



ADVANCE
QUEENSLAND

ENGAGING QUEENSLANDERS IN SCIENCE



Contents

| | |
|---|-----------|
| A message from the Queensland Chief Scientist | 3 |
| Queensland science at a glance | 4 |
| Why should we engage in science? | 6 |
| Did you know? | 7 |
| Engaging Queenslanders in science. | 8 |
| Vision. | 8 |
| Priority areas and goals | 9 |
| Where are we now?. | 11 |
| STEM participation | 12 |
| The current situation | 12 |
| Why we should increase the number of students participating in STEM subjects. | 12 |
| Snapshot of activities under this strategy | 13 |
| Snapshot of what government is currently doing. | 14 |
| What can Queensland do together?. | 15 |
| Public engagement | 16 |
| The current situation | 16 |
| Why we should increase the public’s engagement and participation in science | 16 |
| Snapshot of activities under this strategy | 17 |
| Snapshot of what government is currently doing. | 18 |
| What can Queensland do together?. | 19 |
| Scientist engagement | 20 |
| The current situation | 20 |
| Why we should increase the number of scientists directly engaging with the Queensland community | 20 |
| Snapshot of activities under this strategy | 21 |
| Snapshot of what government is currently doing. | 22 |
| What can Queensland do together?. | 23 |
| Public awareness. | 24 |
| The current situation | 24 |
| Why we should increase the awareness and understanding of the great science taking place in Queensland | 24 |
| Snapshot of activities under this strategy | 25 |
| Snapshot of what government is currently doing. | 26 |
| What can Queensland do together?. | 26 |
| How can you help us achieve our vision | 28 |
| About us. | 29 |
| List of references | 30 |

© Queensland Government (Office of the Queensland Chief Scientist) 2016
 The Queensland Government supports and encourages the dissemination and
 exchange of public sector information.
 The copyright in this publication is licensed under a Creative Commons Attribution
 3.0 Australia licence. To view a copy of this licence, visit [creativecommons.org/
 licenses/by/4.0/au](https://creativecommons.org/licenses/by/4.0/au).

Under this licence you are free to use this publication in accordance with the licence
 terms without having to seek permission from DSITI. You must keep intact the
 copyright notice and attribute the State of Queensland, Department of Science,
 Information Technology and Innovation as the source of the publication.

A message from the Queensland Chief Scientist



A recent survey revealed that three-quarters of Queenslanders are interested in science, and so they should be!

Science is transforming our lives, the way we think and the way we do things, and it is happening very quickly. For example, sequencing the human genome, confirmed in 1990, took 13 years to complete and cost \$2.7 billion. Today this same process can be done in just over a day and costs around \$1000.

I am a great fan of Queensland science. Most days, when out and about, I find myself thinking, 'Wow! I didn't know we were doing that stuff!' so I guess we can be confident that a large proportion of Queenslanders probably also don't know.

Part of my job is to help highlight and inspire the whole Queensland community to engage in science, and encourage our young people to study science at school. This will not only broaden their job prospects but ensure we have the necessary skills in Queensland to position us for the future.

We need Queenslanders to be 'greedy gobblers' for science. From the hugely successful World Science Festival Brisbane in March 2016 to a plethora of activity during National Science Week each year, there is so much that Queenslanders can do to become engaged in science.

This strategy is ambitious but, I believe, has achievable goals. We want to increase the number of students participating in science, technology, engineering and maths in schools, increase the engagement of Queenslanders in science activities, get more scientists out there engaging with the public, and increase the awareness of the great science taking place in our own backyard. We want Queensland to be the state which people increasingly look to for science.

It is great that the government has put science and innovation 'front and centre' of its agenda, and that in the Honourable Leeanne Enoch MP, as Minister for Science and Innovation, we have a passionate ambassador.

I would like to invite you all on the journey to achieve our vision of creating a Queensland population that engages in, and recognises, supports and advocates for, science.

As Alan Alda (famous actor from *M*A*S*H* and passionate science advocate) recently said, 'science belongs to all of us'.

A handwritten signature in blue ink that reads "Geoff Garrett". The signature is stylized and cursive.

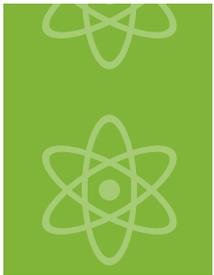
Dr Geoff Garrett AO
Queensland Chief Scientist

Queensland science at a glance

What Queenslanders think about science¹

74%

are interested
in science



45%

feel there is not enough
science news and
information available
in the media or online



47%

feel there are
not enough
science events and
activities in their area



72%

believe
science
is critical
for our
economy



only **1 in 5** could
spontaneously name a
Queensland scientist or
scientific discovery

Why should we engage in science?



Science positively impacts every aspect of our lives and often goes unappreciated. Science is vital to our current and future wellbeing. From health and the environment, to energy and entertainment, science has transformed and improved our communities across every sector, and will continue to do so. Science engagement takes many forms, but at its core is connection, knowledge and empowerment, and it is intrinsically linked to the Queensland Government's Advance Queensland initiative, designed to create a new era of opportunity for every Queenslanders.

Advance Queensland is a \$405 million transformational agenda to maximise and harness the opportunities science and innovation offers to build a new economy, create sustainable jobs and deliver better outcomes for our communities. It is a holistic suite of programs and partnerships, based on international evidence of what works, designed to maintain and leverage our science and research strengths, encourage entrepreneurship and startups, and connect researchers with industry. Science engagement plays a key role in delivering this initiative, and will help build a state where everyone is empowered to be agents of change.

Science, technology, engineering and mathematics (STEM) skills are the foundations upon which we can build a knowledge-based economy that will help us leverage our strengths and unique opportunities, and position us for the future. Recent studies show that the total direct and flow on impact of the advanced physical and mathematical sciences sector amounts to over 22 per cent of Australian economic activity, or about \$292 billion per year.²

A recent survey across Queensland showed:

- ▶ 74% of Queenslanders are interested in science
- ▶ 76% believe that scientific development is having a positive impact on society
- ▶ 45% believe there is not enough information or news about science available
- ▶ 47% express their concern for the limited science-based activities in their area
- ▶ 64% of people in remote and very remote Queensland felt there were not enough science activities in their area.¹

A similar result was found in the national 2010 ANUpoll Public Opinion about Science;³ Australians are very interested in news about science, but felt there should be more information available.

Queensland scientists are international leaders at the forefront of many breakthroughs and discoveries that will deliver outcomes locally, nationally and internationally. However, Queenslanders are largely unaware of the significant, life-changing science and research taking place in their own backyard.

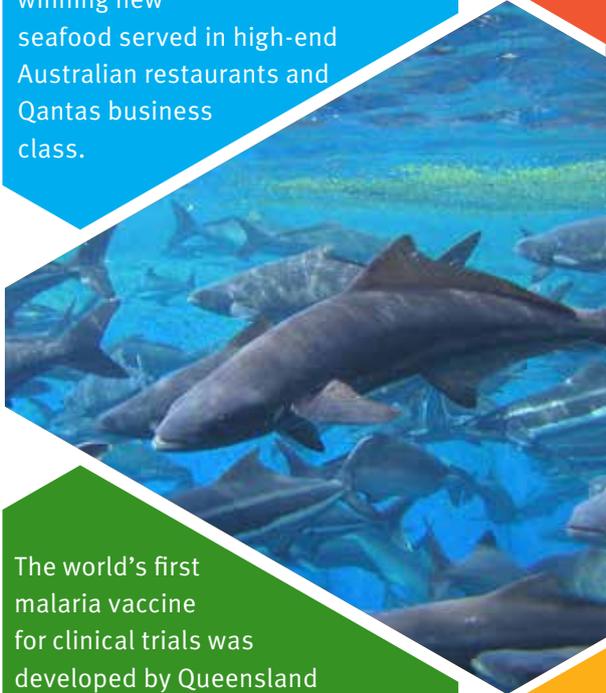
Sharing knowledge powers innovation. Greater public awareness and recognition of Queensland science is essential to engender increased support at local, state and national levels, and will help maintain the reputation of our world-class scientists and researchers, and drive international interest and investment in our state.

Join us to be agents of change and drive greater science engagement Queensland. Whether you're a scientist, teacher, community member or student, this strategy will offer something for you.

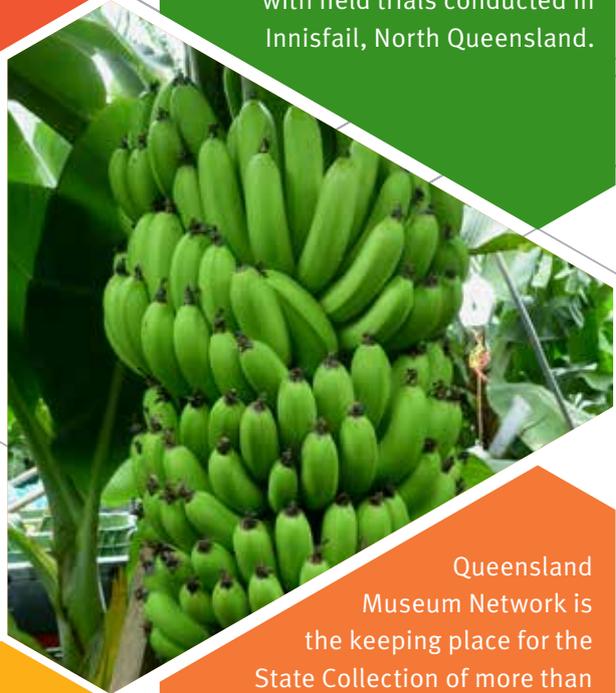
Did you know?

Some of the great science happening in our backyard

In eight years, the Department of Agriculture and Fisheries Cobia R&D team and industry partner have taken cobia from a wild fish to an award-winning new seafood served in high-end Australian restaurants and Qantas business class.



The world's first nutrition trial of pro-vitamin A enriched bananas originated from researchers at QUT, with field trials conducted in Innisfail, North Queensland.



The world's first malaria vaccine for clinical trials was developed by Queensland researchers at Griffith University. With 40 per cent of the world's population at risk of malaria, the success of human trials of this research is significant.



Queensland Museum Network is the keeping place for the State Collection of more than 1.2 million objects and specimens, and more than 14 million research collection items and has described more than 4000 species.



James Cook University scientists have collaborated with Queensland company Fibercon to develop recycled plastic fibres to reinforce concrete footpaths and precast elements—reducing the carbon footprint of construction at no additional cost.

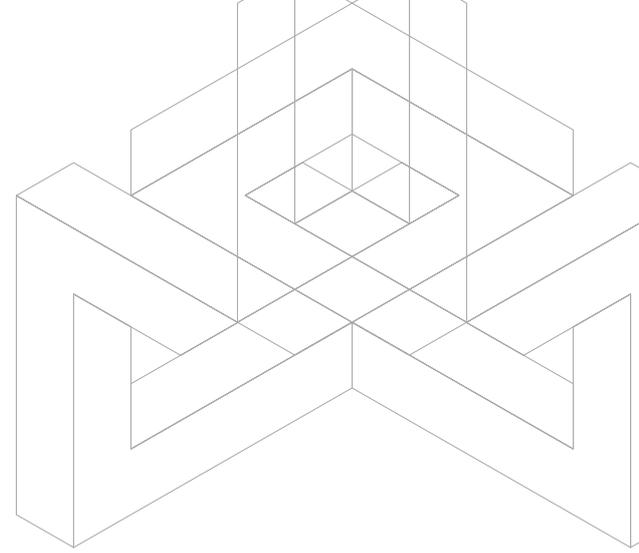
Internal blood loss is a major cause of death following traumatic injury. Queensland scientists at James Cook University have developed the first pharmacological treatment to reduce abdominal bleeding by up to 60 per cent.

Engaging Queenslanders in science

Vision

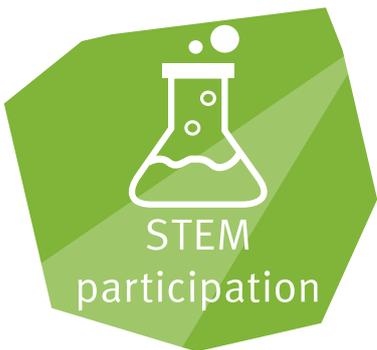
A Queensland population that engages in, and recognises, supports and advocates for, science.





Priority areas

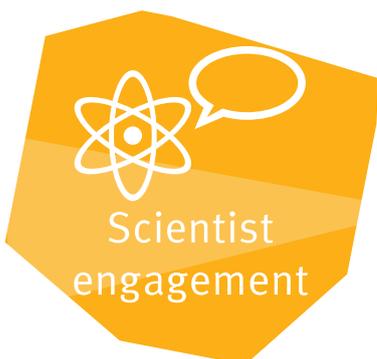
Goals



To increase the number of students participating in school **STEM subjects**



To increase engagement and participation of the Queensland community in **science-based activities**



To increase the number of **scientists** directly engaging with the **Queensland community**



To increase awareness and understanding of the **great science** taking place in Queensland

Where are we now?



Dr Natalie Prow, Research Officer,
Inflammation Biology at the QIMR
Berghofer Medical Research
Institute

Photo courtesy QIMR

Baseline metrics

There has been little benchmarking about public perceptions of science undertaken in Queensland. Numerous national studies have been conducted; however, Queensland is a unique state with its geographically dispersed population, necessitating a benchmarking study specifically for Queensland science.

In 2016 the Office of the Queensland Chief Scientist commissioned a Queensland-wide survey about perceptions and attitudes towards science.¹ The results from this survey provided direction on the most effective ways to promote, communicate and engage with Queenslanders about science in the future. As a direct result, elements of this strategy were developed to prioritise areas needing the most attention to raise the profile of Queensland science.

The full research report is available from:
chiefscientist.qld.gov.au/publications/other-reports.

Mapping of science engagement activities

There are hundreds of professional science communicators employed by the government, universities, institutions, associations and businesses in Queensland. Despite the best of intentions, these professionals often work in competition rather than collaboration, which results in a range of disparate events which are not always sufficiently resourced.

It is vital to gain a thorough understanding of the current science engagement and communication activities occurring in Queensland. The result of this would be to streamline the myriad professional and impactful science communication and engagement activities, leading to improved execution of these events. This would also generate a greater awareness of the impact of Queensland science across multiple audiences throughout Queensland.

A 'map' of STEM education activities for students and teachers has been compiled, and it is proposed that a web portal/searchable database be developed.⁴ This could be expanded to include the mapping of all science engagement activities (not just those that are STEM focused) for Queensland.

Although there is a rich variety of local events, the lack of any coordinating mechanism continues to create actual or perceived duplication, overlap and fragmentation.⁵

Learning from best practice

In 2010, an Inspiring Australia report⁵ recognised, ‘There has been little exchange of best practice among states, or even among regional centres within states. Some outer metropolitan, regional and remote areas are often left out completely’.⁷

Subsequently, through this strategy, the Office of the Queensland Chief Scientist will investigate the possibility of a research project which reviews national (or possibly international) best practice for science engagement. With advances in technology and social media, what worked five years ago may not be relevant today. It is intended that this research will investigate current best practice to ensure the activities and programs in the strategy are as effective as possible.



Great Barrier Reef

© Darren Jew, Tourism and Events Queensland





STEM participation

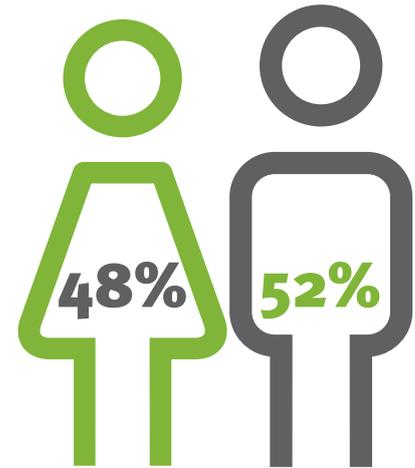
The current situation

In Queensland in 2015, enrolments in STEM subjects exceeded 200,000 for Year 11 and 12 students—48 per cent of them were female and 52 per cent male.

In the 20 years from 1992 to 2012, the total number of Australian students enrolled in Year 12 increased by 16 per cent; however, for the same period participation rates for most science and mathematics subjects decreased by 8 per cent.⁶ The activities and actions in this strategy are looking to increase these enrolment/participation rates.

The current challenges facing the levels of enrolment in STEM subjects include student engagement, achieving excellence and teacher capability.

Students studying STEM subjects

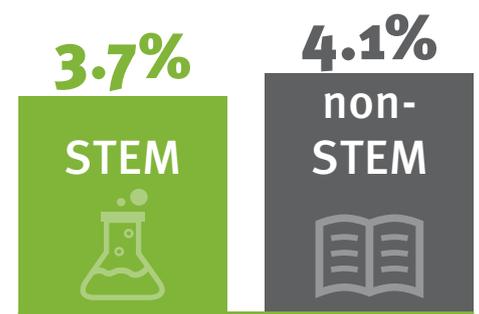


Why we should increase the number of students participating in STEM subjects

STEM graduates cite higher order skills in research, logical thinking and quantitative analysis as the return on their degrees, alongside the qualities of creativity, open-mindedness, independence and objectivity.⁷

STEM education is vital for future skills development in Queensland. Activities in this space should engage students, spark their interest in science and subsequently encourage the uptake of STEM subjects during secondary school, followed by further tertiary study. This may then lead to greater retention in STEM as students progress into tertiary studies, vocational education and training, and work.

Unemployment rate



Snapshot of activities under this strategy

Flying Scientists

Queensland is a large state with a highly dispersed population and as such, it is important that regional and remote communities are able to engage and have access to science activities.

In partnership with the Wonder of Science's Young Science Ambassador Initiative, we are delivering the 'Flying Scientists: Engaging Rural Queenslanders in Science' program. Scientists will travel to regional and remote Queensland to participate in school visits, and community events, and deliver public seminars. The intention is to inform regional communities about a career in science and highlight benefits of studying STEM subjects. This program is being piloted in 2016.

Meet a scientist in schools program

The Queensland Government has committed \$405 million to the suite of [Accelerating Advance Queensland](#) programs. As part of their requirement to engage with the community, many of the Advance Queensland recipients are involved in delivering short presentations about their research and their career path to students during National Science Week (held in August each year). This not only enables the researchers to tell their science story, but may also inspire our future generation of STEM students and workers.

STEM map

There is a plethora of science education and outreach activities run in Queensland. Given the level of activity and potential to streamline like activities, the Office of the Queensland Chief Scientist has developed a publicly available 'map' of STEM activities across the state. This map is also a one-stop-shop for teachers to be able to find STEM activities in their area. There are currently 156 activities listed on the STEM map.⁴

It is proposed that this STEM map will be made into a searchable, and potentially nationwide, database.

52%
of people living
outside of SEQ feel
there are not enough
science activities



42%
of parents in regional
and remote areas are
likely to encourage
their children to
pursue a science-
based career
compared to **59%**
across the state



Snapshot of what government is currently doing

A strategy for STEM in Queensland state schools

In 2016, the Queensland Government's Department of Education and Training released a plan for the direction of STEM education. The aims of the strategy are:

- ▶ building teacher capability to transform STEM learning
- ▶ engaging more students in STEM learning
- ▶ achieving excellence in STEM learning.

The [STEM strategy](#) aligns with *Advancing education: An action plan for education in Queensland*. The strategy is further complemented by [#codingcounts: A plan for coding and robotics in Queensland state schools](#).

#codingcounts

Queensland students need to be prepared to take advantage of the many opportunities in our increasingly digital world.

From 2016, Queensland will offer the new Australian Curriculum: Digital Technologies in state schools from Prep to Year 10, where students will start learning coding and robotics to help develop their digital literacy.

Queensland Coding Academy

Queensland Coding Academy is supporting the implementation of the Australian Curriculum: Digital Technologies across the state through hands-on learning experiences for teachers and students.

Mandatory qualifications

Students intending to enter an undergraduate teacher education program commencing in 2016 or later are required to have at least 'sound achievement' in the current Queensland Curriculum and Assessment Authority subjects of senior English and mathematics.

In addition, students entering undergraduate primary programs also require a 'sound achievement' in a Queensland Curriculum and Assessment Authority science subject, for example, agricultural science, marine science, chemistry or physics.

STEM Girl Power Camp

This [program](#) targets girls' participation and engagement in STEM to encourage enrolment in senior STEM subjects and pursuit of STEM careers.

STEM champions

A STEM champion in each region provides teachers with mentoring and professional development, and supports schools to collaborate with universities, business and industry to enhance STEM teaching and learning programs.

STEM education partnerships

The Department of Education and Training provides funding or support to other organisations that engage students in STEM. These programs include:

- the Wonder of Science program—engaging students in regional and rural Queensland
- SPARQ-ed program—science extension programs at The University of Queensland.

Future Makers

Future Makers is the learning identity of the Queensland Museum. Developed in collaboration with corporate partner QGC, Future Makers is designed to better connect students with museum objects and industry professionals through curriculum-related activity. Teacher professional development programs, such as Creative Lab, are also offered to enhance teachers' connection with the museum and industry professionals, and increase skills in teaching STEM-related subjects.

What can Queensland do together?

Scientists and Mathematicians in Schools

CSIRO's [Scientists and Mathematicians in Schools](#) is a national program that creates and supports ongoing professional partnerships between primary or secondary school teachers and STEM professionals. There are currently 131 teachers in Queensland registered for the program; however, suitable STEM partners have not been found. Consequently, STEM professionals (including scientists, mathematicians, engineers and ICT professionals) should be encouraged to join this program.

Coding clubs such as CoderDojo

CoderDojo is a global movement of free, volunteer-led, community-based programming clubs for young people. At a Dojo, young people between 7 and 17, learn how to code, develop websites, apps, programs and games, and explore technology in an informal and creative environment. In addition to learning to code, attendees meet like-minded people and are exposed to the possibilities of technology. [CoderDojo Brisbane](#) is the first CoderDojo running in Australia.

Makerspace areas for both students and teachers

A Makerspace is a place where people come together to use, and learn to use, materials, and develop creative projects. The spaces are most commonly associated with using technology to create and design, helping to make it easier to engage in STEM-related activities.



Kedron State High School student
Photo courtesy Department of Education and Training



Public engagement

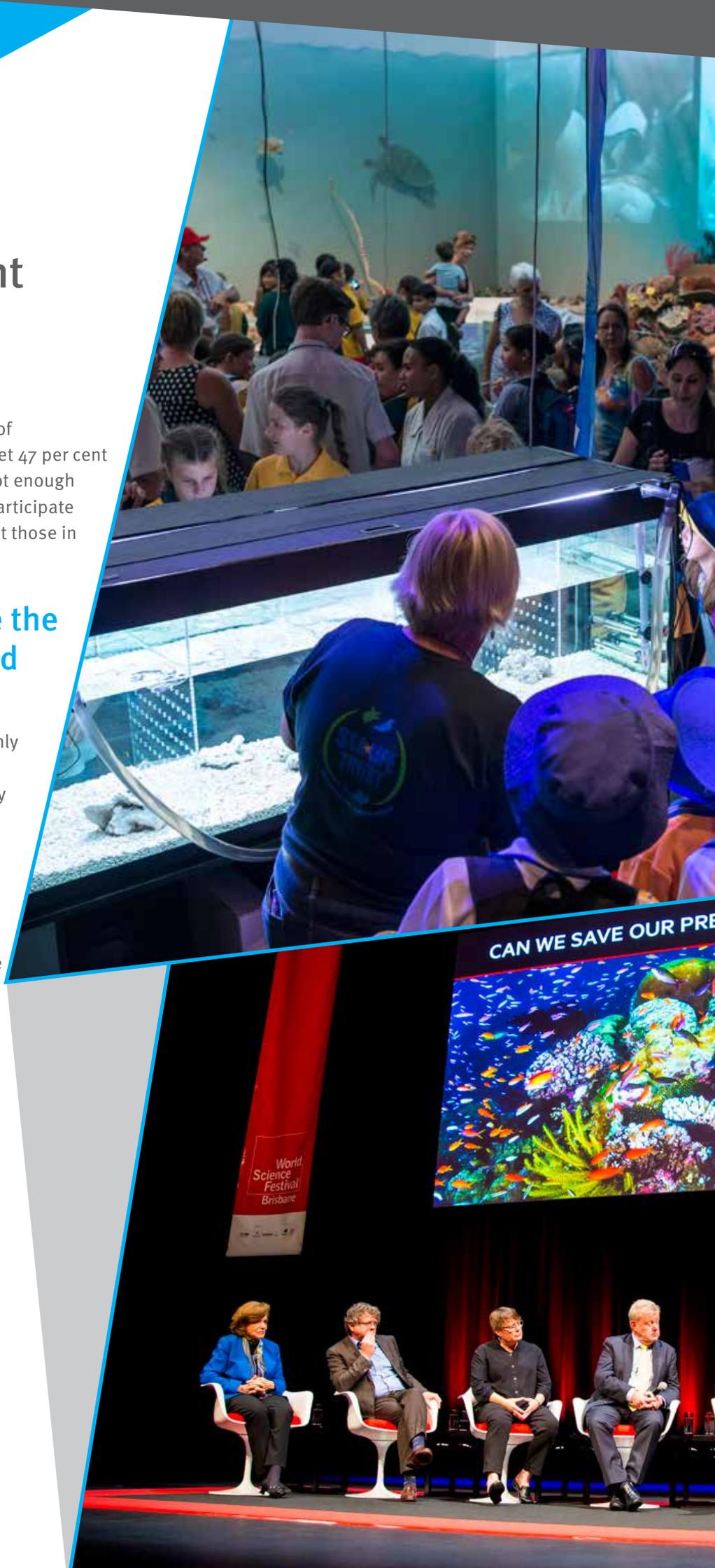
The current situation

Recent research indicates that 74 per cent of Queenslanders are interested in science, yet 47 per cent of Queenslanders believe that there are not enough science events and activities for them to participate in or enjoy. This finding is stronger amongst those in remote or very remote areas (64 per cent).¹

Why we should increase the public's engagement and participation in science

The real benefits of science research are only fully realised when they touch the lives of ordinary people or the environment, or they improve the competitiveness of business.

Getting Queenslanders to engage with science helps equip them with skills and knowledge to use science in their daily lives, and to make informed decisions about scientific topics. Parents can engage with those in their families who are studying science already and help them encourage others to appreciate and understand science better and enable them to make the most of the rapidly changing world we live in.



Top: School students at the Queensland Museum
Right: Panel discussion at the World Science Festival in Brisbane (March 2016)
Photos courtesy Queensland Museum



Snapshot of activities under this strategy

Support for World Science Festival Brisbane

In 2016 and 2017, as part of this strategy, the Office of the Queensland Chief Scientist is supporting **World Science Festival Brisbane** through a formal sponsorship arrangement.

The World Science Festival Brisbane is organised and hosted by Queensland Museum, and brings some of the world's greatest thought leaders to Queensland, showcases local scientists and performers from around the Asia-Pacific region, and hosts the brightest and the best from previous events in New York. At the World Science Festival Brisbane, the biggest stars of science present the beauty, complexity, and importance of science through diverse, multidisciplinary programming that is the World Science Festival signature.

As part of the World Science Festival Brisbane, regional programs are developed to provide opportunity for regional communities to celebrate and explore science. Through a variety of media, the regional program enables local scientists to interact with students and community members from regional towns in Queensland to raise awareness of the research and innovation which is being achieved in our own backyard, thereby fostering an interest in STEM.

Events during National Science Week

Through the strategy, the Office of the Queensland Chief Scientist will coordinate a series of events during **National Science Week** (in August) each year. The events in National Science Week will build on the excitement and momentum from the World Science Festival Brisbane (in March). The events on offer will change from year to year, and depend on emerging trends in best practice and the needs of the community.

Flying Scientists

The Flying Scientists initiative will provide an engaging hands-on learning experience and opportunity for scientific discussion in regional and remote communities, as well as undertaking the roles already outlined in the STEM section of this strategy.





Snapshot of what government is currently doing

Queensland Museum and Sciencentre

Queensland Museum is funded by the Queensland Government and is a museum of natural history, cultural heritage, science and human achievement that tells the changing story of Queensland.

The museum houses permanent and changing exhibitions, and also provides in-depth education experiences, innovative public programs, early childhood activities and entertaining holiday activities. Behind the scenes, Queensland Museum is home to millions of objects, specimens and artefacts.

Queensland Museum offers object-based learning workshops, where children and their adult carers explore different science concepts such as atomic theory, biodiversity, fossils and ancient life. Workshops are hands-on and encourage inquiry, questioning and collaborative learning.

Located at the museum, the [Sciencentre](#) also offers an exciting, experience-rich environment that is contemporary, user-friendly and inspiring.

Inspiring Australia

Inspiring Australia Queensland runs numerous science engagement initiatives, and links people from the Queensland community so they can deliver engaging, intriguing and inspiring events which focus on revealing the invisible science of the everyday. Inspiring Australia is a national initiative which is supported by the Queensland Government.

Queensland Art Gallery and Gallery of Modern Art

Primarily through the Learning and Public Engagement portfolio, Queensland Art Gallery and Gallery of Modern Art holds regular public programs, forums and talks relating to exhibitions and displays that elucidate links between the creative arts and science. These include active researchers and conservators who provide insights into the conservation concerns and scientific techniques employed across art media.

Nature Play Queensland

Supported by the Queensland Department of National Parks, Sport and Racing, [Nature Play Queensland](#)'s role is to advocate the nature play message and to increase access to nature play resources, events and programs for Queenslanders.

The benefits of nature are well studied. By providing opportunities for people to connect with and learn about nature, we are increasing their environmental awareness, appreciation and stewardship.

Weed Spotters Network

The [Weed Spotters Network Queensland](#) is the biggest citizen science project in the state, and is a community-based weed surveillance program. Participants collaborate with scientists to help find, identify and document new occurrences of potential and existing weeds at an early stage so that appropriate action can be taken.



This is science—out and about—learning about our environment © Bigstock—Shutterstock

What can Queensland do together?

Citizen science

Citizen science enables volunteers in the community to make a direct contribution to scientific research, discover an unfamiliar place, or learn about a specific environmental challenge. These opportunities provide inspirational, immersive experiences that challenge individuals and transform mindsets.

Queenslanders are encouraged to look for opportunities to participate in scientific research, while scientists should seek ways to involve the local community in their research.

Science and research facility open days

Open houses and facility tours are a good way to engage general public audiences, especially families, by giving them a behind-the-scenes look at Queensland science. Over 40 per cent of Queenslanders indicated that, if given the opportunity, they would like to do an open house tour.¹

The use of existing initiatives like Brisbane Open House would be beneficial.

Guided nature tours/nature play for children

Nature play not only builds a person's appreciation, but has positive health benefits for their cognitive, social and emotional development. Almost 40 per cent of Queenslanders said that they would be interested in being involved in nature-related activities.¹

Science clubs

Science clubs give adults and children an interactive and engaging learning experience. Approximately 20 per cent of Queenslanders showed an interest in participating in science clubs.¹

Café Scientifique

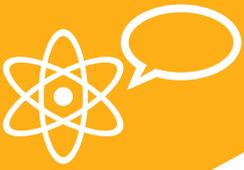
For the price of a cup of coffee or a glass of wine, anyone can come to explore the latest ideas in science and technology. Meetings take place in cafés, bars, restaurants and even theatres, but always outside a traditional academic context.

You can host your own [Café Scientifique](#) in partnership with Inspiring Australia Queensland.



An Australian citizen scientist has made an amazing discovery in a busy Cairns' suburb—a mangrove species that's never been seen before in Australia.

Local explorer, Hidetoshi Kudo made the remarkable discovery of Haines orange mangrove (*Bruguiera hainesii*).



Scientist engagement

The current situation

In a national survey conducted by CSIRO, 42 per cent of people indicated they trust scientists.⁸

On a national level, of an estimated 10,000–12,000 scientific research projects carried out in Australia each year, the results of fewer than 2000 are announced publicly:

Science engagement is trapped in the 20th century ... operating under an outdated model, rather than encouraging the public to participate in, and critically evaluate, scientific endeavours.⁵

Scientists should therefore increase their interaction and engagement with the community, media and schools. Key to this is scientists developing the ability to communicate their science to a lay audience and making themselves available to the media.

Why we should increase the number of scientists directly engaging with the Queensland community

Public engagement with science indicates an intentional and meaningful interaction. This provides an opportunity for the scientist to inform, impart knowledge to a new audience and gain skills in presenting their research. For the public on the other side of the interaction, this can provide an opportunity to meet and speak with a real scientist and gain a better understanding of the world around them. It is not limited to knowledge acquisition, as it also provides people with a new view of the world, a greater breadth of perspectives and an insight into the stories behind news headlines of discoveries or other research success.

This strategy also seeks to connect researchers and scientists with industry—one of the key aims of the Advance Queensland programs is to encourage and facilitate collaboration. Such collaboration can lead to greater uptake of research findings and better use of research, among other benefits.

Dr Melinda Laidlaw, Queensland Herbarium, measuring fog in the high elevation World Heritage-listed rainforests of Green Mountains



Snapshot of activities under this strategy

Partner Up Queensland

Partner Up Queensland is a series of events coordinated by the Office of the Queensland Chief Scientist, designed to provide training for scientists and researchers (which may include science communication skills, professional development or use of new media). The training events are often followed by a networking session to bring researchers and industry together.

The ultimate aim of the Partner Up Queensland series is to further develop and strengthen the careers and science engagement skills of our up-and-coming scientists and researchers.

Flying Scientists

Scientists will travel to regional and remote Queensland to engage with the community discussing their research and scientific careers.

Meet a scientist in schools program

This program enables the scientists to engage directly with students and tell their stories and promote interaction.

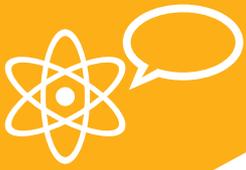
Young Tall Poppy Science Awards

The prestigious annual Young Tall Poppy Science Awards aim to recognise the achievements of Australia's outstanding young scientific researchers and communicators. The Office of the Queensland Chief Scientist coordinates the Queensland Young Tall Poppy Science Awards in conjunction with the [Australian Institute of Policy and Science](#). The Office of the Queensland Chief Scientist ensures the Queensland recipients have the opportunity to fulfil their requirements to participate in education and community outreach programs, in which they become role models to inspire school students and the broader community about the possibilities of science.



A Young Tall Poppy, Dr Cheryl McCarthy, from the National Centre for Engineering in Agriculture with vision weed spot sprayer for sugar and cotton

Photo courtesy National Centre for Engineering in Agriculture



Snapshot of what government is currently doing

Artists in Residence Science program

The Artists in Residence Science program supports creative collaborative residencies between professional artists and creative practitioners with scientists and the diverse science networks, researchers, data and infrastructure in the Department of Science, Information Technology and Innovation.

During their three-month voluntary residency, the artists work with scientists on a range of science-related artworks, and will engage with the public through talks and presentations of their artwork.

Meet our Curator

Each Wednesday, Queensland Museum hosts the 'Meet our Curator' session, allowing visitors to talk to museum staff (who are often scientists) and learn more about specific objects or specimens contained within the state collection.

Data Lounge created by DSITI Artist in Residence Science artist Jane James 2015.

This functional piece of furniture is constructed from the data of the Remote Sensing Centre of the Ecosciences Precinct.

Meet our curator
Photo courtesy
Queensland Museum



What can Queensland do together?

Science communication training for scientists

It is important to provide training which is specifically designed to address the needs of scientists to communicate scientific or technical information in a variety of public and professional interactions. This includes things such as media interviews, writing grant proposals, school presentations or participating in public forums.

This should occur from the undergraduate level, including science communication as part of the course structure.

Scientists directly engaging with schools

This initiative provides students with an opportunity to engage with a ‘real’ scientist and gain an understanding about possible careers in science, maths and ICT. STEM professionals should be encouraged to join programs such as the CSIRO Scientists and Mathematicians in Schools program.

Scientist involvement in World Science Festival and National Science Week

World Science Festival Brisbane is an iconic event which Brisbane has secured for the next three years. It is vital that Queensland scientists are centre stage in as many events as possible. There are opportunities for real engagement, and for raising awareness of the great science in Queensland and overseas.

National Science Week is Australia’s annual celebration of science and technology, and thousands of individuals—from students, to scientists to chefs and musicians—get involved, taking part in more than 1000 science events across the nation. There are many interactive activities on offer for both students and the general community. Queensland scientists should be actively involved in the events.

 national science week

IGNITE YOUR
IMAGINATION





Public awareness

The current situation

In a recent survey, four in five people could not name a Queensland scientist or scientific discovery and even when prompted with a list, 41 per cent did not recognise any of the names/discoveries.¹

Recent research also shows that 45 per cent of Queenslanders feel there is not enough science news or information in the media or online, a void which may be partially filled with local and state-based stories.¹

Why we should increase the awareness and understanding of the great science taking place in Queensland

Queensland scientists and researchers are at the forefront of many national and international discoveries. Increasing the awareness of the great science happening in Queensland helps to create a community which values, supports and recognises science.

Scientists and researchers therefore need to 'tell more stories' and publish their research outcomes in 'plain English', which may subsequently receive more media attention and promotion.

Greater awareness will provide openings for greater engagement, with the benefit of increasing understanding and a better informed community.

Right: Scientists showcased on Queensland Science social media





Snapshot of activities under this strategy

Partner Up Queensland

One of the key goals in the Partner Up Queensland series is to train scientists on how to communicate and promote their research findings, and advocates for science in Queensland.

Flying Scientists

Scientists travelling out to regional and remote Queensland will help 'spread the word' to communities that would not normally receive such information.

Meet a scientist in schools program

Students across the state will be made aware of the great science being undertaken in Queensland by the Advance Queensland fellows, and potentially be inspired by the 'cool jobs' they see scientists undertaking.

Young Tall Poppy Science Awards

Putting the great scientific work done by the Queensland Young Tall Poppies up in lights in a prestigious award ceremony assists in creating a public awareness of Queensland science, providing students with inspiration for both their studies and future roles in society.

Queensland Science social media

The Queensland Science social media channels include Facebook, Twitter and Instagram. Current followers for this are 4421, 2216 and 767 respectively. The aim of the Queensland social media science channels is to bring together the Queensland Science community to celebrate successes, share latest events, and explore research and development opportunities.

Follow us on:



Queensland Science



@qldscience



qldscience



Snapshot of what government is currently doing

Peter Doherty Awards

The Peter Doherty Awards for Excellence in STEM Education recognise students, teachers, support officers, schools and education partners (volunteers, mentors and organisations) who demonstrate an outstanding and innovative contribution to STEM education in Queensland.

What can Queensland do together?

Public seminars and lectures

There are numerous public seminars and lectures, often hosted by tertiary institutes. To ensure public engagement and interest, these events need to be directed at a lay audience and be well publicised. There is some interest in these events, with 27 per cent of Queenslanders indicating that if they were available they would be interested in science talks/seminars.¹

Media

Scientists can tell their stories using media channels such as television, radio, print, digital or social media.

There are numerous avenues for scientists to get stories into the media; however, scientists need to become better at communicating their research in plain English. Media which are supportive of science stories or programs should be targeted and scientists should become more active at pitching stories.

Engaging media could involve a training session followed by a pitching competition for scientists.



Videography and photography

To maximise engagement opportunities and change people's perceptions of science/scientists, current and relevant images and videos are vital. This will also ensure that all facets of science are represented and science is portrayed in a broad and non-stereotypical light. Visuals are also necessary to attract attention and cut through the information overload.

Video is a great way to communicate science in a concise, easily digestible, multipurpose manner. Video would enable viewers a glimpse into Queensland scientists at work.

It is currently difficult to access visually interesting, high-quality images of Queensland science and research projects.

These are necessary to accompany science stories in print media, and for inclusion in advertising and other written and promotional materials. A central photo library would be beneficial.

Events

The science community in Queensland (universities, government, institutes and industry) hosts hundreds of events annually. With some additional funding and incentive to collaborate, these science events could be more impactful, and those delivered only in south-east Queensland could go on a roadshow to regional areas.

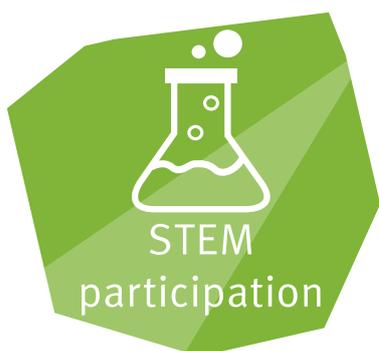
Left: A team of volunteers demonstrating taxidermy
Right: Street science at the World Science Festival in
Brisbane (March 2016)

Photos courtesy Queensland Museum



Almost half of Queenslanders—**47%**—believe that there are not enough science-based activities and events in their local area. This is especially true of those who reside in remote and very remote areas of Queensland—**64%**.¹

How can you help us achieve our vision



Advance Queensland Engaging Science Grants

The Advance Queensland Engaging Science Grants support scientists, science communicators, teachers, organisations, STEM professionals and community groups to carry out science engagement and communication activities to increase the reach of science across Queensland.

Our vision is to create a Queensland population that engages in, recognises, supports and advocates for science. This will ultimately provide the community with the ability to make informed and educated decisions on issues affecting their day-to-day lives.

The Advance Queensland Engaging Science Grants are open to applicants all year round, and applicants must address at least one of the four priority areas:

1. STEM participation
2. public engagement
3. scientist engagement
4. public awareness.

Up to \$10,000 (excluding GST) is available to eligible applicants to conduct a science engagement activity.

Applicant eligibility

To be eligible for a grant, an applicant must:

- ▶ be Queensland based with an Australian Business Number (or employed by a Queensland-based organisation with an Australian Business Number)
- ▶ address at least one of the four priority areas and associated objectives of the strategy.

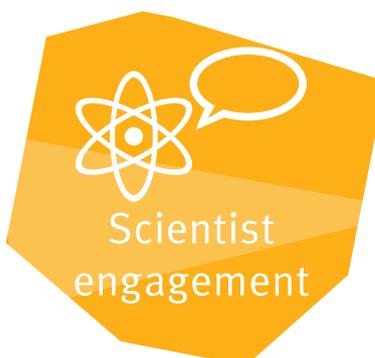
Collaboration between institutions (e.g. schools, organisations, research institutes, media organisations, community groups) will be highly regarded, as will activities which have obtained a co-contribution to the project. Those activities which have a wide reach or are held in regional Queensland will also be looked upon favourably.

How to apply

Guidelines for applicants are available on the Advance Queensland website.

Applications should be completed and submitted electronically via the Queensland Government website. The online lodgement process is hosted via a secure site, and application documentation will remain strictly confidential.

All applications will require a fully completed Advance Queensland Engaging Science Grant application form.



About us

Office of the Queensland Chief Scientist

The Queensland Chief Scientist is responsible for leading the development of science and innovation strategy across government, as well as promoting Queensland science and research, and engaging with science and innovation stakeholders.

The Chief Scientist works to improve community engagement around science to build better understanding of and support for the role of science, research and innovation in the state's future economic, social and environmental wellbeing.

The Queensland Chief Scientist leads the Advance Queensland science engagement and communication strategy (this document) which aims to create a Queensland population that engages in and recognises, supports and advocates for science.

The Chief Scientist also works to profile Queensland as a knowledge-based economy characterised by world-class research and investment opportunities, therefore attracting world-class talent, investment, collaboration and cooperation.

You can find out more at chiefscientist.qld.gov.au.

Who should you contact?

This strategy was developed through extensive consultation. We welcome feedback on the detail around the strategy, and will publish updated versions periodically. If at any stage you wish to provide feedback, please do so via the details below.

Office of the Queensland Chief Scientist

Department of Science, Information Technology and Innovation

info@chiefscientist.qld.gov.au

(07) 3215 3739

Level 25, 111 George Street
BRISBANE QLD 4000

List of references

- 1 TNS 2016, *Queenslanders' perceptions and attitudes to science*
chiefscientist.qld.gov.au/publications/other-reports
- 2 Centre for International Economics 2015, *The importance of advanced physical and mathematical sciences to the Australian Economy*
- 3 Lamberts, R, Grant, WJ, and Martin, A, 2010 ANUpoll—*Public opinion about science*.
- 4 Map of Queensland Science engagement and outreach activities
chiefscientist.qld.gov.au/stem-education/activities-resources
- 5 Inspiring Australia 2010, *Inspiring Australia: a national strategy for engagement with sciences*
inspiringaustralia.net.au
- 6 Kennedy, J, Lyons, T and Quinn, F 2014, 'The continuing decline of science and mathematics enrolments in Australian high schools', *Teaching Science*, vol. 60, no. 2, pp 34–46
- 7 Australian Government, Office of the Australian Chief Scientist 2016, *Australia's STEM workforce*
- 8 Cormick, Craig, 2014, *Community attitudes towards science and technology in Australia*

Follow us on:



Queensland Science



@qldscience



qldscience