to work in good jobs is open to all Australians is important from a social equity standpoint.

Second, tech workers design and build new services and products that solve existing pain points. Ensuring a diversity of perspectives, skills and life experiences are brought to bear in identifying the problems to be addressed, and how to address them, has a vital impact on the efficacy and quality of services and products produced.

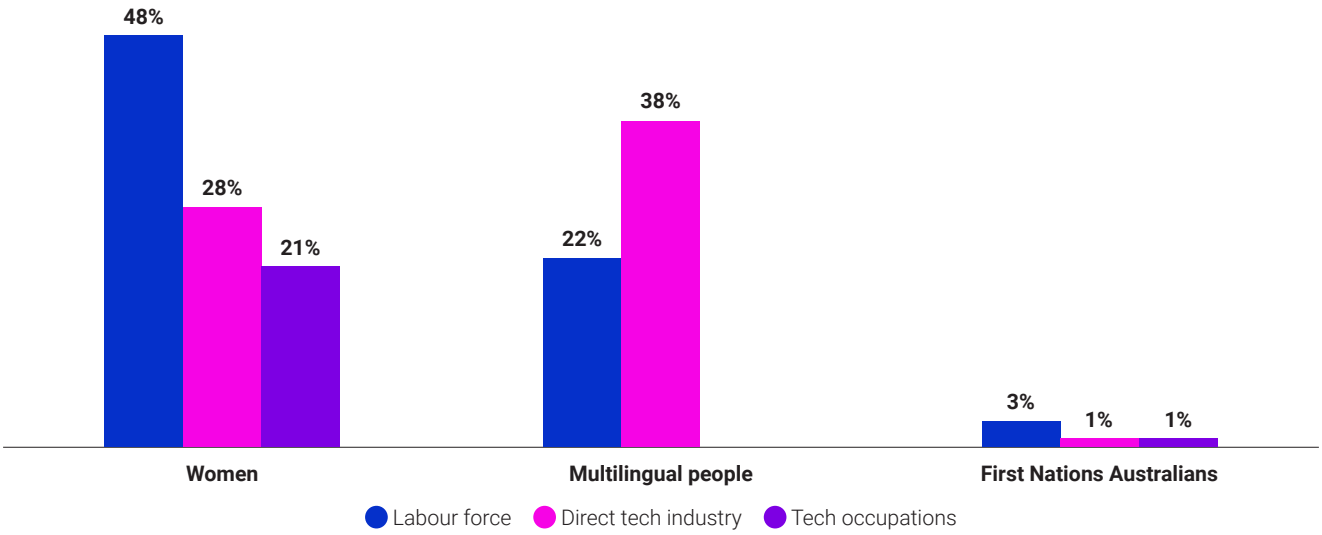
Finally, Australia has deep skills shortages in its tech workforce, including in areas such as product management, software engineering, data science and cybersecurity. In fact, to achieve Australia's national target of having 1.2 million workers in tech jobs by 2030, Australia will need 600,000 more people on a net basis to enter tech jobs. This includes people entering via their first job, entering via reskilling and upskilling pathways, and via migration. It will be vital to ensure that the full gamut of Australians are inspired and able to work in tech jobs if these skill shortages are to be addressed.

Tech Council research shows that the tech workforce does not fully include commonly underrepresented groups. While women account for 48% of the labour force, they only account for 28% of total tech workers across the economy as of November 2022. This is slightly lower for tech occupations (such as Software Engineers), with women comprising only 21% of people working in these jobs. Women are slightly better represented in the direct tech industry because this includes female-dominated occupations like marketing and human resources within tech companies, as shown in Exhibit 9.

First Nations Australians are also not currently included in the tech sector at the same level as the labour force. Though First Nation Australians represent 3% of the labour force, only 1% of people working in tech occupations (and the direct tech industry) identify as Aboriginal or Torres Strait Islander in the 2021 Census.

EXHIBIT 9: *Representation of women, CALD people and First Nations Australians in the tech workforce*

% of women, multilingual people and First Nations Australians



Note; Data on multilingual people's employment in tech occupations was not available when this analysis was conducted.

Source: Australian Census 2021

In terms of age, tech sector workers are slightly younger on average than across the rest of the labour force. Approximately 52 per cent of workers are under the age of 40, compared to 49 per cent for other industries. That said, the intersection of age and other demographic characteristics like gender can differ. Women, for instance, are twice as likely to enter the tech sector between the ages of 25 – 30 years old, than they are before 25 due to lower participation rates in STEM higher education pathways.

A distinct trend in tech workforce diversity is the inclusion of people from culturally and linguistically diverse backgrounds. Thirty-eight percent of people working in the direct tech industry speak more than one language well or fluently. The tech sector is also a major employer of migrants. Half of the people working in tech occupations were born overseas, compared to one-third of people working in non-tech occupations. Migration is also an important source of gender diversity for the tech workforce, with almost half of the women in the tech sector having migrated to Australia in the two years prior.

These statistics reflect the diversity of the whole tech workforce. Of course, these industry-wide figures may not be representative of all companies. Understanding the drivers for success for firms with excellent diversity and inclusion outcomes will be important to help identify how to lift the progress across the sector.

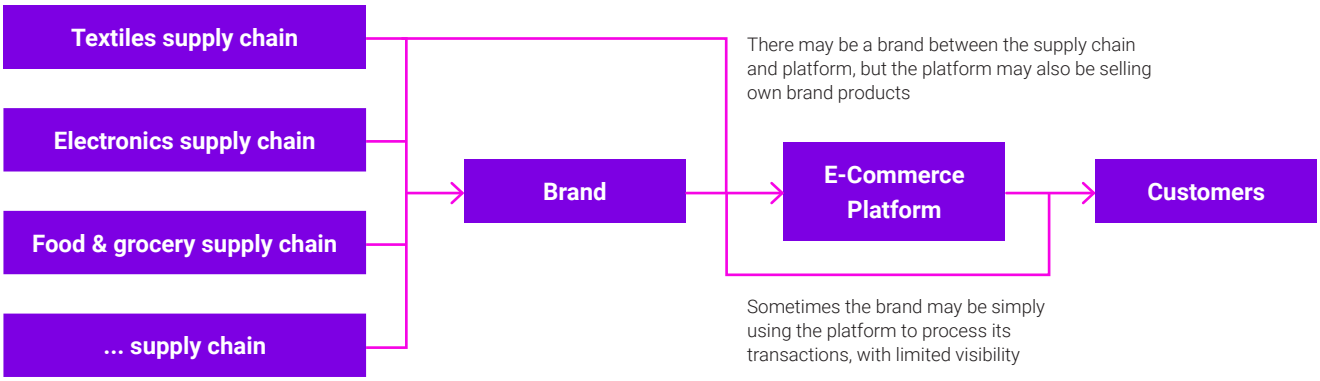
> Supply Chains

Tech products and services used by consumers are the culmination of complex, global supply chains. These global supply chains bring many benefits but can also present risks to companies. The main areas of concern in supply chains are the sourcing of raw materials and the human rights of workers, either up the supply chain or in outsourced workforces.

Tech products utilise a range of minerals, and some of those minerals are sourced from areas affected by ongoing conflict. Managing the human rights concerns in these complex environments can be challenging, particularly when the supply chains are long and tech companies are several steps removed from the sourcing of raw minerals.

The human rights impacts of workers across supply chains differs across the tech sector because of different relationships to those supply chains. Most tech manufacturing is outsourced into long supply chains, which makes it challenging for brands and retailers to ensure the appropriate respect for workers' rights in their supply chains. These impacts are particularly acute for e-commerce platforms, that may have exposure to many different supply chains. This is illustrated in Exhibit 10. Software also uses large, outsourced workforces in developing countries, but the shorter supply chain and more direct control generally makes it easier to ensure workers' rights.

EXHIBIT 10: *Conceptual e-commerce supply chains*



> **Supply Chains cont.**

Impact of mineral sourcing

Problem

- The production of tech hardware uses a range of different raw materials
- This includes some materials that can be obtained in regions where their production finances conflict or risks encouraging conflict
- The four minerals of particular concern are tin, tungsten, tantalum and gold, which have a range of applications in tech products – tin, for example, is used in solder, while gold is featured in connectors
- Cobalt has recently become of greater concern also, but is currently not featured in most conflict minerals standards or frameworks
- The region of principle concern is the Democratic Republic of Congo and surrounding countries in the Great Lakes region of Africa, where conflict has persisted in recent decades and is often financed by mineral production

Response

- Responsible Minerals Initiative has been established to support collective action by industry to address this issue
- It aims to continue the use of minerals from the region in order to maintain support for economic activity
- To address conflict risk, supply chain monitoring and auditing are undertaken to ensure extraction, smelting and refining activities are conflict free

Protection of workers up the supply chain

Problem

- Most tech hardware is manufactured in developing countries, except for some high tech products such as semiconductors
- The human rights standards or enforcement of standards for workers in those production facilities often differ to the those in developed countries where many consumers live
- Issues include working hours, use of child labour, health and safety, and the right of workers to organise and raise complaints
- There are also concerns about the rights of workers in raw materials sourcing – in many countries in Africa, there is still significant artisanal mining, with damaging consequences for workers' health and safety and poor incomes

Response

- Most major brands have a range of supplier responsibility programs in place to ensure standards in their supply chains
- A common tool is a supplier code of conduct, discussed in detail subsequently
- This is often accompanied by supplier declarations of compliance, audits, and sometimes there are processes for direct engagement with workers to ensure human rights are being respected

Protection of outsourced workforces

Problem

- While tech software does not usually use the same long supply chains, it often relies on large technical workforces located in countries with emerging skills bases
- The employment of these workforces may be either outsourced to contractors, or directly by local subsidiaries of the software company
- Services provided by these workforces range from product development and design, through to technical support to customers
- The largest suppliers of these workforces are India and the Philippines, though Eastern European countries are also significant sources of contract developers
- Workers rights are often not as well established in these countries compared to Australia, and managing the local context while maintaining consistency can be a challenge for some companies

Response

- While there are clearly workers rights challenges with these outsourced workforces, the shorter supply chain and more direct control by the companies may make this risk more manageable than the challenges in hardware manufacturing
- Given these workers are usually higher skilled and more highly educated, they may be less susceptible to exploitation than low-skilled workers in minerals processing or manufacturing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Governance impacts

For the tech sector, globally and in Australia, governance impacts can span common business impacts such as shareholder rights and transparency as well as tech-focused impacts such as trust in technology, data protection and the ethics of technology use. In this report we devote our attention to tech-focused governance impacts.

> Trust in technology

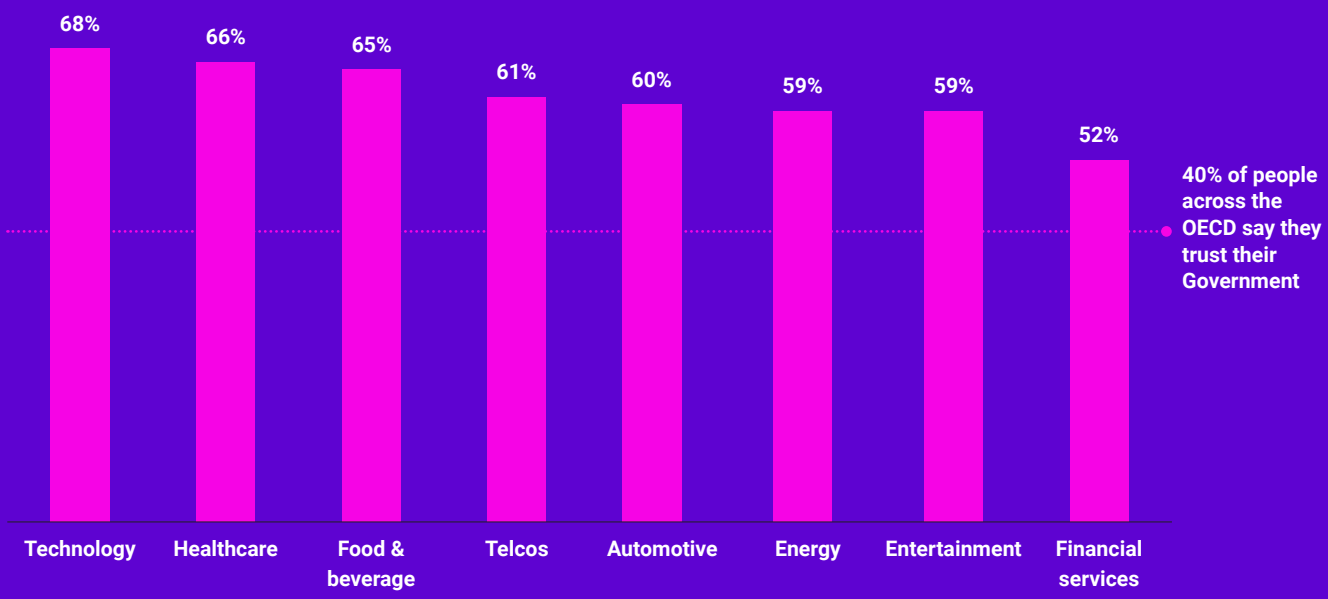
Trust in technology and the tech sector, and the appropriate governance practices to underpin that trust, are required to realise the benefits of greater technology adoption. The broad impact of trust in technology includes a range of distinct impacts, including trust in data use, responsible use of technology and artificial intelligence, and cybersecurity. There is an increasing expectation that companies developing technology will anticipate and manage the potential impacts of technology to ensure it is responsibly designed and developed. This includes responsible AI, and secure and safe by design movements. There is a similar expectation that companies using data and technology will do so safely, securely, and transparently.

Global surveys show that technology remains the most trusted industry globally. Sixty-eight per cent of respondents said they trusted the tech sector, which is significantly higher than the 40% of people in the OECD who trust their governments. Exhibit 11 provides more detail.

While tech remains one of the most trusted industries globally, trust levels have declined in recent years. In the five years to 2021, trust in the tech sector globally has declined by approximately 2% on average, annually. This decline has culminated in technology being trusted on a similar basis as the healthcare industry by 2021, as shown in Exhibit 12.

EXHIBIT 11: *Global trust in different industries*

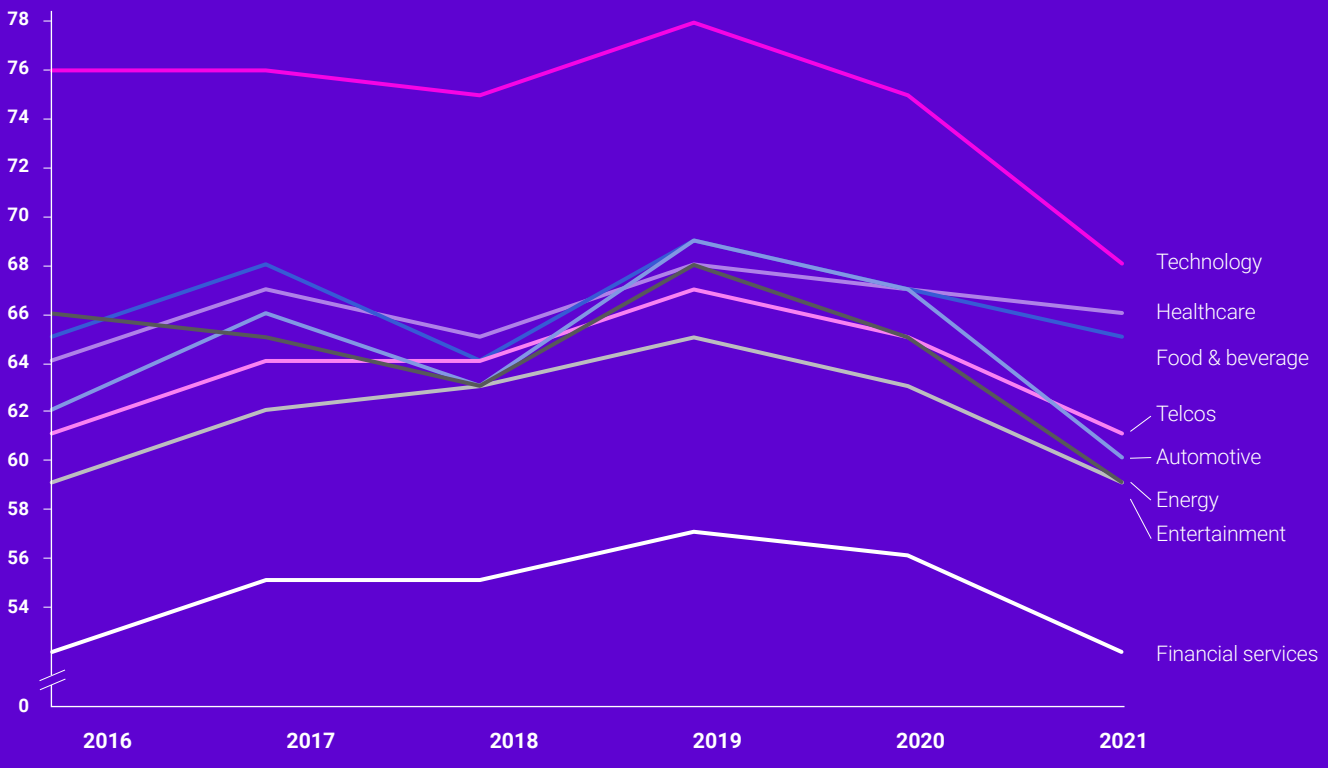
Share of respondents who report trusting the industry, 2021



Source: Edelman (2021), Edelman Trust Barometer: Trust in Technology; OECD

EXHIBIT 12: *Changes in global Trust in different industries over the last five years*

Share of respondents who report trusting the industry, 2016-21



Source: Edelman (2021), Edelman Trust Barometer: Trust in Technology

In Australia, the tech sector is trusted. Among OECD countries, trust in Australia's tech sector sits exactly at the median. This means our tech sector is trusted at similar levels to that of Ireland, Canada and Germany. Within the OECD countries included in the global survey cited previously, there is a trend towards higher levels of trust in tech within countries with lower average annual incomes. This correlation is illustrated in Exhibit 13. The one notable exception to this trend is The Netherlands, which has both high average wages and trust in technology.

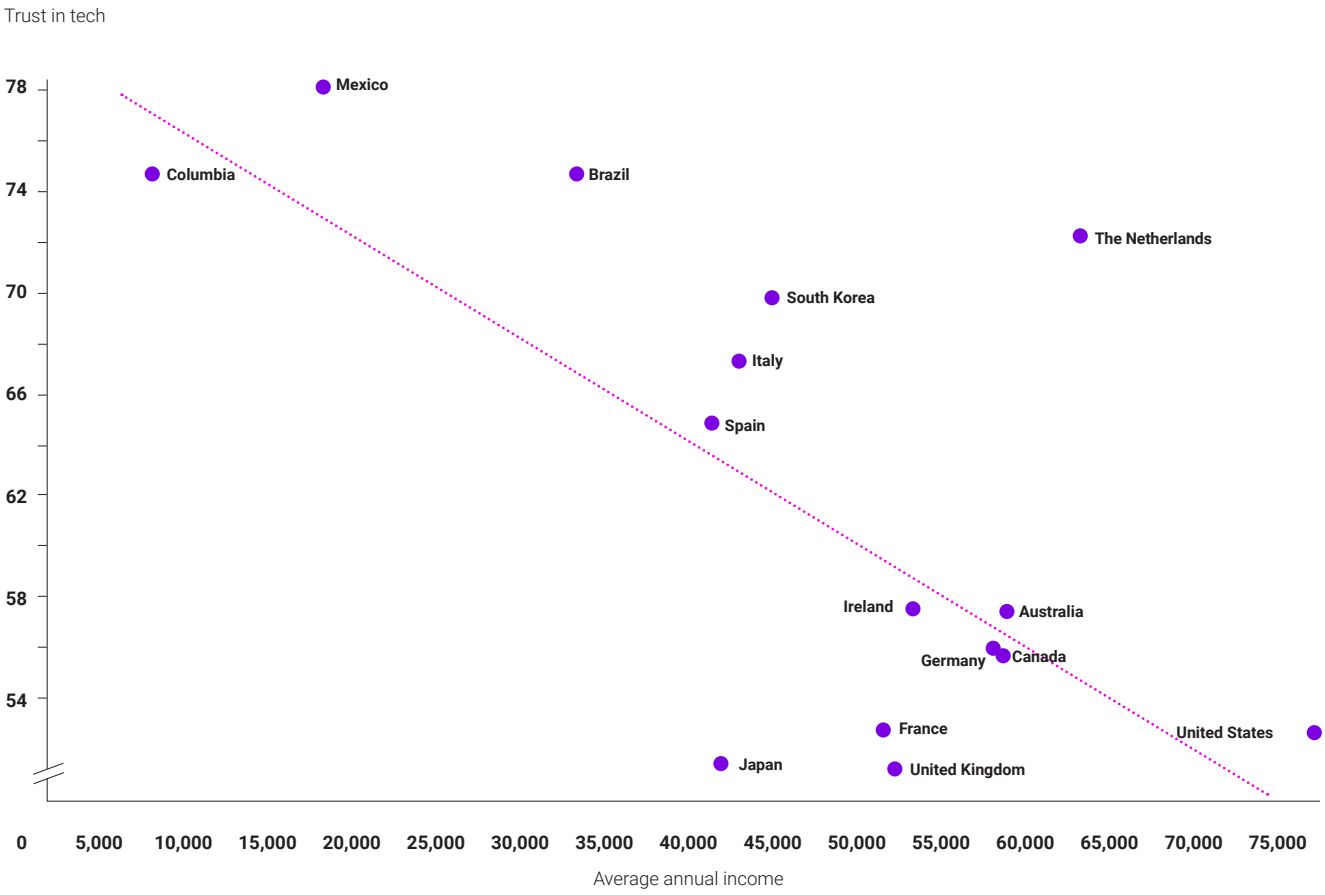
The correlation highlighted in Exhibit 13 is symptomatic of how context can significantly shape our experience of otherwise identical technologies. In this sense, it is important to highlight that trust levels in any given industry are highly dependent on the context in which those industries, their products and services, are integrated into our everyday lives.

> What this means for companies' governance practices

Governance practices have an important role to play in ensuring the responsible design and use of technologies, and therefore building and maintaining the community's trust in technology. The common trait across the range of tech-related governance practices is taking responsibility for anticipating adverse impacts of technology and being proactive about managing those impacts. For example, data governance practices that pre-emptively identify the risks of storing personal consumer data and mitigate those risks by adopting robust cybersecurity practices.

Many tech companies are already undertaking significant steps to developing and evolving initiatives to address tech-specific governance impacts. For example, Atlassian's Responsible Technology Principles which were announced alongside the release of Atlassian Intelligence which deploys AI capabilities across their cloud platform and products. These principles guide how Atlassian builds, deploys and uses new technologies, like AI, in a responsible and values-aligned way.

EXHIBIT 13: *Trust in tech and average annual incomes in selected OECD countries, 2021*



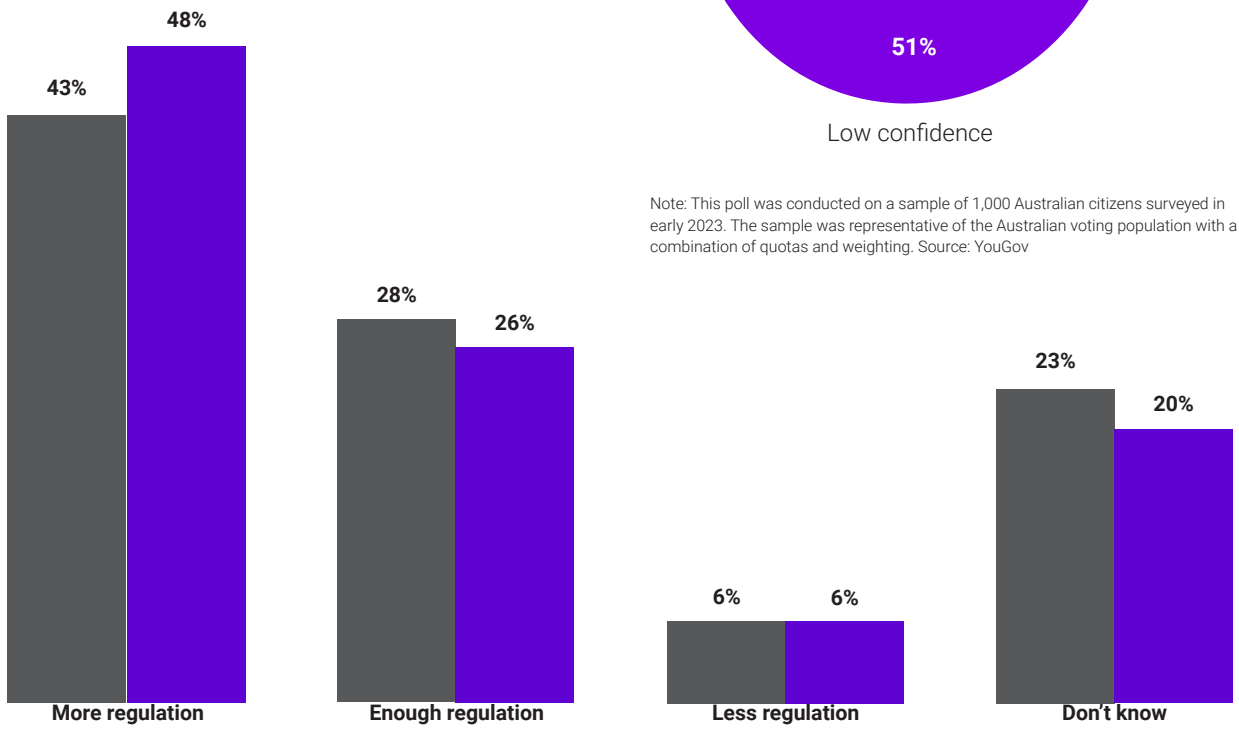
Source: Edelman (2021); World Bank

Importantly, Australia's tech ecosystem has its own distinct culture and values, and the ability to determine how it approaches ESG impacts on its own terms. For example, Australia's ecosystem skews to firms producing enterprise software and fintech products[1]. These products typically have a subscription as a service business model, whereby the customer pays for access to the product. This can create aligned economic incentives where both the customer and the business place a high value on data governance and responsible usage, because the business appreciates that if data is not treated appropriately it will lose customers and revenue, which would impact the viability of the business.

Australia is also emerging as a leader in climate tech and environment tech. These are areas where the local tech sector can make an outsized contribution to the local and global challenge of mitigating climate change. The impact mindset of business in areas such as climate tech can also predispose the business to considering its broader business impact earlier in the company's life.

EXHIBIT 14: *Australians' views on the degree of tech sector regulation*

Share of respondents, 2022 & 2023



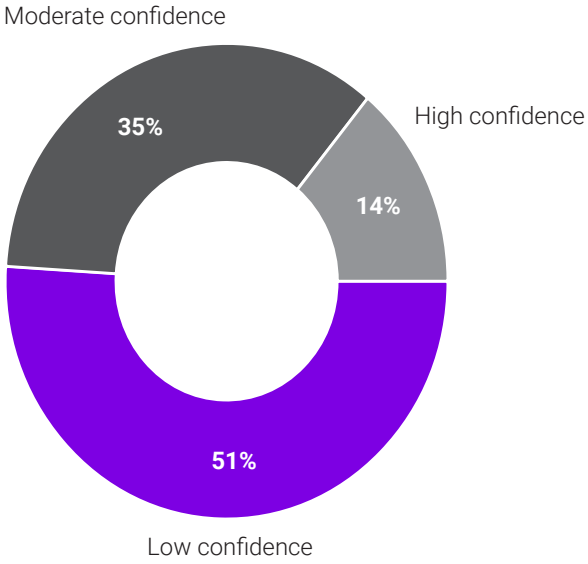
Note: This poll was conducted on a sample of 1,000 Australian citizens surveyed in early 2023. The sample was representative of the Australian voting population with a combination of quotas and weighting. Source: YouGov

> The Australian community expects industry and government to work together on technology governance impacts

In the last year, consumers have come to expect more regulation of tech companies. Between 2022 and 2023, the share of respondents who support the Australian Government regulating tech more increased 5pp from 43% to 48%, this is shown in Exhibit 14. However, most people are not confident the Australian Government understands the tech sector well enough to regulate it appropriately. 51% of Australians have low confidence in the Government's ability to act alone on tech regulation, shown in Exhibit 15.

EXHIBIT 15: *Australians' confidence in the Australian Government's ability to appropriately regulate tech*

Share of respondents, 2023



Note: This poll was conducted on a sample of 1,000 Australian citizens surveyed in early 2023. The sample was representative of the Australian voting population with a combination of quotas and weighting. Source: YouGov

1. Tech Council of Australia, Making Australia into a Regional Tech Hub

Australians expect industry and government to work together on the governance of new technologies. For example, polling conducted by YouGov shows that 71% of people polled believe that the tech sector should be integral to handling cybersecurity impacts with Government, which is shown in Exhibit 16 . This is almost four times as many people who believe the Australian Government should act alone on cybersecurity, through imposing regulations on the tech sector rather than working with the sector to protect Australians from cyberattacks.

In other areas, Australians are still making up their minds on the impacts of new technologies. For example, in the same YouGov research program, Australians were evenly split on whether AI would have a positive or negative impact on their lives (33% positive and 32% negative), while a further 29% could not say. Of Australians currently employed, only a quarter felt that AI would have a negative impact on their employment (24%). A higher number felt the impact would be positive (27%), while 41% could not say.

The data on trust in the tech sector suggests that our relationship with technology is changing and complex. The ongoing need to build and maintain the community's trust in technology is not a responsibility exclusive to tech companies. All companies, and governments, that are intensive adopters or developers of technology share this responsibility. Ensuring that the Australian community's relationship with technology is grounded in trust is an area that we will continue to work on with our members.

These trends highlight that responsible technology design and use is now one of the most important issues in ESG in the tech sector. It also highlights that it is an area which will have to draw on a range of governance mechanisms, spanning internal governance practices within organisations, voluntary principles, standards and regulation.

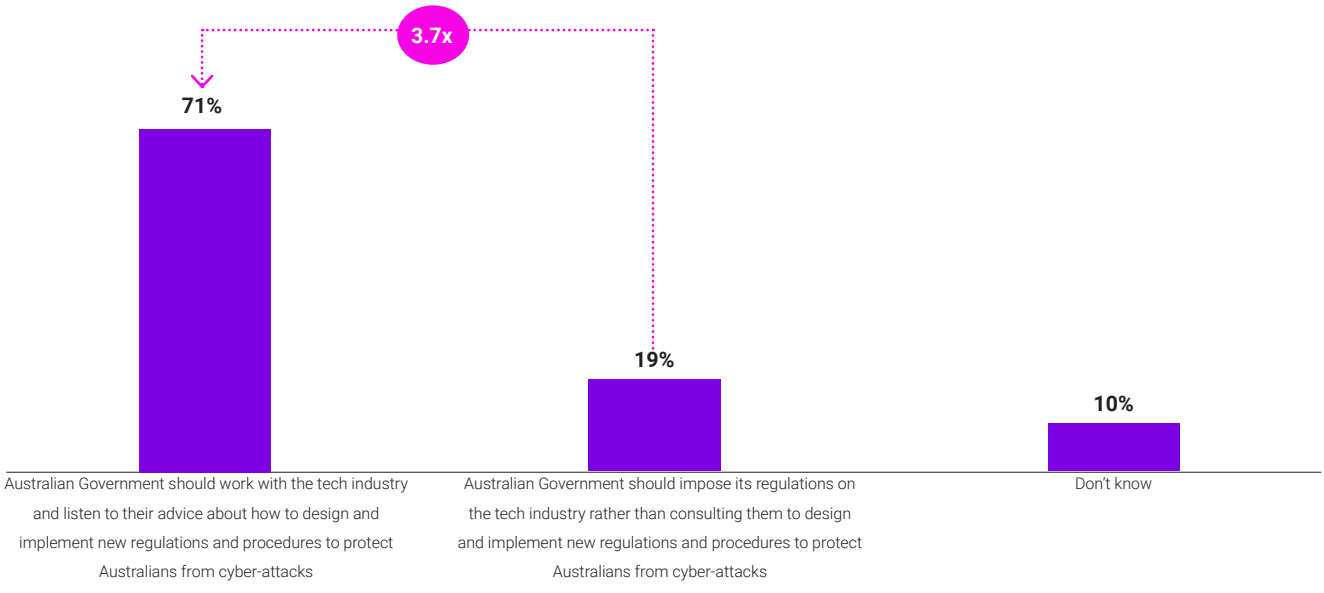
For this reason, the Tech Council and its members are taking a multifaceted approach to responsible technology design and use. This encompasses:

- undertaking research into emerging issues, such as this paper and research into the impacts of AI, our annual community sentiment research via YouGov
- working collaboratively with governments on a range of policy issues, such as AI regulation, cybersecurity and data policy and governance
- engaging with the public, government, industry and other stakeholders on tech impacts, such as via the Tech Council's annual National Tech Summit conference, our annual Tech Showcase, via consultations and workshops, and through participation in the Responsible AI Network, and;
- building ecosystem capability, for instance, via the TCA's ESG community of practice group.

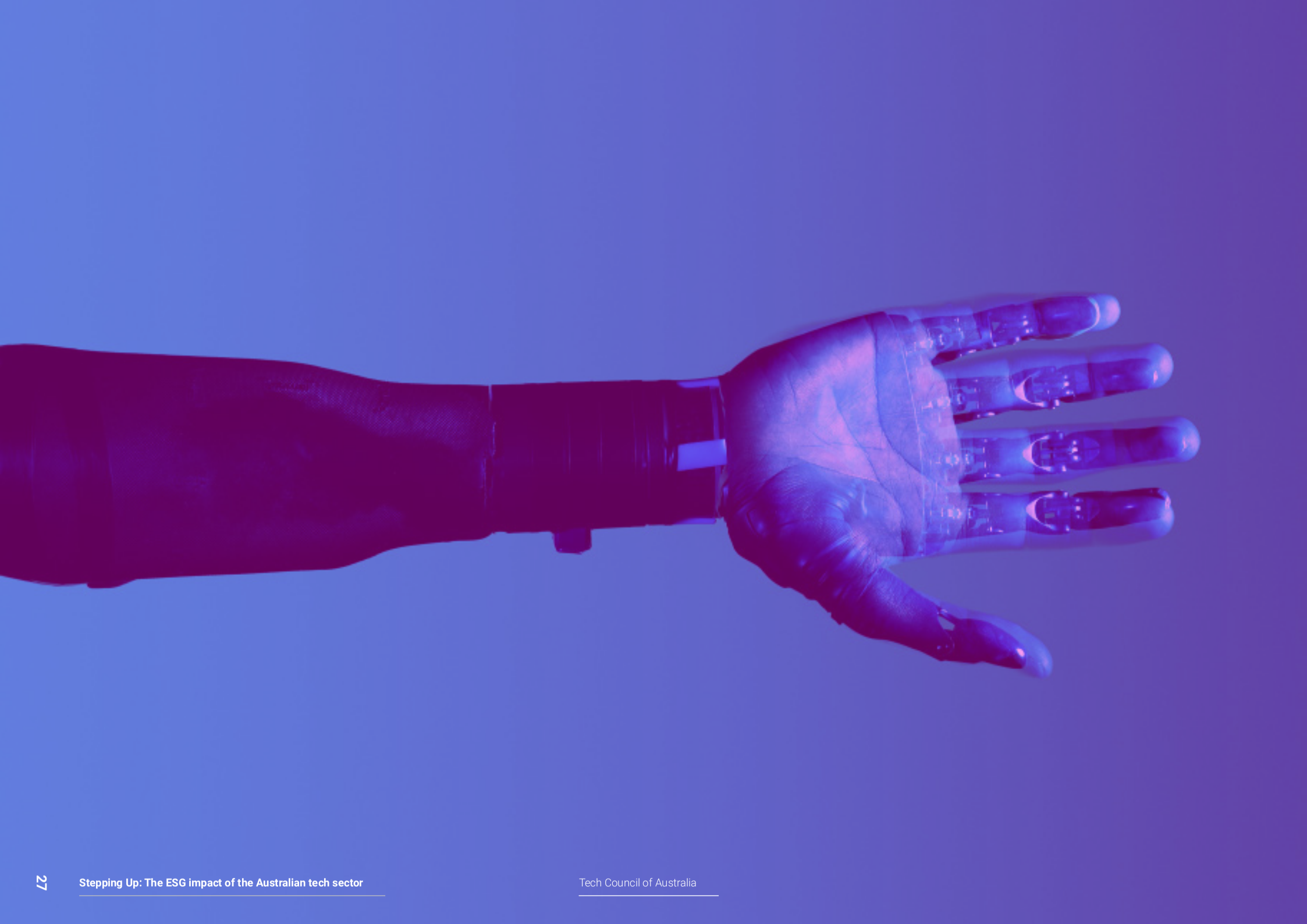
This work will be ongoing and iterative, reflecting the dynamic nature of technology. However, ensuring that the Australian community's relationship with technology is grounded in trust is an area that we will prioritise and continue to work on with our members, governments and the community.

EXHIBIT 16: *Australians' trust in approaches to handling cybersecurity issues*

Share of respondents whose view is closet to the approach, 2023



Note: This poll was conducted on a sample of 1,000 Australian citizens surveyed in early 2023. The sample was representative of the Australian voting population with a combination of quotas and weighting. Source: YouGov



ESG impacts vary considerably across the Australian tech sector

The Australian tech sector contains a variety of segments that have distinct ESG impacts. This diversity of impacts is something that the Tech Council will continue to account for in our work on ESG impacts to ensure we're serving the range of needs across our membership.

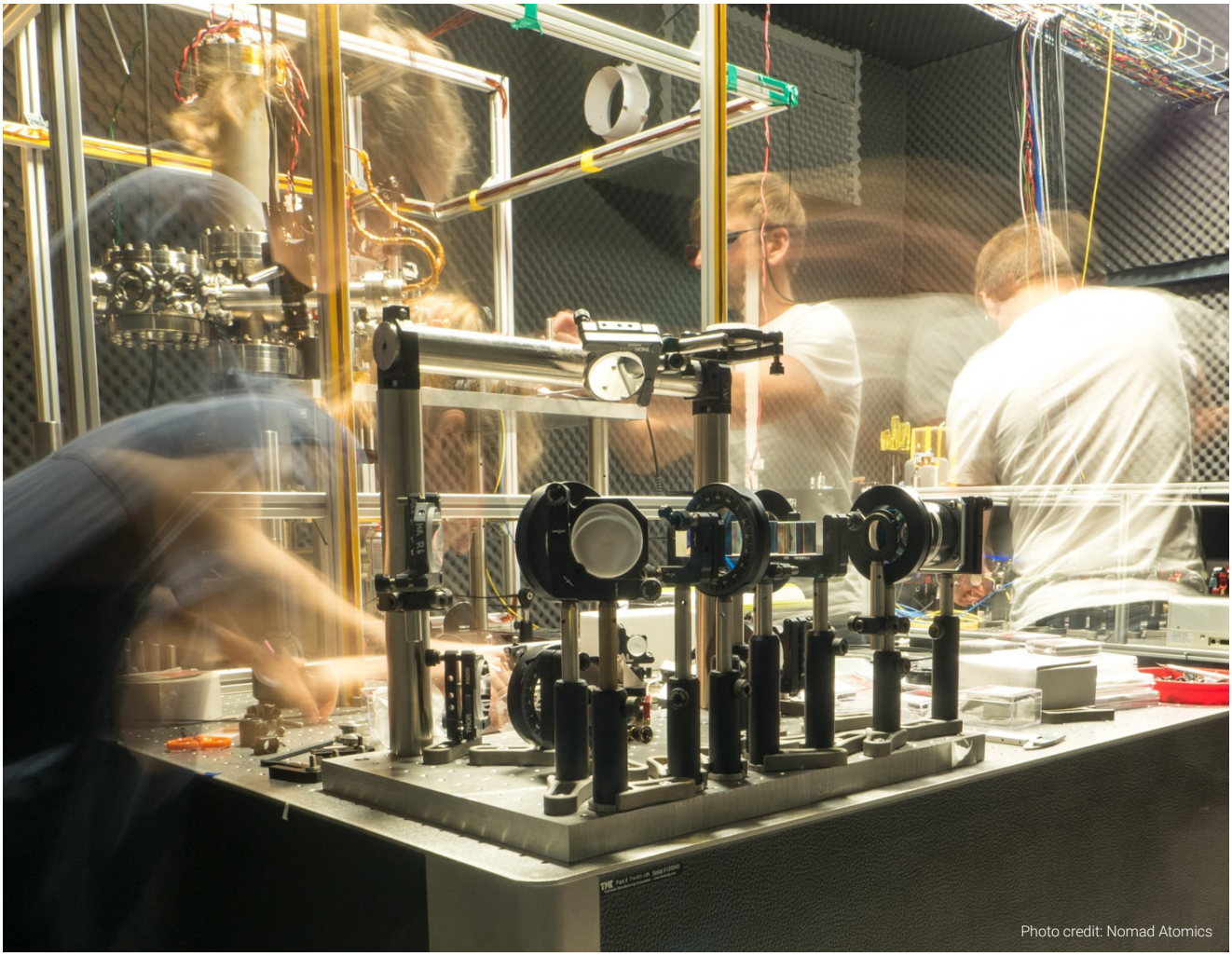


Photo credit: Nomad Atomics

The ESG areas explored in our research have very different impacts across the Australian tech sector. This is because Australia's tech sector includes 10 subsectors and 37 segments which each have distinct relationships to stakeholders, their workforce and the environment. These are laid out in Box 3.

The varied nature of ESG impacts can be driven by a number of factors. One key factor is the nature of the product or service that is core to a given segment. For hardware-focused segments of the tech sector, such as Space Tech and Robotics & Drones, e-waste and recycling is a more pressing concern than for segments like Media & Design or Business Software.

For consumer-facing segments like e-commerce or health software, privacy and trust in data use can be a more prevalent matter than in segments like AgTech or 3D Printing.

Australia's tech sector have a role to play in ensuring they have a positive social and environmental impact. But significant differences in the prevalence of particular ESG areas means that approaches vary considerably, and the Tech Council's support needs to account for this diversity of needs.

Box 3: Composition of the Australian tech sector

A company is considered part of the direct 'tech sector' if it develops or sells technology, rather than simply uses it (which virtually all companies do in one form or another). Developing proprietary technology is at the heart of their business model.

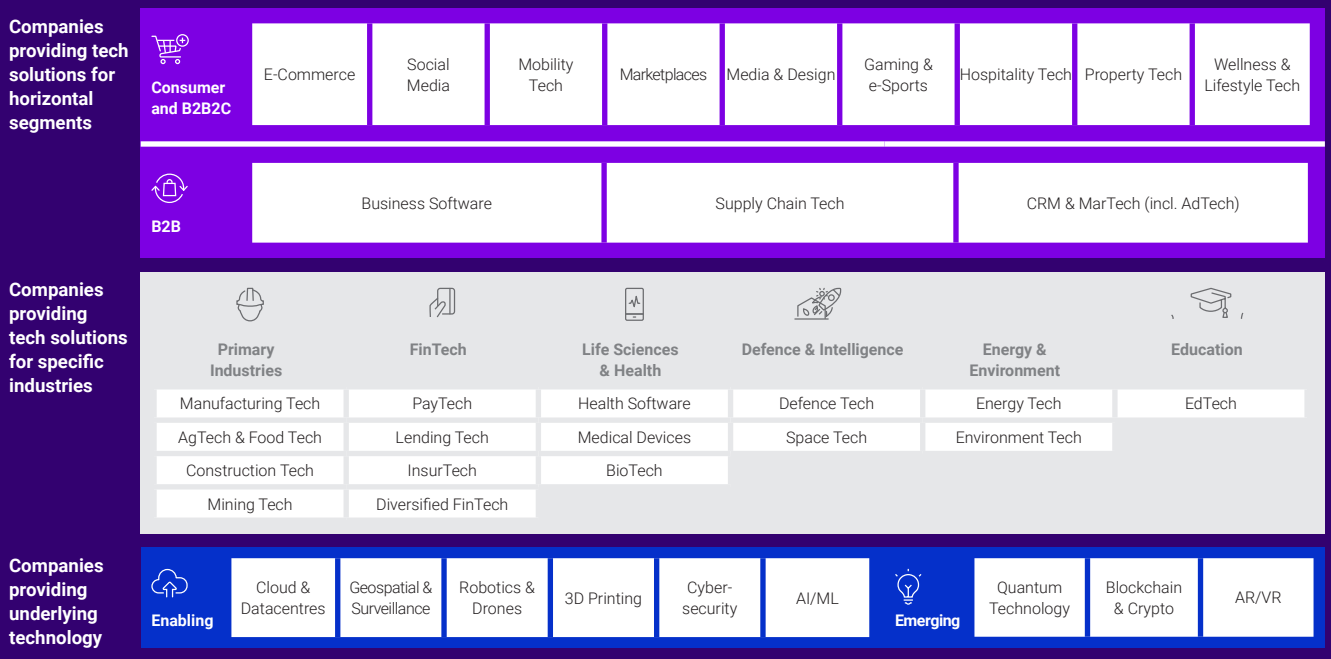
Exhibit 17 sets out a taxonomy for classifying companies active in the Australian tech sector into subsectors and segments. The subsectors identify a broad tech market; the smaller segments identify where specific businesses directly compete. It identifies ten subsectors, in which there are 37 market segments.

The subsectors are defined as follows:

- the Consumer/B2B2C subsector: this includes tech companies that have a consumer or retail focus, for example the Gaming & e-Sports segment. It also includes companies that connect other businesses and their customers, for example Marketplaces, or Property Tech.
- the B2B subsector: this includes tech companies that support enterprise and business functions, for example software that supports Supply Chain, HR, legal or accounting processes.
- The six industry segments: this includes tech companies that support six specific industries: Primary Industries, Fintech, Life Sciences & Health, Defence & Intelligence, Energy & Environment and Education; for example, PayTech is a segment within Fintech, or Construction Tech is a segment within Primary Industries.
- Enabling: this includes tech companies that enable other technologies and other tech players developing specific solutions, for example, Cloud & Datacentres.
- Emerging: this includes tech companies that are developing capabilities with leading edge technologies of the future, for example Quantum Tech.

We developed this taxonomy as a useful starting point to support analysis on comparative advantages of sub-segments within the tech sector . No taxonomy will be perfect and none should be static – especially in a dynamic and fast-moving area such as the tech sector. We expect and hope the framework will be debated, iterated and updated over time with stakeholders

EXHIBIT 17: *Australian tech sector taxonomy*



Source: Tech Council of Australia, Making Australia into a Regional Tech Hub

We've identified three priority ESG impacts for the tech sector

The Tech Council has identified the tech sector's priority ESG impacts as workforce diversity, carbon emissions, and trust in technology, using a double materiality assessment. Through our research we have also identified that our members are already pursuing work to address these impacts and we will establish a dedicated program to further the impact of this work.

Our research shows the tech sector is already performing well in some areas such as climate-related impacts, but we also recognise there is considerable room for improvement, particularly in impacts like workforce diversity.

To identify the top impacts for the Australian tech sector, we undertook a double materiality assessment. This form of assessment is a common approach to identifying priority areas for ESG strategies. More information on this type of assessment is included in Box 4. A double materiality assessment is normally undertaken at the company level. The Tech Council has undertaken this analysis, in partnership with our members, to identify the priority impacts at the industry level for tech. This has required some adjustment to how we conduct this assessment.

We have conducted a double materiality assessment for the tech sector

To undertake a double materiality assessment at the industry, rather than company level, we made some adjustments to this method:

- The **business case perspective** (horizontal axis): the Tech Council is a membership organisation, this means that our 'business case perspective' is the materiality to members.
- The **stakeholder perspective** (vertical axis): we have taken a broad view of the tech sector's stakeholders to account for variations in customer groups, governments (including at the State and Territory level) and local communities.

These adjustments are outlined in Exhibit 18 which is illustrates the Tech Council's template for a materiality assessment matrix.

Photo credit: Silicon Quantum Computing

Box 4: What is a double materiality assessment?

A materiality assessment is used to identify areas for focus in ESG strategies. It is a method of prioritisation which takes individual ESG impacts, such as 'Workforce diversity' or 'E-Waste Management' and rates their materiality from two perspectives:

- Business Case perspective which identifies how material this impact is to the success of the company.
- Stakeholder perspective which identifies how material this impact is to particular stakeholders, such as employees, customers or investors. Multiple stakeholder groups are often combined. This perspective is sometimes framed as the 'impact perspective' which takes into account the company's impact on a given area.

Using these two ratings, we can place impacts in one of four quadrants. Companies typically focus on the top right quadrant – impacts that highly material stakeholders and may impact business success.

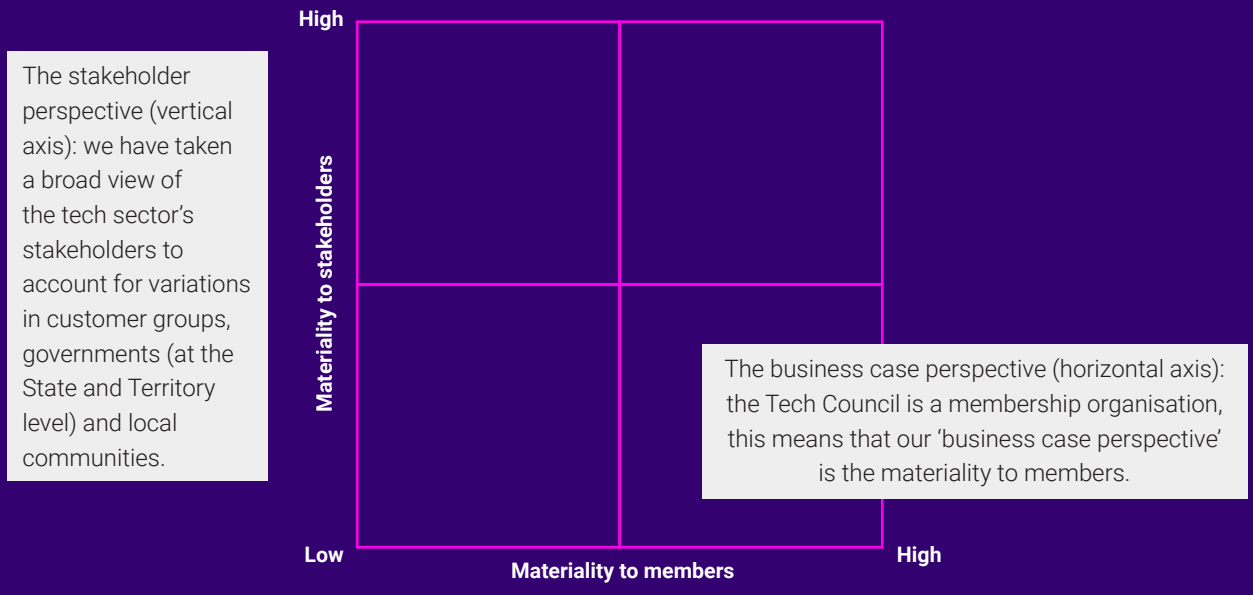
What are the limitations of materiality assessments?

Like any tool, it is imperfect. There are three commonly cited limitations of these assessments:

- Firstly, the definitions of the axes can vary across companies which limits the comparability of assessments
- Secondly, the feedback loop between the axes isn't considered. For example, if an impact is of high importance to stakeholders such as investors, then that in itself will affect business success
- Thirdly, it doesn't have a time dimension, so it needs to be regularly repeated

Despite its limitations, materiality assessments are still a useful tool and its wide acceptance among sustainability and ESG professionals makes it a good starting point.

EXHIBIT 18: *A double materiality assessment approach for the tech sector*



Source: company websites; WBCSD (2021), The reality of materiality: Insights from real-world applications of ESG materiality assessments

Our analysis has identified three priority impacts

We examined a range of specific impacts, that coalesced into 14 commonly-cited impacts that relate to the five focus areas discussed previously in this report. These are all listed in Table below.

While some impacts are more relevant to some companies than others, we believe this list is a good indication of the common impacts faced across Australian tech sector. Ensuring we focus on areas that have broad relevance means the Tech Council's work can have greater impact.

Through a double materiality assessment, we have identified the current highest priority ESG impacts for the Australian tech sector. These are the three impacts that consistently of the highest materiality to Tech Council members and external stakeholders which is shown in Exhibit 19.

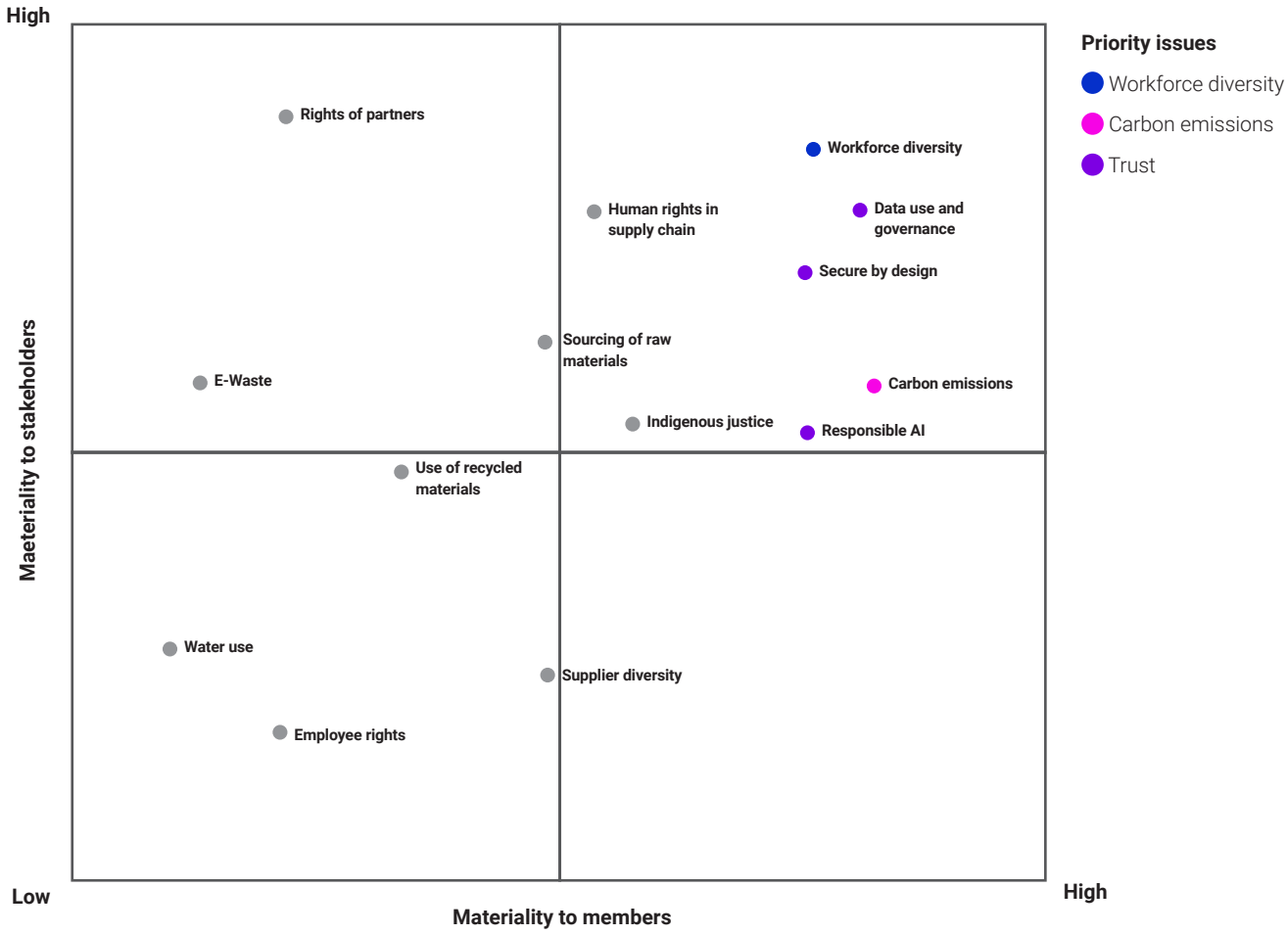
These three priority impacts – workforce diversity, carbon emission and trust in technology -- will be the priority areas for ESG-related ecosystem capability work through the Tech Council in the next 12 months. As these concerns evolve, we will revisit this analysis and update the scope and scale of our work accordingly. The Tech Council will also continue to engage in policy and research work that touches on a broader range of impacts relating to the tech sector's environmental and social impact.

- **Workforce diversity** – tech jobs have half the gender pay gap of other high paying industries, demonstrating a significant opportunity to improve women's economic security, but inclusion of diverse groups such as women, First Nations Australians and people with disability remain stubbornly low.
- **Carbon emissions** – the tech sector is helping drive decarbonisation through commercialisation of new technologies, adoption of some of the most ambitious climate targets of any industry, and leading the shift to renewable energy as one of the biggest investors in Power Purchase Agreements in Australia and globally. Tech also has clearer pathways to abatement and net zero than many industries.
- **Trust in technology** – trust in technology remains relatively high but has declined in the last few years. Recent cybersecurity impacts in Australia have appear to have bolstered the community's trust in the tech sector to address these impacts. Importantly, there is a growing focus by tech companies on how to support data protection and privacy, safety and wellbeing, and the ethics around new technologies like AI. Trust in technology, unlike the other priority impacts noted, spans three specific impacts in our double materiality assessment: data trust, responsible AI and secure by design technology.

TABLE 1: *Focus areas and specific ESG impacts explored*

ESG Area	Focus area	Specific impacts explored
Environmental	Climate	> Carbon emissions > Sourcing of raw materials > Water use
	Waste & Recycling	> Use of recycled materials > E-waste
Social	Workforce & Community	> Workforce diversity > Employee rights > Indigenous justice
	Supply chains	> Human rights in the supply chain > Supplier diversity > Rights of partners
Governance	Trust in technology	> Data use and governance > Responsible AI > Secure by design

EXHIBIT 19: *Double materiality assessment for the Australian tech sector*

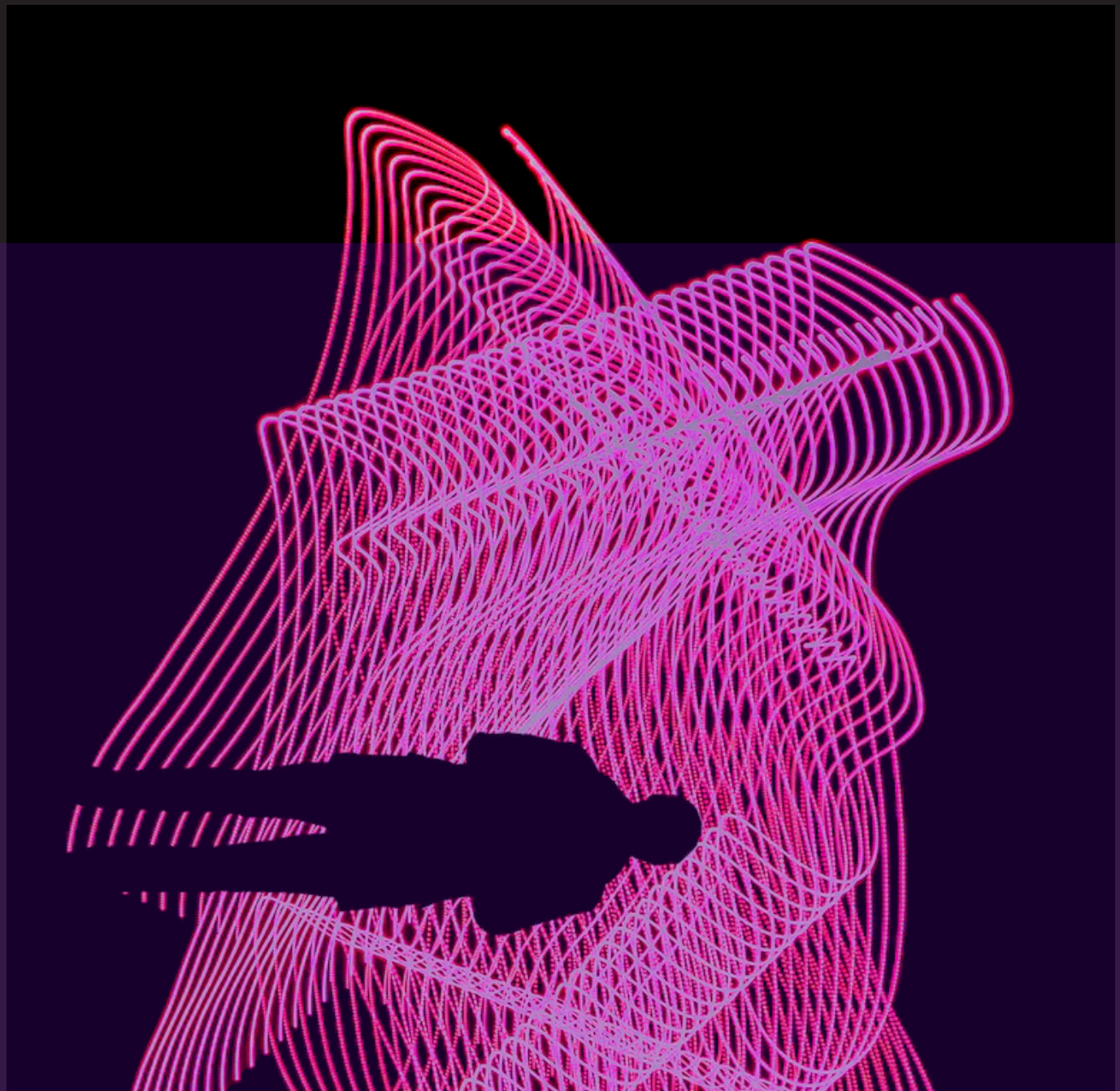


Note: Privacy has not been included as a separate issue because it may be confused with the legal obligations under privacy law. Aspects of privacy fall within data trust and responsible AI.

Source: Company websites; WBCSD (2021), The reality of materiality: Insights from real-world applications of ESG materiality assessments; Tech Council analysis

There is already a significant amount of work underway across the tech sector on these impacts

A key finding from our research is that our members are already acting on many of these areas. The Tech Council, primarily through research and policy work, has also actively engaged on many of these impacts and will continue to do so. This means that additional action by the Tech Council must complement existing work and fill gaps in sector capability.



Case study: How Kyndryl is helping to improve access to STEM careers for First Nations students

Kyndryl and Indigenous Technology have announced a partnership to broaden participation and access to STEM careers for First Nations students.

Kyndryl and Indigenous Technology will co-design a series of in-person workshops, launching in September 2023, that will offer professional development, automation education and an insight into working in IT for First Nations students and community members.

Students will be invited to attend from a range of leading universities. Attendees who complete the workshops will also be invited to apply for paid work experience at Kyndryl with corporate and government client projects. In order to increase access to a broad range of ICT careers and attract a broad range of skillsets and vocations, the program will not be limited to only those pursuing traditional STEM degrees.

The Australian tech sector has great potential to be a leader in responsible and trusted innovation that has a positive impact

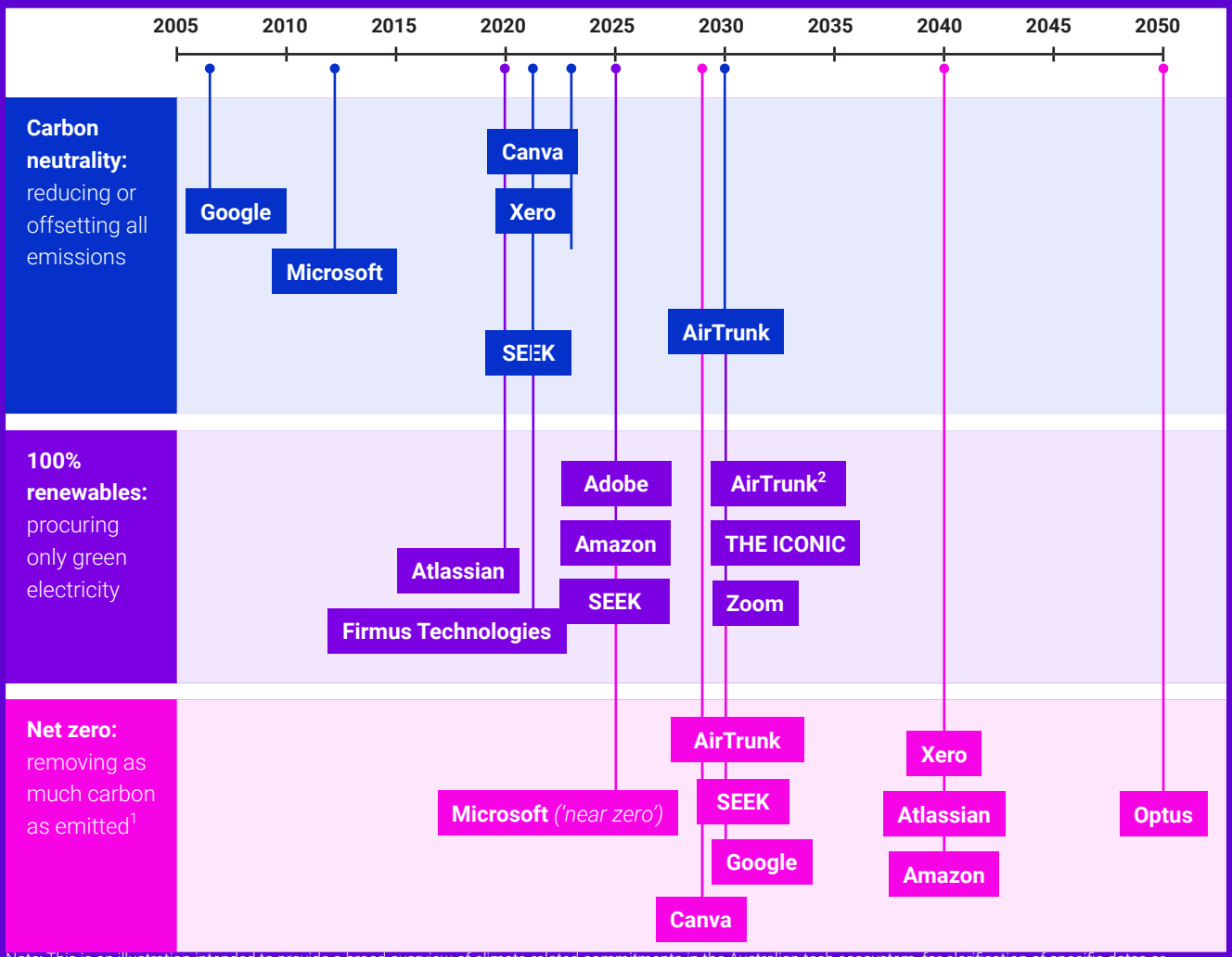
Our research shows that Australia's tech sector is already taking steps towards ensuring we have a positive impact. For instance, many major tech firms have made significant commitments to ensure they take responsibility for their impact on the environment.

In Exhibit 20, we provide a timeline of climate commitments made by some of the largest tech firms in the Australian ecosystem. These commitments span a range of climate-related targets. The first is carbon neutrality which involves reducing or offsetting all emissions. The second is 100% renewables, a commitment to procuring only green electricity. The final category is net zero, which involves removing as much carbon as emitted. It's important to note that the ability of software companies to hit net zero is materially determined by the changes in data centres. The decisions taken by data centre providers on their pathways to greater sustainability has shaped many software companies' decisions which has led to some congregation around similar timeframes (as shown in Exhibit 20).

These are significant steps towards addressing our impact on the environment, one part of the ESG framework. These commitments will only become more important as Australia's tech sector grows, and the technologies produced by these companies are further adopted across the Australian economy.

EXHIBIT 20: *Timeline for key climate commitments*

Scope 1 & 2 emissions only



Note: This is an illustration intended to provide a broad overview of climate-related commitments in the Australian tech ecosystem, for clarification of specific dates or greater detail on commitments, please visit our members' websites. 1. The Science Based Targets initiative defined Net Zero as a vast majority of emissions (~90% or higher) needing to be reduced and only residual, hard to abate emissions are to be removed. The United Nations Global Compact provides an overview of the Science Based Targets initiative in this article. 2. Through their approach to Net Zero developed specifically for hyperscale data centres. Please see case study on page 16 for more information
Source: Companies named

The Tech Council's role in ESG impacts

As we work towards our economic goals of 1.2 million tech jobs and a tech sector contributing $250bn in GDP by 2030, the Tech Council will work with members to ensure the sector also contributes to a better environment and society.

The first step in this work has been undertaking research to understand the activity already underway in these areas. This helps us understand how companies are approaching these impacts and the progress that has already been made. This in turn highlights how the Tech Council is best placed to support further progress.

The Tech Council will build capability in the tech ecosystem to help companies have a positive impact

To support the work that our members are already doing, and to build capability across the sector, the TCA will lead work in four areas to support the sector to identify and manage ESG impacts.

The Tech Council will lead and coordinate work across four areas to help with ESG impacts for the industry:

- **Research** which includes producing and publishing unique, expert insights into tech sector activity, impacts and impact in Australia benchmarking.
- **Policy** which includes developing expert, original and pragmatic policy positions on key impacts impacting the tech sector.
- **Engagement** which includes engaging with decision-makers, stakeholders and the public via events, consultations and workshops.
- **Ecosystem capability building** including supporting the Australian tech ecosystem to develop and share best practice as well as lift capability.

Examples of the work undertaken or planned across these four core competencies is included in Exhibit 21.

As these impacts evolve, our approach will adapt. We're committed to remaining engaged on these impacts and supporting our members in having a positive impact in our communities and environment.

EXHIBIT 21: *The Tech Council's core competencies and work on priority ESG impacts*

Competency	Description	Examples of work we are doing		
		Environment - emissions	Social - workforce diversity	Governance - trust in technology
Research	We produce and publish unique, expert insights into tech sector activity, issues and impact in Australia	> Stepping Up report		
		> Industry benchmarking of practice > Research on areas of comparative advantage in Australia's tech sector and financing trends	> Tech Jobs Opportunity report > Diversity in Tech report > CSIRO place-based innovation > Industry benchmarking of practice	> YouGov community sentiment research > Facial recognition technology expert working group > Artificial Intelligence project with the Human Technology Institute > Industry benchmarking of practice
Policy	We develop expert, original and pragmatic policy positions on key issues impacting the tech sector.	> Advocating for policies that support the growth of the Australian tech ecosystem and responsible tech design and use		
		> NRF and financing policies to support new industries and technologies to support energy transition	> Skills and training policy > STEM Diversity work and review submission > Modern Slavery reforms submission	> AI regulation and policy > Privacy reform > Cybersecurity strategy and policy > Data governance and strategy
Engagement	We engage with decision-makers, stakeholders and the public via events, consultations and workshops.	> National Tech Summit > Annual Tech Showcase > Participation in consultations and roundtables by third parties		
		> Roundtable events with Ministers and stakeholders on financing	> Virtual Work Experience program > Roundtable events with Ministers and stakeholders	> Responsible AI Network > Quad investor network > Roundtable events with Ministers and stakeholders
Ecosystem capability building	We support the Australian tech ecosystem to develop and share best practice as well as to lift capability in them	> ESG Community of Practice		
			> Digital Employmernt Forum > Virtual Work Experience program	> Digital Leaders Forum

The Tech Council is establishing a fourth core competency: ecosystem capability building

A priority ESG initiative within this area is establishing an ESG Community of Practice which will bring together leaders, practitioners, industry newcomers, and innovators to drive research, collaboration and sharing of experiences that can benefit the whole ecosystem and build stronger ESG practices.

Our research has identified the Tech Council is well placed to support the tech workforce in building greater capability to address ESG impacts. While there is significant work underway, there is a strong appetite across our membership for greater engagement and coordination on these impacts across the sector. There is also interest among our small and medium members in supporting their employees to build their capabilities in these areas so their companies can ensure they have a positive impact as they grow.

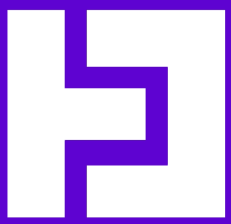
The work being undertaken through our ESG Community of Practice will also be useful for companies across the economy looking at the ESG impacts of technology applications, and how technology can help them address their ESG impacts.

The Tech Council's ESG Community of Practice will have three streams:

- **Ecosystem capability building** which will focus on amplifying lessons learnt, supporting companies to uplift their practices, connect practitioners across the tech industry and unearth emerging trends.
- **Industry & government initiatives** which will focus on scaling, supporting and informing relevant stakeholders about work underway and how they can support this work.
- **Research** which will focus on better understanding impacts and successful initiatives

These streams will start work immediately towards building capability and supporting initiatives that address the three priority impacts: the tech sector's workforce diversity, the carbon emissions and supporting trust in technology.

To get involved in our ESG Community of Practice contact **community@techcouncil.com.au**



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