

Re-starting the engines of innovation

R&D expenditure is often taken as a proxy for investment in innovation. Further, government support for business expenditure on R&D is widely supported on the basis of the 'public good' spill-overs from private research. Both these propositions are easy to support, but do not get us far enough.

We need to remember that innovation policy is more than traditional research or science policy, so that the role of science and technology investment needs to be assessed within a broader context. (The corollary is that science policy needs to invoke more than just innovation policy considerations).

Technical R&D is not the only necessary input to innovation-fuelled competitiveness and productivity. Numerous studies show that continuing investment in skills development and workplace innovation is also a major productivity driver, as is investment in the innovation-releasing capabilities embedded in capital goods.

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the stand-alone use of 'R&D' in favour of either 'research and technical development' or 'research and business development', depending on the context. This is not pedantry. We need to have clarity about the roles and functions associated with commercialisation.

The Review Panel's basic position is that universities and research agencies do research, but it is firms that commercialise. Innovation is a market-centric activity, pure and simple.

Innovating firms, however, need access to a robust research base from which to draw inventive inputs through a variety of means for technology transfer and information flows. We need to improve the depth, sustainability, and the accessibility – for firms – of our local research and talent base. In doing this we need:

- more flexible collaboration programmes and the removal of perverse incentives, especially those arising from the failure to fully fund research activity;
- to promote greater clarity about technology transfer roles and functions;
- to improve search and discovery mechanisms, and the 'information markets' around research capability;
- to reduce transaction costs and to simplify contractual frameworks; and
- to improve access to skills.

In innovation policy it is also very important to have great clarity, in proposing government intervention and public support, about precisely what problem we are trying to solve. Within an innovation context R&D is not an end in itself. The basic challenge is how we promote globally competitive firms and industries through:



- more firms investing in R&D and their technology skill base to support sustained productivity growth and firm competitiveness;
- assisting firms and industries to address emerging markets and new opportunities; and
- improving the ability of firms to change tack and adapt (thus avoiding lock-in to obsolescent technology or market models).

In addition, we need more innovation in the delivery of core public services, to increase their effectiveness and efficiency, and greater attention to securing social and industrial benefits through a focus on innovative responses to major national and global challenges like climate change, new energy sources, water, food security and population health.

The conclusions and recommendations of our recent review of the National Innovation System are predicated on ten guiding principles.

These are:

1. The market place is the crucible for innovation. The firm and the entrepreneur must be at the heart of innovation policy.
2. People and talent are what make it happen.
3. Access to knowledge and information flows is what connects and energises the players within the innovation system.
4. Innovation policy needs to address systemic points of failure – a broader notion than market failure.
5. A small country economy faces the challenge of accessing and leveraging the 98% of knowledge not invented locally – global integration is a necessity.
6. Innovation policy calls for a whole of government perspective and coordination.
7. National priorities for innovation should focus on the country's distinctive strengths and challenges.
8. We need to invest in gathering information about innovation to support better evidence-based policy.
9. There needs to be clarity about the role of players within the system.

10. Within a global economy there is an imperative to internationalise all aspects of the National Innovation System. In addition, the review's recommendations are calibrated to address the challenges of Australia's declining innovation performance and

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capabilities relative to global leaders. Not only has our investment in innovation declined in absolute terms, but this is also showing up in poor relative industrial performance and competitiveness.

Against this background our report calls for early action to turnaround our steadily declining performance relative to the best in the world. The majority of our recommendations centre on both strengthening Australia's research base, and reducing the risks associated with the early stages of commercialisation.

The recommendations and thrusts of the *Venturous Australia* report imply almost doubling our rate of innovation investment over the next five years or so. Some might comment that we are overly ambitious in our bid for increased investment in innovation. Such claims do not bear close scrutiny. If we regarded Australia as a firm, then a base investment of 1% of turnover/GDP in the sustainability and viability of our enterprise as a going concern would be properly regarded as modest and even high-risk in the long-run. Nothing less will turn around our shrinking efforts, and put us on the path to an overarching goal of securing a place within the top quartile of high performing countries. And as Ross Garnaut reminds us, responding to the daunting national and global challenges

posed by climate change, and proportional measures for amelioration and adaptation, call for additional and step-function increases in our innovation efforts.

The review team now anxiously awaits the government's and the community's response to our proposals. The greatest risks I see are as follows.

1. The marshalling of alibis for inaction. These alibis could be crafted around the need for prudence in the face of global financial instability, or fuelled by the rival claims of sectional interests for priority.
2. Cherry picking from the proposals. What is needed is a balanced investment portfolio of innovation activity geared to long-run national interests and priorities.
3. Half measures and under-investment.

It is unlikely that there will be another such 'root and branch' review

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of Australia's innovation system for quite some time. If we do not act decisively now then that next review will report on even faster declines in national economic performance and productive capabilities.

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Review reactions

Ms Rebecca James, chief executive officer of Research Australia – "The green paper is a good start for addressing some of the issues that plague our research sector..." This report gives a strong signal to the government to act on infrastructure, commercialisation and collaboration... "It will be important for the government to continue to listen closely to the concerns of the health and medical researcher sector as they act on these recommendations."

Mr Kumar Parakala, president of the Australian Computer Society (ACS) – "The ACS is pleased with the recommendations the Innovation Review Paper (IRP) has made to address Australia's long term vision for an innovation system, in particular the emphasis on R&D tax concessions and lifting innovation spending. However we believe a greater emphasis must be placed on the role of ICT in the creation of a new system.

"It's unfortunate that the capabilities of the ICT industry have not been sufficiently acknowledged for the pivotal role they currently play - and the greater role they can play in developing an innovation nation."

Professor Bryan Gaensler, ARC Federation Fellow, University of Sydney – "It's pleasing to see a strong and explicit recommendation that Australia needs to better engage with international partners. While we

want to position ourselves to make discoveries and breakthroughs in our own backyard, we also must acknowledge that innovation is a global endeavour – new ideas are built up from hundreds of interconnected strands that often transcend national boundaries. Australia needs to put in place concrete steps to better connect into the vast amount of knowledge and expertise based beyond our shores."

Professor Ken Baldwin, president of FASTS – "FASTS welcomes *Venturous Australia* with its clear aspirational goal of revitalising Australia's innovation performance.

In particular we note the commitment to:

- fund the full costs of research;
- restore the decline in the past 15 years of publicly funded research;
- provide new incentives for ramping up private sector innovation such as Tax Credits;
- providing a long term commitment to national infrastructure through funding of a new NCRIS scheme;
- establish a National Innovation Council to coordinate our research framework.

We are concerned, however, that the emphasis on success in competitive grants and performance in Excellence in Research Australia to drive University research block grants will not encourage end-user driven external collaboration."