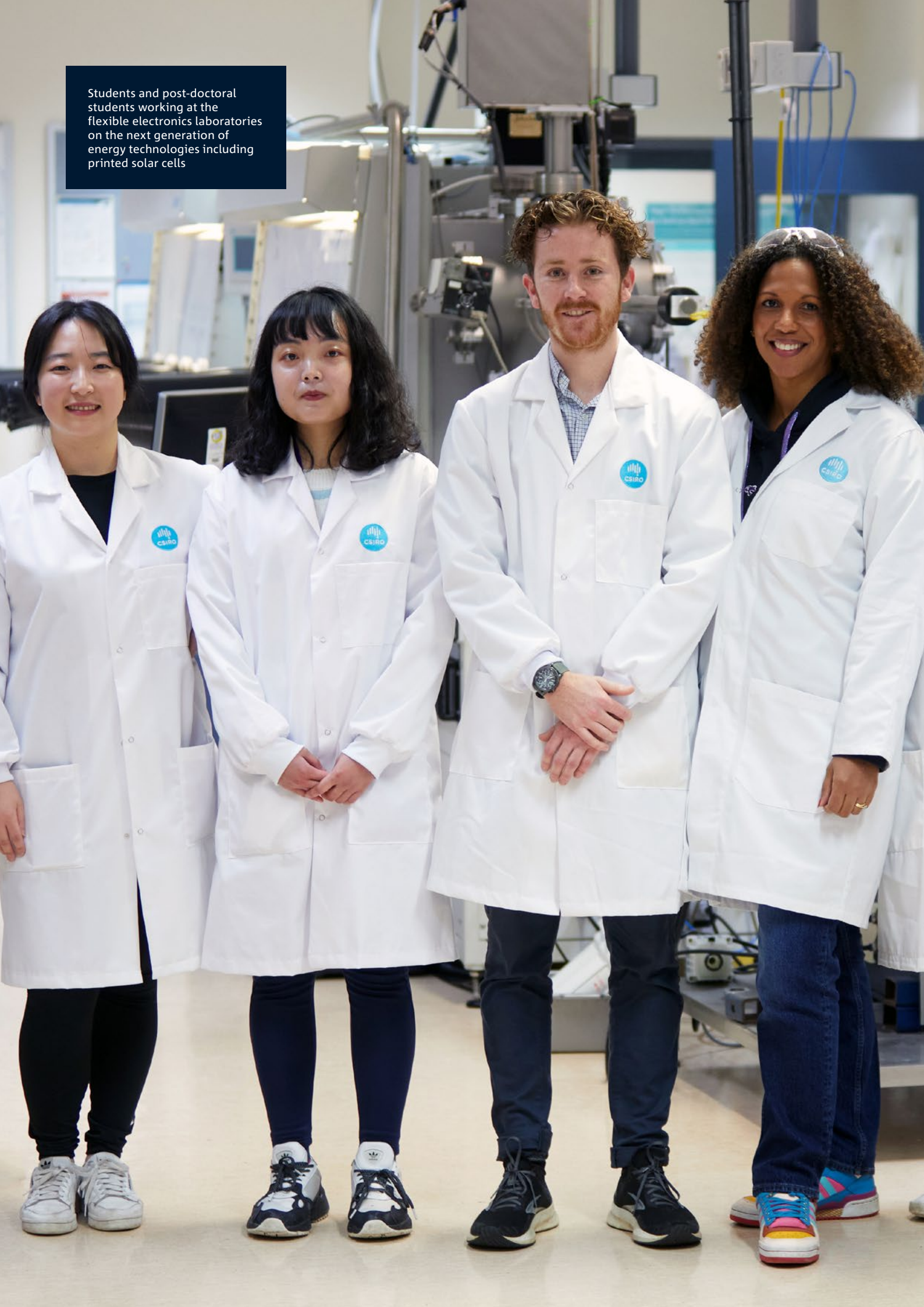
Australia's National
Science Agency

CSIRO Strategy

Corporate Plan 2023–24



Students and post-doctoral students working at the flexible electronics laboratories on the next generation of energy technologies including printed solar cells

Contents

CSIRO acknowledges the Traditional Owners of the lands, seas and waters, of the area that we live and work on across Australia. We acknowledge all Aboriginal and Torres Strait Islander peoples and their continuing connection to their culture and pay our respects to Elders past and present. CSIRO is committed to reconciliation and recognises that Aboriginal and Torres Strait Islander peoples have made and will continue to make extraordinary contributions to all aspects of Australian life including culture, economy and science.

Cover: (top) CSIRO Manufacturing team leader and scientist Katherine Locock with Phil Thompson, Co-Founder of Native Secrets, a CSIRO Kick-Start alumni company, discussing the benefits of white cypress as an essential oil on Country in Dubbo Wiradjuri Country.

White Cypress also known by *Callitris glaucophylla*, used as an essential oil for its antimicrobial benefits (bottom). Photo: Gary French CC BY NC

Read the Corporate Plan online at csiro.au/corporate-plan

1 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 2023–24 Corporate Plan (the Plan). As Australia's national science agency, CSIRO's purpose is to solve the greatest challenges through innovative science and technology and this Plan outlines CSIRO's strategy for continuing to deliver on that purpose for the next four years, 2023–24 to 2026–27, as required under paragraph 35(1(b)) of the *Public Governance, Performance and Accountability Act (PGPA) 2013*.

The Board is committed to continuing to strengthen and grow the national science agency, ensuring it continues to benefit many generations of Australians.

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 global geo-political and economic disruptions of recent years such as COVID-19, the Ukraine-Russia conflict and the increasing cost of living are driving Australians to harness science and technology-driven innovation to respond.

The Australian Government recognises the importance of CSIRO as a unique and special asset for Australia, releasing a new Statement of Expectations in 2022 to ensure we continue our legacy of delivering impact with contemporary relevance and focus. The Board warmly welcomes the government's expectation to position science at the forefront of decision making to the benefit of society. I expressed this support on behalf of the Board in the Statement of Intent I provided to the government in July 2023.

The Plan charts the course ahead for CSIRO to continue delivering on its purpose and address the expectations of the Australian Government. It outlines the challenges we seek to solve, which are closely aligned with the government's National Reconstruction Fund priorities and Industry Growth Centres program to support established industries and help build new ones.

CSIRO works across the Australian science, research, and innovation ecosystems for national benefit. Our work includes looking after Australians' health and wellbeing, protecting our food security and quality, strengthening our country through resilient and valuable environments and

sustainable energy and resources, through to looking ahead to our future industries and the security of Australia and the region. It also includes a deep commitment to supporting Australia's transition to net zero emissions, as articulated in CSIRO's recent legislative amendment to give effect to Australia's obligations under the Paris Agreement.

The Plan also recognises the importance of leveraging CSIRO's unique multidisciplinary approach to grow industry partnerships that build sovereign capability and turn scientific breakthroughs and a culture of innovation into real-world solutions. It also reflects CSIRO's commitment to work with Indigenous communities and organisations to create Indigenous-driven science solutions that support a sustainable future.

On a personal note, and on behalf of the entire CSIRO Board, I would like to extend our sincere thanks and appreciation to Dr Larry Marshall, CSIRO's longest serving Chief Executive in the past 50 years, who completed his final term as Chief Executive at the end of June. We look forward to welcoming incoming Chief Executive Professor Doug Hilton later this year and continuing to create a better future for all Australians.

Kathryn Fagg AO
Board Chair

1.2 Chief Executive's foreword

As the Acting Chief Executive, it is a great honour to present CSIRO's 2023–24 Corporate Plan.

Australians have always turned to science to solve seemingly impossible challenges and pave the way for a brighter future. They have turned to science, and they have turned to CSIRO, Australia's national science agency.

This Plan updates our strategy to continue to deliver on our purpose to solve the greatest challenges through innovative science and technology. It also closely reflects the new Statement of Expectations that sets out the Australian Government's priorities, including the priorities of the National Reconstruction Fund.

We are focusing our future science on six key challenges: Health and wellbeing; Food security and quality; Secure Australia and region; Resilient and valuable environments; Sustainable energy and resources; and Future industries.

The Plan sets ambitious goals for CSIRO to support Australian industries at every stage of business growth. It is clear on CSIRO's commitment to support business, from startups grown from Australian research through the ON program or receiving investment from the Main Sequence Fund, to small and medium businesses (SMEs) enabled by research and development through SME Connect programs like Kick-Start. Where appropriate, CSIRO will also support innovative SMEs emerging through the Australian Government's new initiatives.

CSIRO will strengthen relationships with Australia's first scientists by working more closely with Aboriginal and Torres Strait Islander peoples, in line with CSIRO's Indigenous Engagement Strategy and the commitments of CSIRO's Reconciliation Action Plan. CSIRO is also committed to broadening Australia's future Science, Technology, Engineering and Mathematics (STEM) pipeline, ranging from engaging and inspiring students in primary schools through to providing career pathways for tertiary students into Australian industries to strengthen Australia's competitive edge.

The critical work CSIRO does every day is only possible because of its people. The Plan supports CSIRO's people through a range of measures including a rigorous commitment to health and safety and support for a diverse, inclusive and values-driven culture. Our people, and their brilliant contributions to science, are at the heart of this Plan.

I am so proud of the efforts and achievements of CSIRO's people and partners over the past few years. We have proven we can achieve incredible things when we work together, united by our clear purpose to solve the greatest challenges through science and innovation, and we look forward to playing an important role in the future.

Kirsten Rose
Chief Executive (Acting)

2 Our purpose and strategy

Our strategy reflects the role CSIRO plays in benefitting the society and supporting Australia's national interests. It reflects the priorities outlined by the Minister and the requirements of CSIRO in the *Science and Industrial Research Act 1949*.

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 and wellbeing of all Australians.
Food security and quality	Grow the triple bottom line value of Australia's agri-food and fibre industries.
Secure Australia and region	Safeguard Australia and our region from threats.
Resilient and valuable environments	Enhance the resilience and value of our natural and built environments.
Sustainable energy and resources	Lower emissions to net zero while sustaining Australia's prosperity.
Future industries	Create Australia's future sustainable jobs and industries.

Our values underpinning how we work

People first

Making it real

It sets the course to achieve our purpose and realise our vision. It articulates the challenges we are solving, objectives and key initiatives that will enable us to deliver, and our values, which underpin everything we do.

The different sections of our strategy are outlined on pages 6–18.

How we deliver

Impact translation	Advance Australia's translation and commercialisation of science through collaborative networks.
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 strengthen our nation's STEM pipeline. Build a culture that makes us an employer of choice and operate in an adaptable, resilient and responsive way.
World-class infrastructure	Share our world-class national labs and facilities with industry, universities and government.

Our vision is to create a better future for Australia

Trusted

Further together

2.2 Our purpose, vision and values

Our purpose

Solving the greatest challenges through innovative science and technology.

As the national 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 Australia's quality of life, the economy and 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 governments, universities, industry, and the community to ensure that science and technology are at the forefront of decision making; to deliver solutions that improve the lives of Australians, contribute to national wellbeing, and build our industry, science, and research capabilities.

Values

Our values guide behaviours and decision-making for all our people. They articulate how we work every day as we deliver on our strategy.

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.

Making it real: We practice 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 are 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.

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.

CSIRO's Deputy Hydrogen industry Mission lead, Dr Vicky Au with CSIRO research scientists Dr Christian Hornung and Dr John Chiefari holding catalytic static mixers rods.

2.3 Challenges

Aligned with the Australian Government's priorities, CSIRO is helping solve six national challenges and turn them to Australia's unique advantage.

We are working with governments, the research sector, industry, and the community to deliver impact under the challenges through large-scale scientific research initiatives, particularly our Missions and Future Science Platforms (FSPs).

Six challenges we are working with partners to solve:

Health and wellbeing

Enhance the health and wellbeing of all Australians.

- **Support healthier lives**
- **Infectious diseases prevention and preparedness**
- **Digital transformation of healthcare**
- **Health technology solutions**

Food security and quality

Grow the triple bottom line value of Australia's agri-food and fibre industries.

- **Profitable agricultural production**
- **Improved crops and animals**
- **High value foods and feeds**
- **Sustainable and trusted value chains**

Secure Australia and region

Safeguard Australia and our region from threats.

- **Biosecurity**
- **Defence and national security**
- **Sovereign resilience**
- **Stable and prosperous region**

Resilient and valuable environments

Enhance the resilience and value of our natural and built environments.

- **Resilience to climate risks**
- **Healthy ecosystems**
- **Resilient communities and built environments**

Sustainable energy and resources

Lower emissions to net zero while sustaining Australia's prosperity.

- **Electricity transition**
- **Industry and transport decarbonisation**
- **Sustainable prosperity from resources**
- **Value-added critical minerals**

Future industries

Create Australia's future sustainable jobs and industries.

- **Future high-tech industries**
- **Transition to sustainable industry**
- **Strengthen the innovation system**

Health and wellbeing

GOAL: Enhance the health and wellbeing of all Australians.

We have identified four areas where we can deliver the greatest impact. These are built on our multidisciplinary capabilities and the role that animal and environmental science play in achieving positive human health outcomes.

Support healthier lives

We are improving quality of life by personalising healthcare technology, educating the community, and developing healthier food products. For example, our Immune Resilience FSP is using emerging technologies to develop 'ready-to-go' therapeutics that target the host's immune system, instead of the virus, to treat infections.

Infectious diseases prevention and preparedness

We are enhancing preparedness and ability to respond to infectious diseases by controlling emerging pathogens and disease threats more effectively. For example, our Minimising Antimicrobial Resistance Mission is working with industry and government partners to halt the rising death rate and economic burden of antimicrobial resistance in Australia by 2030.

Digital transformation of healthcare

We are enabling the effective and efficient healthcare system transformation through data interoperability, Artificial Intelligence (AI), virtual care, and diagnostic analytics. For example, our researchers developing low-cost screening technology that can deliver ophthalmologic care to remote and Indigenous communities.

Health technology solutions

We are partnering with industry to facilitate the manufacturing of innovative health products, medical devices, materials, and technology solutions. For example, we are advancing therapeutic and vaccine manufacturing by building a new Microbial Production Facility that will work with Australian companies and researchers engaging in the early-stage development of protein drugs and vaccines in microbes, including mRNA, that has been used in new COVID-19 vaccines.

Dr Filip Rusak, CSIRO Post-Doctoral Research Fellow analysing MRI results with colleagues at the Australian e-health Research Centre in Herston Brisbane.

Food security and quality

GOAL: Grow the triple bottom line value of Australia's agri-food and fibre industries.

The Australian National Soil Information System (ANSIS) is working to improve access to soil data to help manage our valuable soils in a sustainable way for future generations.

We have identified four areas of impact where we are delivering science and technology solutions that can make the greatest difference:

Profitable agricultural production

We are developing farm and fish production systems that proactively manage risk, generate sustainable outcomes, are resilient to biotic threats, adapted to changing climates, and use resources efficiently. For example, our Drought Resilience Mission is reducing the economic impacts of drought.

Improved crops and animals

We are creating new genotypes through gene-editing genetic modification, and conventional breeding, that have breakthrough traits demanded by producers, processors and consumers. For example, our Immune Resilience FSP is exploring precision genome engineering to develop resilient animals.

High value foods and feeds

We are developing new ingredients and products that generate value along the supply chain, meet new market demands, respond to society's evolving nutritional needs, and create new industries. For example, our Future Protein Mission is creating new Australian protein products and ingredients.

Sustainable and trusted value chains

We are building resilient supply chains with traceability, sustainability reporting, production and processing technologies that improve the footprint of agrifood and fibre systems. For example, our Trusted Agrifood Exports Mission is increasing the value of Australian food exports by building trust in the safety, quality, and provenance of our food.

Secure Australia and region

GOAL: Safeguard Australia and our region from threats.

We have identified four areas of impact where our science and technology can make the greatest difference:

Biosecurity

We are helping protect Australia and the region from biosecurity threats. For example, our developing Catalysing Australia's Biosecurity Mission is delivering a transformative system with sustainable national outcomes by 2030 that will protect Australia from the growing threat and impact of pests and diseases.

Defence and national security

We are enhancing Australia's defence and national security on key transitions: science, industry, technology. For example, our Collaborative Intelligence FSP is leveraging the strengths of both human security experts and AI systems for more effective cybersecurity operations.

Sovereign resilience

We are enhancing Australia's sovereign resilience on key transitions: supply chains, critical technologies, research infrastructure. For example, our developing Critical Infrastructure Protection and Resilience Mission is growing the resilience of our sovereign critical infrastructure systems.

Stable and prosperous region

We are contributing to regional stability, resilience and prosperity on key transitions: climate, health, energy, food. For example, CSIRO's Australian Centre for Disease Preparedness (ACDP) provides a trusted and rapid diagnostic, surveillance and response service for infectious diseases affecting animals and people, which is crucial in detecting and managing disease outbreaks of national and international significance.

Dr Rahul Rane and Dr Tom Walsh lead the Australian Pest Genome Partnership (APGP), sequencing the genomes of Australia's top pests and weeds to inform management and eradication efforts and kickstart innovative research in Australia and overseas.

Resilient and valuable environments

GOAL: Enhance the resilience and value of our natural and built environments.

The European Space Agency's Sentinel-2 satellite is one source of satellite data for the AquaWatch Australia Mission.
Credit: European Space Agency.

We have identified three areas of impact where our science and technology can make the greatest difference:

Resilience to climate risks

We are supporting adaptation, mitigation and resilience decision-making at-scale with end-to-end climate science and risk information. For example, we ensure that the best available climate information is available, future changes are modelled and interpreted, and the complex collection of interrelated impacts is integrated into decision making.

Healthy ecosystems

We are informing the sustainable use, conservation, restoration and future management of environmental systems at-scale with end-to-end and integrated environmental systems science and solutions.

For example, ensuring that water is safe and available for communities, industry and the environment through resource assessments, contamination tracking and novel approaches such as integrated satellite modelling by the AquaWatch Australia Mission.

Resilient communities and built environments

We are helping underpin long-term investment and planning decisions with integrated biophysical, social and economic science. For example, the data and modelling made available by our Transport Network Strategic Investment Tool (TraNSIT) has informed billions of dollars of infrastructure investment and operational decisions across the transport and logistics sectors.

Sustainable energy and resources

GOAL: Lower emissions to net zero while sustaining Australia's prosperity.

We have identified four areas of impact where we can enable the transition of the nation to a vibrant, resilient, and sustainable renewable energy and global development forerunner:

Electricity transition

We are helping transition the electricity network to facilitate low emission electricity, abiding to Australia's emissions targets. For example, our work with the Global Power System Transformation Consortium (G-PST) is rapidly accelerating transitions to advanced low emission power systems.

Industry and transport decarbonisation

We are partnering with industry to accelerate renewable energy adoption and emission reduction in hard-to-abate industries. For example, our Towards Net Zero Mission is focusing on innovation and capability building to help Australia's hardest to abate sectors – including steel and agriculture – to halve their emissions by 2035.

Sustainable prosperity from resources

We are helping grow Australia's resource base and technologies, while driving environmental performance towards net zero. For example, our Deep Earth Imaging FSP is enabling more precise imaging of subsurface rock properties to unlock the potential of Australia's minerals, energy and water resources at greater depths.

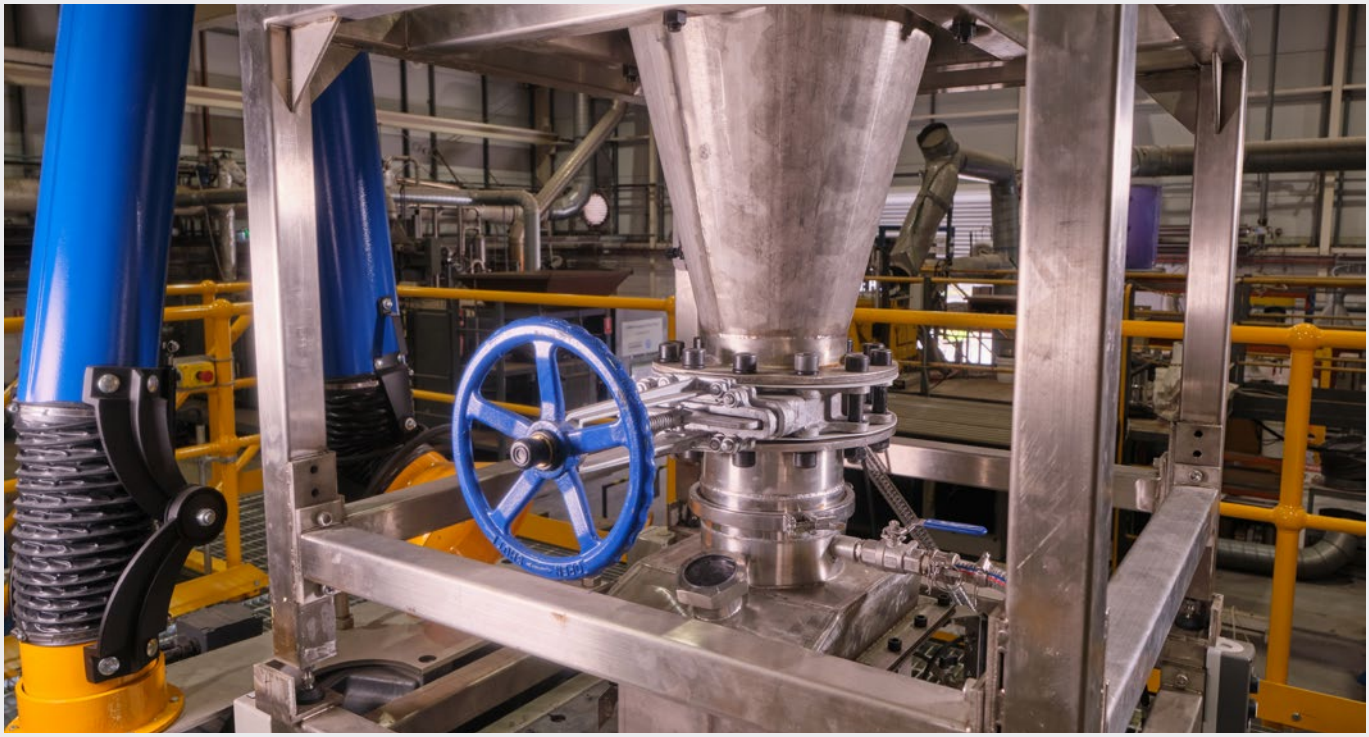
Value-added critical minerals

We are developing supply chains for critical minerals to meet renewable energy needs and provide access to clean energy technology. For example, our work with the National Critical Minerals research and development (R&D) Hub with Geoscience Australia and ANSTO.

The Digital Infrastructure Energy Flexibility (DIEF) project will allow property owners within the pilot to share data and build innovative software applications for sophisticated management of building carbon emissions.

Future industries

GOAL: Create Australia's future sustainable jobs and industries.



One-of-a-kind CSIRO designed rig for safe shredding of end-of-life Lithium-ion batteries in Clayton Victoria.

We have identified three areas of impact where our science and technology can deliver the greatest difference:

Future high-tech industries

We are helping develop the science and technology required to accelerate Australian markets to operate competitively at-scale, with a focus on value-adding, diversification and sovereign capability. For example, we are investigating how to lower the barrier to entry for Australian manufacturers to adopt Internet of Things (IoT) through Secure Intelligent Digital Manufacturing, enabling manufacturers to understand their operations in greater detail, and enhancing safety and productivity.

Transition to sustainable industry

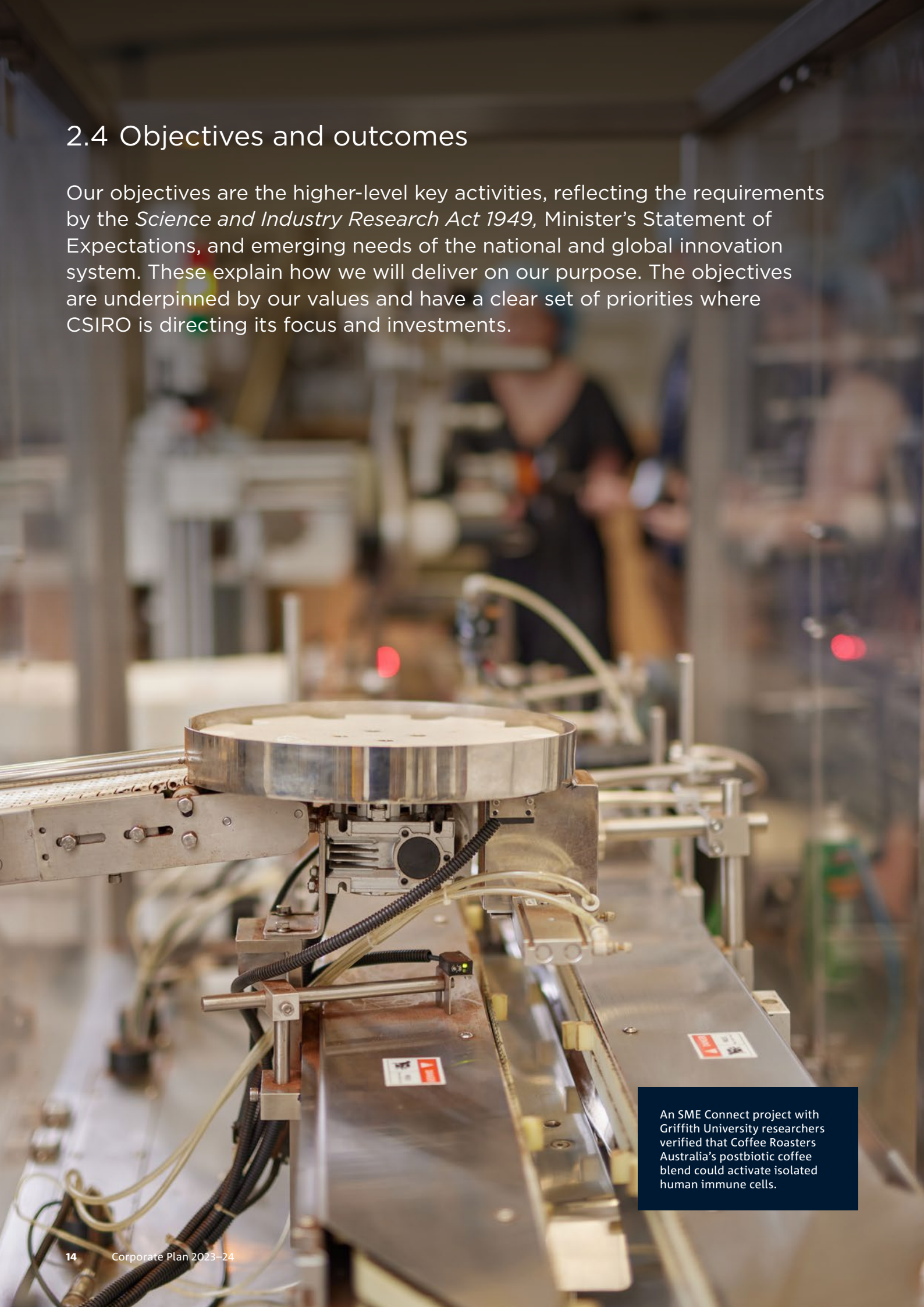
We are supporting Australian industry to transition to ethical, sustainable, resilient, human-centric and responsible operating models leveraging current and emerging technologies and approaches. For example, our Ending Plastic Waste Mission seeks to revolutionise packaging, influence consumers and decision-makers, and develop technology in waste innovation.

Strengthen the innovation system

We are increasing industry investment in R&D through targeted innovation services focused on technology adoption, capability development, and collaboration. For example, our suite of innovation programs, including Industry PhD (iPhD), Kick-Start, ON Prime, Trailblazer, Innovate to Grow and the SME Collaboration Initiative are lowering the barriers between research and industry.

2.4 Objectives and outcomes

Our objectives are the higher-level key activities, reflecting the requirements by the *Science and Industry Research Act 1949,* Minister's Statement of Expectations, and emerging needs of the national and global innovation system. These explain how we will deliver on our purpose. The objectives are underpinned by our values and have a clear set of priorities where CSIRO is directing its focus and investments.



An SME Connect project with Griffith University researchers verified that Coffee Roasters Australia's postbiotic coffee blend could activate isolated human immune cells.

OBJECTIVE 1

Impact translation

OUTCOME: Advance Australia's translation and commercialisation of science through collaborative networks.

Strategic priorities

Accelerate commercialisation:

- Expand business models and unencumbered revenue streams from commercialisation of CSIRO's research to invest more in excellent science, strengthen our financial sustainability and deliver greater impact to Australia. Diversify impact translation pathways through digital platforms and technologies.
- Boost collaboration with universities and industry to drive Australia's commercialisation outcomes for economic development from science.

Exponential networks

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

Key initiatives

STRATEGIC PRIORITIES	KEY INITIATIVES	2023–24	2024–25	2025–26	2026–27
Accelerate commercialisation	**CSIRO commercialisation program:** 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.	●	●	●	●
	Main Sequence – CSIRO's Innovation fund: Expand Main Sequence Fund to invest in spinouts, start-ups and SMEs with strong links to Australian high-value deep tech opportunities including from Australia's Economic Accelerator.	●	●	●	●
	Commercialisation services for national innovation system: Boost and complement our commercialisation capability and services for the innovation system, including delivering industry programs such as iPhD, ON Prime and Accelerate, to uplift the technology readiness level and scale of research.	◐	●	●	●
Exponential networks	**Strategic partnerships:** 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

OBJECTIVE 2

Purpose-driven science and technology

OUTCOME: 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.

Strategic priorities

Impact focused

Focus on the right problems and shape our research for maximum impact. Support government priorities such as areas detailed in the National Reconstruction Fund, contributing expertise and innovation.

Future science and technology (S&T)

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

Science digital transformation

Empower our researchers through leading-edge technologies and skills to optimise and revolutionise the process of science and deliver greater value from digital innovation.

Key initiatives

STRATEGIC PRIORITIES	KEY INITIATIVES	2023–24	2024–25	2025–26	2026–27
Impact focused	**Six challenges for greater impact:** Affirm and operationalise our future science capability to ensure we are responding to national priorities, informed by market insights and megatrends analysis, delivered through investments in one-CSIRO priorities to achieve greater impact for the nation.	Planning	Implementation	Implementation	Implementation
	Science solutions to solve challenges: Operationalise our impact priorities (such as Biosecurity preparedness and resilience, Decarbonisation for industry, Critical minerals, Natural disaster and resilience, Future manufacturing) in support of our six challenges.	Planning / Implementation	Implementation	Implementation	Implementation
	Missions program: Develop and launch new missions and mission-directed initiatives. Extend the scale of existing missions in partnership with innovation system stakeholders. Continually assess impact of launched missions and expand the program to address national priorities.	Implementation / Continuous improvement	Continuous improvement	Continuous improvement	Continuous improvement
Future S&T	**Refinement and ongoing delivery of Future S&T Plan:** Pursue discovery of opportunities spanning science disciplines. Build and leverage these through a globally interconnected capability development program.	Implementation / Planning	Implementation / Planning	Implementation / Planning	Continuous improvement
Science digital transformation	**Accelerate and scale digital transformation of the scientific process:** Continue to implement the CSIRO digital science program and digitally enabled business platform model. Grow a global reputation for CSIRO as a digital disruptor of science.	Planning	Implementation / Planning	Implementation	Implementation

Planning Implementation Continuous improvement

OBJECTIVE 3

Engage and empower talent

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

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 the experience of our people and working seamlessly across the organisation to drive a more digitally mature, networked, sustainable, and impactful CSIRO.

Key initiatives

STRATEGIC PRIORITIES	KEY INITIATIVES	2023–24	2024–25	2025–26	2026–27
Preferred place to work	**CSIRO Culture Program including Diversity and Inclusion:** 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	**Attract and develop outstanding talent:** Become an employer of choice, develop our capability and talent pipeline for the Australian innovation system through programs such as Research+, Early Career Researcher, 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	**Adapt CSIRO's ways of working:** Adapt and improve our 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 systems and insights.	●	●	●	●

● Planning ● Implementation ● Continuous improvement

OBJECTIVE 4

World-class infrastructure

OUTCOME: Share our world-class national labs and facilities with industry, universities and government.

Strategic priorities

Shared national labs

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

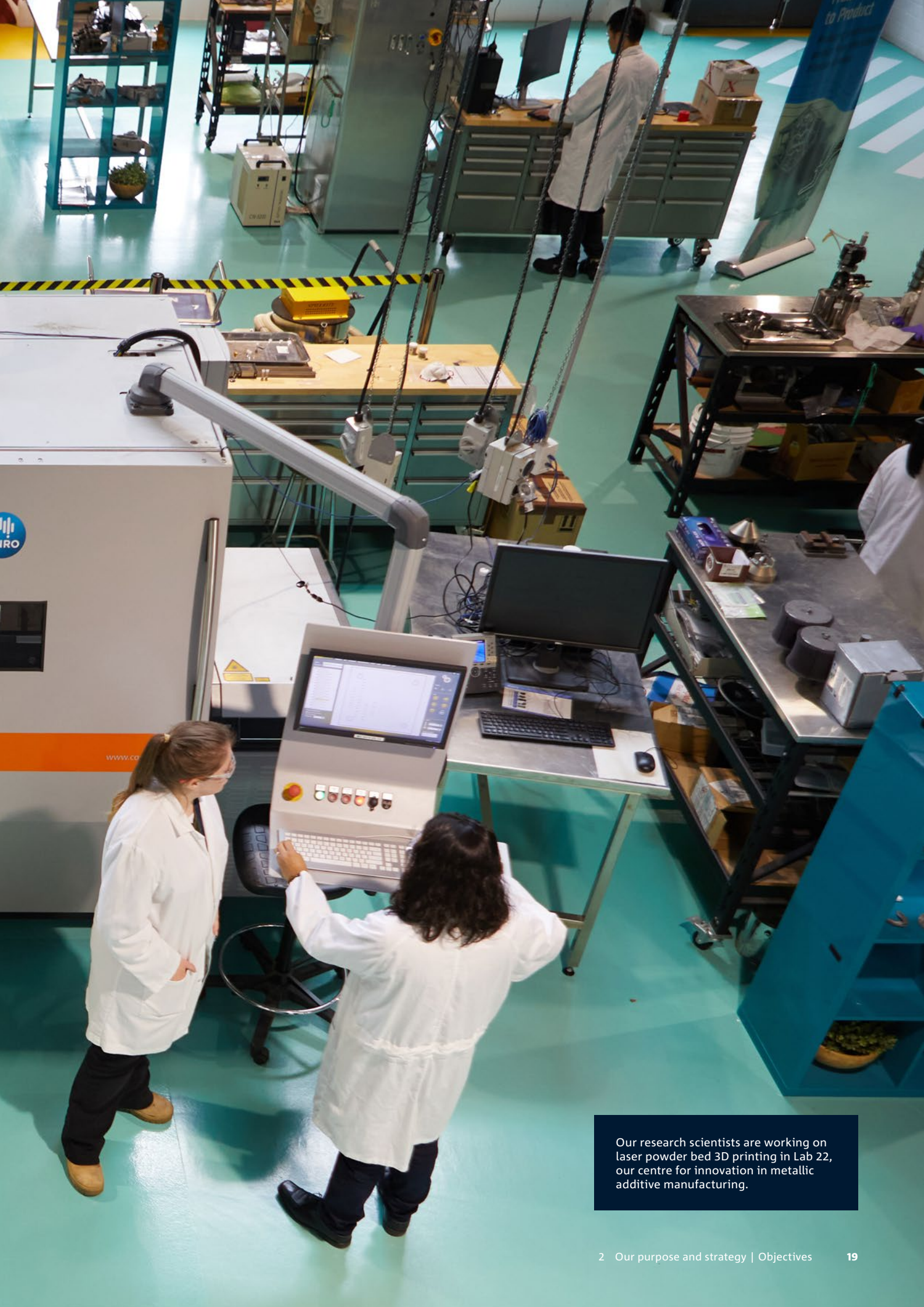
Research infrastructure

Develop collaborative research infrastructure integrated with digital technologies that optimise our safety, efficiency and scientific excellence.

Key initiatives

STRATEGIC PRIORITIES	KEY INITIATIVES	2023–24	2024–25	2025–26	2026–27
Shared national labs	**Innovation hubs, ecosystems and precincts:** Implement strategically directed innovation hubs such as the National AI Centre, providing global level capability and infrastructure to support the nation's researchers and development of our industries in a sustainable manner.	◐	●	●	●
	Landmark infrastructure upgrades: Continue upgrading our landmark infrastructure (ACDP mid-life refit, National Research Collections building, Pawsey Supercomputing upgrade).	◐	●	●	●
	Square Kilometre Array (SKA): 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.	●	●	●	●
Research infrastructure	**Labs of the future:** Continue to build our labs of the future, transforming how we do research by integrating automation, robotics, and sensors into our lab environment, as well as Machine Learning and Artificial Intelligence, digital twins and cloud labs into our research process.	●	●	●	●

● Planning ● Implementation ● Continuous improvement



Our research scientists are working on laser powder bed 3D printing in Lab 22, our centre for innovation in metallic additive manufacturing.

2.5 Our capability

Over the next four years, we will continue to invest in future science and technology, our partnerships, and shared national infrastructure and labs to ensure we have the right capability to deliver on our purpose, objectives and national priorities.

Future science and technology

Cross-cutting capabilities: Breakthroughs in science can be accelerated by continuously assessing the capabilities that will be required to achieve innovative science. Our current Future S&T plan is being reviewed and revised to ensure we have capabilities that cut across science disciplines and enable us to remain future-ready to address Australia's changing needs and deliver impact.

The key priorities of the cross-cutting capabilities are:

- co-development of an Indigenous science strategy
- accelerating and incubating Indigenous science opportunities
- innovative economic pathways
- investing in people for research leadership and governance.

The current 'future' capabilities identified include: Advanced materials; Artificial Intelligence and Machine Learning; Engineering; Genomics; Indigenous knowledge and science; Simulation and modelling; Quantum technologies; Robotics, Internet of Things, and Sensing; Social science and user experience; and Synthetic biology.

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.

The current FSPs include: Advanced Engineering Biology; Autonomous Sensors; CarbonLock; Collaborative Intelligence; Deep Earth Imaging; Environomics; Hydrogen Energy Systems; Immune Resilience; Microbiomes for One Systems Health; Precision Health; Quantum Technologies; Responsible Innovation; Revolutionary Energy Storage Systems; Space Technology; and Valuing Sustainability.

CSIRO has developed award-winning technology to enable robots to autonomously navigate unknown and dangerous environments with potential applications in search and rescue, mining and industrial inspection. The image shows a Boston Dynamics Spot robot dog equipped with CSIRO's 3D mapping and localisation technology (Wildcat) and autonomous navigation technology (NavStack).

Partnerships

Indigenous science and engagement: CSIRO recognises Aboriginal and Torres Strait Islander peoples as Australia's First Scientists and we are committed to Indigenous engagement and collaboration in science to build stronger mutually beneficial relationships with Aboriginal and Torres Strait Islander peoples. We aim to increase the participation of Aboriginal and Torres Strait Islander peoples in our research and development agenda, and to ensure that our activities are effective in contributing to solving the challenges and meeting the aspirations of Aboriginal and Torres Strait Islander communities. In partnership with Aboriginal and Torres Strait Islander people, we have collaboratively built on many projects and together have created far reaching solutions from science and technology. Through our recently launched Indigenous Science and Engagement Program we aim to deliver science solutions and pathways, prioritised by Aboriginal and Torres Strait Islander people, that embed Indigenous led and co-design in the delivery of CSIRO's science and technology that is inspired and equipped to make a difference for all Australians. We recognise the need to invest in building cultural capability in our people, and to building strong relationships with Aboriginal and Torres Strait Islander communities to deliver on the goals and actions endorsed in our Reconciliation Action Plan.

SME engagement: We are committed to boosting Australia's innovation performance through programs that connect research with business and commercialisation opportunities. We support SMEs through programs like CSIRO Kick-Start, Innovate to Grow and the SME Collaboration Initiative. We will support the government's new initiative Industry Growth Program when it launches in late 2023, which will look to support early-stage businesses in their most challenging development phase.

Missions: CSIRO's globally recognised innovative scientific and technological solutions contribute to Australia's international standing and impactful leadership in scientific innovation, and deepen the benefits of global collaborations. 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.

Missions launched so far: Hydrogen Industry; Drought Resilience; Future Protein; Trusted Agrifood Exports; Ending Plastic Waste; Towards Net Zero; Minimising Antimicrobial Resistance; and Aquawatch Australia.

Talent for CSIRO: We aim to attract world-class talent through recruitment initiatives like Impossible Without You and the Science Leader Program. We aim to retain that talent by being an employer of choice underpinned by our values. Some of the culture programs we have implemented include our diversity and inclusion initiatives, and engaging talent through professional development grants programs like Research+.

Talent for Australia: We seek to strengthen the talent pipeline for the Australian innovation system through our programs:

- iPhD, which places STEM PhD candidates in small businesses.
- STEM Together; Generation STEM; Educator on Board; the Indigenous STEM Education project; and Young Indigenous Women's STEM Academy, which are all delivered for teachers, students, and the wider community.

Infrastructure and labs

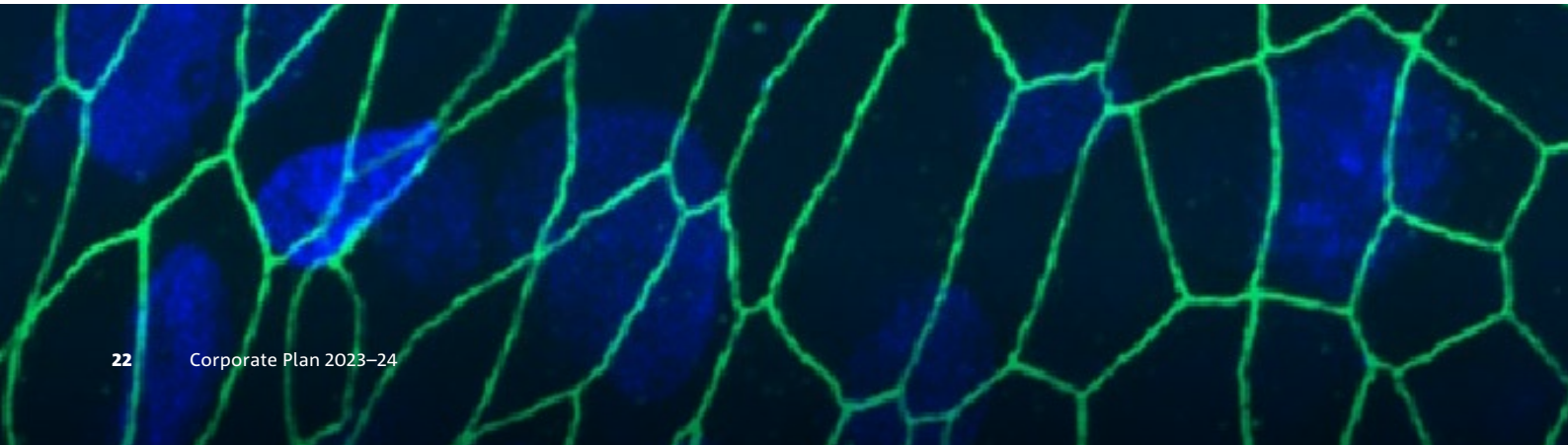
National labs and innovation hubs: We maintain and manage a suite of national research infrastructure for all Australian researchers. We have a continuous focus on upgrading and leveraging our research infrastructure to strengthen Australia's sovereign research capability and CSIRO's position as a leader and a global partner of choice with immediate focus across the Indo-Pacific. We are also investing in improving our own facilities for CSIRO people as part of our 'Labs of the Future' digital enhancement initiative, while consolidating our property footprint in line with our Property Strategy. Our Sustainability Strategy is one of CSIRO's key mechanisms to achieve our Net Zero and broader sustainability objectives, managing the climate risk on our operations as well as contributing to mitigating carbon emissions. Investing in cutting-edge new facilities and delivering on our Sustainability and Property Strategies benefit our people and enable world-class science while being environmentally and financially sustainable.

Key hubs, facilities and initiatives include: Australian Centre for Disease Preparedness part life refresh project; Australia Telescope National Facility; Carbon capture utilisation and storage hub; CSIRO Centre for Earth Observation and NovaSAR-1 National Facility; National Vaccine and Therapeutics Lab; Digitisation and collections; Hydrogen hub; Microbial Production Facility; National AI centre; Net Zero targets for CSIRO 2030 (scope1-2); and Newcastle energy centre transition to Net Zero by 2025.

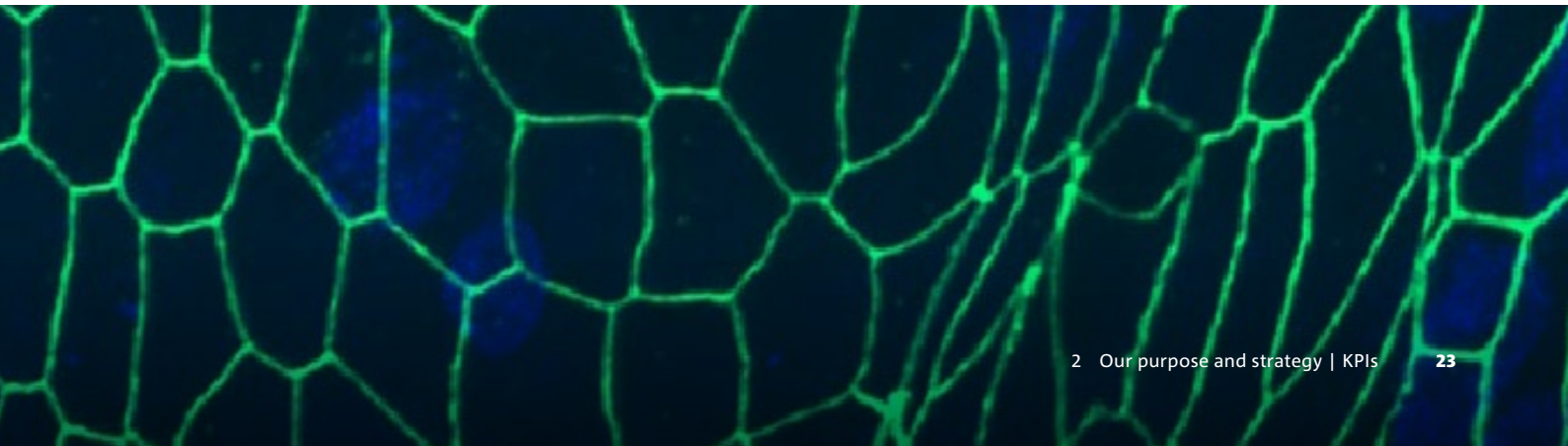
2.6 How we measure success

As per our Portfolio Budget Statement 2023–24, 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.

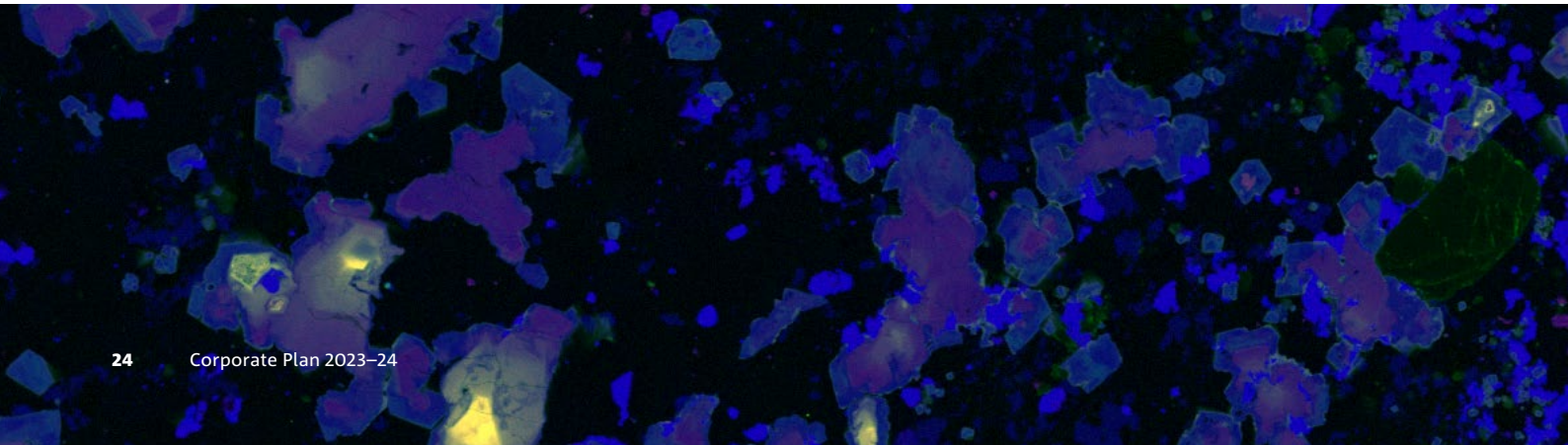
OBJECTIVES	KEY PERFORMANCE INDICATORS (KPIs)[a]	METRICS[bc]
1. Impact translation	**Demonstrated uptake and adoption with industry to support Australian innovation**	Total annual Intellectual Property (IP) revenue
		Value of CSIRO's equity holdings
	Enhance innovation translation with Australian industry including SMEs and external partners	Normalised Citation Impact at science field level
		Participation in ON program to accelerate research
		Commenced, cohort growth, and graduating iPhDs
		Externally validated evaluations of Indigenous science and engagement programs or projects
		Number of SMEs engagements[e]
		Number of industry organisations engaged in education programs
	Do fewer, bigger things together	Cross organisation engagement[f]
2. Purpose-driven science and technology	**Impact by alignment, design, and scale**	Return on Investment (as per Portfolio Budget Statement)
		Joint investment with external partners in Missions-directed research
	Drive future science opportunities	IP from Future Science Platforms
	Be Australia's trusted advisor	Positive public sentiment of CSIRO
		Positive business sentiment of CSIRO
		Customer satisfaction measure through Net Promoter Score



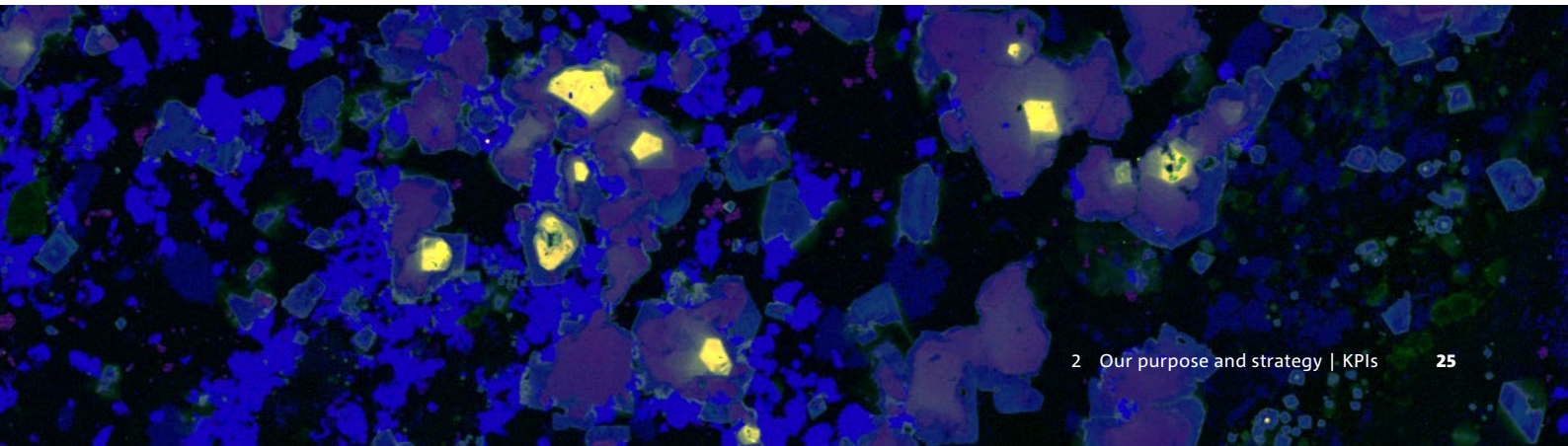
TARGETS[d]			
2023–24	2024–25	2025–26	2026–27
≥$40m	≥$42m	≥$42m	≥$42m
$200m	$200m	$220m	$220m
>75% of RISE units of assessment in top 2 rank quartiles, with not less than 50% in the rank 1 (top) quartile, calculated on a volume-weighted basis	>75% of RISE units of assessment in top 2 rank quartiles, with not less than 50% in the rank 1 (top) quartile, calculated on a volume-weighted basis	>75% of RISE units of assessment in top 2 rank quartiles, with not less than 50% in the rank 1 (top) quartile, calculated on a volume-weighted basis	>75% of RISE units of assessment in top 2 rank quartiles, with not less than 50% in the rank 1 (top) quartile, calculated on a volume-weighted basis
100 teams	100 teams	100 teams	N/A
30 iPhDs commenced	75 cumulative iPhD cohort	100 cumulative iPhD cohort	120 cumulative iPhD cohort 10 graduating iPhDs
Minimum of 2 evaluations with shared lessons learnt	Minimum of 2 evaluations with shared lessons learnt	Minimum of 3 evaluations with shared lessons learnt	Minimum of 3 evaluations with shared lessons learnt
1,500	+10%	+10%	+10%
82 organisations	82 organisations	82 organisations	82 organisations
>20%	>20%	>20%	>20%
20 impact assessments[g] and at least $1.5b worth of Net Present Value (NPV) p.a.	20 impact assessments and at least $1.5b worth of NPV p.a.	20 impact assessments and at least $1.5b worth of NPV p.a.	20 impact assessments and at least $2b worth of NPV p.a.
$180m	$230m	Maintain or increase	Maintain or increase
>422 registrable and non-registrable IP	>444 registrable and non-registrable IP	>467 registrable and non-registrable IP	>491 registrable and non-registrable IP
74%	75%	75%	76%
80%	81%	81%	82%
> +46	> +48	> +50	> +52



OBJECTIVES	KEY PERFORMANCE INDICATORS (KPIs)[a]	METRICS[bc]
3. Engage and empower talent	**Have a safe and inclusive workplace for all**	Hazards and proactive Health, Safety and Environmental (HSE) reporting
		Diversity in leadership defined by proportion of female leaders
		Staff sentiment towards CSIRO's culture[h]
	Be a destination employer	Impossible Without You campaign
		CSIRO Early Research Career Fellows retention rate
4. World-class Infrastructure	**Have shared national labs**	Externally validated evaluations of collaborative use of CSIRO's facility / hub / precinct / collections
		Infrastructure usage rates (Targets as per Portfolio Budget Statement) - Australia Telescope National Facility (ATNF) - Pawsey Supercomputing Centre (Pawsey) - National Research Collections Australia (NRCA) - Marine National Facility (MNF)
Operational measures	**Financial commitments**	Meet approved net cash operating surplus/(deficit) ($'000 as per Portfolio Budget Statement)
	Staff safety	Total Reportable Injury Frequency Rate[j]



TARGETS[d]			
2023–24	2024–25	2025–26	2026–27
2,000 reports	3,000 reports	4,000 reports	5,000 reports
43%	44%	45%	46%
46th percentile	49th percentile	52nd percentile	55th percentile
95% of recruits complete the first year of their term	90% of recruits complete the second year of their term	80% of recruits practically[i] complete the third year of their term	N/A
≥42%	≥42%	≥42%	≥42%
Minimum of 2 evaluations with shared lessons learnt	Minimum of 2 evaluations with shared lessons learnt	Minimum of 2 evaluations with shared lessons learnt	Minimum of 3 evaluations with shared lessons learnt
ATNF – Minimum of 70% successful astronomical observations Pawsey – 90% core hours NRCA – 70% outward loans of collections (averaged over 5 years) MNF – Minimum of 90% successful research days	ATNF – Minimum of 70% successful astronomical observations Pawsey – 90% core hours NRCA – 70% outward loans of collections (averaged over 5 years) MNF – Minimum of 90% successful research days	ATNF – Minimum of 70% successful astronomical observations Pawsey – 90% core hours NRCA – 70% outward loans of collections (averaged over 5 years) MNF – Minimum of 90% successful research days	ATNF – Minimum of 70% successful astronomical observations Pawsey – 90% core hours NRCA – 70% outward loans of collections (averaged over 5 years) MNF – Minimum of 90% successful research days
(32,270)	(18,707)	(9,157)	(47,950)
2.5 incidents	2.3 incidents	2.1 incidents	1.9 incidents



3 Our operating environment

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

3.1 Trends influencing our strategy

As a globally leading research agency, our own science foresighting contributes significantly to identifying the key trends influencing our strategy. These include, Our future world: Global megatrends 2022; Australian National Outlook 2019; COVID-19: Recovery and resilience report; and our industry roadmaps. In this year's Corporate Plan, we also draw heavily on the work done to develop our responses to the six challenges we are solving to deliver on our purpose. As an agency within the Industry, Science and Resources portfolio, our strategy also responds to the Minister's Statement of Expectations and other government priorities.

Trends

- Rising health burden
- Increasing economic losses due to climate change
- Geopolitical shifts and rise of Indo-Pacific
- Managing energy transition
- Plateauing Australia's competitive edge
- Rising food insecurity
- Lifting Australia's innovation performance
- Declining research and development (R&D) investment
- Rapidly evolving future science and technology
- Widening STEM skills gap
- Emerging national research infrastructure priorities

To support our strategic priority to attract world-class talent, our 'Impossible Without You' campaign successfully appointed more than 200 early to mid-career researchers and the first cohort of the Indigenous Graduate Program and Enterprise Services Graduate Program.

TREND	CSIRO RESPONSE
Rising health burden	
Enormous pressure is being placed on our social and economic resources by an aging population, chronic diseases, and high rates of obesity and weight-related problems. In addition, the steady increase in animal-borne infectious diseases pose a serious threat to human health and the economy. Climate change and destabilisation of natural ecosystems with severe weather events are also in turn putting more strain on our healthcare systems. Globally, COVID-19 triggered a surge in healthcare spending which has grown around 40 per cent between 2018 and 2022, reaching USD 12 trillion.[1] The Australian Government has committed AUD 101 billion for health, AUD 36 billion for aged care and AUD 563.1 million for sport in 2023–24, bringing the total next four year's commitment to AUD 580 billion.[2]	Our Health and wellbeing challenge goal is to enhance the health and wellbeing of all Australians. We have identified four areas of impact where our science and technology can make the greatest difference: support healthier lives; infectious diseases prevention and preparedness; digital transformation of healthcare; and health technology solutions (see page 8 for more on our Health and wellbeing challenge). Our response to solve this challenge includes FSPs like Precision Health, missions like Minimising Antimicrobial Resistance, and critical infrastructure such as the Australian Centre for Disease Preparedness (ACDP) in Geelong, our National Vaccine Therapeutics Lab in Clayton, and Microbial Production Facility in Melbourne.
Increasing economic losses due to climate change	
The acute and chronic effects of climate change are being felt around the world and Australia is no different. The threats to our environment include increasing land and sea temperatures, the rapid loss of biodiversity and enduring and emerging environmental damage caused by pollution, waste, and habitat disturbance. While there is increasing community awareness of environmental issues and the need for action, we are also facing more pressure from population growth and movement compounded by increasing per-capita demand for environment-derived resources. Direct economic losses to the world resulting from natural disasters in 2022 are estimated at USD 313 billion.[3] The cost to Australia alone was AUD 38 billion in 2020 and this is projected to reach AUD 73 billion per year by 2060.[4]	Our Resilient and valuable environment challenge goal is to enhance the resilience and value of our natural and built environments. We have identified three areas of impact where our science and technology can make the greatest difference: resilience to climate risks; healthy ecosystems; and resilient communities and built environments (see page 11 for more on our Resilient and valuable environment challenge). Our response to solve this challenge includes FSPs like Environomics, CarbonLock and Applied Engineering Biology, missions like Aquawatch Australia and critical infrastructure like our National Bushfire Behaviour Laboratory and the National Collections and Marine Infrastructure we manage for the nation.
Geopolitical shifts and rise of Indo-Pacific	
Current geopolitical shifts and rising global military spending that reached a new high of USD 2,240 billion[5] in 2022 are likely to have long-lasting impacts on countries with advanced economies seeking peace and stability. In addition, disruptive events such as wars, natural disasters and significant biosecurity outbreaks are threatening habitability, regional food security, public health, and economies. Australia must create cost-efficient, resilient, and sustainable supply/value chains against global disruptions through investments in advanced manufacturing that enable sovereign capability. Recent global events have led to record-level defence spending in Australia, alongside increasing cooperation across matters of national security. Our alliances, including AUKUS and the Quad, and other global strategic partnerships in Indo-Pacific region are strongly influencing science and technology with an increasing focus on delivering a secure region.	Our Secure Australia and region challenge goal is to safeguard Australia and our region from threats. We have identified four areas of impact where our science and technology can make the greatest difference: biosecurity; defence and national security; sovereign resilience; and stable and prosperous region (see page 10 for more on our Secure Australia and region challenge). Our response to solve this challenge includes FSPs like Collaborative Intelligence and Quantum Technologies, and missions in development like Catalysing Australia's Biosecurity and Critical Infrastructure Protection and Resilience.
Managing energy transition	
The global push to reduce emissions requires accelerated development and application of technologies to achieve decarbonisation by 2050, as well as technology diversification due to differing industry sector needs and global supply chain constraints. Australia's electricity generation is projected to significantly increase along with greater use of renewable energy sources. There is also growing demand for value-added, sustainable minerals supply chains driven by electrification and the global transition to low emission technologies. After passing the Climate Change Act in 2022, the Australian Government has presented policies like the Rewiring the Nation Plan, the National Energy Transformation Partnership, and National Energy Performance Strategy to fast-track the country's energy transition.[6]	Our Sustainable energy and resources challenge goal is to lower emissions to net zero while sustaining Australia's prosperity. We have identified four areas of impact where we can enable the transition of the nation to a vibrant, resilient, and sustainable renewable energy and global development forerunner: electricity transition; industry and transport decarbonisation; sustainable prosperity from resources; and value-added critical minerals (see page 12 for more on our Sustainable energy and resources challenge). Our response to solve this challenge includes FSPs like Revolutionary Energy Storage Systems, Hydrogen Energy Systems, Autonomous Sensors and Deep Earth Imaging, missions like Hydrogen Industry, Towards Net Zero and missions in development like Renewable Energy Powerhouse.

TREND	CSIRO RESPONSE
Plateauing Australia's competitive edge	
As Australia's historic wealth from natural resources begins to plateau, there is a need to be increasingly innovative to gain competitive advantage. To compete globally in the AUD 1.6 trillion innovation race,[7] Australia will have to undertake newer-to-world innovation and focus on productivity in future industries. Digital innovation will play a critical role in this and is expected to generate AUD 10–15 trillion globally[8] and could contribute AUD 140–250 billion to Australia's GDP by 2025.[9] Compared to other advanced economies, Australia has captured less value from digital innovation (11.2 per cent versus 7.4 per cent of GDP, respectively), particularly in developing new digital industries.[8] This is hindering our ability to capitalise on emerging markets and impeding the transition of existing industries to more advanced, sustainable, and responsible production methods.	Our Future industries challenge goal is to create Australia's future sustainable jobs and industries. We have identified three areas of impact where our science and technology can deliver the greatest difference: future high-tech industries; transition to sustainable industry; and strengthen the innovation system (see page 13 for more on our Future industries challenge). Our response to solve this challenge includes FSPs like Advanced Engineered Biology and Quantum Technologies, missions like Ending Plastic Waste as well as developments in the National AI Centre with Machine Learning and robotics.
Rising food insecurity	
Food production must double to feed 10 billion people by 2050.[10] Sweeping changes to farming and how we produce food are required; technology and science hold the key. According to the World Resources Institute, there is a 56 per cent food gap between the food the world produces today and the food we will need by 2050.[10] Australian agri-food and fibre industries are resource-constrained, fossil fuel dependent, and impacted by climate change. Current farming practices are reaching production limits and require radically new approaches to maintain viability in many regions in Australia. The industry needs to respond to ambitious and time-critical targets for sustainability, rural productivity, and economic value, as well as emerging needs of consumers seeking healthier foods that have a validated, smaller environmental footprint.	Our Food security and quality challenge goal is to grow the triple bottom line value of Australia's agri-food and fibre industries. We have identified four areas of impact where we are delivering science and technology solutions that can make the greatest difference: profitable agricultural production; improved crops and animals; high value foods and feeds; and sustainable and trusted value chains (see page 9 for more on our Food security and quality challenge). Our response to solve this challenge includes FSPs like Microbiomes for One Systems Health and Valuing Sustainability, missions like Drought Resilience, Future Protein and Trusted Agrifood Exports, and infrastructure like our Food Innovation Centre in Werribee, Victoria.
Lifting Australia's 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 five years to 25th of 132 economies in the Global Innovation Index rankings.[11] This drop in performance is primarily because Australia's research translation capabilities focus on the research side rather than on commercialisation efforts. In addition, Australia fares poorly in industry-research partnerships with the rate of collaboration between SMEs with universities and research institutes lowest in the region.[12]	As an agency primarily focused on applied research, we are driven by delivering solutions from science. We seek to strengthen Australia's research commercialisation and entrepreneurial skills through our Global Strategy, larger programs of work such as missions, our infrastructure and sites, commercialisation services and programs such as iPhD, Innovation and Engagement Services and the CSIRO's Innovation Fund. We are also placed at the centre of delivering the outcomes of the AUD 2.2 billion investment by the Australian Government in the University Research Commercialisation Action Plan.
Declining 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[13], well below the OECD average of 2.52 per cent.[14] Business R&D has fallen from 1.2 per cent in 2011–12 to 0.91 per cent in 2019–20.[13] 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.[15] 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 12.3 per cent in 2020.[16] A likely reason is the stronger links that publicly funded research agencies such as CSIRO have with industry. Australia now ranks ahead of countries such as the United States in the proportion of GovERD funded by industry.	We aim to deliver the greatest value within the financial resources at our disposal, by driving the effective utilisation of CSIRO's research budget for delivering the impact at-scale. The six challenges that we are assisting the nation to overcome help us focus on delivering science solutions that matters the most. We work closely with the government to align our strategic priorities to their agenda and the Minister's Statement of Expectations to create system-level collaboration both domestically and internationally – with universities, government, industry, and communities to maximise the social, environmental, and economic impact of R&D investment.

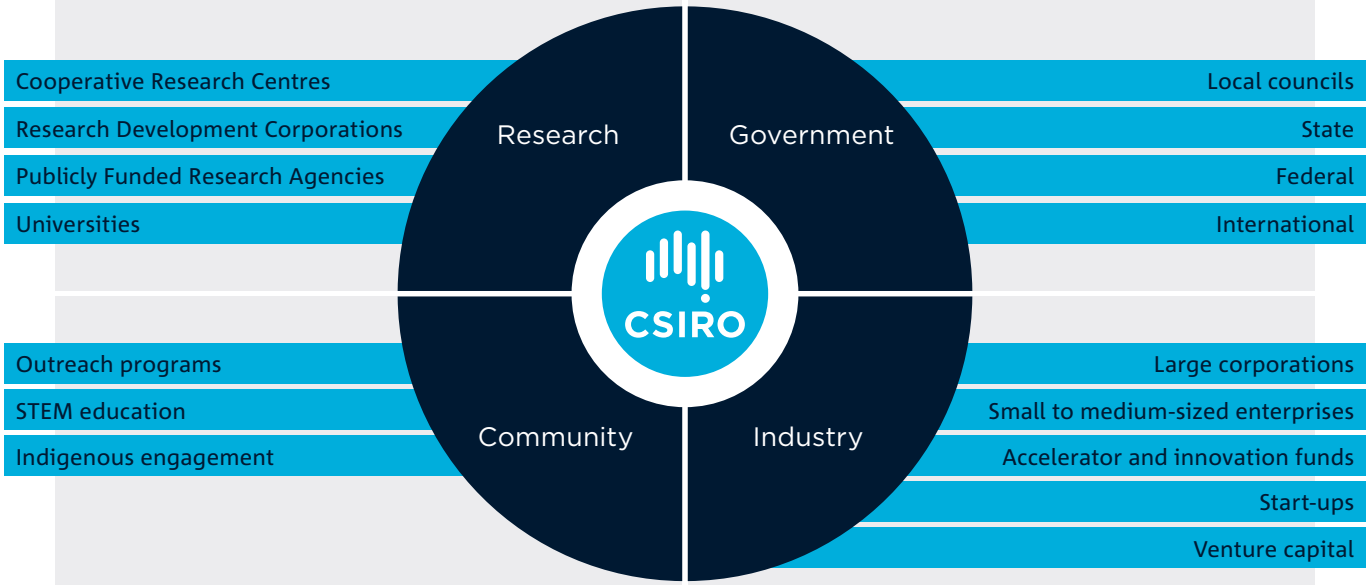
TREND	CSIRO RESPONSE
Rapidly evolving future science and technology	
Innovation cycles are accelerating, and research methods are evolving rapidly, providing opportunities to address previously intractable science questions by bringing together cross-disciplinary capabilities. Digital capabilities, such 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.	In this rapidly evolving environment, shaping a clear, long-term science and technology direction is critical for maintaining our competitive advantage. Through our Science Digital Program, we are empowering our researchers with leading-edge digital technologies, skills, and ways of working, to create a better future for Australia. We are applying technologies ranging from AI to deep domain expertise to support the adoption of technology in multiple industries across the economy. We are also reviewing our Future S&T plan to ensure we have capabilities that remain future-ready to address the changing needs of Australia and deliver impact.
Widening STEM skills gap	
The world's leading economies are increasingly investing in their STEM education pipelines to grow their innovation-driven industries. Australia will need around an additional 6.5 million digital workers by 2023 – an increase of 79 per cent from 2020.[17] But the gap between the knowledge generated in the education system and the skills demanded by employers and individuals is widening. The number of school students studying STEM in later secondary (Year 11 and 12) is flat lining at 10 per cent or less[18] and Australia students' performance in STEM is also slipping.[19] Our talent pool is limited by gender and cultural inequity in STEM education and careers. In addition, Australia's geographic location and low rates of investment in R&D create a challenging recruitment and retention environment for the nation's research sector.	We develop and nurture Australian talent and capabilities at the grass roots level by delivering quality STEM programs such as STEM Together, Generation STEM and Educator on Board, with focus on populations that are under-represented in our STEM pipeline, like Indigenous and female students. Within CSIRO, we are growing our workforce through the CSIRO Culture Program, including initiatives to strengthen diversity and inclusion, leadership capability and development, and embedding our values as the foundation for how we work together. We have several recruitment programs to attract world-class talent, including our Impossible Without You campaign, our Science Leader Program, and Indigenous recruitment through our Reconciliation Action Plan, as well as growing Australia's cohort of early career researchers through our CSIRO Early Research Career postdoctoral program.
Emerging national research infrastructure priorities	
The quality R&D being conducted in Australia is supported by our national research infrastructure. The current national infrastructure portfolio provides an essential base to support government priorities, such as the Modern Manufacturing Strategy, the Science and Research Priorities, the National Climate risk and Adaptation Strategy, the Blueprint for Critical Technologies, Australia's Long-Term Emissions Reduction Plan, and the University Research Commercialisation Scheme. Every five years, the government renews its approach to national research infrastructure through a strategic roadmap to ensure such infrastructure remains relevant and responsive to Australia's needs, and those of our world-class research sector. Through the National Collaborative Research Infrastructure Strategy (NCRIS), Australia has committed to invest AUD 4 billion in national research infrastructure between 2018–29.[20]	CSIRO is the custodian of several national assets, ranging from: the Global infrastructure of the Square Kilometre Array; landmark ACDP facility and RV *Investigator*; National Pawsey and the Atlas of Living Australia; and a great deal of institutional research infrastructure, some of which we intend to grow into national research infrastructure such as the National Bushfire Research Facility. We are sharing national facilities and collections with Australian and international researchers and industry to ensure maximum benefit for the nation.

3.2 Innovation through collaboration

Solving Australia's greatest challenges cannot be done by one organisation alone. We collaborate with partners including Australian and international universities, governments, industries and with businesses of all sizes. The diversity of our collaborators drives our innovation, from strategic advisory and planning, to research and development, to programs and funding.

We partner with research institutions through co-location, co-publication and collaboration to boost innovation and ensure the best available research is used to solve the greatest challenges and deliver outcomes for Australia and the world.

We share our research activities and provide scientific information and advice to inform policy development and program implementation.



We deliver learning experiences for students, teachers and the community to equip Australians with the knowledge they need to enter the workforce and increase their STEM skills.

We partner with industry to co-create commercialisation outcomes that deliver impact and create economic value for the nation.

3.3 Risk oversight and management

Identifying and managing risks is central to delivering on our purpose of solving the greatest challenges through innovative science and technology. Breakthrough science, innovation and collaboration require robust engagement with risks of technical or scientific failure. We are committed to identifying and managing these risks, engaging with the opportunities they represent and mitigating their consequences in a considered and effective way.

We take a proactive approach to risk management and promote a positive risk culture to empower our people to engage with risk and to make risk-informed decisions. Our approach to risk is informed by the Board's risk appetite statement that sets out the level of risk we are willing to accept. We are open to engaging with higher risks where there is an opportunity for innovation and impact, and less accepting of risks that threaten the safety of our people, the integrity of our science and commercial dealings and compliance with our obligations.

Our approach to risk aligns with the PGPA Act, the recently updated Commonwealth Risk Management Policy, and International Standard ISO 31000:2018 Risk management – Guidelines. Our risk management approach is overseen by the Board Audit and Risk Committee, on behalf of the Board.

Over the period of this Corporate Plan, we will continue to strengthen our risk management by improving the integration of risks with our decision-making, operations, planning, control, and reporting frameworks. We will build our risk capability through targeted risk training and evolving the way we report on enterprise level risks to the Board Audit and Risk Committee.

Our research scientists Dr Kim and Dr Milhuisen are using a roll-to-roll coating machine to produce flexible solar cells.

Using these techniques, our researchers can produce more than 50 metre's of continuous roll solar cells.

Key risks and mitigation strategies

We apply a three-lines model to provide assurance that our key systems and control strategies are effective in managing our risks. The key risks relating to our objectives are:

OBJECTIVES	RISK CATEGORY AND KEY RISKS	RISK MANAGEMENT AND MITIGATION STRATEGIES
Impact translation	**Innovation** Failing to enable the desired external industry and research collaboration and translation of CSIRO's research into real impact.	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 drive translation through increasing technology readiness with grant funding from the Science and Industry Endowment Fund; SME Connect to build industry connections; and equity investments via the Uniseed and Main Sequence Fund.
	Collaboration Failing to effectively engage and manage relationships with customers, partners, and collaborators (government, industry, universities, and communities).	We support collaborative teams to manage technical and scientific risks to deliver value and impact. We broaden our horizons by seeking out strategic collaborative partnerships to help deliver science impact. 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.
Purpose-driven science and technology	**Impact** Failing to anticipate future market needs and prioritise our science and investments to deliver the greatest impact in a dynamic global and national context.	The risk of failure is inherently high in undertaking challenging science, however we are committed to deliver impact through our research and associated activities. 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.
	Integrity 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 purpose).	The actions that compromise scientific integrity, impartiality and independence are unacceptable. 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.
	Digital transformation Failing to progress the digital transformation of science, people, functions, and processes at the desired pace.	We are moving towards a leading-edge science and delivery model, enabled by an integrated digital ecosystem. We have invested in foundational activities in our digital transformation journey and identified areas for further exploration and investment.

OBJECTIVES	RISK CATEGORY AND KEY RISKS	RISK MANAGEMENT AND MITIGATION STRATEGIES
Engage and empower talent	**People** Inability to attract, retain and develop the diverse talent and leadership pipeline necessary to conduct and support world-class scientific research to deliver impact.	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. 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.
	Inability to identify, develop and adopt the cultural changes required to successfully achieve relevance and impact.	
	Governance Failing to maintain a resilient organisation and safe and secure operating environment.	There is no tolerance for actions that endanger the safety of our people. A range of organisational initiatives are focused on people development and cultural change. Our 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.
	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.	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. 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.
	Sustainability Failure to achieve sustained financial stability and growth through appropriately managing existing resources and developing future strategies to adequately respond to changing economic factors.	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 the government appropriation budget. The associated risks are measured and monitored at project, program and enterprise levels through the Major Transactions Committee, Executive Team, and the Board.
World-class infrastructure	**Research infrastructure** Failure to play our role in the provision of national infrastructure and an inability to keep pace with the digital transformation necessary to support leading-edge research and innovation.	Effective management of our national infrastructure is critical for delivering on our purpose. We continuously review our infrastructure portfolio to assess strategic alignment, impact delivery, operating model and financial sustainability of the organisation as well as delivering the needs of our national innovation system, as identified in NCRIS. We ensure maximising the sustainable use of national research facilities and collections by Australian and international researchers, as well as by encouraging industry access to relevant research facilities and maintaining collections of national importance.

4 Appendices

CSIRO subsidiaries

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.

NAME OF ENTITY	JURISDICTION OF OPERATION	EQUITY HOLDING	GOALS/FUNCTION	CONTRIBUTION TO CSIRO'S PURPOSE
Fundacion CSIRO Chile Research	Chile	51% founder interest	Created in October 2013 as the principal vehicle for collaboration between CSIRO and Universidad de Chile.	Provides collaboration opportunities to create solutions for current and future challenges. Opens up postgraduate training opportunities. Helps grow Mining Equipment, Technology and Services sector in both countries.
CSIRO USA	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.
Innovation Fund trading as Main Sequence	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, the CSIRO Innovation Co-investment Fund, the Main Sequence Core Fund 3, the MSV Parallel Fund, the Main Sequence Opportunity Fund 3 and the Main Sequence NGS 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, the CSIRO Innovation Follow-on Fund 1, the Main Sequence Core Fund 3, the MSV Parallel Fund and The Main Sequence Opportunity Fund 3.	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 to create more than 2120 deep technology jobs and helped to build 53 deep tech companies including Samsara Eco, Quasar Sat, Emesent, Q-CTRL and MGA Thermal.
Science and Industry Endowment Fund	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
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Subsidiaries	34
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Key activities	14–18

References

1. World Economic Forum, 2023, ‘Global Health and Healthcare Strategic Outlook: Shaping Future of Health and Healthcare’
2. Department of Health and Aged Care, 2023, ‘Budget 2023-24: Building a stronger Medicare’
3. AON, 2023, ‘Weather, Climate and Catastrophe Insight’
4. Deloitte, 2021, ‘Special report: Update to the economic costs of natural disasters in Australia’
5. Stockholm International Peace Research Institute, 2023, ‘World military expenditure reaches new record high as European spending surges’
6. International Energy Agency, 2023, ‘Australia 2023’
7. Innovation and Science Australia, 2018, ‘Australia 2030: Prosperity through Innovation’
8. AlphaBeta, 2018, ‘Digital Innovation: Australia’s $315b opportunity’
9. McKinsey & Company, 2017, ‘Digital Australia: Seizing opportunities from the Fourth Industrial Revolution’
10. World Resources Institute, 2018, ‘How to sustainably feed 10 billion people by 2050’
11. World Intellectual Property Organization, 2022, ‘Global Innovation Index 2022: What is the future of innovation-driven growth?’
12. Organisation for Economic Co-operation and Development, 2017, ‘OECD science, technology and industry scoreboard 2017’
13. Australian Bureau of Statistics, 2020, ‘Research and Experimental Development, Businesses, Australia’
14. Organisation for Economic Co-operation and Development, 2020, ‘Gross domestic spending on R&D’
15. Australian Government, Department of Industry, Science, Energy and Resources, 2022, ‘Science, Research and Innovation (SRI) Budget Tables 2021–22’
16. Organisation for Economic Co-operation and Development Stats, 2018, ‘Gross domestic expenditure on R&D by sector of performance and source of funds’
17. AlphaBeta, 2021, ‘Unlocking APAC’s digital potential: Changing digital skill needs and policy approaches’
18. Consult Australia, 2019, ‘Australia’s STEM education challenges’
19. Organisation for Economic Co-operation and Development, 2019, ‘Programme for International Student Assessment (PISA), 2018’
20. Australian Government, Department of Education, 2021, ‘NCRIS factsheet’

Gabrielle from the Environmental Services team at the Illawarra Local Aboriginal Land Council and Lucy, a Deadly in Generation STEM program participant. Each student dug holes in the soil and sowed a native tree, providing an opportunity to connect, learn and contribute to land regeneration.

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 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 the 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 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 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.**
   - **KPI assessment:** CSIRO is a large, complex agency which requires a sophisticated and integrated performance framework to capture progress against our Corporate Plan. Therefore, we embrace the mixed methods approach to performance management, supported by the PGPA Act and Rule, as it provides greater insight into progress and performance across the organisation. Our aim is to comprehensively monitor and report the diversity of contribution to our performance goals and expectations. When assessing the overall performance of a KPI, those with multiple metrics are rated either 'met', 'partially met' or 'not met' in regards to achievement of set targets. For KPIs with single metrics, they are rated either 'met' or 'not met' in relation to achieving targets.

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 sourced 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. **The number of SME engagements** are represented by all contract engagements.

f. **Cross organisation engagement** is calculated as average of deployment in and deployment out proportions.

g. **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.

h. **Staff sentiment towards CSIRO's culture** is defined by the summative survey result related to the Core Values Index.

i. **Practical completion of the term** (for a CERC fellow) means that they have completed their project/training.

j. **Total Reportable Injury Frequency Rate:** The total number of recordable work-related incidents resulting in a medical treatment injury, lost time injury, fatality or rated as a significant incident, per million hours worked.

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

CSIRO. Unlocking a better future for everyone.

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