

A Submission by the
Council of Australian Postgraduate Associations Inc
(CAPA)
to the

2002 National Research Priorities

Consultative Panel

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Council of Australian Postgraduate Associations Incorporated

The Council of Australian Postgraduate Associations (CAPA) welcomes the opportunity to contribute to the Government's proposed framework for establishing national research priorities. We applaud Minister McGauran's decision to incorporate public consultation into the priority setting process. We submit the following response to the Minister's issues paper, *Developing National Research Priorities*, on behalf of all students enrolled in Australian postgraduate degrees.

CAPA is the national peak body representing Australia's 155,312 postgraduate students. It has affiliated postgraduate associations in 34 of Australia's public higher education institutions and in all States and Territories. Australian postgraduate students fall into two broad categories: postgraduate coursework students who number 116,913 and postgraduate research students who number 38,499.¹ The research undertaken by doctoral and research masters candidates, as well as the research carried out by many postgraduate coursework students for the thesis component of their degrees, is a vital part of the Australian research effort. In 1984, Margaret Powles estimated that postgraduate students contributed 35-50 per cent of universities' research and between 10.8-15.5 per cent of Australia's total research effort.² More recently, Siddle has argued that a more accurate figure is 65-70 per cent of university research.³

CAPA accepts the need to set national research priorities in order to better coordinate Australian research. However, we are concerned that without additional research funding the priority setting process becomes a zero-sum allocation: targeted funding for research priorities must be diverted from other research. We have already seen Australia's research capacity undermined by the implementation of the Research Training Scheme in 2001, which reduced the total number of postgraduate research places from 24,980 in 2000 to 21,644 in

¹ Department of Education, Science and Training (DEST) (2002) *Students 2001: Selected Higher Education Statistics*, Table 22.

² M. Powles, 1984, *The role of postgraduates in Australian research*, CAPA, Melbourne, p. 44.

2001 (EFTSU). We cannot afford to let Australian research be weakened any further. CAPA is also concerned by the Government's decision in January this year to target 33 per cent of the 2003 Australian Research Council (ARC) funding round to four scientific research areas, thus pre-empting public consultation on appropriate research priorities. We find the priority setting process outlined in *Developing National Research Priorities*, with its emphasis on public consultation and broad thematic research priority areas, to be highly preferable.

The following submission contains CAPA's suggestions for further improving the priority setting process. Our recommendations are listed below.

Recommendation 1: That national research priorities for Social Sciences and Humanities (SS&H) be set in conjunction with Science, Engineering and Technology (SET), to foster cross-disciplinary research.

Recommendation 2: That the broader Australian research effort be strengthened by the repeal of the Research Training Scheme, the re-instatement of all postgraduate research places cut under the scheme, and a return to funding based on student load.

Recommendation 3: That national research priorities be funded through additional research investment, rather than at the expense of the broader research effort.

Recommendation 4: That the number of thematic priority areas to be selected be expanded from three to five, to minimise the risk of crucial research areas missing out.

³ D. Siddle, 1997, *Submission to the Committee conducting the review of Higher Education Financing and Policy*, Deans and Directors of Graduate Education, 23 April.

Recommendation 5: That the Government guarantee that priorities will not be extended to university block funding at any stage, in order to preserve the diversity of Australian research.

Recommendation 6: That the timeframe for reviewing the selected priorities be extended from three to ten years, in order to accommodate longer term research.

Recommendation 7: That the membership of the Expert Advisory Committee be representative of a diverse range of research fields, and include international participation.

Introduction

Public investment in research is essential to advance the economic, social and environmental welfare of Australia. Public investment in research is vital for:

- innovation in all research disciplines;
- training skilled graduates;
- supporting new research networks and stimulating interaction with industry;
- expanding the nation's capacity for problem-solving;
- developing new equipment and techniques;
- creating new firms; and
- providing social knowledge.⁴

CAPA sees the immediate benefit of this public investment in terms of the skills and knowledge developed by postgraduate students engaged in research. The increased research capability of these students further benefits the Australian economy and broader society when postgraduate researchers use their skills and knowledge in their future employment. In this way, public investment in research enhances the strategic capacity of Australian firms, government agencies, research centres, universities and industries. Setting national research priorities involves making decisions as to where Australia's strategic capacity is best directed.

Setting priorities for SET and SS&H

The setting of national research priorities is one of the many recommendations made by the Chief Scientist, Dr Robin Batterham, in his November 2000 report on Australia's science capability, *The Chance to Change*. Batterham has also discussed the importance of research that spans both SET and SS&H, including the complementary role that SS&H research can have in implementing scientific

⁴ Alister Scott, Grové Steyn, Aldo Geuna, Stefano Brusoni, Ed Steinmueller (2001) *The Economic Returns to Basic Research and the Benefits of University-Industry Relationships: A literature*

innovation. "Research in the humanities and social sciences, for example, can enhance the organisational, management, legal and marketing knowledge that is critical to successful innovation."⁵

Given that one of the aims of a national priority setting process is to identify research that may be best undertaken using a cross-disciplinary or multi-institutional approach, CAPA finds the separation of the SET and SS&H priority setting processes unhelpful. We question why the priority setting process for SS&H is not due to take place until 2003-4, particularly given the importance of research into areas such as public health which spans the sciences, social sciences and humanities. Academy of the Humanities President, Iain McCalman, has also criticised the separation of the SS&H priority setting process. He argues that knowledge is holistic, and for this reason he is "disturbed by the tendency to segregate knowledge and insulate social sciences and humanities from science".⁶

For this reason we recommend,

Recommendation 1: That national research priorities for Social Sciences and Humanities (SS&H) be set in conjunction with Science, Engineering and Technology (SET), to foster cross-disciplinary research.

Potential impact on the broader research effort

Without additional funding for national research priorities, any diversion of funding to priority areas will be at the cost of Australia's broader research effort. CAPA is concerned that this will compromise the diversity of Australian research.

review and update of findings, Report for the Office of Science and Technology, Science and Technology Policy Research, University of Sussex, p 13.

⁵ R. Batterham, *The Chance to Change: Discussion Paper by the Chief Scientist*, Commonwealth of Australia, 2000, p 33.

⁶ D. Illing, 'Humanities research to be prioritised next year', *The Australian*, 29 May 2002, p 24.

In the United Kingdom, the Science and Technology Policy Research Unit of the University of Sussex has demonstrated that a key role for public investment in research should be to foster diversity.

Public funding for research plays an important role in supporting the creation of diverse options. Variety is a vital feature of flexible innovation systems. The value of variety or diversity becomes clear when the problem of uncertainty and ignorance is considered. Society is subject to uncertainty about future opportunities and threats. Variety is widely regarded as a desirable attribute in the context of an uncertain future.⁷

Developing National Research Priorities argues that Commonwealth agency and competitive grants funding can be diverted to shorter term priority areas, such as those nominated for targeted ARC funding in 2003, because university block funding is sufficient to maintain a breadth of speculative basic research. This is not the case. University research is increasingly being directed towards the same areas of applied science and technology: the current funding model rewards concentration rather than diversity of research.

The performance based funding formulae of the Research Training Scheme (RTS) and Institutional Grants Scheme (IGS) have compelled universities to concentrate their research efforts in self-selected areas of research strength, identified by each university in its Research and Research Training Management Plan (RRTMP). Since the repeal of the legislation establishing the National Board of Employment, Education and Training, there has been no independent advisory body of the type needed to review RRTMPs to ensure that there is sufficient breadth in the research strengths of Australia's 38 public universities. As a result, the humanities and social sciences are conspicuous by their absence in many of these plans. For example, James Cook University identifies its 'Areas of Research Excellence' as being Marine Science and Earth Science, and lists its 'Established Areas of Research Focus' as being Tropical Biology and

⁷ Scott *et al.*, (2001) *The Economic Returns to Basic Research and the Benefits of University-Industry Relationship*, p 14.

Conservation, Biotechnology and Biomolecular Sciences, and Computational and Experimental Mechanics.⁸ The University of Adelaide identifies its research strengths as being Agriculture, Veterinary and Environmental Sciences; Biological Sciences; Chemical Sciences; Earth Sciences; Engineering and Technology; Information, Computing and Communication; Mathematics; Medical and Health Sciences; Physical Sciences; Studies in Human Society with specific reference to the National Key Centre for Social Applications of Geographical Information Systems.⁹

Universities benefit financially from concentrating postgraduate research places in the disciplines with more timely completion rates, since the RTS allocates postgraduate research places according to a formula which gives a 50% weighting to student completions, 40% weighting to sources of total research income, and a 10% weighting to the number and type of publications produced by a university. The probability of completion is higher in disciplines such as health, science, agriculture and veterinary science, than it is in disciplines such as arts, humanities, social sciences, law and architecture.¹⁰ Therefore, when university RRTMPs include objectives such as "revise scholarship distribution formula in a way that rewards faculties with the better completion rates and times"¹¹, this will typically involve the diversion of scholarships away from the arts and humanities towards health and science disciplines.

Within disciplines, the RTS formula directs departments to allocate research places and scholarships to students whose research proposals appear more likely to be completed within the two year and four year limits imposed by the

⁸ James Cook University Research and International Division, *Research at James Cook University*, <<http://www.jcu.edu.au/div2/research.shtml#2>>

⁹ The University of Adelaide (2001) *Research and Research Training Management Report 2002*.

¹⁰ Yew May Martin, Maureen Maclachlan, and Tom Karmel (2001) *Postgraduate Completion Rates*, Occasional Paper Series 2001D, Higher Education Division, DETYA, Canberra, Table One, p 8.

¹¹ This particular example is taken from the Monash Research and Research Training Management Plan 2000, Target 9.3.1.

<<http://www.monash.edu.au/research/statements/monashplan/part2-9.html>>

scheme on research masters and doctoral degrees respectively. In this way, the RTS diverts places from speculative and innovative research that may involve a longer process of trial and error, to conservative projects that are more likely to be completed within the scheme's time limits.

As noted above, the RTS has reduced Australian research capacity by cutting over 3,000 postgraduate research places. Regional universities, which have already been hit hard by the removal of 'gap' places, will lose more research places at the end of 2004, when the regional protection currently in place is removed. During the transition period 2002-2004, no university can gain or lose more than 5 per cent of its postgraduate research places. Once this protection is removed, postgraduate research will gradually become even more concentrated in a small number of departments in the older, metropolitan universities.

CAPA therefore recommends,

Recommendation 2: That the broader Australian research effort be strengthened by the repeal of the Research Training Scheme, the re-instatement of all postgraduate research places cut under the scheme, and a return to funding based on student load.

The pressure on universities to attract private investment, and to divert research places away from disciplines that are less likely to conform with RTS completion times, means that universities are more likely to concentrate their research in similar high private investment generating areas, at the cost of national research breadth and diversity. CAPA is also concerned that the setting of additional priority areas for ARC grants will see the 80 per cent rejection rate for grant applications increase even further, and therefore deprive even more Australian

researchers of funding.¹² In this context, the proposal's assumption that a broad basic research base will be maintained by universities is less than convincing.

In the interests of promoting variety in Australian research, CAPA recommends,

Recommendation 3: That national research priorities be funded through additional research investment, rather than at the expense of the broader research effort.

Recommendation 4: That the number of thematic priority areas to be selected be expanded from three to five, to minimise the risk of crucial research areas missing out.

Recommendation 5: That the Government guarantee that priorities will not be extended to university block funding at any stage, in order to preserve the diversity of Australian research.

The timeframe for priority setting

The Minister's issues paper proposes that national priorities be reviewed approximately every three years. This is an extremely short time frame for significant research, particularly when the third criterion for the selection of priority areas includes the "potential of the research to achieve commercially or socially relevant outcomes over the cycle of the priorities regime".¹³ Adams provides evidence that basic research takes an average of twenty years to produce tangible economic results.¹⁴ More recently, Mansfield has demonstrated that there is, on average, a six year time delay between the completion of

¹² K. Carr, *Government's Research Priorities Policy 'Elitist-Driven'*, Media Statement, 29 January 2002 <<http://www.alp.org.au/media/0102/kcmsarc290102.html>>

¹³ *Developing National Research Priorities: An Issues Paper*, p 14.

¹⁴ J. Adams (1990) 'Fundamental stocks of knowledge and productivity growth', *Journal of Political Economy*, v10 98, no 4,

academic research and the incorporation of this research into industrial practice.¹⁵ Similar priority setting processes in the US and Japan operate on a 10 year and 25 year time scale respectively.¹⁶

Annual performance reviews of research and three-yearly reviews of priorities are better suited to shorter term applied research than longer term basic research, which may take five if not ten years to produce assessable outcomes. It is important that the priority setting process is appropriate for both basic and applied research, particularly as German research on industry-university collaboration demonstrates that "'pure' science seems to be more effective in stimulating advanced innovations than applied research focusing on commercialization".¹⁷

Therefore we recommend,

Recommendation 6: That the timeframe for reviewing the selected priorities be extended from three to ten years, in order to accommodate longer term research.

The consultation and selection process

While CAPA commends the Minister's desire for public consultation during the national priority setting process, we are concerned at the truncated timeframe and nature of this consultation. CAPA President Leisa Ridges attended the consultation forum held in Canberra on 20 June and was surprised to find that the panel did not appear to record many of the suggestions made by members of the public in attendance, and instead spent more time presenting their own views to the audience.

¹⁵ E. Mansfield (1998) 'Academic research and industrial innovation: An update of empirical findings', *Research Policy*, vol 26, pp 773-776.

¹⁶ *Developing National Research Priorities: An Issues Paper*, Appendix B: Priority Setting in Other Countries, p 29-31.

CAPA is also concerned about the membership of the Expert Advisory Committee, which will shortlist potential priority areas for the Government. The Federation of Australian Scientific and Technological Societies (FASTS) has recommended to the Minister that the Committee should be made up of ten members "to provide a spread of expertise and experience across disciplines, geographical areas and research backgrounds", and should include international members with experience in prioritisation.¹⁸ CAPA supports these suggestions and therefore recommends,

Recommendation 7: That the membership of the Expert Advisory Committee be representative of a diverse range of research fields, and include international participation.

¹⁷ A. Kaufmann and F. Todtling (2001) 'Science-industry interaction in the process of innovation: the importance of boundary-crossing between systems', *Research Policy*, vol 30, no 5, p 798.

¹⁸ Correspondence from Toss Gascoigne, Executive Director of the Federation of Australian Scientific and Technological Societies (FASTS), to the Federal Minister for Science, Peter McGauran, June 2002.