University of Canberra

Submission to the Productivity Commission Issues Paper

The University of Canberra appreciates the opportunity to contribute to the Productivity Commission's Issues paper on *Public Support for Science and Innovation.* The Issues Paper is broad ranging and has been addressed in detail in the submission by the AVCC. The University of Canberra contributed to this submission and supports the content. We do not wish to repeat the many valid points and arguments presented in that submission.

Here, in the context of the Issues Paper and the AVCC submission, we wish to emphasis a few points that we believe will be important to Australia's science, engineering and technology (SET) capability in the future.

Succession Planning and Capacity Building:

We believe that one of the most significant problems that will face Australia's future SET capability will be that of succession planning and capacity building. There are many growing issues that will combine over the next few years to impact on this area. These include:

1. the aging demographic of Higher Education (HE) staff,
2. the decrease in the number of students pursuing SET to higher degree levels,
3. the relative unattractiveness of a career in HE, including high teaching loads and lack of specific research funding for early career researchers (ECRs) etc
4. the growth of the HE sector in neighbouring countries,
5. higher rewards outside Australia for skilled research workers, and so on.

We believe that Australia needs some form of national plan to address these issues, in particular such a plan needs to be implemented before the issues become manifest; this will be when the current, over-represented cohort of senior staff and researchers begin to retire *en masse* during the next 10 years. Time and funding will be required to make an ordered generational "handover" such that hard-earned expertise is not lost from our research and innovation system. This point was made some time ago by the Queensland Chief Scientist: *Building brain-based industries? First, find the brains*,

http://www.sdi.qld.gov.au/dsdweb/v3/guis/templates/content/gui_cue_doc.cfm?id=4917

Impact of SET Research and Development:

It has been admitted in many fora that measuring impact of R&D is difficult; however we believe very strongly that this must not deter the government from pursuing the issue. Impact, in its many forms, must be measured and must include benefits not only to the economy, but also to society in general, to its function, culture and environment; in particular the latter three have few commercial champions but, in the greater scheme of human civilization, are perhaps more important. Some points on impact:

1. It is acknowledged that there is varying time delay in impact. Whatever drivers are implemented for R&D (the proposed RQF for example), they must not simply encourage short term benefit at the expense of the long term.
2. The Davis & Tuny report makes a great deal of the economic impact of R&D in the context of Australia's industrial structure, but fails to carry out a time dependent

analysis of the correlation of expenditure and impact. Given the massive change in Government expenditure on R&D between 2001 and 2005 due to the BAA reforms, there is significant opportunity to carry out a perturbation analysis on the correlation between expenditure, output and impact, although (again) the impact may take longer to become evident.

3. It will be vital that any assessment of impact should include significant input from R&D stakeholders and end users.

Engagement:

The University of Canberra believes strongly that "engagement" of the HE sector with business, industry, government and community is vital and indeed should be a core function, whether this is through teaching, research, commercialization or knowledge transfer (however defined). Resourcing for this function should be much more than Third Stream Funding closely defined in terms of commercialization. While it is a core function of universities, it is apparent that this function has languished, arguably due to the decline of available time and resources.

An important aspect is engagement with the National Research Priorities (NRPs). There are however several problems with this concept:

1. The NRPs are all well defined but strongly multidisciplinary, which is no bad thing. However research is categorized in the RFCD codes, none of which easily fit the NRPs.
2. Such multidisciplinary research could easily be discouraged if the RQF does not overtly favour, or at very least does not (and is not seen to) disadvantage, multidisciplinary research groupings.
3. It is not at all clear to researchers that addressing these priorities is used to prioritise research grant applications to any great extent.

Research Funding:

In terms of public funding for HE research, there are many schemes available. Perhaps one of the most important in the context of impact and engagement is the ARC Linkage scheme. We pose the following questions for which the Commission may wish to seek answers:

1. Why are so few SMEs represented among the partners for linkage funding?
2. Is the taxation system and "red tape" too complicated or time consuming for SMEs to bother?
3. What proportion of Australian industries benefit from Linkage funding, and how can this be expanded to involve more?
4. Why do so many funding schemes (Grants, Centres, CRCs etc) still require matching funds from Universities? Where are those funds supposed to come from?