

# **Summary of the 2009-2010 Federal Science Budget and the White Paper *Powering Ideas* in the context of the Academy's Research and Innovation Policy Statement 2007**

## **Overview**

The 2009-2010 Science Budget represents important initial steps toward the goals expressed in the Academy's *Research and Innovation in Australia: a policy statement 2007 (Policy Statement)*. Particularly welcome is the Government's clear recognition that adequate and sustained investment in science, research and innovation is integral to our economic recovery and ongoing prosperity. However, it should be noted that the focus of this Science Budget is almost entirely on material infrastructure. The human infrastructure required to support the effective use of this expenditure – something the Academy emphasised in its *Policy Statement* – is yet to be properly addressed and future budgets will need to provide associated additional funding.

Along with the Budget, the Government released its White Paper *Powering Ideas: An innovation agenda for the 21<sup>st</sup> century (Powering Ideas)* which constitutes a response to the *Cutler Review of the National Innovation System* and a part response to the *Bradley Review of Australian Higher Education*. *Powering Ideas* is a ten-year reform agenda, however, and the policy and programs presented in it – as with any White Paper – are not specified in detail but will be further refined by the Government in coming months and years. The Academy will seek to assist this process by providing soundly based advice on science, education and research issues. It should also be noted that much of the additional funding commitments in this Budget will not be delivered until later financial years ie 2011-12 and 2012-13.

The Academy's 2007 *Policy Statement* made 10 recommendations (see Attachment A) regarding actions that Australia must take to maintain a strategic economic position in a competitive world. This summary should be read in conjunction with that document. The *Policy Statement's* 10 recommendations have been grouped into six topics and a brief assessment is provided for each about the extent to which *Powering Ideas* and the Budget measures are consistent with the Academy's vision and priorities as articulated in the 2007 *Policy Statement*.

## **1. Research & Development [Recommendations 1, 2]**

- *Powering Ideas* acknowledges Australia has 'failed to keep pace with the rest of the world' with business spending in R&D collapsing in the late 1990s and now lagging many of our competitors. It also acknowledges that governments have a responsibility to step in where markets fail.
- The Government has adopted 7 National Innovation Priorities which complement four previously identified National Research Priorities for Australia that together will help focus public-sector research.

- The Budget allocates \$8.58 billion on science & innovation in 2009- 2010 – an increase of 25% compared with 2008-09. One quarter of the entire Science & Innovation Budget goes towards programs that encourage business investment in innovation, including R&D tax incentives. Three quarters is shared between the higher education sector, research agencies and multi-sector initiatives eg Cooperative Research Centres Program.
- There is significant increase in infrastructure spending aimed at providing support for future research. However, approximately 43% of the increase (~\$730m) has gone to industry grant programs, and it is unclear at this stage whether either scientific endeavour or R&D will be a significant component of that activity.
- In summary, Commonwealth spending on science and innovation has fallen 22% as a share of GDP since 1993-94. Australia’s business R&D collapsed in the late 1990s, and while it has grown since then, it will lag many of our competitors and is in danger of remaining behind unless the Government implements policy that drives greater innovation and R&D expenditure as called for in the Academy’s *Policy Statement*. See table below for national R&D expenditure context.

Selected National Expenditure on R&D 2006-2007

Country	Gross % GDP	Business % GDP	Government <sup>1</sup> % GDP	Aspirational Gross % GDP	Gross Exp \$B(PPP) <sup>2</sup>
Australia	1.78	1.04	0.74	?	14.9
China	1.43	1.02	0.41	2.00 <sup>3</sup>	86.8
Denmark	2.43	1.62	0.81	3.00 <sup>4</sup>	4.7
UK	1.78	1.10	0.68	2.50 <sup>5</sup>	35.6
USA	2.62	1.84	0.78	> 3.00 <sup>6</sup>	348.7

Source: OECD Science, Technology and Industry Outlook 2008 - © OECD 2008

## 2. Science in Schools [Recommendation 3]

- The Government accepts that ‘we reverse the historic decline in the study of science and maths’. However, the 2009 - 2010 Budget did not contain new initiatives to directly address this Recommendation, although substantial commitments were made in the 2008-09 Budget to address science infrastructure in schools and teacher training. For example, the next steps of the Academy’s *Primary Connections* and *Science By Doing* programs are supported by DEEWR

<sup>1</sup> Government expenditure on R&D was calculated by subtracting business (BERD) from gross (GERD) expenditure

<sup>2</sup> Source: OECD Science and Technology Statistics at:

<http://oberon.sourceoecd.org/v1=772249/cl=25/nw=1/rpsv/~3954/v207n1/s1/p1>

<sup>3</sup> OECD Science and Innovation: Country Notes at: <http://www.oecd.org/dataoecd/18/36/41559747.pdf>

<sup>4</sup> OECD Science and Innovation: Country Notes at: <http://www.oecd.org/dataoecd/15/55/42003188.pdf>

<sup>5</sup> OECD Science and Innovation: Country Notes at: <http://www.oecd.org/dataoecd/18/51/41559425.pdf>

<sup>6</sup> President Obama speech at NAS

under the Australian Government Quality Teacher Program (AGQTP) – National Projects.

- Given the Government's rhetoric and mandate to bring about an *Education Revolution*, next year's Federal Budget (2010-2011 - election year) is expected to feature significant education spending (and reform), despite the projected Federal Budget deficit.

### **3. Basic Research & Universities [Recommendations 4, 5, 8]**

- The 2009 – 2010 Budget/*Powering Ideas* contain significant initiatives to address the issues of performance assessment and under funding of infrastructure in our universities as proposed in the *Policy Statement*.
- To support Basic Research and Universities, the Government has committed to enhanced performance measurement, indexation of block grants (\$51.6 million to replace the current inadequate indexation arrangements for research block grants from 2012, with an index that better recognises the cost pressures on Australian universities), more support of the indirect costs of research, and increased investment in infrastructure.
- The Excellence in Research for Australia (ERA) initiative was announced in 2008 (current Budget \$35.8m over 4 years), and replaces the Research Quality Framework. This initiative will involve the ARC using quantitative and qualitative analysis to evaluate the quality of research conducted by Australian tertiary education institutions.
- The Education Investment Fund provides research infrastructure \$901m over 5 years; building on \$580 million allocated in 2008 with a remaining \$321 million allocated in this year's Budget. The infrastructure investment is complemented by establishing a new national Research Infrastructure Committee to coordinate future infrastructure decisions.
- Sustainable Research Excellence in Universities provides \$813 million over 5 years (including \$301.0 million in 2013–14) to help cover the indirect costs of research. Twenty percent will be delivered on the basis of a university's relative success in attracting research income (the current means of determining all of the RIBG funding); and 80% contingent on universities undertaking activity-based costing of the indirect costs of research and meeting performance targets which are to be developed and agreed during 2009–10.

### **4. Publicly Funded Research Organizations [Recommendation 6]**

- The 2009- 2010 Budget/*Powering Ideas* touch upon Publicly Funded Research Organisations in a relatively limited way. These include some infrastructure measures, particularly in areas of research identified as national strengths (space

science and astronomy; marine and climate science; and future industries – biotechnology and nanotechnology). But this is not sufficient to support the core-capabilities of these research organisations whose budgets barely kept pace with inflation in recent years.

#### **5. Early career researchers [Recommendations 7, 9]**

- The intention to support Early-Career and Mid-Career Researchers is present in the 2009 – 2010 Budget/*Powering Ideas* but the measures to date are only initial steps towards providing viable career pathways.
- The 100 Super Science Fellowships announced in the Budget builds upon the ARC Future Fellowships, announced in the 2008-2009 Budget (four-year fellowships of up to \$140,000 a year to 1,000 Australian and international middle career researchers plus \$50,000 per year for the Administering organisation). However, these fellowships spread across Australia's 39 Universities plus publicly-funded research agencies, equates to very few new Fellowships per research strength per institution.
- Undergraduates - youth allowance changes in calculations eg increases in the parental income and personal income thresholds; reduction in the age of independence; start-up scholarship for all students on Youth Allowance, adjusts funding to alter accessibility with no specific benefit to science undergraduates.
- Post-Graduates eg APA stipend increased from \$20,007 to \$22,500 and indexed annually at CPI (\$51.7 million over four years). While an 11% increase is most welcome, it is noted that the new stipend is now just above the Henderson Poverty Line (for singles; 2009).

#### **6. International [Recommendations 7, 8, 10]**

- Enhancing international collaboration is clearly an intention of *Powering Ideas* (eg National Priority 6 – Australian researchers & business involved in more international collaborations on R&D). However, the Budget measures are limited (eg Square Kilometre Array radio telescope project) and are insufficient to meet this ideal or the Policy Statement Recommendations concerning International Collaboration or International resource access.

The Academy will engage with Government over the coming financial year to clarify program detail and the nature of reforms eg proposed performance targets. Based on a review the 2007 *Policy Statement*, the 2009 – 2010 Budget/*Powering Ideas* and further discussions with Government, a new *Policy Statement* will be developed for release in early 2010.

**Recommendations from *Research and Innovation in Australia: a policy statement*  
(2007)**

**Recommendation 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.

**Recommendation 2**

That Australia examines the implications of continuing relatively low level of private sector investment in R&D and creates policy settings that encourage greater innovation.

**Recommendation 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.

**Recommendation 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.

**Recommendation 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.

**Recommendation 6**

That Australia provides support for publicly funded research organizations sufficient to enable them to maintain their core capabilities, on which their competitiveness as world-class research providers depends.

**Recommendation 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.

**Recommendation 8**

That Australia makes a long-term commitment to maintaining first class national research infrastructure facilities and promotes Australian access to international facilities.

**Recommendation 9**

That Australia gives urgent attention to nurturing rewarding and secure career paths for talented early-career researchers.

**Recommendation 10**

That Australia recognizes the importance of engagement with the international scientific community and uses science more effectively as a tool of foreign policy.

## Attachment B

**TABLE 1. ESTIMATED COSTS OF PROGRAMS AND INCENTIVES PROVIDING SUPPORT FOR SCIENCE AND INNOVATION THROUGH SPECIAL APPROPRIATIONS AND OTHER MEASURES <sup>a, b</sup>**

PORTFOLIO/PROGRAM	post. ref. <sup>a</sup>	2000-	2001-	2002-	2003-	2004-	2005-	2006-	2007-	Estimated	Budget
		01	02	03	04	05	06	07	08	Actual 2008-09	Estimate 2009-10
		\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
<b>BROADBAND, COMMUNICATIONS AND THE DIGITAL ECONOMY</b>											
Support from the Federation Fund - Commonwealth Technology Port	6	0.0	2.1	3.9	1.3	2.1	0.0	0.0	0.0	0.0	0.0
<b>EDUCATION, EMPLOYMENT AND WORKPLACE RELATIONS</b>											
Estimate of Other Research and Research Training Support Sourced from the Australian Government <sup>c</sup>	9	429.8	431.1	434.3	434.7	0.0	0.0	0.0	0.0	0.0	0.0
National Institutes Program - ANU Component <sup>d,e</sup>	8	161.2	157.9	150.7	150.3	154.9	160.7	166.6	167.7	167.5	171.1
Science Lectureships	9	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>ENVIRONMENT, WATER, HERITAGE AND THE ARTS</b>											
National Oceans Office <sup>f</sup>	14	0.0	2.1	3.9	1.3	2.1	0.0	0.0	0.0	0.0	0.0
<b>INNOVATION, INDUSTRY, SCIENCE AND RESEARCH</b>											
Australian Research Council <sup>g</sup>	7	247.8	265.8	298.3	399.6	480.9	544.4	570.3	571.8	585.9	650.5
Chair and Child Protection	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1
Commercialisation Training Scheme - transfer of funds from ARC	9	0.0	0.0	0.0	0.0	0.0	0.4	5.5	5.5	5.5	5.6
<i>Funding for research and research training provided under HESA (2003) <sup>h</sup></i>											
· Australian Postgraduate Awards Scheme	9	83.1	83.2	87.1	89.5	91.2	93.1	94.1	96.6	101.4	151.2
· Institutional Grants Scheme <sup>i</sup>	8	257.2	262.9	286.4	285.2	290.6	296.1	302.0	308.1	311.3	317.8
· International Postgraduate Research Scholarship Scheme	9	16.2	14.0	16.7	17.8	18.1	18.5	18.4	19.2	19.4	19.8
· Research Infrastructure Block Grants	8	81.5	111.2	136.7	160.6	183.0	199.9	203.9	206.0	210.2	214.6
· Regional Protection Scheme	8	0.0	2.0	3.2	5.8	3.0	3.1	6.2	3.2	1.6	0.0
· Research Training Scheme	8	504.5	515.6	528.0	541.9	552.2	562.6	573.9	585.4	591.5	603.9
· Systemic Infrastructure Initiative	8	0.0	23.6	28.4	71.4	39.9	48.7	29.7	0.0	0.0	0.0
Mount Stromlo Observatory Reconstruction	9	0.0	0.0	0.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0
Research Evaluation and Grants for Learned Academies	9	2.5	2.4	2.4	2.5	2.2	2.0	2.0	4.1	3.5	3.6
<i>Societies</i>											
· FASTS	14	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2
· CHASS	14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2
Super Science Fellowships - ARC	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
<i>Support from the Federation Fund</i>											
· Institute of Molecular Bioscience	9	8.0	3.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
· National Marine Science Centre	9	1.5	4.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sustainable Research Excellence in Universities	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
<i>Tax incentives programs <sup>j</sup></i>											
· R&D Tax Concession (125%)	4	430.0	480.0	280.0	320.0	330.0	370.0	430.0	510.0	580.0	670.0
· Premium Tax Concession for Additional R&D (175%)	4	0.0	20.0	50.0	85.0	100.0	130.0	195.0	310.0	390.0	470.0
· R&D Refundable Tax Off-set <sup>k</sup>	4	0.0	40.0	182.0	235.0	229.0	237.0	190.0	248.0	233.0	223.0
· Research and Development Tax Concession - interim transition measure <sup>l</sup>	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.7
· Tax Deduction for Patents Designs and Copyright <sup>j</sup>	6	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
· Pooled Development Funds	6	6.0	6.0	7.0	8.0	9.0	8.0	10.0	13.0	12.0	11.0
· Venture Capital Limited Partnerships	6	0.0	0.0	0.0	3.0	35.0	9.0	10.0	10.0	10.0	10.0
· Exemption from Early Stage Venture Capital Limited Partnerships	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.0
<b>TOTAL</b>		<b>####</b>	<b>####</b>	<b>####</b>	<b>####</b>	<b>####</b>	<b>####</b>	<b>####</b>	<b>####</b>	<b>3,225.3</b>	<b>3,626.7</b>

**Notes:**

- The financial information has been provided and confirmed by the departments responsible for administering the programs listed in the table. The information is also checked by the Department of Finance and Deregulation. Posting reference numbers in Column 2 reconcile program expenditures with their respective sector aggregates in Table 1.
- Departmental expenses attributable to the administration of programs are excluded from the data in accordance with the recommendations of the Frascati Manual (2002, OECD).
- Until the 2004-05 financial year, the item Estimated Research & Research Training Component Sourced in the Operating Grant represented an estimate of the operating grant expended on research. The estimate was based on the Australian Bureau of Statistics (ABS) survey of research expenditure of universities by source of funds. It reflects that component of block funding for teaching and learning not specifically provided for research. The estimate from 2000-01 to 2003-04 exclude the funds provided to the IAS through the ANU's operating grant.
- This item refers to funds for research and research training provided to the Institute of Advanced Studies (IAS) of the Australian National University (ANU) through the ANU's operating grant.
- Following from the 2002 Review of Higher Education, the Australian Government announced a package of new higher education policies, to be implemented between 2004 and 2008. The legislation to give effect to the reform package, the Higher Education Support Act (2003) (HESA), was passed by Parliament on 5 December 2003. As a result, this estimate is no longer consistent with the implementation of the new funding arrangements for higher education institutions under the provisions of the HESA and has not been included from 2004-2005 onwards.
- This program has since 2004-05 been administered as part of the Marine Research program.
- The ARC was established as an independent statutory authority on 1 July 2001 under the Australian Research Council Act (2001). The funding identified here represents administered funding only.
- The Systemic Infrastructure Initiative has been replaced by the National Collaborative Research Infrastructure Strategy. For an explanation on the disaggregation of the Research Infrastructure Block Grants program and the Research Training Scheme reported in this table, see notes on p.37, *Portfolio Budget Statements 2008-09 - Budget Related Paper No. 1.14 - Innovation, Industry, Science & Research Portfolio*.
- Includes the Joint Research Engagement Scheme
- Estimates of revenue forgone from the annual Taxation Expenditures Statements (TES). The TES estimates are revised each year as more data come to hand.
- The calculation of the R&D Tax Offset given in the table is the sum of the ATO's administered payments for the Offset and the calculation of the tax expenditure in the 2008 TES produced by the Treasury. This calculation is only a proxy for the benefit provided to taxpayers by this measure rather than an exact representation. An exact calculation cannot be constructed as taxpayers' future tax positions cannot be calculated at this point. The future tax positions are integral to calculating the value of deductions forgone by receiving the Offset.
- Includes \$0.7m of funding in 2009-10 relating to the R&D Tax Credit.