



**Australian Government**

**Department of Industry**

# Innovation Australia

Boosting Commercial Returns from Research Review  
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Dear Sir

## **Boosting the Commercial Returns from Research - Response to Discussion Paper**

*Innovation Australia* is pleased to provide the attached submission in response to the discussion paper “Boosting the Commercial Returns from Research” prepared jointly by the Department of Education and the Department of Industry. *Innovation Australia*’s submission recommends a wide range of policies that can be used to increase the rate of return of commercial returns from research. We have also made a number of additional points on issues not discussed in the paper but which are also important in improving commercialisation of research.

The R&D Incentive Committee operates under delegation from *Innovation Australia* and provides oversight over the R&D Tax Incentive. A submission from this Committee, which has a particular focus on the R&D Tax incentive, is included as part of our submission

Our suggestions are intended to increase the rate of return from Government research funding in line with the Australian Government’s *Industry Innovation and Competitiveness Agenda* (the Agenda) and reduce red tape and the dependence on the public purse.

Our secretariat will be pleased to provide copies of previous submissions made by the Board and which are referred to in the document.

3 December 2014

# Innovation Australia

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## *Submission to Boosting the Commercial Returns from Research Review*

*Innovation Australia* (IA Board) has a key role in providing independent advice to the Government on matters relating to innovation in business and industry. This submission is made in response to the discussion paper, “Boosting the Commercial Returns from Research” prepared jointly by the Department of Education and the Department of Industry.

The R&D Incentive Committee operates under delegation from the IA Board and provides oversight over the R&D Tax Incentive. A submission from this Committee, which has a particular focus on the R&D Tax incentive, is included in **Attachment 1**.

## **BACKGROUND TO THIS SUBMISSION**

The Australian innovation system is a complex set of activities and relationships - encompassing multiple industries, stakeholders, enablers and value chains. This complexity results in inefficiencies and confusion, creating barriers for the successful commercialisation of research outcomes<sup>1</sup>. A whole of government approach, as advocated by the recently released OECD report on Science Technology and Innovation<sup>2</sup> will deliver more effective utilisation of government support, consistent with the Government’s objectives for reduced red tape and increased efficiencies.

While noting the “overarching ambitions” enunciated in the discussion paper, this submission principally addresses the fourth ambition, for an “industry policy that fosters innovation and entrepreneurship”. It also notes the focus on “better translation of research into commercial outcomes.... will help drive innovation... grow successful businesses and research capacity, and boost productivity and exports”. IA Board’s strong support of this ambition is evident in the advice and submissions made over recent years, which have highlighted that:

- a. the effectiveness of and returns from various government innovation support programmes is significantly discounted by deficiencies in the engagement of Australia’s universities and publicly funded research organisations (PFROs) with industry and other users of research;
- b. remedying these deficiencies will rely substantially on systemic changes in the higher education and R&D systems, and less on new programme interventions;

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<sup>1</sup> See for example, Office of the Chief Scientist, “*Science, Technology, Engineering and Mathematics: Australia’s Future*”, September 2014, which states, “Australia’s STEM investments and policies have suffered from a lack of coordination, misdirected effort, instability and duplication.”

<sup>2</sup><http://www.oecd.org/sti/oecd-science-technology-and-industry-outlook-19991428.htm>

- c. systemic change may be achievable without significant new budget outlays;
- d. the deficiencies do not lie exclusively with the universities and PFROs but also in the willingness or ability of businesses to participate in innovation;
- e. market failure in early-stage equity capital markets is a problem in all modern capitalist democracies, and particularly in Australia, and depends on a variety of government interventions for remedy;
- f. public procurement policies could enable the Government to play a key role as a lead customer for certain innovative products and services; and
- g. there is a need for stability of policy and programmes for sufficient periods of time, and across changes of government to enable their effectiveness to be properly evaluated and to provide continuity and some certainty to businesses and research end-users.

## RESPONSES TO PROPOSALS

Our responses to the specific proposals in the discussion paper are listed below:

### Creating stronger incentives for research-industry collaboration

The IA Board agrees with the proposal to create stronger incentives for research-industry collaboration. We suggest that applicants for competitive research grants should be required to make a statement about “pathways to utilisation”. A “nil” response should be allowable for fundamental and basic research where it is genuinely unknowable (mathematics, astrophysics, exobiology etc.). A disciplined approach to evaluating researchers’ responses will build awareness of the importance of utilisation.

The IA Board has strongly advocated for better measures of research outcomes and innovation (see further detail below). These can include indicators of “collaboration” and “engagement” that provide insight into what sort of behaviours and incentives will work.

Various modes of business - PFROs - collaboration are working successfully in Australia and internationally. Proposals to leverage greater collaboration should be based on analysis of the effectiveness of these programmes and the manner in which current support is utilised. **Attachment 1** provides suggestions for the use of the tax system to provide broader incentives for collaboration, provided that there are clear rules to support compliance. Existing industry-PFRO support programmes e.g. Research Connect, ARC Linkage grants also need evaluation in supporting commercial outcomes.

Collaboration between businesses, especially those with complementary capabilities may also result improve commercial outcomes of research. The CRC Programme is a significant mechanism for business-to-business and many-to-many collaboration. The IA Board has suggested how the CRC model can be modified for improved outcomes in a separate submission to the CRC Review<sup>3</sup>. The proposed Industry Growth Centres are also a means to drive collaboration for innovation and translation, although their working structure and performance remains to be demonstrated.

### **Supporting research infrastructure**

The IA Board strongly supports the development of long term roadmaps for research infrastructure investment which link to a national strategy on research priorities.

### **Providing better access to research**

Intellectual property (IP) is a significant, and often strategic, intangible asset for innovating companies. The IA Board agrees that increased access to the results of research may increase commercialisation rates for research. However ownership issues need to be able to be resolved in a timely and cost effective manner to provide incentives for commercialisation. Many PFROs in Australia and internationally have a range of strategies for IP ownership from “open innovation” to IP that is owned by the institution and licensed to industry. This is a complex area with no standardised solutions. Policies in this area need to be supported by careful analysis and review on outcomes achieved to date in Australia and internationally.

### **Increasing industry-relevant research training**

The IA Board believes that any “review of research training arrangements” should explicitly address the currently dominant emphasis on training PhDs for careers as researchers in PFROs, to the detriment of both the PhD students and the broader economy.

- The CRC Programme is one model which enables “industry ready” PhD graduates, trained jointly with the research users although other models are prevalent and are generally driven by university placement programmes;
- The mobility of staff between universities and research users (without current disincentives but ideally with incentives), should be seen as a form of advanced training; and
- Staff mobility and exchange should form part of metrics for research impact.

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<sup>3</sup>A Copy of the IA Board’s submission to the CRC Review. November 2014 can be provided to the Review Committee by the IA Board Secretariat.

## Measurement of outcomes

The IA Board has been advocating for better measures of research outcomes for the last few years and has been working with the ATN and other universities to develop and promote such measures.

Clearly, there is an overwhelming need for a national approach to assessment of “research impact” for publicly funded research, to complement the Excellence in Research Australia (ERA) assessments. IA Board suggests that:

- a. indicators of research impact are the end-game and should include successful commercialisation and global market potential;
- b. indicators of “collaboration” and “engagement” are not substitutes but can provide complementary or intermediate indications of research impact;
- c. research impacts should be assessed across not only STEM fields, but to be acceptable and credible across the university system, also allow for impact of research in the HASS fields; and
- d. pilot work already done in Australia by the ATN and Go8 and by the Academy of Technological Sciences and Engineering (ATSE), and experience in other countries, indicates a combination of qualitative approaches and metrics will provide the best assessments. Considerations to date are that:
  - proxy measures like patent numbers are useful but not sufficiently meaningful or applicable across diverse fields to be used as metrics;
  - metrics that measure behaviours (mobility and exchange of people etc.) are important;
  - there is no single metric that will suffice, and all metrics examined to date are by themselves inadequate for assessing research impact. A coherent set of metrics is likely to be proposed in early 2015.

## Capitalising on the Medical Research Future Fund (MRRF)

The IA Board supports the bold ambition and novel approach to establishing the MRRF. It notes that, while adoption and utilisation in clinical practice is likely to be successful, Australia’s capacity to “commercialise” and thereby capitalise on the results of important areas of biomedical research (new therapeutics, diagnostics, etc.) is likely to be constrained by:

- capital availability;
- experience and know-how;
- absence of partners; and
- market size.

Therefore, a significant proportion of the assets of the MRFF should be dedicated to translation and commercialisation activities. The existence of the Medical Research Commercialisation Fund and possible raising of MRCF Fund 2, which will reportedly attract superannuation funds as investors (in stark contrast to the general situation in early-stage equity capital markets at present), should be taken into account in planning the MRRF.

## **OTHER ISSUES**

Certain issues raised in the body of the discussion paper were not then covered in the proposals in Section 5.

### **Data analytics**

There is a pressing need for effective analysis on the impact of government support programmes over the past decade, the sectors that have benefitted, employment created, economic benefits, multiplier effects and net returns. Big Data analytics tools should be able to make a contribution to support policy development.

### **Innovation in the services sector**

The discussion paper does not explicitly discuss innovation in the services sector although many digital innovations are proving disruptive to established industry structures while improving service delivery in B2B and P2P solutions (for example Uber taxis, Air BnB). Innovating service companies may create significant employment especially as they are scalable and can successfully go global.

### **Entrepreneurship**

A report from the Commercialisation Australia (CA) Board in 2014<sup>4</sup>, based on direct experience and citing studies by PricewaterhouseCoopers, concluded that Australians were no less well disposed to entrepreneurial behaviour than people in other countries, but that there were systemic impediments to fully expressing and capitalising on this.

The IA Board strongly supports the Government's decision to address one of these impediments i.e. the current tax treatment applied to employee share schemes.

The CA Board report noted the important role, over a decade and more, of initiatives such as incubators, accelerators, and mentorship programmes. The original government-supported activities are now complemented by many similar private activities, at least in the limited area of lean start-ups in digital services and software.

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<sup>4</sup>Early Stage Capital for Innovation and Entrepreneurship, CA Board Report May 2014

## Early-stage capital

The discussion paper (Pages 6, 16 and 17) highlights the problem of access to finance for innovation-active firms, especially those that are new or small or both, and the fact that Australia significantly underperforms all comparator countries. Various approaches taken in other countries are identified, including co-investment funds, tax incentives and grants. Virtually all western democracies provide some form of government intervention to deal with market failure in the early-stage equity capital market (ESECM).

The IA Board notes that the Government has not included measures to address this market failure and has withdrawn support for the venture capital segment by terminating the Innovation Investment Funds (IIF) co-investment programme<sup>5</sup>. This policy approach will exacerbate the difficulty currently experienced by innovation-active firms in gaining access to early-stage investment capital and will be significantly detrimental to the success of other initiatives to boost commercial returns from research. Moreover analysis of returns from such programmes indicates a significant return to the government which excludes multiplier effects of developing entrepreneurship skills, creating high expertise employment and exports as well as developing the market appetite for venture capital investment which will support future start-ups and commercialisation efforts.

The IA Board supports the initiatives to support employee share options and crowd-sourced equity funding. These will contribute to boosting commercial returns from research but are unlikely to overcome the market's failure to provide early-stage capital. The changing nature of the ESECM, documented in the report from the CA Board in 2014, provides an opportunity for the Government to think differently about policy and programmes for addressing the capital market failure.

## Procurement

Public procurement policies are being used in many countries as a tool for fostering collaboration between industry and PFROs and providing pathways for commercialisation of research. The OECD Science Technology and Industry Outlook Report 2014, indicates that support for innovation through demand side instruments like procurement will become increasingly important<sup>6</sup>. The IA Board has previously provided<sup>7</sup> arguments for the use of procurement to boost commercial returns, and notes that such policies:

- are systemic in their effect;
- do not necessarily add to budget outlays; and

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<sup>5</sup>The IIF programme contributed \$724 million of capital commitments (\$401 million public and \$323 million private) to the Australian venture capital sector over 16 years and was a significant factor in supporting more than 120 start-ups. Of this, \$530 million has been invested and total returns to date are \$505 million, \$336 million to private investors, due to their preferential treatment in the IIF model and \$169 million to the government. Source: Unpublished AusIndustry data

<sup>6</sup><http://www.oecd.org/sti/oecd-science-technology-and-industry-outlook-19991428.htm>

<sup>7</sup> Submission to the Senate Finance and Public Administration Committees, 6 March 2014.

- are becoming more widespread, according to the just-released OECD Science, Technology and Industry Outlook 2014, especially to foster collaboration and support for SMEs.

## International Collaboration

International collaboration is becoming increasingly important in leveraging knowledge and specialised expertise as well as investment in research infrastructure for higher order outcomes. The IITB-Monash University collaborative model<sup>8</sup> may provide useful insights on the issues to be addressed if this strategy is to be supported nationally.

## Diversity

There is a great deal of international evidence that diverse teams drive greater levels of innovation<sup>9</sup>. Strategies to enhance the diversity of research teams in both PFROs and business in terms of gender, ethnicity, age and other factors should be built into factors for evaluating the performance of teams and the delivery of outcomes.

## CONCLUSIONS

*Innovation Australia* strongly supports the intention to adopt measures to boost commercial returns from Australia's research effort. Many of the recommendations are consistent with those made in previous submissions and support the Government's agenda for increased industry innovation and competitiveness. We are available to discuss the above recommendations and their implications and to provide copies of previous submissions if required.

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<sup>8</sup> The IITB-Monash Research Academy is a global research partnership that delivers innovative solutions through collaborative, multi-disciplinary projects between industry and universities in India and Australia. See <http://www.iitbmonash.org/>

<sup>9</sup> See for example - House of Commons Science and Technology Select Committee (2014) Women in scientific careers. Available at <http://www.publications.parliament.uk/pa/cm201314/cmselect/cmsctech/701/70102.htm>; and Fostering Innovation through a Diverse Workforce. Forbes Insights 2011, [http://www.forbes.com/forbesinsights/innovation\\_diversity/index.html](http://www.forbes.com/forbesinsights/innovation_diversity/index.html)



## **R&D Incentives Committee Submission**

### **[attachment 1 to Innovation Australia's submission]**

The R&D Incentive Committee's responsibilities include administering and monitoring aspects of the R&D Tax Incentive Programme and the R&D Tax Concession Programme.

The *R&D Incentives Committee (Committee)* supports the focus of this review in boosting the commercial outcomes from research. This objective is consistent with the government's *Industry Innovation and Competitiveness Agenda*. We note, however, that there will always be a need to maintain a certain level of fundamental research which will not be otherwise undertaken by the private sector due to the long lead times and uncertain outcomes and paths to commercialisation. Breakthroughs from such research (for example CSIRO – Wifi) can result in large and, frequently disruptive, gains. Fundamental, pure research is usually undertaken by publicly funded research organisations (PFROs) and most leading economies continue to provide funding for this type of research.

Nevertheless, there is also a pressing need to provide appropriate support frameworks and incentives for research that is expected to be commercialised and generate returns for the organisations involved (private or public) and the Australian economy.

### **The role of the R&D Tax Incentive in supporting commercialisation**

The Committee supports the premise from the discussion paper for this review that the R&D Tax Incentive has been one of the Government's most significant levers for encouraging business innovation. While the primary objective of the R&D Tax Incentive is to support R&D conducted by industry in Australia, we believe there is scope for the programme (or an alternative mechanism which uses the tax system) to encourage further collaboration between industry and PFROs.

Many countries around the world have schemes that support R&D using the tax system. According to the accounting firm KPMG, there is an escalating competition to provide R&D incentives in a country's jurisdiction to attract innovating companies. The United States, United Kingdom, Canada, Germany and Japan are among the top countries, including Australia, that provide R&D Tax Incentives.<sup>10</sup> The Ernst and Young (EY) global comparison of tax incentives shows the large number of countries with R&D tax incentives including China, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea and Vietnam.<sup>11</sup> Given the competition in our own region, it is critical that Australia is proactive in developing policy in this area.

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<sup>10</sup>[http://www.competitivealternatives.com/reports/2014\\_compalt\\_report\\_tax\\_en.pdf](http://www.competitivealternatives.com/reports/2014_compalt_report_tax_en.pdf)

<sup>11</sup>[http://www.ey.com/Publication/vwLUAssets/EY-Worldwide\\_R\\_and\\_D\\_incentives\\_reference\\_guide/\\$FILE/EY-Worldwide-R&D-incentives-reference-guide.pdf](http://www.ey.com/Publication/vwLUAssets/EY-Worldwide_R_and_D_incentives_reference_guide/$FILE/EY-Worldwide-R&D-incentives-reference-guide.pdf)

For Australia, innovation is vital to ensure the growth of the economy and its competitiveness. For example the released draft *Report on Competition Policy Review*<sup>12</sup> emphasises the need for an open economy that “encourages innovation, entrepreneurship and the entry of new players.” The report identifies innovation and the development of new technologies as a key influence on the economy.

While PFROs in Australia tend to work in basic research, industry R&D is usually a first step in developing and commercialising innovative products successfully. It should also be possible to encourage collaboration where demand is driven by industry through industry-PFRO collaboration. This is an industry “pull” factor rather than a science 'push'. Many PFROs in Germany, for example, collaborate successfully with industry on this basis.

The R&D Tax Incentive is one (established) means of providing coherent, strategic incentives for collaboration with an emphasis on industry-led innovation diffusion, commercialisation and internationalisation. It can provide the driver for industry to fund outcome driven research (industry pull) rather than science driven.

### **Advantages of the R&D Tax Incentive**

Key advantages of the R&D Tax Incentive are:

- it is well known and widely accepted within industry with established support structures in the private sector;
- it is an established means of providing coherent, strategic incentives for industry led collaboration with PFROs;
- it provides essential cash flow support for early stage innovating companies and assists in extending research budgets;
- Government has well-established, cost effective compliance structures to monitor the programme; and
- as an entitlement programme, there are low entry costs, consistent with the government agenda to reduce red tape.

### **Enhancing the R&D Tax Incentive**

As an entitlement programme, the R&D Tax Incentive has been criticised for not producing advanced technology and products. Increased, effective collaboration with PFROs which provides industry access to higher level research activity should be encouraged by:

1. Providing additional incentives for industry-PFRO collaboration, especially if this is to develop significant, new, invented-in-Australia technology;
2. Including success factors from university-industry collaboration in the university reward system (i.e., the ERA).

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<sup>12</sup> See: <http://competitionpolicyreview.gov.au/draft-report/>

Additional incentives could be provided to industry for:

3. patent applications;
4. equity investments in start-up companies;
5. sales of patented technologies (similar to the “Patent Box” policy in the UK<sup>13</sup>);
6. projects that involve international collaboration to develop advanced technology;
7. the development of research skills in industry and industry awareness of the capabilities of PFROs through collaborative projects that involve industry placements for research projects.

### **Other mechanisms to support commercialisation of research**

Once a company has developed an innovation, other forms of support are needed to enable companies, especially SMEs to commercialise their ideas.

Streamlined regulations that accommodate emerging technologies with recognition of international approvals will reduce the time taken to bring a product to market.

Increased government support through demand for innovative products will increase innovation in public service delivery while providing market validation for innovative products and services.

Streamlining intellectual property ownership requirements within PFROs will reduce the time and effort to negotiate arrangements and ensure that these are effective and enforceable.

Reducing barriers for industry placements, for example, workers compensation and other regulations will facilitate knowledge transfer while reducing costs and red tape.

Mentoring and support, especially for SMEs, are needed to develop the necessary skills to commercialise a product successfully. It may be possible to up-skill Australian entrepreneurs through programmes that use successful expatriate Australians and other established technology entrepreneurs to transfer knowledge, especially for specific sectors or companies, to support commercialisation on a global level.

### **Conclusion**

The R&D Incentives Committee supports this review on the basis that it provides an opportunity to leverage existing arrangements to improve research/industry collaboration and increase the rates of commercialising from Australia’s research efforts. We would welcome the opportunity to meet with the members of the review committee to expand on the issues raised in this submission and to provide further information.

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<sup>13</sup>The Patent Box enables companies to apply a lower rate of corporation tax to profits at 10%, from patented inventions. see <https://www.gov.uk/corporation-tax-the-patent-box>