



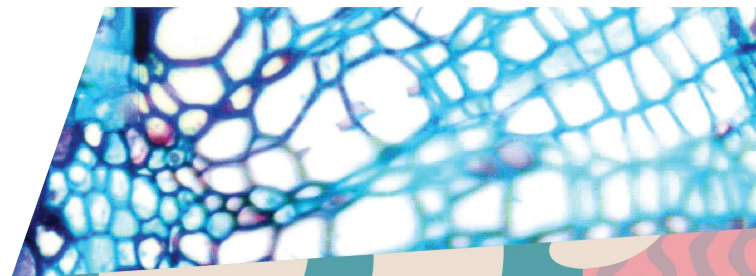
Australian Government

Australia's National Science Statement

A Future Made in Australia

August 2024

| industry.gov.au/NationalScienceStatement





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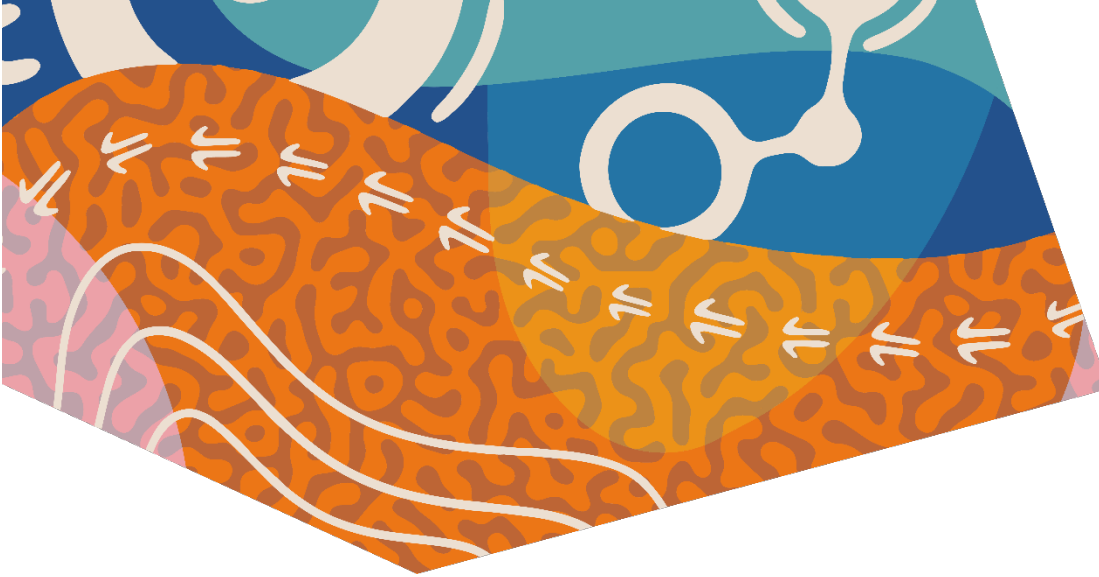
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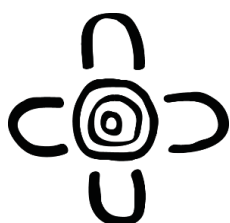
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Contents

Acknowledgement of Country	2
The artwork	3
Title: 'A Cultural Synergy'	3
Australia's National Science Statement	4
Science is essential to national transformation	5
1. Australian Scientists, science institutions and infrastructure shaping Australia's future	6
2. Science at the centre of Australian industry	7
3. A diverse, skilled workforce to underpin the translation of science into new industries	8
4. Embracing science to drive Australia's regional and global interests	9
5. A science system prepared for future challenges	10



Acknowledgement of Country

Our department recognises the First Peoples of this Nation and their ongoing cultural and spiritual connections to the lands, waters, seas, skies, and communities.

We Acknowledge First Nations Peoples as the Traditional Custodians and Lore Keepers of the oldest living culture and pay respects to their Elders past and present. We extend that respect to all First Nations Peoples.



The artwork

Title: ‘A Cultural Synergy’

Crafted by Lawson ‘Wukawe’ Dodd for the Department of Industry, Science and Resources (DISR), “A Cultural Synergy” is a digital vector artwork symbolising the integration of Aboriginal and Torres Strait Islander knowledge into Australian culture, economy, and science. Traditional symbols and contemporary design convey the essence of collaboration, featuring large circular meeting places at the core, representing diverse communities uniting to share culture, knowledge, and resources. Arch-like shapes surrounding these circles highlight the significance of collaborative research, while journey lines interconnect them, illustrating the fusion of First Nations wisdom with Western scientific resources. The vibrant background, showcasing various colours and textures, mirrors the rich history of science across cultures, reflecting the shared effort between First Nations knowledge and Western science. Structured as a left-to-right journey, the artwork depicts the evolution of science, with dramatic branches reaching out to connect with First Nations communities and integrate their knowledge into the broader narrative of Australian science progress. “A Cultural Synergy” is a visual celebration of unity, embodying the harmonious blend of cultural heritage and scientific advancement.



Australia's National Science Statement

A future made in Australia

Through science and innovation, Australia will develop new industries that drive a dynamic economy, provide well paid jobs, improve our quality of life, preserve our unique environment and build a future made in Australia.

The National Science Statement provides a framework to shape science policy and leadership across governments, in our labs, in research institutions and in boardrooms, to 2034. It is supported by a set of revitalised [National Science and Research Priorities](#). These emphasise the science and research collaborations Australia will need to solve its greatest challenges.

Science is essential to national transformation

Today, science is at the centre of government's ambition to reshape Australia's economy and manufacturing base to meet the 21st century challenges.

Australia's future prosperity, security and wellbeing rely on our capacity to use our scientific strengths. The government recognises that great ideas emerging from science and research become great products. They become profitable, enduring companies and create new jobs.

In recent years, Australians have witnessed firsthand the role science plays in keeping Australians safe, helping plan for big challenges, and responding to disruptions. For example,

- The **COVID-19 pandemic** has reminded every country of the value of science in saving lives and the importance of sovereign capability in critical aspects of modern life.
- We have come to understand that how countries **forecast, mitigate and adapt to the impacts of climate change** and natural hazards will help shape future national and economic prosperity.
- **Critical technologies such as robotics and artificial intelligence** are opening up new opportunities and reshaping businesses and economies.

Meanwhile, geopolitical shifts are challenging Australia's supply chains and trade. Science is increasingly part of geopolitical partnerships and effective diplomacy. Strategic partnerships that support science collaboration and new industry opportunities, particularly in our region, can play an important role in Australia's economic future.

And science is changing. While natural and social sciences have made significant contributions to the Australian way of life, the challenges and issues affecting our country and region are creating changes in science tools. New ways of working are emerging that embrace multi-disciplinary approaches, shared infrastructure, shared datasets and developing digital capabilities.

In particular, the world is shifting to new models for conducting science – away from the siloed science funding, hyper competitive teams and a lack of collaboration. Mission led science is becoming the new normal, and Australia can lead the way.

The National Science Statement places science at the forefront of Australia's industrial transformation and the government's efforts towards a Future Made in Australia.

To this end, it outlines 5 imperatives which will shape the national science system and national science policy, and their influence on Australia's transformation, over the next 10 years. These are collective imperatives, engaging not just governments, but civil society, academia, industry and international partners. They are:

1. Australian scientists, science institutions, and infrastructure shaping Australia's science future
2. Science at the centre of Australian industry
3. A diverse, skilled workforce to underpin the translation of science into new industries
4. Embracing science to drive Australia's regional and global interests
5. A science system prepared for future challenges.

1. Australian scientists, science institutions and infrastructure shaping Australia's future

Australia's universities and research institutes perform well above their weight. In 2022, Australia produced 3.4% of the world's published research, despite being only 0.33% of the world's population (Australian Universities Accord, 2024). Eighty four per cent of Australia's university research is at or above world standard and Australian graduates are in demand around the world.

Australia's universities support independent, broad-based exploratory research that is a precondition for innovation, and are the place where new ideas and discoveries are generated. Australia has a rich network of national science agencies, which include the Australian Nuclear Science and Technology Organisation, Geoscience Australia, the Defence Science and Technology Group and the Australian Institute of Sport. Australia's flagship science agency, the CSIRO, has an extraordinary history of globally significant inventions, from the insect repellent in Aerogard to the Hendra virus vaccine to handheld light detection and ranging (LIDAR). Industry Innovation and Science Australia also provides connective tissue between research and commercialisation. The result across government is tremendous breadth and depth of scientific capability.

Around the country, Australia has a unique system of nationally shared, specialist research infrastructure and facilities. This system ensures researchers and industry partners have the resources they need to undertake medical research, complex modelling, imaging, exploration and prototyping for industrial development. The availability and extent of research infrastructure is a strong factor for companies selecting research and development (R&D) and manufacturing bases. It is an important part of the fabric supporting a Future Made in Australia.

This system, which gives a strong scaffold to support national science and research priorities, must also remain responsive to the changing tools of science. Artificial intelligence, machine learning, big datasets, hybrid computing systems and the fast development of quantum computing will change the way science happens. They will also create new imperatives, including access to good data.

To build on the strengths of the current ecosystem, the government will:

- Continue efforts to embed and be an exemplar in evidence informed policy development and decision making
- Target strategic investment in science infrastructure and agencies to meet Australia's future needs
- Modernise our science agency systems and decision-making mechanisms, including to better support open science and cross disciplinary and cross institution collaborations.

2. Science at the centre of Australian industry

The complexity and urgency of today's challenges need collective attention across the science and research system, government and industry. Solutions will need collaborative, multidisciplinary, multi-jurisdictional and mission-led approaches at scale.

Achieving Australia's net zero targets, for example, will not only rely on deploying solar, battery and wind at scale. It will also need modernising ageing energy infrastructure, new technologies to build energy efficiencies, communities seizing the opportunities of the transformation and continued support for science. All in 25 years.

An effective system will need better visibility, mobility and collaborative effort across all sectors of the economy. Australia's researchers are already highly connected globally and have set up strong collaborative models domestically. This needs to be replicated in industry.

More flexible practices in employment and research assessment can support scientists and entrepreneurs to move in and out of roles in different sectors. An expanded culture of collaboration will need a culture shift away from institutional silos, which can create disincentives to collaboration that is in pursuit of common goals. It will need to address what Industry Innovation and Science Australia has called the "missing middle" that has held back Australia's ability to scale up and absorb innovation (2023). It will need mission-based science investment, and new approaches to working with small and medium enterprises, larger industry partners and governments.

A nation's ability to use science to build industrial growth is part of the foundation on which geopolitical, economic and cultural power rests. An effective system needs investment in science, and an understanding that patient investment will bring solutions.

An effective R&D system helps turn great ideas into great products, and maximises return on investment in science and research. In recent years, Government initiatives like Australia's Economic Accelerator, the Industry Growth Program and the Cooperative Research Centres Program are supporting commercialisation of Australian science. In 2023, the Government established its \$15 billion National Reconstruction Fund Corporation (NRFC) to provide finance to drive Australian based investments in priority areas of the Australian economy. How Australia seizes investment opportunities, including in areas like renewables and low emissions technologies, medical science, transport, agriculture, resources, defence, and enabling capabilities, will shape our future economic dynamism.

To embed deeper connections between science and industry, the government will:

- Incentivise and support the translation of science and research into new industries and sustainable products
- Challenge and value risk-taking by businesses, government and universities in pursuit of solving national challenges at scale
- Support greater flexibility in the movement of science-trained professionals between industry, research and government.

3. A diverse, skilled workforce to underpin the translation of science into new industries

The changing face of science and manufacturing calls for new skills and a significant increase in the STEM (science, technology, engineering and mathematics) qualified workforce. Jobs and Skills Australia predicts that over the next decade around half of new jobs will need a degree or higher, and 44% a VET qualification (Jobs and Skills Australia, 2023).

Given international competition for skilled workers, Australia cannot rely on importing talent alone to fill gaps. An enduring solution depends on more Australians studying STEM subjects from primary school through the post-school system, and on empowering more diverse communities to see a future for themselves in STEM.

We also need to make better use of the current investment in training STEM graduates. Too often, the skills of STEM-trained professionals are not fully used. For example, STEM professionals may end up on career pathways that do not sufficiently recognise mobility or career breaks.

Aboriginal and Torres Strait Islander peoples make a valuable contribution to STEM. They hold deep knowledge of the Australian continent and its natural systems, built on more than 65,000 years of unbroken connection. Indigenous-led science and effective collaborations have advanced science and discovery by unlocking new forms of medicines and therapeutics, new materials, and new ways of managing and protecting the unique environment to ensure our rich biodiversity is available to future generations. Australian science will benefit from learning from Aboriginal and Torres Strait Islander knowledge and building greater diversity by providing more opportunities for Aboriginal and Torres Strait Islander scientists.

To build the skilled workforce needed to support the growth of future industries, the government will:

- Celebrate and invest in science professionals in every sector, from our science teachers in primary and high school classrooms, to science technicians and analysts, to our scientists making world-leading discoveries.
- Offer programs that support diverse and under-represented groups and remove barriers holding them back from entering and staying in STEM careers.
- Elevate, respect, and invest in Aboriginal and Torres Strait Islander knowledge systems and Aboriginal and Torres Strait Islander scientists.
- Incentivise new approaches to science, including greater multidisciplinary collaboration across humanities and science disciplines.

4. Embracing science to drive Australia's regional and global interests

Australia is invested in the future prosperity and stability of the Indo-Pacific, and in its relationships with emerging powerhouses of industry and science in the region. Southeast Asia, for example, is one of the fastest-growing regions in the world, fuelled by demographics, industrialisation, urbanisation and advances in technology (DFAT 2023). After years of strategic policies and investment, many of our partners in the region have become science leaders and innovators.

Australia is also deepening economic ties with Pacific nations in our region to address shared or specific critical challenges, including responding to climate change, digital connectivity and transitioning to net zero. Science and technology collaborations are a part of supporting economic growth and prosperity in our region.

Australian researchers are globally respected, and it is well recognised that we achieve greater success when we work together to solve mutual problems. Long-standing bilateral arrangements are testament to the enduring benefit of focused science and research partnerships.

Building on this work, the government will continue to:

- Identify opportunities for international collaboration to keep Australia at the forefront of new discoveries and emerging technologies
- Promote scientific collaborations as part of geopolitical relationships, particularly in the Asia Pacific region, and to solving shared problems
- Use Australia's diverse scientific leadership to foster new opportunities for collaboration
- Invest in programs that provide avenues for science diplomacy.



5. A science system prepared for future challenges

Events since 2020 have made Australia's vulnerability to supply chain disruptions clear. Australia's population now has better awareness of the importance of scientific expertise and critical infrastructure to the health and security of Australia's population.

During the pandemic, Australia benefited from decades of support for science. When we needed answers, Australian researchers from all fields pivoted their expertise, infrastructure and knowledge to inform decision-making. This was not only embodied by the epidemiologists and public health experts, but how Australia's researchers came together to give rapid, accurate and peer reviewed evidence to government through the Rapid Research Information Forum, led by the Chief Scientist.

The pandemic response showed the importance of trust in science and institutions of democracy. Part of Australia's success was due to Australians' willingness to listen to science and make unprecedented changes to their lives based on it. Trust in science must be earned, maintained, and protected as part of our future prosperity and national security.

Initiatives like National Science Week and the National Youth Science Forum have brought public engagement and interest in science to many communities. Science communication will continue to be an essential part of the science system in the face of new challenges.

Advances in generative AI pose new risks to trust in institutions and the communication of trusted scientific advice. This could lead to an increase in plausible sounding, but false, scientific narratives. At their worst, these technologies could see scientific literature being used to advance malicious products, such as harmful drugs, at greater speed and scale than has previously been possible.

To support resilience of our science system in anticipation of future challenges, the government will:

- Be an exemplar advocating for, respecting and listening to scientific advice
- Support science engagement initiatives as an important mechanism to promote public trust in science
- Build community trust in emerging technologies by promoting responsible technology development
- Continue to prioritise work to address and counter misinformation and disinformation online, monitor emerging risks, and help ensure the development and use of AI in Australia is safe and responsible.

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