



Australian Academy of Science

# **2014-15 FEDERAL BUDGET**

## **COMMENTARY ON MEASURES RELATING TO SCIENCE, RESEARCH AND INNOVATION**

**FROM THE SECRETARY FOR SCIENCE POLICY / 2014**

## 2014-15 federal Budget

### Comments from the Academy's Secretary for Science Policy

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The Budget is an interesting mix of pluses and minuses as far as science and research is concerned.

#### Medical Research Future Fund

The Budget does start the process of creating a “future fund” (>\$20B) over the next few years to provide sustainable investment in Medical Research and this is an excellent initiative. The proposal is coupled to some fairly unpalatable offsets (significant shake up of the health system, individuals paying more for medical care than they have in the past, etc), which may mean it is difficult to get this initiative cleanly through a vote in the parliament.

Providing the fund comes to fruition, it will guarantee a healthy and sustainable investment in medical research into the future.

There is the concern that this is specifically targeted at medical research and it has been pointed out that you can't take a blinkered approach that focusses just on medical research – medical research needs underlying expertise in chemistry, biology, biochemistry, mathematics, informatics, computer science, etc. To maintain a strong presence in health and medical research there must be a broader focus to ensure that there is the underlying strength in the other disciplines on which medical research relies.

The detail of how the medical research funding is allocated has yet to be discussed and this will be a key question to rolling out the initiative as will be the relative importance of preventative versus curative health measures.

#### National Research Infrastructure

The Academy also welcomes the new investment in major national research infrastructure. This has been a real point of concern since, up until recently, we did have a good scheme that supported both large single items of infrastructure (like telescopes, ships at sea, the synchrotron) as well as national facilities (like clusters of powerful microscopes, facilities for nanofabrication, major computing facilities, etc). The current Budget only supports major research infrastructure for one additional year so this really must be stage 1 of a strategy to provide sustainable support for our major research facilities.

The critical issue for the major research infrastructure is to ensure that there is proper support for the lifetime of the facilities. It may well be that we can't support the broad range of facilities that we currently have under the National Collaborative Research Infrastructure Strategy (NCRIS), but those facilities that we do support, we must do properly with a plan and a commitment to ensure that they are fully utilised and properly maintained. It is only common sense that where you are dealing with multi-million dollar projects, you would expect to have a thorough strategy and good project management to make sure that you get the most out of the investments you have made.

#### Mid-career Research Fellowships

Also there has been a re-funding of the Future Fellowship Scheme. This was a successful initiative under the previous Government to provide Fellowship support for mid-career researchers. It was another scheme that was simply earmarked to terminate but now has another lease of life albeit in a scaled back format. This is also a very welcome investment in early-career researchers who will be the research leaders of the future.

## Australian Research Council

The Budget has reduced the funding to the Australian Research Council (ARC) – this is the main body that supports all research programs other than medical research – so everything from the physical sciences like chemistry, physics and mathematics through to engineering and the arts, social sciences and humanities will be hit. The main concern is that success rates, which are currently hovering just below 20%, must drop and this puts us into a zone where a significant quantity of excellent research will simply no longer be done in Australia. It also has wide reaching implications for the morale of our research workforce.

## Major science agencies – reduction in funding

Our biggest concern with the Budget is the overall net reduction in science and research activity over the next few years. The Budget heralded significant reductions to some of our major research organisations like CSIRO, the Australian Institute of Marine Science, the Defence Science and Technology Organisation and NICTA, in addition to the large cut to ARC programs.

No matter how you cut the Budget, there will be less research and science in the three years following this Budget. This is really not a good outcome.

There will be a significant downsizing and a shakeup of the research sector as a whole. There will be very talented individuals looking for new careers and the fear is that some of the research talent will diffuse offshore.

## Undergraduate education

Government support for undergraduate education at universities has been cut back in the Budget, but the universities now have some flexibility in the level of fees that can be charged to undergraduate students. This is a massive step change for the higher education sector in Australia – probably the biggest change in our generation.

Universities are still trying to unpack the consequences of deregulation. It does mean that, to some extent, there will be market forces at play in the fees that undergraduates now pay for their courses. Universities will be able to position their 'fee structure' to what is appropriate for the demand, so I am sure that there is an infinity of quite complex modelling going on in every university in the sector.

It does appear that Government support for science undergraduates has been more severely hit in the Budget than some other disciplines and the consequence is that universities will effectively need to recoup proportionally more fees from science students. Some see this as a growing pressure, which could discourage enrolment in the sciences.

Another consequence of the introduction of fees is that there will be pressure to look to the shorter degrees (because they will cost less) and that this may lead to reductions in enrolments in some of the longer degrees and double degrees (like science/law, or science/business).

## Postgraduate research students

The Government has also reduced the funding that universities receive to support domestic (Australian) higher degree research students (PhD and Masters students) and introduced fees for students undertaking research degrees. This is the first time in Australia that Australian research students will pay fees to undertake their research programs. The consequences of introducing fees for higher degree research students is hard to predict, but it will throw up a disincentive to students thinking about taking up research degrees at a time where there is a loud call for innovation and research to be the drivers for Australia's future economic development. The concern is that, nationwide, there may be a net drop in the number of students undertaking research higher degrees and this will result in a net decline

in the amount of research activity across the sector. Universities realise that the research student cohort really is the 'engine room' of research activity – while PhD and research Masters students are really still gaining experience in their respective disciplines, they do contribute to most of the research that is done and most of the research that is published across the country.

## Education Investment Fund

The EIF (Education Investment Fund) has now been completely wound up and its assets folded into the Asset Recycling Fund (ARF). The ARF is a fund that provides incentives to states and territories to privatise assets and use the proceeds to fund infrastructure (roads, airports, etc).

The EIF was first established under the Howard Government and at its height, the EIF had close to \$10 billion under management. It was effectively an endowment or a 'Future Fund', where the interest was invested each year in significant university infrastructure.

The EIF was raided to pay for the Rudd Government's stimulus package during the global financial crisis and both the Rudd and Gillard governments spent down much of the principal.

After the GFC, the EIF really was a shadow of its former self, with the capital eroded to between \$3 billion and \$3.5 billion. The use of the EIF was also broadened so that it was applied to many different targeted programs, well outside the original intent of being focused on university infrastructure. For the past few years, the residual capital in EIF has simply not been in the zone where it could support major building programs or the required investment in major university research infrastructure.

So there really was only a narrow window of a couple of years where the university sector had a glimpse of a scheme that could have sustained the much-needed ongoing capital investment in our universities.

## Industry engagement

There are several Budget initiatives that impact directly on industry and how it engages with the research sector.

There has been a reduction in the Government R&D tax offsets to industry. The R&D tax concessions were a mechanism whereby companies could access tax offsets as an incentive to engage in research and development. There is no question that this removes a valuable incentive which encouraged industry to think more strategically about innovation and to undertake research programs to better position themselves for new developments into the future. On the plus side, there are changes to the company tax rates – these will stimulate businesses but are not linked to better research engagement like the R&D tax concessions were.

The Government has eliminated the IIF (the Innovation Investment Fund). The IIF scheme funded a number of venture capital fund managers to support the transition of research into viable commercial ventures. The IIF's had an important place in getting innovations into the marketplace. With the IIF's gone there does need to be something to fill this void, particularly if it could be focused more at the earlier-stage, high-risk, pre-seed level where great innovations often struggle to get off the ground.

Commercialisation Australia has been wound up as has the Enterprise Solutions program and the Enterprise Connect program. All of these schemes were focused, in one way or another, on supporting the transition of early stage ideas and innovations through the stage of spawning new industries. The Government has foreshadowed the introduction of a new Entrepreneurs Infrastructure program to partially fill this space but few details of the new program have emerged so far.

The CRC program will not run in 2014 and will be reviewed. The program has been significantly scaled back over the past five years from the scheme that it was during the 90s and the 2000s. The strengths of the scheme have been that it could support larger, bolder programs with strong engagement between the research sector and the industry/end-user sector. There are many examples of terrific outcomes from the scheme. On the downside, the program also had its drawbacks – there were several examples where the scheme really didn't work at all and it has been one of the most administratively cumbersome schemes of all time. There must be vaults and vaults of paperwork arising from the CRC program over the years. The CRC program also evolved from the early days where there were typically fewer partners in each CRC (so there was good buy-in and engagement from every participant) to a situation where there were typically many, many participants so there was much less opportunity for any player to actually set the direction and drive the strategy. Many CRCs started to appear like a group of consolidated small contractors rather than partners in a well-focused program. We would do well to learn from the experience of the CRC scheme and to harvest best practice from the most successful CRCs to revitalise the scheme going forward.

The Industry Innovation Precincts scheme has also come to an end. One doesn't expect that there will be too many tears over the demise of this scheme. While it had laudable objectives, to bring together industry and the research sector, it was rushed and poorly thought through. The biggest risk was the term 'precinct' implied a geographic focus in one place and that the 'precincts' could be driven by political necessity (stimulating the economy of some particular place) rather than a focus on getting the best research expertise together with the right industry partners for any particular priority.

## Science leadership

Apart from the plan to establish a 'future fund', most of the other science and research-related entries in the Budget have only a short term focus – they cover off immediate needs without an indication of where the Government would like to take science and research into the future.

Australia does lack leadership in the Government when it comes to science. In this Government, Australia doesn't actually have a Minister for Science and science has been notable by the deafening silence in the commentary before and after the release of the Budget. The need for real science and research policy does need a champion and a flag-bearer in the Government and without a responsible minister with a focus on the issues, then other 'important and urgent' matters will always dominate the agenda.

The investment in research must have a longer-term horizon. Significant research problems don't get pushed over in a weeks or months, they take years or decades. So we do need a vision and a plan for where we are going with the science and research sectors and the plan needs to extend well beyond the normal budget cycle and the forward estimates.

Ideally a Government would have a broad framework for Australia's future science and research effort, bridging from our immediate needs and well into the future. It would identify the problems we must address, the capacity, skill base and expertise we must build and maintain, and the facilities and infrastructure we need to put in place to properly cater for the country's needs.

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