

NSW Innovation Blueprint – Have Your Say Survey

Respondent details

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Ideas: how can we increase the rate at which new ideas and insights emerge and create new products and businesses?

- [What are the biggest opportunities and barriers in this area?](#)

The biggest opportunity for NSW is to ensure that its R&D strengths are leveraged by industry.

NSW has world-leading research strengths in critical science and technology areas including advanced manufacturing, digital and communications technologies, quantum, robotics and autonomous systems, aerospace and defence, decarbonisation and energy transition, the circular economy and medical technologies (Source: *Shaping the future of NSW in science and technology – 20-Year R&D Roadmap*). NSW universities are highly ranked on a global scale and make substantial contributions to both research and the delivery of technology-skilled graduates. The presence of Federally supported research organisations in NSW also contributes significantly to NSW's R&D capability (e.g., the Commonwealth Scientific and Industrial Research Organisation, Australia's Nuclear Science and Technology Organisation and the Defence Science and Technology Group) (Source: *Turning ideas into jobs: Accelerating R&D in NSW*).

In view of these strengths, NSW could do more to translate research into new commercially viable technologies, products and services. For example, the NSW Innovation and Productivity Scorecard (2022) identified university-industry collaboration as a significant opportunity, noting that doubling our 2020 rate of collaboration could see a productivity increase worth up to \$150 million per year for NSW. It is crucial for Government to provide a stable policy environment in NSW that is conducive to long-term investment decisions by key actors in the R&D ecosystem. Government must recognise, as is hoped for in the Innovation Blueprint, that it has a critical role in bringing sectors together and articulating clear and long-term policy intent to supercharge the innovative process of transforming ideas into tangible outputs such as jobs, new businesses, products and services.

To leverage NSW's R&D strengths, the NSW Government should focus its efforts on delivering stable and coherent policy that builds on previous policy work in NSW, is clear on intent, long-term and influential at both the state and federal level. An example is the innovation policy work led by the NSW Chief Scientist and Engineer in 2021-2022.

- [What should the NSW Government focus its efforts on?](#)

- Leverage NSW's competitive advantages and incentivising collaboration

Collaboration between industry and universities should be stronger and more productive and would benefit from a more systematic approach. For example, NSW has a competitive advantage in quantum research and technology that should be supported and maintained. The Sydney Quantum Academy is a compelling example of four universities and Government co-investing to create internationally significant expertise in NSW and attracting industry investment.

- Support research infrastructure and innovation precincts

Innovation ecosystems, when appropriately supported, become dense hubs of economic activity where innovation, entrepreneurship, creativity and placemaking become greater than the sum of

its parts (Source: NSW Innovation and Productivity Council, *NSW Innovation Precincts: Lessons from international experience*).

The UTS Vault is an example of hard infrastructure leveraging the soft infrastructure offered by the Tech Central innovation precinct. It is a unique purpose-built secure research and innovation facility at the heart of Tech Central established with a multi-million-dollar grant from the NSW Government. Facilities such as these are generally inaccessible for startups, new market entrants, SMEs and local companies due to the scale of capital required to establish them. The UTS Vault addresses this deficiency and will support the incubation and growth of national security, resilience and sustainability industry and research initiatives.

- Support education, training and upskilling.

There are cohorts of businesses in NSW (primarily manufacturing SMEs) who need to upskill their workforce to deliver significant productivity gains but do not have the money to spend on training. Some universities, like UTS, run programs to fill this gap (e.g. SME@UTS) with government support.

The New Education and Training Model (NETM) and the Institutes of Applied Technology (IAT) are also examples of government investment allowing innovation in education and training delivery models directly targeting industry needs.

- **Who should the NSW Government partner with?**

The NSW Government should partner with universities and other idea-generating organisations (e.g. startups and scale ups) to stimulate the innovation ecosystem.

Universities play a critical role in the generation of new ideas and insights and in contributing to the creation of economic, environmental and societal value for the state.

Universities such as UTS have strong, existing relationships with industry. UTS is the state's leading university for Cooperative Research Centre (CRC) research activity over the last four years and was one of the most engaged Australian universities in the Australian Government Innovation Connections program prior to its winding up in May 2023.

We are also mindful that we are preparing students for the workforce of the future and our industry engagement covers the entire spectrum of the learning experience. UTS embeds industry engagement in the development of our curriculum; industry practitioners teach and assess our students; 'real-world' industry-driven problems form a core part of our curriculum; we work with industry partners to develop short courses and microcredentials; and we have industry advisory boards overseeing and guiding the work of many of our faculties.

The NSW Government has recognised the importance of partnering with universities in the *NSW Higher Education Strategy 2021-2025* but there is more that can be done, and this strategy is conveniently due for a refresh.

- **Which initiative should the NSW Government do first?**

There are more than 870,000 small to medium businesses in NSW. While they are the powerhouse of the NSW economy, only a fraction engage with idea generators such as universities and research organisations thus undermining the speed of innovation and productivity uplift in NSW. This must change.

UTS recommends the NSW Government, led by the Office of the NSW Chief Scientist and Engineer, prioritise a stocktake of all government funded R&D programs to identify and validate which would be of most benefit and address gaps in supporting the whole business innovation ecosystem (startups, scale ups and SMEs).

In the context of this audit, the following initiatives should be considered:

- Introduction of Work Integrated Learning Vouchers (similar to TechVouchers) to fund NSW businesses to employ university students on short term projects to drive innovation. For the business, it is low cost, low risk and gives them access to an untapped source of skilled emerging entrepreneurial talent. For the universities and students, it creates a network of potential employers for students as they progress through their studies.
- Dedicated Innovation Facilitators to connect business with the NSW tertiary education and research sector, potentially located within the Boosting Business Innovation Program (now known as Boost). At present, Boost is modelled as ‘an indirect human intervention program’ and this shift in its model would add a personal connection to develop understanding and trust between business and the research community.

A key driver to the success of many NSW Government R&D programs is the central, coordinating role of the Office of the NSW Chief Scientist and Engineer in designing and delivering these programs and this should be continued.

Investment: how can we increase the amount and diversity of finance available to startups and scaleups?

- **What are the biggest opportunities and barriers in this area?**

Government should resist imposing austerity measures that cut public funding to R&D and lean into its role as a major funder of R&D. The economic benefits to gross domestic product are well known, but they also spillover into social and environmental areas (Source: Productivity Commission *Public Support for Science and Innovation*).

In a tight-fiscal environment where both government and investor funding are scarce, the biggest opportunity for NSW is to leverage its intellectual capital (e.g. NSW’s tertiary education system, R&D infrastructure and innovation precincts) and co-invest to attract investment and co-creation and in turn increase the amount and diversity of finance available to startups and scaleups.

However, even with the existing NSW programs (e.g. Biosciences Fund, the Physical Sciences Fund, the Small Business Innovation and Research Program and the Deep Tech Commercialisation Training Program) there is simply not enough investment funding available in NSW to support early-stage, low Technology Readiness Levels which is not attractive to venture capitalists given it is still high risk.

Other barriers were identified in recent survey data from Startup Muster 2023 (<https://www.startupmuster.com/>) which aims to measure and publish the progress, challenges and opportunities within the Australian startup ecosystem in order to demonstrate and accelerate progress. The sample size included more than 1000 respondents (585 founders and 322 supporters), key barriers identified included fundraising/equity-based capital raising (30%), customer acquisition (9%), talent (8%), finance/lending (8%) and product development (6%), with a staggering 24% of startups contemplating leaving Australia because of better market opportunities, access to capital and lack of local support. There is a role for Government in working with businesses to understand how it can remove these barriers.

- **What should the NSW Government focus its efforts on?**

The NSW Government should focus efforts on securing a greater proportion of Australian R&D funding for the whole of the NSW innovation ecosystem e.g. the Industry Growth Program is intended to be the SME pipeline into the National Reconstruction Fund. Other opportunities lie with Australia’s Economic Accelerator and Cooperative Research Centres.

For example, all eastern state governments provide some form of co-funding support to leverage the National Collaborative Research Infrastructure Strategy (NCRIS). While NCRIS itself does not call for state government co-funding the existence of state funding does strengthen these bids. Both Victoria and Queensland do this very effectively in giving a competitive advantage to their local universities and there is evidence to show that this strategy effectively drives funding towards those states. For example, in an analysis prepared by the NSW Vice-Chancellors' Committee in 2019, NSW spend on university R&D has been the largest of all states since 2015 however when corrected for population it has lagged that of Victoria, in recent times by around 10%.

The NSW Government must leverage its intellectual capital – innovation precincts, its world-class research and education system and industry strengths – and lead by example in co-investing and leveraging its strengths.

The success of innovation precincts and their potential as incubators for startups and scaleups is well known to the NSW Government (Source: *NSW Innovation Precincts: Lessons from international experience*). UTS is located at the heart of the TechCentral innovation precinct and a critical anchor tenant. Over the last decade we have committed significant capital and operational investment into R&D and state-of-the-art equipment on campus, in recognition that one of the identified deficiencies in Australian industry structure is the underpinning technology infrastructure. Examples of this include UTS's Vault, ProtoSpace, Data Arena and UTS TechLab. The scale of these facilities is beyond the capacity of businesses to fund alone or even in partnership, but when provided by the university/government sectors, allows business of all sizes to engage in critical technologies, physical prototyping, high-end data analysis and virtual manufacturing.

The NSW Government should concentrate its efforts in curating these innovation precincts to attract investment in innovation. Aiming for greater coherence and critical mass will pay dividends for NSW.

- **Who should the NSW Government partner with?**

Key actors for collaborative partnerships to unlock further investment include:

- Universities and research organisations, as well as their incubators and accelerators;
- Business NSW and other business networks in NSW;
- Australian Government (particularly noting the examples set by the UK Catapult Network, the German Fraunhofer platform and US National Science Foundation Engines);
- Venture Capital firms; and
- The Startup ecosystem.

- **Which initiative should the NSW Government do first?**

The NSW Government should prioritise securing a greater proportion of Australian Government R&D funding. To supplement that effort, there are some no / low-cost initiatives that government can consider and UTS invites further consultation with our practitioners in the entrepreneurial space (e.g. UTS Startups), SMEs (e.g. SME@UTS) and big industry (UTS TechLab) to gain a better understanding of the context in which these entities operate.

Based on UTS engagement with these groups, initiatives to consider include:

- Raising awareness and utilisation of the R&D Tax Incentive by new startups. Currently only 13% of Australian startups have used this grant, and only 8% are planning to, but a far larger proportion should be eligible (Source: UTS Startups).
- Creating a new fund to support research translation and commercialisation outcomes across key industry sectors/technologies. It should be structured so it catalyses significant investment from other industry, university and government sources and should aim to drive the triple bottom line of social, environmental and economic indicators over a 10-year timeframe. Multi-year funding agreements should be offered to provide business certainty.
- Leverage NSW Government procurement processes to increase opportunities for startups, including increasing visibility of upcoming NSW procurement opportunities to communities of

startups and encouraging larger procurement processes to be broken into smaller ones suitable for startups.

As a useful comparison, the Breakthrough Victoria Fund has been noted for its investments into Victorian universities' ideas and innovations. The NSW Government could consider the development of a similar fund, learning from the experiences of the Victorian model as well as the challenges that have faced the National Reconstruction Fund. Once funds are secured, the NSW Government could review (with a panel of investment experts) projects that were submitted (both successful and unsuccessful) under the Australia's Economic Accelerator program as well as other university portfolios of IP, licenses and start-ups.

However, UTS cautions against any incentive that results in the premature establishment of fledgling companies before they are ready to 'leave the nest'. It may be more appropriate for some NSW university ideas and technologies to be licensed directly into existing NSW businesses without the requirement for start-up companies to be established.

Industrialisation: how can we increase the volume and impact of highly novel innovation outputs being generated by NSW businesses?

- **What are the biggest opportunities and barriers in this area?**

As mentioned above, NSW has world-leading research strengths in critical science and technology and our universities are highly ranked on a global scale, making substantial contributions to both research and the delivery of technology-skilled graduates.

However, Australia's economic complexity has continued to degrade. As pointed out by the IMF, as other advanced economies swiftly escalate their investments in R&D to avoid being outcompeted for new jobs, industries and income sources, Australia's overall expenditure in R&D has plummeted to a 17-year low and this is especially pronounced in the business sector (Source: IMF Country Reports: Australia 2021 <https://www.imf.org/en/Publications/CR/Issues/2021/12/02/Australia-Selected-Issues-510757>).

The situation in NSW is no different, and an analysis by the University of Sydney and University of NSW shows that government intervention (constituting funding, sharing technical risk, resources and policy) is essential to bridging the gap particularly in the nascent stage involving university intellectual property (paper available upon request). For UTS, one of the most important and effective approaches to connecting industry and our research has been through the use of physical infrastructure (UTS Vault, Tech Lab, ProtoSpace etc) and embedding our students in industry placements.

- **What should the NSW Government focus its efforts on?**

The NSW Government must focus on the structural transformation (i.e. primarily through stable government policy making) required for significant growth of the R&D system, supported by increasing Australia's total investment in R&D. This approach has been the subject of much discussion, most recently at the Federal level with respect to the Australian Universities Accord process.

To increase the adoption of NSW grown ideas and innovations, the NSW Government could build on the many pilot programs that it has supported in recent years. Additionally, act as an exemplar by helping to actively scale them up, by helping them grow into businesses or help find existing businesses to licence into and to actively procure these goods and services.

For example, Western Sydney University, UTS, Department of Planning and Environment, Sydney Park Olympic Authority, Sydney Water, Monash University, ARCS Group, Centratch Systems and Hydrology and Risk Consulting received funding through the NSW Government's Digital Restart Fund to establish [SIMPACT](#) (Smart Irrigation Management for Cool Parks and Towns) to deliver

new digital tools to improve irrigation for Olympic Park's Bicentennial Park. The project has successfully set up over 50 devices to measure temperature and humidity, 13 weather stations and over 200 'smart-soil' devices installed across the park using AI to predict when and for how long different sections of the park need to be watered. The system will work with recycled water and uses the soil moisture outcomes to learn over time the most efficient irrigation regime. The program could be further rolled out across Sydney parklands and be commercialised.

- **Who should the NSW Government partner with?**

The NSW Government should first strengthen horizontal linkages across NSW Departments and universities (as public institutions established under state law) to understand its own policy levers (funding, organisations and priorities) before attempting to identify focus sectors around which it would be expected to deploy those policy levers. For example, the objectives around energy transition and economic diversification, including in the regional areas, will only be achieved through collaborative government leadership. Thereafter, success hinges on our universities', industries' and governments' ability to work in concert to develop, grow and apply productive knowledge in more complex industry settings.

- **Which initiative should the NSW Government do first?**

As proposed by the discussion paper, the NSW Government should follow through with the development of a dedicated Industry Policy to support the Innovation Blueprint.

Many of the barriers between industry and universities can be linked to a lack of awareness of university capabilities. We know that NSW universities and research organisations are ready and eager to engage with NSW businesses and industry and vice versa. Clearly, there is a gap between the sectors that needs to be bridged to make it easier to engage and connect with us, a role that could be bridged by government.

The NSW Government should work with universities and research organisations (facilitated by the Office of the NSW Chief Scientist and Engineer) to assist with active promotion of our capabilities through a range of activities including:

- Business-university breakfasts and other networking events organised by NSW Government departments and agencies with key client groups, industry associations and stakeholders and researchers.
- Use the [Hubs and Networks](#) that the NSW Government has established as better and broader conduits for engagement with business and industry. While these Hubs and Networks are undertaking excellent engagement activities, in many cases due to the way they have been structured the opportunities for broader engagement are limited to founding organisations/members.
- Realising the opportunity of an ecosystem-based approach by linking innovation capabilities and key innovation and industrial infrastructure. The forthcoming RNA Research and Pilot Manufacturing Facility is an example of this approach, a second being the NSW Government's commitment to the Advanced Manufacturing Research Facility which is expected to establish a network of manufacturing capability hubs in the areas of NSW's actual manufacturing concentration across NSW.

Internationalism: how can we increase the number of innovating businesses selling locally developed products into global markets?

- **What are the biggest opportunities and barriers in this area?**

It is well documented that the world's economy is transforming into a knowledge-based economy that is digitally enabled and centred in Asia. The opportunity for NSW is to leverage its strong, existing trade relationships with Asia (particularly Japan, China, Republic of Korea and Taiwan), the United States and ASEAN members to combat a weakening domestic economy that is over reliant on coal exports. NSW is also well positioned to be promoted internationally as a world-leading knowledge economy given its comparative strengths in R&D, knowledge economy workers and being the home to seven of the world's Top 500 universities. (QS World University Rankings 2024). In return, NSW will attract investment, global talent and key business partners.

The barriers to increasing the number of innovating businesses selling locally developed products into global markets have been well-articulated in the NSW Trade Statement 2021 *Locally Invested, Globally Connected* and include:

- lack of international leads or contacts
- uncertain of how to start exploring international expansion
- required information on how to operate in different markets
- unsure of the international demand for their product, service, or technology
- dissuaded by the higher costs associated with exporting
- feel too small to compete and succeed overseas

In addition to the above, innovating businesses need support to understand and navigate complex border mechanisms designed to encourage the transition to net zero (such as Europe's Carbon Border Adjustment Mechanism) by decarbonising supply chains.

- **What should the NSW Government focus its efforts on?**

NSW's trade strategy is due for a refresh and it would be appropriate to incorporate feedback from this consultation on the Innovation Blueprint into that review to ensure cohesion between the various policy instruments under development (e.g. the Higher Education Strategy and the Industry Strategy).

As a starting point for the trade strategy, the NSW Trade Statement 2021 diagnosed areas of improvement that are appropriate for exploration:

- Facilitate new export growth opportunities
- Help SME's to compete internationally
- Promote NSW as a world-leading knowledge economy
- Harness NSW's competitive advantages
- Strengthen international partnerships at all levels.

In addition to those areas, the NSW Government could consider working closer with the Australian Government (e.g. Austrade) on trade missions and leveraging Australia's alumni network to strengthen our connections around the globe for our local businesses.

- **Who should the NSW Government partner with?**

The NSW Government should reserve partnerships for high-level trading partners, the Australian Government and key actors in the innovation ecosystem such as universities. The NSW Government should facilitate relationships with:

- The local diplomatic network
- SMEs
- Trade delegations

- **Which initiative should the NSW Government do first?**

A relatively quick win could be securing NSW hosting rights for leading international conferences, facilitated by BESydney.

Another, more complex initiative that will take time to develop is NSW's position on attracting foreign direct investment (FDI). Ideally, this kind of policy should be coordinated centrally by the Australian Government but that has not been the case since the abolition of Invest Australia in 2007. Both Victoria and Queensland have leaned into the policy vacuum and for NSW it should contemplate a knowledge-based FDI attraction policy to differentiate itself (i.e. focus on innovation precincts, not just mining and property investments).

NSW Government also welcomes your thoughts on the following questions:

- **What are the key indicators of NSW innovation performance to include in the Innovation Blueprint?**

The work of the former Greater Cities Commission and the NSW Innovation and Productivity Council in this area are worth reviewing being relatively contemporary and distinctive to NSW's particular context.

Initial suggestions on key indicators include:

- Number and growth rate of university spin-outs, startups and scaleups.
- Investment raised by university spin-outs (both locally and internationally).
- Jobs created by university spin-outs and startups.
- Collaboration rates between universities and SMEs.

- **What overall role should the NSW Government play in connecting the innovation ecosystem?**

A key theme of this submission has been the call for a more joined up system and improved connectivity with the Australian Government, a role that only the NSW Government can play.

Specifically, the NSW Government should:

- Focus on providing strong foundations: vision-setting, long-term planning and prioritisation (20-Year Roadmap etc); human capital pipeline and attraction; R&D infrastructure (both hard and soft); strong R&D investment; innovation precincts, transport and mobility.
- Provide catalytic co-investment funding to stimulate research commercialisation.
- Foster university-industry collaboration through innovation precincts and infrastructure.
- Convene cross-sector stakeholder groups to co-design policies and programs.
- Promote NSW's research and innovation capabilities to attract international investment.
- Develop resources to connect businesses with university research capabilities.
- Exempt company stamp duty for startups to encourage registration in NSW, perhaps using ESIC as the eligibility framework. This would stop startups registering businesses in other states to avoid stamp duty, and the total cost would be offset by the uplift in payroll tax.
- Protect NSW's international education sector for the social and economic benefits it brings to our communities in terms of new perspectives, knowledge and skills (Source: Committee for Sydney *High Achievers: A plan for unleashing the huge potential of Sydney's universities*). Revenue from international education also directly and indirectly helps to offset the research funding shortfall left by declining government expenditure in R&D (Source: Australian Universities Accord Final Report).

- **Where are the opportunities for the NSW Government to work with the Australian Government on innovation initiatives?**

Australia's productivity slowdown is well documented and boosting our innovation ecosystem is one of the keys to turning that around (Productivity Commission, *5-year Productivity Inquiry: Innovation for the 98%*). However, despite many recommendations encouraging state-federal coordination, there is little transparency regarding progress on this front.

One complex area that the NSW Government could work with the Australian Government on is a regulatory framework that enables investment by Australia's superannuation system in university

R&D, with a particular focus on accelerating the development and deployment of world-leading net zero and circular economy technologies, at speed and scale. According to a recent analysis undertaken by the UTS Institute of Sustainable Futures, there is a \$1 trillion opportunity to align science and superannuation (*Submission on the Australian Government's Sustainable Finance Strategy, 2023*). For NSW, this opportunity represents a significant and much needed funding source for its key idea generators such as universities and research organisations.

To encourage a more joined-up national ecosystem, NSW could advocate for the Australian Government to re-establish a dedicated Ministerial Council focussed on improving productivity through innovation and industry transformation.

At a minimum, the Ministerial Council could undertake regular foresighting exercises on missions, challenges and areas of current and potential competitive advantage.

It could also:

- Align State and Federal research support schemes, such as the Australian Economic Accelerator, NCRIS and the National Reconstruction Fund.
- Facilitate partnerships between the Australian Government and the states on joint research infrastructure investments.
- Coordinate development of research and industry precincts across jurisdictions.
- Support the progress of the Buy Australian Plan.

- [Is there anything else you would like to tell us?](#)

The University of Technology Sydney (UTS) thanks Investment NSW for leading consultation on the Innovation Blueprint and looks forward to further engagement on the design and delivery of the policy.

As a final note, UTS is keen to see in the Innovation Blueprint:

- A commitment to a partnership and co-design approach to the Innovation Blueprint.
- Recognition that early-stage research commercialisation funding requires significant investment for long-term ROI.
- Recognition that the university sector, via the NSW Vice-Chancellors' Committee, is eager to contribute research excellence, industry engagement, innovation precincts, entrepreneurship, and global partnerships.
- The opportunity to establish NSW as a global innovation leader.
- Recognition of the significant investment made by NSW universities (approximately \$4.5 billion in 2020 (Source: Australian Department of Education) in the innovation ecosystem and a commitment from government to coinvest in aligned opportunities.