Global Megatrends

Patterns of change creating opportunity and risk over the coming decade

Dr Claire Naughtin, Senior Research Consultant in Strategy and Foresight

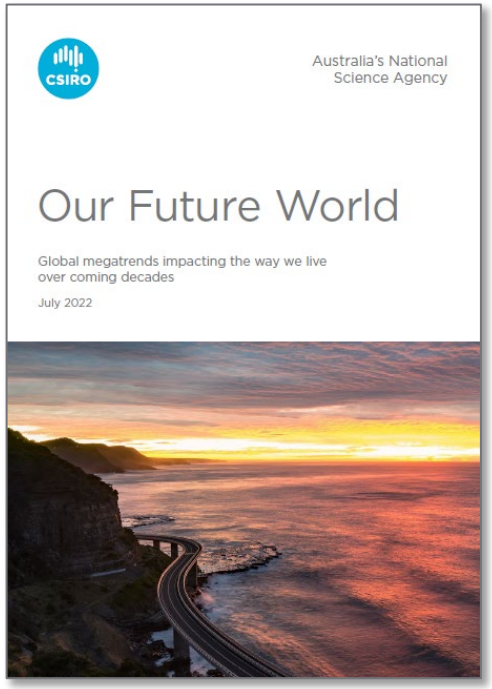
Source. ABC News, 29 December 2017

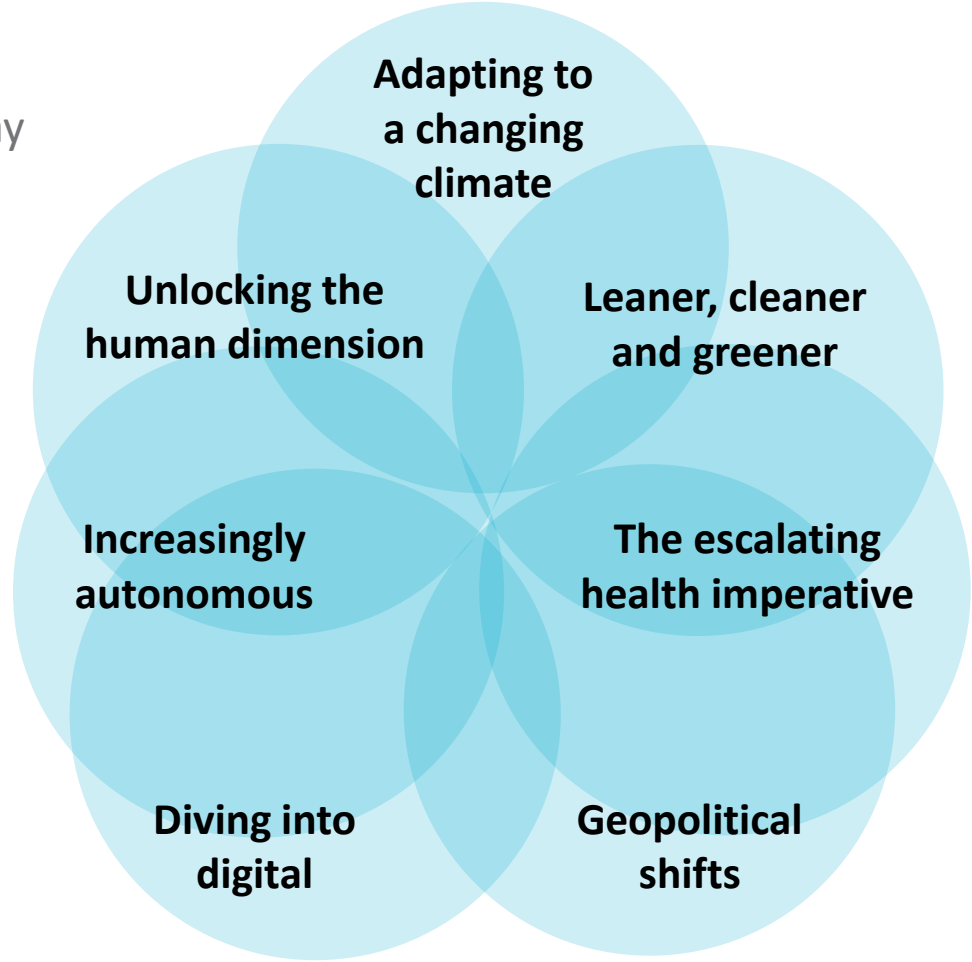
Megatrends

Purple dye showing the trajectory of a rip current at Tamarama Beach, Australia
Source. ABC News, 29 December 2017

Our Future World

Global megatrends impacting the way we live over the coming decades

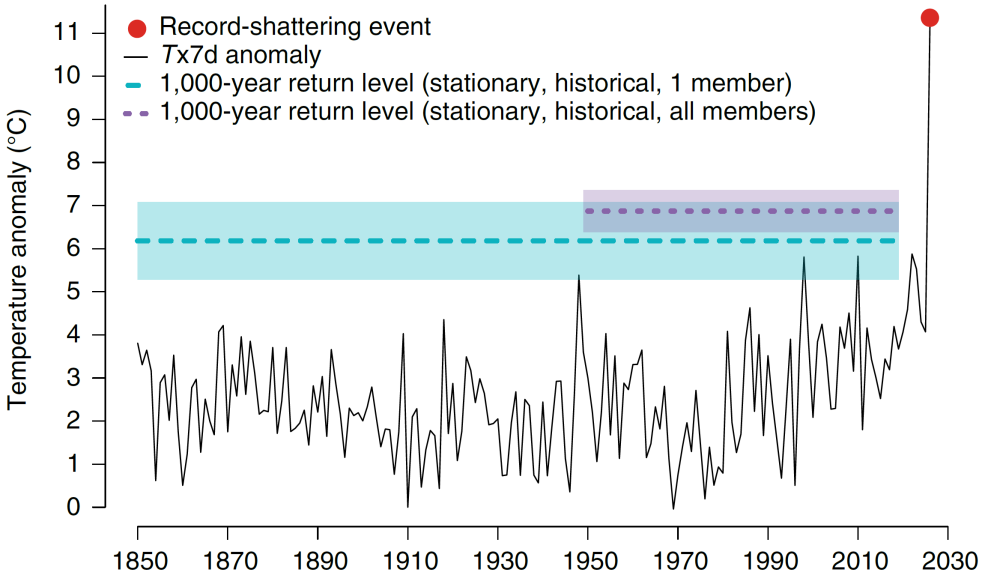




Adapting to a changing climate

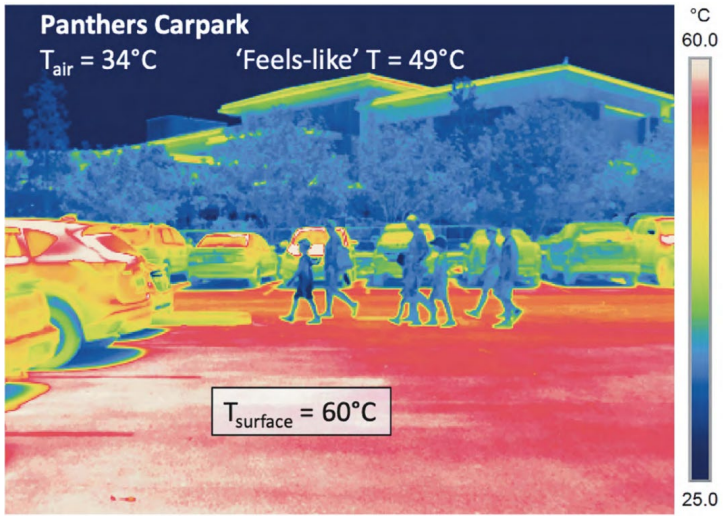
Pushing the bounds of ‘normal’

Heatwaves >2 SD above historical records



Data source. Fischer et al. (2021) Nature Climate Change

Penrith recorded the hottest temperatures on Earth (48.9°C) on 4 January 2020



Source: Western Sydney University and Penrith City Council

The economics of extreme weather

Natural disasters are costly for the Australian economy…

$38 b

Actual cost of natural disasters, 2020

$73 b

Minimum predicted cost of natural disasters, 2060

Data source. Deloitte & Australian Business Roundtable for Disaster Resilience & Safer Communities (2021)

…and for critical infrastructure

↑ 1.3%

Increase in operational and infrastructure costs under a 1.5°C global warming level

↑ 6.9%

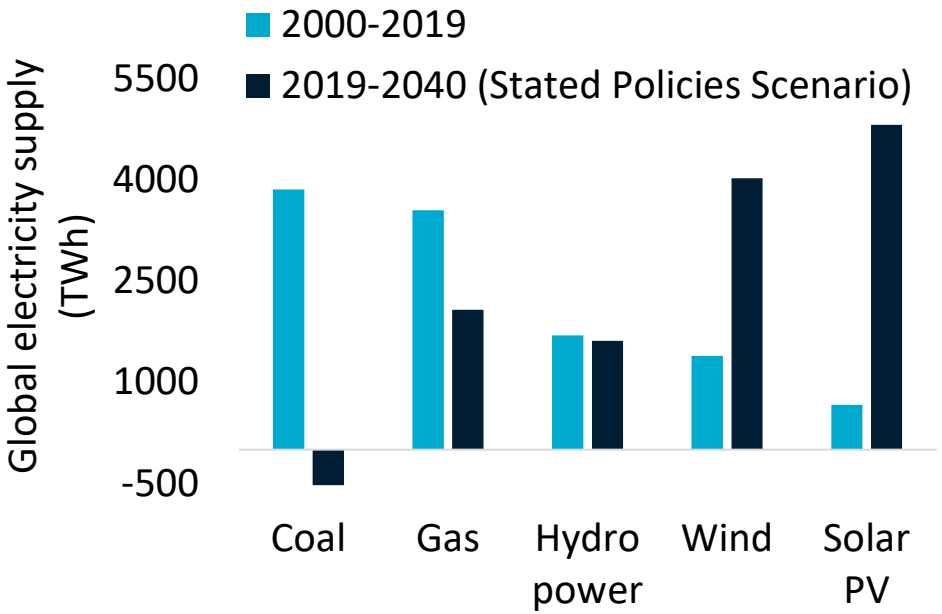
Increase in operational and infrastructure costs under a 4°C global warming level

Data source. Mulholland & Feyen (2021) *Climate Risk Management*

Leaner, cleaner and greener

Alternative energy resources

Renewables to surpass coal as the primary energy source by 2025



Data source. International Energy Agency

A strong global push towards net-zero and beyond

129 countries

Number of countries that have committed to achieving net-zero by 2050

Data source. Mallapaty (2020) *Nature*

Clean energy industry opportunities

Green steel as an example clean energy workforce transition opportunity

39,400
Workers employed in carbon industries

25,000
Projected jobs in green steel manufacturing*

*Steel produced using renewable energy sources

Data source. The Grattan Institute

Today’s waste, tomorrow’s resources

Lithium-ion battery recycling could reflect a multi-billion opportunity for Australia

187,984 t

Lithium-ion battery waste generated in Australia, 2036

3,300 t

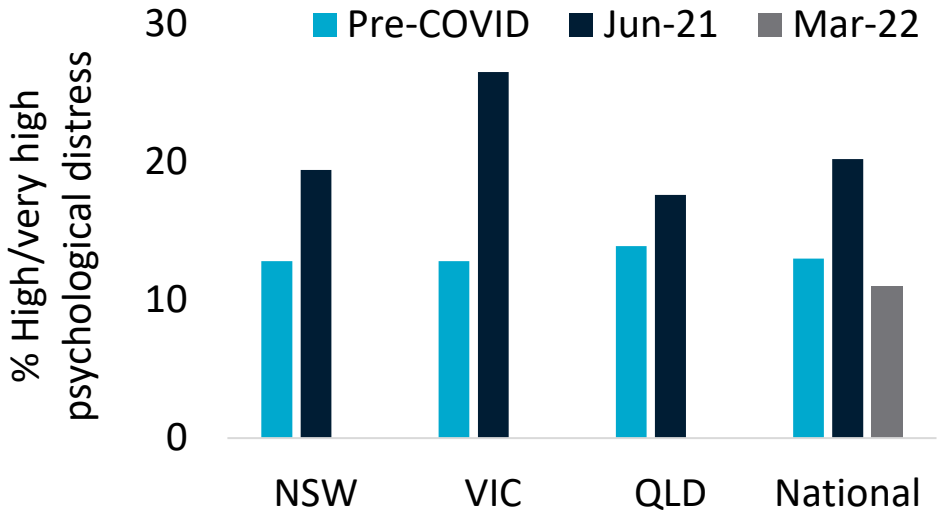
Lithium-ion battery waste generated in Australia, 2016

Data source. CSIRO

The escalating health imperative

The silent pandemics

The pandemic has had a significant impact on our mental health



Data sources. Australian Bureau of Statistics

The emerging risk of pathogens resistant to modern antibiotics

4.95 million

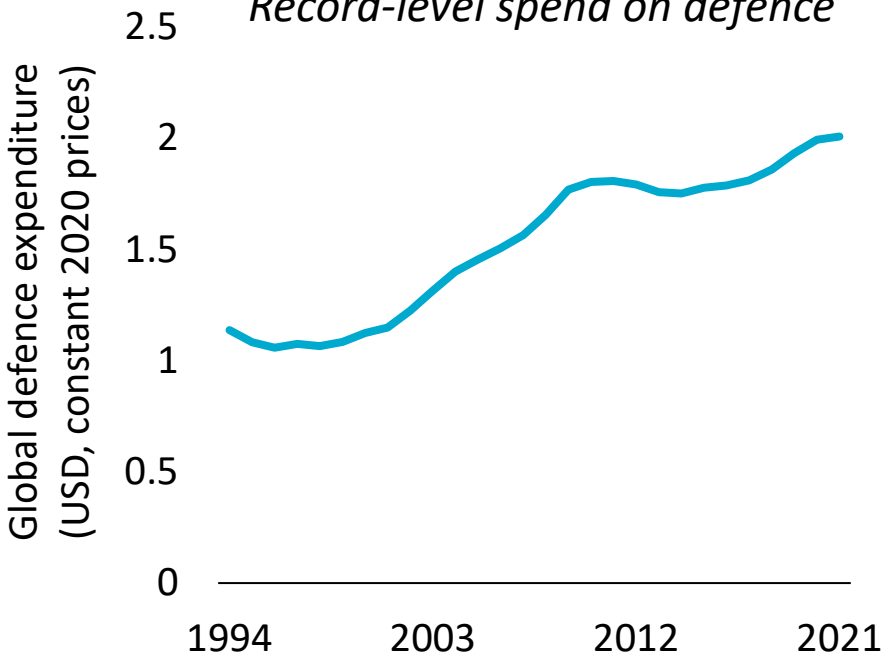
Number of deaths worldwide associated with bacterial AMR in 2019

Data source. Murray et al. (2022) *The Lancet*

Geopolitical shifts

The world is investing in stability and security

Record-level spend on defence



Data source. World Bank

An opportunity to build more resilient supply chains

50%

Share of Australian businesses that were unable to find an alternative supplier to their supply chain issues

Data source. Australian Bureau of Statistics

Diving into digital

A boom in digital products and services

Online shopping is growing fast, but is yet to make up the majority share of retail spend

19.3%

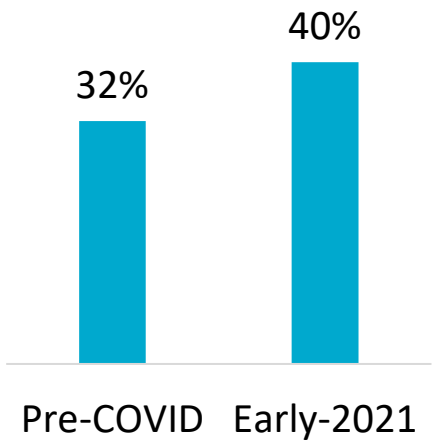
Online share of retail spend, 2020-21

4.3%
Growth in retail spend, 2020-21

23.4%
Growth in online goods spend, 2020-21

Data source. Australia Post (2022) *Inside Australian Online Shopping*

More Australians are regularly working remotely



Data source. Australian Bureau of Statistics

Digital across the ages

Younger Australians 18-34 years

50% in 2020

Young people use an average of
5+ more types of online devices

88% in 2020

Young people use **apps to make voice or video calls or send messages**

Older Australians 65+ years

26% in 2020

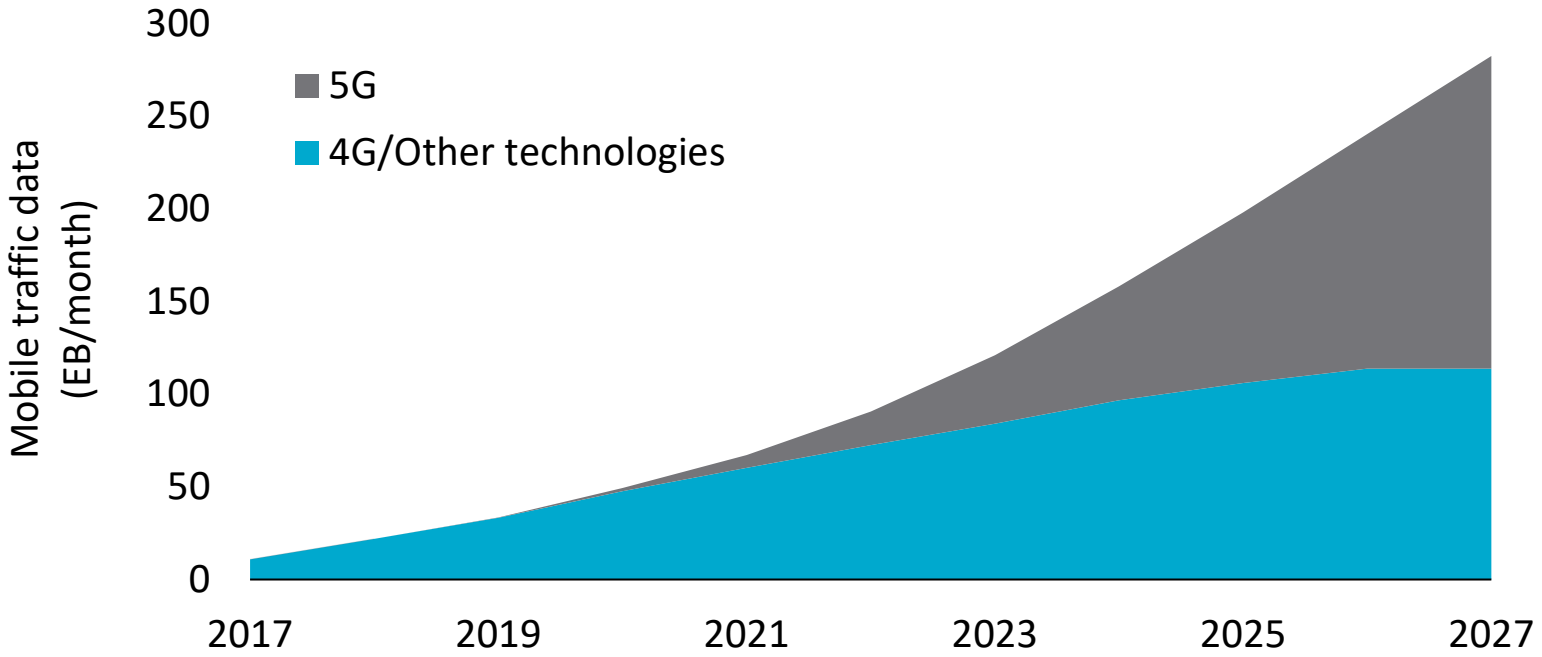
Older people use an average of
5+ more types of online devices

55% in 2020

Older people use **apps to make voice or video calls or send messages**

Data source. Australian Communications and Media Authority (2021)

Diving deeper into data



Data source. Ericsson Mobility Report

Demand for digital and data jobs and skills

The tech workforce is growing twice as fast as the rest of the economy

861,000

Number of tech workers in 2021

66%
Growth in tech workers, 2005-21

35%
Growth in all workers, 2005-21

Data source. Tech Council & Accenture (2021)

1.2 million

Target number of tech jobs in Australia by 2030

653,000

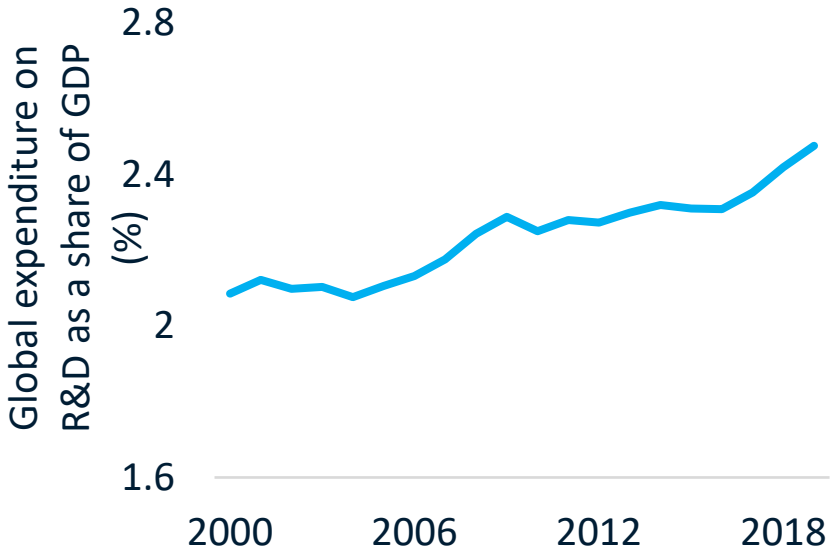
Number of people to join the tech workforce in Australia by 2030, taking into account natural workforce attrition

Data source. Tech Council, Accenture & Digital Skills Organisation (2022)

Increasingly autonomous

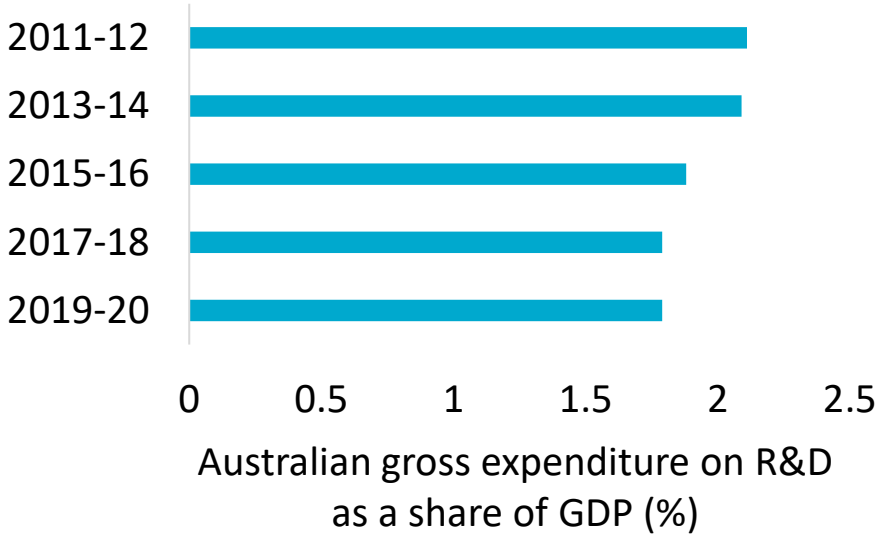
New possibilities for innovation and discovery

Global investment in research and development continues to grow



Data source. OECD R&D Expenditure Statistics

Australia spent less on R&D in 2019-20 ($36 b) than Amazon ($62 b) and Alphabet ($40 b)



Data sources. Australian Bureau of Statistics and NASDAQ

CSIRO

The ethics of artificial intelligence

Australia's AI Ethics Principles

1. Human, social and environmental wellbeing
2. Human-centred values
3. Fairness
4. Privacy protection and security
5. Reliability and safety
6. Transparency and explainability
7. Contestability
8. Accountability

Most Australians would trust AI more if assurance mechanisms were in place

68%

Share of Australians who ***do not trust AI systems***

72-81%

Share of Australians who would trust AI systems ***if assurance mechanisms were in place***

Data source. Gillespie et al. (2021) *Trust in Artificial Intelligence* report

CSIRO

Job augmentation over automation

Most jobs won't be automated by AI, but most jobs will be augmented by AI

9-14%

Share of jobs in OECD countries that are at high risk of future automation

Data source. Arntz, Gregory and Zierahn (2017) OECD; Nedelkoska and Quintini (2018) OECD

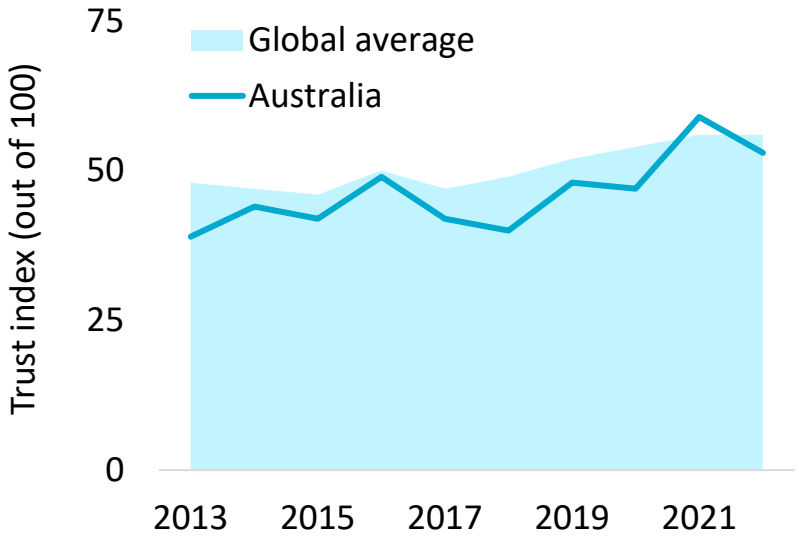
The first magazine cover generated by DALL·E, an image-generating AI system

Image source. ABC News & Hearst Magazine Media

Unlocking the human dimension

Trust, transparency and values-driven

Australia experienced a short-lived boost in public trust in institutions



Data sources. Edelman Trust Barometer

Growing consumer demand for enhanced corporate transparency

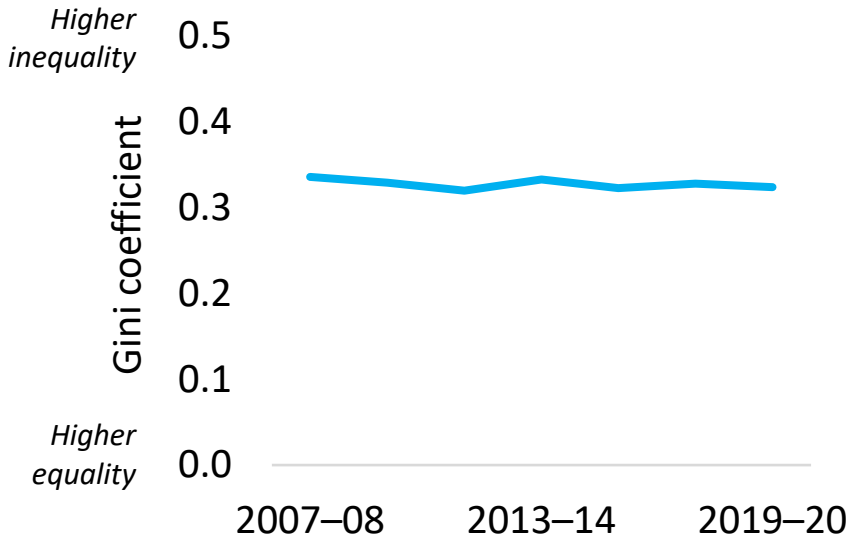
85%

Share of Australian consumers who want to see ***greater transparency*** around company sustainability and ethical practices

Data sources. Couriers Please (2021)

Raising the bar for the Great Australian Dream

Income and wealth inequality measures have been stable



Data source. Australian Bureau of Statistics

Home ownership is decreasing across the generations

65.8%

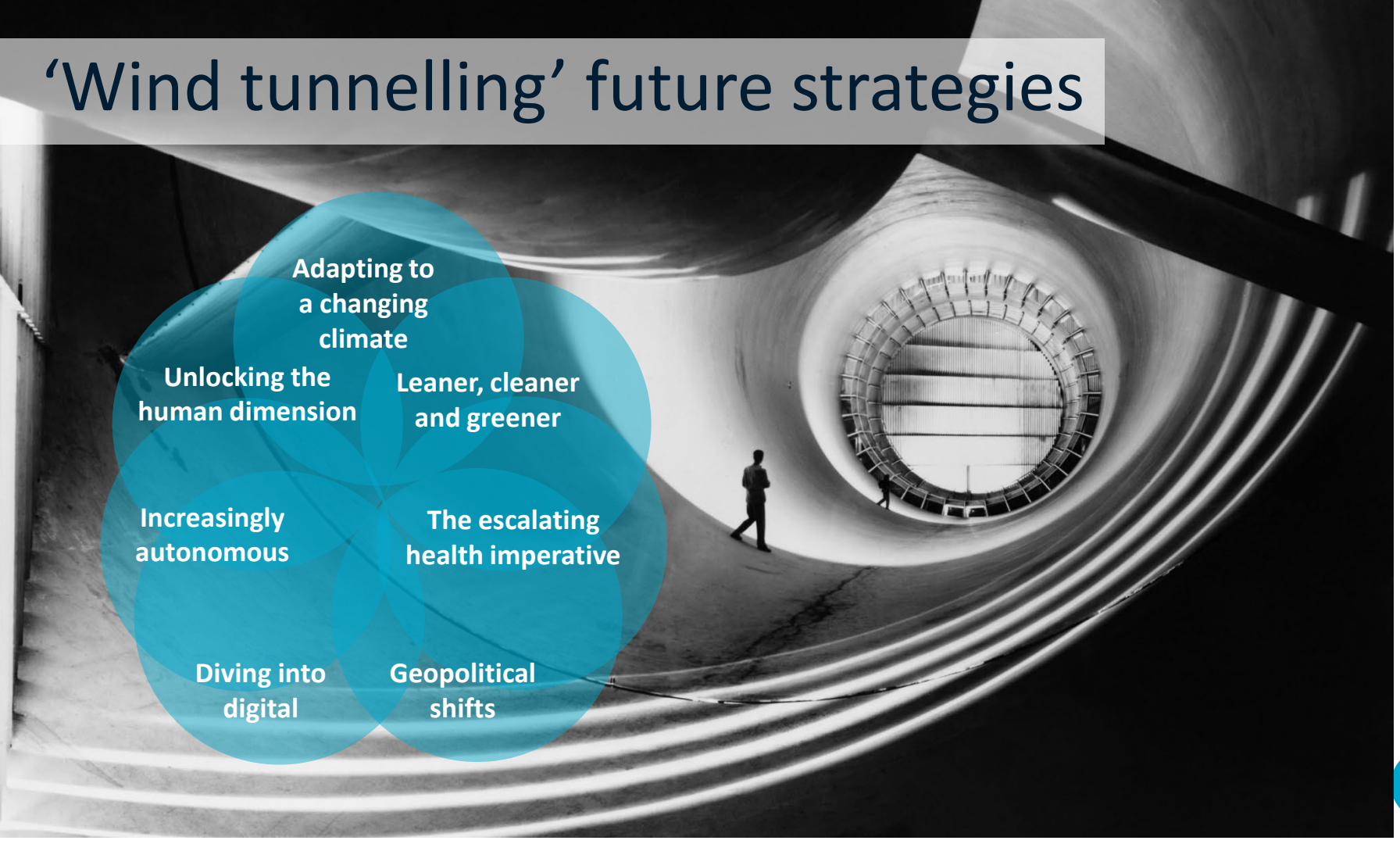
Share of Baby Boomer generation who owned their home at age 25-39

vs. 54.6%

Share of Millennial generation who owned their home at age 25-39

Data source. Australian Bureau of Statistics

‘Wind tunnelling’ future strategies



Thank you

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