



Australia's National  
Science Agency



# CSIRO Strategy

## Corporate Plan 2022-23

As part of CSIRO's missions program, we have committed to reducing Australia's plastic waste by 80 per cent by 2030.

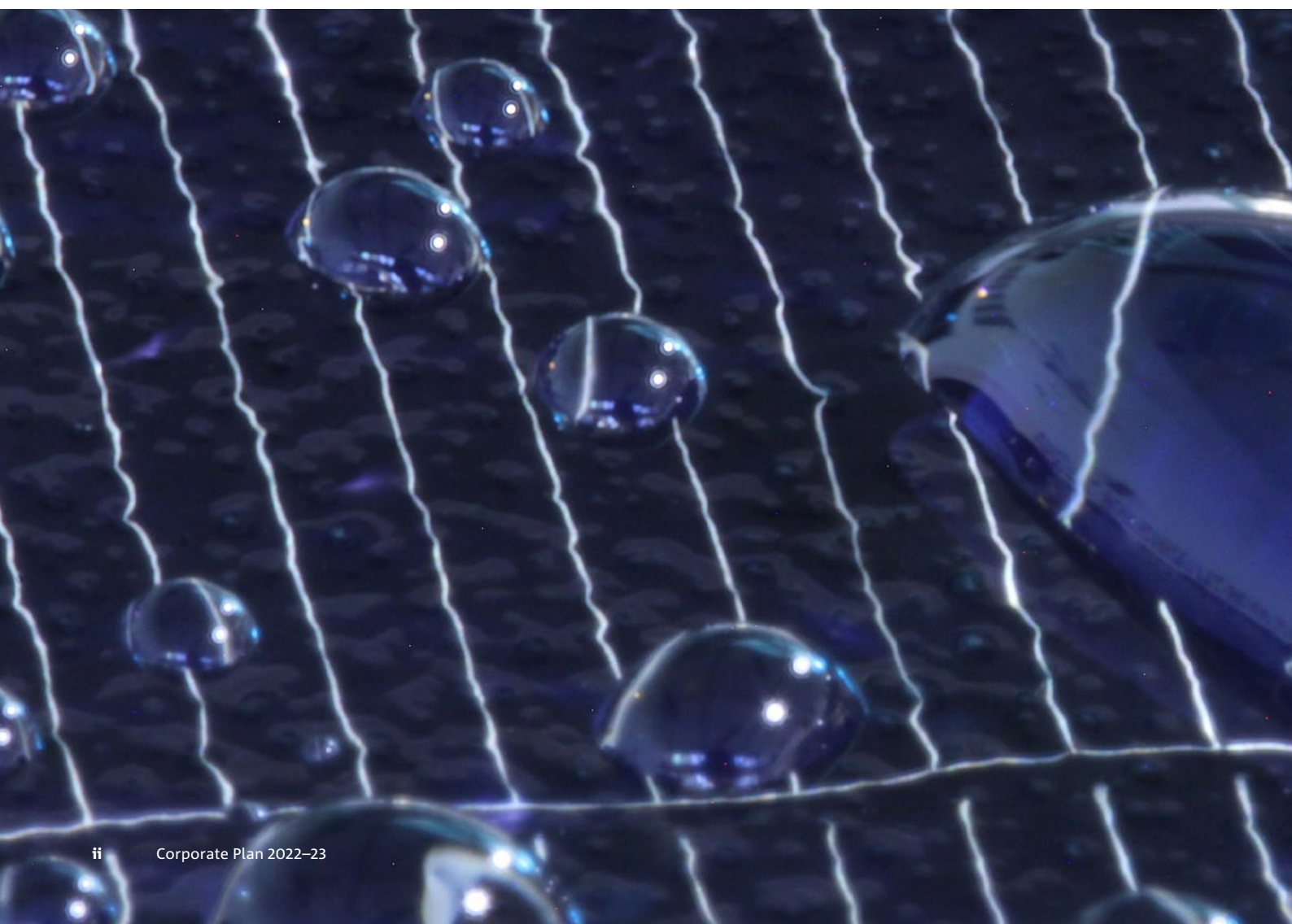
Dr Deborah Lau leads our Ending Plastic Waste Mission, which aims to change the way we make, use, recycle and dispose of plastics through a range of science and technology solutions.

Read the Corporate Plan online at [csiro.au/corporate-plan](https://csiro.au/corporate-plan)

# Contents

- 1 Introduction .....1
  - 1.1 Opening statement.....2
  - 1.2 Chief Executive’s foreword.....3
- 2 Our purpose and strategy .....5
  - 2.1 Strategy on a page.....6
  - 2.2 Our purpose, vision and strategy .....8
- 3 Our operating environment .....13
  - 3.1 Trends influencing our strategy.....14
  - 3.2 Our organisational structure and subsidiaries.....22
  - 3.3 Innovation through collaboration.....24
  - 3.4 Risk oversight and management .....26
- 4 Capability .....31
  - 4.1 Our people .....32
  - 4.2 Investment in future capability .....33
- 5 How we measure success .....37
- 6 Strategic objectives .....41
  - Objective 1 Deliver impact through innovation .....42
  - Objective 2 Purpose driven science and technology .....44
  - Objective 3 Engage and empower talent.....46
  - Objective 4 Build collaborative networks .....48
- 7 Appendix.....51
  - CSIRO subsidiaries .....52
  - List of requirements index.....53
  - References .....54

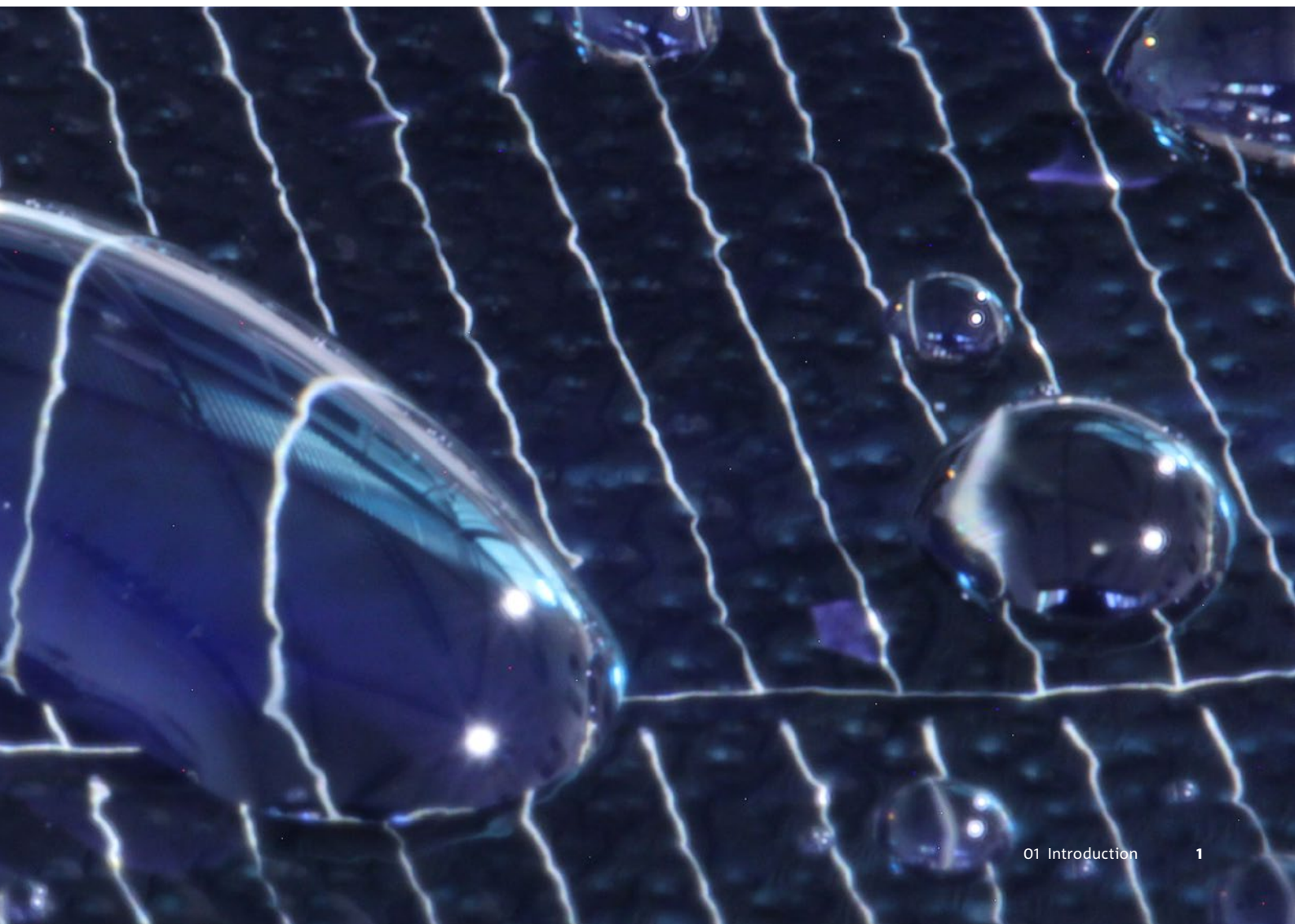
Water beads on the surface of a solar photovoltaic (PV) module, following the application of a hydrophobic coating to the glass surface. The CSIRO-developed coating repels water and dirt reducing the operation and maintenance costs for PV panels. CSIRO is working with industry on these advanced coatings that can reduce the cost of manual labour to clean the panels.





# 01

## Introduction



# 1.1 Opening statement

On behalf of the accountable authority of the CSIRO, the CSIRO Board, I am pleased to present our key strategic document, the 2022–23 Corporate Plan. As Australia's national science agency, CSIRO's purpose is solving the greatest challenges through innovative science and technology. This Corporate Plan outlines CSIRO's strategy for continuing to deliver on that purpose for the next four years, 2022–23 to 2025–26, as required under paragraph 35(1(b)) of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act).

For more than 100 years, CSIRO has been trusted by Australians to deliver national benefit through science and innovation. This is made possible through the excellence of its science, the strength of its partnerships, and the integrity of its people to make life better for all Australians. The Board is committed to continuing to strengthen and grow the national science agency, ensuring it continues to solve the greatest challenges through innovative science and technology to benefit many generations of Australians.

CSIRO's research is focused on areas where its multidisciplinary science can deliver impact, like energy transition, climate adaptation, health and biosecurity threats, and natural disasters. This is supported by investment in the breakthrough research that will enable tomorrow's innovations, such as through the \$200 million Future Science Platforms (FSPs) program, and sharing world-class infrastructure with businesses and researchers around the country.

CSIRO supports its people to thrive, driving a culture that makes us an employer of choice for world-class talent. We are committed to growing Australia's pipeline of science and technology leaders through increased recruitment for early and mid-career researchers. Together with our partners, industry and universities, we are expanding programs such as the industry PhD (iPhD) and ON Accelerator to provide opportunities for science and technology leaders to develop their innovation-driven careers in Australia. These programs will contribute to our culture of collaboration where people can develop their full potential.

This Corporate Plan recognises that CSIRO cannot deliver on its purpose alone, it relies on valued partnerships with government, industry, research and the wider Australian community to translate science and technology into real-world solutions that makes lives better. We support deep-tech start-ups through the CSIRO Innovation Fund and share our world-class facilities through the Trailblazer University program to catalyse Australia's innovation system.



We bring together coalitions of partners around multidisciplinary missions to solve challenges that cannot be solved by any single organisation, like ending plastic waste, reducing the impacts of drought, and developing an Australian hydrogen industry. The success of these initiatives through growth in revenue is re-invested in research for tomorrow.

To support the science, people and partnerships that deliver on our purpose, CSIRO itself must be a strong organisation. Investing in initiatives such as digital transformation and Ways of Working ensure we can enable and support our science to have maximum impact in the community. CSIRO is committed to operating innovatively to harness the expertise, creativity and passion of its people for the benefit of the nation.

There has never been a more important time for the national science agency to deliver solutions from science that will contribute to Australia's future sustainability and prosperity. The disruption of recent years is an opportunity for Australia to respond and excel globally by harnessing science and technology-driven innovation. CSIRO's purpose for the past century has been solving the greatest challenges through innovative science and technology, and this Corporate Plan continues that legacy with contemporary relevance and focus. The Corporate Plan outlines CSIRO's strategy to address today's challenges, making deliberate choices on where CSIRO and its partners can have the most impact for the most people, today and into the future.

**Kathryn Fagg AO**  
Board Chair

## 1.2 Chief Executive's foreword

In recent years, Australians have faced devastating and record-setting bushfire and flooding events at the same time as wide-ranging impacts of a global pandemic – and their national science agency has stood by them every step of the way, delivering support and solutions from science. I am so proud of the way Team CSIRO has drawn on decades of expertise while responding with agility to face these challenges with partners across Australia. Our people have been able to do this – and much more – because we already had the right strategy in place to deliver on CSIRO's purpose: to solve the greatest challenges through innovative science and technology.

Our 2022–23 Corporate Plan recognises that our people are at the heart of our success. The simplified strategic objectives and priorities outlined in this plan are the result of harmonising our people's 2030 'agency of the future' vision with CSIRO's core legislated role in our Act to articulate those areas of greatest importance of focus for us to realise our purpose. This builds on the continued strong connection all our people feel to our purpose, reflected in our 2022 culture survey. Our updated strategic objectives and priorities, as well as our values, remain true to the spirit of CSIRO's creation over a century ago, while clearly focussing on what Australia needs from us today.

The national challenges we set out to solve are translated into timely, relevant and real-world solutions through our missions and projects across our research areas. Together with our partners, we have launched 5 missions since creating the missions program, with more to come over the strategy period, and powered by investments in the twenty FSPs across the organisation. For the first time, this Corporate Plan captures the full scale of CSIRO's wider research in one place, through a high-level snapshot mapped against our challenges. This shows the true depth and breadth of CSIRO's expertise and impact, which underpin our role as the most connected organisation in Australia's innovation ecosystem, and demonstrate our unique ability to bring a truly multidisciplinary, collaborative approach to solving complex challenges, which sets us apart.



CSIRO's partnerships are the enabler of our shared success. This Corporate Plan reflects partnerships with industry, government, and society built up over many decades, while also focussing on new initiatives to harness today's opportunities like supporting the Australian research sector through the iPhD program, ON accelerator, the Trailblazer University program, Main Sequence, and our National Labs. These programs work collaboratively across the entire system to ensure more great Australian science turns into better jobs, more globally competitive companies, and, sometimes, whole new industries for all Australians.

Our Corporate Plan, as our strategy, is updated year on year to reflect the rapidly changing needs and circumstances of Australians, but as their national science agency, we are unwavering in delivering on our purpose to solve the greatest challenges through innovative science and technology. Built on the foundations of a century of trust, and brought to life by our people every day, our strategy is our roadmap to realising our vision: to create a better future for Australia.

**Dr Larry Marshall**  
Chief Executive



More than 70 CSIRO scientists and engineers work on Great Barrier Reef research across our organisation. Our collaborative work includes improving water quality, managing pests such as crown-of-thorns starfish, predicting impacts of climate change and much more.

John Brewer Reef March 2022.





# 02

## Our purpose and strategy

Our strategy articulates how we will achieve our purpose  
and our future vision.



## 2.1 Strategy on a page

Our purpose is to solve the greatest challenges through innovative science and technology

### The challenges we are solving

Health and wellbeing

Enhance the health of Australians through preventative, personalised, biomedical, and digital health services.

Food security and quality

Achieve sustainable security through new AgriFood products, technology and innovation for Australia.

A secure Australia and region

Help safeguard Australia from threats (terrorism, regional instability, pandemics, biosecurity, disasters and cyber-attacks).

Resilient and valuable environments

Enhancing the resilience, sustainable use and value of our environments, including by mitigating and adapting to the impacts of climate and global change.

Sustainable energy and resources

Build competitiveness, sustainability and security of our energy and minerals resources while heading to Net Zero.

Future industries

Help create Australia's future industries and jobs by collaborating to boost innovation performance and promote STEM skills.

Our values underpinning how we work

Making it real

Trusted

## Our objectives to deliver

Deliver impact through innovation

Advance Australia's commercialisation of science and deliver new value from digital innovation.

Purpose driven science and technology

Deliver impact at-scale aligned with the challenges we are solving and the portfolios of research directed to them. Invest in the right future science and technology to solve tomorrow's challenges.

Engage and empower talent

Attract world-class talent and strengthening our nation's STEM pipeline. Build a culture that makes us an employer of choice and operate in an adaptable, resilient and responsive way.

Build collaborative networks

Share our world-class national labs and facilities with industry, universities and government and harness the power of our diverse relationships for better outcomes.

Our vision is to create a better future for Australia

People first

Further together



## 2.2 Our purpose, vision and strategy

Our strategy comprises our objectives, key priorities, 2025 goals and programs to deliver on the goals, all of which is underpinned by our values.

### Our purpose

#### **Solving the greatest challenges through innovative science and technology.**

As the nation's science agency, our purpose is to solve the greatest challenges through innovative science and technology. Our purpose has endured for more than 100 years and will continue to guide us into the future. As one of the world's largest multidisciplinary science and research organisations, we focus on issues that matter the most: for our quality of life, for the economy and for our environment.

### Our vision

#### **Create a better future for Australia.**

When we all focus on the big things that really matter, Australian science and technology can solve seemingly impossible problems, and create new value and a better future for all Australians. We are working closely with the government, universities, industry, and the community to bolster Australia's COVID-19 recovery and build long-term resilience.

### Challenges

Our vision is to create a better future for Australia. We are helping the nation overcome six challenges and turn them to Australia's unique advantage, to help future-proof our quality of life, the economy, and our environment.

#### **Six challenges we are working with partners to solve:**

##### **Health and wellbeing**

Enhance the health of Australians through preventative, personalised, biomedical, and digital health services.

- Supporting healthier lives
- Preparing for, and prevention against, infectious diseases
- Enabling transformation of the health care system
- Advancing manufactured products and technologies to support health

##### **Food security and quality**

Achieve sustainable security through new AgriFood products, technology and innovation for Australia.

- Agricultural productivity
- High value foods
- Trusted value chains
- Sustainable farm systems

##### **Secure Australia and region**

Help safeguard Australia from threats (terrorism, regional instability, pandemics, biosecurity, disasters, and cyber-attacks).

- Biosecurity
- Defence and security
- Sovereign resilience

**We are accelerating investment in future revolutionary science and technology including:**

Artificial Intelligence (AI) – Machine Learning (ML)

## Missions

To help solve each of these challenges, in addition to the science CSIRO delivers every day, we are developing and launching missions. These are big, bold initiatives which aim to tackle big, multi-faceted problems by bringing together the innovation ecosystem including research agencies, universities, industry, government and community to work collaboratively on outcomes that lead to positive benefit, new jobs and economic growth.

They may begin as CSIRO missions but due to their scale, ambition and collaborative nature, they are being co-developed with partners in Australia and overseas to achieve even greater impact. Some of the partners include Google, Commonwealth Bank Australia and the United States National Science Foundation, as well as non-government organisations such as Ocean Protect and Conservation Volunteers Australia.

## Missions launched in 2021 and 2022

Since the missions program began in 2020, we have launched 5 missions:

**Drought resilience:** Building resilience to droughts and reducing their impacts in Australia by 30 per cent by 2030 by driving on-farm innovation, building regional resilience and acting as a policy enabler to support Australia's drought preparedness.

**Ending plastic waste:** Changing the way we make, use, recycle and dispose of plastics with the goal of an 80 per cent reduction in plastic waste entering the Australian environment by 2030.

**Future protein:** Leveraging increasing global demand for high quality protein to create new Australian protein products and ingredients that earn an additional \$10 billion in revenue by 2030 focussing on sustainable animal protein production, plant protein for new markets and novel protein production systems.

**Hydrogen industry:** Creating a globally competitive Australian hydrogen industry in 2030 by lowering the cost of clean hydrogen to under \$2 per kilogram.

**Trusted agrifood exports:** Growing export premiums of Australian grown food to boost Australian exports by \$10 billion in this decade by building trust in the safety, quality, and provenance of our agrifood.

### Resilient and valuable environments

Enhancing the resilience, sustainable use, and value of our natural and built environments, including by mitigating and adapting to the impacts of climate and global change.

- Climate resilience
- Water security
- Healthy ecosystems and biodiversity

### Sustainable energy and resources

Build competitiveness, sustainability and security, nationally and regionally, of our energy and minerals systems and resources while lowering emissions to Net Zero.

- Electricity transition
- Industry and transport decarbonisation
- Unlock resources for a sustainable future

### Future industries

Help create Australia's future industries and jobs by collaborating to boost innovation performance and promote Science, Technology, Engineering and Math (STEM) skills.

- Future manufacturing
- Future digital industries
- Circular economy
- Innovation services

## Strategic objectives

Our strategic objectives, guided by the *Science and Industry Research Act 1949*, and emerging needs of the national and global innovation system, are closely aligned to our values, and help us to deliver on our purpose:

- **Deliver impact through innovation:** *Turning science into solutions that **make it real***  
Deliver new value from digital innovation, support the translation of research into solutions and drive the nation's commercialisation outcomes through our unique commercialisation pathways capabilities, industry and investor connections and access to funding opportunities.
- **Purpose driven science and technology:** *Earning **trust** by predicting, preparing for, and solving the greatest challenges*  
Impact-driven focus, motivated by national challenges, harnesses leading-edge science and technology to create exponential impact for the nation.
- **Engage and empower talent:** *Putting our **people first** so they can focus on putting our customers first*  
We have a workforce of the best and the brightest minds united by our purpose. Our people are enabled to work seamlessly across diverse teams and develop sought-after careers in and outside CSIRO.
- **Build collaborative networks:** *Forming deep collaborations to amplify our impact and go **further together***  
We collaborate across the global innovation system, share our national labs and world-class infrastructure, and build strong partnerships to support research and development (R&D) investments, amplify innovation, and solve our greatest challenges, together.

## Values

Our values support achieving our cultural vision, guiding behaviours and decision-making for our people.

**Making it real:** We do science with real impact. We thrive when taking on the big challenges facing the world. We take educated risks and defy convention. We celebrate successes and failures and leverage them to learn as we strive to be the force for positive change.

**Trusted:** We're driven by purpose but remain objective. We fight misinformation with facts. We earn trust everywhere through everything we do. We trust each other and we hold each other accountable. Together our actions drive Australia's trust in CSIRO.

**People first:** Our first priority is the safety and wellbeing of our people. We believe in, and respect, the power of diverse perspectives. We seek out and learn from our differences. We do our very best to get all this right.

**Further together:** We achieve more together than we ever could alone. We listen and collaborate, in teams, across disciplines, across boundaries. We embrace ambiguity and use discussion and persistence to generate unique solutions to complex problems.





We strive to be an employer of choice, building Australia's future talent pipeline and attracting the world's best to work in a place that unleashes their full potential.

Research Technician Virginia Mwape, with a liquid handling robot, that dispenses a selected quantity of reagent, samples or other liquid to a designated container.



The Pyrotron in our new National Bushfire Behaviour Research Laboratory in Canberra helps us understand how bushfires behave under different conditions, and informs bushfire preparation and management.

Members of the Bushfire Behaviour and Risks team Matt Plucinski, Stuart Sadler and Andrew Sullivan prep the Pyrotron for the demonstration. The Facility opened in March 2022.





# 03

## Our operating environment

The external and internal insights, risk management framework and collaborative partnerships that influence our strategy.





## 3.1 Trends influencing our strategy

We leverage external insights and our own science foresight from our publications, such as *Our future world: Global megatrends*, *Australian National Outlook 2019*, the *COVID-19: Recovery and resilience report*, our Future Science and Technology (S&T) plan and industry roadmaps, to inform research decisions and strategic direction.

### Global trends

Global connectivity and pandemics

Balancing growth with sustainability

Digital innovation growth

Rise of Indo-Pacific

The escalating health imperative

### Australian innovation system trends

Global innovation performance

Research and development (R&D) investment

Skill transition

Trust in institutions

### CSIRO internal trends

Role in solving national challenges

Shifting research methods

Future of work

Health, safety and wellbeing

Infrastructure and property footprint

## On a mission to End Plastic Waste

In March 2022, CSIRO launched the Ending Plastic Waste (EPW) Mission with a goal for an 80 per cent reduction in plastic waste entering the Australian environment by 2030.

An initial \$50 million was funded through contributions by CSIRO, industry, government, universities and other organisations to change the way Australia makes, uses, recycles and disposes of plastics.

The mission is developing targeted solutions across the entire plastics supply chain, with a focus on transforming plastic waste into a commodity. This will support economic growth and jobs for Australia and realise the potential of circular economy plastic initiatives for recycling, which is expected to provide US\$67 billion in value globally by 2025.

Our research includes revolutionising packaging materials and waste systems; best practice for the development and implementation of standards; effective solutions for recycling; analytics and machine learning to inform decision making; and creating behaviour change.

Our research extends beyond the domestic shores, with our tools and capabilities being applied in the Indo-Pacific region. We successfully launched the Plastics Innovation Hub Indonesia, with other hubs expected to launch in Vietnam and across the region in the coming year. This will establish an innovation ecosystem and deliver relevant and high-tech solutions to tackle plastic waste in the region.





## Global trends influencing our strategy

### THE TREND

#### Global connectivity and pandemics

Globalisation will be the mainstay of recovery and building resilience across the globe. As the world reconnects, economic growth driven by flows of trade, capital, information, and people will need to be balanced with challenges such as future pandemics and increased focus on sovereign capability and regional areas.

---

#### Balancing growth with sustainability

The demands of a growing population are depleting the natural environment. Climate change is an economic, environmental and social issue with natural disasters becoming more intense and frequent. Direct economic losses and physical damage to the world resulting from natural disasters were estimated at \$343 billion in 2021.<sup>3</sup> The World Economic Forum's risk report identifies climate action failure, extreme weather, biodiversity loss, human environmental damage, and natural resource crises among the top 10 global risks.<sup>4</sup>

---

#### Digital innovation growth

The adoption of high-performance computing, Artificial Intelligence (AI), Machine Learning (ML), sensors, the Internet of Things, robotics, and other Industry 4.0 technologies is growing globally. Digital innovation is already disrupting entire systems of production, management and governance and expected to create \$10–15 trillion of global opportunity.<sup>7</sup>

---

#### Rise of Indo-Pacific

Growth across the Indo-Pacific in the last two decades has shifted the world's economic centre of gravity east. Even after COVID-19's impact on foreign direct investments (FDI) to Southeast Asian nations in 2020, ASEAN remains an attractive investment destination, with its share of global FDI rising from 11.9 per cent in 2019 to 13.7 per cent in 2020.<sup>10</sup> China, Japan, South Korea and India continue to spend heavily in R&D and will remain the engine of growth for Asia and the world. Coalitions of countries in the Indo-Pacific region that are designed to preserve the international rules-based order also have a unified interest in protecting social and economic growth for the region.

---

#### The escalating health imperative

Global healthcare expenditure is on an upwards trajectory and will likely continue as populations age and as new health challenges emerge (like antimicrobial resistance and future pandemics). COVID-19 has compounded the challenges around chronic illness and mental health difficulties through increased pressure on the health system.

---



## THE IMPACT

COVID-19 exposed the lack of preparedness, resilience, and high reliance on increasingly globalised and interconnected economies and value chains.<sup>1</sup> As global activity restarts, continuous international coordination of R&D activities is needed to ensure better preparedness and resilience to future threats, whilst in turn also developing sovereign capability. The Australian Government has committed an additional \$371 million biosecurity package to strengthen the nation's ability to keep out exotic pests and diseases and fight outbreaks.<sup>2</sup>

Australia's climate has warmed on average by 1.4°C since 1910, leading to an increase in the frequency of extreme heat events and the severity of drought conditions during periods of below average rainfall.<sup>5</sup> Oceans around Australia are acidifying, leading to longer and more frequent marine heatwaves.<sup>5</sup> The 2019–20 bushfires in Australia killed or displaced around 3 billion animals and burned between 12.6–19 million hectares.<sup>6</sup> The 2021–22 flood events in eastern Australia were deemed as one of the nation's worst recorded flood disasters. Increased societal awareness and climate-related concerns are driving pressure to balance economic growth with sustainable operations.

COVID-19 accelerated global digital transformation by 7 years.<sup>8</sup> For Australia, digital innovation is critical to manage and mitigate the social and health crises. Digital technology is expected to contribute between \$140 billion and \$250 billion to Australia's gross domestic product (GDP) by 2025.<sup>9</sup> Compared to OECD peers, Australia has captured a third less value from digital innovation.<sup>7</sup> The government's strategic investments to establish industry 4.0 test labs, National AI centre and digital capability centres aim to unlock the value of data, drive investment and uptake of emerging technologies in Australia.

The regional Indo-Pacific groupings, including AUKUS and Quad will have increased impact on science, technology, and R&D particularly as they relate to emerging and new technologies that cut across sectors including defence, climate, health, and food security. Australia also stands to benefit from Asia's growing share of the global GDP and 2.4 billion middle-class households. A network of 15 free trade agreements gives Australia preferential access to fast-growing markets like China, India, Indonesia and Singapore.

Compared to the OECD average (8.8 per cent), Australia spends a greater share of GDP on healthcare (10 per cent).<sup>11,12</sup> The Australian Government committed \$121.4 billion to healthcare in 2021–22 and indicated an intent to invest a total of \$503 billion over the next four years.<sup>13</sup> Along with responding to COVID-19 implications, there are growing opportunities for the innovation sector to advance medical sciences and deliver services that will improve the health and wellbeing of the ageing population.

## CSIRO'S RESPONSE

We are building Australia's resilience to future pandemics by leveraging the Australian Centre for Disease Preparedness (ACDP), to develop faster, more sensitive diagnostic and surveillance tools, new vaccines, and antiviral therapeutics. We collaborate internationally as part of a global effort to manage and mitigate the threat of emerging infectious diseases. We are supporting the development and implementation of critical technologies such as AI and quantum which extends the nation's ability to respond to biosecurity threats.

We are delivering practical solutions to support our environment. We are directing digital, land and water management, urban area planning, modelling, and sustainable energy, and resources capabilities, to deliver innovative solutions for a resilient and valuable environment. Our world-class national bushfire behaviour laboratory will assist us to better understand and respond to bushfire behaviour. To support flood affected communities, we are working with the Australian government over the next 2 years to identify options and opportunities for mitigating risk and building resilience in the Northern Rivers region.

Our solutions are increasingly at the intersection of science and digital, and leveraging our expertise in technologies like AI and ML for research. We are embracing digitised laboratories, lab-on-a-chip and sensing technologies, and expanding our research skills across digital. We are delivering the nation's digital economy strategy through our role in leading the Australian government's National AI Centre and contributing to related programs.

We are tackling large scale problems in the region through our global strategic partnerships, and presence in Vietnam, Singapore and Indonesia. To drive post-COVID-19 economic recovery opportunities, we have expanded our partnership with India to leverage the synergies of diverse perspectives in building an innovation-led future.

Through our research Future Science Platforms (FSPs), and missions program (pages 9 and 34) we are developing a range of preventative, personalised biomedical and digital health solutions to enhance the health, wellbeing and lifespan of all Australians.

A vertical strip on the left side of the page features a microscopic image of plant cells, showing various green and yellowish oval structures against a dark background.

## Australian trends influencing our strategy

### THE TREND

#### Global innovation performance

Our nation's research accomplishments are impressive, underpinned by a strong education system. However, the translation of research to commercial outcomes is relatively poor. Australia's ranking dropped 5 places in the last 3 years to 25<sup>th</sup> of 132 economies in the Global Innovation Index 2021 rankings.<sup>14</sup>

---

#### Research and development (R&D) investment

Australia's gross and business expenditure on R&D as a proportion of the GDP has fallen in the last decade. Gross R&D declined from 2.11 per cent in 2011–12 to 1.79 per cent in 2019–20,<sup>16</sup> well below the OECD average of 2.52 per cent.<sup>17</sup> Business R&D has fallen from 1.2 per cent in 2011–12 to 0.91 per cent in 2019–20.<sup>16</sup>

---

#### Skill transition

STEM and digital skills will play a vital role in realising Australia's innovation and productivity potential. STEM education complements the development of critical thinking, creativity, collaboration, and problem solving, which are demanded for future careers.

Employment in STEM occupations is projected to grow by 12.9 per cent in the next 5 years, well above the average growth of all occupations (7.8 per cent) and more than twice as fast as non-STEM occupations (6.2 per cent).<sup>20</sup>

---

#### Trust in institutions

A lack of trust in Australian institutions stems from incompetence and unethical behaviour which threatens institutions' social license to operate. Since 2013, the overall trust in Australian institutions remained low, until 2020 and 2021 which witnessed significant trust increase due to rapid bushfire and COVID-19 responses, driven by science and technology.<sup>23</sup> However, increased scientific attention has also led to increased levels of scepticism and conspiracy theories.

---

## THE IMPACT

To compete globally in the \$1.6 trillion innovation race,<sup>15</sup> Australia will have to undertake newer-to-world innovation compared to the incremental innovation, and improve its collaboration, translational and commercialisation track records.

---

CSIRO's share of the government's total R&D appropriation investment has declined from a peak of 30 per cent in the early 1980s to 8.6 per cent in 2020–21.<sup>18</sup> However, in the last few years, the proportion of Government Expenditure on R&D (GovERD) being funded by industry has risen from 7.7 per cent in 2012 to 10.3 per cent in 2018.<sup>19</sup> There is increased interest by institutional investors, private equity, and venture capitalists to invest in research commercialisation. A likely reason is the stronger links that publicly funded research agencies such as CSIRO have developed with industry. Australia now ranks ahead of countries such as the United States in the proportion of GovERD funded by industry.

---

In Australian schools, enrolments in STEM subjects are at the lowest levels in 20 years, with the number of school students studying STEM in later secondary (Year 11 and 12) flat-lining at around 10 per cent or less.<sup>21</sup> The long-term trends also indicate students' performance in STEM subjects is slipping.<sup>22</sup> The country's talent pool is limited by gender inequity in STEM education and careers.<sup>21</sup> It is vital that Australia keeps pace with technological change to advance the economy and invests effectively to develop students' STEM and digital skills.

---

In 2020, Australia and New Zealand reported 58 per cent of their populations having high levels of trust in science, one of the highest amongst other regions in the world and more than the global average of 41 per cent.<sup>24</sup> This level of trust is key to R&D organisations like CSIRO to continue to build consensus and develop solutions that address key challenges.

---

## CSIRO'S RESPONSE

As an agency primarily focused on applied research, we are driven by delivering solutions from science. We collaborate with all key players of the innovation system, domestically and internationally – universities, government, industry and communities. We seek to strengthen Australia's research commercialisation and entrepreneurial skills through our global strategy, commercialisation services and programs such as industry PhD (iPhD), ON Prime and Accelerate, specialist equipment, Innovation and Engagement Services and the CSIRO Innovation Fund (page 33–34 and 43). Our key focus is to work with industry to build national sovereignty in core industries such as manufacturing and food to optimise Australia's independence in times of limited trade, pandemics, and global competitiveness for resources.

---

We are focused on creating system-level collaboration to maximise the social, environmental, and economic impact of R&D investment for our nation. Our larger programs of work such as missions, our shared national labs such as Australia Telescope National Facility, National bushfire behaviour research lab, and commercialisation services drive greater global collaboration to support R&D investments to go further and address issues aligned to the national priorities.

---

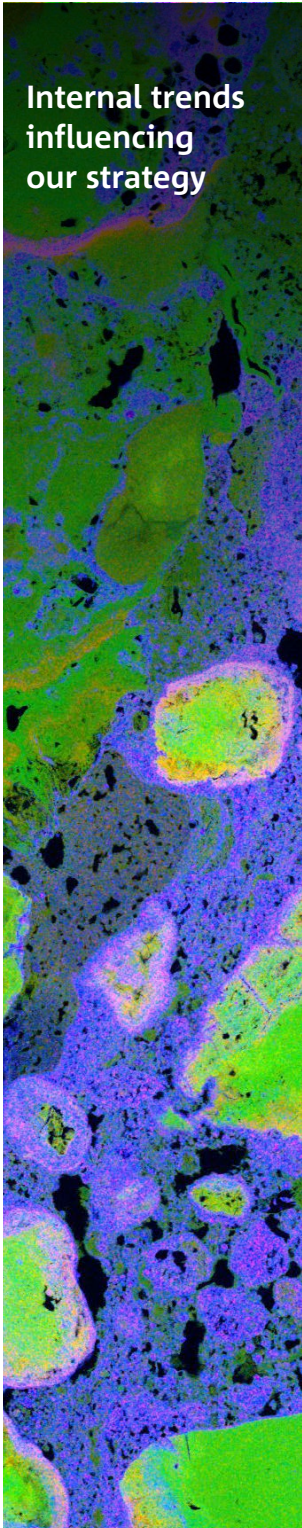
We strengthen Australia's STEM talent pipeline through education and outreach programs in schools and communities. We continue that support for universities through our iPhD program and postdoctoral fellowships, to encourage STEM professionals into industry, and the innovation system. As a Champion of Change for gender equity, our Chief Executive leads efforts to promote diversity in STEM. This is supported by our commitment to the Science in Australia Gender Equity program, empowering the next generation of Aboriginal and Torres Strait Islander STEM professionals through the Reconciliation Action Plan, strong advocacy for the Advancing Women in STEM strategy and the Women in STEM Decadal Plan.

---

To continue earning Australia's trust, we focus on solving the challenges that matter the most to Australians. We earn trust by operating with integrity in everything we do. We provide unbiased, ethical, scientific advice based on deep domain knowledge and evidence; we deliver on our commitments to our people and our partners; and we put safety first in everything we do.

---





## Internal trends influencing our strategy

### THE TREND

#### CSIRO's role in solving national challenges

As the nation's science agency, our purpose is to solve the greatest challenges through innovative science and technology. It's a purpose that's endured for more than 100 years and will continue to guide us into the future.

---

#### Shifting research methods

Innovation cycles are accelerating and research methods are evolving rapidly, providing opportunities to address previously intractable science questions by bringing together cross-disciplinary capabilities.

---

#### Future of work

Society is fundamentally transforming the way we work. Automation and 'thinking machines' are changing the skills that organisations are looking for in their people. Competition for talent is fierce. COVID-19 has accelerated the existing trends – including adoption of digital technologies and remote working – and caused organisations to re-evaluate many aspects of work. Many of the roles, skills and job titles of tomorrow are unknown to us today.

---

#### Health, safety and wellbeing

CSIRO workplaces include chemical and engineering facilities, laboratories, pilot plants, glasshouses, animal and field stations, and offices. Our people also work away from base in a variety of hazardous environments including mine sites, oil rigs, farms, forests, mountains, deserts and water bodies. Climate events, bushfires and pandemics add to the operational risks.

With diverse operations both overseas and in Australia, we continue to be ever-vigilant in protecting the wellbeing of our people, partners and the community.

---

#### Infrastructure and property footprint

In 2000, we operated from more than 76 research facilities and sites across metropolitan and regional areas of Australia. By 2022, this has been reduced to 51 sites in Australia and 3 sites overseas. We also have a presence in 28 other locations which include monitoring stations, testing racks and hosted occupancies.

---

## THE IMPACT

Our endurance in delivering national impact is our ability to adapt and address – head on – the challenges that our environment, society and economy face. We regularly review our research areas and impact priorities, rationalise programs and create greater economies of scale by working closely with collaborators across the innovation system. This is particularly important in the short-term as the recent global economic downturn may lead to investment in R&D being deprioritised as government and industry seek to rationalise budgets.

Digital capabilities, such as AI, are allowing the analysis of vast amounts of data to spot patterns, detect anomalies and derive useful insights in efficient ways. Non-classical quantum sciences are revealing fresh insights into physical processes. There is also an increasing move to multidisciplinary science and technology, including the importance of the humanities and social sciences.

These momentous changes raise huge organisational, talent and human resources shifts. Adaptability – in organisations, individuals, and society – will be essential for navigating the changes ahead. Businesses will have to ease the routes to training and retraining and encourage and incentivise adaptability and the critical skills of leadership, creativity, and innovation.

Our widely varied safety risk profile adds complexity to our safe work environment. In 2021–22, our safety performance on Total Recordable Injury Frequency Rate was 3.1, an improvement over the previous year of 3.7. Regulatory notifiable incidents reported to Comcare, and other regulators decreased from 8 in 2020–21 to 3 in 2021–22. We aspire to zero harm at work and our safety performance has room for improvement.

Our dispersed property footprint, infrastructure and work environment need to align better with our future science and workforce needs, which will be digitally driven, agile, and adaptable. With the increased virtualisation of work and more people working remotely, we expect our infrastructure will shift to enable and promote more virtual sites complemented by fewer but more collaborative, vibrant physical locations.

## CSIRO'S RESPONSE

Missions: large-scale research initiatives aimed at driving breakthroughs aim to accelerate the pace and scale at which the nation can solve each challenge and unlock a better future. We embrace leading-edge digital and transformational approaches, bringing networks of partners and collaborators together with science and infrastructure for deeper, impactful relationships to solve national challenges and build resilience for the future.

Shaping a clear, long-term science and technology direction is critical for maintaining our competitive advantage. We are empowering our researchers with leading edge digital technologies, skills, and ways of working, and applying technologies such as AI to our deep domain expertise to support the adoption of the technology in multiple industries.

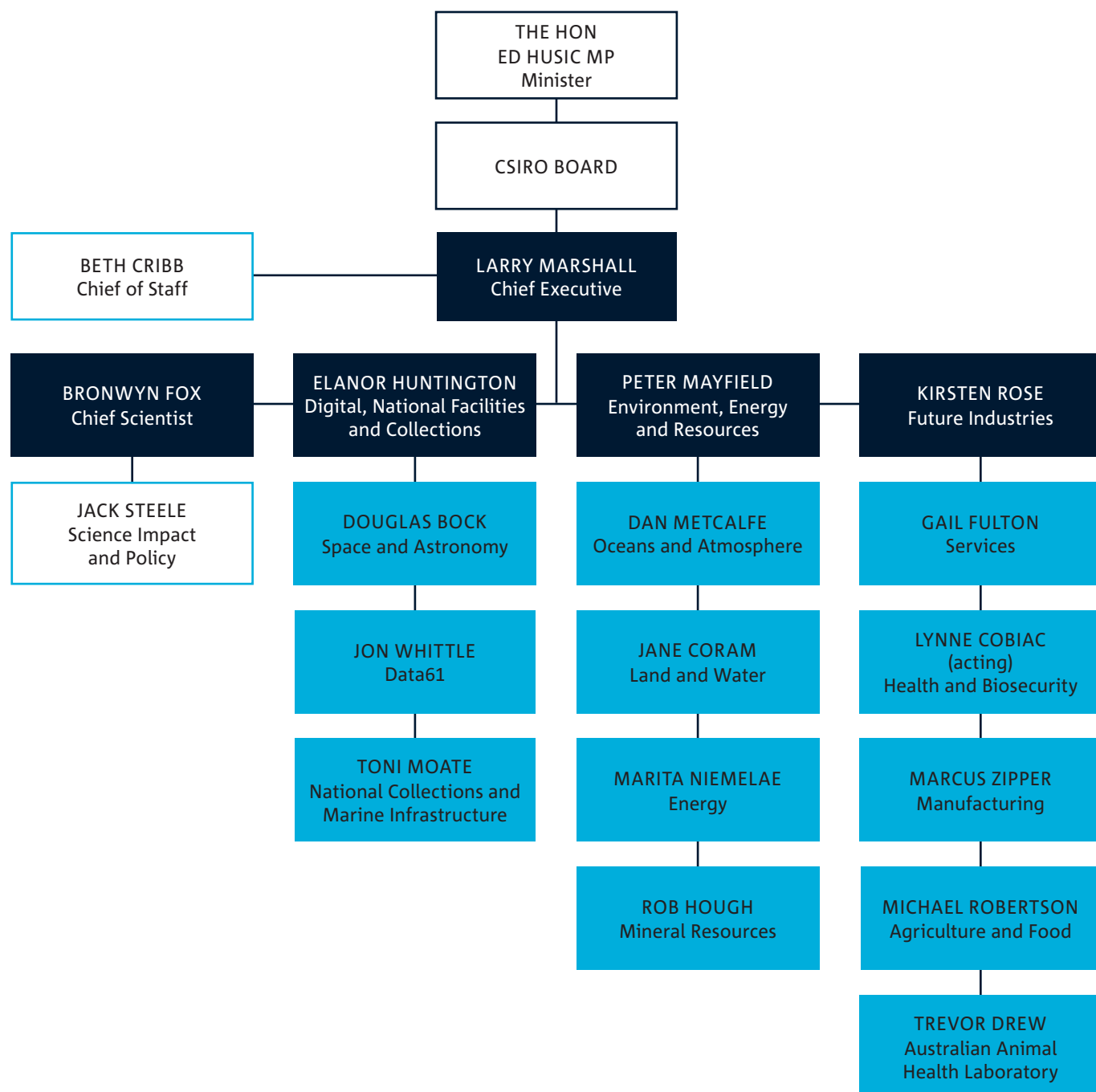
Innovation comes from diversity in all its forms, and the changing nature of work provides a significant opportunity for us to rethink and redesign how our workforce is structured and enabled. With the aim to be an employer of choice for world-class talent, our workforce strategy and capability plan will address changing workplace requirements. We are developing a more agile and adaptable workforce, delivering a great people experience, and caring for each other. Our 'Ways of Working' program will provide further support to amplify performance from our service delivery models (page 47).

Our Health, Safety and Environment (HSE) 4-year plan has 5 focus areas: a single HSE management system; leadership and management capability; a proactive risk management culture; health and wellbeing; and environmental management. In conjunction with our culture program, we will improve our safety maturity, wellbeing, and the morale of our people (page 34 and 47).

Our Property Strategy and the 'Ways of Working' program are reviewing our future workplace needs, property, infrastructure, and safety requirements. Through our 'Labs of the Future' program, we are developing plans to establish digitised laboratories, flexible workspaces, a smaller, more sustainable footprint, cutting-edge, smart infrastructure shared with partners, and an efficient carbon footprint. Our Newcastle energy centre will be a demonstration site for our net zero emissions target by 2025, with an aim to achieve the same for the rest of CSIRO by 2030.

## 3.2 Our organisational structure and subsidiaries

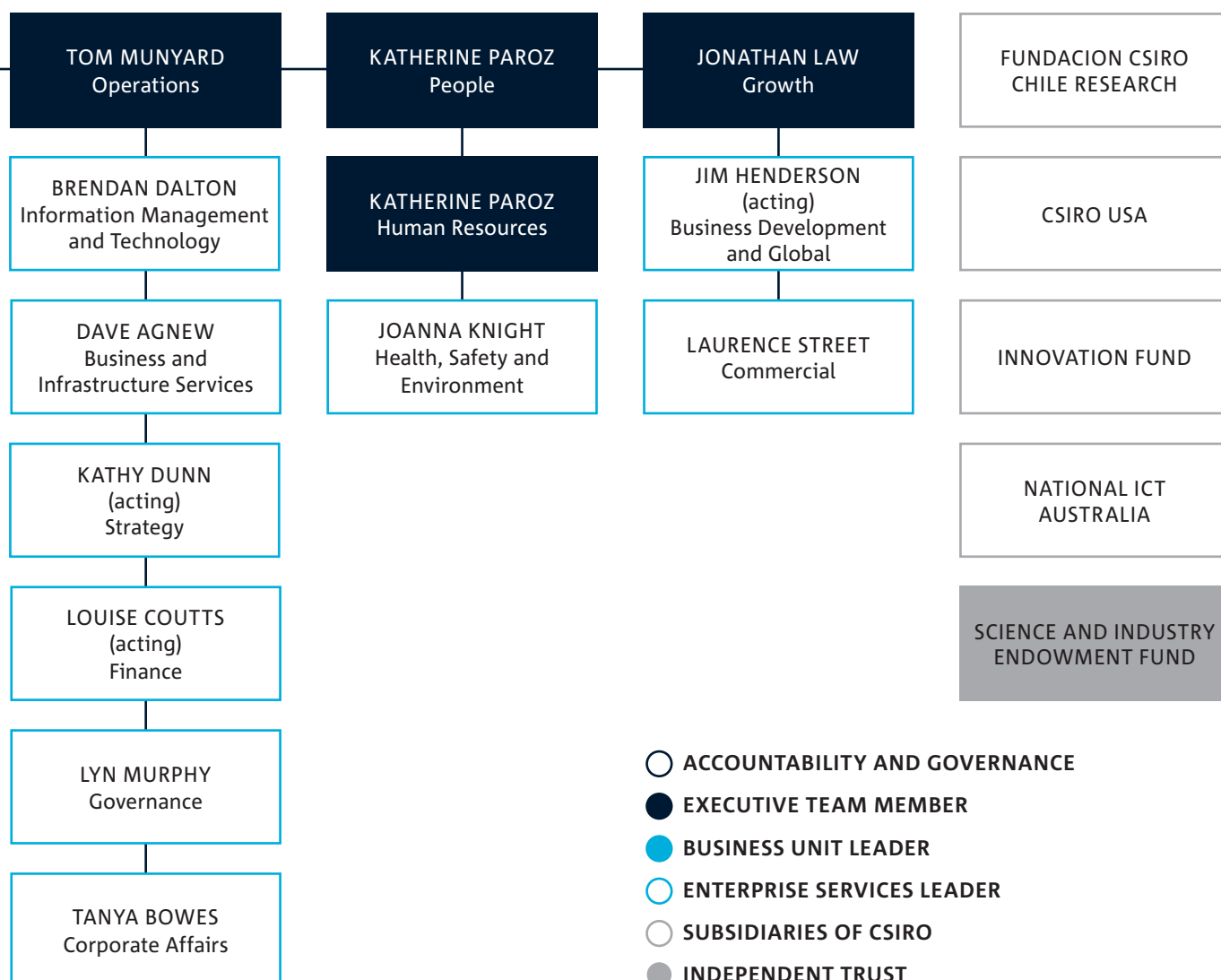
### Our organisational structure





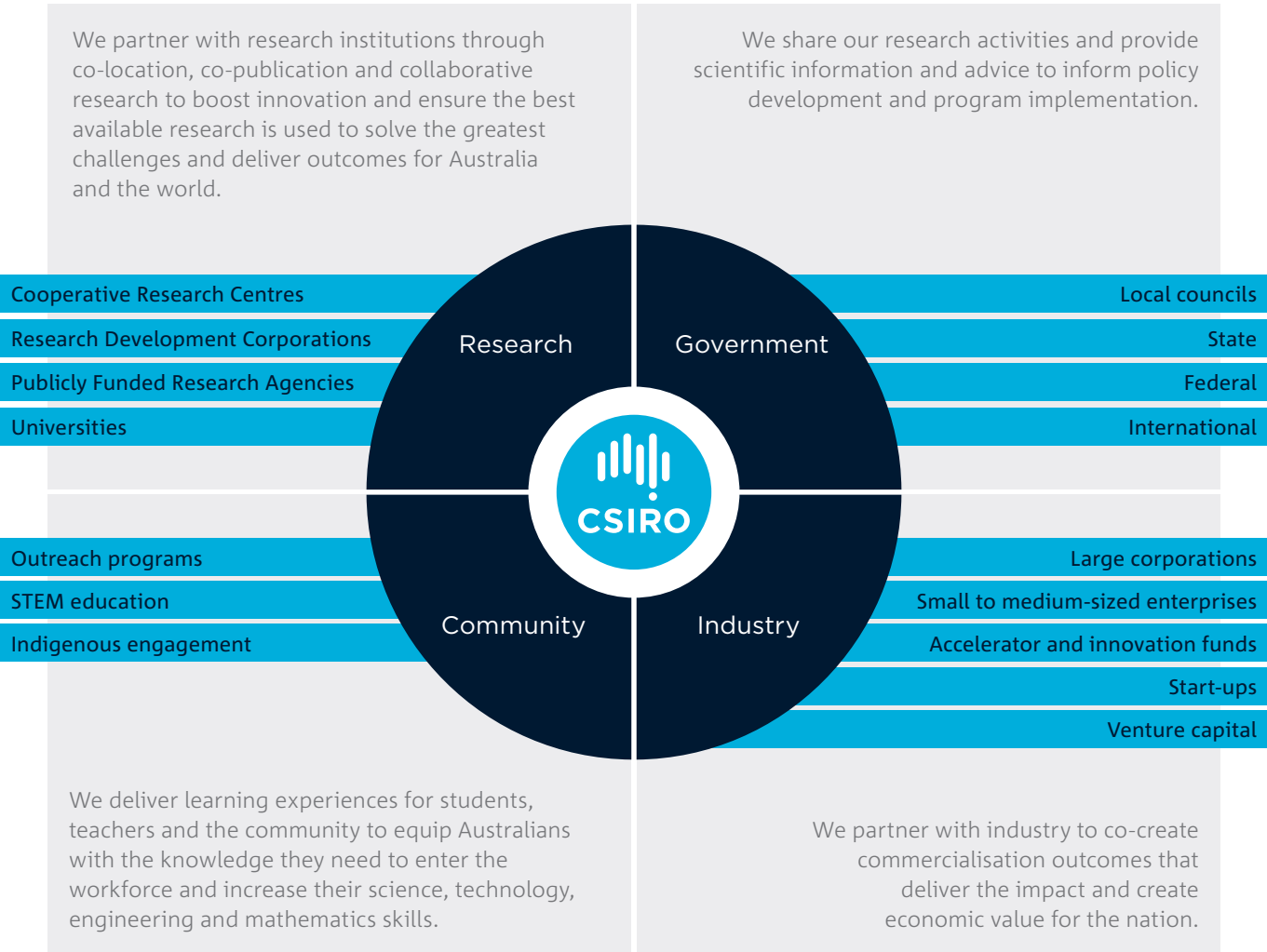
For information about our Business Units, Services, and national research infrastructure, see objectives 1, 2, 3 and 4 on pages 42, 44, 46 and 48. Our enterprise support functions provide advice and support across the Operations, People and Growth areas (see our capabilities on pages 33–35).

Our subsidiaries play a critical part in our ability to achieve our purpose. We have offshore representation that supports our global engagement, and funds that invest in science areas that create new opportunities for Australian innovation. Find out more about these on pages 43 and 52.



### 3.3 Innovation through collaboration

The delivery on our purpose depends on collaboration and cooperation, including with Australian and international universities, governments, industries, and businesses of all sizes. The diversity of our collaborators drives innovation, from strategic advisory and planning, to research and development, to programs and funding.





## CSIRO's future science to tackle energy storage, carbon locking, immune resilience and the bioeconomy

Since launching our Future Science Platforms (FSPs) in 2016 to focus on breakthrough research, we've invested more than \$200 million across more than 20 areas to reinvent and create new industries for Australia. In 2022, we committed \$50 million over four years to:

**Revolutionary Energy Storage Systems** to reimagine Australia's electricity grid from one designed for fossil fuels to instead incorporate more sources of renewable power. This research will aim to unlock the secret to efficient and safe energy storage to see us charge electric vehicles as easily as we now fill our petrol tanks, or keep our portable devices charged for many days without the need for a top up.

**Permanent Carbon Locking** to harness biology, chemistry and engineering to drive innovation in carbon capture and carbon storage science. Research is focussing on accelerated atmospheric carbon removal and permanent carbon storage, and integrating these in novel ways.

The future science and capabilities being developed have the potential to underpin new industries and reshape existing industries for Australia and beyond.

**Immune Resilience** to build on the accelerated understanding of human and animal immune systems gained from COVID-19 and develop technologies that prevent, protect, and respond to emerging health threats. This research will further unravel the complex nature of immune systems and develop new strategies to enhance immune resilience in both humans and animals.

**Advanced Engineering Biology** to develop powerful new tools for biological design and prototyping that will supercharge the delivery of impactful new goods and services, enabling creation of the 50,000 jobs and \$30 billion a year.



## 3.4 Risk oversight and management

Promoting ethical, well-organised, systematic, and cost-effective decision-making

Risk management is embedded in everything we do, from planning to performance and decision making.

Breakthrough science, innovation and collaboration carry risk of technical or scientific failure, however, we are committed to managing these risks and mitigating their consequences in a considered and effective way.

### Risk management framework

Under the *Public Governance, Performance and Accountability Act 2013*, the CSIRO Board has the overall responsibility for ensuring an appropriate and comprehensive risk management framework is in place. The risk management framework determines the nature and extent of the risks we will accept (risk appetite and tolerance) to deliver on our purpose, consistent with well organised, ethical, and cost-effective use and management of public resources. It also includes the key accountabilities and responsibilities for managing risk across the agency.

Formal committees and bodies support our efforts to identify and manage risks and provide independent advice and assurance as to the appropriateness of CSIRO's system of risk oversight and management. Key bodies include the Board Audit and Risk Committee, the Executive Audit Risk and Compliance Committee, Major Transactions Committee, and the Board's People and Safety and Science Excellence Committees.

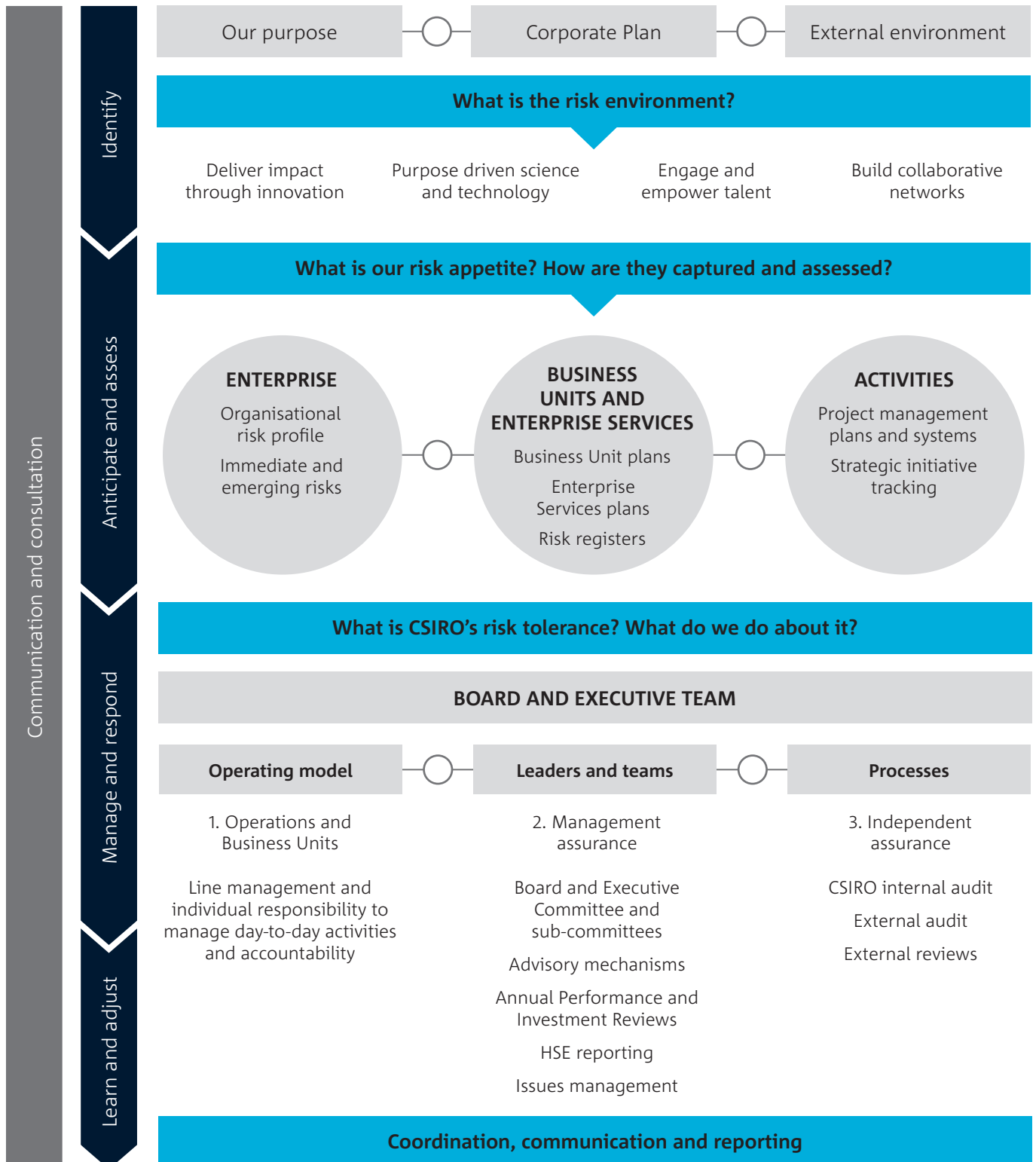
### Reviewing and improving our risk management

We take a continuous improvement approach towards risk management that aligns with best practice principles. Our framework, methodology and approach meet the requirements of section 16 the *Public Governance, Performance and Accountability Act 2013* and is consistent with both the international standard AS/NZS ISO 31000 Risk Management Principles and Guidelines and the Commonwealth Risk Management Policy. The risk framework is reviewed annually and presented to the Board for endorsement.

### Key enterprise risks and mitigation strategies

Key enterprise risks that may prevent us from achieving our purpose and strategic priorities are listed in the table on the following pages. If realised, these risks would have a significant impact on our ability to conduct research and deliver impact for creating a better future for Australia.

## How we manage risks



## STRATEGIC OBJECTIVES AND RISK CATEGORIES

### 1. Deliver impact through innovation

#### Effective solution translation

Failing to enable the desired external industry and research collaboration and translation of CSIRO's research into real impact.

#### Digital transformation

Failing to progress the digital transformation of science, people, functions, and processes at the desired pace.

### 2. Purpose driven science and technology

#### Prioritised science and capability

Failing to anticipate future market needs and prioritise our science and investments to deliver the greatest impact in a dynamic global and national context.

#### Science integrity and public trust in science

Failing to conduct our science with integrity and in a manner that upholds our Code of Conduct and failing to perform the role of trusted advisor (inadequate, untimely advice, lack of innovative solutions to deliver on the purpose).

### 3. Engage and empower talent

#### Talent and workforce

Inability to attract, retain and develop the diverse talent and leadership pipeline necessary to conduct and support world-class scientific research to deliver impact.

#### Culture and values

Inability to identify, develop and adopt the cultural changes required to successfully achieve relevance and impact.

#### Health, safety, and the environment

Failing to maintain a resilient organisation and safe and secure operating environment.

#### Financial

Failure to achieve sustained financial stability and growth through appropriately managing existing resources and developing future strategies to adequately respond to changing economic factors.

#### Security – physical, personnel and cyber

Inability to effectively manage the inherent tensions between achieving CSIRO's objectives as an open and collaborative organisation whilst maintaining appropriate levels of physical, protective, and cyber security.

### 4. Build collaborative networks

#### Customers, partners, and collaboration

Failing to effectively engage and manage the relationships with customers, partners, and collaborators (government, industry, universities, and communities).

## RESPONSE

Effective solution translation and commercialisation is core to delivering research impact. We have been responding to broader calls and initiatives to drive greater commercial outcomes from publicly funded research in Australia.

We are moving towards leading edge science and delivery model, enabled by an integrated digital ecosystem.

The risk of failure is inherently high in undertaking challenging science, however actions that compromise scientific integrity, impartiality and independence are unacceptable. The conduct of our business operations is subject to the application of our governance and accountability frameworks and mechanisms. The policies, processes and systems underpinning these are subject to regular internal and external review.

Our people are at the heart of our impact and we are committed to attracting the best talent, to help position CSIRO as the destination employer in Australia, and strengthen the nation's future talent pool.

In pursuing our science, we undertake many activities with a high inherent risk relating to health, safety, and the environment but these risks must be managed to a goal of zero harm. There is no tolerance for actions that endanger the safety of our people.

Commercial and financial risks that imperil a long-term sustainable financial position, and the dynamic global environment in which we operate, demands engagement with new commercial business models and approaches in a global context.

There are inherently high consequences of risks associated with safety and security of our people, systems, and sites. We aim to provide our people, visitors, and collaborators with a safe and secure operating environment, and protect our research to ensure that Australia realises the benefits it brings.

Effective management of these often-complex relationships to deliver value and impact for our customers is a fundamental risk. We support collaborative teams to manage technical and scientific risks to achieve customer value and impact delivery. We broaden our horizons by seeking out strategic collaborative partnerships to help deliver science impact.



## RISK MANAGEMENT AND MITIGATION STRATEGIES

Our ability to deliver new value from digital innovation and CSIRO's commercialisation strategy is key to drive positive impact for society and a sustainable CSIRO. We leverage investments in the CSIRO Innovation Fund, Science and Industry Endowment Fund (SIEF), Main Sequence, Uniseed, SME Connect and upskilling our people.

We have invested in foundational activities in our digital transformation journey and identified areas for further exploration and investment.

Controls and mitigation strategies include:

- articulating a clear strategic direction, including operationalising challenge strategies and impact priorities, and reviewing the business unit and enterprise services strategies for better alignment.
- supporting our investment decision-making criteria and process, and updating our operating model.
- focusing investments on transformative, cross-cutting future science and laboratories.

Scientific integrity is underpinned by extensive controls including peer review of science, ethics, and publication approvals. The conduct of our business operations is subject to the application of our governance and accountability frameworks and mechanisms.

We have a range of organisational initiatives focused on development, talent retention and attraction, and culture change programs supporting the development of the effective and efficient workforce needed to deliver on our purpose.

A range of organisational initiatives are focused on people development and cultural change. Our Health, Safety and Environment (HSE) 4-year plan has 5 focus areas: a single HSE management system; leadership and management capability; a proactive risk management culture; health and wellbeing; and environmental management. These are monitored internally through our governance frameworks and the Board.

We review our role in the National Innovation System, budget, investments, and operations. Working closely with government, we regularly assess areas of scientific focus, corporate services, large scale capital, and operating costs. We engage closely with global industry to generate external revenue to complement government appropriation budget. The associated risks are measured and monitored at project, program and enterprise levels through the Major Transactions Committee, Executive Team, and Board.

Security risks are managed through rigorous measures and mitigation strategies focused on preventing cyber security incidents and foreign interference, and continuous improvement of physical and personnel security environments. The implementation and effectiveness of our security strategies, programs and measures is monitored and overseen by the Security Committee, with regular reporting to the Chief Operating Officer, the Executive Team and the Board.

Controls and mitigation strategies include:

- delivering fewer, bigger collaborative programs like missions, aimed at making significant breakthroughs and accelerating the pace and scale at which the nation can solve challenges.
- a global strategy which fosters greater collaboration with international partners, and managing our offshore market entry, including international footprints and/or programs.

Geologists Siyu Hu and Steve Barnes are refining the way we search for and locate nickel-rich deposits at Serpentine Bay, WA and in other regions to reduce the impact on the environment and increase our economic opportunities from critical energy metals.





# 04

## Capability

Our capabilities help us to deliver our strategic priorities and achieve our purpose.





# 4.1 Our people

Our extraordinary people are critical to delivering the best science for the benefit of the nation. They work across the entire spectrum of research, science, engineering, commercialisation, and enterprise services.

Based on indefinite, term, and casual employees, at 30 June 2022 there were 5,672 staff at CSIRO, a full-time equivalent of 5,291. Of these, 3,464 (full-time equivalent of 3,229) or 61 per cent, were classified within the research function. We also welcome support from affiliates (approximately 2,445 each year) such as fellows, distinguished visitors, students, contractors, and others who help to progress our science.

AVERAGE STAFFING LEVELS	2019–20	2020–21	2021–22	2022–23
Total average staffing levels full-time equivalent	5,193	4,907	5,001	5,448



Our Future Protein Mission goal is for the world to produce more protein, more sustainably, from more sources into the future. We're leveraging increasing global demand for high quality protein and creating new Australian protein products and ingredients that earn an additional \$10 billion in revenue by 2030.

Professor Michelle Colgrave leads our Future Protein team.

## 4.2 Investment in future capability

Over the next four years, we will invest in our people, infrastructure and data capabilities and build on existing activities that underpin our objectives and purpose.

### Deliver impact through innovation

**Commercialisation services:** Boost the commercialisation support and services we offer to students and small and medium business through programs such as industry PhD (iPhD), ON Prime and Accelerate and specialist equipment, to uplift the technology readiness level and scale of research.

**Commercialisation pathways:** Expand the use of different routes to market for new and improved products, services, and processes by collaborating and co-creating with industry, investors, and universities.

**Digital commercialisation:** Explore ways to improve access to CSIRO's commercialisation support through digital enhancements.

**Digital academy:** Deliver new learning programs to support and equip our researchers to use digital technologies in their science. Capability areas include: agile, AI, data management and analytics.

**Managed Data Ecosystem (MDE):** This digital transformation program will connect our current and new technology platforms to create leading-edge High-Performance Computing, systems and technologies for data analysis and modelling, such as public cloud.

### Purpose driven science and technology

**Future Science Platforms (FSPs):** We are investing in boundary-pushing science initiatives that are reinventing existing industries, creating new industries for Australia, and breaking through seemingly impossible problems. Our FSPs:

- Advanced Engineering Biology
- Autonomous Sensors
- Collaborative Intelligence
- Deep Earth Imaging
- Environomics
- Hydrogen Energy Systems
- Immune Resilience
- Machine Learning and Artificial Intelligence
- Microbiomes for One Systems Health
- Permanent Carbon Locking
- Precision Health
- Quantum Technologies
- Responsible Innovation
- Revolutionary Energy Storage Systems
- Space Technology
- Valuing Sustainability

**Future Science and Technology (S&T):** Breakthroughs in science can be accelerated by the capabilities that are needed to be realised. Our Future S&T plan will be reviewed to ensure we have capabilities that cut across science disciplines and deliver impact. They include:

- Advanced materials
- Engineering
- Genomics
- Indigenous knowledge and science
- Modelling and simulation
- Quantum technologies
- Robotics, internet of things, and sensing
- Social science and user experience
- Synthetic biology

**Missions:** Missions are large-scale scientific and collaborative research initiatives aimed at making significant breakthroughs. Through missions we aim to accelerate the pace and scale at which the nation can solve each challenge and unlock a better future. Our missions launched to date:

- Drought resilience
- Ending plastic waste
- Future protein
- Hydrogen industry
- Trusted agrifood exports

## Engage and empower talent

**Culture and safety:** Implement a targeted program of people engagement, diversity and inclusion, and leadership development initiatives, including embedding our values as the foundation for how we work together. Build our health and safety maturity and supporting processes, systems, and frameworks.

**Attract and develop outstanding talent:** Become an employer of choice, develop CSIRO's capability and talent pipeline for the Australian innovation system through a suite of programs such as Research+, CSIRO Industry PhD (iPhD) and 'Impossible without you' recruitment campaign. Create a differentiated workplace that enables our people to perform at their best and develop their careers.

- **Impossible without you:** The 'Impossible without you' recruitment campaign aims to attract Australia's next generation of inventors, innovators and change makers to CSIRO. Instead of recruiting for specific roles, we are searching for people with a broad scope of talent, diverse skillset and experience to engage across our research areas. We aim to maximise the impact of our science by recruiting the right people to help us deliver on our strategic priorities and missions.
- **CSIRO iPhD program:** Through this program, candidates undertake research on a problem developed in collaboration with and jointly supervised by industry. The program aims to develop graduates with the skills to drive research with industry and to foster relationships across multiple sectors.
- **Research+:** The ResearchPlus program of internal grants assists our researchers to build a collaborative network of talent across the organisation with strong research, leadership, and innovation programs. The suite of programs engenders new approaches and capabilities across CSIRO, while enhancing the quality and impact of our science, progressing the career and professional development of early to mid-career researchers, and reinforces a culture of scientific excellence.

**Ways of Working:** Develop and embed our 'Ways of Working' with a focus on aligning our impact focus, streamlining processes, creating a culture of empowerment, and enabling greater collaboration.





We are developing digital replicas of our physical fish, algae, plant, insect and wildlife collections so they can be made freely available online to all Australians. Digitising our collections makes it easy for the research community to access this vital biodiversity research infrastructure into the future.

## Build collaborative networks

**National labs and innovation hubs:** Continuous focus on upgrading and leveraging our research infrastructure to strengthen Australia's sovereign research capability and CSIRO's position as a leader and a global partner of choice with immediate focus across the Indo-Pacific. Key hubs and facilities that are being developed or upgraded include:

- Australian Centre for Disease Preparedness
- Australia Telescope National Facility
- Carbon capture utilisation and storage hub
- CSIRO Centre for Earth Observation and NovaSAR-1 National Facility
- CSIRO climate science centre
- Current Good Manufacturing Practice facility
- Digitisation and collections
- Hydrogen hub
- Microbial Production Facility
- National AI centre
- National bushfire behaviour research lab
- Surgical face mask testing facility



As part of our commitment to reconciliation and in line with our Reconciliation Action Plan, we commissioned this painting, representing a part of the Universe mapped from Wajarri country by Margaret Whitehurst, to celebrate the ASKAP radio telescope's survey. CSIRO acknowledges the Wajarri Yamatji as the traditional owners of the Murchison Radio-astronomy Observatory site where ASKAP is located.





# 05

## How we measure success

The Australian Government's Portfolio Budget Statements (PBS) outline how government will allocate resources to achieve their outcomes. As per our PBS 2022-23, our outcome is *innovative scientific and technology solutions to national challenges and opportunities to benefit industry, the environment and the community, through scientific research and capability development, services and advice*. We actively review and monitor our performance including the use of performance measures as part of our performance framework.





## OBJECTIVE 1: Deliver impact through innovation

*Turning science into  
solutions that **make it real***

## OBJECTIVE 2: Purpose driven science and technology

*Earning **trust** by predicting,  
preparing for, and solving  
the greatest challenges*

## OBJECTIVE 3: Engage and empower talent

*Putting our **people first** so  
they can focus on putting  
our customers first*

## OBJECTIVE 4: Build collaborative networks

*Forming deep collaborations  
to amplify our impact and  
go **further together***

### KPIs<sup>a</sup> AND METRICS<sup>b,c</sup>

#### Demonstrated uptake and adoption

Total annual IP revenue; value of CSIRO's equity holdings

#### Enhance innovation translation

Normalised Citation Index (NCI) at science field level; Participation in ON program; Externally validated evaluations of Indigenous science and engagement programs or projects; and Number of SME facilitated projects; and Number of industry organisations engaged in education programs

#### Impact by alignment, design, and scale

Externally validated assessments of triple bottom line impacts from a cross-section of the science areas reported annually<sup>e</sup>; Benefit Cost Ratio (BCR) reporting CSIRO's Return on Investment every two years; and Percentage of CSIRO's science investment in Missions

#### Drive future science opportunities

Whole-of-life registerable and non-registerable intellectual property (IP) from Future Science Platforms (FSPs); and Infrastructure usage rates

#### Be Australia's trusted advisor

Positive public and business sentiment of CSIRO; and Customer satisfaction measured through Net Promoter Score (NPS)

#### Have a safe and inclusive workplace for all

Hazards and proactive Health, Safety and Environmental (HSE) reporting; Diversity in leadership defined by the proportion of female leaders; and Staff survey capturing sentiment towards CSIRO's culture.

#### Be a destination employer

Successful diversity in recruitment and retention of staff employed through the Impossible without you campaign; Commenced and continuing industry-based PhDs (iPhD); Percentage of internally filled positions; and Percentage of CSIRO Early Research Career Fellows (CERCF) retained as future leaders

#### Do fewer, bigger things together

Average of deployment-in and deployment-out proportions

#### Have shared national labs

Externally validated evaluations of CSIRO's infrastructure investments reported annually

For details on our methodologies, metric weightings, data sources and impact and evaluation processes, see pages 54 and 55.

TARGET <sup>d</sup>	2022–23	2023–24	2024–25	2025–26
IP revenue	≥\$39m	≥\$40m	≥\$42m	≥\$42m
Equity holdings	\$150m	\$200m	\$200m	\$220m
NCI at science field level	At least three quarters of RISE units of assessment in the top 3 quartiles			<div></div>
ON program teams	100	<div></div>		
Indigenous science and engagement	Minimum of 2 evaluations	<div></div>		Minimum of 3 evaluations
SME facilitated projects	350	350	380	380
Industry organisations engaged in education programs	82	<div></div>		
Impact assessments (targets as per PBS)	20	20	20	20
BCR	At least \$1.5b worth of net present value delivered per annum	N/A	At least \$2b worth of net present value delivered per annum	N/A
Missions program	\$140m	\$180m	\$230m	Maintain or increase
IP from FSPs	> 268	5% year-on-year increase	<div></div>	
Infrastructure usage rates	Targets as per PBS	<div></div>		
Public sentiment	≥74%	Maintain or increase (year-on-year)	<div></div>	
Business sentiment	≥75%	Maintain or increase (year-on-year)	<div></div>	
NPS	> +51	Maintain or increase (year-on-year)	<div></div>	
HSE reports	1,800	Maintain or increase (year-on-year)	<div></div>	
Diversity in leadership	≥41%	42%	43%	44%
Staff sentiment	Establish baseline	Maintain or increase (year-on-year)	<div></div>	
Impossible without you	Recruit 40/40/20% Men/ Women/Neutral and 3% Aboriginal and Torres Strait Islander staff	Retains 95% of recruits 1 year from hire	Retains 90% of recruits 2 year from hire	Retains 80% of recruits 3 year from hire
iPhD students	20 commenced	20 commenced	55 continuing	100 continuing
Mobility	Establish baseline	Maintain or increase (year-on-year)	<div></div>	
CERCF retention rate	42%	Maintain or increase (year-on-year)	<div></div>	
Cross organisation engagement	> 20%	Maintain or increase (year-on-year)	<div></div>	
Collaborative use of a facility / hub / precinct / collections	Minimum of 2 evaluations	Maintain or increase (year-on-year)	<div></div>	

At our Newcastle Energy Centre, researchers are exploring the integration of Electric Vehicles (EVs) to our electricity network. EVs are an increasingly important mode of transport in Australia with the potential to substantially reduce emissions, and even act as an asset to the grid.





# 06

## Strategic objectives

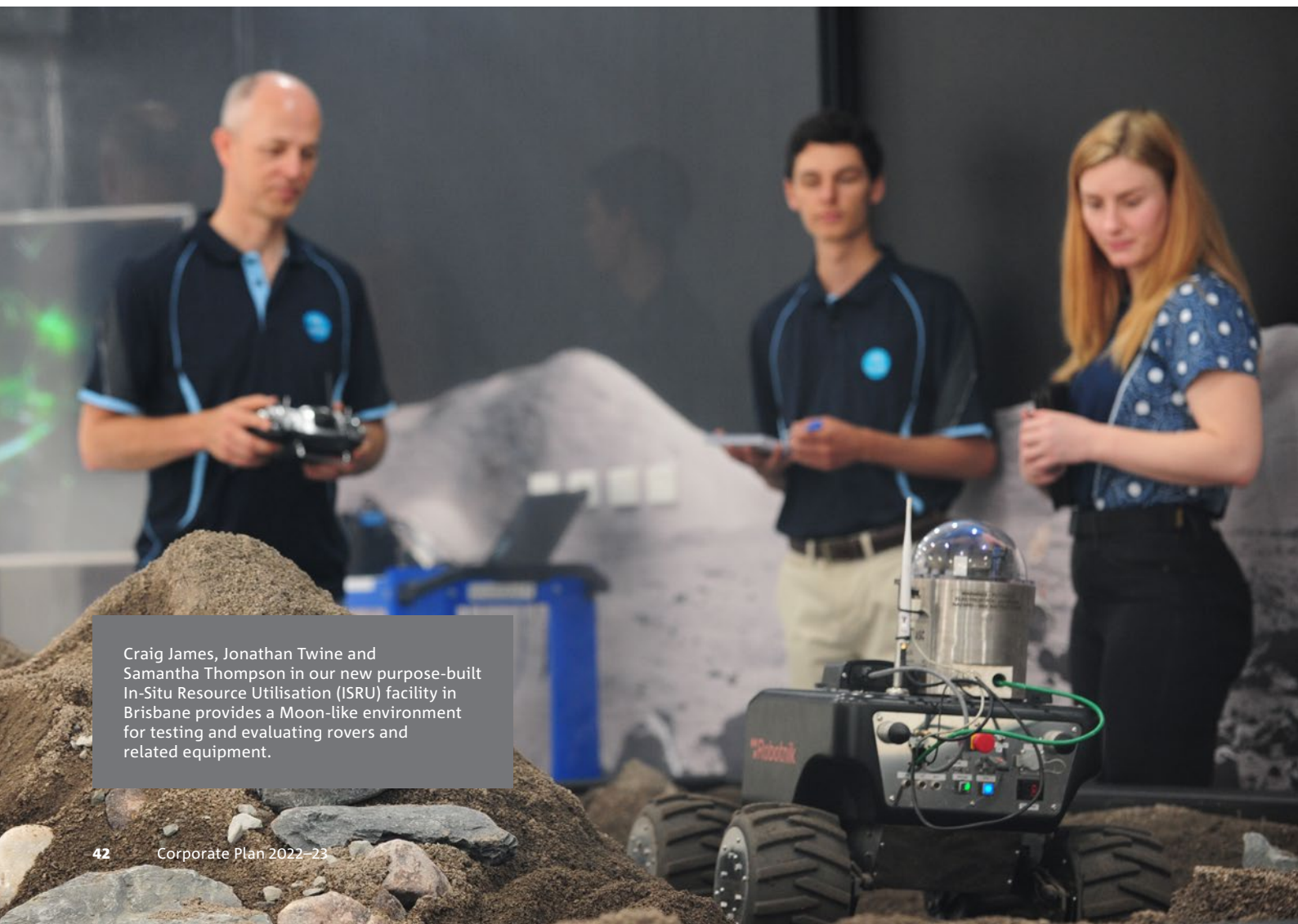
The strategic objectives articulate how we will deliver on our purpose and vision. They align with our values and are underpinned by the strategic priorities where CSIRO is directing its focus and investments.



# Objective 1

## Deliver impact through innovation

*Turning science into solutions that **make it real**:* We deliver new value from digital innovation, support the translation of research into solutions and drive the nation's commercialisation outcomes through our unique commercialisation pathways capabilities, industry and investor connections and access to funding opportunities.



Craig James, Jonathan Twine and Samantha Thompson in our new purpose-built In-Situ Resource Utilisation (ISRU) facility in Brisbane provides a Moon-like environment for testing and evaluating rovers and related equipment.

## Strategic priorities

### Accelerate commercialisation:

- Create unencumbered revenue streams from commercialisation to invest more in excellent science, strengthen our financial sustainability and deliver greater impact to Australia.
- Boost collaboration with universities and industry to drive Australia's commercialisation outcomes and create a new pillar for economic development from science.

### Digital transformation

Deliver new value from digital innovation across people, science and infrastructure to optimise and revolutionise the process of science and enhance our services.

## Key initiatives

STRATEGIC PRIORITIES	KEY INITIATIVES	2022–23	2023–24	2024–25	2025–26
Accelerate commercialisation	<b>Main Sequence – CSIRO Innovation fund:</b> Expand CSIRO's Innovation Fund, managed by Main Sequence and catalyse venture capital investment in Australian R&D for high-value opportunities to be taken to market.	●	●	●	●
	<b>CSIRO commercialisation program:</b> Increase the volume, velocity and value of science translation and commercialisation capacity and capability, including through recruitment and deployment of Innovation Accelerator Funds and the Commercialisation Pathways.	●	●	●	●
	<b>Commercialisation services:</b> Boost and complement our commercialisation capability and services for the innovation system, including delivering programs such as Industry PhD (iPhD), ON Prime and Accelerate, and specialist equipment, to uplift the technology readiness level and scale of research.	●	●	●	●
Digital transformation	<b>Accelerate and scale digital transformation of the scientific process:</b> Continue to implement the CSIRO digital science program and digitally enabled business platform models and grow a global reputation for CSIRO as a digital disruptor of science.	●	●	●	●

● Planning
● Implementation
● Continuous improvement



# Objective 2

## Purpose driven science and technology

*Earning **trust** by predicting, preparing for, and solving the greatest challenges:* Our impact-driven focus, motivated by national challenges, harnesses leading-edge science and technology to create exponential impact for the nation.



At CSIRO, we're developing a low-cost titanium wire from waste products, that can be used to make 3D printed parts such as aerospace components.

# Strategic priorities
















## Impact focused




Understand the future so we focus on the right problems to solve, and shape our research for maximum impact.

## Future science and technology (S&T)

Invest in the right revolutionary science and technology to accelerate scientific breakthroughs and solve tomorrow’s challenges.

# Key initiatives

STRATEGIC PRIORITIES	KEY INITIATIVES	2022–23	2023–24	2024–25	2025–26
Impact focused	<b>Science solutions to solve challenges:</b> Operationalise our impact priorities (Biosecurity preparedness and resilience, Decarbonisation for industry, Critical minerals, Natural disaster and resilience, Future manufacturing) in support of key national challenges.				
	<b>Challenge strategies for greater impact:</b> Affirm and operationalise our decadal science capability informed by market insights and megatrends analysis and delivered through investments in a one-CSIRO priorities to achieve greater impact for the nation.				
	<b>Missions program:</b> Launch further missions as they are co-developed with anchor partners and investors, demonstrating the value of the collaborative operating model. Continually assess impact of launched missions and expand the program to address key national priorities.				
Future S&T	<b>Future S&amp;T and Labs:</b> Pursue discovery of opportunities spanning science disciplines. Build and leverage these through a globally interconnected capability development program. Develop collaborative research infrastructure integrated with digital technologies that optimise our safety, efficiency and scientific excellence.				

 Planning Implementation Continuous improvement

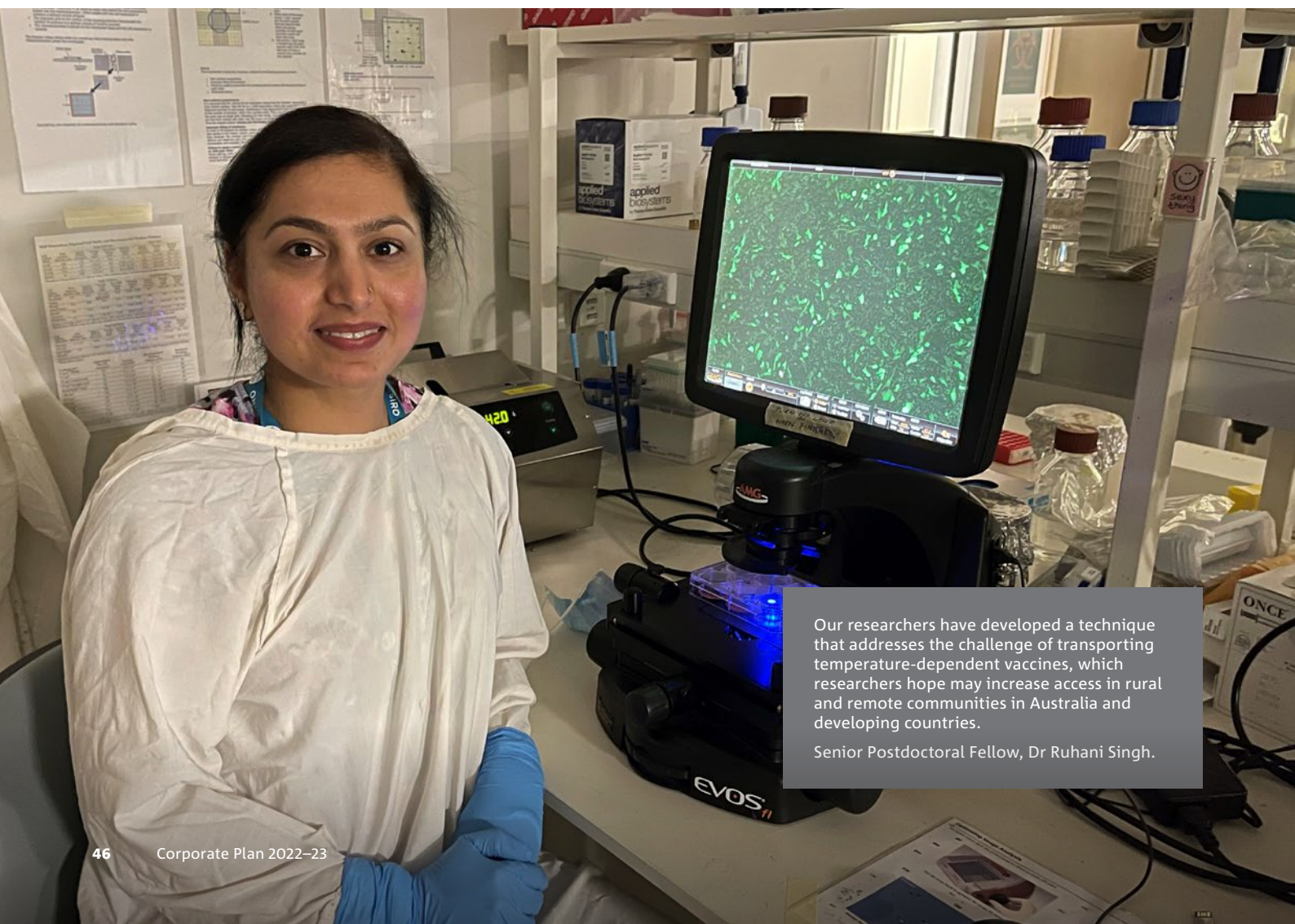


# Objective 3

## Engage and empower talent

*Putting **people first** so they can focus on putting our customers first:*

We have a workforce of the best and the brightest minds united by our purpose. Our people are enabled to work seamlessly across diverse teams and develop sought-after careers in and outside CSIRO.



Our researchers have developed a technique that addresses the challenge of transporting temperature-dependent vaccines, which researchers hope may increase access in rural and remote communities in Australia and developing countries.

Senior Postdoctoral Fellow, Dr Ruhani Singh.



## Strategic priorities

### Preferred place to work

Be an employer of choice by driving a culture that enables our people from diverse backgrounds and perspectives to do their best.







### World-class talent



Be the destination employer in Australia for the best global science and technology talent and strengthen Australia's STEM pipeline.

### Greater adaptiveness

Operate with more adaptability, resilience and responsiveness with a focus on enhancing our people experience and working seamlessly across the organisation to drive a more networked, sustainable, and impactful CSIRO.

## Key initiatives

STRATEGIC PRIORITIES	KEY INITIATIVES	2022–23	2023–24	2024–25	2025–26
Preferred place to work	<b>CSIRO Culture Program including Diversity and Inclusion:</b> Implement a targeted program of people engagement, diversity and inclusion, and leadership capability and development initiatives, including embedding our Values as the foundation for how we work together at CSIRO.				
World-class talent	<b>Attract and develop outstanding talent:</b> Become an employer of choice, develop our capability and talent pipeline for the Australian innovation system through programs such as Research+, iPhD and 'Impossible without you' recruitment campaign. Create a differentiated workplace that enables our people to perform at their best and develop their careers.				
Greater adaptiveness	<b>Ways of Working (including Enterprise Services of the Future):</b> Develop and embed our CSIRO ways of working with the aim of aligning our impact focus, streamlining processes, creating a culture of empowerment, and enabling greater collaboration, supported by digital insights.				

 Planning
  Implementation
  Continuous improvement

# Objective 4

## Build collaborative networks

*Forming deep collaborations to amplify our impact and go **further together**:*

We collaborate across the global innovation system, share our national labs and world-class infrastructure, and build strong partnerships to support research and development (R&D) investments, amplify innovation, and solve our greatest challenges, together.



Our research is continuing to develop new crops, like Anameka™ saltbush, whose nutritional profile and improved relative palatability increases its voluntary intake by livestock, provides higher energy values and increases livestock productivity.

Matt Wilmot, Senior Research Technician with Hayley Norman, Group Leader

## Strategic priorities

### Shared national labs

Open and share our world-class infrastructure with industry, universities and governments to strengthen Australia's sovereign research capability.

### Exponential networks

Harness the exponential power of our diverse, inclusive partnerships to amplify our impact and increase the benefit we deliver.

## Key initiatives

STRATEGIC PRIORITIES	KEY INITIATIVES	2022–23	2023–24	2024–25	2025–26
Shared national labs	<b>Innovation hubs, ecosystems and precincts:</b> Implement strategically directed innovation hubs including the National Space Mission for Earth Observation, and the National AI Centre, providing global level capability and infrastructure to support the nations researchers and development of our industries in a sustainable manner.				
	<b>Landmark infrastructure upgrades:</b> Continue upgrades of our landmark infrastructure (ACDP mid-life refit, National Research Collections Building, Pawsey Supercomputing upgrade).				
	<b>Square Kilometre Array (SKA):</b> Continue to manage the SKA site in Australia, partner with industry and science organisations to build the SKA-Low Telescope and operate the same in collaboration with the SKA Observatory.				
Exponential networks	<b>Strategic partnerships program:</b> Coordinate and lead cross-disciplinary, major domestic and global programs targeted at delivering organisational growth through addressing market pull at-scale opportunities and developing strategic customer/partner engagements.				

 Planning
  Implementation
  Continuous improvement



The world's first true millipede with more than 1000 legs was discovered in Western Australia by a team including scientists from CSIRO, Australia's national science agency.



# 07

## Appendix



# CSIRO subsidiaries

NAME OF ENTITY	JURISDICTION OF OPERATION	EQUITY HOLDING	GOALS/FUNCTION	CONTRIBUTION TO CSIRO'S PURPOSE
<b>Fundacion CSIRO Chile Research</b>	Chile	Nil	Created in October 2013 as the principal vehicle for collaboration between CSIRO and Chile.	Provides collaboration opportunities to create solutions for current and future challenges. Open up postgraduate training opportunities. Help grow mining equipment, technology and services sector in both countries.
<b>CSIRO USA</b>	Delaware, USA	100% Sole membership company	Establishment of an office for CSIRO operations in the USA.	An operating entity for connecting innovators throughout the USA, Mexico, and Canada. Facilitates relationships connecting Australian researchers with US projects in different industries.
<b>Innovation Fund</b>	Primarily Australia	The Innovation Fund is a group of entities, including the CSIRO Fund of Funds, the CSIRO Innovation Holding Trust, the CSIRO Innovation Fund 1, LP, the CSIRO Innovation Follow on Fund 1, the CSIRO Innovation Fund 2, LP, the CSIRO Innovation Follow on Fund 2 and the CSIRO Innovation Co-investment Fund. Through the CSIRO Fund of Funds and the CSIRO Innovation Holding Trust CSIRO is an investor in the CSIRO Innovation Fund 1, LP, and the CSIRO Innovation Follow-on Fund 1 respectively.	Provides venture capital backing to deep technology companies with connections to the Australian publicly funded research sector.	Invests in translating publicly funded Australian research into global companies. Since it commenced, the Fund has helped create more than 1,240 deep technology jobs and helped to build 42 deep tech companies including Myrotia, Kasada, Gilmour Space, Q-CTRL and Baraja.
<b>National ICT Australia (NICTA)</b>	Australia	Nil	Holds the NICTA Intellectual Property Reservoir (NIPR) equity portfolio.	
<b>Science and Industry Endowment Fund (SIEF)</b>	Independent trust	Nil	The Fund makes strategic investments in scientific research that addresses issues of national priority for Australia.	Provides grants to science and scientists for the purposes of assisting Australian industry, furthering the interests of the Australian community, and contributing to the achievement of Australian national objectives.



# List of requirements index

The corporate plan has been prepared in accordance with the requirements of:

- subsection 35(1) of the PGPA Act
- the PGPA Rule 2014.

These are the required sections and the page reference(s) that show how our corporate plan meets these expectations.

REQUIREMENT	PAGE/S
<b>Introduction</b>	2–3
Statement of preparation	2
The reporting period for which the plan is prepared	2
The reporting periods covered by the plan	2
<b>Purpose</b>	6–7
<b>Operating context</b>	14–29
Environment	14–21
Subsidiaries	22–23, 52
Cooperation and collaboration	24
Risk oversight and management, including key risks and its management	26–29
Capability	32–35
<b>Performance</b>	38–49
Performance measures	38–39
Targets for each performance measures (if reasonably practicable to set a target)	38–39
<b>Key initiatives/activities</b>	43, 45, 47, 49

# References

1. Mariana Mazzucato, 2019, *'The COVID-19 crisis is a chance to do capitalism differently'*
2. Department of Agriculture, Water and the Environment, 2021, *'Biosecurity budget 2021-22'*
3. AON, 2021, *'Weather Climate and Catastrophe Insight:2021 Annual report'*
4. World Economic Forum, 2022 *'The Global Risks Report 2022'*
5. CSIRO and Bureau of Meteorology, 2020, *'State of the Climate 2020'*
6. BBC, 2020, *'Australia's fires 'killed or harmed three billion animals'*
7. AlphaBeta, 2018, *'Digital Innovation: Australia's \$315b opportunity'*
8. McKinsey & Company, 2020, *'How COVID-19 has pushed companies over the technology tipping point – and transformed business forever'*
9. McKinsey & Company, 2017, *'Digital Australia: Seizing opportunities from the Fourth Industrial Revolution'*
10. Association of Southeast Asian Nations (ASEAN), 2021, *'ASEAN Investment Report 2020-21'*
11. Australian Institute for Health and Welfare, 2020, *'Health expenditure Australia 2018-19'*
12. Organisation for Economic Co-operation and Development, 2019, *'Health at a glance 2019'*
13. Minister for Health and Aged Care, 2021, *'Budget 2021-22: Generational change and record investment in the health of Australians'*
14. World Intellectual Property Organization, 2021, *'Global Innovation Index 2021: Tracking Innovation through the COVID-19 Crisis'*
15. Innovation and Science Australia, 2018, *'Australia 2030: Prosperity through Innovation'*
16. Australian Bureau of Statistics, 2020, *'Research and Experimental Development, Businesses, Australia'*
17. Organisation for Economic Co-operation and Development, 2020, *'Gross domestic spending on R&D'*
18. Australian Government, Department of Industry, Science, Energy and Resources, 2022, *'Science, Research and Innovation (SRI) Budget Tables 2021-22'*
19. Organisation for Economic Co-operation and Development Stats, 2018, *'Gross domestic expenditure on R&D by sector of performance and source of funds'*
20. Australian Government, National Skills Commission, 2021, *'State of Australia's Skills 2021: now and into the future'*
21. Consult Australia, 2019, *'Australia's STEM education challenges'*
22. Organisation for Economic Co-operation and Development, 2019, *'Programme for International Student Assessment (PISA), 2018'*
23. Edelman, 2021, *'Edelman Trust Barometer 2021'*
24. Wellcome, 2020 *'Wellcome Global Monitor 2020 - How Covid-19 affected people's lives and their views about science Covid-19'*

## Glossary

**Strategic priorities:** Critical areas where we will direct our focus and investments in the next 4 years

**Key initiatives:** Initiatives that we will undertake during the entire period of the corporate plan in order to achieve the strategic priorities.

## Endnotes

### a. Methodologies:

- i. Quantitative counts;
- ii. Survey method is used to consistently measure and rigorously validate how we are performing over time. All survey findings are conducted, analysed, and reported by independent providers to adhere to National Ethics Standards, avoid bias, and ensure credible performance reporting in accordance with the Public Governance, Performance and Accountability (PGPA) Rule; and
- iii. Impact assessments and evaluations are conducted by third-party providers on CSIRO's procurement panel or undertaken internally and validated by external experts to ensure evaluation process and analyses are rigorous and the findings are defensible. CSIRO's evaluation guide, which is publicly available, is the reference document for all impact assessments. CSIRO impact assessments are published on [www.csiro.au](http://www.csiro.au) by default, unless the report is commercial-in-confidence or policy sensitive – e.g., where publication may prejudice a commercialisation process, where a government announcement is due related to the evaluation subject matter, where an external partner has agreed to the



Steel is the world's top engineering and construction metal, and also the most recycled material in the world. Producing green steel is a complex process of removing carbon emissions from steel production.

evaluation for internal purposes only, or similar. In such cases the options are to delay publication for a time or publish a high-level summary only or both. As part of the recent review of CSIRO's Performance Framework, an international analysis of performance reporting approaches of peer research organisations was conducted which highlighted that in-depth, rigorous, and validated case studies are a universally accepted way of demonstrating research organisations are delivering against their intended purposes. Therefore, CSIRO adopts a similar approach to align with this international standard and carries a global reputation of being leading edge in the field.

- b. All metrics are equally weighted.
- c. **Data sources:** internal systems with access to SAP, Opportunity to Delivery (O2D), Human Resources, Health and safety, Financial, IP, contract, and engagement platforms. External surveys, impact assessment and evaluation data are sources by third party providers or requested from CSIRO systems.
- d. All targets are endorsed by the CSIRO Board, with oversight by the Board Audit and Risk Committee (Charter available: <https://www.csiro.au/en/about/corporate-governance/minister-and-board/barc>),

which assists CSIRO and its Board in the areas of financial management, risk management, internal control, and compliance. Targets are set to drive growth, establish new baselines in which forward goals can be agreed, or to maintain high performance.

- e. **Impact assessments and evaluations are selected based on the following criteria:** **Representativeness:** selected to reflect the breadth of activities undertaken by CSIRO and the type of research undertaken. This ensures a more comprehensive picture is available of the performance of the organisation (across provision of national facilities and infrastructure, education services, and research, and across different impact pathways, i.e., commercial, policy, capability building and learning). **Significance** (strategic importance): Programs of work that are strategically significant to the organisation and/or represent large investments (e.g., large Government initiatives, Missions, FSPs) and all undergo impact assessments or evaluations at program close. **Evaluation readiness:** The availability and accessibility of evidence for analysis to substantiate impact realised or expected in future, including the willingness of CSIRO partners/ customers to participate in the evaluation determines if an assessment is shortlisted to proceed to evaluation.



As Australia's national science agency, CSIRO is solving the greatest challenges through innovative science and technology.

CSIRO. Unlocking a better future for everyone.

**Contact**

1300 363 400  
[csiro.au/contact](https://csiro.au/contact)  
[csiro.au](https://csiro.au)