



QUEENSLAND
FUTURES INSTITUTE



QLD POLICY LEADERS' FORUM
BLUE SKY QUEENSLAND
- Bold Ideas for a Bright Future

23 NOVEMBER 2023

QLD Policy Leaders' Forum

BLUE SKY QUEENSLAND - Bold Ideas for a Bright Future

Thursday 23 November 2023

7:30am – 9:00am

Customs House,
399 Queen St, Brisbane

PANELISTS:



DR. LARA HERRERO

Research Leader,
Institute for Glycomics,
Griffith University



**ASSOC PROF.
CARISSA KLEIN**

Deputy Director,
Centre for Biodiversity
& Conservation Science,
The University of Queensland



DR. NADINE OSTERN

Cisco Chair in Trusted Retail,
Queensland University
of Technology



**ASSOC PROF.
CORI STEWART**

Chief Executive Officer,
ARM Hub



**MODERATOR:
PROF CAITLIN BYRNE**

Pro Vice Chancellor (Business),
Griffith University

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Snapshot

The key theme from the 2023 Queensland Futures Institute's Forum – Blue Sky Queensland - Bold Ideas for a Bright Future was the innovative developments being undertaken by the State as we grapple with shifts across research translation, technology development, biodiversity loss and economic diversification.

Summary of Panel Comments

- We will face many challenges in the coming years in developing several areas of the Queensland economy – including around biodiversity loss, research and innovation, technology, and trust, and around the growth of local manufacturing.
- The panel has identified several opportunities to overcome these challenges, promoting collaboration between industry, government and universities across these sectors and policy domains.
- To achieve this, we must foster local ideas and innovation by investing in fundamental research and science education. We must also leverage a nature-positive approach to the economic development of Queensland.
- In the context a rapid technology uptake, we must also develop proactive measures to build trust as businesses leverage technologies across new applications.
- Australia's ranking on economic complexity has fallen by about 50 places compared to other countries in the last 20 years, while almost all Asian Pacific economies have surpassed us. This trend highlights the need to add value onshore as we take advantage of these economic opportunities.
- Given the urgency of the challenges discussed, it is critical to invest in solutions now to mitigate their risks and reduce their impacts in the future.

Moderator Summary

Prof. Caitlin Byrne

- Queensland continues to benefit from strong demographic trends that underscore its appeal as a destination for talented migrants, tourists, students, capital and ideas. For many who come to the state, Queensland continues to represent the opportunity for a brighter future. However, there's no time for complacency. Queensland business leaders, policy-makers and innovators must work better together to boldly advance the role and relevance of science, technology and innovation if the State is to build on successes to date and maximise the opportunities ahead.
- For Griffith University – the topic is a timely topic. Griffith is the product of bold Queensland thinking. Established in 1975 it was designed to be forward-focused; bringing environmental studies, engagement with our Asia Pacific region, and a strong sense of social justice to the higher education landscape in the State.
- More broadly, when it comes to higher education, Queensland benefits from a well-developed, collaborative University sector that collectively demonstrates the value innovative education, invests in novel and collaborative research, and works closely with industry and community - taking up the challenge to problem-solve, commercialise and deliver impactful outcomes across the State.
- The imperative exists for Queensland business, industry and government to work more closely together with a strategic long-term view – across key emerging areas from drug discovery and biodiversity to emerging technologies and robotics while also affirming citizen and consumer trust. Taking bold steps together now will be critical if Queensland is to remain competitive in the fast moving global marketplace and deliver on the aspiration of a brighter future for all over the longer term.
- Our panellists are focused on the future. Each is recognised and awarded as an expert in their respective fields and bring a diversity of disciplinary thought to today's discussion.

Comments from Panel

What are your ideas for a bold future for Queensland? What will the future look like and what must we do to achieve this?



Dr. Lara Herrero

- As a medical doctor with experience in an emergency department, and as a researcher, I have experience in science and technology across health and medicine in Queensland and Australia more broadly.
- Basic science is foundational for all endeavours. However, we are currently falling short in this area, and need to act now to support educational outcomes and foster Queensland's human capital.
- Over the past 20 years, there has been a shift towards funding only translational research. This funding is tied to short timeframes, which is resulting in poor outcomes, as well as disheartened junior scientists who cannot translate research in these short grant periods. We must reprioritise funding for basic research which underpins the translational research to improve these outcomes.
- To achieve this, basic research cannot rely solely on government funding; philanthropy, commercial funding and industry involvement are essential. Additionally, a long-term perspective is needed as this research results in longer-term returns.
- Collaborative agreements are also needed to bridge the gap between researchers, philanthropy, and commercial support. These can only be achieved by strengthening relationships and improving communication between these players.
- There is also a role for teachers to promote STEM and innovation through education, fostering students' ideas which often lead to the best innovations in research.



Assoc Prof. Carissa Klein

- In my field of conservation science, our goal is literally, not metaphorically, blue sky - and achieving this requires the preservation of nature.
- Queensland is the most biodiverse state in Australia with attractions like the Great Barrier Reef, Simpson Desert, and ancient rainforests. Nature clearly plays a crucial role in our wellbeing and economy, but we are experiencing biodiversity loss like we've never ever seen before.
- Globally, biodiversity loss is at unprecedented levels, and Australia ranks second in this alarming trend. Queensland is a global deforestation hotspot due to weak environmental regulations which are leading to land clearing at staggering rates. In addition to our greenhouse gas emissions, these poor environmental practices pose a significant threat to the future of our natural assets like the Great Barrier Reef.
- A new global initiative - the Nature Positive Future initiative - is a glimmer of hope, uniting governments, businesses, and philanthropists to address the urgent need for biodiversity restoration.
- We are in a 'nature debt', where we are destroying nature faster than we can restore it. Nature Positive aims to find creative, short-term solutions and involves collaboration between various sectors to regenerate biodiversity and mitigate this trend.

Comments from Panel

- While the Australian Government supports the initiative and is also proposing legislation and a potential 'nature repair market', there is a significant funding gap which may require a ten-fold increase in current funding to overcome. There is clearly a strong need for collaboration with industry, through private funding, as well as by leveraging knowledge and skills to support this effort.
- However, there is a significant challenge in understanding the business opportunities and developing financial tools and mechanisms to facilitate a rapid transition to nature-positive practices. For example, the flooding around Brisbane River – which has been caused by damage to catchments – requires investment in biodiversity to regenerate catchments to reduce flood risk. There is a clear relationship between the cost of this flooding risk and the potential investment in mitigation measures. Investing proactively, rather than facing the costs of the next flooding event, will not only reduce this risk but also benefit biodiversity upstream and contribute to carbon reduction.
- The Nature Positive movement offers an opportunity for researchers and industry to collaborate on practical, effective, and profitable solutions to issues such as the above example and will drive a significant societal and industry shift to reverse the decline of biodiversity in Queensland and globally.



Dr. Nadine Ostern

- In the trusted retail sector, we are focusing on emerging technologies in both the retail and service sectors. We are now facing a significant challenge is ensuring continued trust in these technology- and data-intensive environments.
- Initially, this might seem less crucial than other sectors like saving oceans or medical research, but technology underpins all our industry sectors and research areas. Technology is pivotal in creating value in personal, work, and societal aspects of our lives.
- Recent events, such as the Optus incident and OpenAI leadership changes are creating challenges around maintaining an optimistic perspective and trust around technology. This is reflected in two trends which are currently playing out in the market, particularly in the retail/service sector.
- Firstly, the adoption of technology by businesses is being imposed on customers but primarily benefiting businesses. An example of this, is the use of a camera/sensor system at check-outs, which are being used for theft detection. Secondly, technology is used with the customer, benefitting both customers and businesses – we see less of those solutions. For instance, self-check outs could also prevent overpayment instead of theft only to benefit the customer as well.
- To unlock the potential of technologies in retail and the service industry more generally, businesses must become 'trust architects', and better design these systems to build trust with customers. In the above example, there is a missed opportunity to create value in built trust, in that the system could have also prevented overpayment (items being scanned twice).
- Businesses must advance beyond the use of technology by itself, by instead thinking about the opportunities this presents to build trust with customers. To become trust architects, businesses must reduce uncertainty and vulnerability for customers, leveraging opportunities to demonstrate that they care for their customers and build confidence in retailers' use of technology.

Comments from Panel



Assoc Prof. Cori Stewart

- My blue sky vision for Queensland is to become a leading manufacturing state, driven by the need to diversify our economy after our mining and resource boom. Creating high-value industries across the state is crucial for addressing the economic challenges we face.
- While we already have some industrial policy settings in place to support this, Australia, and therefore Queensland, ranks lowly among developed nations in manufacturing capability. Despite our skills and research capabilities, the Harvard Economic Index ranks Australia 93rd of 113 countries in terms of our economic complexity. This reflects our dependence on mining exports, which is particularly relevant for the Queensland economy.
- To tackle this, we must focus on diversifying and growing industries, considering workforce needs across the entire value chain. We must leverage new and existing opportunities across sectors, such as in the medical and biomedical industry, and in critical minerals and clean technology. Clean technology creates a significant opportunity given the scale of the energy transition locally, and opportunity to create new export markets – such as through green hydrogen or local manufacturing.
- Strategic policy decisions and investment are essential for the success in these areas – particularly in local manufacturing.
- A challenge we have seen in the past is that the ideas and companies which start locally are quickly attracted overseas to be developed. We need to create an economy which fosters innovation and new ideas which can be realised locally and contribute to Queensland's long-term economic growth.
- The adoption of technology may solve this problem by enabling Queensland businesses to compete globally. However, despite fast consumer adoption of technology, our industries - particularly manufacturing - lag behind. Overcoming this will require supportive policy and regulatory settings as well as collaboration between universities and industry. This will be crucial to ensuring Queensland's industries and workforce are equipped for the rapid adoption of technology needed to support capability development.
- We must urgently match the pace of technology development in addressing this challenge, moving beyond discussion and towards implementation.

The Queensland Government has outlined a 10-year roadmap to Queensland becoming a leader in biomedical industry in the Asia Pacific. What is needed to achieve this target?



Dr. Lara Herrero

- There is strong competition in the Asia Pacific, but we have a strong biomedical industry in Queensland. We can achieve this target not only in the region but globally through strong investment and collaboration across education and industry.
- More broadly, we are unlikely to compete in terms of profit with the commercial and economic strength of the pharmaceuticals industry in the U.S. However, if we reframe the target in terms of health outcomes, we are likely to be at the forefront of this industry within the decade.

Panel Questions

Becoming nature-positive is a significant aspiration. What must businesses do to achieve this?



Assoc Prof. Carissa Klein

- Several centres of excellence and research centres are currently working with industry to determine how businesses can become nature-positive. As a general framework to guide how businesses develop the implementation detail, there are three steps businesses can take. Firstly, they must avoid environmental impacts where possible. Secondly, where they cannot avoid, they must minimise these impacts. Lastly, they can exceed the scope of their own impact, for example, by entering into a nature repair market and buying biodiversity credits.

How can businesses build brand awareness, reputation, and trust to change customers' mindsets around the adoption of technology?



Dr. Nadine Ostern

- Businesses need to change their mindset to acknowledge that trust can become a competitive advantage, rather than being viewed as an afterthought.
- In the current economic climate, supply chain and workforce pressures and the associated costs are hindering businesses' ability to compete. Because of this, trust is becoming increasingly important as these traditional competitive aspects are becoming harder to leverage.
- Technology creates an opportunity to build this trust. But while many businesses believe customers are not ready for adoption, we are seeing customers already showing a willingness to trust new technology developments, as exemplified by widespread use of ChatGPT. This highlights that customer trust for similar technologies can vary across contexts – while people may use certain technologies personally, they may not be comfortable with their use by businesses. For example, customers may share data when online, but not trust retailers when it is being collected in person.
- In this sense, building trust in businesses' application of technology is essential. Given Australia is a moderate follower in technology adoption, there is an opportunity to leverage learnings from other advanced markets, like China, to understand the best applications of each technological development.
- For example, in China, AI is used to create virtual influencers that are indistinguishable from real people. While these specific uses may not adapt well to Australia's consumer culture, these learnings and innovations can nevertheless be leveraged to understand potential opportunities.

Panel Questions

What is your key message about the future of Queensland?



Assoc Prof. Cori Stewart

- We must diversify Queensland's economy – "Let's make it here!"



Dr. Nadine Ostern

- We need to build trust and be aware of the digital world and technological possibilities ahead of us. We must build the foundation for leveraging technology tomorrow, today.



Assoc Prof. Carissa Klein

- Let's make it here, in a sustainable way so that we can protect our biodiversity and achieve a nature-positive state.



Dr. Lara Herrero

- Let's empower our young kids and our junior scientists because they are the ones who will shape the future.
- Basic research is a long-term game – so will require a long-term strategy to support this sector in the coming decades and achieve meaningful research outcomes.

Audience Questions

How can the private sector better support the application and translation of research to achieve commercial outcomes in Queensland?



Dr. Lara Herrero

- Over the past 20 years, there has been a consistent trend in research funding not matching the rate of growth, nor number of PhD graduates.
- The ARC linkage program and the Advance Queensland program are commendable government initiatives, which have created partnerships between the government, universities, and industry.
- There is a continued need for a pipeline from basic research through to translation and application – and this requires a commercial understanding from individuals in academia and vice versa to recognise the commercial potential of research.
- Another critical element is the ability to commercialise research outcomes through patents. Without this protection, it is unlikely that research will attract commercial interest.
- It will remain important to maintain collaboration between academia and industry to achieve this translation and commercialisation.



Assoc Prof. Cori Stewart

- Queensland's medical industry has seen significant successes, such as Sanofi, which have attracted attention due to government support.
- ARM Hub originated from QUT and was established independently for medical translation work – as this was the model that was determined to be required.
- Now, it's more likely that a lab-to-market innovation strategy would get leverage in the technology and science translation space.
- These approaches were considered in the U.S., with the Biden administration selecting a place-based economy and innovation systems approach over a lab-to-market strategy. This focuses on attracting companies and enhancing the investment landscape for research and development translation.
- Queensland has excelled in attracting investments for medical and biotech, establishing itself as a medical powerhouse. While we have seen significant investment in medical/biotech in Australia, technology and science has not benefited from such funding.
- However, there's a lack of industry policy at the federal level, with the National Reconstruction Fund seen more as a fund and loan system than a comprehensive policy. The absence of a cohesive industry policy has created challenges in coordinating and understanding priorities at a deeper level to guide research and translation.
- Overall, while research investment in Australia has declined (with health and biomedical research being relatively better off than other sectors), there will remain a continued need for investment and commercial involvement in research.

Audience Questions

How can we leverage the breadth of Queensland's strategic economy to innovate, particularly around mining?



Assoc Prof. Cori Stewart

- Eventually, our economy will need to completely shift away from mining and we will have a fully diversified economy. We are currently extracting and exporting raw materials, including lithium, without much value addition. To thrive, it's crucial to leverage our strategic advantage and add value to these products onshore.
- Our biodiversity can offer a strategic advantage, and we can also create an opportunity to integrate indigenous knowledge into the economy.
- While critical minerals will gain importance, adding value across all sectors is essential for sustainable growth. Therefore, onshore value creation should also be achieved through manufacturing. This would also leverage the strength of Queensland's manufacturing workforce, which is particularly skilled and innovative across the value chain.
- It is critical to continually work to diversify these areas and deliver this strategic shift towards a broader economy.

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