

UNSW Submission – Investment NSW's Innovation Blueprint

UNSW welcomes the opportunity to comment on the NSW Innovation Blueprint - Discussion Paper. We welcome the collaborative approach of the NSW Government to support NSW's innovation ecosystem and strengthen partnerships with industry, research institutions, and key stakeholders such as UNSW.

Executive Summary

The NSW Government should enhance the long-term sustainability and competitiveness of the State's innovation ecosystem in the following ways:

- 1) Play a more active role in accessing and leveraging the research expertise and capabilities of the State's universities such as UNSW to help address NSW's critical policy challenges; and
- 2) Foster innovation, collaboration and commercialisation of research and development (R&D) through a long-term and consistent focus on innovation policy, with targeted funding and promotional activities. This would include:
 - Driving solutions to improve NSW's commercialisation and translation performance including scoping potential solutions relating to NSW's growing gap in university research commercialisation that are co-designed with key stakeholders, including universities, while ensuring they are empowered to be agile and innovative;
 - Supporting talent attraction and retention efforts to ensure intellectual capital remains in NSW;
 - Continuing to develop and support innovation precincts and co-location initiatives that boost collaboration with universities and industry partners;
 - Prioritising co-investment and providing stable funding to enable universities to retain and grow research capacity;
 - NSW Government establishing its own research translation fund that accelerates delivery of new technologies to global markets from NSW;
 - Committing to co-creating a partnership fund with NSW universities to support researchers in translating research into real-world solutions;
 - Increasing support for existing innovation programs with a track-record of success;
 - Evaluating existing incentives to boost R&D activity in priority policy areas; and
 - Continuing to promote the global contributions of NSW's higher education and research sectors to international audiences.

Introduction

Universities such as UNSW play a vital role in enhancing Australia's prosperity, both through social, scientific and technological innovations that can improve our quality of life, as well as through their contribution to economic growth and productivity. It is estimated that every dollar invested in university research generates a \$5 return to the economy¹. For example, to help address the risks from climate change, UNSW has created the world's first early warning system for extreme bushfires that has become an invaluable tool for firefighting services.

The Innovation Blueprint provides an opportunity to identify fiscally responsible and agile policy responses to boost NSW's innovation, commercialisation, and economic growth. The innovation expertise and capability within the State's universities remain an under-utilised asset that could be leveraged with the NSW Government's support to unlock additional investment capital in NSW and attract foreign direct investment, driving economic complexity.

Ideas

Support universities to generate cutting-edge research and ambitious ideas to solve policy challenges

We support the NSW Government's commitment, summarised in its NSW 2021-2025 Higher Education Strategy, to implement a collaborative, whole-of-government approach to engaging with universities and connecting the higher education sector with government and industry.

The role of universities in creating and disseminating new knowledge, research and ideas is of great value to society. For example, Australia's researchers punch well above their weight, accounting for some four per cent of the world's published research despite comprising only 0.3 per cent of the global population². Australia also spends around 1.6% of GDP on R&D³. This important research can be translated into real world applications, including solutions to policy challenges or inventions that improve lives.

Universities can also support government efforts by co-designing initiatives that promote the exchange of ideas and insights to solve policy issues. For example, the NSW Government should consider a follow-up to its recent Ideas Summit to target initiatives that will help to underpin the development of the NSW innovation strategy.

Boost entrepreneurial activity in NSW

While inspiring new ideas, universities also support entrepreneurship efforts through educational offerings and tailored programs that seek to collaborate closely with the broader innovation ecosystem.

Entrepreneurship is a core theme of UNSW's founding identity and defined forward-looking priorities. For example, through the UNSW Founders Program, we have been supporting UNSW students, staff, researchers, and alumni to build entrepreneurship skills, and found and grow companies. UNSW

¹ Deloitte (2022) The economic contribution of the University of New South Wales. Retrieved from: <https://www.unsw.edu.au/content/dam/pdfs/unsw-adobe-websites/about-us/reports-publications/2022-12-DAE-UNSW-Economic-Contribution-Final-Report.pdf>

² Australian Academy of Science (2021) Science in Australia. Retrieved from: <https://www.science.org.au/curious/policy-features/science-australia#:~:text=Australia%20is%20an%20important%20part,of%20the%20world%27s%20published%20research.>

³ Australian Bureau of Statistics (2010) Research and Development. Retrieved from: <https://www.abs.gov.au/ausstats/abs@.nsf/2f762f95845417aeca25706c00834efa/0c241443d6ae4349ca25779e001c478d!OpenDocument>

Founders has invested into 107 companies who have further raised more than \$155 million of investment capital and grants, and hold a total value of over \$740 million. Furthermore, UNSW regularly ranks first out of Australia's universities for the number of funded founders and companies they have helped create.

However, as highlighted through the Innovation Summit discussions, there is a growing gap in the number and rate of creating innovative new businesses when compared to other Australian innovation centres such as the increase in outputs of Victoria. The process of developing NSW's innovation strategy will be key to ensuring that not only does this gap not continue to grow and NSW falls behind other states, but also that we are in fact able to be the national leader.

Areas where the NSW Government could focus include the following:

- Ecosystems that bridge gaps between sectors e.g. connecting regional farmers with scientists, medics with manufacturers, or clinicians with research scientists to foster a more integrated approach to innovation.
- Further support joint NSW Government and UNSW partnership positions, which allow individuals to undertake both research and practice. This type of partnership is practiced for example at Taronga Zoo in conservation and coral biology; the Australian Museum; and Bush Heritage Australia. The NSW Government should consider establishing these positions with universities in innovation priority areas which could be co-funded with universities and industry.
- Opportunities to develop platform and manufacturing innovation. Admittedly, a large barrier is that the end-user and the developer of these technologies usually come from different disciplines. When interdisciplinary centres focus on a common goal, they can significantly increase the generation of ideas.

Support talent attraction and retention efforts to ensure intellectual capital remains in NSW

Universities continue to play an important role in talent attraction and retention, which can help give NSW the leading edge in the global battle to attract new investment, ideas and industries. Furthermore, safeguarding industrial and economic zones to ensure cutting-edge university research and infrastructure can be built on key economic lands where industry will want to co-locate is critical to the success of any innovation strategy seeking to retain and attract talent.

As noted in the NSW Innovation and Productivity Council (IPC)'s *Global Talent Wars* report, being able to access and attract the right people and skills can mean the difference between a business succeeding or failing⁴. The suite of government policies geared to support the start-up ecosystem in NSW should include facilitating connections and employment avenues for skilled graduates into priority sector start-ups.

Government investment enabling NSW start-ups to employ PhD graduates will bolster their innovation absorption capacity, promote technology transfer, knowledge exchange, and expedite growth and market value. Moreover, these incentives can help mitigate the exodus of our best and brightest, ensuring NSW intellectual capital remains in NSW to benefit our state.

Also of importance is how innovation can support the retention and attraction of talent in the public sector. Greater investment alongside, for example, joint appointments and initiatives between

⁴ NSW Innovation and Productivity Council (2022) *Global talent wars: Learning from locations that attract the best*. Retrieved from: <https://www.investment.nsw.gov.au/assets/Uploads/files/IPC/ipc-global-talent-wars-accessible.pdf>

government and universities can help boost NSW's intellectual capital, while at the same time, expand our innovation ecosystem to stimulate and support public purpose work.

Foster collaboration on ideas through coordinated innovation precincts

Proximity matters for ideas generation, knowledge transfer and industry-partnerships, given for example 50 per cent of biotechnology and pharmacology patents occur within a 3km radius of research institutions and a 13km radius for all other technologies. This indicates that taking a more coordinated approach around innovation ecosystem development – with universities and employment lands – can significantly improve our export economy and knowledge-intensive jobs in high-value, high-quality products and services.

For example, UNSW is a founding partner in the Randwick Health and Innovation Precinct where students and researchers work alongside practitioners to manage real-life cases and solve significant health problems, supported with next generation technologies. It is the State's only precinct co-locating a university immediately adjacent to adult, women's and children's hospitals.

Successful innovation precincts require a policy approach that incentivises co-location of innovative industry near universities and accessible and affordable creative spaces to capture the R&D value-chain⁵. The agglomeration benefits can improve place-based productivity by 3-6 per cent⁶.

Investment

As highlighted in the NSW Government's 2040 Economic Blueprint, it is increasingly important that there is enhanced strategic coordination between universities, government and business for funding opportunities and an easily accessible 'front door' for stakeholders to understand how they can work with government, including on R&D. More broadly, this is particularly significant as countries which spend a higher percentage of their GDP on higher education R&D have, on average, higher levels of GDP per capita⁷. In NSW, only 1.8 per cent of NSW Gross State Product is spent on R&D and the majority of this investment is provided by industry and higher education⁸.

Prioritise co-investment and provision of stable funding

Central to supporting the R&D innovation ecosystem in NSW, is a long-standing commitment to and funding for R&D as part of a sustainable and competitive innovation ecosystem in NSW, and the NSW Government playing a proactive role in facilitating collaboration between universities and industry to enhance R&D. Research has shown that the 'triple helix model' of co-investment between industry, government and university is the single most important mechanism for leveraging R&D investment⁹. In this model, intermediaries are a fundamental aspect of success¹⁰. UNSW would like to see continued support for intermediaries, such as the NSW Smart Sensing Network, which can help businesses navigate the ecosystem of R&D support and university capability.

⁵ Westmead EDR and Tech Central (2022) *Agglomeration report*

⁶ Clarivate (2023) *Six cities innovation systems mapping*

⁷ Deloitte (2020) *The importance of universities to Australia's prosperity*. Retrieved from: <https://universitiesaustralia.edu.au/wp-content/uploads/2022/04/Report-The-importance-of-universities-to-Australias-prosperity.pdf>

⁸ NSW Innovation and Productivity Council (2022) *2022 NSW Innovation and Productivity Scorecard*. Retrieved from: <https://www.investment.nsw.gov.au/assets/Uploads/publications/NSW-Innovation-and-Productivity-Scorecard-2022.pdf>

⁹ Johnson, WH (2008) 'Roles, resources and benefits of intermediate organizations supporting triple helix collaborative R&D: The case of Precarn', *Technovation*, vol. 28, no. 8, pp. 495-505. Retrieved from:

<https://www.sciencedirect.com/science/article/pii/S0166497208000217?via%3Dihub>

¹⁰ Ibid.

NSW boasts a competitive edge over other states in several key sectors such as new energy, resources, quantum, and agricultural technology. To further enhance this position, it is essential that the NSW Government provides stable funding so that universities can retain and grow research capacity in these fields.

Reinvigorate NSW's commercialisation ecosystem through research translation and partnership funds

Coupled with a consistent and long-term innovation policy, focused intervention and leadership by the NSW Government would help reinvigorate NSW's commercialisation ecosystem and enhance innovation leadership nationally. To support this, we recommend immediate dialogue between universities and the NSW Government be initiated to establish a research translation fund, with university co-funding to accelerate the commercialisation of new technologies and creation of a growing and sustainable pipeline of new companies. The research translation fund could be modelled on *Breakthrough Victoria's University Innovation Platform (BVUIP)*. As a total commitment of \$2 billion by the Victorian Government, the BVUIP was launched in 2023 offering co-investment partnerships with Victorian universities. While there has been recent criticism of the Breakthrough Victoria model in the media in recent weeks, these criticisms can be addressed through improved governance. The underlying principle of co-investment between government, university and industry remains proven and NSW is well-placed to learn from and improve upon a similar scheme in NSW at scale.

Additionally, whilst the Federal Government's Australian Economic Accelerator (AEA) is expected to improve research commercialisation across Australia, NSW is currently less well-positioned to take advantage of Commonwealth Government funding, which risks widening the disparity between NSW and other states. We consider that there is an urgent need to support NSW universities in increasing investment readiness to realise the full benefits of AEA grants, in parallel with strengthening the university innovation culture and capabilities that support Technology Readiness Level (TRL) acceleration.

We suggest the NSW Government also consider committing to co-creating a partnership fund with NSW universities to support researchers in translating research into real-world solutions. The fund would help bridge critical financing gaps currently inhibiting NSW's translation ecosystem and progress more high-impact technologies from the laboratory into the market.

Increase support for existing innovation programs with a track-record of success

We recommend providing funding to platforms and programs proven to be impactful and operating sustainably, rather than encouraging the innovation community to create new programs to fit grant funding guidelines. This includes support provided to universities to build necessary infrastructure and facilities which the broader innovation ecosystem benefits from, for example through the NSW Government's *Boosting Business Innovation Program* which was established in 2016.

Increase the amount and diversity of finance for startups and scaleups through angel investor education

Most startups require angel investment in their early stages, when they are not ready for venture capital. Currently, 16 per cent of Australians qualify for the Federal Government's 'sophisticated' investor status for angel investment. However, many individuals lack awareness of what angel investing is and how the angel investment process works.

With the NSW Government's support, we can create more awareness of angel investing and further scale the program. Universities can help provide information about the key risks of angel investment as

well as strategies to minimise them. For example, UNSW's Angel Investors Program has been running since 2019 and has seen great success (we have graduated 160 angels who have invested at least \$3 million in over 100 companies).

Industrialisation

Government as a facilitator of increased university-industry collaboration

The NSW Government has an important role to play in facilitating greater collaboration between universities and NSW businesses. This is particularly important as Australia performs relatively poorly in industry-university collaborations¹¹ and this remains a challenge according to the NSW 2022 Innovation Productivity Scorecard. By doubling our 2020 collaboration rate, the NSW economy could see a productivity increase worth up to \$150 million per year.

UNSW, like other NSW-based universities, has significantly increased its engagement with industry in recent years with the help of government schemes designed to promote greater collaboration. For example, UNSW has been a participant in the NSW Government's \$18 million *Boosting Business Innovation Program* and would like to see continuation and expansion of programs such as this which bring universities and industry together to foster innovation.

Evaluate existing incentives to boost R&D activity and collaboration in priority policy areas

Research commercialisation from NSW universities leads to innovative new products and services, new companies, and greater industry diversity. The NSW Government should continue to evaluate existing incentives to boost R&D activity and pull industry towards research institutions and more effectively commercialise university intellectual property.

For example, while UNSW is part of national partnerships with venture capital groups, attracting investment from these vehicles has proven challenging as their desire for good, early, returns leads them to be attracted to lower-risk, higher TRL projects. This focus often overlooks the innovative, foundational research conducted at universities, typically in the early stages of development when transformative ideas are most vulnerable and need support.

UNSW also makes significant contributions in areas where research translation and commercialisation need further support, as highlighted in the NSW Government's 2040 Economic Blueprint. These areas include quantum computing, autonomous systems, artificial intelligence, medical technologies, the circular economy and advanced instrumentation. Better research translation and commercialisation can therefore help to improve uptake of advanced technologies, systems and processes, including in NSW businesses.

¹¹ CSIRO (2019) *Australian National Outlook*. Retrieved from: <https://www.csiro.au/en/work-with-us/services/consultancy-strategic-advice-services/csiro-futures/innovation-business-growth/australian-national-outlook#:~:text=The%20new%20Australia%20National%20Outlook,to%20a%20positive%20Outlook%20Vision>. In CSIRO's assessment comparing Australia with other OECD countries, Australia ranked 27th out of 29 on large business collaboration with the higher education sector or other non-commercial research institutions. Universities Australia (2019) *Startup Smarts: Universities and the Startup Economy*. Retrieved from: https://universitiesaustralia.edu.au/wp-content/uploads/2019/06/Startup_press-v2-web-1.pdf. Australia ranked 29th out of 29 on SMEs collaborating with the higher education sector or other non-commercial research institutions.

Internationalism

UNSW has a long-held tradition of sustained and high-impact innovation, focusing on areas critical to our future to ignite positive change both locally and internationally. As highlighted in its 2021-2025 Higher Education Strategy, the NSW Government should continue to help raise the international profile and promote the global contributions of NSW's higher education and research sector. This should include support from the NSW Government to:

- Provide case studies showcasing success stories of NSW businesses and start-ups expanding internationally;
- Provide grants for entrepreneurs to travel internationally to create partnerships, distribution channels, meet with customers and investors, and exhibit at relevant tradeshow; and
- Extend its partnership with the UNSW Founders which has set up Landing Pads in countries including Singapore (already in partnership with Investment NSW), China, India, Japan and the US.

NSW's strategic location and close ties with other major markets in ASEAN make it an ideal springboard for companies seeking revenue-generating overseas opportunities. The state's proximity to dynamic and rapidly growing markets in ASEAN enhances its appeal as a gateway for businesses seeking to increase their presence and operations in the global marketplace. This unique positioning reinforces NSW's role as a key player in fostering international trade.

Retaining talent will also be critical to the success of the innovation strategy in this context. The NSW Government is therefore urged to advocate for policies that facilitate the migration of top-tier talent into the State through admission to NSW universities, especially as NSW leads Australia as the preferred study destination for higher education.

Conclusion

Universities are critical actors in local and international innovation ecosystems and important partners for governments. Our unique role allows us to provide valuable insights that contribute to the roadmap for the innovation sector – from idea-creation to selling new products and businesses in global markets.

The proposed examples, ideas and recommendations would allow the NSW government to co-create solutions with stakeholders, including UNSW, that empower researchers, attract investors, and restore competitiveness. Getting the policy settings right will allow NSW to thrive at the cutting edge of discovery for decades.

Should you wish to discuss any issue raised in this submission, please do not hesitate to contact our Head of Government Relations, Mr Robin Schuck, on 0411 124 258 or r.schuck@unsw.edu.au.

Attachment

For further information supporting this submission, please see attached paper *Accelerating university research commercialisation in New South Wales* by Professor Emma Johnston, Deputy Vice-Chancellor (Research), The University of Sydney and Professor Nicholas Fisk, Deputy Vice-Chancellor (Research & Enterprise), UNSW.