



## **Advance Queensland: First Macro- Level Evaluation (Term 1) – Evaluation Report**

September 2019

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# Acronyms

Key terms used throughout the Evaluation Report are defined in the table below.

<b>Term</b>	<b>Definition</b>
ABS	Australian Bureau of Statistics
AQ	Advance Queensland
AQ Strategy	Building Our Innovation Economy – Advance Queensland Strategy
BDF	Business Development Fund
BERD	Business expenditure on research and development
BLADE	Business Longitudinal Analysis Data Environment
DES	Department of Environment and Science
DESBT	Department of Employment, Small Business and Training
DITID	Department of Innovation and Tourism Industry Development
DET	Department of Education
DPC	Department of the Premier and Cabinet
DSDMIP	Department of State Development, Manufacturing, Infrastructure and Planning
GERD	Gross expenditure on research and development
GOVERD	Government expenditure on research and development
HERD	Higher education expenditure on research and development
LABii	Longitudinal Australian Business Integrated Intelligence
METS	Mining equipment, technology & services
MIT	Massachusetts Institute of Technology
NGO	Non-government organisation
OQCS	Office of the Queensland Chief Scientist
QT	Queensland Treasury
QUT	Queensland University of Technology
R&D	Research and development
REAP	Regional Entrepreneurship Acceleration Program
STEM	Science, technology, engineering and mathematics
The Evaluation	First Macro-Level Evaluation of AQ
VC	Venture capital
WAF	Women’s Academic Fund

# Executive summary

Globally, societies and economies are undergoing profound changes that alter the way we work and live. Globalisation is opening up opportunities for international trade while intensifying cost competition, and technological advancements are challenging traditional business models while paving the way for creative methods of product delivery.

The Queensland economy is not immune to these changes and can either adapt and prosper, or be eroded by these changes. It is well documented in the literature that innovation is central for future economic prosperity.<sup>1</sup>

Since the late 1990s, the Queensland Government has made significant investments into transforming the Queensland economy from a commodity-based economy to an economy driven by knowledge and innovation.

Advance Queensland (AQ) is a Queensland Government initiative that aims to foster innovation, by building a more diversified Queensland economy and creating jobs. AQ is informed by research led by Professor Josh Lerner, Queensland’s innovation ecosystem and recommendations for future action (Lerner report), which identified weaknesses and opportunities in Queensland to better support innovation.<sup>2</sup> Based on the recommendations in the Lerner report, AQ has developed five key strategies. These key strategies are identified in the Queensland Government’s AQ A whole-of-government policy framework and includes:



**SUPPORTING CULTURE** – this element involves engaging the community in innovation, inspiring current and future generation to be creative, develop ideas, work together and identify innovation potential.



**BUILDING CAPABILITY** – this element involves maintaining a strong research base to support entrepreneurship, business commercialisation, creativity and the creation and update of new technologies; increase the update and level of science, technology, engineering and math (STEM) skills in the community.



**FOSTERING COLLABORATION** – this element involves building networks and partnerships across organisations, sectors and disciplines to help spark creativity and ideas, diffuse existing knowledge, and increase the translation of ideas into outcomes.



**INCREASE INVESTMENT** – this element involves facilitating access to capital to fund the translation of ideas to outcomes, and assisting innovators to be “investment ready”.



**SCALING FOR JOBS AND GROWTH** – this element involves empowering businesses and key industries to benefit from accelerating technological disruption and accessing changing global chains, unlocking the potential of small businesses, high growth firms and regions to innovate and develop.<sup>3</sup>

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<sup>1</sup> Organisation for Economic Co-operation and Development, *The Knowledge-Based Economy* (1996)

<sup>2</sup> Lerner et al., *Queensland’s innovation ecosystem and recommendations for future action* (2014)

<sup>3</sup> Queensland Government, *Advance Queensland A whole-of-government policy framework*.

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By June 2018, approximately \$384 million dollars in funding was committed to programs and activities that address at least one AQ strategy. It was in this context that Deloitte Access Economics was engaged by the Department of Innovation and Tourism Industry Development (DITID) to undertake the first “macro-level” (whole-of-initiative) evaluation of AQ (the Evaluation).

The Evaluation acknowledged that changes within systems are complex and take time. Given the short amount of time that has elapsed between the end of Term 1 (2017-18) and the time of the Evaluation, it is inappropriate to reach definitive conclusions about the full impacts of AQ. Instead, the Evaluation aims to assess outputs and intermediate outcomes of activities undertaken in the first three years of the AQ initiative (2015-16 to 2017-18) against AQ strategies and objectives, and as identified in the AQ Evaluation Framework.<sup>4</sup> Thus, the evaluation comprises three evaluation types:

- **A process evaluation** that investigates the extent to which the initiative has been implemented as intended, has successfully reached the target audience and the extent to which the governance has supported the implementation of the initiative.
- **An effectiveness evaluation** that investigates the extent to which the initiative has contributed to particular outcomes.
- **An efficiency evaluation** that investigates the extent to which the initiative has been delivered at the lowest possible cost, to the areas of greatest need and has continued to improve over time by finding better or lower cost ways to deliver outcomes.

## Key findings

The Evaluation found evidence that AQ has been delivered according to its strategies and objectives. In certain aspects, AQ has addressed weaknesses and capitalised on opportunities in the innovation system as recommended in the Lerner report. Key findings on progress and intermediate outcomes against the AQ objectives are summarised below and grouped by AQ strategy. It should be noted that changes in system-level indicators are influenced by many factors beyond AQ, but are indicative of shifts in the innovation ecosystem that AQ aims to influence.



### SUPPORTING CULTURE

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- **There was a reported increase in innovation awareness and engagement.**  
76% of AQ participants in the survey reported that AQ had enhanced Queensland’s reputation as a place for innovation. Additionally, Queensland’s share of Australian startups has increased from 16.5% in 2015 to around 20% in 2018.
- **There was a reported increase in entrepreneurialism.**  
71% of AQ participants in the survey reported that AQ had encouraged a positive attitude towards self-identifying as an entrepreneur. It was also found that there was an increase in the number of clusters of entrepreneurial activity with 29 co-working spaces, 16 startup groups and 6 commercialisation units.<sup>5</sup>



### BUILDING CAPABILITY

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- **There was a reported increase in innovation capability.**  
65% of researchers and 71% of startups in the survey reported that AQ had increased their innovation capability. It was also found that gross expenditure on research and development (R&D) from the higher education sector (HERD) as a share of gross state product increased

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<sup>4</sup> Queensland Government, *Advance Queensland Evaluation Framework v3* (2018)

<sup>5</sup> Note: The 29 co-working spaces, 16 startup groups, and 6 commercialisation units are 2019 statistics. These statistics have been used due to unavailability of data for the 2017-18 period.

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from 0.56% in 2014 to 0.59% in 2016.<sup>6</sup> As highlighted previously, such system level indicators are influenced by many factors but are indicative of shifts in the innovation ecosystem that AQ aims to influence.

- **There was a reported increase in uptake of STEM subjects in schools and universities.** Number of state school students in Years 3 to 9 receiving a C-level of achievement or higher in Science or Mathematics increased by up to 3.1% between 2015 and 2017.<sup>7</sup>
- **There was some success regarding AQ's performance in developing, attracting, and retaining talented people.** 47% of researchers in the survey reported that AQ had supported them in employing people in long-term/permanent contracts. In addition, 31% of startups reported that AQ had increased the flow of highly qualified people into businesses.



## FOSTERING COLLABORATION

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- **Some sustainable partnerships were facilitated by AQ.** 57% of researchers in the survey agreed that AQ had facilitated formal agreements with businesses to conduct research or build prototypes. 46% of researchers in the survey agreed that AQ had facilitated formal agreements with businesses to commercialise existing research.
- **There was a reported increase in the development of local and international networks.** Over 1,000 formal collaborations were facilitated between businesses, researchers, government, community groups, educators, future innovators and numerous informal collaborations were facilitated through network programs and events. In addition, over half of survey respondents agreed that AQ had facilitated inter-personal connections. As of 30 June 2018, over 130 international and interstate connections for local entrepreneurs were facilitated by Hot DesQ recipients.



## INCREASE INVESTMENT

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- **There was a reported improvement in the pipeline of investible products.** The survey revealed that 60% of businesses and 51% of startups agreed that AQ funds have been used to improve the quality of existing products. Queensland University of Technology's (QUT) analysis showed that AQ participants had an average of 2.8 trademarks, higher than the average of 1 trademark for non-participants (businesses that applied for an AQ program but did not receive the grant) and 0.5 for all other Queensland businesses. The difference between AQ participants and non-participants was found to be statistically significant.<sup>8</sup>
- **Queensland's share of national investment (venture capital) in terms of value has increased** from 13.5% in 2015-16 to 15.3% in 2017-18. Angel investor networks have been established across 10 Queensland regions. The survey findings demonstrated that 24% of startups and 17% of businesses in the survey agree that AQ has facilitated connections with investors, including angel investors and venture capitalists. This suggests that AQ should consider expanding the work to facilitate startups and businesses to connect with investors in line with recommendations in the Lerner report to support the venture capital market as a longer term strategy.

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<sup>6</sup> ABS, *8111.0 Research and Experimental Development, Higher Education Organisations, Australia* (2018).

<sup>7</sup> DET, *Data provided by the Department of Education* (2019).

<sup>8</sup> Moyle and Pandey, *Advance Queensland program analysis powered by the Longitudinal Australian Business Integrated Intelligence (LABii) Queensland Database v.2.0* (2019).



## SCALING FOR JOBS AND GROWTH

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- **Organisations that received AQ funding experienced a higher number of business growth events compared to organisation that did not receive AQ funding.**

This was found by QUT data analysis.<sup>9</sup> The survey findings demonstrated that less than half of businesses, startups and researchers in the survey agreed that AQ has supported the commercialisation of products. However, AQ could strengthen support for commercialisation of projects as recommended in the Lerner report as a longer term strategy.

- **There was a reported increase in economic benefits from innovation.**

As of 30 June 2018, AQ supported 12,568 jobs, including actual new jobs reported and additional new jobs forecast to be created in Queensland within five years as a direct result of AQ investment. Survey data revealed that 60% of businesses and 65% of startups agreed that AQ has helped to improve productivity or profitability. In addition, 38% of businesses, 53% of startups, 47% of researchers, and 35% of government agencies and non-government organisations (NGO) agreed that AQ had supported them in employing people in long-term or permanent contract.

### Other findings of the Evaluation

#### Overall quality

Overall, the survey of AQ participants indicated that AQ programs are, in general, of high quality. 78% of survey respondents reported that they were satisfied or strongly satisfied with the programs. In addition, 72% of survey respondents agreed that AQ was easy to access.

#### Fidelity

AQ and associated programs were found to be largely been implemented as planned, delivered as intended, and the allocation of funding was on track. In addition, AQ and associated programs were found to have evolved over time according to the needs of the stakeholders.

#### Reach

The largest target group was startups and entrepreneurs. Correspondingly, startups, entrepreneurs and businesses were the largest recipient type to receive AQ funding. In addition, the reach of AQ has increased over time, with a growing number of applicants, participants and followers on social media.

#### Governance

The majority of implementing agencies reported during consultations that governance of the program had improved over time, particularly in terms of the strategic direction of AQ becoming clearer. However, improvements could be made around some aspects of governance relating to structure and roles and responsibilities. Some of the highlights found during consultation was that senior leaders found the structure to be clear and in particular, the Minister for Innovation and Tourism Industry Development and Minister for Cross River Rail chairing the Strategic Leadership Group meetings is positive for engagement.

#### Enablers and barriers

Stakeholders were also asked to identify specific enablers and barriers to implementation of AQ programs. Enablers to implementation include:

- Strong AQ brand allows for easy program implementation as a result of buy-in and support from leaders across Queensland government.

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<sup>9</sup> Moyle and Pandey, above n 8.



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- Existing organisational structures and processes (e.g. program documents, operational functions, contacts) that can be leveraged for programs.
- Having the right people in the right roles to assist and enable program success.

Some barriers to implementation include:

- Program funding cycles made some program planning challenging.
- Reporting requirements and processes.
- Lack of visibility of how data and information is used.

### **Efficiency**

The Evaluation found that AQ funding has a relatively high leverage ratio when compared to other programs that aim to promote R&D. Specifically, AQ leveraged \$1.40 for each dollar of funding committed, which is higher than the 1:1 ratio that has been found among other R&D tax incentive programs.<sup>10</sup>

From a program administration perspective, it was reported during consultations with implementing agencies that AQ programs have been delivered with low administrative costs. A large proportion of implementing agencies consulted suggested that delivering the same scope of programs would not be possible at a lower cost. Similarly, it would be difficult to achieve the same outcomes with fewer resources. However, it was suggested that there is potential for improving the efficiency of delivery by enhancing communication and collaborations between DITID and other implementing agencies.

The extent to which AQ has supported innovation was analysed using the survey results. Two-thirds (67%) of survey participants either agreed or strongly agreed that AQ had addressed their most urgent need. Further, survey participants who agreed most strongly with this statement were educators, followed by government agencies and not-for-profits, and then startups.

Outcome measures and consultation with stakeholders indicated that AQ had evolved and improved over time. Supporting this, there was gradual improvement in the outcomes of jobs per million dollars committed and funds leveraged per dollar committed over time.

### **Key recommendations for the future direction of AQ**

Findings from the Evaluation have important implications for the future direction and implementation of AQ.

The Evaluation found that 67% of survey respondents agreed that AQ had helped to address their most urgent needs. As the innovation system is constantly changing in response to changing demands from the economy, **it is important that the strategic direction of AQ continues to be based on research and consultations with stakeholders to ensure that AQ addresses the evolving needs of the innovation system.** Additionally, all innovation participants and innovation enablers are integral parts of the innovation system. It is therefore important for AQ to balance the need of all innovation participants and sustainably maintain the pipeline of ideas and products.

Consultations and research indicates that there are **two main areas of need that should continue to be addressed; access to capital and commercialisation of products.** The Evaluation found that the venture capital market in Queensland still remains relatively small compared to that of New South Wales and Victoria.<sup>11</sup> During stakeholder consultation, subject

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<sup>10</sup> The McKell Institute, *Committing to the Innovation Nation Why the R&D tax incentive is so important for Australia* (2017).

<sup>11</sup> ABS, *5678.0 - Venture Capital and Later Stage Private Equity, Australia, 2017-18* (2019)

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matter experts reported that while AQ had been successful in inspiring people to try new business ideas, they had not seen a significant improvement in the quality of ideas and businesses. This is also reflected in the survey results which showed that less than half of survey respondents agreed that participating in the program had helped them to commercialise products. **This suggests that there is scope for further improvement in this area and for AQ to provide further support to aid commercialisation and boost the quality of ideas.** Supporting businesses in commercialisation and access to capital are among longer term recommendations identified in the Lerner report.

**It is vital that AQ creates opportunities for all Queenslanders, including female, regional, and Indigenous Queenslanders.** Findings from a recent Queensland Government report, Public Perceptions of Innovation Report, indicated that 41% Queenslanders are concerned that innovation could leave some people behind and 39% are concerned about loss of jobs.<sup>12</sup> **An inclusive approach would allow AQ to reach all Queenslanders and thus promote sustainable economic development.**

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<sup>12</sup> Queensland Government, *Public Perceptions of Innovation Report* (2017).

# 1 Introduction

## 1.1 Background to Advance Queensland (AQ)

Since the late 1990s, the Queensland Government has made significant investments into transforming the Queensland economy from a commodity-based economy to a knowledge-and-innovation driven economy. These efforts include investment in training, infrastructure, financial support of programs, and a venture capital (VC) ecosystem to create an innovation economy.

### 1.1.1 Underpinning research, principles and policy recommendations

In 2014, the Queensland Government commissioned research into the state of the innovation ecosystem in Queensland.<sup>13</sup> This research, led by Professor Josh Lerner from Harvard Business School, outlined a number of principles for future investment:

- **Set the table:** choose programs that focus on enhancing the entrepreneurial ecosystem through tax incentives, technology transfer programs, and/or ease of immigration for foreign talent.
- **Borrow from others:** focus on solutions which have been successful in other jurisdictions.
- **Measure, evaluate and revise programs:** try a variety of approaches and understand that some will work and others won't.
- **Keep it reasonable:** focus on efforts that can be accomplished at the State Government level.
- **Keep it cost-effective:** choose reasonably priced strategies and many approaches, rather than a few high-cost interventions.

These principles informed the following policy recommendations:

1. **Build bridges between Queensland and the rest of the world:** improve the ability of entrepreneurs to gain inspiration, ideas, and skills from experienced entrepreneurs worldwide to support innovation and business longevity.
2. **Enhance the skills of local entrepreneurs:** increase the experience of local innovators especially in regards to accessing VC and growth funding.
3. **Encourage the formation and institutionalisation of formal angel groups:** grow the innovation ecosystem by improving access to early stage capital and growth funding by supporting the formation of more angel investment groups.
4. **Encourage and implement widespread entrepreneurial education:** improve entrepreneurial education for school age children, university students, and invest in research.

Three additional higher cost initiatives were also recommended to be implemented later in the development of Queensland's innovation economy.

5. **Fund Commercialisation Projects:** the Lerner report identified a mismatch between the amount of funding available to researchers and the amount of funding available for commercialisation projects that would unlock long term benefits of research products and make them more widely available.
6. **Create a Matching Fund Investment Program:** a matching fund investment program would see government matching private investment in startups and new ideas.
7. **Encourage Local Institutional Investor:** the Lerner report observes that globally successful "venture clusters" or innovation hotspots rely on local institutional investors that contribute capital funding. Government policy to support innovation should therefore encourage local institutions to invest in startups and innovation.

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<sup>13</sup> Lerner et al., *Research and Experimental Development, Higher Education Organisations, Australia* (2014).

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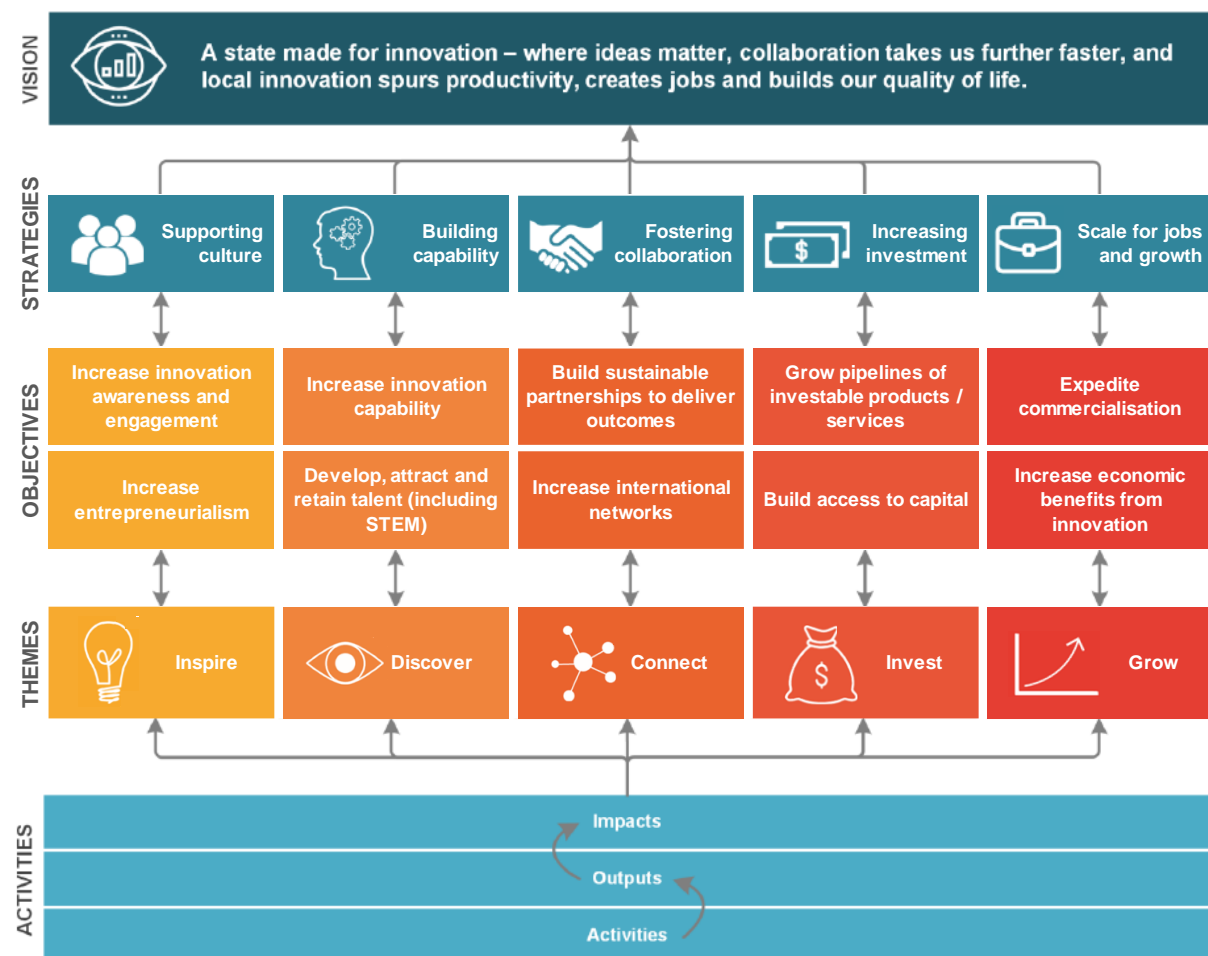
### 1.1.2 AQ framework

The recommendations in the Lerner report formed the basis of the Policy Framework for AQ.

AQ is a whole-of-government initiative designed to impact all aspects of Queensland’s innovation system, ranging from inspiring Queenslanders to innovate, enabling the discovery of new breakthroughs and connecting innovators across boundaries, to promoting investment in Queensland ideas and supporting local companies to grow. AQ contributes to the central theme of the Queensland Government’s economic growth agenda to help create real and sustainable jobs and benefit Queensland’s communities.

The AQ Framework illustrates how the program and activities, themes, objectives, strategies, and overarching vision are interrelated (Figure 1.1).

Figure 1.1 AQ framework



Source: Queensland Government Advance Queensland Evaluation Framework v3 July 2018

### 1.1.3 Vision

The AQ vision positions Queensland as a state made for innovation, creating jobs both now and for the future. It seeks to empower entrepreneurs, innovators and researchers by supporting their ideas and translating these ideas into commercial success and social benefit. The right environment for businesses to thrive is paramount to the creation of jobs in the present and for the future. AQ strives to foster an innovative system to realise this vision.

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### 1.1.4 Strategies and objectives

Five key strategies were developed to realise the AQ vision for Queensland. Corresponding to each of the five strategies are two objectives that guide the design and implementation of the programs and activities (Table 1.1).

The strategies were specifically developed to target areas of development in Queensland's innovation ecosystem in line with recommendations in the Lerner report. By targeting the innovation ecosystem's weaknesses, the Queensland Government seeks to address these issues to enable the realisation of economic and social benefit which would not have otherwise occurred.

Table 1.1 Advance Queensland strategies and objectives

Lerner recommendations	Strategy	Objective	Description
Encourage and implement widespread entrepreneurial education	Supporting culture – Engaging the community in innovation, inspiring current and future generation to be creative, develop ideas, work together and identify innovation potential	Increase innovation awareness and engagement	Increase Queensland's reputation as a knowledge economy, and Queenslanders awareness and engagement in innovation, including science, research, technology, business and startup activity
Enhance the skills of Local Entrepreneurs		Increase entrepreneurialism	Building Queensland's culture of entrepreneurialism, and clusters of entrepreneurial activity
Encourage and implement widespread entrepreneurial education	Building capability – Maintaining a strong research base to support entrepreneurship, business commercialisation, creativity and the creation and update of new technologies; increase the update and level of STEM skills in the community	Increase innovation capability	Initiatives that specifically target improving research capability and business and industry skills for undertaking innovation activity
Enhance the skills of Local Entrepreneurs		Develop, attract and retain talented people (including STEM skills)	Initiatives that increase the uptake and level of individual skills (including STEM), and build the science, research and technology strength that enables increased innovation and entrepreneurial activity
Build bridges between Queensland and the rest of the world	Fostering collaboration – Building networks and partnerships across organisations, sectors and disciplines to help spark creativity and ideas, diffuse existing knowledge, and increase the translation of ideas into outcomes	Build sustainable partnerships to deliver outcomes	Increase the value of local, national and international collaboration between business to research; business to business; and research to research
Enhance the skills of Local Entrepreneurs		Increase local and international networks	Increase the number and scale of business to research; business to business; and research to business connections locally, nationally and globally
Encourage the formation and institutionalisation of formal angel groups	Increase investment – Facilitating access to capital to fund the translation of ideas to outcomes, and assisting innovators to be "investment ready"	Grow pipeline of investable products/ services	Increase business investment in innovation and startup activity, including capital expenditure and external innovation investment (such as research and technology uptake)
Encourage local institutional investors		Build access to capital	Build Queensland's VC industry, increase cross-industry innovation investment and investment from third parties
Create a Matching Fund Investment Program			

Lerner recommendations	Strategy	Objective	Description
Enhance the skills of local entrepreneurs	Scaling for jobs and growth – Empowering businesses and key industries to benefit from accelerating technological disruption and access changing global chains, unlocking the potential of small businesses, high growth firms and regions to innovate and develop	Expedite commercialisation	Increase the level of ideas, research and technologies turned into commercial products, processes or systems
Fund Commercialisation Projects		Increase economic benefits from innovation (including jobs)	Increase employment opportunities; improve profitability and productivity; exports; and stimulate economic growth through increased level of innovation






Source: Queensland Government Advance Queensland Evaluation Framework v3 July 2018

### 1.1.5 Themes

Each of the key strategies and objectives in the previous section are aligned to a particular theme (refer Figure 1.1 for alignment), under which all of the AQ programs and activities are grouped for the purposes of reporting on the progress and performance of the initiative.

The themes and description of each theme is shown in Figure 1.2.

Figure 1.2 AQ themes and description

 Inspire	 Discover	 Connect	 Invest	 Grow
Inspire Queensland to engage with science and technology, to be entrepreneurial and take their ideas to the world.	Discover new solutions to improve everyday lives through programs to foster current and future talent and enable researchers and industry to solve global challenges here in Queensland.	Connect Queenslanders to world-leading local and international innovators through programs that encourage collaboration and build the entrepreneurial ecosystem.	Invest in Queensland innovation through programs to encourage seed funding, venture capital and deal-flow, and foster emerging industries.	Grow the competitiveness of our businesses, industries and regions through programs to accelerate growth and unlock new markets and opportunities.

Source: Queensland Government Advance Queensland Evaluation Framework v3 July 2018

### 1.1.6 Programs and activities

AQ comprises a wide range of programs and activities, which are grouped under and aligned to the aforementioned themes, strategies and objectives. While programs are primarily aligned to one key strategy, programs in most instances support multiple strategies. In addition, these programs are led by multiple government agencies and require collaboration between government, industry, research institutions, not-for-profits and the community.

The programs and activities under AQ are delivered in the following forms:

- **Grants** – funding provided to defined entities for a specific purpose or project under a structured program which includes an application, assessment, decision and funding agreement process.

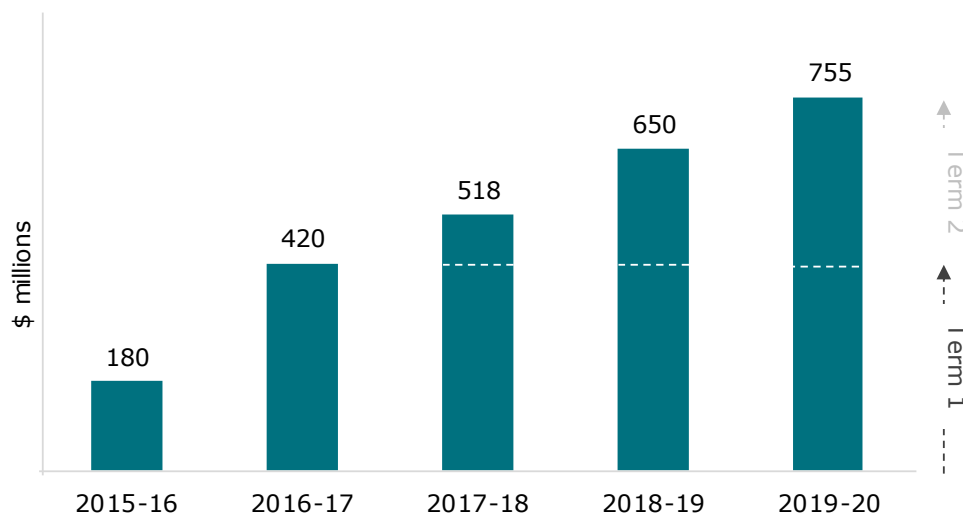
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- **Partnerships** – financial contribution to one-off strategic projects or organisations to support unique opportunities.
- **Competitions** – a contest in which people or companies take part in order to win a defined end-prize.
- **Procurement** – obtaining goods or services in a fair and equitable manner that aligns with AQ strategic goals.
- **Events** – an event for external participants that is funded by and or/supports AQ aims, objectives or programs.
- **Sponsorships** – provision of financial support for an external event or activity.
- **Foundations and administrative activities** – activities to support the delivery and governance of the initiative.

### 1.1.7 Budget

AQ was launched in 2015, with an initial budget of \$180 million. Over time, the funding allocated to AQ has increased, with a subsequent increase in program offerings. The funding profile, split between Term 1 and Term 2 of the Palaszczuk Government is outlined in Chart 1.1.

Chart 1.1 AQ budget over time



Source: DITID

### 1.1.8 Governance

With the increase in budget has come an increase in the number of programs and activities and the government agencies involved in implementation. As at 30 June 2018, nine government agencies were responsible for implementing programs under the AQ initiative.

To ensure that there is effective portfolio and program management, strong governance and clear roles and responsibilities are required. AQ's governance structure is aligned to the Australian National Audit Office's Better Practice Guide for Public Sector Governance which places emphasis on achieving the following for good public sector governance:

- Developing strong leadership at all levels, with a focus on ethical behaviour and continuous improvement.
- Maintaining governance systems and processes that are fit for purpose.
- Optimising performance through planning, engaging with risk, innovation, and performance monitoring, evaluation and review.
- Focusing on openness, transparency and integrity, engaging constructively with stakeholders and promoting accountability through clear reporting on performance and operations.

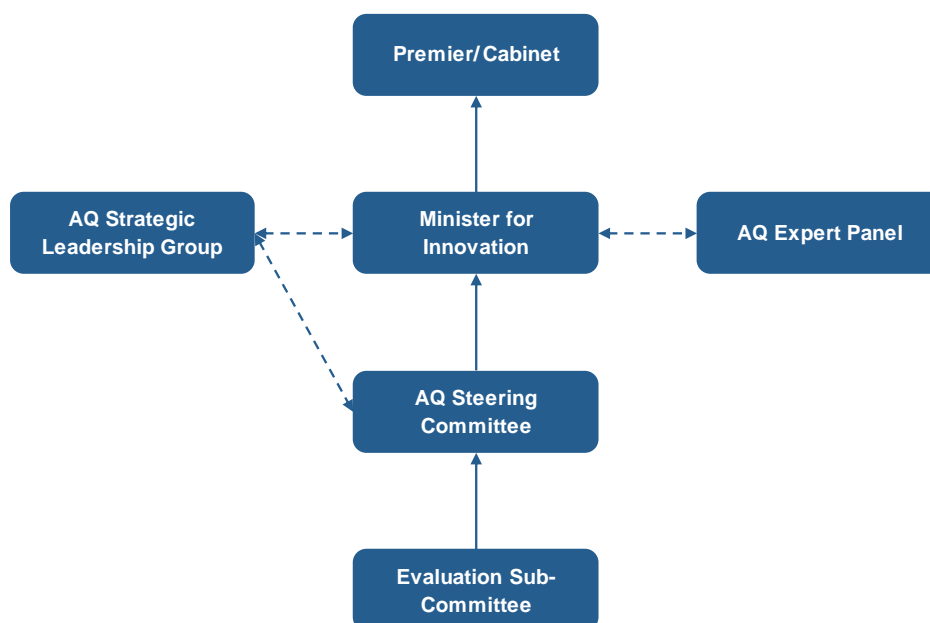
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- Where appropriate, participating in collaborative partnerships to more effectively deliver programs and services, including partnerships outside government.

Governance structures and processes for AQ are reviewed on a regular basis and evolved over time to ensure they remain fit for purpose.

The AQ whole-of-initiative governance structure as at June 2018 is shown in Figure 1.3 and the high-level role statements for each group within the AQ governance structure is detailed in Table 1.2.

Figure 1.3 AQ whole-of-initiative governance structure



Source: Queensland Government Advance Queensland Governance Framework June 2018

Table 1.2 Roles and responsibilities for AQ governance groups

Level	Group name and organisational arrangements	Role statement
Strategic	AQ Strategic Leadership Group <ul style="list-style-type: none"> <li>• Chair: Minister for Innovation and Tourism Industry Development and Minister for Cross River Rail</li> <li>• Deputy-Chair: Director-General, DITID</li> <li>• Members: Directors-General of implementing agencies</li> </ul>	Provides strategic leadership, sets the direction and is the key strategic decision making body for the AQ initiative.
Advice	AQ Expert Panel <ul style="list-style-type: none"> <li>• Chair: Minister for Innovation and Tourism Industry Development and Minister for Cross River Rail</li> <li>• Members: Queensland Chief Scientist and Independent experts</li> </ul>	Provides high-level independent advice to government on AQ.



Level	Group name and organisational arrangements	Role statement
Approval	<p>AQ Steering Committee</p> <ul style="list-style-type: none"> <li>Chair: Director General of DITID</li> <li>Deputy-Chair: Deputy Director-General, Innovation DITID</li> <li>Members: Deputy Directors-General of implementing agencies</li> </ul>	Provides oversight and is the operational decision making body for AQ.
Oversight	<p>Evaluation Sub-Committee</p> <ul style="list-style-type: none"> <li>Chair: Executive Director, Innovation Governance and Strategy, DITID</li> <li>Members: Senior officers from implementing agencies</li> </ul>	Provides oversight of evaluation activities.
Coordination	<p>AQ Implementation Unit Established within Innovation Division, DITID</p>	<p>Provides whole-of-initiative coordination through:</p> <ul style="list-style-type: none"> <li>Management strategies and guidance material</li> <li>Maintenance and provision of key program information and data</li> </ul>
Implementation	<p>Implementing agencies and program managers includes:</p> <ul style="list-style-type: none"> <li>Department of Agriculture and Fisheries (DAF)</li> <li>Department of Education (DET)</li> <li>Department of Employment, Small Business and Training (DESBT)</li> <li>Department of Innovation and Tourism Industry Development (DITID) <ul style="list-style-type: none"> <li>Office of the Queensland Chief Entrepreneur (OQCE)</li> </ul> </li> <li>Department of Environment and Science <ul style="list-style-type: none"> <li>Office of the Queensland Chief Scientist (OQCS)</li> </ul> </li> <li>Department of State Development Manufacturing, Infrastructure and Planning (DSDMIP)</li> <li>Department of the Premier and Cabinet (DPC)</li> <li>Queensland Health (QH)</li> <li>Queensland Treasury (QT)</li> </ul>	Deliver and report on AQ programs and activities

Source: Queensland Government Advance Queensland Governance Framework June 2018

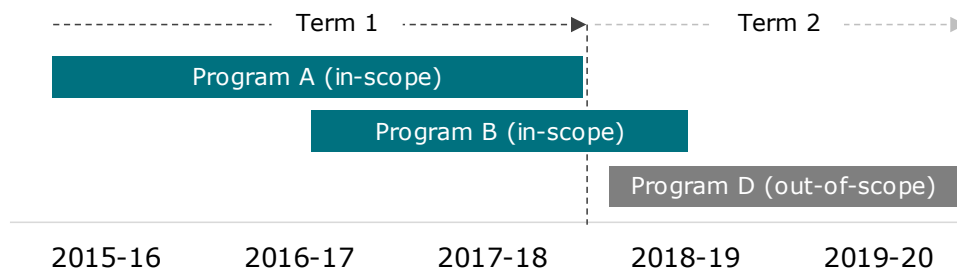
## 1.2 Purpose and scope of the Evaluation

Deloitte Access Economics was engaged by DITID to undertake the first macro-level evaluation of AQ (Term 1 activities). The Evaluation assesses:

- Key achievements and benefits of AQ to date, including outputs and intermediate outcomes
- Extent to which AQ has met the needs of and been adopted by key innovation system participants, as well as key demographics such as female, regional and Indigenous entrepreneurs
- Delivery against AQ strategies and objectives.

The Evaluation was conducted at a whole-of-initiative level and took into account all programs and activities in Term 1, between 2015-16 and 2017-18. An illustration of what programs would be considered in-scope and out-of-scope is provided in Figure 1.4. For the full list of programs which are considered in-scope and out-of-scope, see Appendix D. Out-of-scope programs from Term 2 are also identified in Appendix D.

Figure 1.4 AQ programs and activities over Term 1 and Term 2



Note: Only quantitative data up to and including 30 June 2018 (end of Term 1) was used in the analysis for the Evaluation. However, the qualitative data (views provided during stakeholder consultations) may include views of the whole AQ program as stakeholders are unlikely to have differentiated between Term 1 and Term 2

The Evaluation consists of three types of evaluations:

- **A process evaluation** that investigates the extent to which AQ has been implemented as intended, has successfully reached the target audience and the extent to which the governance has supported the implementation of the initiative.
- **An effectiveness evaluation** that investigates the extent to which AQ is responsible for a particular outcome or outcomes.
- **An efficiency evaluation** that investigates the extent to which AQ is delivered at the lowest possible cost, to the areas of greatest need, and continues to improve over time by finding better or lower cost ways to deliver outcomes.

### 1.3 Overview of the evaluation methodology

The findings of the Evaluation are based on triangulation of various sources of data, including program data provided by AQ implementing agencies, survey responses from AQ recipients, consultations with AQ implementing agencies and subject matter experts, and analysis conducted and provided by QUT (Table 1.3). Consultations were undertaken with central program stakeholders (members of the AQ Steering Committee and the AQ Evaluation Sub-Committee), program leaders (program managers and directors in implementing agencies), and subject matter experts (members of AQ Expert Panel, members of the Aboriginal and Torres Strait Islander Business and Innovation Reference Group, and other stakeholders nominated by the Office of Queensland Chief Entrepreneur). Case studies have been used to further illustrate the findings.

Table 1.3 Data sources

Source of data	Details
Program documents and data	Documents that help inform the Evaluation include AQ whole-of-initiative quarterly reports, program overviews, the AQ Organising Framework, AQ Evaluation Framework and AQ Policy Framework. Program data provided by DITID included performance and implementation data, as well as actual and forecast jobs by AQ program.
Semi-structured interviews	23 interviews have been conducted with central program stakeholders, program leaders, AQ Expert Panel and other subject matter experts. Guiding questions that have been used in these interviews are provided in Appendix B.
Online survey	229 AQ participants have provided responses to the survey. Details on the demographics of respondents and survey questions are provided in Appendix C.
Desktop research	Desktop research has been conducted with relevant publicly available information and data incorporated in the Evaluation. Appropriate references are included throughout the Evaluation.
QUT Longitudinal Australian Business Integrated Intelligence (LABii) data analysis	QUT analysis of AQ recipients provided in the AQ Program Analysis – Powered by the LABii Queensland Database v.2.0.

Source: Deloitte Access Economics

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## 1.4 Limitations

As the first macro-level evaluation of AQ and given the ever-changing nature of innovation, there were some challenges faced in the evaluation. The following limitations should be noted and considered in the planning of future macro-level evaluations.

- The Evaluation focuses on the impacts of AQ at the whole-of-initiative level and takes into account all AQ programs in Term 1. As such, results reported in the Evaluation (e.g. leverage ratio, survey results) are overall indicators of AQ and does not account for specific achievements of programs. It is acknowledged that results could differ across programs, and therefore results reported in the Evaluation may not reflect achievements of individual programs.
- While the scope of the Evaluation is restricted to Term 1 programs and activities, the Evaluation acknowledges that a clear cut separation of Term 1 and Term 2 is not always practicable. Some Term 1 programs were continued in Term 2 and consequently, responses provided by implementing agencies and program participants may reflect outcomes of the program in both Term 1 and Term 2.
- AQ programs are grouped under 5 themes. While programs in each theme primarily align to a strategy (Figure 1.1), outcomes of these programs may also contribute to other strategies. To capture such interlinkages, survey questions were not designed to be different across programs and themes. Similarly, survey results were not disaggregated by programs and themes. To mitigate potential negative bias due to survey questions being inappropriate to participants of certain programs, an 'NA' option was provided in the survey. Survey respondents could select this option if the question was irrelevant to program/s they were involved in.
- The survey results reported in the Evaluation are based on responses of 229 AQ participants. Based on the number of surveys distributed by implementing agencies and Deloitte, it is roughly estimated that the survey was sent out to 3,600 AQ participants, which implies that the response rate is approximately 6.4%. Further details on sample size by participant's demographics and programs are provided in Appendix C. Due to the small sample size, survey results are not disaggregated into themes. Additionally, the survey was only distributed to participants of certain programs. While this helped to avoid over-burdening participants who had participated in other surveys, the sample may not be representative of all AQ participants. Survey results, therefore, should be interpreted with these limitations in mind.
- However, while there are some limitations which should be considered when interpreting the key findings, they do not undermine the credibility of the evaluation as a whole. For example, while the sample size of the survey limited the ability to disaggregate results further, these survey findings are suitable for use at an overall level in the report alongside the multiple other data points used in this evaluation (such as stakeholder interviews, desktop research and QUT data modelling findings). These challenges are not surprising for system-level initiatives where multiple confounding factors will always be present and the levels of business stakeholder engagement in surveys and the like is always challenging.
- The analysis in the Evaluation is limited by data availability. In particular,
  - The unavailability of data related to other similar innovation programs has limited the analysis to benchmark and assess technical efficiency of AQ.
  - Business data at the business level (i.e. the BLADE and LABii dataset) were not available to Deloitte Access Economics. Consequently, Deloitte Access Economics was not able to conduct econometric tests to examine the causal relationship between participating in AQ and business performance indicators. Nevertheless, the access to the LABii dataset was available to QUT. References to QUT analysis have been included in the Evaluation where appropriate.
  - Some macro-level indicators identified in the AQ Evaluation Framework have not been reported due to the unavailability of data. Details on indicators that are not reported in the Evaluation are provided in Chapter 3.

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- The issue of data challenges and the need to improve innovation indicators and key metrics are currently the focus of a current study by the Australian Government Department of Industry, Innovation and Science.<sup>14</sup> Key findings are expected to be available by the end of 2019 including key gaps, issues and opportunities for improving innovation metrics in Australia. This review could help inform future evaluations of AQ and could help address some of the data challenges that are recognised to exist to better capture innovation outcomes and support decision making.
- As AQ seeks to improve the Queensland innovation system as a whole, system-level indicators are discussed in this Evaluation. As system-level indicators are impacted by many factors beyond AQ, the Evaluation acknowledges that changes to these indicators may not be attributable to AQ. Nevertheless, they are important indications of shifts in the innovation ecosystem that AQ aims to influence.
- Finally, as the first Macro Level Evaluation, it is recognised that it takes time for the full extent of impacts on innovation and the economy to occur. As such, a key focus of this Evaluation is on interim outcomes and impacts based on current data availability. While this is an inherent limitation of this Evaluation, this will continue to improve over time as the outcomes and impacts flow through to the economy and better support the ability to measure and directly attribute of the whole-of-economy impacts of AQ including innovation. As such these limitations should continue to lessen over time and this underscores the importance of future macro-level evaluations to review and update the evaluation findings presented in this report. This also highlights the importance of continuing to capture program data to support future evaluations and build a longer time series of data for evaluation purposes.

## 1.5 Structure of this report

This report details the findings from the Evaluation and the implications for the development of AQ. The remainder of this report is structured as follows:

- **Chapter 2** – details the findings of the process evaluation and discusses the extent to which AQ has been delivered as planned.
- **Chapter 3** – details the findings of the effectiveness evaluation and discusses the extent to which AQ has achieved what it sets out to achieve.
- **Chapter 4** – details the findings of the efficiency evaluation and discusses the extent to which AQ has been delivered efficiently.
- **Chapter 5** – provides a summary of key findings and considerations for the future of AQ.
- **Appendix A** – details the methodology of the Evaluation, including the program logic, indicator framework, and data collection, sources and analysis.
- **Appendix B** – lists the interview questions used in the semi-structured interviews with central program stakeholders, program leaders, and AQ expert panel and other external stakeholders.
- **Appendix C** – provides survey sample demographics and lists the survey questions posed to AQ participants and other external stakeholders.
- **Appendix D** – lists the AQ programs which are in-scope and out-of-scope for the Evaluation.
- **Appendix E** – provides a comparative analysis between Queensland and Australia.

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<sup>14</sup> Department of Industry, Innovation and Science, *Innovation Metrics Review: Have Your Say* (2019) <<https://www.industry.gov.au/news-media/innovation-metrics-review-have-your-say>>.

# 2 Has AQ been delivered as planned?

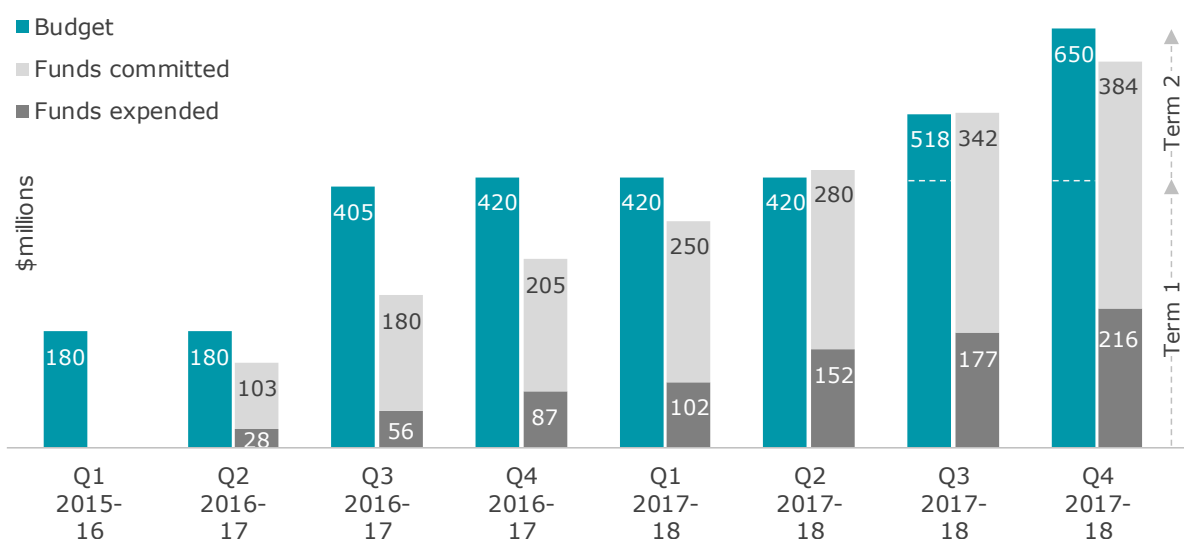
## 2.1 To what extent has AQ and associated programs been delivered as intended or planned?

### Key finding 1

- AQ has been largely delivered as intended. Allocation of funding is on track. The majority of program leaders and central program stakeholders agree that programs have been delivered as planned.
- Some central program stakeholders and program leaders suggested that programs had evolved over time in alignment to AQ strategies and the needs of participants.

The Evaluation found that AQ has been largely delivered as intended. The funds expended and committed across all AQ initiatives have increased over time (see Chart 2.1). As of 30 June 2018, \$216 million of funds were expended.

Chart 2.1 AQ funds expended, funds committed and budgeted



Source: DITID

Note: \$420 million of funds budgeted in Term 1 is the focus of the Evaluation. The budget is the amount of funds that have been allocated and provided to AQ by QT. The funds committed is how much funding has been contractually committed but not yet expended.

The majority of the program leaders and central program stakeholders agreed that programs were largely delivered as intended and implemented as planned. They agreed that programs were tracking well in alignment to program objectives and delivered in a cost-effective manner. Factors that enabled successful implementation for various programs included being attractive to the target audience, delivering programs under budget and catering to participant needs.

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Some program leaders and central program stakeholders reported that programs were adjusted and incrementally improved. Such adjustments were made to incorporate learnings on project delivery, respond to participants' needs, and improve alignment to AQ strategies. This aligns with the "measure, evaluate, revise" principle in the Lerner report which suggests to try a variety of approaches and understand that some approaches will work and others will not.

*"Projects have evolved over time to incorporate learnings on project delivery, respond to stakeholder needs and align projects with AQ objectives"*

*~AQ central program stakeholder*

Some central program stakeholders and program leaders also noted that while programs were largely being implemented as planned, it is too early to determine if the outcomes achieved are aligned to the initial plan. In certain cases, this was highlighted as difficult to measure and provides an opportunity for more precise tracking to be implemented.

It was also difficult from a central program stakeholder's perspective to be certain of how programs were tracking and if they were aligned with the original plans. Some stakeholders were unsure of whether programs were on track as they felt that this information was not readily available and others mentioned that they were not aware of the original plans of programs.

Improvements in information sharing between all stakeholders would be beneficial and allow for visibility of how programs continue to track against intended plans.

## 2.2 To what extent have target groups of AQ been adequately reached?

### Key finding 2

- The largest intended target group for AQ was startups and entrepreneurs. Correspondingly, startups, entrepreneurs and businesses were the largest participant type to receive AQ funding.
- In addition, the reach of AQ has increased over time, with a growing number of applicants, participants and followers on social media.

The recommendations put forward in the Lerner Report focus on supporting three main target groups: startups, entrepreneurs and businesses. Specifically, growing collaborations and connections for startups and entrepreneurs both locally and internationally, enhancing entrepreneurial skills through education, and also how to support their growth through securing additional sources of funding. Businesses was another main focus put forward through the recommendation to fund commercialisation projects and creating a matching fund investment program.<sup>15</sup> Thus, investigating whether AQ had adequately reached these suggested target groups was a focus in the Evaluation.

It was found that the overall reach of AQ programs has grown over time, with over 11,000 applications received for grant programs and other opportunities as of 30 June 2018. As a result of the growing applications to AQ programs, many programs became over-subscribed and some applicants were not able to attend events and/or participate in programs. Some stakeholders reported that increased interest to their programs were a result of word-of-mouth and further marketing activities were not required.

Another indicator of increase interest in AQ programs is the number of public enquiries received over time. In September 2016, 316 public enquiries received. This grew to 9,800 public enquiries by 30 June 2018.

It was also found that the awareness of the AQ brand had grown over time, becoming more predominant and easily recognised. There were over 13,000 Facebook and Twitter followers in June 2018, which was 8 times higher than in January 2016.

*"Majority of our events are over-subscribed due to high interest" ~Program manager*

AQ has had a focus on startups as drivers for Queensland's economic growth. This is largely because the startup sector was identified as being a real opportunity for growth in Queensland with potential to contribute further to the economy.<sup>16</sup> The focus on startups is reflected in the types of AQ participants as shown in Chart 2.2, where 85% of AQ participants are classified as business, startup or entrepreneurs.

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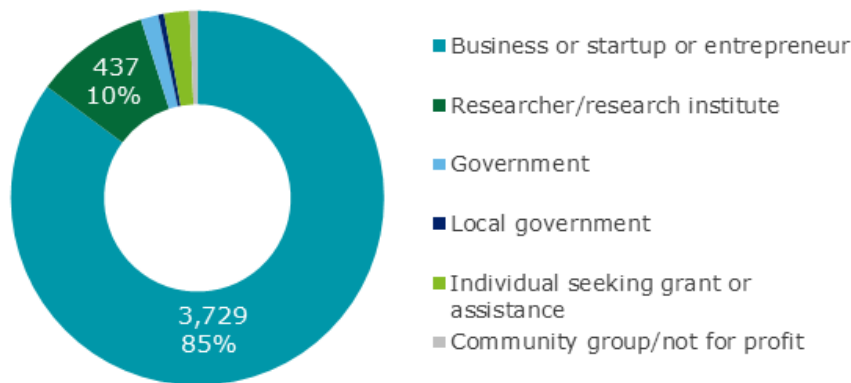
<sup>15</sup> Lerner et al., *Queensland's innovation ecosystem and recommendations for future action* (2014)

<sup>16</sup> Queensland Government, *Advance Queensland Policy Framework* (2018)



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Chart 2.2 Number and percentage of AQ participants by participant type (as at 30 June 2018)



Note: The above participant category is based on the Queensland Government Investment Portal's categorisation of 'Applicant type'.

The approach to identifying and approaching the above stakeholder groups differed across implementing agencies which was related to the variation in stakeholders. For instance, a workshop aimed at PhD students to help improve the process between ideation and commercialisation would use specific mailing list from universities. However, a larger event such as a festival would be more broadly advertised and may be open to a wider audience across several stakeholder groups. While the key stakeholders were identified and approached in different ways, startups and entrepreneurs were a target stakeholder group across most AQ programs and correspondingly businesses, startups and entrepreneurs formed the largest group of AQ participants.

*"...large focus on startups and entrepreneurs. May need more distributed focus going forward" ~AQ central program stakeholder*

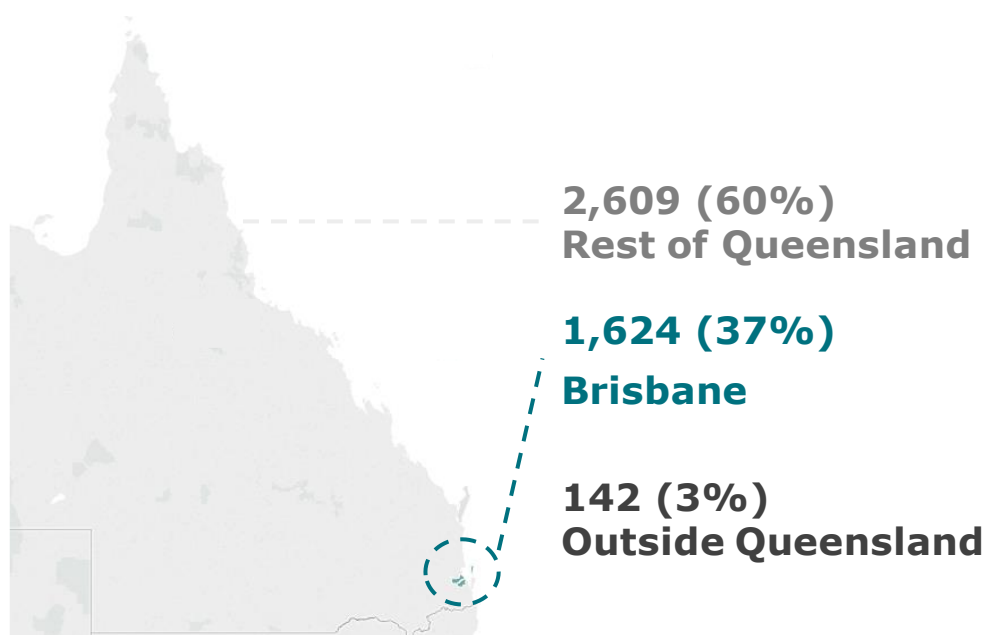
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Diversity and inclusion are important values to Queenslanders and a priority for the Queensland Government. Not only is it important from a values standpoint, but it has been found that workforce diversity, which includes gender and racial equity, leads to an increase in productivity for the economy.<sup>17</sup> Thus, AQ aims to provide fair opportunity to improve the capability of people who reside in regional Queensland, and women and Aboriginal and Torres Strait Islanders. As such, the Evaluation has considered to what extent have target groups (regional, female, and Aboriginal and Torres Strait Islander Queenslanders) been adequately reached by AQ.

### 2.2.2 To what extent has AQ reached regional Queenslanders?

Based on program data as of 30 June 2018, 4,233 AQ participants were located in Queensland. 2,609 participants were located outside of Brisbane but within Queensland. The proportion of AQ participants primarily located in Brisbane, rest of Queensland and outside of Queensland, as of 30 June 2018, is illustrated in Figure 2.1.

Figure 2.1 Proportion of AQ participants who are primarily located in Brisbane, rest of Queensland and outside of Queensland, as of 30 June 2018



Source: DITID, Deloitte Access Economics

19 Term 1 programs had significant regional components. A list of these programs, the themes that they fit under and their implementing agencies are provided in Table 2.1.

Table 2.1 Programs that focus on regional Queenslanders or have significant regional components

Theme	Program(s)	Agency
Inspire	Engaging Queenslanders in Science Strategy and Activities	DES
	World Science Festival	
	Office of the Queensland Chief Entrepreneur	DITID

<sup>17</sup> Herring & Henderson, *Diversity in Organizations: a critical examination* (2015); Saxena, *Workforce Diversity: A Key to Improve Productivity* (2014)  
<https://www.sciencedirect.com/science/article/pii/S2212567114001786>

Theme	Program(s)	Agency
	Queensland Startup Events and Activities Fund	
Discover	STEM.I.AM	DITID
Connect	Advancing Regional Innovation Program	DITID
	Regional Network Fund	
	Hot DesQ	DITID
	Cairns Innovation Centre	QT
Invest	Regional Business Angels Support Program	DITID
	Ignite Ideas	
Grow	Advancing Small Business Queensland Strategy and 5 associated grants programs	DESBT
	Small Business Regional and Industry Engagement	
	Growing Queensland's Companies	DITID

Source: DITID

Program data as at 30 June 2018 indicated that the proportion of participants from regional Queensland was 60% and the proportion of funds committed to regional participants was 37%. This highlights that the regional reach is high with a large number of participants with relatively smaller grants when compared with Brisbane.

### 2.2.3 To what extent has AQ reached female Queenslanders?

The Women's Academic Fund (WAF) and Women in Stem Prize were the Term 1 programs that specifically catered to women of the innovation ecosystem, by requiring applicants' gender to be female to access funding. Promoting this specific criteria was designed to attract and reach female Queenslanders.

The WAF program was implemented by the former Department of Science, Information, Technology and Innovation and attracted significant demand from female researchers. An evaluation by DES, in April 2018, found that WAF provided several benefits to female primary researchers. Recommendations from the evaluation were used to inform the development and evolution of WAF, which was revamped as a new program called Women's Research Assistance Program (WRAP). WRAP is delivered in Term 2 of AQ, along with the Female Founders' Program which caters for female participants. Details on the WAF program are provided in the case study on the following page.

When excluding programs that specifically catered to women, female participants accounted for 45% of individual participants and 35% of the funding committed to individual participants. When programs that specifically catered to women are included, female participants accounted for 69% of individual participants. This indicates that females have been reached at least as equally as males and programs that specifically catered to women play an important role in improving AQ's reach to female Queenslanders. However, the data also indicates that on average, a female participants received less funding than a male participant. Further investigation is required into why a higher proportion of participants are female and yet in total receiving less funding committed compared to male counterparts.

## **Case study: Women’s Academic Fund (August 2015 – June 2017)**

### **Implementing agency: DES**

#### **Background**

Female researchers are under-represented in senior leadership positions in research. Across STEM disciplines, women make up 50% of junior academics, but only 21% of senior professors. This results in a drain of knowledge, capability and reduces Australia’s scientific productivity. While there are many issues that drive these outcomes, a key factor is family-related career interruptions within a highly competitive environment. To address this issue, the WAF was introduced to provide funding to female primary researchers and organisations that employ female primary researchers. The WAF consists of three components of funding:

- Maternity Funding – organisations could access grants up to \$25,000 (or \$500 per week) to maintain research progress while a primary researcher is on maternity leave or when she returns from maternity leave. The key objective was to increase likelihood that female primary researchers would remain in research and in time gain more senior levels.
- Carer Funding – female researchers could access grants up to \$1,000 twice a year to cover out-of-pocket child care or respite care expenses while presenting at a national or international conference or sitting on a professional research committee
- Women’s Lecture Funding – organisations could access grants of up to \$2,000 to arrange conferences, lectures or presentations held within Queensland, highlighting the work of leading female Queensland researchers.

#### **Achievements of the program**

There were many applications to the three different components of funding:

- Maternity Funding – 133 applications received, 124 (93%) were approved.
- Carer Funding – 70 applications received, 48 (69%) were approved.
- Women’s Lecture Funding – 20 applications were received, 8 (40%) were approved.

DES undertook an evaluation of WAF in April 2018, which found that the WAF program largely supported women in progressing in their research careers. This improves STEM capability in Queensland by enabling women to potentially reach more senior leadership positions and contribute to the Queensland economy. Examples of survey responses during the evaluation include:

- Maternity Funding (68 survey responses were received)
  - 63 (93%) respondents reported that WAF helped avoid detriment to their research careers
  - 48 (71%) respondents reported that without WAF, their research would have either discontinued or experienced critical delay
  - 41 (60%) respondents reported that WAF helped make the decision easier to take maternity leave
- Carer Funding (participant reports, research institution and the Office for Women were consulted)
  - Overall, the Carer Funding component was viewed positively by all participants. Further, the funding has helped female researchers present at or attend conferences that they may not have been able to without such financial assistance.
- Women’s Lecture Funding
  - Three participants said that the event could not have been held without the funding
  - Small number of grant awardees was due to low awareness that the component exists. Thus, this component requires better publicity in future AQ programs.

#### **Next steps**

Based on learnings from the WAF evaluation, WRAP has been launched in 2018-19 to better support female researchers, for example by including other types and periods of extended leave, creating a flexible fund where researchers design the assistance to suit her circumstances and needs.

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#### 2.2.4 To what extent has AQ reached Indigenous Queenslanders?

Based on program data as at 30 June 2018, 8.7% of AQ individual participants identified themselves as Aboriginal and/or Torres Strait Islanders and 2.4% of funding committed was provided to Aboriginal and/or Torres Strait Islanders individual participants. It should be noted that Indigeneity has not been routinely collected from participants across all AQ programs. Improved data collection would support a better assessment of the reach of AQ to Aboriginal and/or Torres Strait Islanders.

Three Term 1 programs had significant Aboriginal and/or Torres Strait Islanders components, all implemented by DITID (see Table 2.2). A list of these programs, the themes that they fit under and their implementing agencies are provided in Table 2.2. The Evaluation understands the Deadly Innovation strategy is to be implemented by DITID in Term 2 to provide a greater focus on engagement and outcomes for Aboriginal and Torres Strait Islanders.

Table 2.2 AQ programs that focus on Indigenous Queenslanders

Theme	Program(s)	Agency
Discover	Aboriginal and Torres Strait Islander PhD Scholarships	DITID
	Aboriginal and Torres Strait Islander Research Fellowships	
	STEM.I.AM	

Source: DITID

The case study on the STEM.I.AM Program on the following page provides an example of how Indigenous Queenslanders were engaged. In addition, the case study also highlights the AQ program's key objectives for the stakeholder group, outputs and resulting outcomes.

**Case study: AQ STEM.I.AM Program (2016 – 2019)**  
**Implementing agency: DITID**

**Background**

The STEM.I.AM program was developed to address the low levels of Aboriginal and Torres Strait Islander students enrolling in Science Technology Engineering and Mathematics (STEM) related courses at Queensland universities (1.5% of enrolments in 2016). The STEM.I.AM program was developed with the objectives to:

1. Increase the number of Aboriginal and Torres Strait Islander students choosing to study in a STEM field at University.
2. Raise engagement in STEM subjects for Aboriginal and Torres Strait Islander school students in Year 5 through to Year 12 through their involvement in coding and robotics activities.
3. Increase community support for and participation in coding and robotics activities.
4. Build capability in teachers of Aboriginal and Torres Strait Islander students to deliver captivating coding and robotics activities in classes.
5. Shine a spotlight on the achievements of young Aboriginal and Torres Strait Islanders in STEM to inspire self-belief, foster inclusion and encourage Aboriginal and Torres Strait Islander students to go to school, stay in school, and engage with STEM through the fun of coding and robotics.
6. Develop high quality, long-term corporate partnerships that can provide additional support and pathways for Aboriginal and Torres Strait Islander student participation in STEM. This support focuses on opportunities that create a positive difference to help increase uptake of STEM university courses and careers by Aboriginal and Torres Strait Islanders.

**Achievements of the program**

The STEM.I.AM program established and delivered a number of activities including coding and robotics workshops, competitions, professional development, scholarships and an annual roadshow. Delivering these activities resulted in:

- An increased number of registrations for STEM activities including coding and robotics workshops, clubs and competitions. For example:
  - Over 1,200 young Aboriginal and Torres Strait Islanders attended activities at Indigenous Knowledge Centres and public libraries
  - 3 Indigenous school students in a team of 6 from Cooktown State School participated in Robogames 2017, an international event in San Francisco. They designed, built and coded six robots using new technologies, including 3D printers and placed 4<sup>th</sup> overall.
  - Logan public libraries delivered 94 workshops to 934 Aboriginal and Torres Strait Islanders. Delivery at 3 state primary schools included workshops for teachers, coaching for students with enhanced coding skills and presentations to community Elders.
  - 155 school students attended 8 coding and robotics workshops during 2 roadshows at Wujual Wujal (in November 2017) and Aurukun (in March 2018). The roadshows were led by an Indigenous-owned and operated digital literacy training provider, enVizion Group Inc, that upskilled teachers to enable future workshop delivery.
- An increased number Aboriginal and Torres Strait Islander students enrolling STEM university courses (1.7% in 2017, which is a 0.2% increase from the previous year since the STEM.I.AM program launched).

An evaluation by Griffith University found that Indigenous female participants in their survey commented that they enjoyed maths and science, specifically experimenting on a plant (joining science with nature). They also enjoyed seeing their peers engaging in program activities.

### 2.3 To what extent have governance arrangements supported the implementation of the initiative?

#### Key finding 3

- Most stakeholders reported that governance had improved over time, particularly in terms of the strategic direction of AQ becoming clearer.
- However, improvements could be made around some aspects of governance relating to structures and roles and responsibilities.

Stakeholders noted that there has been a marked improvement in the governance structure over time. The changes have resulted in mainly a 3-level hierarchy, consisting of the AQ Strategic Leadership Group, AQ Steering Committee and AQ Implementing Agencies (see Figure 1.3).

Given the level of oversight needed for an initiative of this size, some central program stakeholders considered the change in the governance structure was necessary and important and that it has helped to support program implementation. It was also noted that the Minister chairing the AQ Strategic Leadership Group has helped to promote the levels of interest and engagement of government agencies. A further benefit from the improved governance has been the focus on continuous improvement and program evaluation. This focus is in line with the “measure, evaluate, revise” principle in the Lerner report.

*“The governance has been a big focus and recently become increasingly effective... Now things are running quite well, evaluations are getting off the ground”*

*~ AQ central program stakeholder*

Nevertheless, some program leaders and central program stakeholders reported that improvements could be made around some aspects of governance relating to structure and roles and responsibilities. This was largely attributed to the restricted agility and flexibility of a formal structure that was not considered conducive to collaboration by some stakeholders consulted. Further, it was felt that understanding of the roles and responsibility for each level of governance as well as the associated objectives of the regular meetings could be improved. This comment was more popular among program leaders than central program stakeholders.

Program leaders and central program stakeholders also emphasised the importance of a timely and transparent approach to communication and information sharing through the different governance levels. While the reporting arrangements under the current governance structure were highlighted as being simple, clear and consistent, some stakeholders found it to be repetitive and time consuming.

Furthermore, although the measures included in the reporting template are consistent, they are not always relevant to the programs. For example, some program leaders commented that job creation is not always the primary objective of their programs. As such, there is an opportunity for reporting to be more tailored to programs so that outcomes that are the objectives of programs are captured and reported.

There is also further opportunity to provide feedback on reported data as program leaders noted that they were not always clear how the data was used. There is an opportunity for data and information to be shared with implementing agencies so that program leaders could understand how the information they reported is related to the strategic direction of AQ.

## 2.4 What enablers or barriers to implementation have been identified?

### Key finding 4

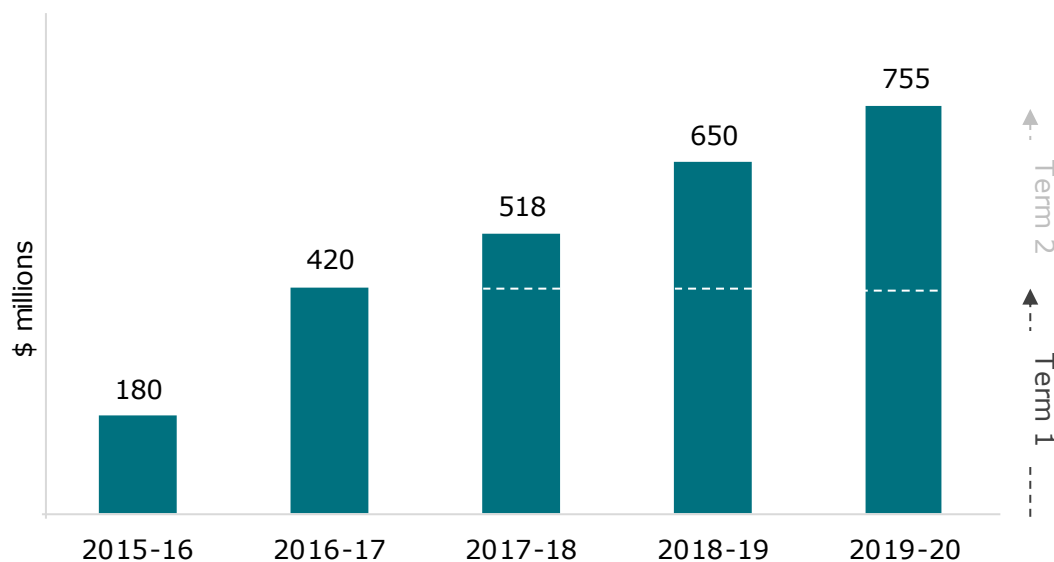
Enablers to implementation included:

- Program leaders and central program stakeholders noted that the AQ brand had helped programs to build awareness among Queensland innovation participants. The AQ website is considered a one-stop shop for participants to find program information and gain support when required. AQ is a priority policy initiative and has strong support from leaders in Government, including funding.
- Programs made use of existing organisational structures and processes that are already in place (e.g. program documents, operational functions, contacts).
- The right people are in the right roles to assist and enable program success.

Stakeholders identified the following enablers that support successful program implementation:

- **Strong AQ brand:** The AQ brand is strong, driven by high awareness and robust participation in programs. The networks formed by satisfied participants of AQ funding also contribute to strengthening the AQ brand. This makes it easy to implement programs, encourage participation and provide participants with relevant and accessible information. Beyond awareness of AQ amongst participants in the Queensland innovation ecosystem, there is also substantial awareness across agencies in Queensland government. AQ as a policy initiative is a priority and has strong support from leaders in Government, including support through funding. Funding for AQ has increased through each budget over time as shown in Chart 2.3.

Chart 2.3 AQ budget over Term 1 and Term 2



Source: DITID

- **Existing organisational structures and processes:** Stakeholders noted the ease of implementation and delivery as a result of program managers being able to leverage existing networks and infrastructure that was already in place. An example includes programs and roadmaps that were already under delivery and were later brought under the AQ banner upon the launch of AQ (e.g. Biofutures Roadmap and Action Plan). These programs had existing resources, such as historical documentation, and operational functions in place that allowed



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continuity of the program once AQ commenced. Consequently, effort could be placed on further program development rather than building the foundation for a new program.

*"...programs were an evolution of the Smart State program. The enabling infrastructure was already in place to help delivery"*

*~AQ program leader*

- **Right people in the right roles:** Stakeholders largely agreed that the AQ Implementation Unit are an easy team to work with. Moreover, the key personnel are willing to engage, to seek advice and gain insights through consultations by ensuring they are easily accessible and available to stakeholders. This helps in supporting collaboration and effective communication across multiple agencies.

### Key finding 5

Barriers to implementation include:

- Program funding cycles made some program planning challenging.
- Reporting requirements and processes.
- Lack of visibility of how data and information is used.

Stakeholder consultations identified four main barriers to implementation:

- **Program funding cycles made some program planning challenging:** As an evolving program AQ has needed to continually seek new funding for programs. Program leaders noted that this uncertainty due to the nature of program funding cycles made forward planning for programs challenging around both staff and resources. This might hinder the scale up of programs and implementing agencies when delivering the programs. This barrier is noted in the Lerner report.
- **Reporting requirements and processes:** As discussed in Section 2.3, there was a mixed response towards the adequacy of the governance structures that are in place for the programs. This identified scope for improvement through clearer roles and delegations and more streamlined processes for reporting for program managers in implementing agencies. Given the size of the investment, there is considerable scrutiny into how funds are distributed. This scrutiny is warranted given the large amount of funding and the use of this funding across various agencies. However, the reporting activities place an administrative burden on agencies. Program leaders and central program stakeholders pointed out that the nature of innovation is such that there is a high failure rate amongst startups and entrepreneurs however the support provided by AQ initiatives remains integral to participants. The intangible nature of these benefits are difficult to capture as part of the current reporting requirements. Stakeholders also noted that it is important for reporting requirements to be flexible so as to capture the important measures pertinent to the focus of the individual programs. Further, where certain programs received funding from various streams (one of them being AQ), stakeholders acknowledged the nebulous nature of reporting 'wins' and determining where exactly accountability lies.
- **Lack of visibility of how data and information is used:** Although AQ is a whole-of-government initiative, stakeholder consultation highlighted that activities are quite often independent rather than a collaborative process. As a result, there are competing responsibilities and accountabilities of AQ across the various implementing agencies. This

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makes it challenging to get a full view of available information. Some stakeholders noted that there is no clear point of contact for different information requirements and also a lack of visibility over how data, evidence and information associated with the different initiatives are used. Central program stakeholders further suggested that information-sharing could be strengthened to further refine the evidence base to track the progress of programs and plan for the next phase of AQ.

*"Reporting template should incorporate the different focuses of different programs. There is a challenge of developing appropriate measures that can be captured by data."*

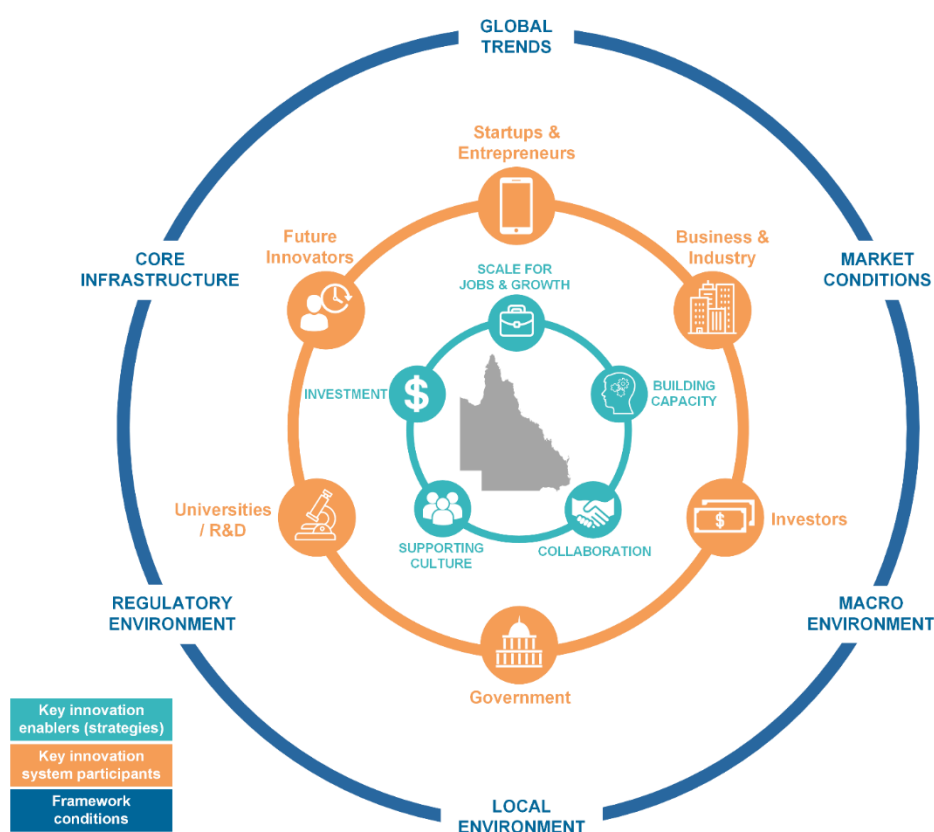
*~AQ implementing agency*

# 3 Has AQ achieved what it set out to achieve?

Innovation takes place in a dynamic and ever-changing system and is exposed to a range of internal and external factors. As noted in the AQ Evaluation Framework, innovation does not occur in isolation.<sup>18</sup> Instead, interactions between different participants are integral to the innovation process as a change in one aspect of a system has flow-on impacts that can either directly or indirectly result in changes in another aspect of the system.

AQ adopted a system-wide approach to building Queensland’s innovation ecosystem and has supported and fostered collaborations between all participants of the innovation system, including researchers, businesses, financial organisations, governments, entrepreneurs, startups, educational institutions, not-for-profit organisations, customers and suppliers. AQ also has enhanced key innovation enablers by supporting an innovation culture, facilitating investments, fostering collaborations, and building capability. The key innovation enablers, system participants and innovation system conditions for Queensland are illustrated in Figure 3.1.

Figure 3.1 Queensland innovation system



Source: Queensland Government – Advance Queensland A whole-of-government policy framework

Overall, the Evaluation found that AQ has supported key innovation system participants and facilitated key innovation enablers. This finding is supported by the survey results, program data,

<sup>18</sup> Queensland Government, *Advance Queensland Evaluation Framework v3* (2018)

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consultations, and system-level indicators. It is important to note that as changes in system-level take time and are influenced by multiple factors, observed change at the system level may not be completely attributable to AQ. However, they are important indications of changes at the system level which AQ is seeking to influence.

The case study below demonstrates how AQ has supported multiple participants of the innovation system across each of the AQ themes and strategies.

### **Case Study: RedEye**

AQ strategies and programs encompass the whole spectrum of the innovation system. This can be illustrated through the RedEye case study.

#### **Startups and entrepreneurs**

RedEye is a Brisbane startup that provides innovative management solutions to businesses in the mining, energy, infrastructure and water industries. RedEye has been associated with a number of AQ programs including: Queensland Startup Events & Activities Fund, Knowledge Transfer Partnerships, Ignite Ideas Fund, and Business Development Fund. Funding from these programs has supported not only RedEye but also other participants of the innovation system.

#### **All Queenslanders and future innovators**

Currently, RedEye employs 88 people across the world from places including Brisbane, Melbourne, Canada, Las Vegas, Denver, Houston, Manila, and New Zealand. Despite the vast number of locations, the most of their staff (72 staff) are in Brisbane. Additionally,

- Redeye has given 18 interns real-world experience at the business in Brisbane.
- 12 recent graduates have secured their first job at RedEye.
- RedEye has retained 80% of their graduate employees. Two of the business's graduates are now in technical leadership roles.

The company is also expecting to significantly increase employment by the end of the year as they expect to enter a phase of exponential growth.

#### **Businesses and industry**

RedEye has developed a number of innovative products. Their solutions, ranging from asset management solutions to drawing and data management solutions, have helped businesses to collect, manage, and share engineering information. The implementation of RedEye's solutions has helped organisations in their digital transformation journey, which ultimately helps to increase productivity.

#### **Investors**

RedEye has already raised over \$10 million and they noted that AQ support is integral to this success. The consultation with RedEye and Energy Innovation Capital (one of RedEye's investors) suggests that AQ has directly facilitated innovators such as RedEye to become investment ready. They noted that the Business Development Fund has encouraged businesses to stay in Queensland and created employment in Queensland.

The rest of this section discusses AQ outcomes and how these outcomes align with AQ strategies, themes, objectives and Lerner recommendations. Where appropriate, outcomes are compared with trends at the national level. Appendix E provides a summary of the comparative analysis.



### 3.1 Supporting culture



People are at the heart of the innovation system. It is people who turn creative ideas into business success stories, drive economic growth, and create new jobs. A strong culture of innovation, characterised by openness to change, positive attitude towards risks, and strong entrepreneurial spirit are key enablers to a flourishing innovation system. To this end, AQ aims to increase awareness and engagement with innovation and promote and increase entrepreneurialism.

This strategy is aligned to the following Lerner recommendations:

- Encourage and implement widespread entrepreneurial education
- Enhance the skills of local entrepreneurs

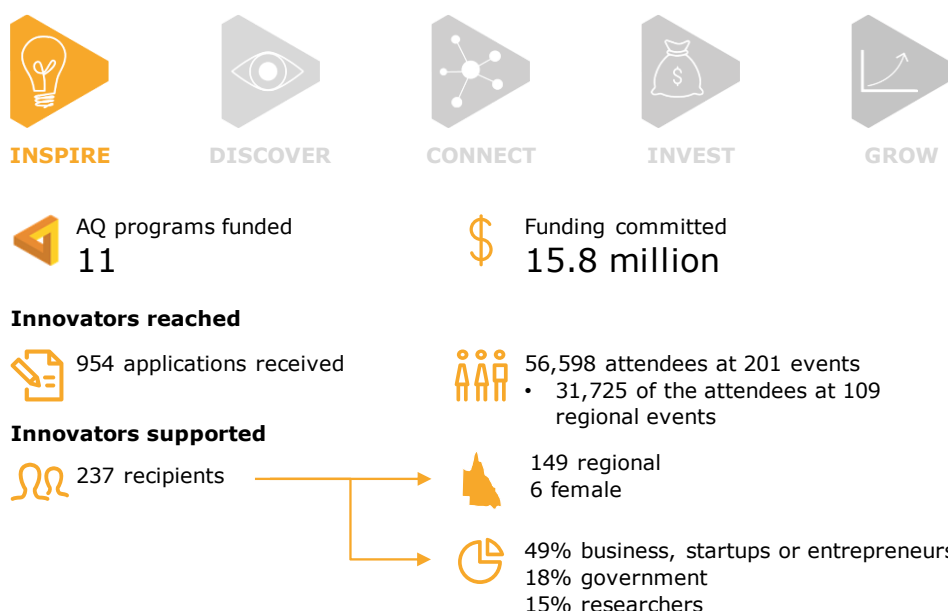
AQ programs and activities under the Inspire theme are directly linked to and contribute to the Supporting Culture strategy (Table 3.1). An overview of key outputs of these programs is illustrated in Figure 3.2.

It should be noted that while programs aligned to the Inspire theme primarily contribute to the Supporting Culture strategy, there are other AQ programs which may have also contributed to supporting Queensland’s innovation culture. Consequently, the effectiveness evaluation of AQ in fostering an innovation culture reflects all relevant AQ programs.

Evidence which suggests that AQ has achieved its objectives under the supporting culture strategy is presented in Table 3.2.

#### 3.1.1 Key AQ program outputs

Figure 3.2 Inspire theme, overview as at June 2018



Note: The above outputs are as of 30 June 2018. Additional programs have launched and funding committed since this date.  
Source: DITID



### 3.1.2 Key AQ programs

Table 3.1 AQ funded programs (Term 1) under the Inspire theme

Program	Overview	Agency
<b>Igniting the innovation spirit of Queenslanders</b>		
Engaging Queenslanders in Science Strategy and Activities	A strategy to build a shared understanding across the community of the importance of science, innovation and STEM education.	DES
Engaging Science Grants	Supports scientists, researchers, science communicators, journalists, teachers, organisations and community groups to deliver science engagement and communication projects, events and activities that align with the vision of the Engaging Queenslanders in Science strategy.	DES
Innovation Festivals	Aims to maximise and harness the opportunities innovation offers to our state by providing sponsorship to attract a world class line up of speakers, entertainment, entrepreneurs, investors, business owners, tech-lovers, government and innovators.	DITID
World Science Festival	Explores and celebrates the entanglement of science and art through a curated program of thought-provoking conversations, inspiring theatrical and cinematic experiences, interactive workshops and engaging demonstrations. This program continues but is no longer funded from AQ.	DES
<b>Inspiring the entrepreneurs of the future</b>		
3 Day Startup	Built international connections by partnering with Queensland universities to attract global experts to deliver experiential entrepreneurial programs at Queensland universities.	DITID
Startup Catalyst	Provides grant funding to Startup Catalyst to host missions for Queensland founders, young entrepreneurs, investors and regional innovation leaders looking to grow their international connections and gain first-hand experience from overseas markets, successful companies, accelerator programs and investors.	DITID
Young Starters' Competition	Recognises and rewards young people with an entrepreneurial idea to develop their startup idea, by providing a competition for young Queenslanders with prizes valued up to \$45,000.	DITID
Young Starters' Fund	Builds, attracts and retains young entrepreneurial talent by providing grant funding of up to \$20,000 to organisations to deliver events and activities that build entrepreneurial and startup skills in young Queenslanders.	DITID
<b>Celebrating &amp; supporting those who have a go</b>		
Founders' Fellowships	Provides grants of up to \$100,000 to scientists, researchers or clinicians currently employed in a Queensland-based university, research organisation or hospital who are looking to take an innovative idea to market.	DITID
Office of the Queensland Chief Entrepreneur	Plays a vital role in building and promoting the importance and contribution of entrepreneurship and investment in Queensland. The office is led by the Queensland Chief Entrepreneur and is an Australian first.	DITID
Queensland Startup Events and Activities Fund	Builds capability within Queensland's startup community by providing grant funding of up to \$25,000 to organisations to deliver events and activities that build entrepreneurial and technology startup skills.	DITID

Source: DITID



### 3.1.3 Findings

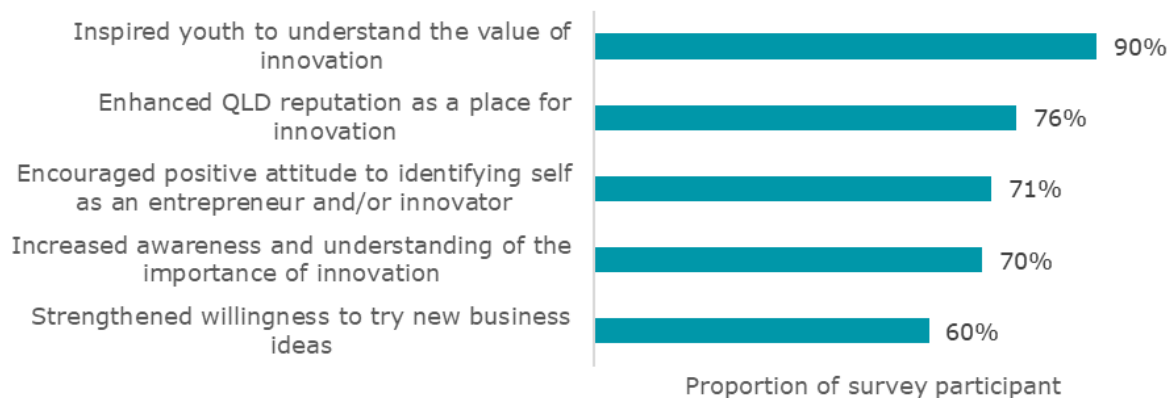
#### Key finding 6a

Overall, the Evaluation found that the objectives associated with the Supporting Culture strategy have been achieved and program outcomes have addressed Lerner recommendations. This is evident by:

- An increase in awareness of science and perceptions of innovation activity.
- An increase in the number of clusters of entrepreneurial activity (i.e. co-working spaces, startup groups, commercialisation units).
- An increase in Queensland’s share of national startups.
- An increase in the business survival rate.
- Survey results which indicate that the majority of respondents agreed that AQ has enhanced Queensland’s reputation as a place for innovation.

Findings from the survey, stakeholder consultations, and desktop research indicate that AQ events are, in general, successful in inspiring their target audience. Of the 229 AQ participants who completed the survey, 90% of participants agreed that Queensland is a place of innovation and 76% of participants agreed that events increased their awareness and understanding of the importance of innovation. The majority of participants agreed that that AQ has inspired young people to understand the value of innovation, encouraged positive attitude to identify themselves as innovators and strengthened their willingness to try new business ideas (Chart 3.1).

Chart 3.1 Proportion of survey respondents agree or strongly agree with impacts of AQ



Source: Deloitte Access Economics

Anecdotally, an educator in a regional area reported that AQ provided an opportunity for researchers to visit their school and for them to form a relationship with the researchers. This relationship then later allowed the educator to partner with a university to organise a career orientation day for students. To demonstrate how an AQ program has supported increasing network and collaboration, a case study on Engaging Science Grants is provided on page 38.



Table 3.2 AQ achievements under the Supporting Culture strategy

Objectives	Outcomes	Evidence
Increase innovation awareness and engagement	Increased awareness and understanding of the importance and relevance of innovation	70% of AQ survey participants reported that AQ has increased awareness and understanding of the importance of innovation.
	Increase in the number of Queenslanders who are interested or very interested in science	In 2016, 74% of Queenslanders said they were interested in science. In 2018, this number fell to 68% but in the 18-24 year old age group, interest in science increased from 65% (2016) to 78% (2018). The gap between men and women's interest in science also fell from 9% to just 2%. <sup>19</sup>
	Increased likelihood of startups staying in Queensland	76% of AQ survey participants reported that AQ has enhanced Queensland's reputation as a place for innovation.
	Queensland has a reputation as the place to go for innovation	
	Perceptions of innovation activity (including Advance Queensland)	94% of Queenslanders are somewhat or very interested in innovation 90% of Queenslanders feel that innovation positively impacts on themselves and the state. <sup>20</sup>
Increase entrepreneurialism	Youth inspired to understand the value of innovation	90% of AQ survey participants reported that AQ has inspired youths to understand the value of innovation.
	Willingness to trial new business ideas	60% of AQ survey participants reported a strengthened willingness to try new business ideas.
	Positive attitude to identifying self as an entrepreneur and/or innovator	71% of AQ survey participants reported that AQ has encouraged a positive attitude to identifying themselves as an entrepreneur.
	Increased clusters of entrepreneurial activity	In 2019, there are 29 co-working spaces in Queensland (up from 23 co-working spaces in January 2018), 16 startup groups, and 6 commercialisation units. <sup>21</sup>
	More startups in Queensland	In 2018, approximately 20% of startups in Australia are in Queensland (up from 16.5% in 2015). <sup>22</sup> Queensland's business survival rate has increased from 60.2% in 2016 to 63.3% in 2018. <sup>23</sup> In comparison, business survival rate in Australia has increased from 62.1% in 2016 to 64.5% in 2018.

Note: There are some macro indicators identified in the Advance Queensland Evaluation Framework that have not been included in this table due to unavailability of updated data.

Source: Deloitte Access Economics

<sup>19</sup> Office of the Chief Scientist, *Queenslanders' Perceptions and Attitudes to Science* (2018)

<sup>20</sup> Colmar Brunton, *Public Perceptions of Innovation* (2017)

<sup>21</sup> Office of Queensland Chief Entrepreneur (2019) <<https://www.chiefentrepreneur.qld.gov.au/>>

<sup>22</sup> Startup Muster, *Startup Muster Annual Report* (2018)

<sup>23</sup> ABS, 8165.0, *Counts of Australian Businesses, including Entries and Exits* (2018)





## **Case Study: Engaging Science Grants (August 2016 – ongoing)** **Implementing agency: DES (administered by DITID)**

### **Background**

A 2016 survey, Queenslanders' Perception and Attitudes to Science by OQCS, found many Queenslanders were interested in science, but believed there was insufficient information or news about it. There was also concern about the limited science-based activities in their area, particularly in rural and regional Queensland.

To address this issue, Engaging Science Grants was launched in August 2016 as part of the Engaging Queenslanders in Science Strategy under AQ. The strategy's vision is to create a Queensland population that is engaged in and recognises, supports and advocates for science. To deliver this vision, grant funding of up to \$10,000 was provided to Queensland-based applicants to be spent within a 12-month period. The funding was awarded to applicants to deliver an event, activity or project that met at least one of four goals:

STEM participation – to increase the number of students participating in STEM subjects.

Public engagement – to increase engagement and participation of the Queensland community in science-based activities.

Scientist engagement – to increase the number of scientists directly engaging with the Queensland community.

Public awareness – to increase awareness and understanding of the great science taking place in Queensland.

Recipients of Engaging Science Grants funds include scientists, researchers, science communicators, journalists, teachers, organisations and community groups based in Queensland with an Australian business number. Similarly, the above stakeholder types (including students) were also participants of events and activities delivered by the recipients.

### **Achievements of the program**

Based on an evaluation by OQCS in March 2019, 494 participants applied for Engaging Science Grants, 113 people received over \$1 million in funding, and 64,900 people attended events or participated in activities. Data collected during the evaluation by OQCS extends over both Term 1 and Term 2 of AQ and thus the data for both terms was considered.

Recipients delivered a wide range of STEM education activities, training workshops, science fairs and other events, with 64% of activity delivered in rural or remote Queensland. Examples include:

Students attending sessions covering coding and robotics.

Scientists spoke about their research careers to students, teachers and parents.

A series of illustrated children's books showcasing women in STEM was published.

Students attending a one week camp at the University of Queensland to understand what life would be like as a STEM student.

These activities workshops and events led to networking and collaboration opportunities for participants, access to experts and equipment which would otherwise be unavailable in remote areas, and inspiring high school students to take STEM subjects at university.

Some highlights from the Engaging Science Grants program include:

Spark Engineering Camp – feedback from a student: "Overall, Sparks Camp has such a happy and inviting environment. The camp has really opened my eyes to uni life... uni is a great option after school ..."

Maintaining a community oyster gardening initiative for shellfish reefs – 30,000 oysters were deployed onto trial reefs which provided the opportunity to gain a deeper understanding of how to maximise shellfish growth, survival and reef productivity.



### 3.2 Building capability



Creativity, knowledge and skills are drivers of innovation. Queensland has a strong research base, however, as researchers are in demand globally and increasingly mobile, it is important for Queensland to continue to be an attractive place for researchers. At the same time, as technology has and will continue to fundamentally transform the way we work and live, STEM and digital skills become increasingly important parts of every workplace. Queenslanders, equipped with these essential skills, would be able to harness technological advances and continue to innovate in the future.

Building Queenslanders’ capability to innovate was identified as one of five key strategies in the AQ Policy Framework, and is aligned to the following Lerner recommendations:

- Encourage and implement widespread entrepreneurial education
- Enhance the skills of local entrepreneurs

AQ programs and activities under the Discover theme (Table 3.3) are directly linked and contribute to the Building Capability strategy. An overview of key outputs of these programs is illustrated in Figure 3.3.

It should be noted that while programs aligned to the Discover primarily contribute to the Building Capability strategy, other AQ programs may have also contributed to building innovation capability in Queensland. Consequently, the effectiveness evaluation of AQ in building capability reflects all relevant AQ programs. Evidence which suggests that AQ has achieved its objectives under the Building Capability strategy is presented in Table 3.3.

#### 3.2.1 Key AQ program outputs

Figure 3.3 Discover theme, overview as at June 2018



Note: The above outputs are as of 30 June 2018. Additional programs have launched and funding committed since this date.  
Source: DITID



### 3.2.2 Key AQ programs

Table 3.3 AQ funded programs (Term 1) under the Discover theme

Program	Overview	Agency
<b>Attracting and retaining world class talent</b>		
Aboriginal & Torres Strait Islander PhD Scholarships	Lays the foundation for careers in research for Aboriginal and/or Torres Strait Islander scholars through scholarships of up to \$120,000 over 3 years.	DITID
PhD Scholarships	Lays the foundation for careers in research, by supporting scholars in gaining a research PhD degree, through scholarships of up to \$45,000 over three years.	DITID
Women's Academic Fund	Provides support to female researchers to remain connected to their research and professional careers	DITD
<b>Enabling researchers and industry to solve global challenges – here in Queensland</b>		
Aboriginal & Torres Strait Islander Research Fellowships	Supports early-career Aboriginal and/or Torres Strait Islander researchers in gaining post-doctoral professional research experience through fellowships worth \$240,000 over 3 years.	DITID
Advance Queensland-TAFE Qld Pathways Scholarships	Assists disadvantaged students in the completion of vocational education, and the transition into university studies in STEM by providing scholarships.	DITID
Research Fellowships	Benefits Queenslanders through original research by providing \$180,000 early career and \$300,000 mid-career research fellowships over 3 years for PhD qualified researchers.	DITID
<b>Preparing Queenslanders for the jobs of tomorrow</b>		
Global Schools Through Languages	Supporting Queensland state school students to develop a global mindset, enable them to communicate across languages and cultures and open doors to further study and opportunities.	DET
Review of STEM education in Queensland state schools	Undertake a review of curriculum and teaching practices within Queensland schools associated with the teaching of STEM, under an memorandum of understanding with DITID	DET
Schools of the Future: A strategy for STEM in Queensland state schools	Focuses on engaging young Queenslanders in STEM.	DET
STEM.I.AM Program	Activities to increase the number of Aboriginal and Torres Strait Islander students pursuing Science, Technology, Engineering and Mathematics studies or careers by providing targeted engagement activities and scholarships.	DITID

Source: DITID



### 3.2.3 Findings

#### Key finding 6b

The Evaluation found that AQ was successful in increasing innovation capability. This is evident by:

- 51% of businesses and 71% of startups in the survey reporting that AQ strengthened their innovation capability through training opportunities.
- 52% of businesses and 61% of startups in the survey reporting that AQ strengthened their innovation capability by enabling them to undertake R&D capabilities.
- An increased quality and quantity of scholarly output.
- An increase in students studying STEM subjects and increases in STEM literacy scores.

AQ also achieved some success in developing, attracting, and retaining talented people.

Based on the survey participant responses, 51% of businesses and 71% of startups in the survey reported that AQ strengthened their innovation capability through training opportunities and 52% of businesses and 61% of startups in the survey reported that AQ strengthened their innovation capability by enabling them to undertake R&D capabilities.

Additionally, there was an increase in the higher education expenditure on R&D as a proportion of gross state product (HERD intensity) from 0.56% in 2014 to 0.59% in 2016 (Chart 3.2). Meanwhile, state government expenditure on R&D as a proportion of gross state product (GOVERD intensity) remained the same (0.09%). This was slightly higher than in New South Wales (0.05%) and Victoria (0.06%) (Chart 3.3).

It should be noted that system level indicators, such as HERD and GERD, are influenced by many factors but are indicative of shifts in the innovation ecosystem that AQ aims to influence.

Chart 3.2 Higher education on R&D as a proportion of gross state product (%)

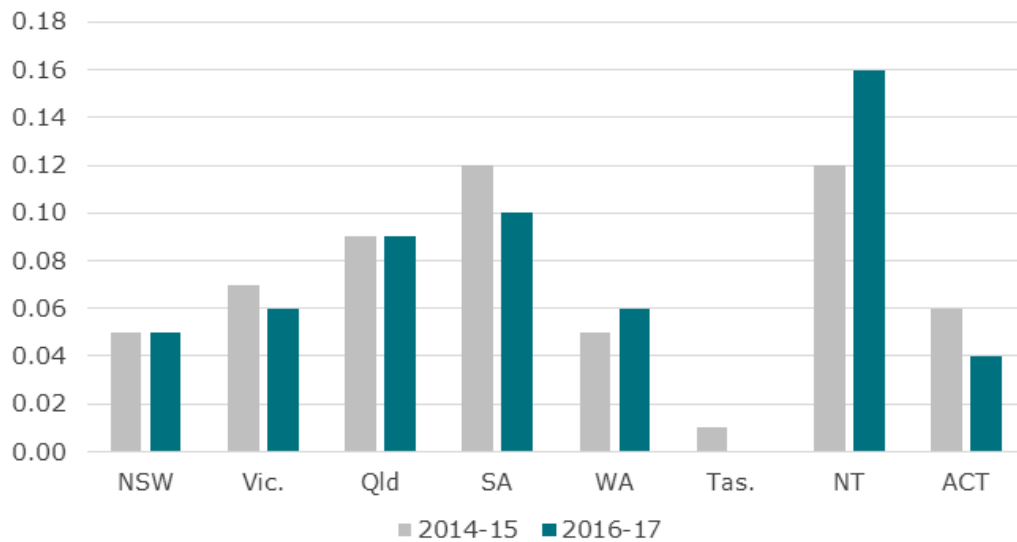


Source: Australian Bureau of Statistics (ABS) (2016) 8111.0 - Research and Experimental Development, Higher Education Organisations, Australia



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Chart 3.3 Government expenditure on R&D as a proportion of gross state product (%)

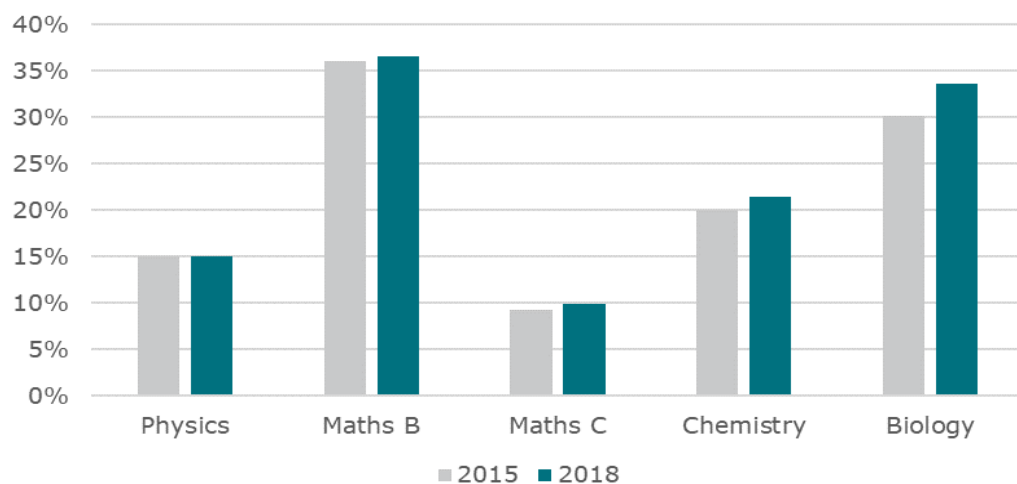


Source: ABS (2016) 8109.0 - Research and Experimental Development, Government and Private Non-Profit Organisation

The evidence demonstrates that certain programs have been successful in attracting and keeping researchers in Queensland (i.e. the Research Fellowships program). Furthermore, 31% of startups in the survey reported that AQ has increased the flow of highly qualified people into businesses. A case study on Research Fellowships is provided on page 45.

Over half of survey respondents agreed that AQ has strengthened the skills of young people, furthered researchers’ understanding of industry needs, and broadened skills of businesses to undertake innovation activities. Stakeholders in consultations reported that the number of state school students in Years 3 to 9 receiving a C-level of achievement or higher in STEM subjects increased by up to 3.1% between 2015 and 2017. STEM uptake among Year 12 students has also increased by an average of 1.2 percentage points between 2015 and 2018 (see Chart 3.4).<sup>24</sup>

Chart 3.4 Proportion of Year 12 students undertaking STEM subjects in Queensland



Source: DET

<sup>24</sup> DET, Data provided to Deloitte Access Economics in a consultation (2019)



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AQ has also strengthened Queensland’s innovation capability by providing significant opportunities at the tertiary education level. An example of this is through the Knowledge Transfer Partnerships program. This program builds collaboration opportunities between universities and small business through bringing on university graduates to work on innovative projects. Between February 2016 and September 2018, approximately \$4 million of funding was committed to support 154 organisations (75 researchers/research institutes and 79 businesses, startups or entrepreneurs).

*“It was an easy program to engage with and was fit for purpose for our needs. The end result was identifying a talented graduate student who has turned out to be one of our most dedicated and capable employees.”*

*~ AQ survey participant*

The Knowledge Transfer Partnership program also creates future opportunities for PhD students to work with young startups and innovative Australian high-growth employers. While PhD graduates traditionally enter academia, a recent study has found that about 51% of PhD students hope to enter business or the public sector.<sup>25</sup> Another study conducted by the Australian National University and Commonwealth Scientific and Industrial Research Organisation’s Data61 suggests that half of the job advertisements scanned specified the need for a high level of education.<sup>26</sup> Medicine, pharmaceuticals, advanced manufacturing, mining and finance as well as emerging industries such as environmental services and media technology and services are leading employers of PhD graduates.<sup>27</sup>

Table 3.4 AQ achievements under the Building Capability strategy

Objectives	Outcomes	Evidence
Increase innovation capability	Increased flow of highly qualified people into business	31% of startups in the survey reported that AQ has increased the flow of highly qualified people into businesses.
	Increased investment in R&D	Gross expenditure on R&D as a share of gross state product has increased in the higher education sector, with HERD intensity increasing from 0.56% in 2014 to 0.59% in 2016. This is slightly lower than the national average of 0.62% in 2016. <sup>28</sup> GOVERD intensity remained the same (0.09%). This is slightly higher than in New South Wales (0.05%) and Victoria (0.06%). <sup>29</sup>

<sup>25</sup> Australian Mathematical Sciences Institute and Commonwealth Scientific and Industrial Research Organisation, *Advancing Australia’s knowledge economy. Who are the top PhD employers?* (2019)

<sup>26</sup> Australia’s Science Channel, *The large, hidden job market for PhD graduates* (2018) <https://australiascience.tv/the-large-hidden-job-market-for-phd-graduates/>

<sup>27</sup> Australian Mathematical Sciences Institute and Commonwealth Scientific and Industrial Research Organisation, above n 22.

<sup>28</sup> ABS, *8111.0 - Research and Experimental Development, Higher Education Organisations, Australia* (2018)

<sup>29</sup> ABS, *8109.0 - Research and Experimental Development, Government and Private Non-Profit Organisations, Australia* (2018)



Objectives	Outcomes	Evidence
	<p>Improve research capability and skills for undertaking innovation activity</p> <p>Skills and knowledge to start and maintain an innovative business</p>	<p>The number of scholarly output per 100,000 population increased from 393 in 2015 to 429 in 2018. The proportion of outputs in the top 1% most cited publication increased from 2.3% in 2015 to 2.6% in 2017.<sup>30</sup></p> <p>51% of businesses and 71% of startups in the survey reported that AQ has strengthened their innovation capability by providing training opportunities to strengthen skills. 52% of businesses and 61% of startups in the survey reported that AQ has strengthened their innovation capability by enabling them to undertake R&amp;D activities. 65% of researchers in the survey reported that AQ has helped them to further their understanding of industry needs.</p>
Develop, attract and retain talented people (including STEM skills)	Increased uptake in STEM subjects in schools and universities	<p>Year 12 enrolments in science and mathematics subjects have been consistent or increased by an average of 1.2 percentage point between 2015 and 2018.</p> <p>Number of state school students in Years 3 to 9 receiving a C-level of achievement or higher in Science or Mathematics increased by up to 3.1% between 2015 and 2017.</p>
	Increased number of researchers employed by universities and businesses	<p>73% of researchers in the survey reported that AQ has supported them in employing people in short-term or casual contracts.</p> <p>47% of researchers in the survey reported that AQ has supported them in employing people in long-term or permanent contracts.</p>

Note: Other relevant indicators include business expenditure on R&D (BERD) intensity, gross expenditure on R&D (GERD), STEM literacy scores, proportion of Queenslanders with a non-school qualification, count of university, TAFE and research institutions per 1000 population. These indicators are not included in this table due to the unavailability of updated data. Survey results are not disaggregated by AQ theme due to sample size constraints.

Source: Deloitte Access Economics,

<sup>30</sup> Elsevier SciVal



## Case study: Research Fellowships (2016 – ongoing)

**Implementing agency: DITID**

### Background

The Research Fellowships program supports researchers undertaking original work that will have a positive impact on Queensland. A key purpose of the program is to attract and keep talented researchers in Queensland, and to develop the professional careers of early and mid-career research fellows from Queensland-based universities, research agencies, government organisations, not-for-profit organisations and businesses. The program evolved from legacy programs run under the Smart State initiative, which previously funded senior and established researchers.

### Achievements of the program

There were two rounds of research fellowships offered in 2016 and 2017 to 87 recipients. The amount of funding contractually committed and leveraged by the AQ Research Fellowships program as of 30 June 2018 is detailed in the table below.

<b>\$ contractually committed</b>	<b>Funds leveraged – co-funding research agencies</b>	<b>Funds leveraged – co-funding partner agencies (primarily industry partners)</b>	<b>Funds leveraged – TOTAL co-funding (research agencies + partner agencies)</b>
\$20.1 million	\$15.1 million	\$11.3 million	\$26.4 million

An evaluation of the Research Fellowships program has recently been finalised. Findings of the evaluation in May 2019 demonstrate the following outcomes have been achieved by the Research Fellowships program:

- Catalysing and expediting research
  - Almost a third of survey respondents would not have undertaken research in the absence of the AQ funding. Of those who would have gone ahead anyway, most would have delayed the research with over 80% stating it would have been conducted at a later date.
- Enabling industry partners to be more innovative
  - Almost a half of all industry partner respondents were able to be more innovative due to the program, and a further ¼ of all industry partner respondents said they could solve the program faster.
- Strengthened collaboration between researchers and industry
  - 76% of researcher survey respondents believe their industry partner is likely or very likely to fund additional research. Industry partners were also very positive, with 95% of respondents indicating the program has encouraged them to consider investing in research in the future.

### Next steps

The Research Fellowships program is continued in Term 2 and the next two funding rounds are available in 2019 and 2020.





### 3.3 Foster collaborations



Innovation is rarely created in isolation. Collaborations facilitate knowledge sharing, provide inspiration for ideas, and enable organisations to leverage internal capabilities. It has been found that business collaborations on innovation are associated with a 70% increase in the likelihood of new-to-world innovation and research collaborations are associated with triple the likelihood of business productivity growth.<sup>31,32</sup>

A study in 2014 suggested that the Queensland collaboration rate was low (22%) and this rate had declined since 2012 (when the collaboration rate was 29%).<sup>33</sup> This low rate of collaborations represented a significant loss of opportunities for the Queensland economy. It is in this context that fostering collaborations among key participants of the innovation system was identified as one of five AQ strategies. This strategy is aligned to the Lerner recommendation of “build bridges between Queensland and the rest of the world”.

AQ programs and activities under the Connect theme (Table 3.5) are directly linked and contribute to the Fostering Collaboration strategy. An overview of key outputs of these programs is illustrated in Figure 3.4.

While the key programs aligned to the Connect theme primarily contribute to the Fostering Collaboration strategy, other AQ programs may have also contributed to fostering collaborations across the innovation ecosystem in Queensland. Consequently, the effectiveness evaluation of AQ in fostering collaboration reflects all relevant AQ programs. Evidence which suggests that AQ has achieved its objectives under the Foster Collaborations strategy is presented in Table 3.7.

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<sup>31</sup> Australian Government, *Australian Innovation System Report* (2014)

<sup>32</sup> Australian Government, *Australian Innovation System Report* (2014)

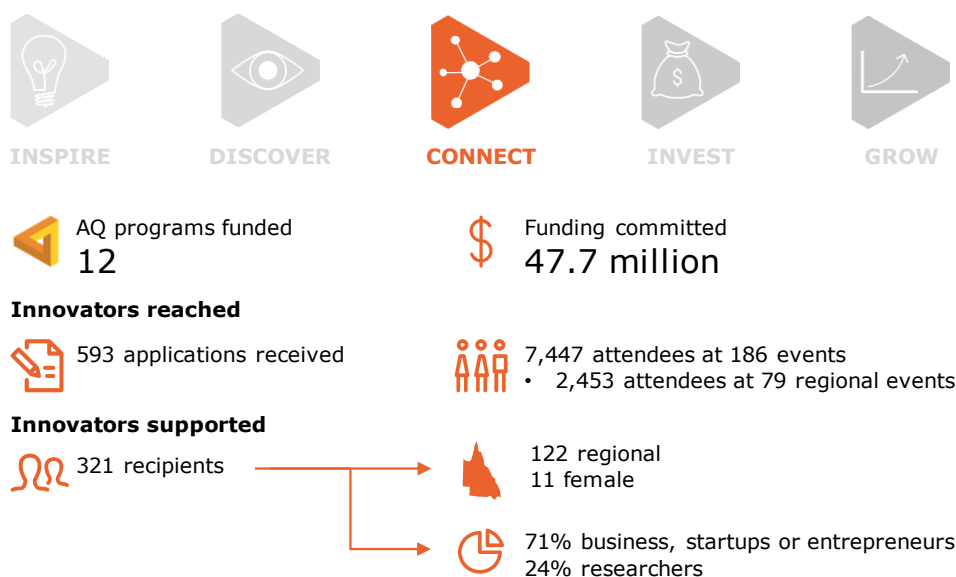
<sup>33</sup> University of Queensland Business School, *Queensland Business Innovation Survey* (2014)



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### 3.3.1 Key AQ program outputs

Figure 3.4 Connect theme, overview as at June 2018



Note: The above outputs are as of 30 June 2018. Additional programs have launched and funding committed since this date.  
Source: DITID

### 3.3.2 Key AQ programs

Table 3.5 AQ funded programs (Term 1) under the Connect theme

Program	Overview	Agency
<b>Building innovation networks that spark opportunities to connect, learn and partner</b>		
Advancing Regional Innovation Program	Aims to turn our regions into hubs for innovation and enterprise, encourages innovation across Queensland and supports local economies to create jobs for regional Queenslanders.	DITID
Regional Network Fund	Complements Advancing Regional Innovation Program by supporting a range of activities and initiatives to encourage connectivity between regions, including access to international entrepreneurial and investor expertise through inbound and outbound activities.	DITID
The Precinct	Located in Brisbane's Fortitude Valley, The Precinct brings together Queensland startups, entrepreneurs, investors and mentors through facilities and a co-working space, to help foster collaboration and build a thriving entrepreneurial culture.	DITID
Life Sciences Queensland	A partnership with Life Sciences Queensland to facilitate the future growth and sustainability of Queensland's life sciences industry, including enhancing Queensland's national and international reputation as a centre of commercial and research excellence.	DITID
<b>Creating global connections for talent, markets and opportunities</b>		
Commercialisation Partnerships Program	Supports Queensland innovators to progress the technology transfer and/or commercialisation of Queensland-developed technologies through placements in Chinese incubators.	DITID
Create Queensland	Provides creative YouTubers with funding, production resources and expert support to develop high-quality digital content, and reach new global audiences.	DITID



Program	Overview	Agency
Hot DesQ	Attracts entrepreneurial talent to boost Queensland's startup ecosystem and broaden global connections by providing grants to international and interstate entrepreneurs to relocate their ideas and business ventures to Queensland for at least six months.	DITID
International Delegations	Provides funding support for delegates to participate in international missions to help Queensland's entrepreneurs gain crucial insight into the mindset and culture of places where global success is a way of life, and to build new connections in new export markets.	DITID
Massachusetts Institute of Technology (MIT) Innovation and Entrepreneurship Bootcamp	Partnership with QUT to bring the MIT Innovation and Entrepreneurship Bootcamp to Queensland in 2017, 2018 and 2019. Also provides 3 scholarships per year to Queenslanders to attend the bootcamp, including one specifically for an Aboriginal and Torres Strait Islander participant.	DITID
MIT Regional Entrepreneurship Acceleration Program (REAP)	A team of Queensland organisations, including Queensland Government, is participating in the Massachusetts Institute of Technology-led program for developing entrepreneurial ecosystems around the world.	DITID
<b>Increasing collaboration between industry, researchers and start-ups</b>		
Cairns Innovation Centre	A facility established in partnership with the James Cook University to translate research, the spirit of enquiry and Queensland's store of youthful talent and ambition into products and processes with real commercial application which can drive economic growth and diversity for Northern Australia.	QT
Knowledge Transfer Partnerships	Supports collaboration and knowledge transfer between universities and small business by providing grants of up to \$50,000 to Queensland businesses to enable them to employ a university graduate to work on an innovative project.	DITID

Source: DITID



### 3.3.3 Findings

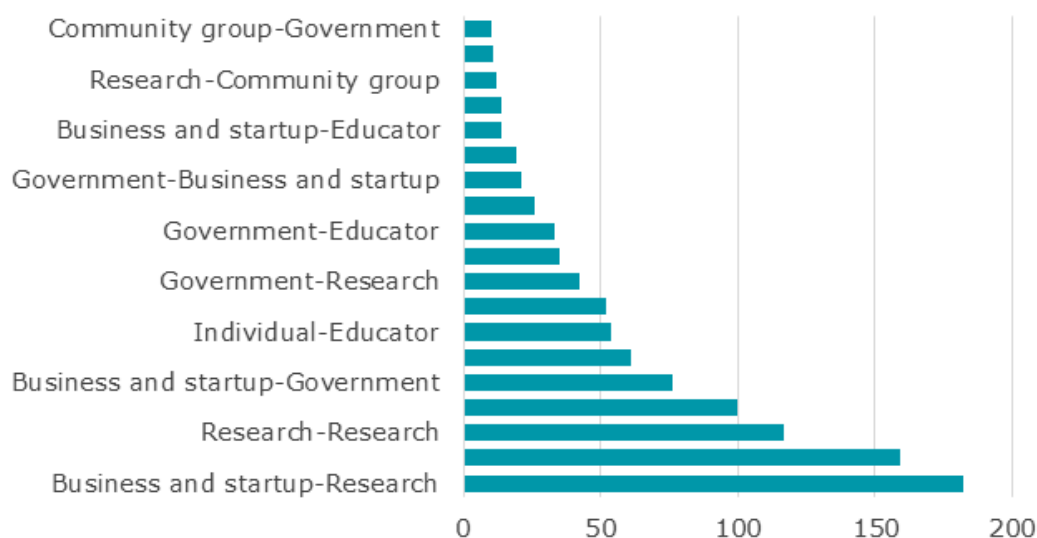
#### Key finding 6c

Overall, the Evaluation found that AQ has fostered collaborations between participants of the innovation system. This is evident by:

- AQ support in development of The Precinct, which provides co-working space for emerging entrepreneurs and startups
- The development of over 1,000 collaborations as indicated by program data
- Over 130 international and interstate connections for local entrepreneurs facilitated by Hot DesQ recipients
- 57% of researchers in the survey agreeing that AQ had facilitated formal agreements with businesses to conduct research or build prototypes and over half of survey respondents agreeing that AQ had facilitated inter-personal connections.

Program data indicates that AQ has supported over 1,000 collaborations. The majority of collaborations are between businesses or startups and research (32%), between researchers (11%), and between businesses (9.3%) (Chart 3.5).

Chart 3.5 Number of collaborations supported by AQ



Note: Participants to the left of the "-" are AQ participants. Participants to the right of the "-" are partners of AQ participants.

Source: Program data provided by DITID

Collaborations fostered by AQ consists of both formal and informal interpersonal relationships. One way in which AQ has enabled collaborations is through delivery of the Precinct. The Precinct is located in Fortitude Valley in Brisbane and provides facilities and co-working spaces to bring together Queensland startups, incubators, investors and mentors. The physical space provides a place where startups can engage with customers and investors and helps to connect Queensland startups and form support networks for growth and development. Startups in the Precinct are also co-located with industry leaders such as the Office of the Queensland Chief Entrepreneur, River



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City Labs, Data 61. Physical space provisions are important as sharing a physical environment was found to be an enabler of a thriving knowledge economy.<sup>34</sup>

*"We were an isolated startup before in a managed office with challenges that none of the businesses around us had. The Precinct is obviously filled with startups, so we can get help and help others at any time. Just sharing the space with likeminded people is inspiring."*

*~ Clipchamp co-founder and CEO Alex Dreiling*

Another avenue in which AQ supports collaboration is through its Innovation Festivals. Innovation Festivals aim to showcase the talents of entrepreneurs and innovators, which assists participants of the innovation ecosystem to know which entrepreneur or innovator is doing what venture in the innovation space. The Myriad Festival was hosted in Queensland in 2017 and 2018. Nearly 10,000 people attended the festival over both years joining a world class line up of speakers and entertainment, entrepreneurs, investors, business owners and technology-lovers. Myriad Festival created an opportunity for local entrepreneurs to showcase Queensland innovation to a national and international audience and allowed for connections between world-leading innovators and investors.

A number of participants have reported that relationships formed during their involvement with AQ has led to further formal and ongoing connections with investors, governments, and clients. In many cases, this has happened even when fostering collaboration was not the main objective of the AQ program that they were participating in. Instead, by participating in AQ activities, participants were able to meet and network with other people across different disciplines. AQ participants reported that such inter-disciplinary networks have broadened their perspectives, changed the way they conduct their businesses, and opened up business opportunities.

A case study on AQ's Hot DesQ program is provided on the following page to exemplify how one of AQ's programs has supported collaboration. Further, the case study specifies who was affected by the Hot DesQ program, outputs of the program and outcomes for participants.

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<sup>34</sup> Microsoft, *Accelerating Australia's innovation ecosystem Joined Up Innovation* (2015)



## Case study: Hot DesQ

### Background

The Hot DesQ program was co-designed with representatives from the Queensland startup sector after leaders advised that attracting international and interstate experience into the state was critical to developing Queensland's local startup talent and profile. Supporting this advice, both the StartupAUS Crossroads report and the Lerner report recommended attracting international entrepreneurs to help accelerate the growth and impact of the local startup ecosystem.

The Hot DesQ program is an Australian-first to attract international and interstate entrepreneurial talents and startups to Queensland for at least six months to pursue their businesses. The main objective of the Hot DesQ program is to boost Queensland's startup ecosystem, grow the entrepreneurial sector and broaden global connections.

### Achievements of the program

As of 30 June 2018, 2 rounds of funding (totalling \$5.4 million) were provided to 108 recipients, half consisting of host recipients and the other half consisting of international and/or interstate businesses and startup recipients. Of these 108 recipients, 22 were regional recipients (half were hosts and half were businesses and startups).

Some examples of how the funding was used to foster and increase collaborations include:

- Regional startup hubs were engaged through the highly successful Hot Entrepreneurs initiative, with events held in Cairns, Townsville, Gladstone, Fraser Coast, Rockhampton, Longreach, Ipswich, Toowoomba, Sunshine Coast and Gold Coast.
- Over 4,600 attendees from across the Queensland startup community and broader ecosystem have benefited from events and workshops delivered or attended by the Hot DesQ entrepreneurs.
- Over 130 international and interstate connections for local entrepreneurs were facilitated by Hot DesQ recipients. In addition, over 400 mentoring sessions with Queensland entrepreneurs were conducted.

Stakeholders have reported that a key enabling factor to the success of Hot DesQ is the collaboration between DITID and Trade and Investment Queensland. Further, Trade and Investment Queensland has promoted each Hot DesQ round across their markets and achieved good response rates.

Ultimately, Hot DesQ has helped to attract startups and entrepreneurs to Queensland and foster collaborations between Queensland and international businesses. Hot DesQ participants in the survey reported that the program has facilitated:

- Formal relationships (e.g. trading partners, joint ventures) with other businesses and startups
- Interpersonal connections and improved knowledge sharing with people working in other businesses, startups, universities and research institutes
- Connections with angel investors or venture capitalists

Through the program, Queensland's tourism, agriculture, health and financial services industries had an injection of new talent and energy, increasing collaboration and innovation across local industry, corporates, startups and researchers.

An example of one of many Hot DesQ funding success stories is Pinch Labs. Pinch Labs is an artificial intelligence enabled enterprise and virtual assistant startup from Silicon Valley, led by Founder, Chris Raethke. During their time in Queensland, Pinch Labs progressed product development with a team of six full-time and part-time employees based in Fortitude Valley. Chris remains in Queensland, sharing his expert knowledge and experience in the startup sector. He facilitates professional connections and provides workshops to educate Queenslanders about building teams, scaling startups and managing rapid growth. To date, Mr Raethke has facilitated more than 50 one-on-one mentoring sessions with Queensland startups.



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As part of the survey distributed for the Evaluation, additional questions were asked to further understand whether AQ had played a significant role in developing collaborations between innovation system participants. The most significant findings were:

- AQ has facilitated inter-personal connections and improved knowledge sharing with other businesses, universities, schools, students, parents, and teachers, including:
  - Educators with other educators, where 90% of survey respondents agreed or strongly agreed.
  - Government with all other system participants, where 88% of survey respondents also agreed or strongly agreed.

Increasing focus of AQ on facilitating formal agreements between businesses and researchers may be considered:

- 18% of business respondents that connected with researchers agreed or strongly agreed that AQ facilitated formal agreements with universities and research institutes to commercialise products developed by universities and research institutes. This was 46% for research respondents who connected with businesses.
- 21% of business respondents that connected with researchers agreed or strongly agreed that AQ facilitated formal agreements with universities and research institutes to conduct research and build prototypes.

The detailed results of the additional survey questions are provided in Table 3.6.

Table 3.6 Collaborations between AQ participants

Innovation system participant responding	Type of connection	Survey question	Proportion of respondents agreeing or strongly agreeing
Business and industry	Business - Business or Startups	AQ has facilitated inter-personal connections and improved knowledge sharing with people working in other businesses and startups.	53%
		AQ has facilitated formal relationships (e.g. trading partners, joint ventures) with other businesses and startups.	38%
	Business - Research	AQ has facilitated formal agreements with universities and research institutes to conduct research and build prototype.	21%
		AQ has facilitated formal agreements with universities and research institutes to commercialise products developed by universities and research institutes.	18%
Startup	Startup - Business or Startups	AQ has facilitated formal relationships (e.g. trading partners, joint ventures) with other businesses and startups.	37%
		AQ has facilitated inter-personal connections and improved knowledge sharing with people working in other businesses and startups.	57%
	Startup - Research	AQ has facilitated inter-personal connections and improved knowledge sharing with people working in universities and research institutes.	48%



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<b>Innovation system participant responding</b>	<b>Type of connection</b>	<b>Survey question</b>	<b>Proportion of respondents agreeing or strongly agreeing</b>
Research	Research - Business	AQ has facilitated industry connections through networking opportunities with businesses.	75%
		AQ has facilitated formal agreements with businesses to commercialise existing research.	46%
		AQ has facilitated formal agreements with businesses to conduct research or build prototype.	57%
Educator	Educator - Educator	AQ has facilitated inter-personal connections and improved knowledge sharing with other businesses, universities, schools, students, parents, and teachers.	90%
Government	Government - All	AQ has facilitated inter-personal connections and improved knowledge sharing with other businesses, universities, schools, students, parents, and teachers.	88%

Note: Participants to the left of the "-" are AQ participants. Participants to the right of the "-" are partners of AQ participants.

Source: Deloitte Access Economics survey responses from AQ participants





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Evidence indicating that AQ has achieved its objectives under the Foster Collaborations strategy is presented in Table 3.7.

Table 3.7 AQ achievements under the Foster Collaborations strategy

Objectives	Outcomes	Evidence
Build sustainable partnerships to deliver outcomes	Queensland has leading innovation hubs	AQ has supported the development of The Precinct. The Precinct is an innovation hub for all of Queensland. It provides co-working space for emerging entrepreneurs and startups and space for startups to engage with customers and investors. It is home to some of Queensland's brightest startups and foundation tenants who are established and recognised industry leaders.
	Collaboration between parties to develop new ideas and products	57% of researchers in the survey agree that AQ has facilitated formal agreements with businesses to conduct research or build prototype. 46% of researchers in the survey agree that AQ has facilitated formal agreements with businesses to commercialise existing research.
	Collaborations for knowledge sharing and research	53% of businesses, 57% of startups, 90% of educators, and 88% of government agencies and NGOs in the survey agree that AQ has facilitated inter-personal connections and improved knowledge sharing with other businesses, universities, schools, students, parents, and teachers.
Increase local and international networks	Attracting and supporting international students	In June 2016 the Queensland Government launched the International Education and Training Strategy to Advance Queensland 2016-2026 as a tool to drive growth in the international education sector. This strategy focuses on four strategic imperatives: Promoting Queensland Internationally; Enhancing the Student Experience; Strengthening our Regions; and Connecting the Industry. The strategy involves leveraging AQ to grow Queensland's global reputation as a high-quality research destination and develop technology solutions that aid the growth of the international education sector. International enrolments in Queensland have increased from over 102,000 enrolments in 2015 to 135,000 enrolments in 2018.
	Retaining connection with international alumni	
	Greater amount of R&D financed abroad	The absolute amount of HERD financed abroad has increased from \$27.1 million in 2014 to \$58.9 million in 2016, however the proportion of HERD financed abroad has increased from 1.6% to 3.1% over the same period.
	Increased number and scale of local, national and global connections.	Program data indicated that AQ has facilitated over 1000 formal collaborations among businesses, researchers, government, community groups, educators and future innovators. Program data from 30 June 2018 reported that 71,466 attendees attended AQ events.

Source: Deloitte Access Economics



### 3.4 Increase investment



Innovation can inherently involve risk, experimenting with ideas, developing products, implementing new processes and systems require funding and not all activity will pay off. It can also take considerable time and expense to prove the viability of new ideas through feasibility testing, proof-of-concept and prototypes. Investment is integral to a thriving innovation system as it allows startups to escape the 'valley of death', helps businesses to commercialise products, and provides opportunities for researchers to engage in research activities.

For startups and businesses, investment remains key throughout the business life cycle (Table 3.8).

Table 3.8 Risk and investment over the business life cycle.

Investor	Angel investors	Venture capital	Private equity
Level of risk	Highest risk	Intermediate risk	Lowest risk
Company maturity	Startup/early stage	Expanding startups	Established businesses
Types of business activities funded	Research & Development Creating a minimum viable product	Expansion of a small scale business. Commercialisation	Growth and continued expansion. Initial public offering

Source: Corporate Finance Institute (2019) Private Equity vs Venture Capital, Angel/Seed Investors. Available at: <https://corporatefinanceinstitute.com/resources/careers/jobs/private-equity-vs-venture-capital-vs-angel-seed>.

The level of investment activity in Queensland, however, is below that of other states. In 2015, only 8% of VC and 10% of Australian private equity investments were made in Queensland companies, compared with 18% VC and 19% private equity investments in Victoria and 47% VC and 49% private equity investment in New South Wales.<sup>35</sup> A lack of investment is an issue across the innovation system, for businesses, startups, and researchers. It is in this context that AQ aims to improve access to finance and investment to translate ideas into marketable products.

This Increase Investment strategy is aligned to the following Lerner recommendations:

- Encourage the formation and institutionalisation of formal angel groups.
- Encourage local institutional investors (recommendation for the later stage).
- Create a matching fund investment program (recommendation for the later stage).

AQ programs and activities under the Invest theme are directly linked to and contribute to the Increase Investment strategy. An overview of key outputs of these programs is illustrated in Figure 3.5.

While programs aligned to the Invest theme (Table 3.9) primarily contribute to the Increase Investment strategy, other AQ programs may have also contributed to supporting Queensland's innovation culture. Consequently, the effectiveness evaluation of AQ in increasing investment in innovation and startup activity in Queensland reflects all relevant AQ programs. Evidence which

<sup>35</sup> Australian Private Equity & Venture Capital Association Ltd, *2015 Yearbook. Australian private equity and venture capital activity report – November 2015*, p 22 (2015)



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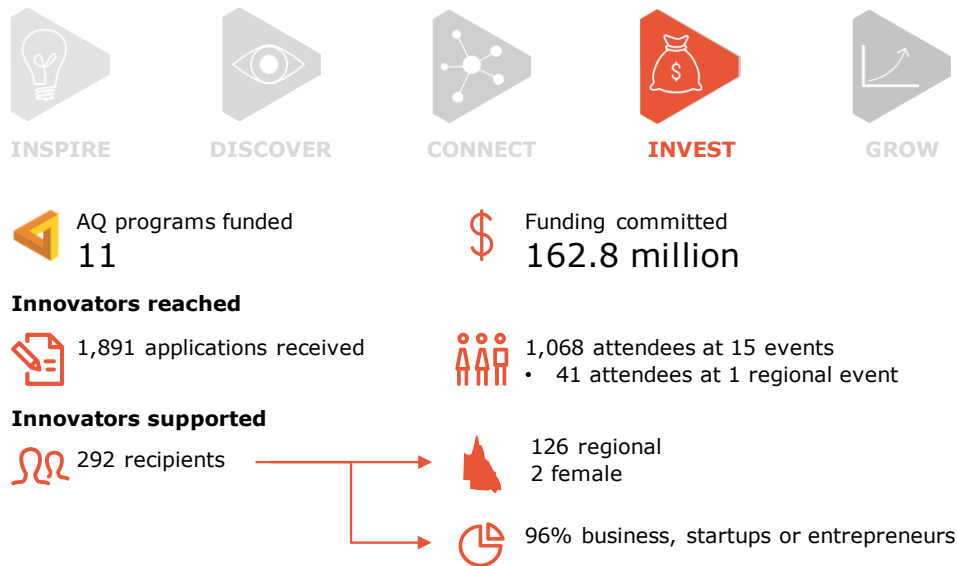
suggests that AQ has achieved its objectives under the Increase Investment strategy is presented in Table 3.10.

*"Our data suggests scaleups are a new focus – startups are doing quite well, but need to focus on next rounds of funding, how to grow and grow globally. In the next phase, we would like to focus on creating a critical mass for the VC market, and to continue feeding the pipeline of startups for this market"*

~ Program leader

### 3.4.2 Key AQ program outputs

Figure 3.5 Invest theme, overview as at June 2018



Note: The above outputs are as of 30 June 2018. Additional programs have launched and funding committed since this date.  
Source: DITID



### 3.4.3 Key AQ programs

Table 3.9 AQ funded programs (Term 1) under the Invest theme

Program	Overview	Agency
Attracting local and global investment and investors into Queensland innovation		
Biofutures Commercialisation Program	Provides grants of up to \$1 million to support bio-industrial experts to partner with Queensland researchers and businesses to scale-up and test new or improved technologies and processes at the pilot or demonstration scale.	DITID
Business Development Fund	Helps Queensland businesses commercialise cutting edge research, or innovative ideas, products and services. Through providing early stage co-investment funding, the BDF promotes angel and VC investment in Queensland-based businesses.	QT
Advance Queensland Industry Attraction Fund	Brings innovative projects to Queensland and helps them grow in order to drive job creation, regional growth, increased innovation and technology and supply chain development.	DPC / DSDMIP
Medical Research Commercialisation Fund	Supporting investment in the commercialisation of early-stage medical research discoveries.	DITID
Regional Business Angels Support Program	Connects potential angel investors in regional Queensland with potential startup investment opportunities and to strengthen the availability of angel investment pathways for regionally based startups.	DITID
Helping innovators to become market and investment ready		
Ignite Ideas Fund	Helps market and investment ready innovators by providing grants of up to \$250,000 to support activities that will test and implement commercialisation plans for a product, process or service that is at, or beyond, minimum viable product or market ready stage.	DITID
Sport Science Challenge	Supports the development of new products, technology or processes that benefit sporting performance or participation in sport.	OQCS
Improving service delivery through innovation		
Data 61 (Strategic Partnership Agreement)	Aims to deliver key development opportunities across Queensland Government agencies, industries and the state's innovation ecosystem, including providing a dedicated foresight capability for the Queensland Government, a Functional Programming Open Lab in The Precinct and facilitating big data challenges to solve problems using large volumes of publicly available data.	DITID
Integrated Care Innovation Fund	Provides financial support to innovative projects that deliver better integration of care, address fragmentation in services and provide high-value healthcare.	QH
Queensland Genomics Health Alliance	Harnesses expertise from health care, industry, research, and academic organisations to collectively address the challenge of translating genomics data into meaningful clinical care, and in doing so improve the health of our community.	QH
Technology Commercialisation Fund Project	To grow jobs and create new economic activity in Queensland and its regions from the commercialisation of intellectual property owned by the Department of Agriculture and Fisheries, and its research partners.	DAF

Source: DITID



### 3.4.4 Findings

#### Key finding 6d

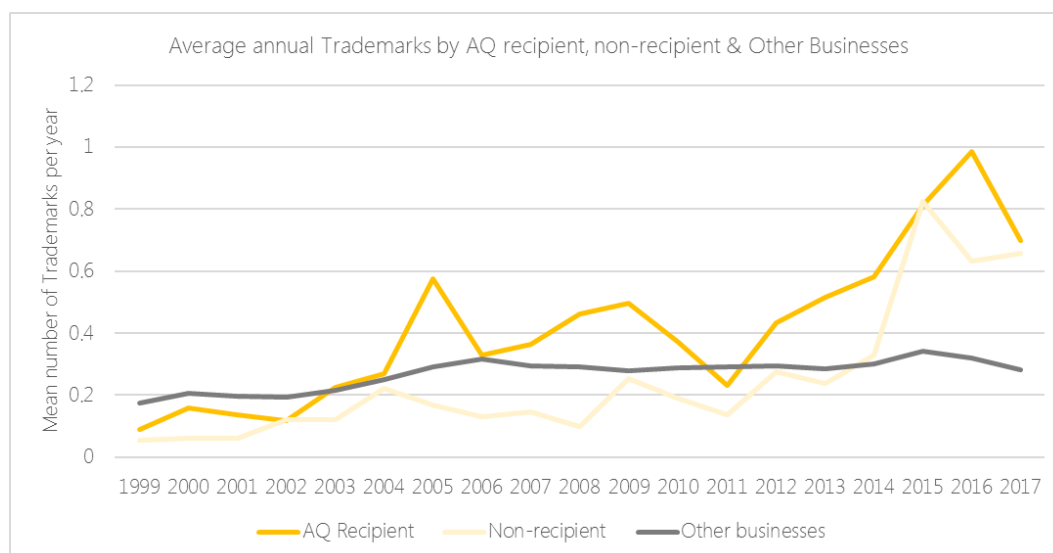
Overall, the Evaluation found that AQ has had some success in increasing access to capital and growing the pipeline of investable products and services. This is evident by:

- A relatively high ratio of funds leveraged to funds committed
- An increase in HERD and GOVERD as share of gross state product
- An increase in Queensland share of national venture capital investment in terms of value from 13.5% to 15.3%
- The development of angel investor networks across 10 Queensland regions, as illustrated in the Regional Investors Support Program case study
- An increase in the number of patents per capita in Queensland
- Higher number of trademarks among AQ participants than non-participants.

Nevertheless, subject matter experts suggested that the VC market in Queensland remains relatively small and access to VC should continue to remain a focus of AQ into the future.

The Evaluation found that AQ has had some success in growing pipeline of investable products. AQ grant recipients have used funding received for a wide range of activities, including but not exclusively to commercialising products, leveraging investment with other private investors, and improving service delivery. 60% of businesses and 51% of startups in the survey agreed that AQ funding has been used to improve the quality of existing products. Additionally, QUT analysis showed that AQ participants had an average of 2.8 trademarks, higher than the average of 1 trademark for non-participants (businesses that applied for an AQ program but did not receive the grant) and 0.5 for all other Queensland businesses (Chart 3.6). The difference between AQ participants and non-participants was statistically significant.

Chart 3.6 Average annual trademarks by AQ participants, non-participants and other businesses



Source: Moyle and Pandey



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A case study on Regional Angels Investors Support Program details how AQ has invested in promoting access to funding across both regional and non-regional Queensland.

At the system level, indicators suggest that there have been positive changes in the level of investment in Queensland since 2015-16:

- Private expenditure on intellectual property in Queensland has increased from \$5,036 million in 2015-16 to \$5,453 million in 2017-18, representing an annual growth of 4.1%. However, this growth rate is lower than the national average of 6.0% annually.<sup>36</sup>
- Queensland's share of national investment in terms of value increased from 13% in 2013-14 to 15% in 2017-18. Meanwhile, Queensland's share of national investment deals declined from 11% in 2013-14 to 10% in 2017-18. This indicates that the value of investments has increased in the period.<sup>37</sup>
- Between 2014 and 2016, Queensland HERD intensity increased from 0.56% to 0.59%, while comparing this to the national level which declined from 0.63% to 0.62%. This means that Queensland higher education institutes increased investment into R&D, whilst at the national level higher education institutes marginally decreased investment into R&D.
- Between 2014-15 and 2016-17, Queensland GOVERD intensity remained the same at 0.09%. This means that the Queensland government's investment in R&D remained stable over the period.

Despite the positive changes, subject matter experts suggested that the size of the VC market in Queensland remains relatively small and access to VC should continue to remain a focus of AQ into the future.

Evidence which suggests that AQ has achieved its objectives under the Increase Investment strategy is presented in Table 3.10 below.

Table 3.10 AQ achievements under the Increase Investment strategy

Objectives	Outcomes	Evidence
Grow pipeline of investable products/services	Increase in trademarks, patents, copyrights	The number of patents per capita in Queensland has increased since 2015, from 77 to 89 patents per capita. QUT analysis showed that AQ participants had an average of 2.8 trademarks, higher than the average of 1 trademark for non-participants (businesses that applied for an AQ program but did not receive the grant) and 0.5 for all other Queensland businesses. The difference between AQ participants and non-participants was statistically significant. QUT analysis also showed that AQ participants had an average of 9.3 patents compared with an average of 0.8 patents for non-participants. However, the difference between AQ participants and non-participants was not statistically significant.
	Increase quality and quantity of new market-ready products	60% of businesses and 51% of startups in the survey agree that AQ funding has been used to improve the quality of existing products.
Build access to capital	Government funding for innovation begins to leverage private sector funding	Program data suggests that for every dollar of AQ funding committed, there is \$1.40 of funding leveraged from other sources of capital. The data also shows that the amount of funding leveraged has increased overtime, with the ratio of leveraged: committed increasing from 0.6 in quarter 3 2016-17 to 1.40 in quarter 4 2017-18.

<sup>36</sup> Queensland Treasury, *Queensland State Accounts* (2019)

<sup>37</sup> ABS, *5678.0 - Venture Capital and Later Stage Private Equity, Australia, 2017-18* (2019)



Objectives	Outcomes	Evidence
	<p>Increased business investment in innovation and startup activity to address 'valley of death'</p> <p>Private sector has access to diversified capital, including angel investors and venture capitalists</p>	<p>Only 24% of startups and 17% of businesses in the survey agree that AQ has facilitated connections with investors, including angel investors or venture capitalists.*</p> <p>Queensland share of national investment in terms of value has increased from 13.5% to 15.3%.</p> <p>Angel investor networks have been established across 10 Queensland regions.</p>

Note: Some macro indicators identified in the Advance Queensland Evaluation Framework are not included in this table due to unavailability of updated data. These indicators include new capital expenditure attracted to Queensland and business investment in R&D.

\*The Queensland share of national investment in venture capital includes the value of investment deals by location of investee company head office in Australian states and territories as well as overseas. This is based on ABS 5678.0 - Venture Capital and Later Stage Private Equity, Australia, 2017-18. Venture capital and later stage private equity is short to medium term, high risk capital investment in companies and investment is generally in new, innovative, or fast growing companies. It should be noted that this excludes business angels (i.e. private individuals investing in private equity).

Source: Deloitte Access Economics, QUT AQ Program Analysis, DITID, Queensland Government Advance Queensland Evaluation Framework v3 July 2018



## Case study: Regional Angel Investors Support Program

### Background

Many entrepreneurs and startups lack intangible assets and sufficient cash flow to secure funds through bank loans. The Lerner report recommended that the Queensland Government encourage the formation and institutionalisation of formal angel groups. Angel groups in particular were identified as an increasingly important for entrepreneurs and startups in providing not only funding, but also early governance and strategic direction.

Queensland Government has delivered the Regional Angel Investors Support Program which aims to connect potential angel investors in regional Queensland with startup investment opportunities and strengthen the availability of angel investment pathways for regionally-based startups.

Recipients of this grant include angel investors, startup incubators and not-for-profit entities established to deliver the regional startup angel investors groups. Support by this program is delivered in the regions: Gold Coast, Sunshine Coast, Ipswich and West Moreton, Mackay-Isaac-Whitsunday, Outback Queensland, Wide Bay Burnett, Fitzroy, North Queensland, Far North Queensland (FNQ), Redland and Logan.

### Achievements of the program

Approximately \$200,000 has been committed through AQ to support angel groups in regional Queensland through activities such as:

- Engagement meetings and workshops for potential business angels.
- Hosting visiting entrepreneurs, business angels or venture capitalists to the region to provide insights to local investors.
- Assisting angel investor groups with administrative support.
- Participating in national business angel events and sharing of learnings with the local group.
- Hosting events to for potential angels and startups – 71 events were held across Queensland regions and provided opportunities for 104 startups to pitch in front of audiences of more than 820 people. This led to increased awareness or startups' ventures and potentially attracted more investment.

Across the 10 Queensland regions where the program has completed, participants have reported that the program has contributed to growing the early stage investment community in Queensland. Although, some challenges with establishing networks and events are still faced. Examples of how Regional Angel Investors Support Program funding has been use to grow the angel investment community in Queensland includes:

- In Townsville, Open Fund, an investment group, launched the Startup Investment Group NQ, a self-sustaining Regional Angel Investor group. More than \$1.3 million of private investment from North Queensland-based investors into Queensland-based startups was facilitated by Open Fund and Startup Investment Group NQ.
- FNQ Angels has attracted 20 active members who have invested \$450,000 in eligible startups.
- Rockhampton Angels reported that investment interest has been improving over the period to approximately 40-50%. Actual investment is improving with the conversion of interest to investment approaching 50%.
- Gold Coast Angels reported strong attendance growth in 2018, including 199 people at 12 events and 24 startups pitched at the meetings. Relationships formed at the Angels Conference saw very strong ongoing interactions between regional angel groups.





- Mackay Angel Network reported networking events have been highly effective to start the conversation around Angel Investment, what it is, who can invest and how to be involved.
- Central West Angels reported that connections were made with Angel Loop and other AI groups to visit the region and conduct some information sessions and pitch events. However, these sessions were not able to be held.
- Bundaberg Angels reported that they struggled to get established and hold meetings. Ultimately, a meeting in June 2019 with support gained to continue to develop an angel group in Bundaberg.

### **Case study: Advance Queensland Industry Attraction Fund (AQIAF)**

#### **Background**

The AQIAF is a \$150 million fund to encourage businesses to relocate to or reinvest in Queensland. The AQIAF leverages approximately \$8 for each dollar of funding committed.

To date the AQIAF has supported 14 projects, more than 1090 new jobs and over \$360 million in private investment.

#### **Achievements of the program - Oji Fibre Solutions**

Oji Fibre Solutions is a subsidiary of the Japanese company, Oji Holdings Corporation, a publicly-listed company on the Tokyo stock exchange and the fifth-largest pulp and paper manufacturer in the world. It is one of Australia's leading pulp, paper and fibre-based packing solutions specialists.

The Yatala plant in Queensland is the newest site in the Oji Fibre Solutions group, opening in October 2017 after considering alternative sites in New South Wales, Cambodia, Vietnam, Myanmar, Thailand, Indonesia and India.

The plant is a modern advanced box plant, producing corrugated cardboard and providing packing solutions to the Queensland market. The site has been fitted with the latest in corrugating, converting and manual handling technologies sourced from around the globe.

The equipment is highly automated with high speed and outstanding precision and quality. The building is a five-star, green star energy site, with numerous environmental initiatives incorporated into the design to make it a leading environmental manufacturing site.

A total of 700 construction jobs were created to establish the \$72 million state-of-the-art advanced manufacturing paper product and packaging facility, creating 100 new jobs in the first five years.

Additionally, Oji has announced the development of fruit and produce distribution hubs in the Bundaberg, Mareeba and Bowen regions.

The project is aligned to the Queensland Advanced Manufacturing 10-Year Roadmap and Action Plan which recognises and supports the manufacturing industry's vital role in our state's economy, employing more than 170,000 people, contributing \$20.3 billion to the economy and in driving innovation, improved levels of productivity and increased competitiveness. Advance Queensland has supported the development of roadmaps for emerging and priority industries to build on Queensland's competitive strengths, diversify the economy and create the knowledge-based jobs of the future.



### 3.5 Scaling for jobs and growth



The value of innovation comes from the translation of ideas and technologies into marketable products, services and processes that address current challenges and grasp tomorrow’s opportunities. From a more practical perspective, innovation has been found to improve productivity, create value added to the economy and support employment.<sup>38</sup> With this understanding, AQ aims to support business growth, build on the state’s competitive and comparative advantage and seize the opportunities arising through changing global value chains.

The Scaling for Jobs and Growth strategy is aligned to the following Lerner recommendations:

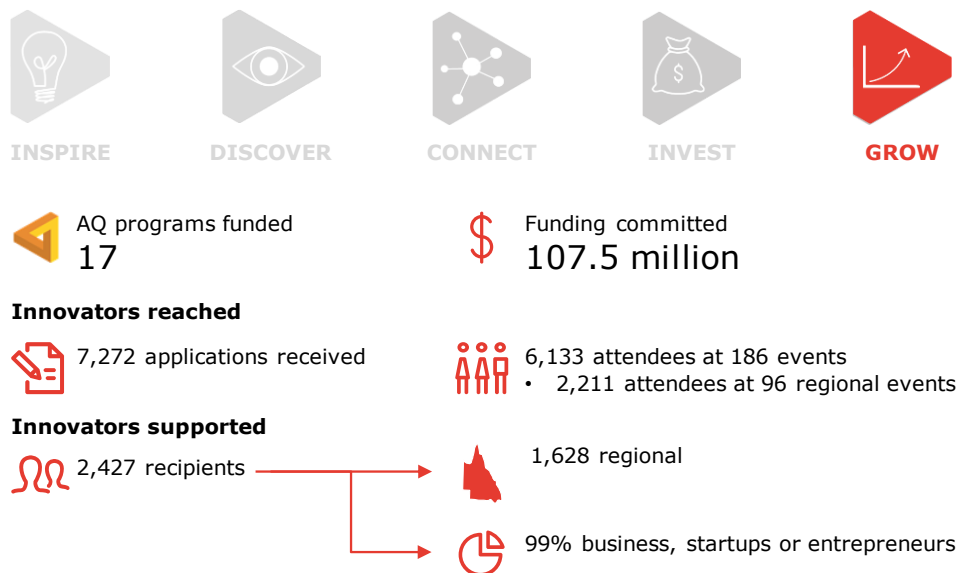
- Enhance the skills of local entrepreneurs
- Fund Commercialization Projects (recommendation for the later stage)

AQ programs and activities under the Grow theme are directly linked and contribute to the Scaling for Jobs and Growth strategy. An overview of key outputs of these programs is illustrated in Figure 3.6.

While programs aligned to the Grow theme (Table 3.11) primarily contribute to the Scaling for Jobs and Growth strategy, other AQ programs which may have also contributed to scaling for jobs and growth through innovation and entrepreneurialism in Queensland. Consequently, the effectiveness evaluation of AQ in scaling for jobs and growth reflects all relevant AQ programs. Evidence which suggests that AQ has achieved its objectives under the Scaling for Jobs and Growth strategy is presented in Table 3.12.

#### 3.5.1 Key AQ program outputs

Figure 3.6 Grow theme, overview as at June 2018



<sup>38</sup> Commonwealth Government, *Australian Innovation System Report*, p2 (2014)



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Note: The above outputs are as of 30 June 2018. Additional programs have launched and funding committed since this date.  
Source: DITID

### 3.5.2 Key AQ programs

Table 3.11 AQ funded programs (Term 1) under the Grow theme

Program	Overview	Agency
<b>Harnessing innovation to create opportunities for traditional and emerging industries</b>		
Australian Biomass for Bio-energy assessment	Provides information about biomass resources across regional Queensland, to assist in project development and decision making for new bioenergy projects.	DES
Connecting with Asia Strategy	A program to grow tourism and make Queensland the number-one destination for millions of Asian visitors.	DITID
Dubai South	Provides selected Queensland companies with access to the Queensland Innovation Hub and network support in the United Arab Emirates master-planned urban project, Dubai South.	DITID
Industry Roadmaps Supporting Priority Industries	Roadmaps to drive innovation-led economic growth through increased collaboration between government, industry and research organisations, for emerging and priority sectors with global growth potential: Advanced manufacturing (Non-AQ funded) Aerospace Biofutures Biomedical Defence Mining equipment, technology & services (METS)	DSDMIP
Platform Technology Program	Accelerates the development and deployment of significant and highly collaborative industry based platform technology projects by providing funding to larger scale, co-funded projects led by industry.	DITID
Innovation Partnership Grants	Positions Queensland as a global innovation hub by providing grants of \$1.5 million to Queensland research organisations to collaborate on research projects with industry.	DITID
Innovation Partnerships	Positions Queensland as a global innovation hub by developing partnerships to the following initiatives: Johnson & Johnson partnership Innovation and Translation Centre (Siemens) Queensland Emory Drug Discovery Initiative	DITID
SoftBank	A partnership with the Japanese robotics and telecommunications company SoftBank, this program aims to position Queensland as a leader in the development and applications of humanoid robotics in Australia.	DITID
<b>Unlocking the potential of small business and regions to innovate</b>		
Advancing Small Business Queensland Strategy	A strategy to position Queensland as the place for small businesses to start, grow and employ. The strategy focuses on stronger advocacy for small business, simplified and coordinated service delivery and connecting small business to opportunity.	DESBT
Advancing Small Business Queensland – Business Growth Fund (formerly Accelerate Small Business Grants Program)	Renamed from the Accelerate Small Business Grants Program, this fund provides targeted assistance for small and medium businesses that demonstrate high-growth and employment aspirations to help them purchase and implement specialised equipment or services to help them seize growth opportunities.	DESBT
Advancing Small Business Queensland – Mentoring for Growth Program	Offers eligible businesses access to volunteer business experts who provide insights, options and suggestions relating to challenges and opportunities that the business is experiencing.	DESBT



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Program	Overview	Agency
Advancing Small Business Queensland – Small Business Digital Grants	Provides small businesses with access to digital technologies and services to enable them to work smarter, engage with the global economy and make the most of online business opportunities arising from digital disruption.	DESBT
Advancing Small Business Queensland – Small Business Entrepreneur Grants	Provides new small businesses access to professional advice and support in the critical early stages of establishing a business.	DESBT
Advancing Small Business Queensland – Small Business Regional & Industry Engagement	Engagement activities with a range of stakeholders, including women in business and indigenous businesses, and activities celebrating small business success.	DESBT
<b>Accelerating development of our high growth firms (scale up faster)</b>		
Growing Queensland's Companies	Supports small-and-medium sized Queensland companies with high-growth potential by delivering leadership and growth training for their Chief Executive Officers and executives.	DITID
Industry Accelerators Program	Helps high growth small-to-medium enterprises and potential startups fast track ideas from ideation to commercialisation, positioning participants to successfully market their products and services to leading edge customers.	DITID
<b>Government is a lead customer and innovator</b>		
Small Business Innovation Research	Awards contracts to innovators to research, develop and test their solutions to complex Queensland Government challenges.	DITID

Source: DITID

### 3.5.3 Findings

#### Key finding 6e

Overall, the Evaluation found that AQ has supported employment and helped businesses to improve productivity and profitability. This is evident by:

- 12,568 jobs supported as at 30 June 2018
- 60% of businesses, 65% of startups in the survey agree that AQ has helped to improve productivity or profitability
- Organisations that received AQ funding experiencing a higher number of business growth events compared to organisation that did not receive AQ funding.

AQ could strengthen its support for businesses to commercialise products in line with the Lerner report recommendation around Fund Commercialisation Projects to be implemented later in the development of Queensland's innovation economy.

AQ recipients have used funding received for a wide range of activities, including, but not exclusively, to fast track their ideas into commercially viable products, receive mentoring and professional advice, and deliver innovative solutions to specific Queensland Government challenges.

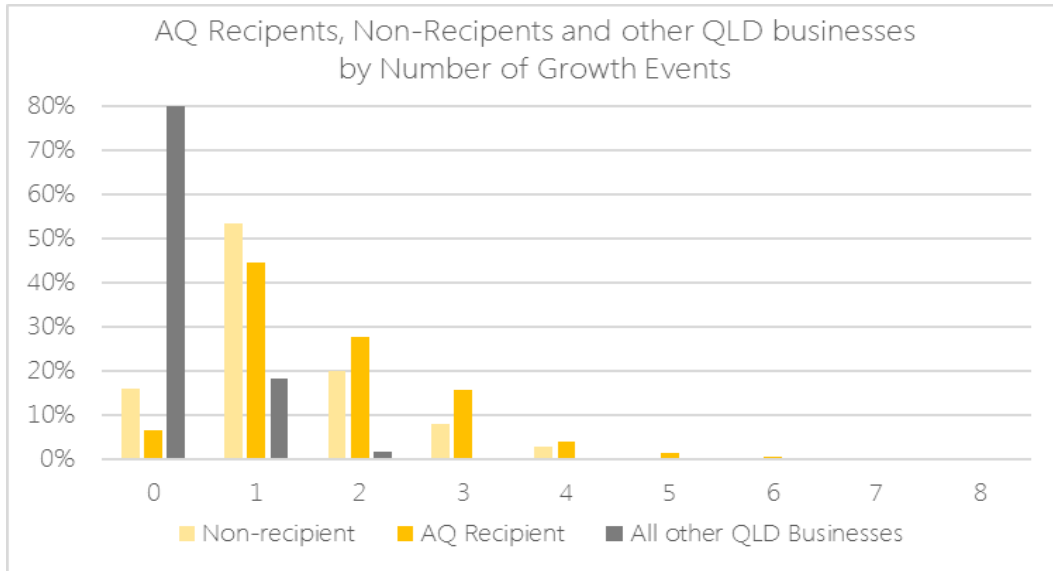
A case study on Growing Queensland's Companies is detailed on page 68. The case study demonstrates how an AQ program has provided mentorship and professional advice which in turn has resulted in stronger growth and development of small- to medium-sized Queensland companies.



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An analysis conducted by QUT found that AQ participants are more likely to have growth events when compared to non-participants (Chart 3.7). A business is said to have a growth event if it has either trademarks, plant breeders, patents, designs or exported products. A business is also said to have a growth event when it is listed on the Australian Stock Exchange and trades interstate. The analysis shows that AQ participants have a mean of 1.7 and a median of 1 growth events, while non-recipients (i.e. businesses who applied for AQ funding but did not receive funding) have a mean of 1.3 and a median of 1 growth events.

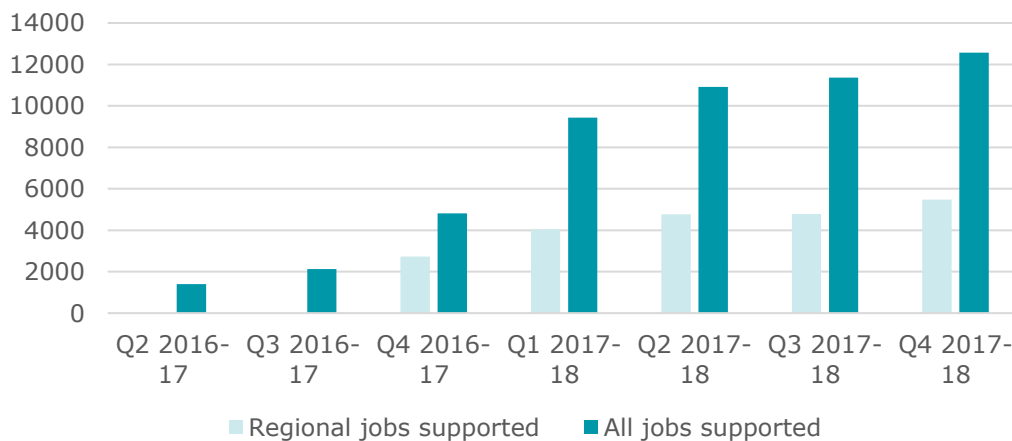
Chart 3.7 Growth events of AQ participants, non-participants, and other Queensland businesses



Source: Moyle and Pandey

By 2017-18, AQ supported 12,568 jobs (Chart 3.8). 44% of jobs supported are in regional Queensland. The most recent whole-of-initiative reporting (Q3 2018-19) reported that the total jobs supported by AQ is more than 15,200.<sup>39</sup>

Chart 3.8 Number of jobs supported by AQ



Note: Jobs supported includes jobs reported (actual to date) and jobs forecast (expected future jobs). Regional breakdown of jobs supported is not available for Q2 and Q3 2016-17.

Source: DITID

<sup>39</sup> DITID, *Advance Queensland Whole-of-initiative Quarterly Highlight Report (2019)*



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One objective which was not as successfully met at this stage was expediting commercialisation of ideas, research and technologies. The majority (85%) of AQ grant recipients were businesses, startups, and entrepreneurs, but less than half of businesses, startups and researchers who responded to the participant survey felt AQ had increased the proportion of innovation products that were commercialised. In stakeholder consultations, program directors also identified this area as an area for future investment.

Evidence which suggests that AQ has achieved its objectives under the Scaling for Jobs and Growth strategy is presented in Table 3.12.

Table 3.12 AQ achievements under the Scaling for Jobs and Growth strategy

Objectives	Outcomes	Evidence
Expedite commercialisation	Increased support to SMEs	DITID is committed to procuring from startups where appropriate under the Queensland Government guide to procurement from startups and SMEs. 85% of grant recipients are businesses, startups, and entrepreneurs. An analysis by QUT suggests that AQ recipients are more likely to have growth events when compared to non-participants.
	Increased proportion of ideas, research and technologies turned into commercial products, processes or systems	41% of businesses, 42% of startups and 46% of researchers in the survey agree that AQ has supported the commercialisation of products.
	Reduced time between ideas and commercialisation	
Increase economic benefits from innovation (including jobs)	Increased employment opportunities	31% of businesses, 48% of startups, 61% of government agencies and NGOs, and 73% of researchers in the survey agree that AQ has supported them in employing people in short-term or casual contract. 38% of businesses, 53% of startups, 47% of researchers, and 35% of government agencies and NGOs agree that AQ has supported them in employing people in long-term or permanent contract.
	Improve profitability and productivity	60% of businesses, 65% of startups in the survey agree that AQ has helped to improve productivity or profitability. 46% of businesses and 41% of startups in the survey agree that AQ has helped them to scale up production The Multi Factor Productivity index in Queensland grew by 1.5% annually between 2015-16 and 2017-18. This is higher than the growth rate at the national level (0.9%)

Note: Number of knowledge based jobs in Queensland was identified in the Advance Queensland Evaluation Framework as a macro indicator. The impact of AQ on exports has been identified as an outcome of AQ. Nevertheless, the number of knowledge based jobs and businesses with export activities are not included in this table due to unavailability of data.

Source: Deloitte Access Economics, QUT AQ Program Analysis, DITID, Queensland Government Advance Queensland Evaluation Framework v3 July 2018



## Case Study: Growing Queensland's Companies

### Background

Growing Queensland's Companies was launched in August 2017 and supports CEOs and executives of small-and-medium sized Queensland companies of high-growth potential by delivering leadership and growth training for their Chief Executive Officers and executives .

The program conducts Growth Clinics and Growth Modules which provide leadership and growth training for CEOs and executives. The Growth Clinics are free 1 day engagements and the Growth Modules are 3 day engagements which require participants to pay one third of the costs.

### Achievements of the program

- Approximately 200 growth clinics were delivered in 2017-18, attended by approximately 123 Queensland Companies
- Growth Modules were delivered 6 months later than the Growth Clinics to respond to participant feedback. Feedback indicated that time was needed after attending Growth Clinics to implement learnings and embed practices in the company before attending the Growth Modules.

Overwhelmingly positive feedback was received from participants of the program:

- 87% of Queensland CEOs agreed that the Growth Clinic enabled them to understand the growth issues that their company is experiencing, and what they need to do about them
- 85% of Queensland CEOs now believe their company has opportunities and the potential to accelerate its growth
- 95% of Queensland CEOs would recommend this Growth Clinic to another CEO.

In a case study of 10 companies that enrolled and completed the program in 2018 experienced continued business growth:

- Actual revenue increase of \$18 million (24%) over 2016-17 to 2017-18, projected growth of \$16 million (16%) over 2017-18 to 2018-19
- Actual profit increase of \$3.7 million (72%) over 2016-17 to 2017-18, projected growth of \$4.1 million (47%) over 2017-18 to 2018-19
- Actual export revenue increase of \$9 million (58%) over 2016-17 to 2017-18, projected growth of \$6 million (28%) over 2017-18 to 2018-19
- Actual job creation of 64 jobs (18%) over 2016-17 to 2017-18, projected growth of 145 jobs created (34%) over 2017-18 to 2018-19.

### 3.6 Overall quality of AQ

Based on the survey responses received, participants reported that overall they were satisfied with AQ; 78% of survey respondents reported that they were satisfied or strongly satisfied with the AQ program/s they participated in. On a scale of 1 (not satisfied) to 5 (strongly satisfied), respondents who participated in both AQ and another similar program rated their satisfaction with both AQ and other similar programs a rating of 3.9. Thus, respondents reported that they were similarly satisfied with the quality of AQ as with other innovation-focused programs they have also partaken in. A list of other innovation policies in Australia is provided in section 4.2. AQ's outcomes, accessibility, and administrative processes associated with applying and receiving support were identified as key factors that contributed to participants' overall satisfaction with AQ.

#### Accessibility

In addition to these outcomes, 72% of survey respondents agree that AQ programs were easy to access. Several participants in the survey reported that the administrative process was simple and efficient and programs were well advertised.

While participant feedback suggests that AQ programs are of high quality, consultations with subject matter experts provided some areas for further development:

- AQ so far has mostly targeted startups and focused on assisting businesses in their early stages. Some stakeholders suggested a stronger focus on SMEs would further increase the amount of jobs supported by AQ. Additionally, attracting large multinational companies to Queensland would both bring important flow-on impacts to related industries in the supply chain and also strengthen Queensland's brand as a place for innovation.
- Participation of Indigenous individuals and organisations could be improved. Among 3,497 participants whose Indigenous status is available in the program data, 3.9% of participants identified themselves as Aboriginal and/or Torres Strait Islander. Consultations with subject matter experts suggest that stronger collaboration with the Aboriginal and Torres Strait Islander Business and Innovation Reference Group would help AQ to better meet the need of Indigenous stakeholders.

#### Appropriateness

As discussed in sections 3.1 to 3.5, participants have reported to receive both tangible and intangible outcomes as a result of AQ programs: event participants were inspired; researchers were provided with networking opportunities; students were encouraged to undertake STEM study; businesses and startups received direct investment and training programs. On average, 67% of AQ participants in the survey agree that AQ has helped to address their most urgent need. Further details on the appropriateness of AQ are discussed in section 4.2.

#### Unintended impacts

29% of AQ participants in the survey indicated that there were some unintended positive impacts as a result of their participation in AQ programs. While unintended impacts vary across AQ programs, emerging themes of the unintended positive impacts include:

- Collaboration – Participants reported that informal relationships created as a result of participating in AQ has led to further collaborations with other participants of the innovation system
- Reputation – Participants reported that because of their association with the AQ brand they have received more attention and support from the wider community
- Recruitment – Participants reported that they extended the employment contract supported by AQ after AQ ends.
- Capability – Participants reported that participating in AQ broadened their perspectives on running a business.



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A small proportion of AQ participants in the survey (5%) indicated that there were some unintended negative impacts as a result of their participation in AQ programs. The commonality among these responses is the administrative process involved with meeting government requirements and reporting.

# 4 Has AQ been delivered efficiently?

## Key finding 7

- *Technical efficiency:* 65 jobs were reported for each million dollars of funding committed and \$1.40 was leveraged for each dollar of funding committed. Consultation with implementing agencies suggest that AQ programs have been delivered with low administrative costs.
- *Allocative efficiency:* AQ strategies and themes were informed by the Lerner report which identified the weaknesses of the Queensland innovation ecosystem in 2014. These themes are comparable to themes in innovation policies from other Australian jurisdictions. The majority of survey respondents (67%) agreed that AQ had addressed the most urgent need of their organisation.
- *Dynamic efficiency:* Outcome measures and qualitative feedback from stakeholders collected as part of the Evaluation suggest that AQ has evolved and improved over time. There was gradual improvement in the outcomes of jobs per million dollars committed and funds leveraged per dollar committed.

### 4.1 Has AQ been delivered at the lowest possible cost? (Technical efficiency)

Technical efficiency is an assessment of whether the outcomes from a program can be delivered at a lower cost. To assess the technical efficiency of AQ, this Evaluation differentiates between costs per outcome achieved (i.e. outcome per dollar of funding committed) and costs to deliver programs.

The Evaluation found that as at 30 June 2018, 65 jobs were reported for each million dollars of funding committed to programs designed to drive jobs.<sup>40</sup> As job outcomes data for other innovation programs is not available, it is not possible to make an objective assessment of the cost effectiveness by job outcome. Nevertheless, the number of jobs for each million dollars committed increased over time. Given the lagged impact of innovation policy on economic outcomes, job numbers may be understated.

The Evaluation found that as at 30 June 2018, \$1.40 were leveraged for each dollar of funding committed to all programs. This leverage ratio is higher than the 1:1 ratio found among R&D tax incentive programs.<sup>41</sup> Some programs which were specifically designed to attract investment, such as AQIAF, have achieved a much higher ratio.

The Lerner report defined cost-effectiveness as minimising investment in single projects to allow investment in multiple strategies to maximise the chance of success. This was implemented as a part of AQ. As at 30 June 2018, AQ provided funding to over 4491 projects. The majority of

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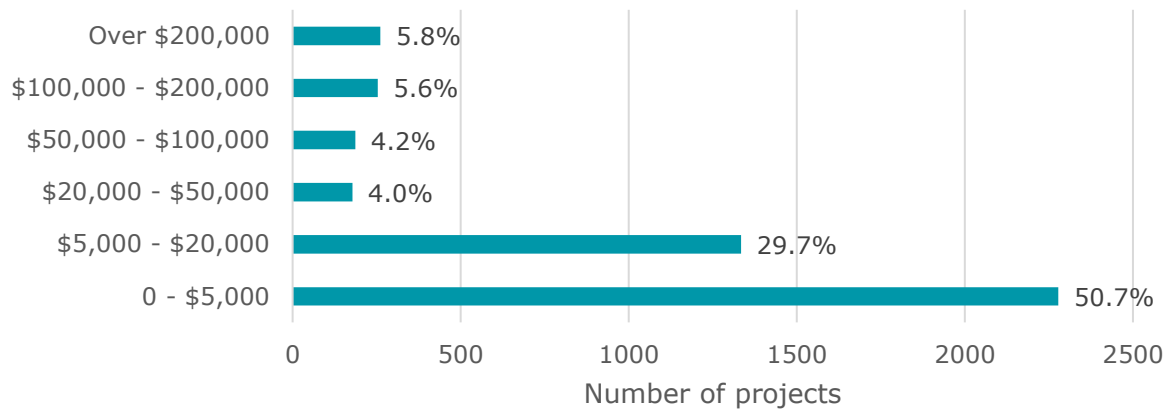
<sup>40</sup> Note: Jobs supported per million dollars committed was estimated based on data of selected AQ programs designed to drive jobs, including Biofutures Commercialisation Program, Connecting with Asia Strategy, Hot DesQ, Ignite Ideas Fund, Industry Accelerators Program, Research Fellowships, Platform Technology Program, Innovation Partnerships Grants, Knowledge Transfer Partnerships, Advance Queensland Industry Attraction Fund, Business Development Fund, Business Growth Fund, Small Business Digital Grants, Small Business Entrepreneur Grants.

<sup>41</sup> The McKell Institute, *Committing to the Innovation Nation Why the R&D tax incentive is so important for Australia* (2017)

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projects (80%) received under \$20,000 while only 20% of projects received more than \$20,000 (Chart 4.1).

Chart 4.1 Number of projects by size of funding committed.



Source: DITID

To assess the efficiency of the delivery of AQ programs, consultations were conducted with program leaders and central program stakeholders. Stakeholders from both groups largely shared the view that it would be hard to achieve the same outcomes with fewer administrative resources and reported that programs were already delivered at the lowest possible administrative cost. Programs which required attendees, such as events, festivals or workshops, were reported to be under administrative pressures. One example was the increased administrative burden created as more people participated in AQ program over time. Events needed to be larger to accommodate more participant and grant programs became more work to administer as the number of applications and participants increased.

*"We couldn't run any leaner without impacting on quality of service delivery. There's always a way to pare back services if you have to but whether that then offers the same value is debatable."*

*~ Program leader*

Some program directors reported that administrative efficiency of delivery could be achieved by improving communication and collaboration between AQ implementing agencies. Suggested improvements to communication and collaboration included:

- Scheduling meetings with more notice and clearer expectations of who should attend.
- Improving "business intelligence" for program directors by providing a dashboard showing overall funding and how it had been distributed.

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## 4.2 Has AQ addressed the areas of greatest need?

Overall, AQ has addressed the Queensland innovation ecosystem's areas of need. This is evident by the survey responses from AQ participants, the alignment of outcomes against recommendations in the Lerner report, and the alignment of AQ's themes with the national innovation strategies.

The alignment of AQ with recommendations in the Lerner report are discussed throughout the report. In addition to the alignment with the Lerner report, AQ strategies and themes also align with innovation policies in other jurisdictions. This alignment is shown in Table 4.1.

Table 4.1 Australian government innovation policies

Region	Description of policy	Size of investment	Similarity of themes	
			Key areas targeted	Corresponding AQ theme
Australia	The Commonwealth Department of Industry, Innovation and Science supports the Commonwealth's innovation program which runs a series of programs, primarily targeting startups and startup investors, to grow the innovation sector in Australia's economy.	\$10,124 million in 2015 <sup>42</sup>	Culture and capital (improving access to early stage capital)	Invest, Grow
			Collaboration (improving levels of industry-research collaboration)	Connect
			Talent and skills (improving the maths skills of school-age children)	Discover, Inspire
			Government as an exemplar (Government should be an innovation lead not an innovation follower)	Connect
New South Wales	Innovation NSW has a strategy organised around four areas that support key initiatives. The initiatives support entrepreneurs and startups, social entrepreneurship and school students/STEM education.	\$153 million in 2018-19, including \$46 million for startups and fast growing businesses <sup>43</sup>	Government as an Innovation Leader	Connect
			Fostering and leveraging R&D	Discover
			Skills for the Future	Inspire, Discover
			A Home for Entrepreneurs	Connect, Grow
Victoria	The Victorian Government supports, Victoria's startup agency which is responsible for supporting the startup ecosystem in Victoria and LaunchVic grow start up infrastructure. The organisation currently supports 30 projects with this overall aim.	LaunchVic - \$26.5 million in funds committed in 2017-18. Significant commitment to public sector innovation, but total	Start ups	Inspire, Invest, Connect, Grow
			Victoria as an international innovation hub	Connect, Grow
			Public sector innovation	Inspire

<sup>42</sup> Productivity Commission, *An Overview of Innovation Policy, Shifting the Dial: 5 year Productivity Review, Supporting Paper No. 12, Canberra* (2017).

<sup>43</sup> NSW Government, *2018 Budget Papers* (2018).

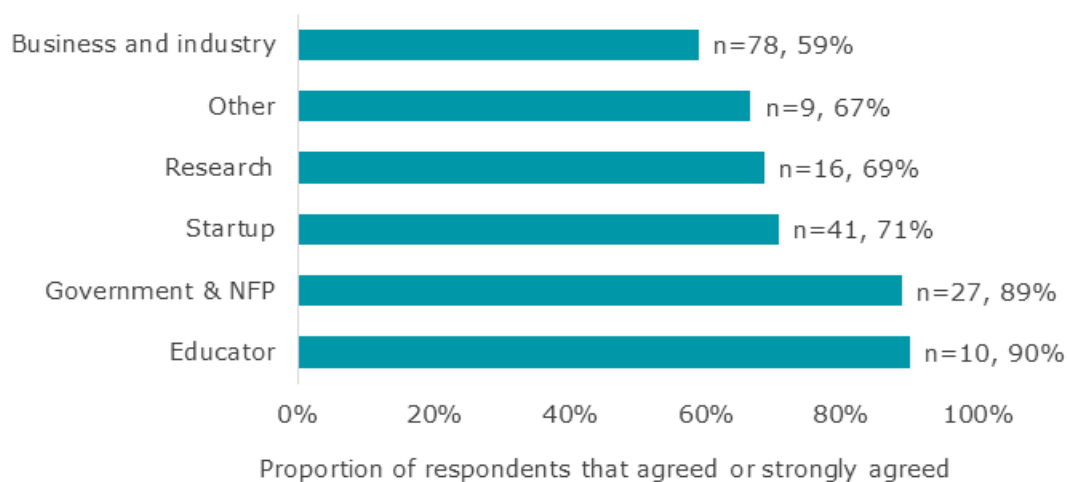
Region	Description of policy	Size of investment	Similarity of themes	
			Key areas targeted	Corresponding AQ theme
	The government also supports a public sector innovation policy which is focused on skilling up and providing grants to public sector employees to innovate.	funding unknown <sup>44</sup>	Help for business	Invest, Grow
			Jobs of the future	Grow
			Research and collaboration	Discover
			Incentives for investors	Invest

Source: Compiled by Deloitte Access Economics

These policies all have components which target startups and share the objective of advancing the innovation ecosystem in Australia by investing in startups now. Similar to AQ, the majority also support the development of local talent available to work in entrepreneurial or research and development roles in the future. In this context, AQ contributes to addressing priority areas identified by multiple agencies as important to supporting innovation.

Two thirds (67%) of survey participants either agreed or strongly agreed that the AQ program they participated in addressed their most urgent needs. The innovation system participants who most agreed with this statement were educators, followed by government agencies and not-for-profits, and startups (Chart 4.2).

Chart 4.2 Survey respondents who agreed or strongly agreed that AQ programs addressed their and their organisations’ most urgent need



Source: Deloitte Access Economics

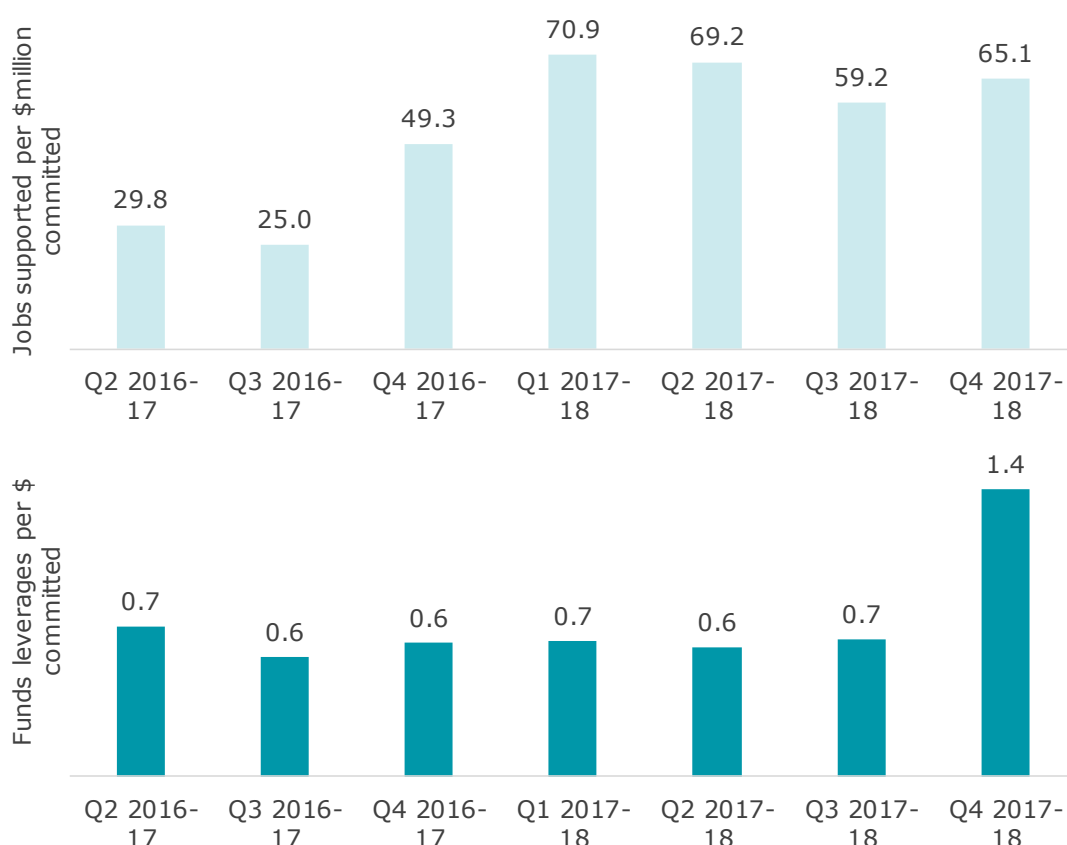
In consultations, stakeholders were asked to consider if AQ represented value for money. The majority of agencies felt the investment represented value for money, although acknowledged the difficulty in quantifying this value. This difficulty arises because much of this value rests on enhancing collaboration and other intangible measures, as well the absence of an easily defined counterfactual. While there has been an obvious direct contribution, the indirect impacts remain of great importance to stakeholders.

<sup>44</sup> Victorian Government, *Government Budget Papers 2018* (2018)

### 4.3 Has AQ continued to improve over time?

AQ has continued to evolve and improve over time based on both improvement in outcome measures and qualitative feedback in stakeholder consultations. There has been gradual improvement in the number of jobs supported per million dollars despite some fluctuations between quarters. The funds leveraged have been stable until Q4 2017-18 when AQIAF reported funds leveraged for the first time since program inception. That is, the numbers shown reflect when funds leveraged were reported to AQ, not when the funds were leveraged.

Chart 4.3 Improvement in AQ outcome measures over time.



Note: Jobs supported per million dollars committed was estimated based on data of selected AQ programs designed to drive jobs, including Biofutures Commercialisation Program, Connecting with Asia Strategy, Hot DesQ, Ignite Ideas Fund, Industry Accelerators Program, Research Fellowships, Platform Technology Program, Innovation Partnerships Grants, Knowledge Transfer Partnerships, Advance Queensland Industry Attraction Fund, Business Development Fund, Business Growth Fund, Small Business Digital Grants, Small Business Entrepreneur Grants.

Funds leveraged per dollar committed is estimated based on all AQ programs.

Source: DITID

Based on consultation, stakeholders report that AQ has changed since inception, both in terms of the range of programs funded and in how programs are delivered.

*"Program reviews have generated learnings that have been incorporated into future work."*

*~ Program leader*

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Overall, the number of programs funded expanded over the first term. Central program stakeholders described AQ as evolving in its early stages. An example of this is how funds for some planned programs were diverted into new programs and successful existing programs.

Stakeholders also reported a process of continuous improvement to programs throughout the rounds of AQ funding. The move to Smarty Grants to administer and manage grant programs was reported as one such major improvement.

Some evaluation activity has been completed or is underway, and there was a view that delivery of programs would benefit from more evaluative work. Process and implementation reviews have driven the reported improvements to program delivery and helped to identify where additional programs could be useful.

The importance of this work, and of continuing to assess the needs of the innovation and tailor available programs over time, is described in the Lerner report in the policy principle “measure, evaluate and revise.” This principle describes how evaluation activity should not stifle entrepreneurship but allow continued investment in successful programs that meet the needs of the innovation system.

# 5 Future directions

The Queensland Government’s efforts to encourage innovation and enhance the State’s knowledge-intensive industries began in the late 1990s with a shift in focus from historical strengths such as agriculture and mineral products towards knowledge and innovation.<sup>45</sup> AQ was developed to build on this further and represented an opportunity to strengthen existing industries and build new high-value industries.<sup>46</sup> The objective of the first macro-level evaluation of AQ over Term 1 is to assess the key achievements and benefits of AQ and examine the extent to which AQ has met the needs of key system participants. This chapter brings together the key findings of the evaluation and highlights key considerations for the future.

It is important to note that change at a system level is complex and takes time. The Lerner report describes a necessary policy principle is to “keep it reasonable” and highlights that policy efforts need to focus on what is achievable at the state level. This principle extends to considering the results of innovation programs in light of the complexities inherent in the innovation system and the long lead time before the full results can be observed. Given the relatively short amount of time that has elapsed since the start of AQ, it is difficult to reach any definitive conclusions about the full impact or overall influence of AQ programs on the innovation ecosystem.

## 5.1 Summary findings of the evaluation

Table 5.1 outlines the key findings of the Evaluation according to each evaluation domain.

Table 5.1 Key findings by evaluation domain

Domain	Key finding
<b>Process evaluation</b>	
Fidelity	AQ has been largely delivered as intended – allocation of funding is on track and associated programs were designed and implemented in line with Lerner recommendations and policy framework. In addition, AQ and associated programs were found to have evolved over time in alignment to the needs of the stakeholders.
Reach	The largest target group for AQ was startups and entrepreneurs. Correspondingly, startups, entrepreneurs and businesses were the largest recipient type to receive AQ funding. In addition, the reach of AQ has increased over time, with a growing number of applicants, participants and followers on social media.
Governance	Most stakeholders reported that governance had improved over time, particularly in terms of the strategic direction of AQ becoming clearer. However, improvements could be made around some aspects of governance relating to structures and roles and responsibilities.
Barriers and enablers	Enablers to implementation include: <ul style="list-style-type: none"> <li>• AQ as an overarching brand makes it easier to implement AQ. Applicants found the one AQ website to be easier to find information and gain support when required.</li> <li>• Programs made use of existing networks and infrastructure already in place (e.g. program documents, operational functions, contacts).</li> </ul>

<sup>45</sup> Lerner et al, *Queensland’s Innovation Ecosystem and Recommendations for Future Action* (2014)

<sup>46</sup> Advance Queensland, *A whole-of-government policy framework*



Domain	Key finding
	<ul style="list-style-type: none"> <li>The right people are in the right roles to assist and enable program success.</li> </ul> <p>Barriers to implementation include:</p> <ul style="list-style-type: none"> <li>Program funding cycles made some program planning challenging.</li> <li>Reporting requirements and processes.</li> <li>Lack of visibility of how data and information is used.</li> </ul>
<b>Effectiveness evaluation</b>	
Effectiveness	<p>AQ programs, grouped under five themes, have covered a broad spectrum of the innovation system. It has supported participants, ranging from businesses to startups, researchers, scientists, not-for-profit organisations and government.</p> <ul style="list-style-type: none"> <li><b>Supporting culture:</b> there was a reported increase in innovation awareness and entrepreneurialism. There was an increase in the number of clusters of entrepreneurial activity with 29 co-working spaces, 16 startup groups and 6 commercialisation units. Queensland share of Australian startups increased from 16.5% in 2015 to around 20% in 2018.</li> <li><b>Building capability:</b> There was a reported increase in innovation capability with an increase in the uptake of STEM subjects in schools and universities. AQ also had some success in developing, attracting, and retaining talented people. Less than half of researchers and startups in the survey agreed that AQ had supported them in employing people in long-term/permanent contracts and increased the flow of highly qualified people into businesses.</li> <li><b>Foster collaborations:</b> There was a reported increase in the development of local and international networks with over 1,000 formal collaborations among businesses, researchers, government, community groups, educators, future innovators and numerous informal collaborations facilitated through network programs and events.</li> <li><b>Increase investment:</b> Some indicators suggest that there is an improvement in access to capital, though more long term focus should be considered to support the venture capital market over the longer term in line with the recommendations of the Lerner report. Queensland's share of national investment in terms of value of venture capital investment deals has increased from 13.5% in 2015-16 to 15.3% in 2017-18. Angel investor networks have been established across 10 Queensland regions. Survey findings demonstrated that 24% of startups and 17% of businesses in the survey agree that AQ has facilitated connections with investors, including angel investors and venture capitalists.</li> <li><b>Scaling for jobs and growth:</b> As at 30 June 2018, AQ supported 12,568 jobs. The survey findings demonstrated that less than half of businesses, startups and researchers in the survey agree that AQ has supported the commercialisation of products. AQ could strengthen commercialisation of products as recommended in the Lerner report as a longer term strategy.</li> </ul>
Access	Overall, AQ was considered easy to access with well-advertised programs and straightforward application processes.
Appropriateness	AQ as a policy was appropriate given the gaps in the innovation system that were highlighted prior to AQ.
Quality	The majority of the AQ participants surveyed were satisfied with the program.

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Domain	Key finding
<b>Efficiency evaluation</b>	
Technical efficiency	65 jobs were reported for each million dollars of funding committed to programs designed to drive jobs and \$1.40 was leveraged for each dollar of funding committed across all programs. Stakeholder feedback was that programs with the same scope could not have been provided at a lower cost, but that efficiency could be enhanced by better communication and collaboration between DITID and delivering agencies.
Allocative efficiency	Survey data demonstrates that the majority (67%) of program participants felt AQ addressed the most urgent need of their organisation. The AQ themes were also targeted to address specific needs of the Queensland innovation system based on the Lerner report. These themes are comparable to themes in innovation policies from other Australian jurisdictions indicating the funds were allocated efficiently by consensus.
Dynamic efficiency	Stakeholders agreed that program delivery and the breadth of programs available improved over time. This process was assisted by interim process reviews as well as changes to how certain programs (especially grants) were administered.

Source: Deloitte Access Economics

## 5.2 What do these findings mean for the future direction of AQ?

It is important that AQ continues to address the needs of the innovation system as it evolves. As highlighted, AQ was the Queensland Government's response to addressing the changing needs of the Queensland economy as it transitions from a commodity economy to a knowledge economy. The AQ Policy Framework showed that the strategic direction of AQ was developed based on extensive research and consultation with subject matter experts in this area. This process helped to identify the specific needs of the Queensland innovation system and consequently, AQ programs were developed and delivered to address the particular areas of need. The five key themes of AQ (that programs are categorised under) are aligned to the specific recommendations identified in the Lerner report. The programs under AQ have largely met the needs of participants. This is reflected in the results of the participant survey where 67% of respondents agreed that AQ has addressed their most urgent needs.

Alignment with the Lerner report's recommendations allowed AQ to successfully address the needs of the innovation system and its participants. The Lerner report also recommended a focus on monitoring, evaluation and revision, and it is important to continually monitor the ongoing needs of stakeholders over time. With the continuous development of technology, the way we work and live will continue to evolve and the needs of Queensland's innovation system will continue to change. It is therefore important that the strategic directions of AQ continue to be based on research and consultations with stakeholders to ensure that AQ consistently addresses the evolving needs of the innovation system.

Consultations and research as part of the Evaluation suggest that two areas of need that should continue to be addressed are access to capital and commercialisation of products. Research showed that the VC market in Queensland still remains relatively small compared to that of New South Wales and Victoria (the number of investment deals in Queensland is 19% of the number in New South Wales and 35% of the number in Victoria in 2017-18).<sup>47</sup> In consultation, subject matter experts suggested that while AQ has been successful in inspiring people to try new business ideas, they have not seen a significant improvement in the quality of ideas and businesses. This is also reflected in the survey of AQ participants which showed that less than half agreed that participating in an AQ program had helped them to commercialise their products. This suggests that there is scope for further improvement in this area and for AQ to provide further support to aid commercialisation and boost the quality of ideas. This is a longer term recommendation of the Lerner report that can be implemented given the increased maturity of the Queensland innovation system following Term 1.

AQ has supported all participants of the Queensland innovation system, ranging from businesses to startups, researchers, scientists, not-for-profit organisations and government. The performance of indicators analysed as part of the Evaluation suggests that AQ has enhanced key innovation enablers, including culture, collaboration and capability. The Evaluation has also found that to a lesser extent, AQ has supported access to capital and the capture of value through commercialisation. While the effectiveness of AQ in these two areas could be improved, it is important for AQ to balance the need of all innovation participants and sustainably maintain the pipeline of ideas and products.

It is vital that AQ creates opportunities for all Queenslanders and its benefits are distributed fairly across society. Research shows that while innovation improves productivity and facilitates economic development, it also changes the way we work and the skills required for jobs. Findings from the recent Public Perceptions of Innovation Report indicate that 41% of Queenslanders are concerned that innovation could leave some people behind and 39% are concerned about loss of jobs. Therefore an inclusive approach will allow AQ to reach all Queenslanders and to promote sustainable economic development. Evaluation findings show that one way for AQ to better cater to the needs of all Queenslanders is to improve engagement with reference groups and subject matter experts to ensure that needs of the different population groups are taken into account. This

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<sup>47</sup> ABS, 5678.0 - Venture Capital and Later Stage Private Equity, Australia, 2017-18 (2019)

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will also allow for equality considerations to be incorporated into program design and implementation (i.e. gender, regional and Indigenous status). Engaging with experts will help to promote access and potentially improve participation in AQ programs by various stakeholder groups.

### 5.3 What do these findings mean for the delivery of AQ?

Data monitoring and reporting process should continue to be revised and streamlined. While program leaders acknowledged that the AQ reporting tool is clear and relatively easy to use, they also suggested that reporting requirements could be better aligned to the objectives and nature of different AQ programs to better capture AQ achievements. In particular, stakeholders acknowledged that in addition to supporting jobs and facilitating economic growth, innovation plays an important role in addressing today's health, social and environmental challenges. While these outcomes of innovation are implicitly acknowledged in AQ strategies and objectives, such achievements of AQ could be better reflected in the reporting tools.

Additionally, a two-way communication between DITID and other implementing agencies on how reported data is used would enable stakeholders to better understand how individual programs contribute to the broader AQ agenda. This would help both central program stakeholders as well as program leaders monitor progress of AQ against its objectives.

Communication can have significant influence on ensuring stakeholder buy-in and consequently, should continue to be a focus from an administrative perspective. Implementing agencies noted that communication across departments has improved over time and this has improved engagement and commitment to the success of AQ. Nevertheless, implementing agencies reported that roles and responsibilities of the groups associated with governance processes could be clearer. Having a clear purpose and agenda for meetings, defined roles for meeting attendees and also allowing for sufficient preparation time in advance of meetings would help with increasing engagement of implementing agencies.

Senior leadership is integral for effective program delivery. Buy-in from senior leadership helps program managers to resource, deliver and implement successful programs. The governance structures of AQ have gone through a change since the initial implementation to ensure the right people are in the right roles, and this has helped to promote a sense of ownership across different agencies. This sense of ownership needs to be maintained across the different stakeholders to ensure that the relevant parts of the innovation ecosystem continue to be incentivised to achieve outcomes.

The AQ brand has made an important contribution to AQ achievements to date and as such, it is important for the brand to continue to be strengthened. The AQ brand is strong and well-known across both participants and government departments. Also contributing to the strength of the AQ brand are satisfied participants of the program who help to advocate for the benefits of participants and promote the program by word-of-mouth. AQ should continue to build on its brand, ensure programs are sufficiently resourced to allow successful implementation in line with the needs of participants. This brand should continue to be used to elevate the role of innovation across Queensland's economy and be used to promote programs that are included in any future refresh of AQ.

AQ as an initiative overall has been agile and this agility has been a contributor to the effective delivery of AQ and ability of AQ to meet stakeholder needs. Central program stakeholders and program leaders noted instances where either the program design was improved or funding was reallocated to better meet stakeholder needs. It is important for an initiative like AQ that involves multiple implementing agencies and stakeholders to remain agile and flexible going forward.

## 5.4 Future areas of research

As the first macro-level evaluation of Term 1 of the AQ initiative, this Evaluation highlights the following areas of consideration for future ongoing evaluations of AQ, whether carried out at the micro, meso- or macro-level. Some of these areas were unable to be considered as part of the Evaluation due to data limitations and/or the inability to observe outcomes as a result of insufficient time that has elapsed since the program commenced. For instance, Deloitte Access Economics was not able to access business data at the organisation level, consequently, the analysis of business performance was supplemented by QUT research. A full list of limitations of the Evaluation are provided in section 1.4.

It is important for future evaluations of AQ to continue tracking lag indicators to provide a better assessment of AQ outcomes. The Evaluation found that there is a time lag in data for HERD intensity, BERD intensity, and GOVERD intensity. For example, the latest data on HERD intensity data is related to 2016, only one year after AQ was announced. Additionally, QUT research has noted that it typically takes time for businesses to come up with ideas, apply for patents and get their patent applications approved. The research suggests that this time lag potentially explains why the number of patents among AQ participants is not statistically significantly larger than the number of patents among non-recipients.

AQ outcomes for Indigenous, female, and regional Queenslanders could be further investigated through targeted evaluations. This Evaluation has demonstrated AQ outcomes for Indigenous, female and regional participants through case studies, however as a macro-level evaluation, the Evaluation has taken into account all AQ programs and assessed their outcomes at a system level more broadly. As such, data collection tools (i.e. survey and consultation questions) were designed to suit all AQ participants, rather than catered specifically for Indigenous, female, and regional participants. Going forward, outcomes relating to Indigenous, female, and regional participants could be further investigated through targeted evaluations.

Future evaluations could investigate the relationship between growth events and job numbers. A business is said to have a growth event if it has either trademarks, plant breeders, patents, designs or exported products. A business is also said to have a growth event when it is listed on the Australian Stock Exchange and trades interstate. Current analysis by QUT showed that AQ recipients have a mean of 1.7 and a median of 1 growth events, while non-recipients average 1.3 and a median of 1 growth events, whereas all other Queensland businesses had an average of 0.2 growth events. Businesses in Rockhampton, Ipswich and Logan have been found to have relatively higher number of growth events compared with businesses in other regional Queensland. Further research to investigate the relationship between growth events and number of jobs would be beneficial to observe ongoing effectiveness of AQ.

A further area of consideration for future evaluation includes analysis of behavioural changes as a result of AQ initiatives in the broader innovation ecosystem. For instance, QUT analysis showed that AQ recipients had an average of 2.8 trademarks higher than the average of 1 for non-recipients and 0.5 for all other Queensland businesses. However, in 2015 (i.e. the start of Term 1 of AQ) there was a spike in the average number of trademarks for both non-AQ recipients and all other Queensland businesses. There could be scope to investigate if this sudden spike was associated with the introduction of AQ as a new innovation policy.

# Appendix A Methodology of the Evaluation

This chapter outlines the methodology used to conduct the Evaluation, including the program logic, indicator framework, and data collection and analysis. The methodology discussed in this chapter is informed by the AQ Evaluation Framework.<sup>48</sup>

## Program logic

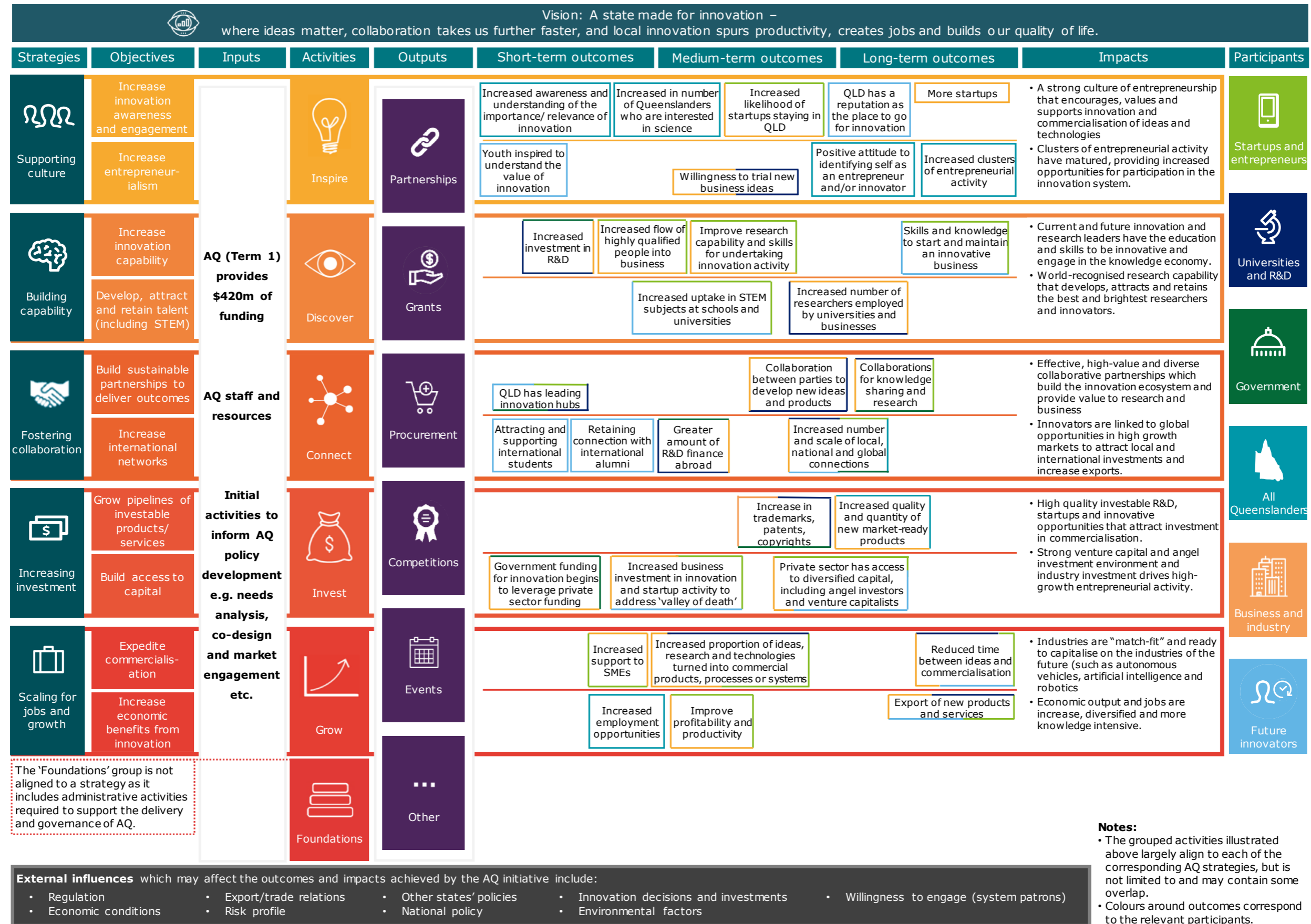
The first step in the methodology involves refining the program logic model underpinning the evaluation of AQ. AQ activities are mapped to their expected outcomes in the program logic model which then inform the development of evaluation questions. This leads to the development of evaluation indicators and informs the data collection strategy and data analysis.

The program logic in Figure A.1 guided the Evaluation and was developed based on AQ-related policy documents, as well as stakeholder input from a co-design workshop held on 18 February 2019. The program logic has been refined as the evaluation progressed.

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<sup>48</sup> Queensland Government, *Advance Queensland Evaluation Framework v3* (2018)

Figure A.1 Program logic used for the Evaluation





## **Indicator framework**

The purpose of the indicator framework is to illustrate linkages between evaluation questions (for each type of evaluation) and how the questions can be potentially measured according to corresponding data sources. Potential data sources include both primary data, collected through semi-structured interviews and surveys, and secondary data sources, such as program data collected by DITID and other implementing agencies, and other sources.

The evaluation questions for each evaluation type are disaggregated into key lines of enquiry. Specifically for the effectiveness evaluation, the key lines of enquiry largely align to the short-, medium- and long-term outcomes of the program logic in section A.1.

The indicator framework has been split into three tables, one for each type of evaluation – process evaluation, effectiveness evaluation and efficiency evaluation. In addition, each table contains the evaluation questions, key lines of enquiry, corresponding potential measures and data sources.

Table A.1 Indicator framework – process evaluation

Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
<b>Fidelity</b>			
To what extent have AQ and associated programs been delivered as intended or planned?	Is the allocation of funding on track?	Amount of total funding committed and allocated and how it is tracked against plan for funding distribution	Program data and monitoring documents
	How are the progress and delivery of programs tracking against the initial plan?	Perception on whether the activities are delivered according to plan	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li>Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	Have the implementation of AQ programs evolved since inception? If so, why?	<ul style="list-style-type: none"> <li>Views of implementing agencies on how implementation of AQ programs have evolved.</li> <li>Any barriers and enablers to implementation.</li> <li>Identification of any changes made and the reasons why.</li> </ul>	Semi-structured interviews/focus groups with implementing agencies
<b>Reach</b>			
To what extent have target groups of AQ been adequately reached?	How has the reach of AQ changed over time?	<ul style="list-style-type: none"> <li>Number of program applications</li> <li>Number of social media reach/ engagement/ followers</li> <li>Number of AQ public enquiries</li> </ul>	<ul style="list-style-type: none"> <li>Case studies</li> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li></li> </ul>
	How has the reach of AQ differed across key demographic groups?	Number of programs that target participants who are: <ul style="list-style-type: none"> <li>Indigenous</li> <li>female</li> <li>regional</li> </ul>	<ul style="list-style-type: none"> <li>Case studies</li> <li>Semi-structured interviews/focus groups with implementing agencies</li> </ul>

Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
		<ul style="list-style-type: none"> <li>Number of applications to female-targeted programs</li> <li>Number of applications to Indigenous-targeted programs</li> <li>Number of applications to regional-targeted programs.</li> </ul>	<ul style="list-style-type: none"> <li>Case studies</li> <li>Semi-structured interviews/focus groups with implementing agencies</li> </ul>
		Proportion of applications to non-targeted programs by Indigenous, female and/or regional participants	<ul style="list-style-type: none"> <li>Case studies</li> <li>Semi-structured interviews/focus groups with implementing agencies</li> </ul>
	How are key stakeholders of key AQ programs identified and approached?	Process to identify and approach key stakeholders across key programs	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li>Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	Are there any learnings/ ideas to improve the reach of the AQ initiative?	Other stakeholders missing that could be targeted through the programs Avenues to improve processes to target missing stakeholders	Semi-structured interviews/focus groups with implementing agencies Semi-structured interviews/focus groups with implementing agencies
To what extent have AQ and associated programs been adopted by key stakeholders?	What is the overall adoption of the AQ initiative?	Number of programs categorised by key stakeholder group, over time	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li>Program data and monitoring documents</li> </ul>
	What is the uptake of key AQ programs?	<ul style="list-style-type: none"> <li>Actual number of program participants compared to expected number of program participants</li> <li>Proportion of participants who are Indigenous/female/from a regional area</li> </ul>	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li>Program data and monitoring documents</li> </ul>

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Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
	Are there any learnings/ ideas to improve the adoption of the AQ initiative?	Any stakeholders that have enquired about the programs but failed to eventually participate	Semi-structured interviews/focus groups with implementing agencies
<b>Governance domain</b>			
To what extent have governance arrangements supported the implementation of the initiative?	Do governance structures facilitate the work done by implementing agencies?	Reported satisfaction of steering committee and leadership members on governance structures	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	Are the governance structures that are in place adequate?	Reported satisfaction of steering committee and leadership members with key governance processes (e.g. level of communication, regularity of meetings, effectiveness of communications)	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
<b>Barriers and enablers</b>			
What barriers or enablers to implementation have been identified?	Have there been any barriers to the delivery of programs or to the implementation of AQ?	Key barriers to implementation	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	What have been the key enabling factors that support AQ?	Key enablers to implementation	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Semi-structured interviews/focus groups with central program stakeholders</li> </ul>

Table A.2 Indicator framework – effectiveness evaluation

Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
<b>Effectiveness</b>			
To what extent have AQ and the associated programs delivered on stated objectives and/or achieved their intended outcomes?	What do AQ participants think about the effectiveness of AQ programs? (i.e. do the programs cater to the needs of program participants)	Reported satisfaction on a Likert scale	<ul style="list-style-type: none"> <li>• Previous survey responses</li> <li>• Survey of universities/ future innovators</li> <li>• Survey of businesses/ startups</li> </ul>
	What is the overall effectiveness of the AQ initiative on business quality?	Marginal impact of being AQ participant on Entrepreneurial quality index and REAP index	QUT's analysis on LABii
	Has AQ helped to foster a supportive culture?	Perception and awareness of science by gender	Perception of Science 2016 Survey
		Number of new startups by regions	<ul style="list-style-type: none"> <li>• LABii data</li> <li>• Business Longitudinal Analysis Data Environment (BLADE) data</li> </ul>
		Perception of Queensland as a place for innovation	<ul style="list-style-type: none"> <li>• Survey of universities/ future innovators</li> <li>• Survey of businesses/ startups</li> </ul>
How has AQ helped to build capability?	<ul style="list-style-type: none"> <li>• Business and startups' perspective on how AQ has supported their capability in conducting research and applying innovative methods, including nature of skills obtained or developed by individuals as a result of AQ</li> </ul>	<ul style="list-style-type: none"> <li>• Survey of businesses/ startups</li> </ul>	
		<ul style="list-style-type: none"> <li>• Number of training opportunities created/ supported directly or indirectly by AQ</li> </ul>	<ul style="list-style-type: none"> <li>• Program data and monitoring documents</li> <li>• Survey of businesses and startups</li> <li>• Survey of universities/future innovators</li> </ul>

Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
		Number of STEM students over time by regional status	Program data and monitoring documents
	To what extent has AQ helped to foster collaboration?	Number of co-working spaces, startup incubators, and accelerators by regions	Program data and monitoring documents
		Activities supported by AQ to attract international students and retain connections with international alumni	Survey of universities/ future innovators
		The extent and nature of collaboration across key stakeholders of key AQ programs	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Semi-structured interviews/focus groups with central program stakeholders</li> <li>• Survey of universities/ future innovators</li> <li>• Survey of businesses/ startups</li> </ul>
	Has AQ resulted in an increase in investment?	Amount of funds leveraged over time	<ul style="list-style-type: none"> <li>• Program data and monitoring documents</li> <li>• Survey of businesses/ startups</li> </ul>
		Use of AQ grants to improve quality and quantity of new products	Survey of businesses/ startups
		Number of intellectual properties	LABii
	Has AQ helped to scale for jobs and growth?	Number of jobs supported by the initiative by regions	Program data and monitoring documents
		The extent that jobs and training opportunities created by AQ have led to longer term jobs and further skill development	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Survey of businesses/ startups</li> </ul>
		Business survival rate and profit margins	<ul style="list-style-type: none"> <li>• BLADE data</li> </ul>

Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
			<ul style="list-style-type: none"> <li>ABS 8165.0 (to be used only if BLADE data is not available or of insufficient quality)</li> </ul>
		Level of exports at the business level	LABii
		Perception on how AQ has supported commercialisation of products	Survey of businesses/ startups
<b>Access</b>			
How easily have key system innovation participants and/or key demographics been able to access relevant programs or services?	Has it been easy for participants to access relevant AQ programs or services?	Reported satisfaction on accessibility on a Likert scale	<ul style="list-style-type: none"> <li>Survey of businesses/ startups</li> <li>Survey of universities/ future innovators</li> </ul>
	Has it been easy for key stakeholders to access the initiative?	Proportion of programs specifically target key stakeholders (i.e. gender, Indigenous status, regional status)	Program data and monitoring documents
	Have there been any barriers to access to AQ programs or services?	Barriers to access	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li>Survey of businesses/ startups</li> <li>Survey of universities/ future innovators</li> </ul>
<b>Appropriateness</b>			
How well has the AQ initiative and its associated programs met the needs of stakeholders?	Do AQ participants find the programs useful?	Reported perception on the usefulness of programs	<ul style="list-style-type: none"> <li>Survey of businesses/ startups</li> <li>Survey of universities/ future innovators</li> </ul>
	Does AQ target key areas of Queensland's innovation system that needs to be addressed	Key areas addressed by AQ in the innovation system and extent of interaction	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li>Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	Have there been any unintended positive or negative impacts of the AQ initiative?	Type and materiality of unintended impacts identified by stakeholders	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> </ul>

Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
Quality			
To what extent have the services provided been fit for purpose and consistent with best practice?	What feedback have been provided by stakeholders (participants and implementation agencies) on AQ programs?	Level of perceived program quality from participants/ event attendees	<ul style="list-style-type: none"> <li>Survey of businesses/ startups</li> <li>Survey of universities/ future innovators</li> </ul>
	Have similar and comparable programs been run in other states/countries?	Comparison between key AQ programs and similar programs	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li>Survey of businesses/ startups</li> <li>Survey of universities/ future innovators</li> </ul>
			<ul style="list-style-type: none"> <li>Desktop research</li> <li>Survey of businesses/ startups</li> <li>Survey of universities/ future innovators</li> </ul>

Table A.3 Indicator framework – efficiency evaluation

Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
Technical efficiency			
To what extent have available resources been optimised, and outputs/outcomes have been delivered at the lowest possible cost?	Could the same outcomes be achieved with a more efficient allocation of resources?	Opinion on whether there is any scope for reduction without sacrificing outcomes	<ul style="list-style-type: none"> <li>Semi-structured interviews/focus groups with implementing agencies</li> <li>Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	Were programs delivered on-budget?	Actual and planned administrative costs per program, grant delivered	Program data and monitoring documents
	What were the costs per key program participants compared to other similar programs?	Administrative costs per program, grant delivered	Program data and monitoring documents



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Key evaluation questions	Key lines of enquiry	Potential measures	Potential data sources
<b>Allocative efficiency</b>			
To what extent does the program provide good value for money?	Do implementing agencies/ central stakeholders consider AQ to be value for money?	Views on value for money by implementing agencies/ central program stakeholders	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	Do AQ participants consider AQ to have good value for money?	Views on value for money of key programs by AQ participants	<ul style="list-style-type: none"> <li>• Survey of businesses/ startups</li> <li>• Survey of universities/ future innovators</li> </ul>
	Do AQ participants consider key AQ programs to have delivered types of outputs / outcomes that are most valuable?	Views on whether the key program is providing types of outputs / outcomes of most value by AQ participants	<ul style="list-style-type: none"> <li>• Survey of businesses/ startups</li> <li>• Survey of universities/ future innovators</li> </ul>
<b>Dynamic efficiency</b>			
Has AQ and associated programs continued to improve over time, by finding better or lower cost ways to achieve outcomes?	Has the delivery of AQ improved over time?	Views of implementing agencies on how implementation of AQ programs have evolved	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	What have been the proposed or implemented changes and refinements to the structure of key processes for AQ programs?	Views of implementing agencies on how implementation of AQ programs have evolved	<ul style="list-style-type: none"> <li>• Semi-structured interviews/focus groups with implementing agencies</li> <li>• Semi-structured interviews/focus groups with central program stakeholders</li> </ul>
	Has the cost of delivering programs under AQ improved over time?	Cost per program participant over time of key programs	Program data and monitoring documents

In the Evaluation it was important to understand the extent to which AQ has delivered on its stated objectives and/or achieved its intended outcomes. To ensure that the Evaluation appropriately and adequately interrogated this, the short-, medium- and long-term outcomes of the program logic were linked to the key lines of enquiry and potential measures of the indicator framework for the effectiveness evaluation (see Table A.4).

Table A.4 Linking between program logic and indicator framework

Key lines of enquiry	Corresponding outcome from program logic	Potential measures
Effectiveness domain		
What do AQ participants think about the effectiveness of AQ programs? (i.e. do the programs cater to the needs of program participants)	Not relevant	Reported satisfaction on a Likert scale
What is the overall effectiveness of the AQ initiative on business quality?	<ul style="list-style-type: none"> <li>• Improve profitability and productivity</li> <li>• Export of new products and services</li> <li>• Increase in trademarks, patents, copyrights</li> </ul>	Marginal impact of being AQ participant on Entrepreneurial quality index and REAP index
Has AQ helped to foster a supportive culture?	<ul style="list-style-type: none"> <li>• Increased awareness and understanding of the importance/ relevance of innovation</li> <li>• Positive attitude to identifying self as an entrepreneur and/or innovator</li> <li>• Youth inspired to understand the value of innovation</li> <li>• Willingness to trial new business ideas</li> </ul>	Perception and awareness of science by gender
	<ul style="list-style-type: none"> <li>• More startups</li> <li>• Increased clusters of entrepreneurial activity</li> </ul>	Number of new startups by regions
	<ul style="list-style-type: none"> <li>• Increased likelihood of startups staying in QLD</li> <li>• QLD has a reputation as the place to go for innovation</li> </ul>	Perception of Queensland as a place for innovation
How has AQ helped to build capability?	<ul style="list-style-type: none"> <li>• Increased flow of highly qualified people into business</li> <li>• Improve research capability and skills for undertaking innovation activity</li> <li>• Skills and knowledge to start and maintain an innovative business</li> <li>• Increased number of researchers employed by universities and businesses</li> </ul>	<ul style="list-style-type: none"> <li>• Business and startups' perspective on how AQ has supported their capability in conducting research and applying innovative methods</li> <li>• Number of training opportunities created/ supported directly or indirectly by AQ</li> <li>• Nature of skills obtained or developed by individuals as a result of AQ</li> </ul>

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Key lines of enquiry	Corresponding outcome from program logic	Potential measures
	<ul style="list-style-type: none"> <li>• Digital literacy increased at schools</li> <li>• Increased uptake in STEM subjects at schools and universities</li> </ul>	Number of STEM students over time by regional status
To what extent has AQ helped to foster collaboration?	<p>QLD has leading innovation hubs</p> <hr/> <ul style="list-style-type: none"> <li>• Attracting and supporting international students</li> <li>• Retaining connection with international alumni</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• Collaborations for knowledge sharing and research</li> <li>• Collaboration between parties to develop new ideas and products</li> <li>• Increased number and scale of local, national and global connections</li> <li>•</li> </ul>	<p>Number of co-working spaces, startup incubators, and accelerators by regions</p> <hr/> <p>Activities supported by AQ to attract international students and retain connections with international alumni</p> <hr/> <p>The extent and nature of collaboration across key stakeholders of key AQ programs</p>
Has AQ resulted in an increase in investment?	<ul style="list-style-type: none"> <li>• Increased business investment in innovation and startup activity to address 'valley of death'</li> <li>• Private sector has access to diversified capital, including angel investors and venture capitalists</li> <li>• Government funding for innovation begins to leverage private sector funding</li> </ul> <hr/> <p>Increased quality and quantity of new market-ready products</p> <hr/> <p>Increase in trademarks, patents, copyrights</p>	<p>Amount of funds leveraged over time</p> <hr/> <p>Use of AQ grants to improve quality and quantity of new products</p> <hr/> <p>Number of intellectual properties</p>
Has AQ helped to scale for jobs and growth?	<p>Increased employment opportunities</p> <hr/> <p>Improve profitability and productivity</p>	<ul style="list-style-type: none"> <li>• Number of jobs supported by the AQ initiative by regions</li> <li>• The extent that jobs / training opportunities have led to ongoing or longer term jobs, and skills obtained or developed during jobs / training</li> </ul> <hr/> <p>Business survival rate and profit margins</p>

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Key lines of enquiry	Corresponding outcome from program logic	Potential measures
	<p>Export of new products and services</p> <ul style="list-style-type: none"> <li>• Increased support to SMEs</li> <li>• Increased proportion of ideas, research and technologies turned into commercial products, processes or systems</li> <li>• Reduced time between ideas and commercialisation</li> </ul>	<p>Level of exports at the business level</p> <p>Perception on how AQ has supported commercialisation of products</p>

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## Data collection

Data for the Evaluation was collected from primary data and secondary data sources, including:

- Primary data collection
  - Semi-structured interviews with AQ central program stakeholders, program leaders, and expert panel and other external stakeholders
  - Surveys with AQ participants such as small and medium enterprises, large businesses, startups, entrepreneurs, universities, scientists and researchers, and Queensland educators.
- Secondary data collection
  - AQ program data and documents provided to Deloitte Access Economics by DITID
  - QUT research
  - Other external data sources including publications by the ABS, Australian and Queensland governments, and other independently published research.

Each source of data and content acquired from each data source is summarised in Table A.5.

Table A.5 Data sources

Source of data	Details
Program document and data	Documents that help form the Evaluation include AQ whole-of-initiative quarterly reports, program overviews, the AQ Organising Framework, AQ Evaluation Framework and AQ Policy Framework.  Program data provided by DITID included performance and implementation data, as well as actual and forecast jobs by AQ program.
Semi-structured interviews	23 interviews have been conducted with central program stakeholders, program leaders, AQ Expert Panel and other subject matter experts. Guiding questions that have been used in these interviews are provided in Appendix B.
Online survey	229 AQ participants have provided responses to the survey. Details on the demographics of respondents and survey questions are provided in Appendix C.
Desktop research	A desktop research has been conducted and relevant publicly information and data have been incorporated in the Evaluation. Appropriate references are included throughout the Evaluation.
QUT LABii data analysis	QUT analysis of AQ recipients provided in the AQ Program Analysis – Powered by the LABii Queensland Database v.2.0.

Source: Deloitte Access Economics

## Data analysis

Data collated was scanned to verify the quality and the potential to provide meaningful findings. The data and document scan took into account factors such as sample sizes, relevance to answering evaluation questions, level of regional disaggregation, outliers, and relevant timeframes. Only data of sufficient quality was investigated at the data analysis stage.

# Appendix B Semi-structured interview questions

## Central program stakeholders

The following key questions were used for discussion with AQ central program stakeholders:

- What is your role in AQ?
- The following questions are related to the delivery of AQ:
  - How are key stakeholders of key AQ programs identified and approached?
  - How are the progress and delivery of programs tracking against the initial plan?
  - Have there been any barriers or enablers to the implementation of AQ?
  - Do governance structures facilitate the work done by implementing agencies? Are the governance structures that are in place adequate?
  - How has the delivery of AQ improved over time? What have been the proposed or implemented changes and refinements to the structure of key processes for AQ programs? Is there any scope for reduction in costs without sacrificing outcomes?
- The following questions are related to AQ achievements
  - What are key areas of Queensland’s innovation system that need to be addressed and how has AQ addressed them?
  - To what extent has AQ helped to foster collaborations between participants of the innovation system?
  - Do you consider AQ to be good value for money?

## Program leaders

The following key questions were used for discussion with AQ program leaders:

- Background and context
  - Can you describe the key programs you are responsible for implementing (type of program and key participants)?
- Implementation of AQ
  - How have the progress and delivery of these programs tracked against the initial plan?
  - Have there been any barriers or enablers to the delivery of the programs?
  - How do current governance structures facilitate the work done by implementing agencies?
- Effectiveness of AQ
  - To what extent do you think the programs have achieved their stated objectives?
  - Have there been any unintended positive or negative impacts of the AQ initiative?
- Efficiency of AQ
  - Could the same outcomes be achieved with a more efficient allocation of resources?

## Advance Queensland expert panel and other external stakeholders

The following key questions were used for discussion with AQ expert panel members and other external stakeholders:

- In your view, what are the key impacts and achievements of AQ to date?
  - Has AQ achieved its objectives?
- Have key innovation system participants been able to access the relevant programs or services?
  - Are there any particular gaps in ability to access?

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- Has AQ addressed the needs of the Queensland innovation system and key stakeholders? What evidence demonstrates this?
  - Based on your understand of Queensland’s innovation system has the design of AQ been fit for purpose?
  - Are there any gaps in the AQ approach or investment profile? If there are gaps how can these be addressed?
  - Would you make any changes to AQ regarding future investments?
- Have there been any unintended positive or negative impacts of AQ?

Do you have any other comments regarding AQ?

# Appendix C Survey methodology and questions

## Survey methodology

In designing the survey instrument, a variety of steps were undertaken to ensure it was suitable and appropriate for the subsequent analysis, including:

- Identifying an appropriate data collection instrument and chosen mode (in this case, we administered the survey online via Deloitte’s in-house survey platform, Qualtrics, which was used to distribute the survey to AQ participants based on existing mailing lists. Qualtrics has been through thorough due diligence checks and meets all privacy and legal requirements.)
- Ensuring that a representative sample could be reached by the survey instrument.
- Aligning the questions to the program logic/indicator framework.
- Fielding the survey to all relevant respondents, ensuring a random sample is achieved.

The survey was provided to a number of AQ implementing agencies who then distributed the survey to their respective participants and relevant contacts (i.e. local government officers). In addition, participants could forward the survey to anyone who they thought were appropriate to provide a response. Due to this survey distribution method, it is difficult to determine the exact number of surveys that were distributed and consequently the response rate could not be determined. Nevertheless, based on the number of surveys distributed solely by AQ implementing agencies and Deloitte, the survey was sent out to approximately 3,600 AQ participants. 229 complete and 8 incomplete responses to the survey were received, which results in an estimated response rate of approximately 6.4%.

The number of survey responses was disaggregated by gender (detailed in Table C.1), region (detailed in Table C.2) and by AQ program (detailed in Table C.3).

Table C.1 Number of survey responses disaggregated by gender

	Male	Female	Total
Inspire	20	30	50
Discover	9	11	20
Connect	32	13	45
Invest	21	5	26
Grow	64	100	164
<b>Total</b>	<b>146</b>	<b>159</b>	<b>305</b>

Note: The total number of survey responses across AQ themes/ programs in this table is higher than the total number of responses described previously (229). This is because if a survey participant has participated in multiple AQ programs, then their responses are counted under all programs they have participated in.



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Table C.2 Number of survey responses disaggregated by region

	Brisbane	Rest of Queensland (ROQ)	Both Brisbane and ROQ	Outside Queensland	Total
Inspire	10	32	8	0	50
Discover	7	13	0	0	20
Connect	19	19	6	1	45
Invest	10	11	5	0	26
Grow	60	79	23	2	164
<b>Total</b>	<b>106</b>	<b>154</b>	<b>42</b>	<b>3</b>	<b>305</b>

Note: The total number of survey responses across AQ themes/ programs in this table is higher than the total number of responses described previously (229). This is because if a survey participant has participated in multiple AQ programs, then their responses are counted under all programs they have participated in.

Table C.3 Number of survey responses by AQ program

	Number of responses
<b>Inspire</b>	
Engaging Science Strategy & Activities	3
Engaging Science Grants	29
World Science Festival Brisbane	4
Young Starters Fund	5
Founders Fellowships	3
Queensland Startup Events and Activities Fund	5
Startup Catalyst	1
<b>Sub-total</b>	<b>50</b>
<b>Discover</b>	
Global Schools through Languages	1
AQ Research Fellowship	1
Review of STEM education in Queensland state schools	7
Schools of the future	11
<b>Sub-total</b>	<b>20</b>
<b>Connect</b>	
Advancing Regional Innovation Program	13
Hot DesQ	9
Knowledge Transfer Partnership Program	22
Innovate Queensland	1
<b>Sub-total</b>	<b>45</b>
<b>Invest</b>	
Business Development Fund	6
Regional Angel Investors Support Program	7
Biofutures Commercialisation Program	2

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Advance Queensland Industry Attraction Fund	2
Sport Science Challenge	1
Ignite Ideas Fund	6
Technology Commercialisation Fund Project	2
<b>Sub-total</b>	<b>26</b>
<b>Grow</b>	
Platform Technology Program	3
Small Business Innovation Research	4
Innovation Partnerships	8
Advancing Small Business Queensland Strategy	16
Small Business Digital Grant	40
Mentoring for Growth	59
Business Growth Fund	14
Small Business Entrepreneur Grant	19
Small Business Regional & Industry Engagement	1
<b>Sub-total</b>	<b>164</b>
<b>Total</b>	<b>305</b>

Note: The total number of survey responses across AQ themes/ programs in this table is higher than the total number of responses described previously (229). This is because if a survey participant has participated in multiple AQ programs, then their responses are counted under all programs they have participated in.

## Survey questions

The following survey transcript includes questions and answers posed to individuals and institutions that received funding through AQ.

### Participant information – Survey for the Term 1 Macro-level Evaluation of the Advance Queensland (AQ) initiative

You have been asked to participate in a survey as part of an evaluation of the Advance Queensland (AQ) initiative. This survey is being administered by Deloitte Access Economics on behalf of the Queensland Government – DITID.

Investment in AQ is designed to foster innovation, build a more diversified Queensland economy, and create jobs. As part of the study we are seeking inputs from a range of AQ participants, including businesses, entrepreneurs, researchers, innovators, educators, government and not-for-profit organisations.

This survey contains three short sections:

- Section 1 aims to gain information on your background and the program that you/ your organisation participated in.
- Section 2 aims to understand the outcomes that you/ your organisation achieved as a result of participating in AQ.
- Section 3 aims to assess the overall quality of AQ initiative and how valuable it is to you/ your organisation. The survey should take around 15-20 minutes. If you do not complete it in one session, **you can save your responses and return to complete it at a later time.**

Participation in this survey is voluntary. If you do not wish to take part, you do not have to. Your participation in this study will not impact your eligibility to participate in or access activities and funding under AQ.

### **Confidentiality**

All information provided will be held by Deloitte Access Economics and will be treated as highly confidential. The final report provided to DITID will not contain any identifying information and will only report findings in aggregate, ensuring the confidentiality of individual respondents and organisations.

### **Advice and Information**

If you have any further questions regarding this study, please do not hesitate to contact us at [manguyen@deloitte.com.au](mailto:manguyen@deloitte.com.au).

## Section 1: Participant background

This section of the survey asks questions about your background.

Q1.1 Which of the following options best describes you, in relation to your involvement with AQ?

- Executive in a small or medium business (1)
- Staff other than executive in a small or medium business (2)
- Executive in a large business (3)
- Staff other than executive in a large business (4)
- Founder of a startup (5)
- Other staff in a startup (6)
- Researcher and/or PhD students in an university (7)
- Researcher in a research institute (8)
- Parent of a school aged AQ participant (9)
- Teacher or educator (10)
- Executive in a government department or organisation (11)
- Staff other than executive in a government department or organisation (12)
- Executive in a community/ not-for-profit organisation (13)
- Staff or volunteer other than executive in a community/ not-for-profit organisation (14)
- Other (Please specify) (15) \_\_\_\_\_

Q1.2 What is your gender?

- Male (1)
- Female (2)
- Other (3)

Q1.3 Which of the following options best describes your Indigenous status?

- Aboriginal (1)
- Torres Strait Islander (2)
- Aboriginal and Torres Strait Islander (3)
- Neither Aboriginal nor Torres Strait Islander (4)
- Prefer not to say (5)

Q1.4 Which regions in Queensland do you primarily work in?

- Brisbane - East (1)
- Brisbane - North (2)
- Brisbane - South (3)
- Brisbane - West (4)
- Brisbane Inner City (5)
- Cairns (6)
- Darling Downs – Maranoa (e.g. Goondiwindi, Roma) (7)
- Fitzroy (e.g. Rockhampton, Emerald, Gladstone) (8)
- Gold Coast (9)
- Ipswich (10)
- Logan - Beaudesert (11)
- Mackay (12)
- Moreton Bay – North (e.g. Caboolture, Redcliffe) (13)
- Moreton Bay – South (e.g. Hills District, North Lakes, Strathpine) (14)
- Queensland - Outback (15)
- Sunshine Coast (16)

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- Toowoomba (17)
  - Townsville (18)
  - Wide Bay (e.g. Bundaberg, Hervey Bay, Gympie) (19)
  - If outside of Queensland, please provide your primary location of work (20)
- 

Q1.5 Please select the AQ program/s that you participated in. Program 1:

- Advancing Regional Innovation Program
- Advancing Small Business Queensland Strategy
- Biofutures Commercialisation Program
- Business Development Fund
- Cairns Innovation Centre
- Engaging Science Grants
- Engaging Science Strategy & Activities
- Flying Scientists program
- Founders Fellowships
- Global Partnership Awards Program
- Global Schools through Languages
- Hot DesQ
- Advance Queensland Industry Attraction Fund
- Innovation Partnerships
- Integrated Care Innovation Fund
- Knowledge Transfer Partnerships Program
- Mentoring for Growth
- National Science Week
- Partner Up Queensland
- Platform Technology Program
- Queensland Genomics Health Alliance
- Queensland Startup Events and Activities Fund
- Queensland-China MOST Commercialisation Partnership Program
- Regional Angel Investors Support Program
- Review of STEM education in Queensland's state schools
- Schools of the future
- Small Business Digital Grant
- Small Business Entrepreneur Grant
- Small Business Innovation Research
- Small Business Regional & industry Engagement
- Sport Science Challenge
- Technology Commercialisation Fund Project
- World Science Festival Brisbane
- Young Starters Fund
- Other.

Program 2 (If applicable):

- As above.

Program 3 (If applicable):

- As above.

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Q1.6 If applicable, please provide the name of other AQ programs that you participated in.

## Section 2: Program effectiveness

This section of the survey asks questions about the outcomes of the AQ program that you participated in. In the event that you may have participated in multiple AQ programs, please respond in relation to the overall experience and impact of the programs you participated in.

Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

### Business and industry

Q2.1 The following options describe how the program might have impacted you/ your organisation. Based on your experience, please rate the degree to which you agree with each of these statements, where 1 = Strongly disagree and 5 = Strongly agree.

Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

### Inspire

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has improved my perception of Queensland as a place for innovation. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has strengthened my understanding of the importance of innovation. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired me to further connect with other innovators, entrepreneurs and researchers. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has strengthened my confidence/ pride to identify myself as an entrepreneur. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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AQ has strengthened my confidence/ pride to identify myself as an innovator. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

**Discover**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has enabled me/my organisation to undertake research and development. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has provided training opportunities for me/my organisation to build and strengthen skills. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

**Connect**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has developed or strengthened international network. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated formal relationships (e.g. trading partners, joint ventures) with other businesses and startups. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has facilitated inter-personal connections and improved knowledge sharing with people working in other businesses and startups. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated formal agreements with universities and research institutes to conduct research and build prototype. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated formal agreements with universities and research institutes to commercialise products developed by universities and research institutes. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated relationships with universities to strengthen the business' brand among university students or to advertise employment opportunities. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated inter-personal connections and improved knowledge sharing with people working in universities and research institutes. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

### Invest

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has provided funding to improve the quality of the existing products. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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AQ has supported my organisation in seeking funding to improve the quality of the existing products. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated connections with investors. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

**Grow**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has supported the commercialisation of products from the business' existing research. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported my organisation to employ people in short-term or casual contracts. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported my organisation to employ people in long-term or permanent contracts. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported my organisation to scale up production. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported other aspects of the business that helped to improve productivity or profitability. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Display This Question:

If Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

### Startup

Q2.1 The following options describe how the program might have impacted you/ your organisation. Based on your experience, please rate the degree to which you agree with each of these statements, where 1 = Strongly disagree and 5 = Strongly agree.

Display This Question:

If Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

### Inspire

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has improved my perception of Queensland as a place for innovation. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has strengthened my understanding of the importance of innovation. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired me to develop a new business idea. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired me to further connect with other innovators, entrepreneurs and researchers. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has strengthened my confidence/ pride to identify myself as an entrepreneur. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has strengthened my confidence/ pride to identify myself as an innovator. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

Display This Question:

If Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

**Discover**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has enabled me/ my startup to undertake research and development. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has provided training opportunities for me/ my startup to build and strengthen skills. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has improved the quality of new hires. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

**Connect**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has facilitated formal relationships (e.g. trading partners, joint ventures) with other businesses and startups. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated inter-personal connections and improved knowledge sharing with people working in other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

businesses and startups. (2)						
AQ has facilitated inter-personal connections and improved knowledge sharing with people working in universities and research institutes. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:  
 If Q1.1 = Founder of a startup  
 Or Q1.1 = Other staff in a startup

**Invest**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has supported me/ my startup with the registering of a new patent, trademark, and copyright. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated connections with angel investors or venture capitalists. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has provided funding to improve the quality of my existing products. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported me/ my startup in seeking funding to improve the quality of my existing products. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

Display This Question:

If Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

**Grow**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has supported the commercialisation of products from the business' existing research (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported me/ my startup in employing people in short-term or casual contracts. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported me/ my startup in employing people in long-term or permanent contracts. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported marketing and sales activities. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported me/ my startup to scale up production. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported other aspects of the business that has helped to improve productivity or profitability. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

Display This Question:

If Q1.1 = Researcher and/or PhD students in a university

Or Q1.1 = Researcher in a research institute

**Participants who identified as University researchers**

Q2.1 The following options describe how the program might have impacted you/ your organisation. Based on your experience, please rate the degree to which you agree with each of these statements, where 1 = Strongly disagree and 5 = Strongly agree.

Display This Question:

If Q1.1 = Researcher and/or PhD students in a university

Or Q1.1 = Researcher in a research institute

**Inspire**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has improved my perception of Queensland as a place for research. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired me to try a new research idea. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired me to further connect with other innovators, entrepreneurs and researchers. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has broadened my view on what it means to be an innovator. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

Display This Question:

If Q1.1 = Researcher and/or PhD students in a university

Or Q1.1 = Researcher in a research institute

**Discover**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has enabled me/my organisation to undertake research. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has enabled me to undertake further study. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has provided training opportunities for me/my organisation to build and strengthen skills. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has helped to further my understanding of industry needs. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Researcher and/or PhD students in a university

Or Q1.1 = Researcher in a research institute

**Connect**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has strengthened my international network (e.g. conferences). (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated inter-personal connections and	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

improved knowledge sharing with other researchers. (2)						
AQ has facilitated industry connections through networking opportunities with businesses. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated formal agreements with businesses to conduct research or build prototype. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated formal agreements with businesses to commercialise existing research. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Researcher and/or PhD students in a university

Or Q1.1 = Researcher in a research institute

**Invest**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has supported me/my organisation in registering for a new patent, trademark, and copyright. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated connections with investors to support research. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Commercial-in-confidence

Display This Question:

If Q1.1 = Researcher and/or PhD students in a university

Or Q1.1 = Researcher in a research institute

**Grow**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has supported me/my organisation to commercialise our existing research. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported me/ my organisation in employing people in short-term or casual contracts. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported me/ my organisation in employing people in long-term or permanent contracts. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Parent of a school aged AQ participant

Or Q1.1 = Teacher or educator

**Future innovators**

Questions in this section refer to future innovators who have participated in AQ programs that you have been involved in.

Future innovators refers to students (from prep to post-graduate) and anyone else looking to engage in the innovation ecosystem, with the programs typically seeking to engage more Queenslanders in innovation, entrepreneurship or science.

As someone who may have delivered or been involved in an AQ program for future innovators, please respond based on your view of how AQ has benefited the participants in the program.

Q2.1 The following options describe how the program might have impacted future innovators. Based on your experience, please rate the degree to which you agree with each of these statements, where 1 = Strongly disagree and 5 = Strongly agree.

Commercial-in-confidence

Display This Question:

If Q1.1 = Parent of a school aged AQ participant

Or Q1.1 = Teacher or educator

**Inspire**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has improved their perception of Queensland as a place for innovation. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has strengthened their understanding of the importance of innovation. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired them to try a new research idea. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired them to try a new business idea. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired them to further connect with other innovators, entrepreneurs, researchers and scientists. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has broadened their view on what it means to be an entrepreneur or scientist. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has broadened their view on what it means to be an innovator. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

Display This Question:

If Q1.1 = Parent of a school aged AQ participant

Or Q1.1 = Teacher or educator

**Discover**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has encouraged them to undertake further study. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has provided training opportunities for future innovators to build and strengthen skills. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported me/my organisation in providing education and training opportunities for future innovators. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has furthered the understanding of industry needs. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Parent of a school aged AQ participant

Or Q1.1 = Teacher or educator

**Connect**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has facilitated inter-personal connections and improved knowledge sharing with other businesses, universities, schools, students,	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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parents, and  
teachers. (1)

Display This Question:

If Q1.1 = Executive in a government department or organisation

Or Q1.1 = Staff other than executive in a government department or organisation

Or Q1.1 = Executive in a community/ not-for-profit organisation

Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation

Or Q1.1 = Other (Please specify)

### Government departments and not-for-profit organisations

Please respond based on your view of how AQ has benefited the participants in the program. This refers to organisations and individuals that you may have collaborated with as part of AQ. Organisations and individuals may include private companies, startups, researchers, and educators.

Q2.1 The following options describe how the program might have impacted organisations and individuals that you collaborated with. Based on your experience, please rate the degree to which you agree with each of these statements, where 1 = Strongly disagree and 5 = Strongly agree.

Display This Question:

If Q1.1 = Executive in a government department or organisation

Or Q1.1 = Staff other than executive in a government department or organisation

Or Q1.1 = Executive in a community/ not-for-profit organisation

Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation

Or Q1.1 = Other (Please specify)

### Inspire

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has improved their perception of Queensland as a place for innovation. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has strengthened their belief on the importance of innovation. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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AQ has inspired them to try a new research idea. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired them to try a new business idea. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has inspired them to further connect with other innovators, entrepreneurs, researchers and scientists. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has broadened their view on what it means to be an entrepreneur or scientist. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has broadened their view on what it means to be an innovator. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Executive in a government department or organisation

Or Q1.1 = Staff other than executive in a government department or organisation

Or Q1.1 = Executive in a community/ not-for-profit organisation

Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation

Or Q1.1 = Other (Please specify)

**Discover**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has enabled them to undertake further study. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has provided training opportunities for them to build and strengthen skills. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported me/my organisation in providing education and training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

opportunities for them. (3)	
AQ has furthered the understanding of industry needs. (4)	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

**Display This Question:**

- If Q1.1 = Executive in a government department or organisation
- Or Q1.1 = Staff other than executive in a government department or organisation
- Or Q1.1 = Executive in a community/ not-for-profit organisation
- Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation
- Or Q1.1 = Other (Please specify)

**Connect**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has facilitated inter-personal connections and improved knowledge sharing with other businesses, universities, schools, students, parents, and teachers. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Display This Question:**

- If Q1.1 = Executive in a government department or organisation
- Or Q1.1 = Staff other than executive in a government department or organisation
- Or Q1.1 = Executive in a community/ not-for-profit organisation
- Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation
- Or Q1.1 = Other (Please specify)

**Invest**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)

Commercial-in-confidence

AQ has supported with the registering of a new patent, trademark, and copyright. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has facilitated connections with angel investors or venture capitalists. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has provided funding to improve the quality of existing products. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported organisation/s in seeking funding to improve the quality of existing products. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Executive in a government department or organisation

Or Q1.1 = Staff other than executive in a government department or organisation

Or Q1.1 = Executive in a community/ not-for-profit organisation

Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation

Or Q1.1 = Other (Please specify)

**Grow**

	1 = Strongly disagree (1)	2 (2)	3 = Neutral (3)	4 (4)	5 = Strongly agree (5)	NA (6)
AQ has supported the commercialisation of products from the business' existing research (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported organisations in employing people in short-term or casual contracts. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported organisations in employing people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Commercial-in-confidence

in long-term or permanent contracts. (3)						
AQ has supported marketing and sales activities. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported organisation/s to scale up production. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AQ has supported other aspects of the business that has helped to improve productivity or profitability. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

Or Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

Or Q1.1 = Researcher and/or PhD students in an university

Or Q1.1 = Researcher in a research institute

Q2.2 Has AQ supported you or your organisation to collaborate with other participants of the innovation system?

- Yes (1)
- No (2)



Commercial-in-confidence

Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

Or Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

Or Q1.1 = Researcher and/or PhD students in an university

Or Q1.1 = Researcher in a research institute

And if

Q2.2 = Yes

Q2.2a Please provide the name of organisations that you or your organisation collaborated with as a result of the AQ program.

---

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Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

Or Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

Or Q1.1 = Researcher and/or PhD students in an university

Or Q1.1 = Researcher in a research institute

And if

Q2.2 = Yes

Q2.2b Please describe how this relationship has supported the objectives of your organisations or the organisations that you collaborated with as part of the AQ program.

Display This Question:

If Q1.1 = Executive in a small or medium business

Or Q1.1 = Staff other than executive in a small or medium business

Or Q1.1 = Executive in a large business

Or Q1.1 = Staff other than executive in a large business

Or Q1.1 = Founder of a startup

Or Q1.1 = Other staff in a startup

Or Q1.1 = Researcher and/or PhD students in an university

Or Q1.1 = Researcher in a research institute

Q2.3 To what extent have the outcomes of the program addressed your or your organisations' most urgent need?

- 1 = Not at all (1)
- 2 (2)
- 3 = Neutral (3)
- 4 (4)
- 5 = A great extent (5)
- NA (6)

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Display This Question:

If Q1.1 = Parent of a school aged AQ participant

Or Q1.1 = Teacher or educator

Q2.2 Has AQ supported you or your organisation to collaborate with other participants of the innovation system?

- Yes (1)
- No (2)

Display This Question:

If Q1.1 = Parent of a school aged AQ participant

Or Q1.1 = Teacher or educator

Q2.2a Please provide the name of organisations that you or the future innovators collaborated with as a result of the AQ program.

---

Display This Question:

If Q1.1 = Parent of a school aged AQ participant

Or Q1.1 = Teacher or educator

And if

Q2.2 = Yes

Q2.2b Please describe how this relationship has supported you or the future innovators' objectives.

---

Display This Question:

If Q1.1 = Parent of a school aged AQ participant

Or Q1.1 = Teacher or educator

Q2.3 To what extent have the outcomes of the program addressed yours or the future innovators' most urgent need?

- 1 = Not at all (1)
- 2 (2)
- 3 = Neutral (3)
- 4 (4)
- 5 = A great extent (5)
- NA (6)

Display This Question:

If Q1.1 = Executive in a government department or organisation

Or Q1.1 = Staff other than executive in a government department or organisation

Or Q1.1 = Executive in a community/ not-for-profit organisation

Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation

Or Q1.1 = Other (Please specify)

Q2.2 Has AQ supported the collaboration between you or your organisation and other participants of the innovation system?

- Yes (1)
- No (2)

Display This Question:

If Q1.1 = Executive in a government department or organisation

Or Q1.1 = Staff other than executive in a government department or organisation

Or Q1.1 = Executive in a community/ not-for-profit organisation

Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation

Or Q1.1 = Other (Please specify)

And if

Q2.2 = Yes

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Q2.2a Please provide the name/s of the organisation/s which are in collaboration with you or your organisation as a result of the AQ program.

---

Display This Question:

If Q1.1 = Executive in a government department or organisation

Or Q1.1 = Staff other than executive in a government department or organisation

Or Q1.1 = Executive in a community/ not-for-profit organisation

Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation

Or Q1.1 = Other (Please specify)

And if

Q2.2 = Yes

Q2.2b Please describe how this relationship has supported the objectives of yours or your organisation or the organisation you collaborated with as part of the AQ program.

---

Display This Question:

If Q1.1 = Executive in a government department or organisation

Or Q1.1 = Staff other than executive in a government department or organisation

Or Q1.1 = Executive in a community/ not-for-profit organisation

Or Q1.1 = Staff or volunteer other than executive in a community/ not-for-profit organisation

Or Q1.1 = Other (Please specify)

Q2.3 To what extent have the outcomes of the program responded to the most urgent need of you or your organisation or the organisation you collaborated with as part of the AQ program.

- 1 = Not at all (1)
- 2 (2)
- 3 = Neutral (3)
- 4 (4)
- 5 = A great extent (5)
- NA (6)

### Section 3: Overall program quality

This section of the survey asks questions about the overall quality of the AQ program that you participated in. In the event that you may have participated in multiple AQ programs, please respond in relation to the overall experience and impact of the programs you participated in.

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Q3.1 How would you rate your **overall satisfaction** with the AQ program?

- 1 = Completely dissatisfied (1)
- 2 (2)
- 3 = Neutral (3)
- 4 (4)
- 5 = Completely satisfied (5)
- NA (6)

Q3.2 What are the main factors that contributed to your overall satisfaction with the AQ program?

---

Q3.3a To what extent do you agree that the AQ program is **easy to access**?

- 1 = Strongly disagree (1)
- 2 (2)
- 3 = Neutral (3)
- 4 (4)
- 5 = Strongly agree (5)
- NA (6)

Display This Question:

If Q3.3a = 1 = Strongly disagree

Or Q3.3a = 2

Or Q3.3a = 3 = Neutral

Q3.3b To what extent have **difficulties in accessing the AQ program** affected your overall satisfaction of the program?

- 1 = No impact (1)
- 2 (2)
- 3 = Neutral (3)
- 4 (4)
- 5 = Significant impact (5)
- NA (6)

Q3.4 Please briefly describe the reason for your answer.

---

Q3.5 If you/your organisation have participated in **any other programs with a similar objective** to the AQ program, how would you rate your overall satisfaction with the other program?

- 1 = Completely dissatisfied (1)
- 2 (2)

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- 3 = Neutral (3)
- 4 (4)
- 5 = Completely satisfied (5)
- My organisation/ I have not participated in any other program (6)

Display This Question:

If Q3.5 = My organisation/ I have not participated in any other program

Q3.6 To what extent do you agree/disagree with the following statements, with 1 = Strongly disagree, 3 = Neutral and 5 = Strongly agree?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	NA (6)
The outcomes of the AQ program <b>better match my expectations</b> compared to the outcomes of the other program/s. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is <b>easier</b> for me/ my organisation to <b>access the AQ program</b> compared to the other program/s. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3.7 Have there been any unintended/unexpected **positive or negative impacts** resulting from your participation in AQ programs?

- Yes, there were some unintended/unexpected **positive** impacts as a result of my/our participation in AQ programs. (1)
- Yes, there were some unintended/unexpected **negative** impacts as a result of my/our participation in AQ programs. (2)
- No, there were no unintended/unexpected impacts. (3)

Display This Question:

If Q3.7 = Yes, there were some unintended/unexpected **positive** impacts as a result of my/our participation in AQ programs.

Q3.7a You have answered Q3.7. Please provide more detail about the unintended/ unexpected **positive** impacts.

Display This Question:

If Q3.7 = Yes, there were some unintended/unexpected **negative** impacts as a result of my/our participation in AQ programs.

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Q3.7b You have answered Q3.7. Please provide more detail about the unintended/unexpected **negative** impacts.

---

By clicking 'Finish and submit', your survey will be submitted and you will no longer be able to alter your response.

**Would you like to finish and submit your survey?**



# Appendix D AQ programs in-scope for the Evaluation

The following listed programs are those that commenced in Term 1 and are considered in-scope for the Evaluation.

Inspire	Discover	Connect	Invest	Grow
<ul style="list-style-type: none"> <li>Engaging Queenslanders in Science Strategy and Activities</li> <li>Engaging Science Grants</li> <li>Innovation Festival</li> <li>World Science Festival</li> <li>3 Day Startup</li> <li>Startup Catalyst</li> <li>Young Starters' Competition</li> <li>Young Starters' Fund</li> <li>Founders' Fellowships</li> <li>Office of the Queensland Chief Entrepreneur</li> <li>Queensland Startup Events and Activities Fund</li> </ul>	<ul style="list-style-type: none"> <li>Aboriginal and Torres Strait Islander PhD Scholarships</li> <li>AQ TAFE Queensland Pathways Scholarships</li> <li>PhD Scholarships</li> <li>Women's Academic Fund</li> <li>Aboriginal and Torres Strait Islander Research Fellowships</li> <li>Research Fellowships</li> <li>Global Schools Through Languages</li> <li>Review of STEM education in Queensland state schools – STEM Review</li> <li>Schools of the future: A strategy for STEM in Queensland state schools</li> <li>STEM.I.AM Program</li> </ul>	<ul style="list-style-type: none"> <li>Advancing Regional Innovation Program</li> <li>Life Sciences Queensland</li> <li>Regional Network Fund</li> <li>The Precinct</li> <li>Commercialisation Partnerships Program</li> <li>Create Queensland</li> <li>Hot DesQ</li> <li>International Delegations</li> <li>MIT Bootcamp</li> <li>MIT Regional Entrepreneurship Acceleration Program</li> <li>Cairns Innovation Centre</li> <li>Knowledge Transfer Partnerships</li> </ul>	<ul style="list-style-type: none"> <li>Biofutures Commercialisation Program</li> <li>Business Development Fund</li> <li>AQ Industry Attraction Fund</li> <li>Medical Research Commercialisation Fund</li> <li>Regional Business Angels Support Program</li> <li>Ignite Ideas Fund</li> <li>Sport Science Challenge</li> <li>Data 61</li> <li>Integrated Care Innovation Fund</li> <li>Queensland Genomics Health Alliance</li> <li>Technology Commercialisation Fund Project</li> </ul>	<ul style="list-style-type: none"> <li>Australian Biomass for Bio-energy Assessment</li> <li>Connecting with Asia Strategy</li> <li>Dubai South</li> <li>Industry Roadmaps (including Aerospace, Biofutures, Biomedical and Life Sciences, Defence, METS)</li> <li>Platform Technology Program</li> <li>Innovation Partnerships (including Johnson &amp; Johnson, Siemens Healthcare, Queensland Emory Drug Discovery Initiative)</li> <li>SoftBank</li> <li>Advancing Small Business Queensland Strategy</li> <li>Business Growth Fund</li> <li>Mentoring for Growth Program</li> <li>Small Business Digital Grants</li> <li>Small Business Entrepreneur Grants</li> <li>Small Business Regional and Industry Engagement</li> <li>Growing Queensland's Companies</li> <li>Industry Accelerators Program</li> <li>Small Business Innovation Research</li> </ul>

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Key out of scope programs from Term 2 are summarised below.






Inspire	Discover	Connect	Invest	Grow
<ul style="list-style-type: none"> <li>Female Founders Program</li> </ul>	<ul style="list-style-type: none"> <li>Women’s Research Assistance Program</li> <li>Industry Research Fellowships</li> </ul>	<ul style="list-style-type: none"> <li>Regional Startup Hubs Support Program</li> <li>Artificial Intelligence Hub</li> <li>Deadly Innovation</li> <li>Innovate Queensland (Program ran in Term 1, but was not funded through Advance Queensland)</li> <li>States of Change</li> </ul>		<ul style="list-style-type: none"> <li>IndustryTech Fund</li> <li>Innovation Partnerships                             <ul style="list-style-type: none"> <li>Clem Jones Centre For Ageing Dementia Research</li> <li>Fraunhofer Institute</li> <li>Life Sciences Queensland – Catalyst</li> </ul> </li> <li>Startup Onramp Regional Program</li> <li>Testing within Government (Program ran in Term 1, but was not funded through Advance Queensland)</li> </ul>

# Appendix E Comparative analysis between Queensland and Australia

To put this evaluation into strategic context from a Queensland and national innovation system perspective, Table E.1 presents the findings of comparative analysis of Queensland's performance over the 2015 to 2018 evaluation period based on selected innovation system indicators. These indicators are mapped to AQ strategies and objectives using currently available data. This highlights that Queensland performed stronger than the national average on 6 of the 10 total indicators (supporting culture, increase investment and scaling for jobs and growth), 3 indicators performed in-line and 1 indicator performed below the national average.

Table E.1 Comparative analysis of selected innovation system indicators

Strategy	Objective	Indicator	Queensland level/share in 2018 relative to Australia	Queensland trend/performance including relative to Australia over 2015-18
Supporting culture	Increase innovation awareness and engagement	Satisfaction of AQ respondents benchmarked nationally – i.e. share that agree that AQ outcomes better match outcomes of similar programs nationally	59% of respondents (significant share of respondents)	
	Increase entrepreneurialism	Share of national start-ups in the economy	Around 20% in 2018 (up from 16.5% in 2015)	
		Business survival rates in AQ targeted ANZISC sectors (professional, scientific and technical services and education used as a proxy)	Business survival rate in Queensland has increased by 3.1 percentage point compared to 2.1 percentage point in Australia. Nevertheless, business survival rate in Queensland is still lower than the national average.	
Building capability	Increase innovation capability	GOVERD intensity	GOVERD intensity in Queensland (0.09%) is slightly higher than in New South Wales (0.05%) and Victoria (0.06%)	
		HERD intensity	HERD intensity in Queensland (0.59%) is slightly lower than the national average of 0.62%	
	Develop, attract and retain talented people		Data for comparison is not available	




Strategy	Objective	Indicator	Queensland level/share in 2018 relative to Australia	Queensland trend/ performance including relative to Australia over 2015-18
Fostering collaboration	Build sustainable partnerships to deliver outcomes		Data for comparison is not available	
	Increase local and international networks	Share of national overseas exports of knowledge intensive services*	10% in 2015-16 decreased to 8% in 2017-18	
Increase investment	Grow pipeline of investable products/ services	AQ funds leveraged relative to funds committed in similar innovation programs nationally/internationally	1.4 ratio in 2018 compared with 1.0 ratio average** in other jurisdictions	
	Build access to capital	Venture capital and later stage private equity – share of national value of investment deals	15.3% in 2017-18 up from 13.5% in 2015-16	
Scaling for jobs and growth	Expedite commercialisation	Share of national patents	16.3% in 2018, similar to 16.0% in 2015	
	Increase economic benefits from innovation	Growth in the Multifactor Productivity Index in the market sector***	1.5% growth (0.9% in Australia) over 2015-16 to 2017-18	

Source: Deloitte Access Economics based on a range of data sources

Notes: \* Knowledge-intensive service exports are defined to include Financial Services, Charges for the use of intellectual property, Telecommunications, computer and information services, Other business services, Personal, cultural and recreational services and Government goods and services and calculated from ABS Cat. No. 5368.0.55.003

\*\* McKell Institute (2017) reported that for each 1 dollar spent on a R&D tax incentive scheme in Australia and internationally there was approximately 1 dollar stimulated in R&D expenditure

\*\*\* Based on the compound annual growth rate in the MFP index for Queensland over 2015-16 to 2017-18 compared with the national average from ABS Cat. No.5260.0.55.002

 Positive (stronger than national average or significant increase in national share)
  Neutral or performance close to national average/similar national share
  Negative or significantly lower than national average and/or significant decrease in share

It is recommended that this analysis be updated in the future in line with new data releases to inform tracking of the performance of the innovation system in Queensland and future evaluations. This includes being informed by the findings of the upcoming national review of innovation metrics by the Australian Government to help improve innovation indicators and metrics to inform policy development in Australia. Findings of this review are expected in the end of 2019<sup>49</sup>

<sup>49</sup> Department of Industry, Innovation and Science, *Innovation Metrics Review* (2019) <https://www.industry.gov.au/data-and-publications/innovation-metrics-review>

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Deloitte Access Economics Pty Ltd

ACN 149 633 116

Level 23, Riverside Centre  
123 Eagle Street  
Brisbane, QLD, 4000  
Australia

Phone: +61 7 3308 7000

[www.deloitte.com.au](http://www.deloitte.com.au)

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