

The University of Sydney submission to the NSW Government's *Accelerating R&D in NSW* consultations, December 2019

Responses to the Expert Panel's six consultation questions

Q.1 How can the NSW Government better support you/your organisation in its R&D efforts?

1. Continue to champion (as the Premier and Parliamentary Secretary Upton have started doing with this initiative) a strong R&D future for NSW as critical to securing the future economic and social prosperity of the State's diverse communities.
2. Set clear priorities for future more planned and systematic R&D investment by the NSW Government in agreed strategic R&D priority areas (for example, clinical trials and other translational health and medical research, biomedicine, quantum science, artificial intelligence, robotics, data science, advanced manufacturing and agriculture, drought resilience, educational and social wellbeing outcomes and systems change) where NSW has significant potential to be competitive in Australia and globally, or faces significant challenges.
3. Make NSW the most attractive Australian destination for R&D intensive domestic and international companies (both mature and start-up) and for talented researchers and students, including by developing a world-leading approach to fostering different types of innovation precincts based on the extensive planning work carried out already by the Greater Sydney Commission and NSW Government's Innovation and Productivity Council.
4. Better coordinate and increase significantly over time, NSW Government funding for R&D aligned to its policy priorities.
5. Establish a secure competitive fund pool to support public R&D infrastructure that aligns with the NSW Government's policy priorities and can be used to leverage funding opportunities from the Federal Government, industry and philanthropy.

Q.2 How can the NSW Government better support the R&D and innovation ecosystem in NSW?

Our responses to question 1 are relevant here. In addition, we provide the following suggestions:

1. In partnership with universities other not-for-profit research organisations and industry, develop and invest in a long-term strategy to develop distinctive areas of R&D and innovation strength for NSW.
2. Provide R&D active SMEs with integrated/coordinated financial and legal support to reduce the burden they face in navigating the R&D tax incentive and other relevant schemes.
3. Build on the successes of the [Sydney Start-Up Hub](#) and related initiatives, to work with industry, universities and other stakeholders to make NSW the leading Australian state in terms of successful start-up companies and the commercialisation publicly-funded R&D.
4. Consider state-based tax and other incentive to attract mature and emerging R&D firms to NSW and to encourage them to collaborate purposefully with NSW universities for research and research training.
5. Facilitate state-based campaigns to help raise awareness amongst industry (including civil society and representative organisations) about the benefits of partnering with universities on R&D to address the key social challenges facing many NSW communities; education and training attainment, youth disengagement, unemployment, mental health, disability, population ageing, addressing the social determinants of chronic health conditions etc.

Q.3 What barriers for R&D in NSW have you experienced and how can the NSW Government address these?

1. Difficulties obtaining a whole-of-NSW-Government perspective and timely decisions when major R&D opportunities and threats arise. Valuable opportunities are often recognised in one part of the NSW Government but cannot be progressed because that area does not have relevant responsibilities or sufficient influence within the Government. We are falling behind other states in this regard (namely VIC, QLD, SA) who demonstrate more agility and willingness to work proactively with universities and industry to find solutions. *The NSW Government could develop an 'in-house brokering' solution for workshopping or escalation when this occurs, to ensure that decisions can be secured in timely fashion.*
2. Limited awareness within local and overseas-based businesses about the R&D and other capabilities within universities that could assist them, as well as industry finding it challenging to identify the best capability for their needs. *The NSW Government (Department of Industry and Chief Scientist and Engineer) could help address this barrier by facilitating 'match making' between NSW universities and industries.*
3. Providing and maintaining world class research infrastructure remains an enduring challenge for NSW universities. *The NSW Government could help address this barrier by establishing a secure competitive fund pool to support public R&D infrastructure that aligns with the NSW Government's policy priorities and can be used to better leverage funding opportunities from the Federal Government and philanthropy. The Government could also help sensibly consolidate large research infrastructure, by co-investing in NCRIS facilities at a larger scale, and assessing whether it makes sense to double-down on things collaboratively in precincts for example. State Government support for research infrastructure in NSW has not grown at the level required to take advantage of opportunities available from Federal Government and other sources of funding.*
4. Gaps in incentive systems for SMEs, which do not fit the criteria of schemes targeting start-ups, but are not big enough to be competitive for other programs. *There are opportunities for the NSW Government to work with SMEs and the University sector to address this gap by developing R&D support programs tailored to SMEs' needs.*

Q.4 What does the NSW Government do well in the R&D space and what are the key opportunities for NSW Government to accelerate R&D in NSW?

1. The increasing close collaboration between the OCSE and other Government departments with the NSW DVC/PVC Research Committee is generating new opportunities for better alignment of Government priorities and university capabilities and needs to continue. It has also helped support the Government's Waratah Research Network initiative. Continuing to build on sector-wide collaboration and coordination should be a priority for our R&D strategy over the next five years.
2. In a similar vein, the reinvigoration of the [NSW Innovation and Productivity Council](#) (IPC) has been a most welcome development, both in terms of bringing a focus on innovation in the NSW economy and for providing a forum for high-level strategic discussions between Government, industry and universities about priorities for collaborative research to boost productivity. Following the review of the IPC this year, we look forward to it having more influence on policy making as part of the NSW Treasury.
3. The [Medical Devices Fund](#) through the Office for Health and Medical Research, the *NSW Physical Sciences Fund* through the Office of the NSW Chief Scientist & Engineer and two excellent examples of successful NSW Government R&D investment.
4. The NSW Government, through the Office of the Chief Scientist & Engineer (OCSE), provides cash support to any successful Australian Research Council Industrial Transformation Training Centre program of \$50,000 per year for three (3) years. This places NSW applications at an advantage and incentivises applications. There are opportunities to expand this model to other ARC grants.
5. [NSW Health's PhD Partnership Program](#) is another scheme the NSW Government could consider replicating across other departments is. The scheme provides funding for research projects designed for PhD candidates to develop skills and experience within the pharmaceutical and biological therapeutics sectors under the joint supervision of academic and industry supervisors.

6. The [NSW Health Research Hubs](#), part of a ten-year strategic plan for health and medical research, have been very successful in supporting research collaboration at NSW's major health precincts. We are actively involved with four of these, which have helped greatly to boost levels of collaboration and coordination of basic and translational research.
7. The NSW Industry Department's [Boosting Business Innovation](#) and [TechVouchers](#) programs have been well received and utilised. Large numbers of SMEs – that otherwise would not have – are engaging with universities in early stage development. These are leading to further investment in R&D. For example, Captix Bio, a NSW-based SME received TechVoucher funding for a partnership with Professor Peter Thorn, Chair in Molecular and Cellular Physiology at the University of Sydney to test encapsulated cells for the treatment of Type 1 Diabetes. The project was a success and the partnership has evolved to a \$1.2 million Innovative Manufacturing Cooperative Research Centre project in partnership with Captix Bio, the University of Sydney and CSIRO.
8. The OCSE networks are driving multi-institutional engagement with government and industry to advance R&D in certain sectors. The [NSW Smart Sensing Network](#), [Cyber Security Innovation Node](#) and [Defence Industry Innovation Network](#) are effective with a clear mandate and single-entry point for universities, government and industry. Creating networks helps nourish sectors with research and collaboration.

Q.5 How can NSW better leverage Australian Government investment in R&D?

1. Position NSW, in advance of the Federal Government enacting its proposed national data sharing and release legislation, work with NSW universities and other stakeholders to ensure that NSW can establishing itself as the leading data science R&D and analysis jurisdiction. This should include building on the good work eHealth NSW is already doing to make clinical/health data available for research to improve health care.
2. Invest into national R&D schemes like ARC Linkage and Centres of Excellence, building on the good progress made by the Office of the Chief Scientist and Engineer in relation to the Australian Research Industrial Transformation Training Centre program.
3. In the area of agriculture and especially drought R&D in NSW, there is great potential for much deeper collaboration and sharing of resources between the NSW Department of Primary Industries, the University of Sydney and other universities with relevant expertise. There is also significant potential for the NSW Government to work with its universities to leverage R&D and other funding from the \$3.9 billion [Future Drought Fund](#) the Federal Government has recently established. This fund, which the Federal Government intends will grow to \$5 billion will distribute \$100 million in funding annually from 2020. The University's submission to the Federal Department of Agriculture's consultation to develop a Drought Resilience Funding Plan may be of interest to the Expert Panel. It can be accessed through the University's submissions website: sydney.edu.au/policy-submissions.
4. Establish a secure competitive fund pool to support public R&D infrastructure that aligns with the NSW Government's policy priorities and can be used to leverage funding opportunities from the Federal Government and philanthropy.
5. Recognise clinical education and research as core responsibilities of clinicians across the NSW public health system. This would help to leverage maximum future Federal Government funding outcomes for the NSW public hospital system under the national activity-base funding arrangements for teaching, training and research that the Independent Hospital Pricing Authority (IHPA) is developing for adoption by COAG Health Ministers.
6. Advocate strongly to the Federal Government for policy and funding that supports higher education, research and research infrastructure in NSW, working with the Premier and other relevant ministers (e.g. Health, Industry, Planning, Primary Industries) states and territories through COAG etc.

Q.6 Are there examples from other jurisdictions supporting R&D that NSW can learn from/adopt?

1. The [MaRs Innovation district](#) in Toronto, Canada is a joint venture between philanthropists, investors, the city of Toronto, the province of Ontario and the University of Toronto focused on clean tech, health, fintech and enterprise. It has over 1000 start-ups in its eco-system and has created more than 12,000 jobs since 2017 through the ventures it has supported. The NSW Innovation and Productivity Council's 2019 report on the key factor underpinning successful innovation precincts features many other case studies of leading precincts from around the world: <https://www.industry.nsw.gov.au/business-and-industry-in-nsw/innovation-and-research/research-series/innovation-precincts-report>
2. The Victorian Government through [Invest Victoria](#) offers investors generous R&D incentives support in a cost-competitive business environment.
3. The Federal Government's [business.gov.au](#) is a great national web-based platform for government, industry and university collaboration. A virtual platform/front door for these collaborations in NSW would be beneficial.
4. The Federal Government's [Innovation Connections](#) supports R&D in growth industries with \$50,000 grants; provided for pre-seed funding R&D programs. Prior to a grant being awarded, the scheme provides a one-on-one facilitator and service report that helps the business to understand their research needs and opportunities to partner with universities.
5. [AusBiotech](#) is a biotechnology and life sciences organisation based out of Melbourne, which attracts large bio medical and pharmaceutical companies to Melbourne.
6. In agriculture R&D, the NSW Government could consider the approach Tasmania has taken, drawing on successful models from the United States. <http://www.cradle-coast.utas.edu.au/tasmanian-institute-of-agricultural-research>. The Tasmanian Institute of Agriculture – TIA – was established in 1997 as a research and development partnership between the Department of Primary Industries, Parks, Water and Environment (DPIPWE) and the University of Tasmania (UTAS). It meets the needs of Tasmanian agriculture through high quality and innovative research, development and extension work. All research by postgraduates of the School of Agricultural Science at UTAS is conducted through TIA.
7. [Oak Ridge National Laboratory in Tennessee](#), USA is the largest US Department of Energy science and energy laboratory and is an excellent example of government investment in cutting edge research technology and infrastructure leading to innovation and industry transformation. Oak Ridge does not have KPIs with the expectation that these facilities need to generate 'X' number of jobs or 'Y' amount of economic activity, however, this still happens organically and is very successful.

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