Uniting SMEs, universities, innovation and regional development: learning from the CQ experience

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Theme area: developing regional capacity through innovation

Abstract: Innovation and regional development are both thematic areas that have come under intense national interest in the past twelve months. Universities can be key innovation actors in driving knowledge creation (through formal R&D) as well as offering support to business networking and commercialisation activities. However, small to medium enterprises (SMEs) are the national powerhouse of innovation. In regional areas, innovative activity by SMEs may not be as high as metropolitan centres, given that collaborative networks are not as dense, and knowledge creation providers may not be readily available. Consequently, where universities are present in regional areas, they have a critically important role in helping the regional SME base to achieve productivity and innovation outcomes. Unfortunately, the SME cohort has been poorly engaged in activities with the tertiary sector compared with larger industry, and there is a poor record of collaboration between businesses and researchers at the national scale. This paper will describe the interactions between CQUniversity and its regional SME base, with the objective of highlighting the drivers and barriers that influence these relationships, and how both regional universities and regional SMEs could be better supported to establish mutually beneficial relationships with each other in order to contribute to regional development and regional innovation outcomes.

1.0 Regional development and innovation policy in Australia

Regional areas are the providers of much of Australia's wealth and are crucial to our nation's current and future global position. Whilst only a third of Australians live in regional Australia, regional Australia provides around 60% of the nation's export earnings[1]. The physical and human capital resident in these communities, together with their blend of interactions, challenges and opportunities, make regional areas uniquely well-placed to make significant contribution to national goals in each of the social, economic and environmental spheres. There is massive untapped potential in Australian regions and this is increasingly being recognized both domestically and internationally. Australia has low sovereign risk, stable political systems, well-developed base infrastructure and highly skilled people and industries. However, regions also face a suite of developmental pressures, which challenge their ongoing sustainability. The Brundtland Report[2] defined sustainable development 'as a pattern of resource use that meets the needs of the present, whilst not compromising the ability of future generations to do the same', and the concept of 'sustainable regional development' to improve regional competitiveness has been firmly embedded into broad regional and national policies for some time (OEC, 2009, p. 5).

Innovation – in its broadest sense – refers to the creation of new value from the ideation and application of novel concepts, products and processes. Innovation is distinguished from novel ideas by the fact that it combines inspiration with entrepreneurship to create new value – be it either commercial or social (Pool 2010). The Australian Government's *Powering Ideas: An Innovation Agenda for the 21st Century* defines innovation as the capacity for invention and discovery (DIISR, 2009). However, innovation also goes beyond pure research, development, demonstration and deployment to include:

- empowering people to innovate;
- changing our processes and methods; and
- developing new business practices and new collaborations (DCCEE, 2010).

It is now clear that innovation has a fundamentally important role to play in contributing to the prosperity and sustainability of regional areas of Australia: the OECD (2011, p. 16) has noted that innovation policy is increasingly being used as an instrument for regional growth – to 'help technologically leading regions to remain ahead and peripheral regions to catch up'. Furthermore, innovation can also be used to simultaneously resolve a range of regional pressures including responding to the complex challenges of environmental sustainability through the use of eco-innovation (particularly in large industry). Regional areas can also play a key role in driving national innovation, being well-positioned to help shape policy as well as being the proving grounds for key technological and systemic innovation demonstration. According to the OECD (2011), the rise of

[1] Department of Regional Australia, Regional Development and Local Government, 2011, *submission to the House of Representatives Standing Committee on Infrastructure and Communications' Inquiry into the role and potential of the National Broadband Network*, February 2011, 15 pages, available online at http://www.aph.gov.au/house/committee/ic/NBN/subs/Sub169.pdf

[2] World Commission on Environment and Development (WCED). *Our common future.* Oxford: Oxford University Press, 1987 p. 43.

regions in implementing and driving innovation policy has resulted from two key trends: one, because innovation has been brought to the core of regional development agendas based on the mobilisation of regional assets for growth; and two, the recognition that networks and connectivity are critical to innovation systems – and that regional areas have a distinct advantage in this space. However, it appears Australia remains challenged by uneven innovation performance, evidenced by productivity decline and poor innovation rates within Australian firms (CoA, 2009). Meanwhile, given that global competition continues to intensify and grow, there is real risk that Australia will continue to lag behind other nations, and fall further in terms of comparative innovation capacity and outcomes. Although regional areas are especially well placed to inform national policy on a range of fronts, regional innovation policy in Australia remains it its infancy. In fact, policy goals for regional Australia seem generally poorly articulated, considering the vastly increased focus on regional development as a result of the political milieu created by the 2010 federal election: most regionally-relevant policy continues to be fragmented and to have uncertain footing in a multitude of portfolios[3]. However, one existing strategy to lift innovation outcomes, as well as regional productivity, has been the 'regions of innovation' approach used by the DIISR[4] Enterprise Connect program. This is based on the principle that developing strong relationships across regional spaces will help drive the interactions that are so important to the ideation and commercialization processes. This program is also important in addressing both a key policy challenge in innovation, as well as one for regional development: that is, how to achieve effective support for regional SMEs in realising national innovation outcomes, whilst simultaneously returning regional value (see Kinnear & Ogden 2011b).

2.0 The role of small-to-medium enterprises (SMEs)

The phrase 'small-to-medium enterprises' (SMEs) refers to businesses of a particular size, with categories commonly based on either employee number or annual turnover. For example, the Australian government categorises the size of firms into four divisions:

- very small (those with up to 9 full-time equivalent employees); small (those employing 10 – 49 FTE);
- medium (those employing 50 – 149 FTE);
- and large (those employing 150+ staff).

Meanwhile, other government agencies also adopt a classification system based on turnover, although there is some flexibility in how classes are defined between different sectors[5].

[3] Including agriculture, fisheries and forestry; broadband, communications and the digital economy; education, employment and workplace relations; families, housing, community services and Indigenous affairs; resources, energy and tourism, and sustainability, environment, water, population and communities.

[4] (Australian) Department of Innovation, Industry, Science and Research

[5] For example, the Department of Innovation, Industry, Science and Research (DIISR) Enterprise Connect program typically defines manufacturing SME's as those turning over between $2m - $200m/yr, whilst creative industries SME's are regarded as any turning over >$1m/yr.

2.2 SMES and regional development

SMEs occupy a critical space in the Australian economy: their roles include being highly flexible and responsive suppliers to large firms, being customers of large firms, and being suppliers to end-use customers in their own right (Ergas & Orr 2007). SMEs contributed to 46% of the value of the national GDP in 2006, and their productivity continues to grow (Ergas & Orr 2007). It is not surprising, then, that SMEs are also an essential component of regional economies,: this is particularly true where they providing critical support roles to larger industry through supply chain relationships; but SME also play an equally important role in providing the diversity, essential services, employment and social fabric that underpins the viability of large-scale industries. There are many studies that have recognised the considerable value of SMEs to regional economic growth, employment, innovation and productivity (Booyens, 2011). Despite this, it appears that very little is known about the profile of regional SMEs apart from business count data: for example, no data exist that link SMEs with gross regional product, and the occupancy of SMEs in different sectors of the economy is rarely documented. The impacts of these lack of data are pervasive. At the regional level, this can often manifest in sub-optimum planning and delivery of strategic responses to build capacity amongst SMEs. It may also contribute to the misalignment and timing of critical skills and knowledge development as well as inhibiting the potential to facilitate and foster industry collaborations, networks and clusters.

2.1 SMEs and regional innovation

Currently, there is significant national focus on innovation as a key pathway for growing SMEs. Innovation is an essential tool by which SMEs can maintain competitiveness, grow market share, explore diversification and enter global trade (Booyens 2011). SMEs are also recognised as a key source of innovation; and the proportion of SMEs who are innovating (in terms of products, services and/or processes) is growing (Ergas & Orr, 2007). SMEs already inject considerable spending into research and development into Australia – some $2.9 billion in 2004-05, or 35% of the national total (Ergas & Orr, 2007). The most recent data show business have the fastest-growing share of gross expenditure on research and development (GERD) (DIISR, 2011). On the back of this, Australia's comparative innovative performance is slowly improving: in 2007-08, Australia ranked 14th of OECD nations for business expenditure on R&D[6] (ABS, 2010); however, the nation now ranks 12th across the OECD for the GERD to GDP ratio, which reached 2.21% in 2008-09 (DIISR, 2011). However, SMEs have distinct needs in terms of assistance to support innovation, and these are necessarily different to those of larger industry. For example, SMEs operate from a limited resource base; feature distinctive organisational cultures (e.g., owner/operators and family businesses); and have a restricted ability to shape and influence their external environment when compared with larger companies (Smallbone et al. 2003). Consequently, the ways in which SMEs pursue innovation - and in particular, the types of relationships that SMEs build across the networks of regional innovation actors – are quite different to those of large industry. This situation is compounded in regional areas

[6] calculated by a R&D spend: GDP ratio

where the resources sectors dominate. By virtue of their sheer size and the economic, social and environmental impacts of (multiple) resources projects, the resource sector are highly likely to draw the bulk of available regional knowledge creation, research and development and professional services towards supporting their activities. This can pressure SMEs into 'follower' mindsets whereby they are constantly in response mode to meet changing market conditions and stresses, requiring them to increasingly work 'in the business' rather than 'on the business'.

3.0 The role of regional universities

3.1 Regional universities and regional development

Higher education institutions are increasingly becoming recognised for their important roles in technological and socio-economic development as well as community citizenship and strengthening the social fabric of their communities (Youtie & Shapira, 2008; DEEWR 2009; Saad and Zawdie, 2011). Indeed, as noted by Howard (2010, p. 34): 'the linkages between higher education policies, skills and workforce policies, and regional innovation and industry policies is coming under closer scrutiny as businesses, industries and regions address the challenges of competitiveness … in a globalised, knowledge-based economy'. In contemporary Australia, the university sector has an important role to play in harnessing and contributing to regional potential by producing quality graduates from, and for, regional areas. For example, the Queensland Department of Education and Training conducts '*Next Step'* surveys annually, to capture post-school student activity. Data from the most recent survey showed that tertiary attendance rates were 43.8% in the Brisbane statistical division – well above the federal government's goal of having '40% of 25-34 year olds hold a Bachelor-level education by 2025'[7] . By contrast, less than a quarter of school leavers (23.3%) were studying for a university degree in the Fitzroy and Central West statistical divisions (DET, 2011). A deeper analysis of the data concluded that school leavers living away from university campuses have a much lower chance of undertaking a tertiary course in the year immediately following high school. It also demonstrated a very strong bias in favour of females undertaking tertiary education in resources-regions (such as Central Queensland) whereas males were opting for apprenticeships (DET, 2011). This highlights some important issues of equity and access (both locational and gendered), as well as being evidence of the context-specific policy challenges that regional universities are particularly well placed to respond to. The long-term effects of the 'brain drain' in regional areas, due to poor tertiary access and/or the attraction towards highly-paid trades careers are unknown; but it seems highly likely that regional development will be impoverished unless the innovation potential of regional human capital is better nurtured through tertiary training. Nevertheless, there are a number of specific advantages that regional universities have in driving and/or facilitating the sustainable development of the regions in which they operate. For one, universities can, in certain circumstances, be more flexible and responsive than existing economic development organisations, since the latter are limited by artificial jurisdictional boundaries (often, by local government area), are often poorly resourced and chiefly adopt the strategic objectives of their funders (local and state government). By contrast, universities have much larger operational

[7] DEEWR, 2009, *An Indicator Framework for Higher Education Performance Funding Discussion Paper*

footprints which align better with communities of interest or functional communities, they have large and diverse operational interests and multidisciplinary expertise (social, economic, environmental), and are often viewed by their communities as credible and apolitical sources of information and leadership. On the negative side, however, many universities appear to have a perception that a tension exists between achieving excellence in research, teaching and regional engagement (Caniëls & van den Bosch, 2011): this often leads to an internal focus on teaching or research objectives at the expense of building regional partnerships. This in itself is perplexing given that one of the core drivers for business and industry engagement is typically that of strengthening the relevance and value of tertiary teaching and research. Despite this, it appears that few universities feature entry points that were designed with business accessibility in mind; nor do they have devoted strategies to enable greater business engagement, particularly in the case of SMEs.

When considering the role(s) that universities might play in regional development, it may also be helpful to review the five key objectives of the newly-established Department of Regional Australia, Regional Development and Local Government (DORA), which have been articulated as follows:

- to increase productivity, economic development and diversification in regional Australia;
- to support leadership and representation in local communities;
- to improve service delivery in regional Australia;
- to improve outcomes from the Commonwealth's investment in regional Australia; and
- to improve the coordination of functions across government and different tiers of government.

Regional universities can assist with each of these objectives, through activities in teaching and learning, research and innovation, engagement and advocacy.

3.2 Regional universities and innovation

The roles of universities (HEIs – higher education institutions) in the national innovation systems are generally well accepted: these organisations have a lead role in not only producing R&D knowledge, but also disseminating it, promoting links, providing leadership and investing in innovation infrastructure (Uyarra, 2010). The general role of HEIs on regional innovation systems has also attracted a significant amount of research, with most papers examining their contribution in terms of generating patents and commercialising scientific outputs, although the limitations of these types of economic performance indicators has also been recognised (Caniëls & van den Bosch, 2011). By contrast, relatively few papers have examined the specific roles of *regional* universities in terms of regional innovation systems. This is important, because the regional context provides for a number of innovation roles by universities that extend well beyond their traditional functions as knowledge creators and disseminators. Consider, for example, some of the implications for the direct and indirect contributions such as:

- regional universities are critical in providing skilled graduates who are more likely to be attracted, and retained, in regional workforces (DEEWR, 2009): therefore providing a

important source of high-quality human capital – the next wave of innovation actors within SMEs;

- regional universities are key employers, helping to stimulate, diversify and sustain regional economies – thus contributing to a stronger economy in which innovation is valued;
- regional universities attract foreign (international or inter-regional) students and researchers, thus enriching the social fabric of regional communities, and providing the diversity of human capital that helps to spur innovation (Ramezanpour & Nithyanantham, 2011);
- regional universities are useful in fostering 'collaboration and connectedness' – the key drivers of innovation – by value-adding to existing business networks. (Example of this include the University of Southern Queensland's Corporate Club and CQUniversity's 'Community of Practice' in innovation and regional development). Hence, regional universities have a key support role in ensure regional players have the ability to communicate effectively, as well as being particularly useful in boundary-spanning (Tiffin & Kunc, 2011);
- regional universities are important in helping to attract government funding for research into regions, particularly where this involves industry leveraging: in fact, regional universities often lead industry-sponsored research metrics when these are calculated on a per unit-basis, with metropolitan-based institutions instead focus on nationally competitive grants (figure 1); and
- the presence of a regional university will be an important advantage for those regions who are constructing business cases for accelerated rollout of the National Broadband Network (NBN), given the obvious applications to e-learning and e-research. The NBN has been acknowledged as a key enabler for innovation.

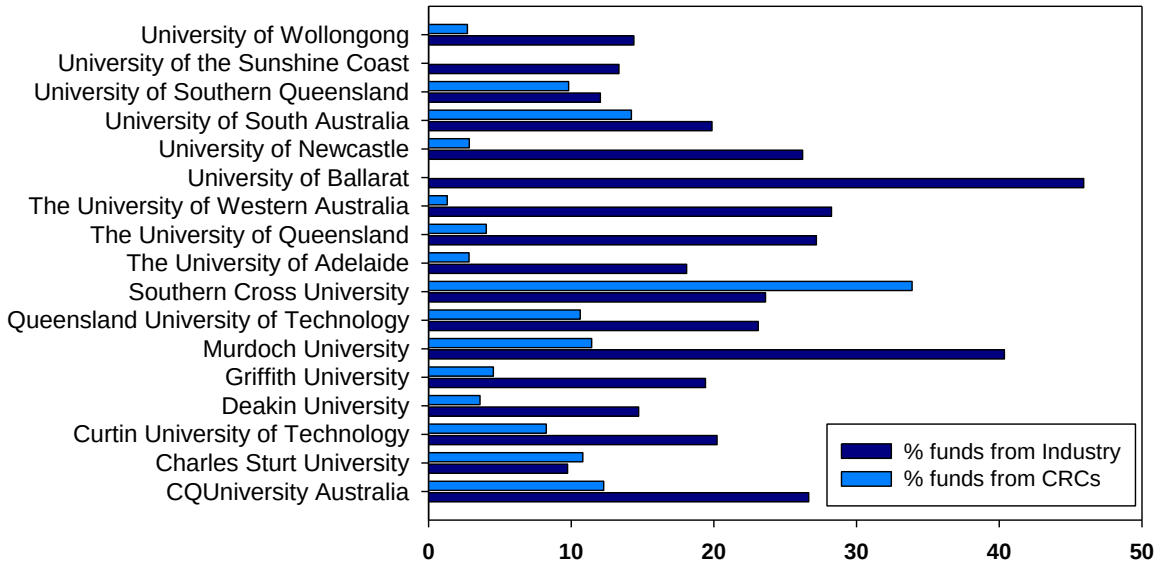

Figure 1: Research performance of universities in Enterprise Connect 'region of innovation' locations. Bars represent the proportion of research funds attracted via engagement with industry, compared with the entire research quantum (including nationally competitive grants) during 2009.

There is also a unique role for regional universities to assist in innovation specifically for regional SMEs. As SMEs are rarely large enough to buy R&D on their own – even considering the government incentives available to do so[8] – many struggle to find partners who can provide the knowledge needed to develop new products and processes (Schienstock, 2005). In regional areas particularly, SMEs are often not grouped (clustered[9]) in ways that allow them to create critical mass and be attractive as research collaborators. Universities may therefore have a role to play in cluster development and brokerage, particularly in the absence of strong representation for commerce. However, formally managing innovation and/or entrepreneurship clusters tends not to be well practiced by universities (Tiffin & Kunc, 2011). A possible reason for this is that matching SMEs and university research expertise first requires a deep knowledge about the strengths of each, and how they complement each other (Schienstock, 2005). This can represent a considerable investment in time and resources, and the likely benefits of this must be balanced against the opportunity costs that universities face in terms of directing research activity elsewhere (particularly towards nationally competitive grants, which carry significant income and reputational benefits). It also includes the need for universities to carefully consider how well businesses are likely to be able to absorb and value-add to research outcomes (Termouth et al. 2010). The challenge is further deepened due to the diversity in SMEs, and how they innovate, with, the 2011 Australian Innovation Report illustrating a significant difference between small and large firms (DIISR, 2011b). From the perspective of universities, then, developing linkages with a business that has a $200m/year turnover, and the likelihood of some internal capacity, is quite different to the engagement and support mechanisms needed for smaller operators, who may have little available resources to bring to the partnership.

4.0 Partnering SMEs and (regional) universities for regional development and innovation outcomes

4.1 Characterising the partnerships

In Australia, the relationships between SMEs and tertiary institutions are often tenuous. Traditionally, the SME cohort has been poorly engaged in activities with the tertiary sector: DIISR (2009) noted that 'Australia has a poor record of collaboration between businesses [as opposed to 'industry'] and researchers'. In fact, despite recent data showing that business-universities collaborations has increased to 2.4% since 2006-07, business-to-research collaborations still remain one of the most significant flaws in the Australian innovation system when compared with internationally comparable indicators (DIISR, 2011b). Within SMEs, research-based innovation typically involves new knowledge development or technology trialling, with applications in the longer-term development of the business – and universities are well-placed to be able to provide these services.

[8] The federally available R&D Tax Credit is a 45 per cent refundable tax credit (the equivalent to a 150 per cent concession) for eligible entities with an aggregated turnover of less than $20 million per annum

[9] The term 'cluster' has academic, policy and industry connotations – for the purposes of this paper, 'cluster' refers to a functional grouping of economic actors striving for collaborative benefit at a locational level.

Furthermore, businesses may also enjoy innovation benefits from university-based expertise in terms of identifying potential market or technological opportunities and issues (Ternouth et al. 2010). Despite this, ABS statistics indicate that universities are amongst the smallest sources of innovation and innovative ideas for small business[10]. The reverse is also true: universities appear to be hardly interested in the mutual benefits that may flow from partnering with SMEs. For example, despite SMEs representing over 90% of all businesses, the SME cohort is often overlooked in terms of university-based research initiatives in Australia. This results from a combination of reasons, including the perceived lack of incentives (particularly in the short term) in terms of how SME-linked research can meaningfully contribute to a university's national research performance (and therefore, its funding), the historical bias for research to be discipline, rather than problem--focussed, a general lack of understanding of the sector, and the apparent difficulties of engaging with it.

It seems that regional universities have a significant – yet largely untapped – role to play in achieving knowledge creation and transfer for regional SMEs. The international literature (particularly European) provides good examples of the multiple and mutual benefits that can result from partnerships between universities and SMEs. Moreover, in Australia, there are now several emerging pressures which indicate that more cooperative activity should be pursued between SMEs and universities, and particularly so in regional settings. Firstly, both the state and federal levels of government have indicated strong interest in growing the success of SMEs, particularly where this contributes to global competitiveness, as well as sustainable regional development and innovation outcomes: evidence of this can be found in both the national innovation priorities as well as the national research priorities. Secondly, for regional universities that are finding it difficult to compete with the larger, research-intensive 'group of eight', supporting regional business growth – and therefore the expansion of regional economies – is logical because it fosters growth in the regional population base from which students can be drawn, as well as growth in the R&D base. Thirdly, Australia has been recognised as a nation that is performing poorly in collaboration, and therefore in R&D and innovation outputs. This stems from problems with a low uptake of research ideas (from both Australia and internationally); and a low understanding of end-user requirements, with fewer innovations developed and reaching the market when organisations are left to take on technical, development, market and commercial risks (IXC, 2011). Fourthly, SMEs will continue to struggle under rising electricity, transport, water and waste disposal costs as Australia adapts to climate change and transits to a low-carbon future: these challenges must be met by innovation if regional businesses are to maintain economic sustainability. Fifthly, regions themselves are becoming more sophisticated in their awareness of the need to balance outcomes across the quadruple bottom line. Here, SMEs play a crucial role in innovating for regional sustainability beyond economic flows: DIISR (2011) reported that Australian businesses that innovate are up to four times more likely to increase employment and social contributions than those who don't. SMEs are critical stakeholders in the liveability and connectedness of their operating environment and both these can be enhanced by university linkages.

[10] Australian Bureau of Statistics, Category 8158.0, *Innovation in Australian Business, 2006-07*.

4.2 The potential for success

Regional universities can help to stimulate regional innovation systems through a combination of research, education and collaboration with both public and private parties (Caniëls & van den Bosch, 2011). However, synergies between universities and SMEs most often occurs where SMEs are able to provide a source of real-world problems to which academic thinking can be applied to find resolutions; as well as provide a source of ideas that can be explored through academic experimentation and evaluation and so become refined for the marketplace. For SMEs, the benefits of partnering with universities are many-fold, and move well beyond the receipt of data generated in a particular project. For example, a research partnership may enable SMEs to access the resident expertise of larger research groups, and be introduced to new experimental techniques, both which can extend the horizons of business (Ternouth et al. 2010). Research partnering also allows SMEs to access 'global pipelines of knowledge' (Cantner et al., 2010) and be better placed to create new products and services, and become more competitive and profitable. SMEs may also explore opportunities for staff training and development through research and coursework, thus developing tailored skills for their business.

For universities, building partnerships with SMEs may help to increase the impact of research (DEST, 2003), which is a key assessment area under the Excellence in Research for Australia (ERA) initiative. Unfortunately, ERA has also been criticised for failing to recognise or value the synergies created where cross-disciplinary teams work creatively and directly with business and industry on real problems – a key area for innovation to emerge[1112]. Consequently, universities may face some tensions in terms of performing well under ERA, particularly those that receive a higher proportion of income from industry, such as smaller, younger and regionally-based institutions. On the other hand, many business partnerships can represent important 'seed' projects, which allow for growth in research expertise and track record, and eventually, the ability to be more competitive in nationally-competitive grant applications (such as ARC linkage grants).

4.3 Key challenges and barriers

One of the key challenges influencing university-business collaboration is the difference in mindsets and the expectations and objectives of any innovation activities undertaken (Mian 2011). On the one hand, university academics are often motivated by objectivity and the 'search for knowledge for knowledge sake', rather than commercial value; they have a discipline rather than application focus; place a high value on rigour and repeatability of results; and may work to slower timelines (particularly if balancing a teaching load in addition to research duties) (Ternouth et al 2010). By contrast, the primary motivation of SMEs to innovate is to 'improve productivity, increase revenue or increase responsiveness to customer needs' (Ergas & Orr, 2007, p. 13). Business people are

[11] Terry Cutler, 'Blind to excellence in innovation', *The Australian*, 9 Feb 2011, p. 36.

[12] Jill Rowbotham, 'ERA scale does not assess potential for innovation', *The Australian*, 18 May 2011, p. 26.

typically driven by profit; are used to working across multidisciplinary areas, and may accept research outcomes with lower academic integrity, so long as commercial objectives are met (Ternouth et al 2010). Consequently, the perceptions of the value proposition offered by universities are likely to be important in influencing the 'conversion' rates of engagement with SMEs to actual innovation outcomes (i.e., completed research projects). For example, businesses may have reservations about research sponsorship and/or participation because of concerns around transaction costs (both dollar expense and timeliness), academic versus practical outcomes, and the treatment of intellectual property rights. In regions, it should also be noted that transaction costs can often be higher due to geographical distance, scarcity of professional services and lower infrastructure baselines. Conversely, researchers may prefer to work on pure research projects without the distractions of business collaboration, and where the academic outcomes are more certain. Furthermore, a large proportion of university research tends to be emerging, early-stage concepts that may be quite removed from the market; however, these 'discovery' type projects can also lead to significant commercial applications (e.g., biotechnology, the Internet) (Holly 2009). Lastly, it must be acknowledged that innovation is characteristically high-risk: this is at odds with contemporary business modelling which requires universities to adopt a high degree of risk management when considering public or corporate investment. The lack of rigorous innovation metrics further complicates this dilemma.

5.0 Engaging with business for innovation: a case study of CQUniversity Australia

5.1 The Central Queensland region

Central Queensland has been recognised as one of ten federally-acknowledged 'regions of innovation', and this offers a unique opportunity and driver to pursue regional development in CQ via the innovation agenda. However, managing the innovation agenda across Central Queensland is an exceedingly difficult task: fostering 'collaboration and connectedness' is thwarted by the sheer geographical size (and geo-politics) of the region as well as the tyranny of distance that separates the sub-regions from each other; the sub-regional differences in priority industries, competition between the key service hubs, and the uncoordinated regional innovation agenda. Optimising the roles of, and interactions between, key innovation actors such as CQUniversity (e.g., in knowledge creation) and SMEs (e.g., in innovation adoption, uptake and commercialisation) is therefore essential in helping to drive innovation outcomes across Central Queensland.

5.2 Current status of SME-CQUniversity linkages

Currently, the key mechanism by which CQUniversity encourages research partnerships with SMEs is by the Research and Development Incentives (RDI) Collaborative Grants scheme. This scheme is offered annually, and involves grants being awarded on a merit-basis to CQUniversity researchers who propose a project with industry sponsorship. The University provides dollar-for-dollar matching of the research funds spent by the partnering firm, up to a ceiling of $10,000. In the five years to

2011, a total of 9 collaborative projects have been granted, representing an internal investment (i.e., CQUniversity contribution) of $82,802 cash and $90,921 in-kind staff time and resources, whilst partnering entities provided $130,140 (cash). Half of these partner organisations were SMEs. Furthermore, the nine projects funded represents 82% of the applications lodged, so the success rate to secure University support is very high. Whilst collaborative schemes such as this are designed to improve business engagement and lift (research-based) innovation, it seems clear that stronger mechanisms are required if these are to achieve outcomes that are regionally (and nationally) significant. For example, the profile of CQUniversity's contract research projects[13] for the five years to 2011 indicates that SMEs are typically only a small proportion of the overall client base for the university. SMEs have historically been involved with smaller, shorter-term research projects, but several have offered 'repeat business' for CQUniversity over the years. However, in these latter situations, it appears that this research work is actually sub-contractual activities originally linked with much larger firms (e.g., primes from mining and heavy industry).

Most recently, a regional business survey undertaken in Central Queensland during July 2011 (n= 79) demonstrated that two-thirds of respondents wanted CQUniversity to 'help shape business innovation in the region'; and 40% indicated that they would participate actively in a CQ Innovation Centre (Figure x). Of considerable concern, though, was that participants generally disagreed that their business had been helped by the presence of CQUniversity; and they were largely unsure of the research services offered by CQUniversity, with less than two percent indicating strong agreement in regards to knowing who to contact for information on starting a research project (Figure 2).

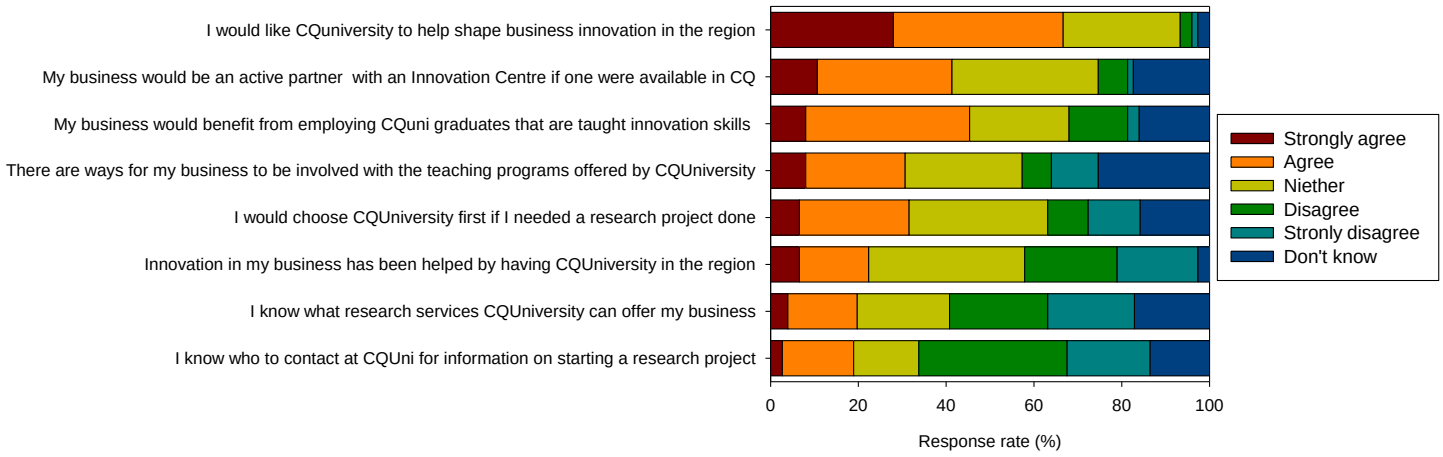

Figure 2: Respondent's level of agreement on statements about CQUniversity and innovation in Central Queensland (total n=79).

[13] Contract research differs from consultancy in that data are made publicly available and there is an expectation that results will be published in an academic forum (e.g., peer-reviewed journals).

5.3 A new model for innovation and regional development practice?

If CQ is to achieve sustainable development in the long-term, it must aspire to greater relevance on the national and global stage. However, achieving this will require new ideas, practices, processes, behaviours and technologies: this is all about innovation. A strategic planning exercise for innovation in central Queensland has indicated that the highest-value projects are likely to be those that:

- are built on foundations of collaboration and connectedness across multiple regional innovation actors;
- are reflective of the current and emerging regional strengths;
- bring new value in at least one, but preferably all, areas of the 'quadruple bottom line';
- allows CQ to contribute to one or more national priority areas; and
- preferably, can be mapped at a level of detail that allows for progress in the short to medium term, and where resources are readily available or can be quickly sourced (Kinnear & Ogden, 2011).

Furthermore, at its most basic level, two of the key functions of CQUniversity are to provide facilities for, and encourage, study and research; and to encourage the advancement and development of knowledge, and its application to government, industry, commerce and the community[14]. Given the significance and diversity of SMEs in the communities in which CQUniversity operates, an innovation strategy that includes a focus on servicing and working with SMEs (e.g., undertaking research for knowledge creation) will help the University to fulfil both of these objectives.

The 'Central Queensland Regional Collaborative (Innovation Central)' has recently been developed as a practical way to use innovation to drive regional development in Central Queensland. The key objective of this model is to provide an innovation-based pathway for regions to realise national objectives whilst retaining regional value. Specifically, the concept provides for a formal platform to share ideas and expertise, as well as to facilitate regional-level decision-making regarding investment in regional development initiatives, resourced from a co-funded pool. This collaborative is a new concept in regional development, involving participation and commitment from all regional stakeholders, from SMEs through to large industry, the three tiers of government and key regional organizations. The design incorporates the key elements of Cooperative Research Centres (a proven model for industry-research interaction), together with an open innovation process, supported and managed by a structure for collaborative regional decision-making and investment.

The proposed Collaborative is also purposefully designed to leverage the value of the regional university by partnering with key regional organisations such as Regional Development Australia. Through this, the Collaborative will complement the existing role of the RDA Committee by providing for rigorous regional consultation; better capture of regional intelligence; a consensus on regional identity, strengths, needs and priorities; truly collaborative solution-seeking and effective regional

[14] Section 5 of the *Central Queensland University Act 1998* (Queensland)

resourcing and investment. The Collaborative is also designed to make a significant contribution to regional development and innovation, through activities and outcomes spanning the knowledge creation, capacity building, implementation, engagement and policy influence/development areas (Kinnear & Ogden, 2011b). Furthermore, there is clear potential for this model to be translated into other regions –thus establishing a new national 'best practice' based on the synergies between innovation and regional development, and by the linkages between regional universities and regional development groups.

The Regional Collaborative will contribute to both 'innovation' and 'regional development' outcomes. Close cooperation between CQUniversity, regional SMEs, key government agencies and other stakeholders across Central Queensland will lead to a greater understanding of regional needs. It will also assist in identifying the practical applications of an innovation approach, including:

- identifying high-value research areas that can be pursued in partnership with regional SMEs;
- setting targets for innovation activity specifically with SMEs (e.g., in research and/or research training); and
- obtaining commitment across different areas of the University to accept responsibility for, and assign resources to, different aspects of innovation with SMEs.

6.0 Future research and other activities

Innovation is an important lens through which issues of sustainable regional development can be assessed and addressed. Despite this, there is no clear method for analysing regional innovation potential, given that this reflects a mixture of objective as well as subjective information. The OECD (2011) has noted a danger for 'regional innovation policies [to] suffer from a limited view of innovation', with most assessment tools biased towards economic outcomes. Certainly, it remains exceptionally difficult to collect meaningful data about regional innovation performance, especially where this is linked to SMEs: traditional innovation metrics are rarely collected at the regional (or sub-regional) level. Some good examples of this include the number of patents registered and/or the annual SME spend on research and development, as neither are disaggregated into regional-level data; measurement of university-industry linkages is also extremely difficult (Tiffin & Kunc, 2011). It was recently noted that regional clustering analyses performed on standard industrial and innovation data, including locational quotients, often fails because these data 'do not capture the nature and strength of traded and untraded inter-firm linkages, knowledge spillovers, social networks, and institutional support structures' that are necessary for regional innovation (Junbo & Randall, 2011, p. 121). The importance of cultural factors in contributing to regional innovation ecosystem cannot be overstated: future research in this space could examine not only the cultural contexts and human resources of regional innovation, but also existing technological capacity and support infrastructure, and the development of effective regional innovation metrics, which reflect both the non-linear and multidisciplinary natures of regional innovation systems.

Future research work in the 'tertiary institutions for regional development' space could help to build a case for regional universities, as key innovation actors, to participate more formally and

collaboratively in the development and implementation of regional innovation plans[15], thus avoiding duplication of efforts in scanning for regional strengths and weakness across a range of government and regional development organisations. It is also important that regional innovation plans are linked with the research strengths of regional universities, which themselves are typically reflective of regional strengths and advantages. Most importantly, the capacity of universities to engage with business and industry can be leveraged to ensure that both groups are able to play a much greater role in innovation-based regional planning and development initiatives. Finally, regional universities – such as CQUniversity – can make an important contribution in the advocacy space for regional innovation. Here, an important first step could be collaboration amongst regional universities to provide a strong evidence base that demonstrates that value of undertaking applied and translational research, rather than the pure, theoretical fields favoured by ERA. After all, this kind of innovation is clearly of high value to partnering business and industry – and innovation outcomes are often best realised when they are linked with the free market.

7.0 Conclusion

This paper has explored some of the key drivers and challenges associated with facilitating relationships between regional universities and regional SMEs for innovation and regional development benefits. These include the lack of understanding of the regional SME profile, and their needs and values in terms of partnerships with the University; and the investment in time and effort that will be needed to redress this. Nevertheless, there is a need to connect SMEs to the collective capacity of regional organisations, and especially to universities. Moreover, these disadvantages can be balanced against the possibility of stronger research outcomes for regional universities, such as the ability to attract additional funding (both from business as well as from larger collaborative grants), and demonstrate real research impact, as well as the contribution to regional reputation building.

Regional universities, as the key actors in regional innovation systems, have a central role to play in knowledge creation, dissemination and uptake, as well as in the machinations of the growth of regional communities. Regional universities can contribute to the multiple agendas through data collection and analysis (research) as well as through a strong engagement agenda to facilitate linkages across innovation systems (SMEs, industry, government and R&D providers). However, the current ERA evaluation paradigm appears to provide some disincentive for regional universities to undertake innovation (as opposed to 'research'), particularly with SMEs.

In the future, national strategy development for 'regions of innovation' could involve federally-resourced, strategic partnership projects between regional universities and their SME base, thus integrating a number of policy areas such as business and regional development, innovation, sustainability, global competitiveness and climate change adaptation. However, before this can

[15] These are already prepared annually by the Innovative Regions Facilitators in each of the ten federally-recognised 'regions of innovation'.

happen, a wider national debate must be stimulated around both SMEs and regional universities, and their respective roles in both regional development and innovation outcomes in Australia.

8.0 Acknowledgements

This research was supported by a discretionary grant awarded to CQUniversity by the Enterprise Connect Innovation Regions Centre (Department of Innovation, Industry, Science and Research).

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