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Planning the innovation agenda for sustainable development in resource regions: A central Queensland case study

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ABSTRACT

The ability to identify and foster innovative solutions to complex challenges is critically important in regional Australia, and particularly so in 'resource regions'. This paper explores the role for innovation in delivering regional outcomes across the social, economic and environmental domains. It describes the value of regional innovation strategies in assessing regional assets, challenges and emerging opportunities, through a case study focus on Central Queensland. This region is one of Australia's key resource hubs, which benefits from the economic activity linked with extractive, transport and processing industries, but also experiences a range of adverse social and environmental effects. Awareness of innovation systems and innovative practices allows regional development practitioners, as well as the mining industry itself, to re-frame issues and opportunities beyond current drivers, development paradigms and planning horizons. This paper presents a set of innovation-based principles to consider when developing strategic responses to these challenges and opportunities. It also introduces the concept of 'innovation wedges' to strengthen regional capacity to adjust and adapt to the rapid and cumulative impacts of resource development activity.

Introduction

Challenges in the development of resource regions

Australia features many landscapes that are rich in natural resources. The economic values of these are immense: estimates for Australian exports in resources and energy were placed at approximately $AU200 billion for 2011–12 (BREE, 2012). This high level of productivity is not a sole result of having available concentrations of mineral, ore and/or coal deposits; rather, the (economic) value is translated through the intensive extraction, processing and handling activities that are housed in Australia. Thus, 'resource regions' are usually characterised by multiple medium- to large-scale extraction and processing facilities, and typically include extensive road, rail and port infrastructure. Almost all resource-rich areas are located in regional parts of Australia, away from the densely populated state capital cities (Fig. 1). In many cases, and particularly in Queensland, these minerals-based resource development sites also coexist with agricultural uses (Carrington and Pereira, 2011).

Current expectations are for the ongoing growth of these resource regions in Australia, as well as the likely emergence of new areas of growth; with trend estimates for exploration expenditure rising by 3.1% to $AU1,056 million to the June quarter 2012, led principally by Western Australia (ABS, 2012a). Resource regions can therefore include both established communities (e.g., the Bowen Basin in Queensland; the Hunter Valley in New South Wales) as well as emerging nodes (e.g. the Surat and Galilee Basins in Queensland). In fact, the 'resource region' moniker is an impermanent one, because regional industry is fluid, capable of both expansion and contraction.

Regional Australia is a term used to describe the various non-metropolitan communities of Australia, including the inner and outer regional areas, as well as the remote and very remote areas. Most of regional Australia is represented by vast and sparsely populated rural and remote areas (Charters et al., 2011), and collectively, almost one-quarter of Australia's population resides outside of major urban areas (ABS, 2012b). The changes associated with large scale resource extraction hubs are a key issue for regional Australia. These activities bring with them complex challenges that manifest across the economic, social, environmental and governance domains: for example, this includes

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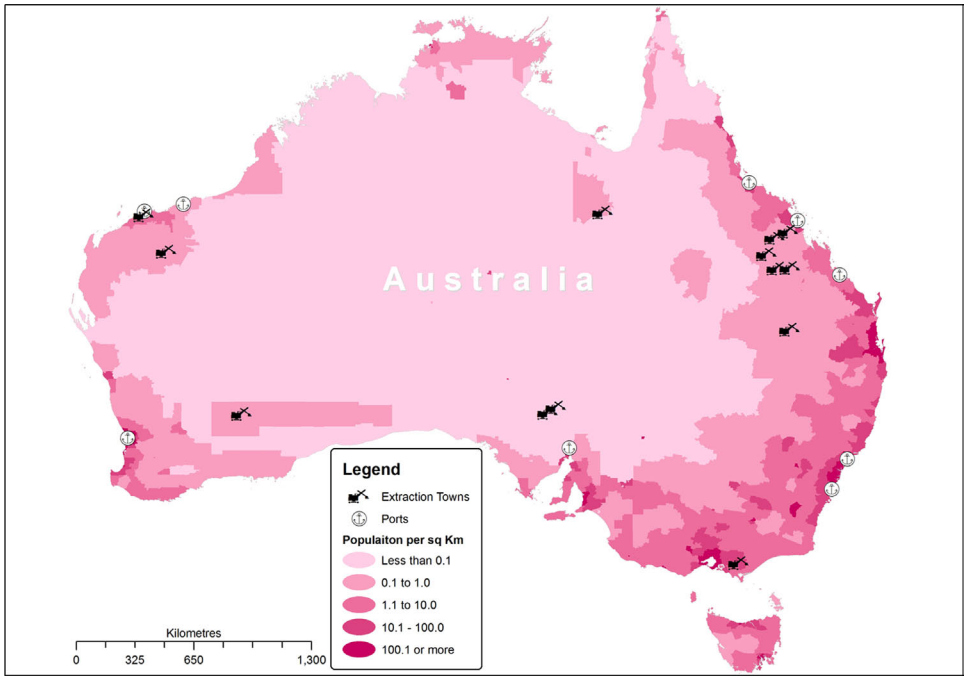

Fig. 1. Examples of key resource regions of Australia.

demographic and labour force shifts; regional governance; liveability, family and social wellbeing; cultural and civic aspects; housing; public health; workforce planning and education; transport and development infrastructure; water and energy; and environment and natural resource management (Kinnear, 2013).

Resource regions thus pose an important conundrum from both a government and community perspective: resource extraction provides significant economic return, but it does so by expending non-renewable assets. This presents a five-fold challenge. First, during rapid industrial development, resource regions are confronted by serious social issues including variable housing pressures, skilled labour shortages and lack of social ('soft') infrastructure: each of these issues have featured strongly in submissions to the current Australian House of Representative's Enquiry (Commonwealth of Australia, 2013). Conversely, the appropriate levels of economic benefit from resource regions are not always retained locally. On the one hand, economic leakage often occurs through supply chain dynamics, as well as labour force mobility; and on the other, there is the issue of appropriate return of royalties to their source regions. The latter has been a trigger point for the introduction of state government 'royalties for regions' policies in both Western Australia and Queensland, though the suitability of these approaches continues to be debated (LGAQ, 2010).

Second, although having strong economies during peak demand, resource regions are very vulnerable to downturns in the global economy. There is a strong dependence on commodity prices, demand for the resource base, and the (low) value of the Australian dollar (BREE, 2012; QRC, 2012). Consequently, during slowdowns, these regions are likely to experience unemployment (including underemployment), instability and social dysfunction. For example, in the Illawarra region of New South Wales, market changes leading to the recent closure of BlueScope Steel has created a need for widespread structural adjustment. The Federal government has since acknowledged that innovation will be integral to transitioning the region to a sustainable future, with the creation of the Illawarra region innovation and investment fund (AusIndustry, 2012). Dependency on extractive industries can also leave regions overexposed to the considerable cost risks associated with key policy shifts, such as the introduction of the carbon tax (MCA, 2011) and mineral resource rent tax.

Third, resource regions may be so dependent on extractive activity that they lack business diversity and competitiveness, and thus the ability to meet the emerging global demand for 'greener' supply chains, manufacturing processes and consumer products. Mining growth in Australia has benefitted not only from its endowment of natural resources and its proximity to Asia, but also from the maturity of structural arrangements for investment and trade, political stability, access to technology, baseline infrastructure and sophistication of human capacity. This path dependency may be both a regional and national construct, reflecting terms of trade and structural adjustment initiatives, amongst other things (Cutler, 2008).

Fourth, the concentration of major industrial and mining activity into regional hubs creates serious environmental issues, including threats to water and air quality and biodiversity.

Finally, the practice whereby physical assets are extracted without simultaneously developing legacy enterprises to fill the void has the potential to impoverish regional areas in the post-mine phase. This creates an enormous additional burden on the three tiers of Government as well as the exiting industries.

Regional innovation systems

Innovation has recently come to the fore as a key tool for enabling regional advantage (European Union, 2010); as well as being a regional advantage in its own right (Kinnear et al., 2012). The Australian Government's *Powering Ideas: An Innovation Agenda for the 21st Century* defines innovation as the capacity for invention and discovery (DIISR, 2009). Often, this can lead to innovation being viewed through the lens of producing commercialisation outcomes, as a 'business activity'. On the other hand, Pangaro (2008) argues that innovation can be interpreted much more broadly: for example, as an insight that enables change leading to 'new value', be it economic or otherwise. Under this definition, awareness of innovation systems and innovative practices can allow regional development practitioners to re-frame issues and opportunities beyond current socio-economic drivers, development paradigms and planning horizons, thus considering a wider range of regional development possibilities.