



REGIONAL UNIVERSITIES NETWORK SUBMISSION

INQUIRY INTO AUSTRALIA'S FUTURE IN RESEARCH AND INNOVATION

Joint Select Committee on Trade and Investment Growth

1. Summary

The Regional Universities Network (RUN) notes:

- The importance of regional Australia in contributing to economic growth (accounting for around 40% of total economic output), national prosperity and productivity;
- The importance of regional universities in overcoming Australia's geographic, economic and labour challenges to improved trade and investment performance. In particular, regional universities play a vital role in:
 - Helping to unlock human potential of the one third of the population who live in regional Australia;
 - Driving regional innovation, and regional economic, social and cultural development. They perform a growing share of Australia's highly ranked research, much of which is undertaken in close partnership with regional Australian industries and communities. They are well placed to drive innovation in their local communities and maintain a concurrent global vision;
 - Delivering the Government's objectives in relation to important policy initiatives such as the *National Innovation and Science Agenda*, the proposed revamped regional development policy which will set out a long term vision for regional Australia, and the development of northern Australia.

RUN urges the Committee to support measures that will assist regional universities in their roles of developing human capital, and promoting regional development and innovation. Specific measures include support for:

- *Revamping regional development policy*: a more strategic approach to regional development policy which includes formal recognition of regional universities. Regional universities should play a more formal role with respect to regional development, and should be eligible for regional development funding. Digital infrastructure should be included in the context of infrastructure support for regional Australia.
- *Promoting regional development through programmes to support researcher-industry collaboration*:
 - A new grants programme which would bring together regionally based universities,

- industry partners, and other relevant participants (including leading domestic and international researchers), to promote regional development, regional innovation and research;
- A new programme of industry PhD scholarships, focussing on SMEs and non-commercial partners, to be jointly funded by universities and partner organisations. A significant proportion of these scholarships should be allocated outside capital cities to drive regional development. Industry partners should be provided with favourable taxation treatment. The Watt Review of Research Funding and Policy recommended the establishment of a programme to support PhD business placements and the acquisition of business relevant skills. While these issues will be addressed as part of the broader Innovation Connections programme, it will be important to ensure they are a key area of focus, and that there are significant numbers of industry PhD scholarship placements in regional Australia.
- *Promoting researcher-small business engagement:* The Australian Research Council's Linkage project provisions should be amended to encourage engagement by small business end-user partners in line with the recommendation of the Watt Review of Research Policy and Funding. Current provisions impede collaboration as they require end user partners with fewer than 20 employees to make a cash contribution. This has been a particular problem in regional Australia.
- *Support for research and infrastructure in industries of importance to regional Australia.* RUN universities are collaborating to drive innovation in areas of importance to their communities. Adequate support for research and infrastructure is critical to underpin this activity. An example of this type of research is the RUN precision agriculture flagship, a collaborative initiative involving four RUN universities.
- *Promoting international engagement and innovation.* The new Global Innovation Strategy should deliver significant research, trade and investment, and soft diplomacy outcomes over the medium term. Subject to the findings of a mid-term review, consideration should be given to modifying or expanding the programme in the longer term.

2. Introduction

For Australia to remain a prosperous nation with high standards of health and well-being, it must be characterised by possessing:

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

Universities make a unique contribution, integrating education, research and innovation.

Universities Australia has commissioned research to estimate the economic contribution of Australia's 41 universities¹ and found they contributed an estimated:

- \$25 billion to the economy and accounted for more than 1.5 per cent of our GDP in 2013;²
- \$160 billion, equivalent to almost 10 per cent of Australia's GDP, which is the estimated value of the stock of knowledge generated by university research in 2014;³
- \$140 billion to the economy through the value of university educations in 2014.⁴ Our universities educated almost 1.3 million Australian and international students in 2014 and directly employed 120,000 fulltime equivalent staff; and

¹ Universities Australia, 2015, *Keep it Clever Policy Statement 2016*, page 3

² Deloitte Access Economics, 2015, *The importance of universities to Australia's prosperity*, Deloitte Access Economics Pty Ltd, Canberra. Cited in Universities Australia *Keeping it Clever Policy Statement 2016*

³ Ditto

⁴ Ditto

- Around two-thirds of the \$18 billion international education market (2014-15) which is attributable to higher education.

Australia's regional universities play a vital role in helping to unlock human potential of the one third of the population who live in regional Australia. They are among the largest and most important institutions in regional Australia. Regional universities are crucial in driving regional innovation, and regional economic, social and cultural development, and are important players in terms of the national economy.

The Regional Universities Network (RUN) is a group of six regionally-based universities - CQUniversity, Southern Cross University (SCU), Federation University Australia (FedUni), University of New England (UNE), the University of Southern Queensland (USQ), and the University of the Sunshine Coast (USC). RUN universities account for 9% of student enrolments at Australian public universities.

RUN universities contribute a growing share to Australia's research ranked 'above' or 'well above' world standard as assessed by the Excellence for Research in Australia 2015 exercise in the following areas:

- Agricultural and veterinary sciences including agriculture, land and farm management; animal production; crop and pasture production; fisheries sciences; and forestry sciences;
- Earth sciences including geochemistry; geology; and oceanography; and
- Environmental sciences including environmental science and management; and soil sciences;
- Biological sciences including ecology; evolutionary biology; and zoology;
- Medical and health sciences including clinical sciences; complementary and alternative medicine; human movement and sports science; nursing; pharmacology and pharmaceutical sciences; and other medical and health sciences;
- Mathematical sciences including pure mathematics; applied mathematics; and numerical and computational mathematics;
- Civil engineering; mechanical engineering; materials engineering; and resources engineering and extractive metallurgy;
- Astronomical and space sciences;
- Macromolecular and materials chemistry;
- Artificial intelligence and image processing; and
- Psychology and cognitive science.

RUN universities have strong, broad and applied research capabilities which provide a robust basis for innovation in regional Australian industries and communities. Much of RUN's research is undertaken in close partnership with the users of the research which reflects the importance of translating research outputs to benefit Australians. It is also growing rapidly. Between 2013 and 2014, RUN research funding increased by 9.5% compared to a sector-wide increase of 5.2%. Growth was particularly strong (11%) with respect to industry-sourced income.

RUN universities are collaborating to drive innovation in areas of importance to their communities. Adequate support for research and infrastructure is critical to underpin this activity. An example of this type of research is the RUN Precision Agriculture Flagship, a collaborative initiative involving four RUN universities.

RUN Precision Agriculture Flagship

Agriculture is expected to play a critical role in our national future, and a highly skilled, technical workforce will be required to achieve production and sustainability goals. A key dimension of farming in the future will be the increasing role of technology and data in the agriculture sector which is facing the challenges of variable climate, volatile and discerning markets, a diminishing workforce and changing demographics.

Four RUN universities are world leaders in precision agriculture, that is, the use of technologies including GPS, autonomous and intelligent systems, big data systems and efficient data analytics, ICT

and embedded sensors systems to improve the productivity and sustainability of Australian farms. The RUN Precision Agriculture Flagship draws together their expertise to build capability and provide the research outcomes for sustainability and growth in the long term. An important element of the flagship is support for a suite of postgraduate scholarships across the universities.

Precision agriculture will play a key role in driving agricultural innovation. For Australian agriculture to remain internationally competitive, agricultural research and infrastructure must be well supported into the future. A recent submission from UNE to the House of Representatives Standing Committee on Agriculture and Innovation's inquiry into agricultural innovation outlined specific measures to enable farmers to achieve improved efficiency, sustainability and profitability from the use of emerging technologies. These technologies include robotics and drones to monitor and control crops, pastures, and animals, and farm infrastructure and machinery⁵.

Two key recommendations from UNE's submission included support for:

- A satellite-delivered Precise Point Positioning augmentation system with a nationwide, centimetre positioning capability to enable farmers to reap significant productivity benefits; and
- Nationwide, reliable on-ground telecommunications, including telecommunications provider interoperability between infrastructure, multi-point connectivity from across farming operations and concomitant access to high speed internet. This will be crucial to realising e-business and technology opportunities on Australian farms.

3. Maximising the contribution of regional Australia

Regional Australia plays a vital role in economic growth, national prosperity and productivity. It is the leading source of Australia's largest export industries: agriculture, mining and tourism, and accounts for around 40 per cent of our total economic output.⁶ Regional Australia also exerts a stabilising effect on our overall economic performance, in part because it contributes to the nation's economic diversity. In the aftermath of the Global Financial Crisis in 2009 and 2010, regional Australia accounted for half of Australia's national economic growth.⁷

Around a third of people employed in Australia are regionally-based. The largest employers are 'Social services' and 'Other services' with each accounting for more than 30% of all employment, followed by high value services at around 10%. Regional Australia is at the forefront of output per worker in over a third of industries. Since 2001, regional Australia has gained ground on metropolitan areas in productivity terms in every industry except mining.⁸

The high productivity of our regions, and the role of regions in contributing to national economic diversity and resilience, will be important for preserving our living standards in the future. Improving regional labour markets and their connectivity to the national economy will be crucial for securing balanced jobs growth in the years ahead. Efforts to build upon the productive capacity of our regions will assist in meeting future national productivity challenges.

Regional universities play a crucial role in helping research and innovation overcome Australia's geographic, economic and labour challenges to improved trade and investment performance.

Going forward

Efforts should be made to maximise the opportunities for regional Australia, its industry and universities in line with the Government's *National Innovation and Science Agenda*, announced in December 2015 (see below).

The Government has also recently issued several policy statements that are relevant to regional

⁵ University of New England submission (number 11) to the House of Representatives Standing Committee on Agriculture and Innovation's, inquiry into agricultural innovation. Extracted from http://www.aph.gov.au/Parliamentary_Business/Committees/House/Agriculture_and_Industry/Agricultural_Innovation/Submissions.

⁶ Regional Australia Institute, 2015, *The economic contribution of regions to Australia's prosperity*

⁷ Ditto

⁸ Ditto

development including the important *Northern Australia White Paper*. RUN universities possess research strengths associated with the industries that are important to northern Australia and share a deep commitment to regional development. There is interest from some RUN universities, such as Southern Cross University, in participating in the proposed Cooperative Research Centre for Developing Northern Australia.

White Paper on the Development of Northern Australia

The White Paper outlines a large number of strategies to promote the development of northern Australia, including by promoting business, trade and investment opportunities. The Government will seek to promote business, trade and investment by building greater business and education links with our regional partners and by fostering greater innovation and leadership through dedicated R&D, biosecurity and tropical health measures in the north

The Paper identifies five industries with bright growth prospects – namely food and agribusiness; resources and energy; tourism and hospitality; international education; and healthcare, medical research and aged care. A Cooperative Research Centre will be established to assist businesses, governments and researchers to work together to identify opportunities for business and growth in the north in areas such as agribusiness and health.

In January, the Government announced that it would invite regional communities, including academic institutions, to contribute to *the development of a revamped regional development policy* in 2016. The new policy will set out a long term vision for regional Australia and examine how to grow opportunities through nurturing innovation and investing in infrastructure. RUN has welcomed the announcement and will argue for more formal and strategic recognition of regional universities in regional development policy, including participation on consultative committees and eligibility for funding. Digital infrastructure should be part of the consideration of infrastructure support for the regions.

Two RUN universities host successful technology parks or innovation centres to promote business start-ups, and innovation.

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 is an anchor tenant with capacity for up to 1,000 staff), 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 Sunshine Coast has become a focal point for business innovation in the Sunshine Coast region since its establishment in 2002. The tenant list of ICSC is dominated by micro and small to medium sized enterprises delivering services to Brisbane and beyond.

There is scope for other measures to promote regional development. These could include support for:

- A new grants programme which would bring together regionally based universities, industry partners, and other relevant participants (including leading domestic and international researchers), to promote regional development, regional innovation and research;
- A new programme of industry PhD scholarships, focussing on SMEs and non-commercial partners, to be jointly funded by universities and partner organisations. A significant proportion of these scholarships should be allocated outside capital cities to drive regional development. Industry partners should be provided with favourable taxation treatment. There may be scope to include this sort of initiative in the National Innovation and Science Agenda's new Innovation Connections programme.

4. The Government's new National Innovation and Science Agenda

RUN has welcomed the Government's \$1.1bn National Innovation and Science Agenda (NISA) which was announced in December. NISA provides a robust framework for innovation and incorporates a total of 24 measures encouraging university-business engagement, funding security for research infrastructure, and incentives for entrepreneurship, commercialisation and business innovation. Many of the measures are directly relevant to addressing the Committee's terms of reference and can be expected to lead to improved trade and investment performance.

RUN universities will engage with NISA through various initiatives potentially including by:

- Collaborating with regional industries in areas of relevance to the new Incubator Support Programme;
- Responding to the new incentives to engage with industry in the research block grants, and the measuring of impact and engagement in university research;
- Participating in the new Global Innovation Strategy (see below);
- Participating in the new Innovation Connections programme which will help businesses to access innovation infrastructure, and provide matched grants to support graduate and postgraduate researchers being placed in business. RUN hopes this initiative will be widely taken up in regional Australia;
- Collaborating with CSIRO with its new Innovation Fund. This fund will provide co-investment in new spin-off and start-up companies, products and services created by research institutions; and
- Initiatives promoting science to school students and communities which will benefit regional Australia.
- One issue that was not adopted by NISA concerns a recommendation of the Watt Review of Research Funding and Policy regarding Australian Research Council Linkage project proposals. At present, end user partners with fewer than 20 staff are required to make cash contributions towards the project. This requirement is a major impediment for investment and engagement by small business, especially in regional Australia. RUN recommends that the requirements for the programme be amended in line with the recommendation of the Watt Review in order to boost engagement with small business.

5. Overcoming Australia's geographic challenges to improving trade and investment performance

All Australian researchers and businesses face geographic challenges when engaging internationally. Advances in information and communications technologies, cheaper and more extensive international travel, and a greater focus of engagement with the Asia-Pacific region, provide opportunities that were not available in the past. However, both trade and research are intrinsically international activities and some face to face interaction is essential for effective engagement.

RUN universities, both individually and collectively, have extensive experience in international research engagement. Recently, RUN universities were funded by the Government to pursue collaborations with Vietnamese researchers in the areas of agriculture, forestry; aquaculture and fisheries; and value chain management. The project's focus was to enhance food security, commercial outcomes and trade opportunities. The initial phase of this project has been completed and further stages are likely. Support for this type of activity from agencies such as the Australian Centre for International Agricultural Research (ACIAR), the Department of Industry, Innovation and Science (DIIS), private philanthropic sources, and universities' own resources, help overcome the geographic and economic challenges to international engagement.

The new Global Innovation Strategy is an important new initiative which will complement the existing efforts and measures administered by DFAT, Austrade, ACIAR and DIIS (which administers two research and innovation programmes with India and China, and encourages bilateral and multi-lateral collaboration). The Strategy will provide \$36m over five years to support landing pads in key innovation hotspots around the globe, seed funding to support international research-industry collaborations, and funding for

workshops, projects and mobility support.

The Strategy should deliver significant research, trade and investment, and soft diplomacy outcomes over the medium term. The Committee may wish therefore to recommend that, subject to the findings of a mid-term review, the Government consider modifying or expanding the programme in the longer term.

Regional universities and international engagement

The issue of international engagement by regional universities was addressed in a recent report by the Chief Economist of DIIS⁹. The report found that regional universities are well placed to drive innovation in their local communities and maintain a concurrent global vision.

International engagement by regional universities – Chief Economist of DIIS

“The challenge for regional universities in relation to geographical remoteness, is better expressed as a dual challenge to sustain local focus and global vision concurrently. It could be argued that regional universities are the best placed of all Australian universities to do this. Firstly, they are collocated with local industry in regional communities, serving their needs as informed and engaged local partners. ...

“Secondly, regional universities have the same opportunities as any Australian university to break down international barriers to engage with key markets overseas.... The dual local and global positioning of regional universities permits them to entertain strategies that drive local business innovation, and strategies that plug regionally generated innovations into global markets.”

The report concludes (Conclusion 3.1) that “Regional Australian universities are well placed to drive innovation in their local communities and maintain a concurrent global vision.”

6. Overcoming Australia’s labour market challenges to improving trade and investment performance

RUN universities enrolled over 108,000 higher education students in 2014, or almost 130,000 students if both higher education and VET enrolments are taken into account. (Federation University and CQUniversity are dual sector institutions.) Over 28,000 higher education students were enrolled in advanced, postgraduate programmes, including more than 2,700 students enrolled in higher degrees by research (PhDs or Masters by research). International students accounted for more than 20,000 higher education enrolments, making a valuable contribution to Australia’s trade in services through the international student market.

RUN universities produce graduates across a wide range of disciplines including health, education, management and commerce, science, agriculture, engineering, law, information technology, society and culture, and the creative and performing arts. About three-quarters of regional university graduates work in regional Australia where they continue to contribute to the nation’s ongoing well-being. The relatively high proportion of students pursuing education and health studies at regional universities reflects the importance of ‘social services’ and ‘other services’ to the employment profile of regional Australia. All students at RUN universities benefit from exposure to the vibrant research environment and the high calibre academics this attracts to RUN universities.

The Watt review of *Research Policy and Funding* in December 2015 noted that:

Including business placements as part of PhD research training is an effective way of driving change. The business benefits from access to high level research skills applied to their specific needs and the student develops an understanding of the value of business relevant research and builds skills for future employment.

The Watt review commended existing university initiatives which provide for business placements but

⁹ Dept of Industry, Innovation and Science, 2016 *How Regional Universities Drive Regional Innovation* pages 29-32

concluded that the scale of these is small. It therefore recommended that funding for a new PhD business placement initiative should be established to support an additional 700 placements per year, at a cost of \$12.5 million.

NISA's new Innovation Connections programme addresses this issue in general terms in the context of a broader range of measures. RUN urges that PhD business placements and the acquisition of business relevant skills should be key areas of focus in developing the guidelines for the new programme, and that there should be a focus on ensuring that there significant numbers of placements in regional Australia.