

Submission by the Regional Universities Network (RUN) to the Inquiry into the Australian Innovation System

Introduction

For Australia to remain a prosperous nation with high standards of health and well-being, it will be important for the Government's policy settings to encourage innovation across diverse industry sectors and geographic locations. Central to this outcome will be:

- a highly educated and adaptable workforce;
- institutions and firms that can generate and exploit knowledge;
- strong networks that connect individuals groups and organisations; and
- the economic and business conditions, and the policy settings that encourage investment and innovation.

Regional universities have a fundamental role to play in innovation, productivity and national development. They drive regional economic, social, cultural and environmental development, and help to unlock human potential of their regions, and thus the nation.

The Regional Universities Network and its universities

The Regional Universities Network (RUN) is a group of six regionally-based universities - CQUniversity, Southern Cross University (SCU), Federation University Australia (FedUni, formerly the University of Ballarat), University of New England (UNE), University of Southern Queensland (USQ), and the University of the Sunshine Coast (USC). All RUN universities are committed to strengthening the development of their regions and the nation.

RUN universities teach more than 100,000 students or 9% of students enrolled in Australia's public universities. They educate 25% of Australia's regional higher education students, 34% of its domestic distance education students, 16% of its lower socio-economic status students and 15% of its Indigenous students. They are comprehensive universities that offer a diverse range of undergraduate and postgraduate coursework programs and research training across a range of disciplines.

All Australian universities undertake research. The research undertaken at RUN universities is regionally embedded and applied, reflecting the distinctive concerns and interests of their regions, but internationally connected.

The importance of regional and rural Australia to the nation

Regional and remote Australia (defined here as ABS statistical areas other than major cities) collectively comprise around 99.8% of the nation's land mass. Thirty four per cent of Australians, or over 7.5 million people, live outside of the major capital city statistical areas. The population of regional Australia is growing, and is expected to rise by a further 26 per cent between 2007 and 2026.

Regional Australia plays a vital role in national prosperity and productivity. It is the leading source of Australia's largest export industries: agriculture, mining and tourism. The Regional Australia Institute (RAI) estimates that regional Australia accounts for around 67% of national earnings¹. The largest employers in regional Australia are the services, health, education and infrastructure sectors. As a very substantial component of the Australian economy, it is clearly in the national interest to maximise regional Australia's contribution to innovation.

Addressing the Terms of Reference

The challenges to Australian industries and jobs posed by increasing global competition in innovation, science, engineering, research and education, with particular reference to:

- (a) the need to attract new investment in innovation to secure high skill, high wage jobs and***

¹ Regional Australia Institute analysis based on ABS data for 2011

industries in Australia, as well as the role of public policy in nurturing a culture of innovation and a healthy innovation ecosystem;

International context

Developments in the global economy, particularly in Asia, present major opportunities and challenges for Australia. Asia's middle class is growing rapidly and is projected to reach 3.2 billion people by 2030². Australia has already reaped enormous benefits from its trade relationships with Asia, with its top three export markets – China, Japan and Korea – accounting for 54% of Australia's exports³.

However, much of this trade has been built upon demand for mineral exports sourced from regional Australia, particularly in iron ore and thermal coal. However, as many commentators have noted, the mining boom is easing, so as China and other emerging nations continue their economic development, demand for more specialised products and services will emerge. Australia must provide high value-added products and services for these markets if it is to continue to achieve high employment rates and be an attractive destination for global investment.

To do this, Australia must have a responsive innovation system characterised by: a highly educated and adaptable workforce; institutions and firms that can generate and exploit knowledge; strong networks that connect individuals, groups and organisations; and the economic and business conditions, and the policy settings that encourage investment and innovation. Public policy and the Government's overall approach to innovation should be focussed on strengthening these key components within Australia, including in regional Australia.

Contribution of regional universities

Universities' education and research functions make them central components of the innovation system. They produce the graduates and postgraduates required to support high skill, knowledge-based jobs and industries, and generate much of the nation's world class research. Universities Australia has estimated that Australia's graduates are worth \$188 billion to the Australian economy annually and that a third of jobs will require a university degree in the coming years.

RUN universities produce graduates across a wide range of disciplines including science, agriculture, engineering, accounting, business, education, finance, health, hospitality management, languages, law, tourism, and, information technology. Most graduates of regional universities stay in regional Australia where they continue to contribute to the ongoing wellbeing of regional Australia.

In 2013, RUN published an independent study on the economic impact of its member universities on their regions. Using very conservative methodology, the study revealed that the main campuses of the RUN universities contributed \$2.1 billion in GDP in 2011, \$1.2 billion in household income, and more than 14,000 full-time equivalent jobs to the Australian economy⁴. It found that the universities contributed to the diversification of their economies by virtue of being a major employer (in some cases, the largest employer) and by attracting international students.

However, universities' contributions to innovation are diverse and complex. They play an important role in promoting competitiveness. A tool developed by the RAI called InSight, which is modelled on the World Economic Forum's Global Competitiveness Report, tracks the competitiveness of Australia's 560 Local Government Areas (LGAs). It takes account of each area's performance against ten themes (such as infrastructure and essential services, economic fundamentals, human capital, innovation, and market size) and 59 indicators. As might be expected, the LGAs that host the major campuses of RUN universities perform relatively well, particularly in relation to access to tertiary education, innovation and human capital. These outcomes are achieved despite the fact that higher education attainment rates in regional Australia are only half those of the capital cities.

More broadly, regional universities play a key role in underpinning the complex inter-play of social, cultural and environmental factors that contribute to prosperity and the liveability of their communities. In order to

² Cited in Department of Industry, Innovation System Report, 2013, page 21.

³ DFAT Australia's trade in goods and services 2013. <http://dfat.gov.au/publications/tgs/index.html> Accessed 8 July 2014

⁴ RUN Economic Impact Study (2012) http://www.run.edu.au/resources/Economic_Impact_Study.pdf

acquire a better understanding of the contributions of RUN universities to their regions, RUN commissioned a second study, *Engaging with regions, building a stronger nation*⁵ which was published in 2013. This report examined the contributions of regional universities to their regions across eight dimensions including:

- Enhancing regional infrastructure
- Human capital development processes
- Business development processes
- Interactive learning and social capital development processes
- Community development processes
- Cultural development
- Promoting engagement within the university.

Examples have been drawn from this study to illustrate how RUN universities are providing intellectual leadership and helping to make their communities and the nation more prosperous and liveable are presented in the following sections.

(b) the Australian Government's approach to innovation, especially with respect to the funding of education and research, the allocation of investment in industries, and the maintenance of capabilities across the economy; and

(e) current policies, funding and procedures of Australia's publicly-funded research agencies, universities, and other actors in the innovation system;

RUN considers that the Government should focus on strengthening the key components of a successful innovation system, namely the building of a highly educated and adaptable workforce; institutions and firms that can generate and exploit knowledge; strong networks that connect individuals, groups and organisations; and the appropriate economic and business conditions and policy settings. In particular, this focus needs to ensure that regional Australia's capacity to innovate is encouraged..

Policy settings – teaching and learning

The introduction of the demand driven education system is an example of a policy initiative that is raising educational attainment and human capital, particularly among students from low SES, and rural and remote, and Indigenous backgrounds. Students from these backgrounds have traditionally been under-represented at university. Regional universities have relatively high proportion of students from these groups. The demand driven student system provides universities with greater flexibility to respond to skills shortages and workforce needs and to build capacity in key industries of regional or national significance. Over time, the innovative capacity of regional Australia is expected to increase in line with improved educational attainment levels.

Examples of several academic programs to meet regional skill needs drawn from the report *Engaging with regions, building a stronger nation* are provided below:

CQUniversity has been partnering with industry peak bodies and individual companies to provide rapid, innovative and tailored solutions for addressing skill shortages in the resources and related sectors. This includes: geoscience; mine technology; mine operations management; project management; and, engineering.

UNE has recently renewed its agriculture and animal science programs, in close consultation with relevant industry sectors. Contrary to national sector trends, the programs have been attracting annual growth of 20 per cent in student demand over the last four years.

⁵ RUN (2013), *Engaging with regions, building a stronger nation* http://www.run.edu.au/resources/RUN_regional_impact_study_vol_1.pdf

RUN universities have also expanded their academic offerings to address the significant shortages of allied health professionals in regional and rural Australia. **CQU**, for example, has introduced a suite of new allied health programs, including oral health, radiography, speech pathology and sonography. **USC** has introduced new programs in nutrition and dietetics, occupational therapy, counselling and health promotion. **SCU** has introduced an Associated Degree of Allied Health, as a pathway to its expanded range of allied health degrees, and **UNE** has introduced Australia's first pharmacy course available in distance mode to students living in rural areas.

Universities also offer pathway and enabling programs to enhance the prospects of students who are less well prepared for university life. The range of these offerings is expected to increase as a result of recent policy developments.

Independently of specific Government initiatives, individual universities have adopted strategies to foster specific skills and attributes such as entrepreneurship. The following case study is an approach adopted by USC:

USC – entrepreneurship and enterprise. To help stimulate regional innovative capacity, USC has introduced entrepreneurship as a theme across its academic programs. All USC undergraduate students are required to study two of three available 'core courses', including 'Innovation, Creativity and Entrepreneurship'. In addition, all undergraduate students have the option of taking a four course minor in entrepreneurship as part of their degree, particularly those who are interested in developing their own business idea from a concept to reality.

Through its annual Business Enterprise Day, delivered in partnership with the Business Educator's Association of Queensland, USC also encourages hundreds of high school students to continue studying business at school and to consider a career in business. The students participate in workshops hosted by over 30 local business people.

Policy settings - research

Government policy settings have enabled regional universities to build their research and research training capabilities, particularly in niche areas of research strength that address regional issues of national and global significance. The Excellence in Research Australia (ERA) initiative has demonstrated that the quality of research undertaken at RUN universities. In the 2012 assessment we achieved particularly high ratings (well above and above world standard) in mathematics, earth sciences and geochemistry, agriculture and forestry, and other medical and health sciences, and we are continuing to grow our research in fields of strategic importance to regional Australia.

Several examples of RUN research are provided below:

Federation University's Centre for eCommerce and Communications (CeCC) conducts research and consultancies that enhance regional connections and partnerships through the application of ICT. The CeCC is emerging as a leader in digital futures, eResearch, knowledge management and web based GIS and spatial mapping. CeCC research projects include Visualising Victoria's Groundwater (VVG), Digital Enterprise, Sport and Recreation Spatial, Barwon South West State Fire Management Planning Support, and Australia's Community Legal Sector.

The VVG project, for example, adapted new technologies to capture, aggregate and spatially depict Victoria's groundwater systems for public access via intuitive web portals. It has not only empowered local water managers and farmers to sustainably manage water use but has led to international partnering and an invitation to participate in the development and trialling of international standards for groundwater transfer management.

The UNE Smart Farm is a demonstration site developed by UNE of regional, national and international significance. The site is a 7,000 acre commercial farm that is linked to the national broadband network and showcases cutting edge on-site technologies aimed at: improving farm productivity and environmental sustainability through more efficient land and water use; enhancing safety; and, providing social/business support networks for Australian farmers and their families.

In addition, the **Agricultural Business Research Institute** (ABRI) at UNE is world leader in agricultural information systems and provides a wide range of agribusiness information services including comprehensive breed register software that meets the needs of modern livestock producers in the New England region, nationally and internationally. With over 35 million animals recorded on the database, covering eight different animal species, the register is used by 80 breed organisations world-wide.

USQ's Institute for Resilient Regions helps equip regions and their communities to adapt successfully to change, develop strong and effective leadership, prosper through sustainable business and development, maintain good health and well-being and exploit technology and infrastructure. The Institute's applied research programs work to support regional resilience, enabling a regional Australia better able to innovate, collaborate, prosper and define positive futures.

SCU's Special Research Centre in Plant Science brings together leading expertise in the fields of plant genetics, phyto-chemistry and ethno-pharmacology to investigate and improve existing crops as well as developing new useful medicinal and food plants and high value food products.

The Collaborative Research Networks (CRN) program is an initiative that is building links between RUN (and other less research intensive institutions) with more research-intensive universities. The program is delivering a wide range of beneficial outcomes including attracting outstanding researchers (PhD students, early career and senior researchers); enhancing the profile of research within RUN universities; increasing research funding and publications output; and ongoing research partnerships which will help sustain research efforts in the medium term.

Funding for the CRN program is due to expire and the program is currently being evaluated. RUN universities consider that it has achieved notable benefits for a very modest outlay and strongly urges the Government to consider a new and revised version of CRN to further enhance the development of research and innovation at our universities for the benefit of regional Australia and the nation.

Another important issue for Government consideration is the debate around the possibility of establishing teaching only universities or to impose restrictions on the delivery of research training at certain universities. RUN universities do not support these suggestions as they run counter to the interests of their students and staff, and to their regions and the nation. Our universities have the requirement to do research embedded in our establishing legislation in recognition of the important role this plays in regional Australia. Any move to restrict research or research training would have an immediate impact on the capacity of affected institutions to compete with other universities in terms of attracting and retaining high quality staff and students, and their reputations would suffer, both domestically and internationally. It would be an impediment to undertaking research embedded in the regions of strategic relevance to regional Australia and the nation. Such a move would also be inconsistent with the spirit of university autonomy.

Australian universities are currently required to perform research and all universities are performing high quality research, at world standard or above, in at least some areas of research endeavour. Research students make a major contribution to the research output of our universities.

(f) the importance of translating research output into social and economic benefits for Australians, and mechanisms by which it can be promoted;

RUN universities recognise the importance of translating research outputs to benefit Australians. Much of the research undertaken at RUN universities is relatively applied and is performed in close partnership with the users of the research. RUN research attracts a relatively high proportion of income from sources such as the

Rural R&D Corporations, local government, contract research and CRC partners in addition to national and international sources. As noted, much of the research performed by RUN universities is relatively applied and is performed in close association with the users of research. This helps to facilitate the uptake of research outcomes by research users.

Two RUN universities also host a technology park or innovation centre to promote business start-ups, innovation, and to leverage the benefits associated with the cross proximity to the university. Information about these facilities is provided below.

The University of Ballarat's [now Federation University's] Technology Park was established in 1995 in partnership with the City of Ballarat and the Victorian State Government. The Centre caters to large-scale organisations such as IBM (which employs 740 staff at the Centre with plans for further growth), early stage technology focused businesses and innovative technology SMEs. The Technology Park's role in attracting enterprises to Ballarat, stimulating business start-up and growth, creating jobs and retaining young people in the region, has led to the Park's strong ongoing support from key regional bodies.

USC's Innovation Centre has become a focal point for business innovation in the Sunshine Coast region, having supported the start-up and growth of over 100 knowledge economy businesses since its establishment in 2002. With a \$2.2 billion world-class health and medical precinct now under construction in the region, the Centre is working with regional partners to leverage the benefits of this significant new regional asset to attract and assist innovative health, science and technology related start-ups and high growth companies.