NSW Department of State and Regional Development Submission to the Productivity Commission's Draft Report into Public Support for Science and Innovation

Introduction

This submission updates the NSW Government's September submission to the Productivity Commission [the Commission] by providing information on recent developments in innovation policy in NSW. This submission also provides comment on three issues that the Department of State and Regional Development [the Department] believes require more attention in the Commission's final report than was evident in the draft report. Apart from detailed work on government support for research and development, the Commission's draft report lacked sufficient detailed comment on the operation of the non-R&D aspects of the innovation system, on the effectiveness of current methods of engagement between the Commonwealth and the States to promote growth through innovation, and on the role of government in promoting knowledge diffusion to increase innovative behaviour in firms.

NSW Innovation Statement

As part of the NSW Government's *Economic and Financial Statement,* DSRD commissioned Professor Jonathan West to provide advice on an innovation strategy for NSW. A paper by Professor West, *A Strategy to Accelerate Innovation in NSW: Outline for Policy Development,* and the NSW Government's response, *NSW Government Statement on Innovation,* were released in November 2006.

In its Statement, the NSW Government endorsed three principles as those that should underpin innovation policy in NSW:

1. That the efforts of government to support and build innovation should be focused on those industries that are most likely to produce benefits for the broader economy, and where innovation will be boosted by the Government's support;
2. That policies and support to these sectors should be based on an analytical understanding of the actual innovation processes specific to these sectors in the NSW economy; and
3. That the Government's role in supporting innovation should be focused on complementing, not replacing the market.

The NSW Government recognises that enhancing innovation capability, particularly by removing impediments, requires tailored responses for different sectors of the economy. The next stage of developing the NSW innovation policy will focus on assessing whether innovative firms have adequate access at acceptable cost to science and technology, capital, and high quality information and knowledge infrastructure.

The NSW Government has announced that it will be assessing the potential for government support and options to promote innovation and that this may occur in five key areas:

1. Improving human capital;
2. Upgrading knowledge and information infrastructure;
3. Reducing the cost to business of utilising science and technology;
4. Encouraging capital allocation to invest in innovation; and
5. Reducing regulatory barriers to innovative NSW companies.

An innovation council will be formed to oversight the assessment of initiatives for key sectors. Four other specific actions have been announced: the establishment of an institute for advanced research in finance; an initiative to stimulate technological innovation associated with carbon dioxide capture and storage; building the State's share of Australian Government support for research and development; and an expression of interest process to identify a solution to deliver fast and 'available anywhere' wireless broadband access. These are discussed in greater detail in Professor West's paper and the NSW Government's response, both of which are available at www.business.nsw.gov.au.

Commonwealth-State collaboration to promote innovation

In its September 2006 submission, the NSW Government raised its concern that allocation of grants under certain Commonwealth programs are overly influenced by the ability of applicants to leverage State Government funds, rather than on the basis of sustaining and leveraging critical mass in capability and research excellence. This can result in fragmentation of effort and sub-optimal research outcomes.

The NSW Government has noted the relatively low levels of Commonwealth R&D support allocated to this State in recent years. For example:

- NSW was the location of only 16.6 percent of Commonwealth R&D expenditure in 2004-05. This was despite NSW being the location of 37.4 percent of business R&D expenditure in Australia, 30.6 percent of State Government R&D, 27.9 percent of higher education and 27.8 percent of private non-profit R&D expenditure in 2004-05.
- In the 2005 ARC Centre of Excellence funding round, only one of the 11 centres funded was headquartered in NSW, and the State attracted only $12 million in ARC funding (or 11 percent) of the total $122 million awarded. This can be contrasted with the results of the 2003 funding round, in which NSW was awarded 64 percent of the total funding (with five out of eight headquarters located in NSW).

To help address this, in February 2006 the NSW Government announced the establishment of a Science Leveraging Fund. This Fund aims to attract greater Commonwealth, international and philanthropic funding support for the NSW science community.

In broader terms, NSW contributed 34.2 percent of Australia's GDP in 2004-05, 33.4 percent of the nation's manufacturing output, and is home to 33.5 percent of the nation's population. The Department is of the view that it would be useful for the Productivity Commission to review the factors leading to the apparent imbalance between the distribution of Commonwealth R&D support amongst jurisdictions, taking into account jurisdictions' relative contributions to the national economy and the location of existing research expertise. The Commission should also review the efficiency of the current method of R&D cost-sharing between the Commonwealth and the States.

Non-R&D Innovation

The Commission's draft report concentrates on where the Commonwealth directs its spending on innovation, which is principally on the R&D component of the

innovation system. While this is a pragmatic approach to the inquiry's wide terms of reference, it leaves unaddressed many important areas of existing and potentially important public sector involvement in the innovation system.

It is recommended that the Commission consider how public support fits in and interacts with the innovation system as a whole, including the post-R&D phase of applying new knowledge, and the non-R&D, process improvement and technology diffusion areas of the innovation system. The ABS' 2005 study, *Innovation in Australian Business*, found that of the $28,650.9 million spent by businesses on innovative activity, only $8,068.0 million (or 20.9 percent) was on R&D.

If the ultimate rationale for government intervention is to ensure that the community captures the positive benefits that research or knowledge may provide, then the government and community have an interest in ensuring that the systems that diffuse and allow the utilisation of this knowledge are functioning effectively and efficiently.

Governments currently intervene to support the innovation system's activities in order to maximise community-wide benefit. Where there is insufficient incentive for private sector involvement or other deficiencies within the innovation system exist, programs have been developed to rectify or reduce these weaknesses. These programs seek to ensure that market forces are not impeded by inadequate information flows of new knowledge, science and technology, to firms able to make use of such information to develop new products, service and thereby increase investment and high-skill, high-wage jobs. Existing intervention (programs) of this kind has not been tested by the Commission, and thus gaps may pass undetected if this is not rectified in the final report.

Further and more detailed consideration needs to be given to aspects of the innovation system beyond R&D. The Commission appears to assume that the market is operating effectively in other areas of the system, that is, that there are no significant system failures. If that is the case there is a need for further analysis of existing programs operating in technology diffusion and commercialisation; if it is not correct then there is a case for comment on the option of rebalancing the relative amounts spent on support of research and development versus other more widespread and, for many firms, important forms of innovation such as management and technology information programs. The Commission should comment on the appropriateness and nature of governments' role in correcting or minimising the failures these programs are established to address. In this respect, further detailed analysis of certain aspects of the system – such as the difficulties faced by Australian firms in interacting with research organisations, in sourcing capital and in accessing and applying leading edge technical and engineering knowledge, should be included in the final report.

Mechanisms for Diffusion and Utilisation

DSRD supports the Commission's view that the increasing emphasis by research organisations on commercialisation, at the expense of other forms of diffusion and utilisation, should be reconsidered. This should be examined in greater detail in the final report. While there are instances where commercialisation through spin-off companies represents the most appropriate approach, other mechanisms that diffuse knowledge more widely may provide greater public benefit at lower overall cost. In a general sense, policy and programs should be designed to maximise these public benefit goals rather than focus on short term optimism of windfall profits from publicly funded research.

Professor West's paper notes an over-emphasis on commercialisation can have an adverse impact upon the culture of the provision of public goods by publicly funded research organisations:

> *"As governments focus on gaining the maximum-possible return from public science and technology investment, and as research agencies strive to demonstrate their value to government, governments in many jurisdictions have created incentives for research institutions to capture as much benefit as possible for themselves rather than for private industry. They do this by maximizing the price of intellectual property and technology consulting. These incentives have been promulgated under the banner of 'promoting a more commercial-oriented culture', but the effect of raising the price of any good is usually to reduce its demand, and hence its usage."* (West 2006 p22)

The NSW Government announced in its *Statement on Innovation* that it will work to make intellectual property generated in institutions it supports more readily available to businesses that can make best use of it.

Conclusion

This submission requests that the Commission further considers a number of important points prior to concluding its work and completing the final report:

- That policy should embrace a system-wide perspective of the role of public support for innovation, and the Commission should not be limited to the current report's focus on R&D intervention;
- That Commonwealth program decision-making should strengthen Australia's current research critical mass and expertise, and not be disproportionately influenced by the ability of applicants to leverage State Government funds; and
- That research institutions supported by governments should link into other areas and organisations within the Australian innovation system in ways that enhance the opportunities for firms to take advantage of public investment in such organisations.

The NSW *Statement on Innovation* highlights the importance of taking a sectoral approach to assessing impediments to business innovation as well as the potentially adverse impacts that may arise from an over-emphasis on commercialisation as a mechanism for diffusion and utilisation. As this view will form the basis of the NSW Government's policy work in innovation, the Commission could usefully consider how best the Commonwealth should engage with the States' innovation strategies, to ensure effective resource allocation, minimal duplication and maximum impact on business innovation.

Finally, the NSW Government included in its innovation statement a commitment to "…endeavour to work with the Commonwealth…, encouraging the Commonwealth Government to redirect its programs to support the focus NSW identifies…" It would be very useful for the Commission to suggest options to improve the efficiency and effectiveness of current methods of Commonwealth-State collaboration in innovation, to maximise the impact of the resources available from both levels of government.