

The University of Sydney, Submission to the NSW Innovation Blueprint survey, April 2024

Topic 1: 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?

Building the foundation of a strong innovation ecosystem is crucial for driving economic growth in NSW. By addressing key challenges and capitalising on significant opportunities, the state can foster an environment that encourages innovation, collaboration, and the creation of high-value jobs.

Opportunities:

- NSW's universities perform strongly in research outputs and IP development. Industry engaging with universities has the benefit of aligning university expertise with industry needs.
- University spinouts and startups have the potential to create high-value jobs in knowledge-intensive industries, which will be critical for NSW's future economic prosperity and resilience. These jobs are often focused on advanced technologies and growth sectors.
- NSW benefits from strong Commonwealth research commercialisation initiatives (such as through the Australian Economic Accelerator) and established State programs, including the NSW Biosciences Fund, Medical Devices Fund, Research Networks, and Waratah Research Network.
- There is strong alignment between NSW's industry and R&D strengths and the Commonwealth's new Industry Growth Program and \$15 billion National Reconstruction Fund (NRF), with potential for NSW-based firms to leverage investment from these and other existing programs.
- Tech Central, the Westmead Health Precinct and the Western Sydney Aerotropolis all present opportunities to create world-class innovation precincts focused on advanced manufacturing, health, agritech, aerospace, defence, and other priority sectors.
- Asia's middle class predicted to reach 3.5 billion people by 2030, providing enormous opportunities for NSW to capitalise on this market for the export of goods, services and the development of mutually beneficial educational and research collaborations.

Challenges:

- Uncertainty in the direction of Commonwealth and State policies relating to critical industry sectors can hinder industry engagement and investment. Businesses require stable, long-term policy frameworks and incentives to confidently plan and ramp up their research and development activities. Frequent policy changes can erode trust in government support and discourage productive collaboration between industry and research partners.
- Compared to global benchmarks, Australian businesses are reluctant to invest in R&D and partner with universities. There is a need for more incentives and support for early engagement between researchers and industry.
- Western Sydney faces challenges related to historical underinvestment and education gaps, which require targeted policies and collaboration to foster an inclusive innovation ecosystem.

Addressing these barriers and capitalising on the significant opportunities will build the foundation of a strong innovation ecosystem and drive economic growth.

What should the NSW Government focus its efforts on?

1. **Building on sound innovation policy work:** Set a target for government investment in R&D and leverage the 20-Year R&D Roadmap and Accelerating R&D in NSW Action Plan to confirm NSW's areas of competitive advantage and inform the government's investment priorities. [The University of Sydney's June 2022 submission to the NSW Industry Policy Green Paper](#)

Consultations highlights the importance of R&D, education, and skills development to NSW's future.

2. **Strengthening human capital development and attraction:** Improve NSW school learning outcomes, especially in STEM, by supporting partnerships between schools and universities. Work with universities and industry to make NSW a destination for top Australian and global research talent in areas of competitive advantage. The University of Sydney is redesigning its undergraduate curriculum to develop 'T-shaped' qualities sought by employers, who have specialised knowledge and skills in a particular area.
3. **Improving NSW's research infrastructure:** Leverage Commonwealth (e.g., NCRIS, NRF), university, and industry investments in areas of competitive advantage. The University of Sydney strongly supports recent NSW research initiatives and strategic investments in R&D infrastructure in priority areas, such as the Sydney Biomedical Accelerator.
4. **Boosting business investment in R&D:** Address Australia's low levels of Business Expenditure on R&D (BERD). Introduce incentives and support for early engagement between researchers including scaling the NSW SBIR program and industry-linked PhD programs. Encourage the Australian Government to consider reintroducing a collaboration premium for the non-refundable R&D tax offset.
5. **Managing employment lands around city universities:** Focus on and support priority sector activities in knowledge-intensive areas near leading city universities. Use available employment land in the Western Parkland City and regional NSW to enable the scaling of R&D SMEs, support advanced manufacturing, and ensure the distribution of jobs.
6. **Investing in Western Sydney:** Support the establishment of new research and education facilities, such as the proposed University of Sydney campus in Parramatta/Westmead, while also investing in the renewal and revitalisation of existing facilities that have the potential to advance key industries in the region. For example, the University of Sydney's Camden Campus, with its focus on Veterinary Science and Agriculture, is well-positioned to support the development of the envisioned Agribusiness Precinct at the Western Sydney Aerotropolis.
7. **Renewing Sydney Quantum Academy funding:** Provide funding to the Sydney Quantum Academy for an additional five years from 2024 to help consolidate Sydney as Australia's leading location for the development of quantum technology capabilities, talent, spinout and startup generation.

Who should the NSW Government partner with?

To build the foundations of a strong innovation ecosystem, the NSW Government should partner with the following stakeholders:

- **Universities:** Universities play a critical role in preparing domestic and international students to meet the economy's needs and should work with the government to expand and innovate tertiary education in response to skills demands. Further, as the primary source of research insights and innovations, universities are critical partners in discovery and translation of new ideas. The NSW Government should work closely with universities to co-design and implement initiatives that support the commercialisation of promising technologies. The government can leverage their deep expertise, networks, and resources to drive innovation and economic growth by partnering with universities as co-investors and collaborators.
- **Industry Partners:** The NSW Government should find ways to increase linkages and movement of people between industry and universities - staff, students and research students. Industries should be broadly defined to include social enterprises and corporatised government agencies.
- **Precincts:** The NSW government should partner with precinct councils on the development of strong and vibrant innovation districts that can concentrate talent and businesses, together with affordable housing, transport and educational opportunities.

- **Federal government:** The NSW Government should partner with the Commonwealth Government to ensure Commonwealth policy and funding for students, research, and research translation is fit-for-purpose.

Which initiative should the NSW Government do first?

The NSW Government should first recommit to and refresh as considered necessary the NSW 20-Year R&D Roadmap to guide investment priorities. This strategic document, developed by the NSW Chief Scientist and Engineer following extensive consultation with industry, universities, and government stakeholders, identifies key areas where NSW has a competitive advantage and sets a long-term vision for research and development in the state.

By updating the Roadmap, the NSW Government can:

- Confirm NSW's areas of strength and opportunity, such as critical minerals, medical and life sciences, defence and aerospace, digital systems and software, clean energy and waste, advanced manufacturing, agriculture, resources, and the visitor economy.
- Align research and innovation efforts across government, industry, and universities to maximise impact and avoid duplication.
- Inform investment decisions for initiatives similar to the \$703.4 million Future Economy Fund announced in the 2022-23 NSW Budget, ensuring that resources are directed towards projects with the greatest potential for economic and societal benefits.
- Foster collaboration and partnerships between universities, industry, and government agencies to accelerate the translation of research into new products, services, and businesses.
- Provide a framework for monitoring progress and assessing the effectiveness of research and innovation investments over time.

Refreshing the NSW 20-Year R&D Roadmap should be the NSW Government's first initiative because it provides a solid foundation for subsequent actions and investments. By setting clear priorities and direction, the Roadmap can help to coordinate efforts across the innovation ecosystem, leverage existing strengths, and drive sustainable economic growth and job creation in NSW.

Once the Roadmap is updated, the government can then focus on implementing specific initiatives aligned with its priorities, such as establishing an NSW Innovation Fund, strengthening human capital development, improving research infrastructure, and attracting innovative international firms to the state.

Topic 2: 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?

Opportunities:

- Attracting significant investment to NSW, both from private sector sources and through the growth of university spinouts. With the right policy settings and support, university research commercialisation can become a major driver of investment in the state.
- Accelerating the growth and success of startups and scaleups by providing access to a diverse range of funding sources. This can help startups and spinouts to scale more quickly, enter new markets, and create high-value jobs in NSW.
- Driving economic growth, job creation, and innovation by supporting the development of a vibrant startup ecosystem in NSW. A well-funded startup ecosystem can contribute significantly to the state's economic growth, as successful startups and scaleups create new industries, drive productivity gains, and generate export opportunities.
- Positioning NSW as a global leader in startup and scaleup investment, attracting international capital and talent to the state. By creating a supportive and well-funded startup ecosystem, NSW can differentiate itself from other states and countries, and become a magnet for international investors and entrepreneurs.

Barriers:

- Lack of early-stage, pre-seed funding for university spinouts and other early-stage startups, hindering their progression from ideation to commercialisation. The "valley of death" funding gap is a significant barrier to the commercialisation of university research and the growth of early-stage startups. Without access to funding to take ideas to proof of concept, many promising technologies and business ideas may never reach the market.
- Limited pool of private sector capital deployed into university research commercialisation, particularly from angel investors and venture capital firms. While NSW has a growing startup ecosystem, the level of private sector investment is still relatively low compared to other leading startup hubs around the world. This lack of private sector capital can make it difficult for startups and spinouts to access the funding they need to grow and scale.
- Fragmented and underdeveloped startup ecosystem, making it challenging for startups to access mentorship, networks, and resources needed to become investment-ready and attract funding. Startups and scaleups require more than just funding to succeed - they also need access to mentorship, expertise, networks, and other resources to help them navigate the challenges of growth and scale. However, the startup ecosystem in NSW is still relatively fragmented and underdeveloped, which can make it difficult for startups to access these critical resources.

What should the NSW Government focus its efforts on?

1. **Recommit to the NSW 20-Year R&D Roadmap:** The NSW Government should first recommit to and refresh the NSW 20-Year R&D Roadmap to guide investment priorities. This strategic document, developed through extensive consultation with industry, universities, and government stakeholders, identifies key areas where NSW has a competitive advantage and sets a long-term vision for research and development in the state. The NSW Government should consider establishing a high-level advisory committee to provide ongoing guidance and support for the implementation of the Roadmap.
2. **Partnership Fund:** Establish an NSW Innovation Fund, modelled on the successful Breakthrough Victoria Fund University Innovation Platform (UIP), to provide critical early-stage funding for university spinouts and startups. By partnering with universities through co-investment, the fund can leverage university expertise and resources to identify and support the most promising technologies and business ideas. This will help bridge the "valley of death" funding gap and accelerate the commercialisation of research.
3. **Grants for angel syndicates:** Unlock latent capital from high-net-worth individuals by offering small grants to angel syndicates, similar to the LaunchVic 'Grants for Victorian HealthTech Angel Networks'. These grants can support the establishment and operation of sector-specific angel syndicates, which provide valuable funding, mentorship, and networks for early-stage startups. By tapping into the expertise and capital of high-net-worth individuals, particularly alumni and industry leaders, the government can catalyse additional private investment into the startup ecosystem.
4. **"Commercialisation release" schemes:** Introduce "commercialisation release" programs to enhance the investment-readiness of university IP by allowing university researchers to backfill their teaching responsibilities and focus on innovation and commercialisation. These schemes can provide targeted support and incentives for researchers to develop and validate their technologies, conduct market research, and engage with industry partners. The [PERIscope Commercialisation Award](#) is a "commercialisation release" program currently being piloted at the University of Sydney, which identifies promising early-stage ventures and accelerates them by 'buying out researcher time' to focus on commercialisation.
5. **Incentivise and subsidise commercial R&D land:** Provide incentives and subsidies for commercial R&D land to enable startups to establish themselves in NSW innovation precincts, particularly in the Eastern Harbour City near top-ranked universities. Proximity to research institutions is crucial for fostering collaboration, knowledge exchange, and access to talent and facilities. By creating affordable and accessible R&D spaces, the government can encourage startups to locate themselves in NSW, tap into the expertise of nearby universities, and contribute to the growth of vibrant innovation precincts.

Who should the NSW Government partner with?

- **Universities:** As key sources of innovative technologies and talent, and partners in establishing early-stage funding mechanisms and sector-specific accelerator programs. Universities are critical partners in driving innovation and commercialisation in NSW. They are the primary sources of the cutting-edge research and technologies that form the basis for many high-potential startups and scaleups. Universities also play a key role in developing the talent pipeline of entrepreneurs, scientists, and engineers that startups and scaleups need to grow and succeed.
- **Industry partners:** To provide mentorship, expertise, and resources to startups and scaleups, and to facilitate their access to markets and customers, industry partners (including large corporates, SMEs, and industry associations) can provide startups and scaleups with valuable mentorship, expertise, and resources to help them navigate the challenges of growth and commercialisation. They can also provide access to markets, customers, and supply chains, which can be critical for startups and scaleups looking to scale and grow.
- **Angel investors, venture capital firms, corporate venture funds, and superannuation funds:** To increase the pool of private sector capital available to startups and scaleups. To build a vibrant and well-funded startup ecosystem, the NSW Government needs to partner with a diverse range of private sector investors. This includes angel investors, who can provide early-stage funding and mentorship to startups; venture capital firms, who can provide larger rounds of funding to support the growth and scaling of startups and can act as potential intermediaries for superannuation funds; corporate venture funds, who can provide strategic investments and partnerships to startups; and superannuation funds, who can provide long-term, patient capital to support the development of the startup ecosystem. By partnering with these different types of investors and providing incentives for them to invest in NSW startups and scaleups, the NSW Government can help to increase the amount and diversity of funding available to support the growth of the startup ecosystem.

Which initiative should the NSW Government do first?

The NSW Government should prioritise the establishment of the co-investment fund with universities to provide early-stage, pre-seed funding for university spinouts and other promising startups. This initiative should be the first priority because:

- It addresses the most critical funding gap in the startup ecosystem, which is the lack of early-stage, pre-seed funding for university spinouts and other early-stage startups. This "valley of death" funding gap is a significant barrier to the commercialisation of university research and the growth of early-stage startups. By providing this critical funding, the NSW Innovation Fund can help to bridge this gap and accelerate the growth of high-potential startups.
- It leverages the expertise and resources of universities, which are currently committing to establishing their own pre-seed investment funds. By partnering with universities to establish the NSW Innovation Fund, the NSW Government can leverage their expertise and resources to identify and support these startups and sends a strong signal to the private market about the technological feasibility and commercial potential of these ventures.
- It can catalyse private sector investment by de-risking early-stage startups and making them more attractive to follow-on investors, such as angel investors and venture capital firms. One of the key challenges for early-stage startups is that they are often seen as too risky for private sector investors. By providing pre-seed funding and support through the NSW Innovation Fund, the NSW Government can help to de-risk these startups and make them more attractive to follow-on investors. This can help to catalyse a larger pool of private sector capital to support the growth of these startups.
- It has the potential to generate significant economic impact, based on the success of similar initiatives like the Breakthrough Victoria University Innovation Platform. The Breakthrough Victoria University Innovation Platform has been highly successful in accelerating the commercialisation of university research and supporting the growth of high-potential startups. By establishing a similar initiative in NSW, the NSW Government can potentially generate significant economic impact, in terms of job creation, innovation, and economic growth.

Topic 3: 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?

Opportunities:

- Optimising innovation precincts and fostering collaboration between universities, industry, and government to enable skills matching, knowledge transfer, and capturing the full R&D value chain.
- Leveraging NSW's strong foundation of world-class universities and research institutions to generate high-potential innovations and drive the creation of new industries, high-skilled jobs, and economic growth. This should include support for service-based innovation outputs and social enterprises that create social and economic returns.
- Capitalising on significant university investments in research infrastructure, such as the Sydney Biomedical Accelerator (SBA), to drive life sciences innovation and industry partnerships.
- Proximity matters for knowledge transfer and industry-partnerships given 50 per cent of biotechnology and pharmacology patents inventors live within a 3 km radius of a research institution and 13 km radius for all other technologies. Taking a more coordinated approach around innovation ecosystem development (particularly university innovation ecosystems) can significantly improve our export economy and knowledge intensive jobs in high-value, high quality products, and services.
- The NSW Government's Net Zero Manufacturing Initiative presents a significant opportunity to increase the volume and impact of highly-novel innovation outputs generated by NSW businesses in the clean technology sector. By offering \$275 million in grants across three key areas - Renewable Manufacturing, Clean Technology Innovation, and Low Carbon Product Manufacturing - the initiative not only bolsters local manufacturing in the renewables and clean-technology industries but also creates secure, long-term jobs that contribute to the state's transition to a net-zero economy.

Challenges:

- Limited early-stage funding and support for commercialisation, particularly at the proof-of-concept stage (the "valley of death"), hindering the translation of university research into marketable products and services.
- Insufficient collaboration and co-location between universities, industry, and government in innovation precincts, limiting the potential for knowledge transfer, skills matching, and capturing the full value of R&D.

What should the NSW Government focus its efforts on?

1. **Recommit to the NSW 20-Year R&D Roadmap:** The NSW Government should first recommit to and refresh the NSW 20-Year R&D Roadmap to guide investment priorities. This strategic document, developed through extensive consultation with industry, universities, and government stakeholders, identifies key areas where NSW has a competitive advantage and sets a long-term vision for research and development in the state. In addition to recommitting to the NSW 20-Year R&D Roadmap, the NSW Government should consider establishing a high-level advisory committee to provide ongoing guidance and support for the implementation of the Roadmap.
2. **Protect economic zones:** Safeguard industrial and economic zones to ensure that cutting-edge research infrastructure and facilities can be built on key economic lands where industry will want to co-locate. This means protecting certain areas against being re-zoned as commercial and housing.

3. **Incentives for university engagement:** Foster university-industry collaboration through incentives for co-investment in research infrastructure, shared innovation precincts, and funding for entrepreneurial training of researchers.
4. **Procurement policies for innovative local technology:** Implement procurement policies that allocate a percentage of government procurement to innovative technology developed in NSW. This will create a demand-pull for local innovation and provide a pathway to market for NSW-based startups and businesses. Using the government's purchasing power to support homegrown technology, this initiative can stimulate the growth of innovative industries and create new jobs in the state.
5. **Recommit to and scale up the NSW government's Small Business Innovation & Research (SBIR) competitive grants program:** The SBIR program - involving participating NSW Small and Medium Sized Enterprises (SMEs) securing grants to develop and implement their proposed solutions to challenges posed by NSW Government agencies - has great potential, however, has been too small. Further, by scaling up this program, there will be more innovative local technology available for NSW Government agencies to pilot at scale and consider procurement (see point 4 above).

Who should the NSW Government partner with?

- **Universities and research institutions:** to facilitate research partnerships, technology transfer, and access to talent for businesses.
- **Industry associations and chambers of commerce:** to understand business needs, co-design support programs, and promote initiatives.
- **Venture capital, angel investors, and other funding bodies:** to coordinate and leverage private sector investment in business-led innovations.
- **Successful innovators and entrepreneurs:** to provide mentorship, guidance, and inspiration to emerging businesses.

Which initiative should the NSW Government do first?

The NSW Government should first recommit to and refresh the NSW 20-Year R&D Roadmap to guide investment priorities. This strategic document, developed through extensive consultation with industry, universities, and government stakeholders, identifies key areas where NSW has a competitive advantage and sets a long-term vision for research and development in the state.

By updating the Roadmap, the NSW Government can:

- Confirm NSW's areas of strength and opportunity, such as medical and life sciences, defence and aerospace, digital systems and software, clean energy and waste, advanced manufacturing, agriculture, resources, and the visitor economy.
- Align research and innovation efforts across government, industry, and universities to maximise impact and avoid duplication.
- Inform investment decisions for initiatives similar to the \$703.4 million Future Economy Fund announced in the 2022-23 NSW Budget, ensuring that resources are directed towards projects with the greatest potential for economic and societal benefits.
- Foster collaboration and partnerships between universities, industry, and government agencies to accelerate the translation of research into new products, services, and businesses.
- Provide a framework for monitoring progress and assessing the effectiveness of research and innovation investments over time.

Refreshing the NSW 20-Year R&D Roadmap should be the NSW Government's first initiative because it provides a solid foundation for subsequent actions and investments. By setting clear priorities and direction, the Roadmap can help to coordinate efforts across the innovation ecosystem, leverage existing strengths, and drive sustainable economic growth and job creation in NSW.

Once the Roadmap is updated, the government can then focus on implementing specific initiatives aligned with its priorities, such as establishing an NSW Innovation Fund, strengthening human capital development, improving research infrastructure, and attracting innovative international firms to the state.

Topic 4: 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?

Opportunities:

- NSW's world-class universities and research capabilities provide a strong pipeline of innovative technologies and talent.
- Diverse international alumni networks of NSW universities provide global connections.
- Highly skilled international alumni returning home after graduating from university, who may be interested in establishing a business or investing in NSW.
- NSW Government's priority markets teams have valuable international networks.

Barriers:

- Lack of early-stage funding and support for commercialisation, making it difficult for research to be translated into products ready for global markets.
- Risk of losing talent and IP to other states and overseas due to more attractive innovation ecosystems interstate and internally.
- Perception that NSW's innovation capabilities are not well promoted or understood in international markets.

What should the NSW Government focus its efforts on?

The NSW Government should focus on:

1. **Knowledge sharing with Priority Markets teams:** Investment NSW's Priority Markets teams are a powerful source of investment attraction in NSW, however their ability to market the state to offshore life science companies may be limited by their knowledge of the state's capabilities. Conversely, NSW universities are increasingly establishing External Engagement teams with deep domain expertise and networks across the university and domestic industry, however, with limited networks with overseas businesses. Strong industry partnerships are especially critical following the state's significant investments in health infrastructure that rely on partnerships, including the Sydney Biomedical Accelerator, mRNA Pilot Manufacturing Facility, and Viral Vector Manufacturing Facility. Establishing quarterly working groups, training events, or other collaboration opportunities between Investment NSW's Priority Markets teams and university External Engagement teams would deliver mutual benefit by improving the Department's investment attraction capabilities and growing the universities' industry networks. Such partnerships could focus on key capabilities within each university, such as the University of Sydney's Advanced Therapeutics and Precision Therapies capabilities, whilst facilitating collaboration between universities to collectively lift the entire NSW innovation ecosystem.
2. **Engaging international alumni at graduation:** NSW Government could also focus on engaging and supporting international alumni to encourage them to build businesses in NSW when they return home. This could involve partnering with universities to identify and engage with international students and alumni, developing a "Stay in Touch with NSW" program to provide regular updates and opportunities, offering targeted incentives and support for international alumni who establish businesses in NSW, collaborating with universities and industry partners to deliver entrepreneurship programs, and leveraging NSW's global network of trade and investment offices to connect alumni with market opportunities in their home countries. By focusing on this valuable source of global talent and connections, the NSW Government can help to build a pipeline of innovative businesses that are well-positioned to sell locally developed products into global markets.

3. **NSW University Capability Showcase:** NSW Government could leverage its convening power and deep expertise in targeted events with ecosystem stakeholders. For example, a flagship event could showcase universities' capabilities with state trade and investment teams, including Priority Markets, Exports, and Trade Commissioners, alongside Austrade. This conference might include presentations around specific themes (e.g. MedTech, Advanced Therapeutics) from research leaders, with booths to facilitate networking and knowledge exchange.

Who should the NSW Government partner with?

- **NSW universities:** critical for research expertise, entrepreneurial talent, international alumni networks and innovation precincts.
- **University external engagement teams:** key conduits for building industry partnerships.
- **International trade commissioners and Austrade:** to facilitate export pathways and promote NSW capabilities offshore.
- **Potential international investors:** to unlock capital for scaling into global markets.

Which initiative should the NSW Government do first?

The NSW Government should prioritise establishing knowledge-sharing initiatives between Investment NSW's Priority Markets teams and university External Engagement teams as a first step in increasing the number of innovative businesses selling locally developed products into global markets. This should be the priority because:

1. **It leverages existing resources and capabilities:** By collaborating more closely, Investment NSW and universities can immediately start sharing knowledge, networks, and insights to better promote NSW's innovation ecosystem overseas, without requiring significant additional investment or resources.
2. **It addresses a key information gap:** The Priority Markets teams have strong international networks and investment attraction capabilities, while university External Engagement teams have deep expertise in NSW's research and innovation strengths. Sharing this knowledge can help to fill important gaps and ensure that NSW is being marketed effectively to international investors and partners.
3. **It supports the success of recent investments:** NSW has made significant investments in health infrastructure, such as the Sydney Biomedical Accelerator, mRNA Pilot Manufacturing Facility, and Viral Vector Manufacturing Facility. Collaborating with universities to identify and attract international industry partners and anchor tenants will be critical to the success of these investments and ensure that they deliver maximum economic and social impact.
4. **It can be implemented quickly and deliver early wins:** Knowledge-sharing initiatives such as quarterly working groups, training events, and joint delegations to international conventions can be established relatively quickly and start delivering benefits in the short term. This can help to build momentum and support for larger-scale initiatives and investments in the future.
5. **It sets the foundation for long-term collaboration:** By establishing regular collaboration and knowledge-sharing between Investment NSW and universities, this initiative can help to build trust, alignment, and shared goals that will support more ambitious partnerships and programs in the future, such as joint investment funds, R&D projects, and global accelerators.

While there are many important initiatives that the NSW Government can pursue to support innovative businesses in accessing global markets, starting with knowledge-sharing between Investment NSW and universities offers a high-impact, low-cost way to make immediate progress and set the stage for long-term success. It can help to ensure that NSW's significant investments in research and innovation are being effectively leveraged to attract international investment, partnerships, and market opportunities, and position the state as a global leader in fields such as advanced therapeutics and precision medicine.

Topic 5: 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?

Key indicators of NSW innovation performance may include:

1. **Engagement between NSW universities and industry:** The level of Category 3 revenue across the university sector indicates collaboration between universities and industry in NSW, Australia, and worldwide.
2. **Business investment in R&D in NSW (NSW BERD) is a strong indicator of business innovation and the state's productivity.**
3. **Level of university pre-seed and proof-of-concept investment.**
4. **Licenses, Options, and Assignments (LOAs) from universities:** According to survey data from the Survey of Commercialisation Outcomes from Public Research (SCOPR) LOAs comprise 70-80 per cent of university commercialisation activities. Between 2017-22, NSW universities generated 1,488 licenses, as reported by SCOPR.
5. **Patent applications and granted patents:** The number of patent applications filed by NSW companies and patents granted (a lag measure of 6-8 years) are indicators of innovation. Plant Breeder's Rights (PBRs) should also be included to capture agricultural research translation.
6. **Relevant Publications:** Number of highly cited research papers published by NSW researchers in critical areas of innovation investment.
7. **Number and growth rate of university spin-out companies:** SCOPR data shows the annual number of spinouts from NSW universities is growing much more slowly than in Victoria (5 per cent vs 34 per cent annual growth since 2017).
8. **Investment raised by university spinouts and startups:** Tracking the total investment raised by university spinouts and the year-on-year growth is an important metric to measure the success and growth of these companies and can be estimated using Pitchbook and Crunchbase.
9. **Jobs created by university spinouts and startups established by their alumni:** University spinouts and startups have the potential to create a significant number of direct jobs in advanced sectors.
10. **Rates of participation in STEM subjects within the NSW Secondary School system and Higher Education:** Raising STEM skills supply through participation in state-based education and universities is critical to retain and grow the pool of talent required for a highly innovative economy.
11. **Data analysis of international HDR students / graduates with in-demand skills:** Tracking the education and career outcomes of international HDR students / graduates with in-demand skills would be indicative of R&D occurrence in NSW.

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

1. **Focus on providing strong foundations for innovation.** Develop a long-term vision and roadmap with investment targets (e.g., 20-Year Roadmap) for the innovation ecosystem, setting clear priorities and goals. The government should engage stakeholders from universities, industry, startups, and the community to co-create a shared vision for NSW's innovation future.
2. **Invest in human capital development and attraction to ensure a strong pipeline of skilled talent.** Work with universities and VET providers to develop curricula that align with industry needs and future skills requirements, and provide scholarships, fellowships, and internship programs to support students and researchers in pursuing innovation-related careers.
3. **Support the development and maintenance of world-class R&D infrastructure, both physical and digital.** Invest in state-of-the-art research facilities, equipment, and technology platforms that are accessible to universities, industry, and startups.
4. **Facilitate the movement of researchers between firms and universities to promote knowledge exchange and collaboration.** Fund secondment and industry fellowship programs that enable researchers to work in firms for short periods to gain commercial experience and

build networks. Support industry sabbaticals for university researchers to immerse themselves in a company's R&D activities and bring back insights to inform teaching and research.

5. **Provide catalytic co-investment funding to stimulate the research commercialisation pipeline.** The proposed NSW Innovation Fund, modelled on the Breakthrough Victoria University Innovation Platform, would leverage university pre-seed investment to accelerate spin-out creation and growth. This "primes the pump" for more private capital.
6. **Foster university-industry collaboration through targeted innovation precincts and shared research infrastructure.** The SBA is a prime example of the government partnering with universities to create an industry-academic precinct. Protecting key economic land and incentivising co-location will further enable these hubs.
7. **Convene cross-sector stakeholder groups to co-design policies and programs that bridge critical gaps in the innovation lifecycle.** Deep engagement between government, universities, industry, investors and entrepreneurs will surface challenges and solutions. A research translation policy working group is a key first step.
8. **Promote NSW's research and innovation capabilities to attract international investment.** Investment NSW's Priority Markets team should work closely with university external engagement teams to showcase NSW's competitive advantages globally and broker commercial partnerships, such as at international events like BIO.
9. **Regularly bring together NSW's innovation community through flagship events and networking programs that spark serendipitous connections and collaborations.** Themed events around priority sectors.
10. **Ensure NSW industry policy and programs enable the State to leverage available Commonwealth funding.**

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

Listed below, are six key opportunities for both governments to work together:

1. **Aligning state and federal research commercialisation support schemes:** The NSW Government should ensure that State-based programs like the proposed NSW Innovation Fund complement and amplify federal initiatives like the Australian Economic Accelerator (AEA), and the National Reconstruction Fund (NRF). Streamlining application processes and evaluation criteria will enable NSW universities and firms to more effectively leverage available Commonwealth funding streams.
2. **Partnering on joint research infrastructure investments:** Collaboration on shared research infrastructure at both the state and national level, such as the Sydney Biomedical Accelerator and the National Collaborative Research Infrastructure Strategy (NCRIS), will enable economies of scale and avoid duplicative efforts. Exploring opportunities for NSW Government co-investment in NCRIS projects will further enhance the state's research capabilities.
3. **Coordinating research and industry precincts across jurisdictions:** Development of precincts like Tech Central and the Westmead Health Precinct provide opportunities to partner with federal agencies like CSIRO and DISR. Joint planning and investment attraction efforts can optimise precinct design, connectivity and competitiveness to deliver both state and national benefits.
4. **Leveraging federal innovation, science and technology priorities:** The NSW Government should align its research and innovation agenda with national manufacturing, defence, space, quantum and other technology priorities. Active participation in federal roadmap development and funding processes will maximise opportunities for NSW.
5. **Scaling entrepreneurship and STEM training programs:** Collaboration on entrepreneurship initiatives like CSIRO's ON Program and the Industry Mentoring Network in STEM (IMNIS) can

expand their reach and impact in NSW. The proposed NSW innovation ecosystem events could be co-branded with relevant federal activities.

6. **Amplifying international research and trade partnerships:** Joint trade missions and business development activities between Investment NSW, Austrade and DFAT can showcase NSW and Australian research and innovation capabilities to international partners and investors. Leveraging the global networks of NSW universities' international student and alumni communities provides further opportunities for co-led engagement.

Regular communication and strategic alignment between NSW and Australian Government agencies responsible for industry, innovation, trade, health and infrastructure – at both the ministerial and departmental level – will be critical to foster a collaborative mindset. The NSW Chief Scientist and Chief Economist should work hand-in-hand with their federal counterparts to identify and act upon partnership opportunities. By demonstrating a united front to research and industry stakeholders, a strong NSW-federal working relationship will boost confidence in and commitment to the national innovation agenda.

Is there anything else you would like to tell us?

Thank you for the opportunity to provide input into the development of the NSW Innovation Blueprint. The University of Sydney is eager to work closely with the NSW Government to realise our shared vision of a thriving innovation ecosystem that delivers social, environmental and economic benefits for the state and the nation.

As we've emphasised throughout our recommendations, a spirit of genuine partnership and co-design should infuse the Blueprint development process and the resulting initiatives. Our experience shows the most impactful programs are those that leverage the unique motivations, expertise and resources of each stakeholder.

We recognise that supporting research commercialisation and entrepreneurship at scale will require a significant financial commitment from government, particularly to bridge the critical early-stage funding gap. However, the return on investment from unlocking our world-class research and talent is immense - as demonstrated by the billions in investment and new industries catalysed by university spinouts to date. With the right policy settings and support, this value creation can grow exponentially.

The University is committed to doing its part by continuing to prioritise research excellence, industry engagement, innovation precincts, student entrepreneurship and global partnerships. We are also keen to explore innovative approaches to IP management, researcher mobility and incentives, and venture creation that could further accelerate translation.

Beyond the crucial research commercialisation agenda, we encourage the government to take a broad view of innovation across the entire education lifecycle. Investing in future-focused STEM education, work-integrated learning, and upskilling opportunities will be critical to develop the workforce that will drive NSW's innovation industries.

There are also ample innovation opportunities in the social sciences, creative industries and Indigenous knowledge domains. Supporting cross-disciplinary collaborations that draw on the state's diverse expertise and experience can spawn novel solutions to complex challenges.

We commend the government's commitment to an evidence-based, consultative approach to innovation policy development. Ongoing investment in robust data collection, analysis and sharing will be critical to track our progress and adapt our approach. Continuing to convene stakeholders via roundtables, working groups, and innovation missions will strengthen our collective capacity and commitment.

The University of Sydney looks forward to being an active partner to government, industry and community as we work together to firmly establish NSW as a global innovation leader. We have a once-in-a-generation opportunity to fortify the foundations of an innovation ecosystem that will underpin the state's prosperity for decades to come.

Ends/