University Research Commercialisation - consultation

Overview

UNSW Sydney welcomes the opportunity to contribute to this consultation.

UNSW recognises that Australia lags behind other countries in translating the excellent research in our universities into new industries which create new jobs and provide economic benefit to Australia.

Australia invests just 1.8 percent of GDP into research compared to the OECD average of 2.4 percent. Countries such as the US and Israel invest 2.8 percent and 4.9 per cent of GDP, respectively.

To address this issue, UNSW proposes that the Australian Government provide funding and incentives for greater university-industry-government collaboration to support commercialisation by:

- Establishing an Australia Research Translation Fund (with a commitment of at least $1 billion per year over 5 years); and
- Establishing Translational Research Partnerships.

Further details on these proposals are outlined below. We would welcome the opportunity to discuss these proposals further with the Minister and the Department.

Barriers to collaboration and commercialisation

There are a range of high level barriers which prevent Australia from building on university expertise to drive economic activity, including:

- A collective failure to understand or celebrate the national asset that exists in our university research
- A lack of incentives in our universities for translational and applied research
- A lack of diversity and absorptive capacity in our economy, particularly SMEs, required to pick up and commercialise discoveries
- University research funding is heavily dependent on student revenue
- Market failure in commercialisation funding to drive the translation of discovery into social and economic impact.

To address these issues, we need a wholesale change in culture and mindset to recognise the importance of research and translation as a return-generating investment. A London Economics report commissioned by the Group of Eight found that for every $1 invested in research, around $10 came back in benefits. We need to recognise that R&D expenditure is an income generating investment in jobs and potentially powerful new industries.

We also need carefully planned funding schemes which are designed to address and overcome the current impediments to greater university and industry collaboration.

Current barriers to greater collaboration between universities and industry include:

- Different expectations on collaboration between universities and industry (eg. industry has low risk appetite)
- Difficulty identifying industry R&D needs
- Limited understanding of the difference between research and product development
- Lack of experience of academics in founding and growing spin out companies
- Long time frames between translating research in the lab to products reaching the market, and thus the need for patient and high risk capital.

Australia favours "founder-centric" commercialisation models, yet many academic inventors would prefer to solve new challenges and create new IP than create new companies- high potential inventions without founder teams cannot access support systems. Australia also lacks "technology-centric" and "market centric" commercialisation models; universities lack funding and deep domain expertise for early-stage commercialisation activities such as business case and business model development.

Commercialisation does not conform to linear pathways, it requires a long-term perspective, stable policy settings, flexibility and patient investment capital. It also does not happen organically, incentives are required to overcome these barriers and promote greater collaboration between universities and industries.

Incentives for commercialisation

Many schemes have been implemented in recent years to increase collaboration between university researchers and industry – such as Innovation Connections, state-based tech vouchers, ARC Linkage/ITRO and CRC Projects. However, these schemes largely focus on the research phase rather than the translation phase and are not sufficient to significantly scale-up activity to generate the profound shift required.

Further incentives to influence industry and university participation in commercialisation could include:

- New funding customised to different stages of translation and technology development; eg. proof of concept for lower Technology Readiness Level (TRL), minimum viable product funding for mid TRL, early stage/seed investment for higher TRL
- Adjusting Research Support program block grant criteria to recognise industry engagement
- Adjusting ERA/E&I assessment to more explicitly focus on commercialisation as a pathway to impact
- Capability development in taking technologies to market (entrepreneurial/business focus rather than academic/technical focus)
- Entrepreneurial PhD with industry co-supervisor and with stipends, potentially via adjusted Research Training Program block grant formula/allocation
- Colocation of industry and university experts, for example on university campuses.

A funding approach to incentivise industry participation in R&D could be through a modification of the current R&D tax incentives. UNSW supports tax incentives for research translation as recommended by the 2016 *Review of the Research & Development Tax Incentive* and the *Australia 2030: Prosperity Through Innovation* report (2018). We endorse the 2016 review's recommendation

for a collaboration premium up to 20% for the non-refundable R&D tax offset (a rise from 38.5% to 58.5%).

Feedback on proposed models

The models of mission-driven research or stage-gated schemes have some merit. If these models are pursued, they should be aligned with national priorities where Australia wishes to develop strong sovereign capability and/or has a global competitive advantage, incorporating relevant aspects of the humanities and social sciences.

In relation to mission-driven research, review and evaluation periods should be incorporated to ensure missions remain relevant and appropriate, with the opportunity to add new missions over time.

A stage-gate approach is appropriate for commercialisation funding schemes and is very typical for product development in industry as a risk mitigation strategy given university research is low TRL. As technical and market risk is reduced, the level of investment is increased.

We would like to see that whatever model is proposed to support research commercialisation, it can accommodate the incredibly diverse range of ways in which research can be transformed into commercial products, including in the context of social enterprises, cultural and creative practice initiatives, and community-oriented organisations.

Establishing an Australian Research Translation Fund

UNSW would like to see the Australian Government adopt an ambitious model to bridge the 'valley of death' and bring about greater success in translating Australia's excellent research output into productive and profitable commercial ventures.

In the health area, Australia has the National Health and Medical Research Council (NHMRC) and the Medical Research Future Fund (MRFF) to span the discovery-translation-applied-commercialisation pipeline. At present no such mechanism exists for other disciplines.

UNSW recommends the Government establish an Australian Translational Research Fund (ATRF) for non-health disciplines, to help drive research commercialisation in priority areas such as those identified by Education Minister Tudge, which include advanced manufacturing, and the transition to a low-carbon economy.

In order to increase Australia's spending on R&D as a percentage of GDP to move closer to the OECD average, and to bring about the significant shift required to maximise the returns on Australia's investment in research, we recommend that Government commit at least $1 billion per year over 5 years to the ARTF.

Establishing Translational Research Partnerships (TRPs)

UNSW also proposes the creation of a network of 8-12 translational research partnerships (TRPs) across Australia. TRPs, funded via the ARTF, will bridge the gap between discovery research at universities and the commercialisation of research. They will be structured around partnerships between universities and industry and will drive a cycle of discovery-translation-application and commercialisation.

In order to determine funding priorities for the TRPs, we propose that TRPs would be subject to external peer review and centred on high-level national priorities set by government such as energy, advanced manufacturing, health, defence, and space. Each partnership would have the autonomy to

decide where to focus within those national priorities, based on the relevant expertise in discovery and their translational opportunities.

We suggest a TRP accreditation process to assess:

● Existing excellence in well-defined areas of discovery and a strong track record of commercialisation;

● Commitment to exemplary partnership between universities and business to drive translation, application and commercialisation;

● A strategic plan explaining how a TRP's specific area of research excellence will advance national priorities;

● The economic benefit of the TRP and when, where and how it will be realised, along with plans to leverage university, business and investment funding to add to public funding; and

● A new approach to capacity building and culture, with a well-defined training program to develop future generations of basic and translational researchers, and opportunities for academics and industry staff to traverse academic/commercial boundaries.

These partnerships would be awarded by an open competitive process with an independent panel, and provide long-term, five-year renewable funding, upon meeting defined targets, at sufficient scale to deliver economic impact.

The TRPs would need to link seamlessly to Australian Research Council (ARC), NHMRC and MRFF funded research, and integrate with other public funds, the CSIRO, industry resources, tax incentives, philanthropy and investors.

Such a scheme could take brilliant ideas that abound in our businesses and universities, and not only translate them into commercially viable applications but also create jobs and economic growth, adding new sectors and vital complexity to the Australian economy.

Conclusion

Effective spending on R&D is crucial for Australia's economic future. Successful commercialisation of basic research requires an efficient translational research effort that converts brilliant ideas into market-leading technologies. We must also ensure that government spending on innovation goes into increasing the quantity of innovation activity, not merely the price of it.

Establishing the ATRF and reforming R&D tax incentives to provide a collaboration premium that encourages industry to partner with publicly-funded research institutions through the TRPs, would constitute an important step in this direction.