



Science and Innovation Investment Framework

Turning great ideas into great opportunities

October 2013



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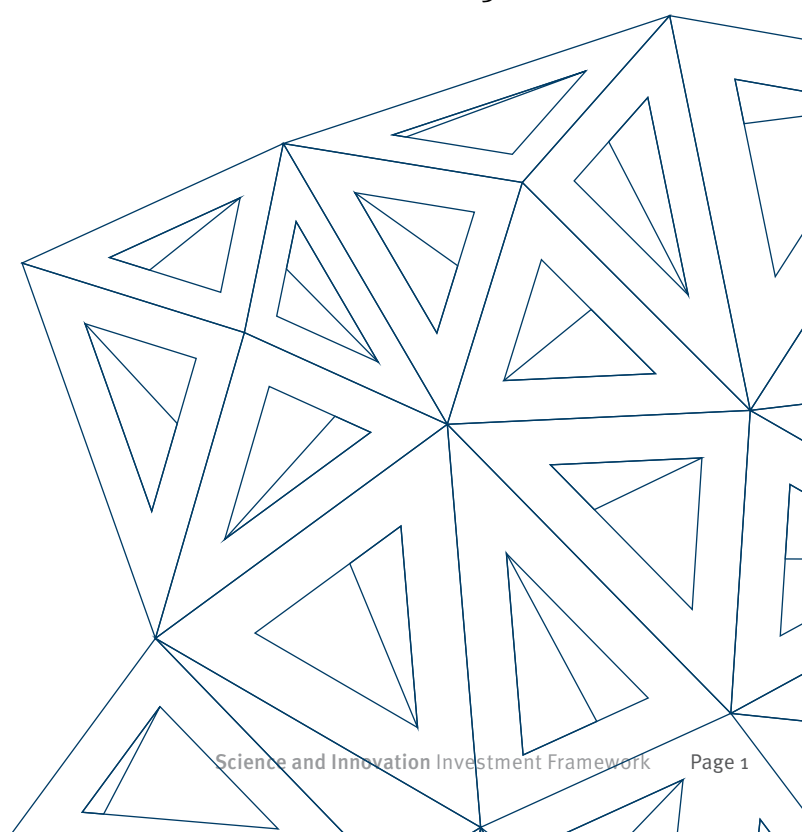




Photo courtesy of CSIRO, Science, Research.

The science and innovation landscape

The majority of Queensland research and development (R&D) is performed by industry, higher education, and state and federal government sectors. In 2008–9, approximately \$3.9 billion was spent on R&D in Queensland representing 14 per cent of Australian R&D. Industry's share of Queensland R&D was more than half (60 per cent) with the higher education sector comprising 27 per cent, state government 7 per cent and Australian Government 5 per cent.

Industry snapshot

Queensland industry spent \$2.68 billion on R&D in 2010–11. Approximately 38 per cent (\$1.01 billion) of all industrial R&D in Queensland was in the mining sector, in particular oil, coal and metals. Twenty per cent (\$531 million) was spent on manufacturing with the majority of expenditure on machinery, food, chemical and transport manufacturing. Almost 19 per cent (\$502 million) was spent on professional, scientific and technical services including computer system design.

Higher education snapshot

Queensland is home to nine universities each specialising in various fields of research. The *Excellence in Research for Australia 2012 National Report* shows almost all Queensland universities perform research above or well above world standard in at least one discipline. Queensland performs strongly in national competitive research programs with The University of Queensland securing the most Australian Research Council funding (\$40.3 million) in Australia during the funding year commencing in 2013.

The Queensland higher education sector spent \$1.48 billion on R&D in 2010. Universities spent 31 per cent (\$462 million) on health research – the greatest expenditure in a single field. Approximately 10 per cent (\$152 million) was spent on expanding knowledge and over 7 per cent (\$110 million) on manufacturing R&D.

State government snapshot

In 2011–12, the Queensland Government directly spent \$231 million and leveraged a further \$403 million on R&D activities. Of this funding, \$238 million was spent on in-house R&D and the remaining \$396 million was spent on external R&D contracts.

The Queensland Government spent almost 39 per cent (\$89 million) of its direct R&D expenditure on health in 2011–12. Other large areas of direct investment included enabling sciences and technologies 14 per cent (\$33 million), energy and resources industries 9 per cent (\$20 million) and ecosystems 8 per cent (\$19 million).

Why we invest

Why science and innovation matters

Science and innovation enable us to capitalise on great opportunities and address grand challenges.

Science and research are rich sources of new ideas and together with technology and innovation become key enablers of other government strategies and aid in problem solving.

Queensland has world-class science and research capability and infrastructure and we now need to translate this into practice and increase uptake of new knowledge and technologies.

There are clear links between innovation and productivity. Productivity is a measure of the efficiency of production. The Organisation for Economic Co-operation and Development has estimated that innovation accounts for at least 60 per cent of Australia's productivity growth over the longer term.

Innovative businesses are more than twice as likely to increase employment, three times as likely to export, 40 per cent more likely to report increased profitability and almost twice as likely to report increased productivity.

Businesses need to drive innovation to create a competitive edge.

Government's role

The *Science and Innovation Action Plan* is a blueprint to renew the state's science and innovation efforts. The Action Plan outlines activities across government to support delivery of science to meet the needs of industry and the public and to remove barriers to businesses driving innovation.

The Action Plan articulates new governance arrangements and establishes a Science and Innovation Advisory Council to provide independent guidance and investment advice to the Minister for Science, Information Technology, Innovation and the Arts.

Governments invest in science and R&D for a variety of reasons including informing public policy, improving service delivery, enhancing productivity growth, nurturing future industries and anticipating emergent issues and crises responses. Ultimately the Queensland Government invests for the benefit of all Queenslanders including economic, social and environmental benefits.

Government will continue to play a vital role in fostering a science and research sector that contributes to the lives of all Queenslanders. It will also support innovative business models to support the competitiveness of Queensland businesses.



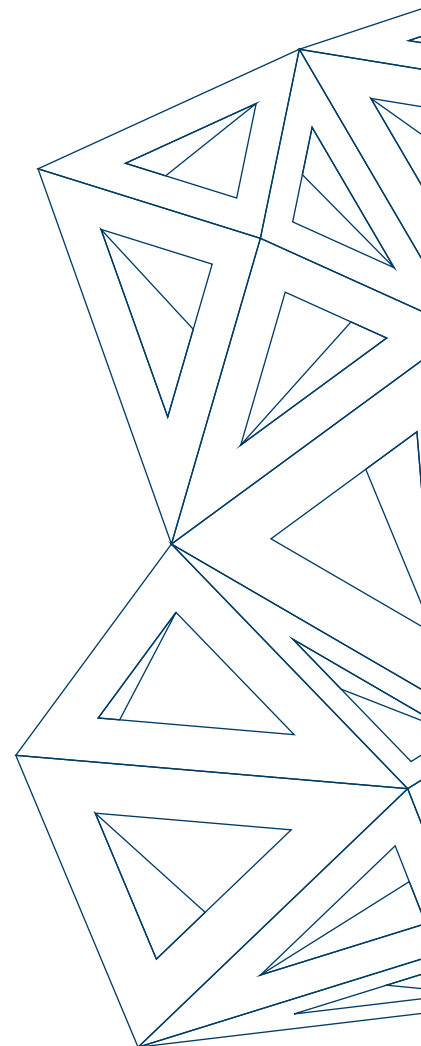
As an investor in science and innovation, the government has invested in a range of initiatives including:

- \$42 million to establish the Australian Institute of Tropical Health and Medicine with James Cook University
- \$4.8 million to the Queensland University of Technology Centre for Tropical Crops and Biocommodities for the development of new tropical pulses that are more drought tolerant and disease resistant
- \$3 million to support a program of research on agricultural robotics at the Queensland University of Technology
- \$9 million to support the Clem Jones Centre for Ageing Dementia Research at the Queensland Brain Institute, The University of Queensland, as the centrepiece of a new research-driven approach to dementia and Alzheimer's disease
- \$500,000 over two years to support collaborative research projects by Queensland and Chinese scientists through the Queensland – Chinese Academy of Sciences Fund.

In addition, the Queensland Government owns and manages a significant portfolio of science assets. The Department of Science, Information Technology, Innovation and the Arts has led the development of the Ecosciences Precinct and Health and Food Sciences Precinct in partnership with the Commonwealth Scientific and Industrial Research Organisation. Some other key assets include the Salisbury Research Facility (fibres/wood); Tropical Weeds Research Centre; Robert Wicks Pest Animal Research Centre; and the Queensland Animal Science Precinct (a joint initiative with The University of Queensland). There has also been significant collaborative investment in health research infrastructure such as the Translational Research Institute and the QIMR Berghofer Medical Research Institute.

Partners in progress

Given the scale of the scientific challenges today, partnerships locally, nationally and internationally are essential. These include partnerships with the Australian and local governments, industry and academia. In recent years the partnerships between the Australian Government, state government, the higher education sector and industry have been important to deliver key capabilities and critical infrastructure.



New science and research priorities

To ensure any future investments are well aligned with Queensland Government priorities and provide value for money, the Queensland Chief Scientist has reviewed Queensland's science and research priorities to ensure they are focused on well-defined areas and reflect identified needs.

These priorities provide the focus of activity that the Queensland Government views as important, developed through consultation across government, with the university and research sector, and with industry. However, recognising fiscal constraints it will obviously not be possible for government to provide additional funding for all these areas. Thus alignment of an activity or project within the scope of a priority does not assume or imply that the activity or project might obtain funding. Choices by government will have to be made in the near term, informed by the investment principles and through independent advice to the Minister from the Science and Innovation Advisory Council.

Queensland science and research priorities

- Developing and delivering enhanced production technologies, tools and practices to help grow productivity, reduce waste and add value to our four pillar sectors: resources (including energy and mining), construction, tourism and agriculture (including food).
- Remain internationally competitive by attracting and retaining science and research talent. This will be done through early-career researcher support programs in priority areas and by encouraging research-focussed mobility and effective translation between industry, academia and government.
- Protecting our biodiversity and heritage: marine and terrestrial.
- Natural advantage with clean(er) – and renewable – energy technologies development (e.g. gas, solar and biofuels).
- Ensuring the sustainability of our physical and especially our digital infrastructure critical for research and – correspondingly – strategically leveraging national programs (including making use of 'big data').
- Building resilience and managing climate risk, through the design and development of construction technologies for extreme weather event resistance (floods, cyclones, droughts), particularly in tropical environments.
- Early detection, treatment and (ultimately) prevention of age-related and Queensland dominant diseases (e.g. skin, tropical).
- Improving health data management and services delivery (including telemedicine).
- Ensuring sustainable water use and delivering quality/water security in a variable climate and in a resources-intensive economy.
- Digitally-enabled technologies, e.g. the development and application of advanced modelling, visualisation, sensing and simulation technologies, tools and practices, including robotics.

What will drive investment?

Investment Principles

The following principles underpin the *Science and Innovation Action Plan* and the *Science and Innovation Investment Framework*. Taken together, these principles aim to create a viable and resilient research and innovation community delivering great outcomes for all Queenslanders and positioning Queensland on the national and global stage.

1. Target government priorities

Target government investment in programs and initiatives to support government priorities.

2. Balanced portfolio

Balance government investment to support a diversity of capability from different scientific disciplines, geographic regions, universities, industry, independent research organisations and government agencies.

3. Deliver value for money

Deliver a clear return on government investment demonstrated through economic, social or environmental outcomes. Those that are successful in receiving funding will partner and co-invest with government, match government investment with funding from other sources, and generate in-kind support from other partners.

4. Science and research investment decision rules (The R.E.D.S)

To support better assessment and targeted investment in science and research, the following rules will be considered in making decisions:

- **Real future impact:** Will the proposed science and research investment increase tangible positive net benefit/impact for the state?
- **External commitment:** Are the necessary collaborative research partners engaged (locally and internationally)? And in seeking much better translation, are the end users of the research engaged, with appropriate skin in the game?
- **Distinctive angle:** In this arena, is it clear what is in it for Queensland and/or why are we doing it here?
- **Scaling towards critical mass:** Do we have, or are we able to, assemble the necessary critical mass, collaboratively and of competitive excellence, to make a real and effective contribution? Both, to the R&D, but also the absorptive capacity, e.g. in industry, and do we have a 'Team Queensland' approach in place?

What improvements have been made?

Streamlined program guidelines and funding applications

Program guidelines and funding applications will be streamlined to ensure a consistent presentation across the Department of Science, Information Technology, Innovation and the Arts grant programs and funding applications will seek the key information on which funding decisions will be based.

Single point of contact for science and innovation programs

A single point of contact has been established for the grant administration of all Department of Science, Information Technology, Innovation and the Arts science and innovation grant programs. Please contact us via isinvestment@innovation.dsitia.qld.gov.au or on 13 QGOV (13 74 68).

New technologies and systems

We will be working toward the implementation of new technologies to streamline the lodgement and processing of applications and facilitate online reporting.

Accelerate Queensland Science and Innovation Program

Under the Accelerate Queensland Science and innovation Program the following programs will be available. Further details on opening and closing dates, guidelines and application forms will be made available via the department's website at www.qld.gov.au/dsitia.

1. Accelerate Fellowships

Objective:

This program will focus on the development of skills and establishment of the professional reputation of high-calibre early to mid-career researchers to undertake practical and applied research in Queensland.

Focus:

- attraction and retention of world-class researchers to Queensland
- support for emerging science leaders to establish a research reputation and build quality research teams around them
- focus on the government's science and research priorities
- support for innovative, practical and applied research
- encourage increased linkage with business and industry
- emphasis on building regional capability.

Available funding:

A funding pool of \$3 million is available. The split between early and mid-career recipients will be determined by the number and quality of proposals received. Each fellowship is awarded to an individual and is not transferable.

The following research fellowship grants will be available:

- Early-Career Fellowships – \$180,000 over three years (excluding GST)
- Mid-Career Fellowships – \$300,000 over three years (excluding GST)

Matching funding will be required.



The Accelerate Fellowships will attract and retain the best researchers to Queensland and focus on the government's science and research priorities. Photo courtesy of The University of Queensland.

2. Accelerate Partnerships

Objective:

This program will focus on priority collaborative science and research projects with an emphasis on translating research into outcomes for Queensland.

Focus:

- support for well-defined research projects in collaboration with national/international research leaders, industry and end users
- joint projects which may lead to ongoing collaborative opportunities
- focus on the government's science and research priorities
- support for innovative, practical and applied research
- short-term 'real' impacts for end users
- encourage increased linkage with business and industry
- ability to establish and build world-class research teams
- emphasis on building regional capability.

Available funding:

A funding pool of \$4.25 million is available. Funding available to successful projects will be up to \$500,000 (excluding GST) with project duration being no greater than two years.

Matching funding will be required.



The government will emphasise the translation of research into outcomes for Queensland through the Accelerate Partnerships program. Photo courtesy of The University of Queensland.

3. Accelerate Ideas

Objective:

This program will support projects that demonstrate the potential commercial viability of a new idea involving partnerships between university researchers and industry.

Focus:

- close to market entry
- demand driven and translation
- business growth
- overcome barriers to commercialisation
- potential investment opportunity.

Available funding:

Funding for individual projects will be up to \$50,000 (excluding GST) per project with project duration of no longer than 18 months.

Matching funding will be required.



Photo courtesy of The University of Queensland.

4. Accelerate International Collaborations

Queensland–Chinese Academy of Sciences Fund

Objective:

This fund will support collaborative research projects being undertaken by Queensland-based research organisations in collaboration with researchers from the Chinese Academy of Sciences (CAS).

Focus:

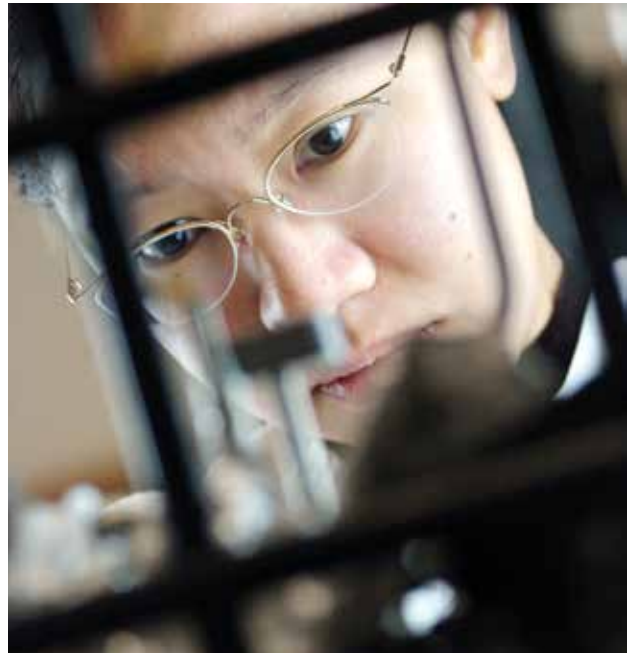
- research, development and innovation that will deliver future economic, social and environmental benefits to Queensland and China
- complementary research priority areas of agricultural biotechnology and food research (including food safety), human health and medical research, and energy
- increased research collaborations with China.

Available funding:

A funding pool of \$500,000 over two years is available to support two funding rounds of collaborative research projects.

Individual projects will be eligible for up to \$125,000 (excluding GST) with a requirement for the Queensland applicant, as a minimum, to contribute an additional \$75,000 (excluding GST).

CAS will provide matching funding.



The Queensland–Chinese Academy of Sciences Fund will help build research collaborations with China.

Program governance and assessment

Once established, the Science and Innovation Advisory Council will oversee the delivery of the funding programs and their alignment with government science and research priorities and investment principles.

Applications submitted to individual programs will be assessed on their competitive merit, in accordance with the specific assessment criteria, by an independent assessment panel.

The Minister for Science, Information Technology, Innovation and the Arts is the decision-maker on all grant programs and will be advised by the Advisory Council.

Program evaluations

Evaluation will be an integral part of programs.

For grant programs, the groundwork will be laid during the application and assessment stage, which will determine the specific outcomes expected from each grantee, thereby providing the basis for subsequent monitoring and evaluation.

