



Australian Academy of Science

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Ms Julia Evans, General Manager
Research Infrastructure and Science Policy Branch
Department of Innovation, Industry, Science and Research
GPO Box 9839
CANBERRA ACT 2601

Via email: Roadmap2011@innovation.gov.au

Dear Ms Evans,

2011 Strategic Roadmap for Australian Research Infrastructure

The Australian Academy of Science welcomes the opportunity to provide some general comments on the Discussion Paper *2011 Strategic Roadmap for Australian Research Infrastructure*. Some of these points were also raised recently in the Academy's response to the National Research Infrastructure Council's Discussion Paper, *Strategic Framework for Research Infrastructure Investment*.

It is critical that Australia has a sustainable strategic policy for science and technology. Australia has the good fortune to be blessed with natural resources that are currently in demand worldwide. For the foreseeable future, we will benefit economically from the export of resources such as coal, natural gas, iron and uranium. However, these will not last forever. It is essential, therefore, that the wealth derived from the riches of our lands be invested in education, science, research and technology. It is of particular importance that there is a strategic approach to building both our intellectual infrastructure (education and skills) and our physical infrastructure (major national scientific resources), as these take time to plan and implement.

Australian investment in science and technology research infrastructure needs to be insulated as far as possible from year by year economic variation. This could be achieved by implementing mechanisms such as the establishment of a research sovereign wealth fund (or sovereign wealth investment fund for research infrastructure). These typically invest through a portfolio of equities, property and bonds, and at an arm's length from the government, relying on external specialists for day to day fund management with supervision by a government authority or central bank. An example is Norway's Government Pension Fund (previously the Petroleum Fund of Norway), or the large committed sovereign wealth fund of Singapore. A portion of the resultant dividends can be utilised for investment in science and technology research infrastructure.

There are precedents in Australia. In 2006 the Future Fund was established to help governments meet the cost of public sector superannuation liabilities by delivering investment returns on contributions to the fund. The Board of Guardians and Management Agency of this fund also invest the assets of the Building Australia Fund, the Education Investment Fund and the Health and Hospitals Fund which were established by the Act of 2008. The current Future Fund, which is approximately \$74 billion, should do more than pay future pensions or act as a fiscal stabiliser as proposed recently by Opposition front

bencher Malcolm Turnbull.¹ It should also fund future productivity by providing for research infrastructure. Alternatively, consideration should be given to establishing a similar but parallel fund for research infrastructure.

Australia must continue to increase its investment in science, mathematics, technology and engineering to provide the science capacity that will drive our nation's future. We need these resources so that our researchers can collaborate internationally at the highest level, in an increasingly collaborative world. To achieve this objective, the Academy calls on the Australian Government to increase research funding to at least OECD averages of GDP expenditure by 2020. The recent Excellence in Research for Australia (ERA) data confirms what the Academy has long argued: Australia produces world class science where consistent support has provided the resources that allow our scientists to work over several years at the cutting edge of research. But this support must grow if we are to continue to deserve a place in the international research community.

Some of Australia's ageing research facilities are in need of upgrading or replacement. Others need better support, including the funding of essential human infrastructure as well as the physical infrastructure. Our major national research facilities, such as the Australian Synchrotron, are an important mechanism for attracting international collaborators and raising awareness about Australia's research strengths. Should key facilities such as the synchrotron suffer through inadequate funding, it would not only be a significant setback for science, but also demoralise our own scientists and send the wrong message across the international scientific community. This, in turn, would cause doubt as to Australia's commitment to its pursuit of significant international scientific infrastructure, such as the Square Kilometre Array (SKA) project.

Finally, many of the challenges facing Australia require scientific literacy. It is crucial that Australia provides excellent education in science and mathematics from the earliest years. There are data showing that we are slipping behind neighbouring countries in maths and science performance at secondary school, and there are growing shortages in the Australian workforce of young people with the maths and science skills necessary for trades and technical professions. This is not only a question of employment and economics, important as these are. Every Australian should know enough science to understand and assess key issues such as global warming and stem cell research. This is why the Academy of Science, with its proven science education programs for primary and secondary schools (*Primary Connections* and *Science by Doing*), continues to argue for increased public support for maths and science education in our schools.

If we support our best research, and train our young people so they can take up the skilled jobs that will be generated, Australia will be able to emerge from the present period as a knowledge-based, economically competitive and intellectually vibrant country. This will be achieved if we make appropriate investments now in research designed to meet tomorrow's needs.

Yours sincerely



Professor Bob Williamson AO FRS FAA FRCP FRCPATH
Secretary for Science Policy

¹ <http://www.theaustralian.com.au/news/opinion/sovereign-wealth-fund-or-bust/story-e6frg71x-1226050064640>