

Executive summary

Sharing knowledge powers innovation. To fully realise the social, economic and environmental benefits of our significant investment in science and research, we must communicate and engage the wider community in science. Australia aspires to an innovative society with a technologically skilled workforce, a scientifically literate community and well informed decision makers. The ‘*Inspiring Australia*’ strategy aims to build a strong, open relationship between science and society, underpinned by effective communication of science and its uses.

This *Inspiring Australia* report on communicating science in Australia proposes a national strategic initiative that will help realise the goals articulated in *Powering Ideas: An Innovation Agenda for the 21st Century*.

Inspiration is simply too important to leave to chance. Now is the time to motivate and inspire young Australians to get involved with science and science-related issues to help solve the environmental, economic, social and humanitarian problems facing our country and the world.

This initiative will establish, for the first time in Australia, a national approach for community engagement with the sciences; it will increase the return on investment in research institutions, infrastructure and programs now and into the future.

This report acknowledges that the sciences—comprising the natural and physical sciences, the humanities, the arts and the social sciences—are fundamental elements of a 21st century creative economy. They underpin the continuing improvements in living standards that Australians expect and deserve.

The aspirational goal is for a scientifically engaged Australia—a society that is inspired by and values scientific endeavour, that attracts increasing national and international interest in its science, that critically engages with key scientific issues and that encourages young people to pursue scientific studies and careers.

If the communication of science is to be effective, it needs to recognise the audiences to be engaged. Activities need to be appropriate and relevant to local communities, and contextualised to acknowledge and value local perspectives. Activities need to build on each other, providing pathways to develop awareness and involvement.

THE CHALLENGE FOR AUSTRALIA

The Australian Government has made an unprecedented commitment to the advancement of scientific research in Australia, through ‘Super Science’ and other projects in areas including astronomy, space, marine science, climate change, clean energy, biological discovery, biotechnology development, nuclear science, nanotechnology and advanced ICT.

The Government has also made a strong commitment to support university research and business commercialisation.

Much of the Australian population, however, would not be aware of these commitments nor of their importance to Australia's economic prospects and the well-being of future generations. Neither is there a broad awareness overseas, especially among Australia's trading partners, of Australia's strengths in science and research.

Nationally, an awareness and understanding of why science and research are critical to our lives is essential for developing and sustaining an innovation culture. Internationally, Australia must fight hard to hold its place and advance its reputation as a first-class science and research performer and preferred partner in world-leading research collaborations.

To harness the full potential of its investment in the sciences, Australia requires a continuing supply of scientists, technologists, mathematicians and engineers to undertake research, generate knowledge and solve problems; a strong base of institutions, infrastructure and resources to secure Australia's future as a knowledge economy; decision makers and opinion leaders who have an appreciation of science and its contribution to solving complex issues; and a strong, open relationship between science and society, underpinned by effective communication of science and its benefits.

Australia is investing strongly in its research base and education. As we approach a future increasingly dominated by complex issues that require openness, dialogue and confidence in our science institutions, scientists and policy makers, the time is right to address the relationship between science and society.

ACTIONS REQUIRED

In order to achieve a scientifically engaged Australia, it will be necessary to develop a culture where the sciences are recognised as relevant to everyday life and where the government, business, and academic and public institutions work together with the sciences to provide a coherent approach to communicating science and its benefits.

It will require leadership by the Australian Government and a coordinated national framework for public engagement—a framework that recognises and harnesses the range of national, state and community-based activities undertaken by both professionals and volunteers and that is supportive of the conditions for increased participation and debate.

The national framework will be developed from existing key national infrastructure—CSIRO Education and Outreach and the state-based CSIRO Science Education Centres, the ABC multi-platform media network and Questacon—working with state-based science centres and museums, research agencies, universities, professional bodies, academies, the media, the business sector and community-based organisations.

The constituent parts of the national science engagement effort, as well as the links between those parts, will need to be strengthened, drawing on the natural and physical sciences, the humanities, the arts and the social sciences.

Australia must now implement sophisticated strategies to improve the promotion of our science and research achievements nationally and internationally. Our science institutions will be expected to share their knowledge to help realise full social, economic, health and environmental benefits of scientific research and in return win ongoing public support.

Institutions and policy makers will need to appreciate the importance of public engagement activity, support increased training and recognition for science communication practitioners, and seek, acknowledge and respond to public perspectives on science.

Australia's science communication providers have proved capable of generating many successful and effective activities. This national initiative will develop an appropriate balance between sustaining successful existing programs and creating new, strategically targeted programs reaching out to those not engaged through traditional science communication channels.

An effective national strategy cannot be delivered by governments or organisations acting alone. Concerted action is needed to ensure that the communication of science and its benefits has a coherent vision and direction.

WHAT HAS LED TO THIS

In 2003 a PMSEIC Working Group on Science Engagement and Education made a series of recommendations, some of which have been implemented (for example, *Primary Connections* and *Science by Doing*). A recommendation for coordinated outreach activities through a National Framework—Local Action model has yet to be introduced.

In 2007 Questacon undertook an audit of science awareness and education activities from Federal Government departments and agencies on behalf of the Coordinating Committee on Science and Technology and noted a large number of uncoordinated activities.

In 2008 there was a major review of the roles and responsibilities of Questacon — The National Science and Technology Centre, which recommended strengthening Questacon's resourcing and the development of stronger links with CSIRO and the ABC.

In 2008 the *Venturous Australia: Building Strength in Innovation* review urged the Government to facilitate favourable conditions for technological development, including through fostering public awareness and community engagement.

In 2009 Questacon was asked to undertake national consultations to inform the design of a replacement for the DIISR Science Connections Program (SCOPE), which terminates in 2011.

A Steering Committee was established to guide this work; it comprised the Chief Scientist for Australia, the Chief Executive of CSIRO, the Director of Questacon, a senior representative of the ABC and a Deputy Secretary from DIISR as chair.

Consultation was undertaken with a wide range of science communicators, educators, journalists and scientists in all states and territories. More than 230 people were consulted.

Individuals and organisations were also invited to make written submissions, and 22 were received. A study was commissioned of the science interests and needs of a typical regional centre, Ballarat, and a youth view was obtained from former participants of the National Youth Science Forum.

Care was taken to consider the communication of science as broadly as possible, drawing participants not only from the natural and physical sciences, mathematics, engineering and technological sciences, but also from education, social sciences and humanities. A Humanities and Science Workshop was held to solicit views of key academics from the disciplines of social sciences and the humanities.

INSPIRING AUSTRALIA: A NATIONAL STRATEGY

This report, *Inspiring Australia: A National Strategy for Engagement with the Sciences*, sets out why communicating science effectively is vital for Australia and why national leadership and coherent action is required (Chapter 1. The challenge for Australia). The report articulates key principles and sets out measurable outcomes and recommendations.

Australia is a high-performing country in a wide range of areas across the sciences, and this has to be acknowledged nationally and globally with appropriate reward and recognition (Chapter 2. Telling Australia's story).

Australia has a small population in global terms and cannot afford to squander its brain power. Therefore, it is important to develop the potential and interest of Australians irrespective of geography, ethnicity, age or social condition (Chapter 3. Engaging all Australians).

A capable science workforce is a prerequisite for the Australian Government's *Innovation Agenda*. Thus, students need enhanced experiences in science and mathematics to help ensure an adequate supply of professionals with appropriate skills (Chapter 4. Building Australia's capacity).

To build on national leadership and coherent action, a national framework—local action approach, a strong Web presence and improved information flow and organisational networking are required to achieve the goal of a scientifically engaged Australia. A supportive research and evaluation program is also needed to monitor progress and inform investment decisions (Chapter 5. Mobilising capability across Australia).

Key principles and recommendations

A NEW INITIATIVE

Australia requires a vigorous, high-quality national strategy for public engagement with the sciences as a vital complement to its *Innovation Agenda*. Such a strategy would increase appreciation of science in Australian culture, facilitate informed citizen participation in decision making and science policy development, boost confidence in the Australian Government's research investment, and ensure a continuing supply of well-qualified science graduates.

Recommendation 1

That DIISR's terminating Science Connections Program (SCOPE) be replaced with a broader national initiative designed to increase the level of public engagement in the sciences. Such an initiative would provide ongoing support for existing, successful activities while developing innovative approaches to effectively engage a wider audience.

VISION AND PRIORITY SETTING

The goal of this national initiative is to create a scientifically engaged Australia—a society that is inspired by and values scientific endeavour, that attracts increasing international interest in its science, that critically engages with key scientific issues and that encourages young people to pursue scientific studies and careers.

Recommendation 2

That the Australian Government strongly articulate the goal of a scientifically engaged Australia and support development of strategic national priorities for communicating science and its benefits.

LEADERSHIP

A coordinated national strategy for science communication will require leadership by the Australian Government to stimulate collaboration and co-investment by governments across jurisdictions; by academic, cultural and professional institutions; by business and industry; and by community organisations.

Recommendation 3

That leadership for this national initiative be provided by Questacon within DIISR, with input from a broadly constituted national advisory group to guide implementation, monitoring and evaluation, and reporting.

COHERENT ACTION

To maximise the effectiveness of science engagement activities across the nation, the significant number of organisations and individuals involved in the natural and physical sciences, the humanities, the arts and the social sciences must work in a consistent direction towards reaching an agreed vision.

Recommendation 4

That a science communication summit be convened to secure buy-in from the diverse range of organisations and individuals in the science communication sector and to identify strategic priorities and the optimal roles for different agencies and institutions.

PRIDE IN AUSTRALIAN ACHIEVEMENT

A key element of the national initiative is to inspire a sense of national pride by promoting activities that recognise and reward the achievements and successes of Australians in the sciences.

Recommendation 5

That the national initiative include continued funding for the highly regarded Prime Minister's Prizes for Science, with an enhanced promotional strategy targeting the wider Australian community and international audiences.

INTERNATIONAL RECOGNITION

It is important for Australia to promote its science achievements and its significant potential for further contributions in global contexts, through a program of activities strategically targeting Australian and overseas audiences.

Recommendation 6

That the national initiative support promotional and awareness-raising activities, including travelling exhibitions showcasing Australia's capability in the sciences and promotional materials for scientists, science policy makers, overseas counsellors and other potential Australian science 'ambassadors' to use abroad.

SCIENCE AND SOCIETY

It is time for Australia to invest in a significant Science and Society program, aligned with Australia's *Innovation Agenda*, to empower and engage citizens in decision making and to inform policy development in the sciences and science-related areas.

Recommendation 7

That a national Science and Society forum be held annually to focus on the priorities for community engagement in science and key issues where science can serve the needs of society.

ENGAGING AUSTRALIAN COMMUNITIES

It is important that Australia continue to deliver high-profile, nationwide science engagement activities providing opportunities for the entire community to participate.

Recommendation 8

That the national initiative provide continued funding to extend the successful community-based activities of National Science Week, stimulating and leveraging further contributions by organisations across Australia and targeting new and under-served audiences.

BUILDING PARTNERSHIPS—USING NETWORKS

Australia requires effective mechanisms to facilitate public information flow and information sharing in the sciences, utilising the knowledge and resources of existing organisations and networks.

Recommendation 9

That the national initiative include collaborative projects that stimulate science organisations and networks across Australia to work together to promote information sharing, including holding ‘Hot Science’ briefings for elected members and policy officers of Federal, state and local governments, and leaders in the legal and business sectors.

STRENGTHENING THE MEDIA’S ROLE IN COMMUNICATING SCIENCE

Programs that increase the potential of media and new media coverage of the sciences need to be supported and encouraged.

Recommendation 10

That the national initiative support science communication and media training for scientists and that a short-term working group be established to review mechanisms for further developing Australian science media content.

A FOCUS ON YOUTH AND THE FUTURE

It is imperative for Australia to address identified skills shortages in the sciences by encouraging young Australian scientists to communicate science and young Australian students to further their studies and take up careers in the sciences.

Recommendation 11

That a key focus of the national initiative should be raising awareness among young people of opportunities in science and research. The Australian Government’s investment in schools, higher education and research should be harnessed to achieve this.

UNLOCKING AUSTRALIA'S FULL POTENTIAL

To ensure a more equitable Australia, a special focus is required to maximise the potential of people who may not previously have had interest in or access to science engagement activities.

Recommendation 12

That the national initiative support science communication exhibitions and programs that target under-served groups, such as those living in outer metropolitan, regional and remote areas; Indigenous communities; people for whom English is a second language; and people who are disabled or have limited mobility.

NATIONAL FRAMEWORK—LOCAL ACTION

Australia requires a 'national framework—local action' approach to deliver an effective and efficient national initiative that mobilises and connects otherwise uncoordinated, overlapping and fragmented activities.

Recommendation 13

That a 'national framework—local action' approach be adopted, led by a national hub collaborating with federal and state jurisdictions, business and the community. Such an approach should aim to increase cooperation amongst organisations involved in science communication down to the regional level, and drive partnerships and complementary activities.

UTILISING NEW MEDIA

The use of the Web and digital technologies in science communication is essential to capture new audiences in a cost-effective way; it should be a central element of the national initiative. The National Broadband Network will expand opportunities for exploiting these technologies.

Recommendation 14

That the national initiative include development of a national Web presence to increase the visibility of Australian science to national and international audiences, and to promote links to other relevant science-related sites.

DEVELOPING AN EVIDENCE BASE

Australia requires a strategic research and evaluation capability to design, target and review effective science engagement activities and to guide future investment.

Recommendation 15

That the national initiative support a program of research in science engagement—such as baseline and longitudinal attitudinal and behavioural studies, activity audits, program evaluations and impact assessments—to inform future investment decisions by government and its partners.