

## **Submission to the Inquiry into research training and research workforce issues in Australian universities**

### **Curtin University of Technology**

Curtin University of Technology focuses on high quality curiosity-driven basic research, as well as high quality use-driven applied research and use-inspired scientific research that address the needs of industry and the broader community. The University has shown rapid growth in research activity in recent years (as evidenced by growth in both Australian Competitive Grant income, and income from government and industry – 54% and 45% respectively, over three years). Engagement with industry and the broader community is an underpinning principle of the University.

The University employs approximately 1045 academic and research staff (930 full time equivalents). The higher degree by research student population at Curtin University of Technology, in 2007, was 1000 equivalent full time student load, of which 58% were full-time and 85% were doctoral students. Of this student cohort 141 were in receipt of an Australian Postgraduate Award (APA), 30 received an Australian Postgraduate Award – Industry (APAI), and 114 received Curtin University Postgraduate Scholarships.

### **Overview - Research Training and Workforce Recommendations**

Research training and the university research workforce are an integral part of Australia's innovation system, and are fundamental to Australia's global competitiveness. The growing population of Australia, and the increasing need to focus national productivity on high-end products to compete with emerging international markets, is translating to an increasing demand for research graduates. A critical issue is that Australian universities are struggling with the demands of industry to produce graduates, while competing with industry for research students and research staff.

This inquiry is timely, and there are several key points that Curtin University of Technology wishes to bring to the attention of the Committee:

- Funding of postgraduate students under the Australian Postgraduate Award (APA) is uncompetitive in a global market, with the value of an APA sitting close to the 'poverty line' for Australia;
- The pool of available high quality students must be increased, and eligibility for the APA should be extended to students with Honours 2A and equivalent, and include international students;
- Flexible support models, of students and employers, to allow the full- or part-time return to studies for students currently in the workforce need to be explored;
- The ability to attract and retain higher degree by research students and high quality research staff are interdependent, and are impacted on by availability and extent of funding, the availability and quality of research infrastructure, and the prospect of job security and a career pathway;
- It must be recognised that the Australian higher education sector and industry/government are competing for research students and research staff in a global market;
- The widening gap between funding to universities and the real cost of research and supervision is making it increasingly difficult for the Australian sector to compete internationally.

### **Research Training Issues**

Australia is producing only 2.3 doctorates per 100 university graduates, compared with 3.9 in Canada and 11.2 in Germany. In this context, the increase in the number of Australian Postgraduate Awards (APAs) announced by the government in the 2008/09 Budget is welcome.

The ability to attract and retain higher degree by research students is dependent upon the quality of research training available, and the perception of clear career pathways post-graduation. Funding associated with the provision of research training, the quality and profile of research staff, and the availability and quality of research infrastructure all impact on quality of training.

We bring to the Committee's notice the following key points associated with the effectiveness of Commonwealth research training schemes:

- The funding provided for students under an APA needs urgent redress. Current funding of a higher degree by research (HDR) student (full-time) under an APA is \$20,007 (2008). In contrast, students under the Australian Postgraduate Awards Industry (APAI) receive a stipend of \$26,140 (2008). The estimated 'poverty line' in December 2007 was \$19,454<sup>1</sup>. This places enormous pressure on students merely to survive in the community. Universities are providing 'top-up' scholarships to APA students, often to the level of an APAI, to ensure students are in receipt of a liveable wage, without undertaking excessive part-time work that interferes with the completion of their studies. The size and duration of the student stipends is a key factor in attracting and retaining postgraduate research students, and in Australia's international reputation as a quality education provider;
- Given high employment rates and a booming economy, any increase in the APA numbers without increasing the pool of quality candidates, will only exacerbate student shortages and leave many scholarships unfilled. Eligibility for an APA is restricted to domestic students who hold a Bachelor degree with First Class Honours or the equivalent which is a diminishing pool of candidates. Eligibility for APA should be aligned with the requirements under the APAI – that is, domestic or international students who hold Honours 2A or equivalent.
- The maximum tenure of the APA is 2 years for a Masters and 3 years for a PhD with the possibility of a six month extension. The national average time for completion of a Masters is 3.5 years, while the average is 5.4 years for a PhD<sup>2</sup>. While it is probable that lack of project resources impacts on the time to completion, the tenure of an APA for a PhD should be increased to at least 3.5 years with the possibility of 6 month extension in line with the notion of a 'timely completion';
- The value of the Research Training Scheme (RTS) which provides funding to universities to support postgraduate research students should be increased to more closely reflect actual costs. Increases in APA numbers have not been accompanied by any increase in the RTS, placing the sector under increasing financial pressure. Additionally, the differential between 'low cost' and 'high cost' places should be closely examined because so-called 'low cost' disciplines have substantial unfunded demands in terms of travel and fieldwork as essential components of the research. Relatively new/emerging discipline areas that are laboratory based can also have excessively high costs associated with the delivery of training. Currently supervisors source external grants to support the students – limiting the number of supervisors who can take on students in these areas, and subjecting the student project to external restrictions/factors. These areas need to be supported if Australia is to maintain capability in cutting edge research.
- Along with the internationalisation of the APAs, consideration should be given to expanding the Endeavour International Postgraduate Research Scholarships (EIPRS) – an important scheme providing Commonwealth funding for fees for international students – in order to compete globally for high quality students.
- Major Commonwealth research scholarship schemes are focussed on students following a traditional pathway (following completion of Honours) to a higher degree. Flexibility to support a return to higher education, on a full-time or a part-time basis, by students currently within the workforce, is essential. In addition to supporting the student, consideration should also be given to supporting industry to up-skill workers – which would help meet Australia's future requirements for tertiary qualified professionals.

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<sup>1</sup> <http://www.melbourneinstitute.com/labour/inequality/poverty/Poverty%20lines%20Australia%20Dec%202007.pdf> accessed May 2008

<sup>2</sup> Graduate Careers Australia, *Postgraduate Destinations 2006 – The Report of the Graduate Destinations Survey*.

There are several models within industry that could be drawn upon – including the Defence Science and Technology Organisation (DSTO) and Google.

- The availability and quality of research infrastructure that supports research training has been of increasing concern to the sector. In the report from the Productivity Commission the level of deferred maintenance on capital assets in universities was estimated at \$1.5 billion in 2005<sup>3</sup>. Even allowing for measurement issues it is clear that infrastructure in Australian universities is of concern. Curtin University of Technology applauds the announcement of the Education Investment Fund and the one-off payments for university infrastructure, in the recent Budget. Of equal importance is the continuation of the National Collaborative Research Infrastructure Strategy (NCRIS), which ensures that Australia has cutting edge infrastructure in areas of strategic national importance.

Nationally and internationally, universities are investigating new paradigms to enhance the quality of research training and equip graduates with the skills necessary (both discipline specific and generic) for the emerging needs of the community, industry and academe. However, until some of the fundamental issues highlighted above are addressed universities have little scope to implement value-add programs.

### **Research Workforce Issues**

The ageing workforce in Australian universities is a very real and pressing issue, and if steps are not taken, coming years are likely to see the exodus of academic retirees far exceeding current recruitment. In this context the key issues associated with the research workforce in Australian universities are:

- The ability to compete internationally for high quality research staff. Australian universities are facing increasing competition for high quality research staff – nationally, from other research users including industry, and internationally in the increasingly global research arena. Attractive salaries, high quality and high profile research activities, cutting edge research infrastructure, international linkages, clear career paths and a high quality of life are all important in retaining Australian researchers, and attracting new entrants and international players. The ability of the sector to provide ongoing appointments is also a major factor in retaining and attracting high quality staff. Discretionary funding of universities however has decreased in real terms over the last 10 years limiting the ability of the sector to respond to current market conditions;
- The ability to provide job security and career pathways. Retaining research graduates within the higher education sector is an essential component to securing the next generation of research academics. A systematised and organised approach to supporting early career researchers, through to mid-career and senior researchers is needed so that career pathways within the Australian higher education research sector are defined. New and existing initiatives, such as Future Fellowships and the ARC Fellowships, are applauded as they will assist in retaining and attracting mid-career and senior researchers;
- Immediate opportunities for new research graduates. New graduates are unlikely to be competitive for many of the available funding schemes, resulting in graduates leaving the sector for industry, or to pursue opportunities overseas. However consideration needs to be given to the bridge between research training and entry into the research workforce.
- Consideration should be given to an automatic one year visa extension for graduates to encourage and facilitate graduates to seek employment within Australia. Not only does this have the potential to address the broader skills needs of industry and government, it also assists in overcoming issues created by the extensive lag time between application and announcement of national competitive grant outcomes. The graduate can seek work in industry or universities while awaiting a grant outcome, stopping the loss of talent from the higher education and broader research sector because the graduate is not compelled to return overseas.

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<sup>3</sup> Australian Government Productivity Commission (2007) *Public Support for Science and Innovation*, Commonwealth of Australia, p214.

- Financial pressures continue to increase in universities which impact on their ability to offer job security and attractive salary packages for research leaders, and the next generation of leaders. There are two major sources of pressure:
  - There is a widening gap between competitive government grant funding and the full cost of research which is not bridged by University Research Block Funding. This is best highlighted by, but not confined to, the salary packages provided under the National Health & Medical Research Council. While research in universities for industry and other segments of the public sector are done on a full cost basis, the gap between the funding supplied under ARC and NHMRC programs and the real cost of undertaking this research must be met by the universities. This gap impacts significantly on universities undertaking curiosity-driven research, and the development of the next generation of research leaders.
  - Many of the major research funding initiatives (including Cooperative Research Centres, National Collaborative Research Infrastructure Strategy, CSIRO Flagships, ARC/NHMRC grants) have significant expectations for in-kind (i.e. unfunded) support from research leaders. When coupled to broader expectations for researchers to undertake student supervision, research commercialisation and community/industry engagement, there are increasing demands on university discretionary funds. Notwithstanding the financial implications, the expectations placed on senior researchers are leading to fatigue and attrition. There is a need for major initiatives to recognise and support the involvement of research leaders.

## Conclusions

The inquiry by the Standing Committee is timely, especially given the context of concurrent reviews on the National Innovation System and the Australian Higher Education System. Universities are an integral component to the national education and innovation systems, impacting directly and indirectly on Australia's productivity and global competitiveness through the provision of innovation and knowledge workers.

Commonwealth funding schemes are extremely important to the maintenance of a high quality research training system, and research environment.

The introduction of the Research Training Scheme focussed the sector on ensuring the integration of students into areas of research excellence, promoted student development through publication, encouraged timely completion of higher degree studies, and broadened the focus of universities to international students. However, funding under the RTS has progressively decreased per student, as growth in total funds have not kept pace with population growth and increased enrolments. Nor does the funding reflect the true cost of providing HDR training.

Scholarships for HDR students in Australia are uncompetitive in a global student market, both in value and tenure. The value of an APA sits on the poverty line, and needs urgent redress. It is both insufficient to meet basic living expenses, and unattractive given high demand for workers with any tertiary qualification, and an increased need to attract mature workers back to higher education. In addition, the tenure of the awards does not reflect international trends in time to completion. Given the growth in the international student cohort there is also a need to increase the number of EIPRS awards.

Attracting graduates to remain in the university research workforce is essential given the increasing demand for research training and the ageing academic workforce. However the diversity of employment options for HDR graduates, coupled to a lack of job security and clear career pathways, makes academe an unattractive option. As with the student market, Australia must be competitive in the global marketing order to maintain and grow its research workforce.

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