

Research and innovation in Australia



In a world where information is only a click away, the competitiveness of nations such as Australia will be tested increasingly by a new world order. Developing nations including China and India understand with unquestioned certainty that inventive international science and technology are the keys to socioeconomic well-being and prosperity. If as a nation Australia is to retain any advantages in the global market-place it needs to invest much greater effort in the years ahead, in education, training and research in science and technology. Australia needs to forge stronger strategic alliances in science and technology, not only with its traditional collaborating partners in Europe and in North America, but with developing countries as well.

Australia's current competitive advantage in science and technology could be eroded quite rapidly. Australia's contribution to global knowledge is only about two per cent, but is of a quality that permits early access to emerging technologies and new opportunities in equal and respectful partnerships. The global challenges in the years ahead demand that Australia build on its enviable reputation as a leader in science and technology. Research at the national and international level is imperative for continued economic prosperity and community well-being. This claim seems evident not only to the scientists among us but also to the Productivity Commission whose report of *2007 Public Support for Science and Innovation* commissioned by the Australian government, found that widespread and important economic, social and environmental benefits derive from Australia's investment of public monies in science and innovation.

The Academy of Science's 2007 policy statement *Research and innovation in Australia* identifies ten actions that Australia must take to maintain a strategic economic position in a world where many other nations have a competitive advantage through low wage systems and the sheer size of their markets. These ten actions are aimed at optimising the nation's potential and building on the nation's ingenuity.

Where might Australia profit from international science leadership? The broad impacts of climate change and the need to reduce greenhouse gas and other emissions require increased research into climate monitoring and into mechanisms to reduce the impacts on the environment. It is also leading to a worldwide race to develop renewable energy alternatives, including solar technologies in which Australia has a record of innovation. Australia is also part

of international R&D into carbon sequestration to allow clean exploitation of Australia's fossil fuel reserves and to safeguard critical coal export markets. In addition, biomedical and health management advances are needed to address the continuing devastation from HIV/AIDS in many countries, as well as the potential threat from bird flu and other pandemics. These represent unprecedented challenges and opportunities for the Australian scientific and business communities that require near-term strategies to sustain the development of our research infrastructure and capabilities, the commercialisation of research and the development of technology by industry.

Major international research facilities and projects in Australia, such as the Square Kilometre Array radio telescope currently under consideration, are also important vehicles to attract international collaborators and raise the profile of Australian research. The Australian Synchrotron and OPAL research reactor are examples of significant additions to Australia's research infrastructure to perform world-class research that will attract important international collaborations.

The following policy recommendations address national priorities for meeting the challenges ahead. They include halting the decline in the supply of researchers and technologists through initiatives at all stages of primary to tertiary education, as well as creating rewarding careers for researchers and developing their international networks. Our researchers and visiting scientists need to be able to undertake world-class research in Australia and to be engaged in major projects both in Australia and overseas. The Australian research community also needs to promote its research achievements and opportunities for collaboration more effectively through international networks. These research priorities need to be matched by the commercialisation of technologies by Australian industries, which continue to be below international benchmarks in most sectors.

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Ten recommendations for research and innovation in Australia

- 1 That Australia increases its support for the national R&D effort to ensure that it retains an internationally competitive science capability to underpin the nation's industrial, commercial, environmental and economic position among leading world economies.
- 2 That Australia examines the implications of the continuing relatively low level of private sector investment in R&D and creates policy settings that encourage greater innovation.
- 3 That Australia further addresses the critical lack of suitably qualified science and mathematics teachers, and expands programs to encourage high school students to study science and mathematics.
- 4 That Australia maintains a long-term commitment to basic research funding in universities, and ensures that the Research Quality Framework (RQF) results in additional funds for high-quality research.
- 5 That Australia continues to invest in the future by building on the Higher Education Endowment Fund (HEEF) for capital works and research infrastructure in universities.
- 6 That Australia provides support for publicly-funded research organisations sufficient to maintain their core capabilities, on which their competitiveness as world-class research providers depends.
- 7 That Australia increases its level of support for existing research centre schemes and develops new 'International Research Centres', and that the research fellowship awards be substantially expanded, particularly for early- and mid-career researchers.
- 8 That Australia makes a long-term commitment to maintaining first class national research infrastructure facilities and promotes Australian access to international facilities.
- 9 That Australia gives urgent attention to nurturing rewarding and secure career paths for talented early-career researchers.
- 10 That Australia recognises the importance of engagement with the international scientific community and uses science more effectively as a tool in foreign policy.

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The Academy's staff work as a team to support activities informed by the elite of the Australian scientific community. We are located in two historic heritage-listed buildings close to the Canberra city centre.

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Research and innovation in Australia: a policy statement is available from:
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