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INNOVATION AND PRODUCTIVITY IN REGIONAL AUSTRALIA *DISCUSSION PAPER*



JULY 2022

EXECUTIVE SUMMARY

National productivity growth in Australia has been lagging in recent years. Whilst this is in line with many other advanced economies, it raises significant questions about Australia's future economic growth. Largely attributed to changing population dynamics and restructuring of the economy, Australia is also experiencing a lower rate of innovation and technological adoption, business investment, and education attainment.

Regional Australia has a critical role to play – as it is both the origin of some drag on productivity growth, and the source of the required high rates of growth. National productivity growth will be enhanced, and lopsided growth avoided, if economic policies can leverage the sectors where regional Australia is already leading in productivity, while simultaneously addressing the sectors being held back.

The opportunity to support the nation's productivity growth in the regions needs to be underpinned by a well-supported innovation ecosystem, in conjunction with measures to ensure regions are highly liveable and dynamic. There has been a boom in innovation infrastructure and actors in Australia, in association with a maturation and diversity in government policy aimed at driving innovation over the last 10 years. The combination of innovation market saturation and the redirection of effort and funding due to the COVID-19 pandemic has resulted in a downturn in growth in this area. Regional Australia is lagging behind on a range of innovation indicators such as education and training, business investment in R&D, capital attraction, and regional patents and trademarks.

There is an opportunity to take advantage of the diminishing productivity returns of our largest cities, in favour of regional centres. Whilst regional housing and labour markets are both experiencing significant under-supply, housing affordability in the vast majority of regions is better than in the capital cities. The growing opportunities for high-skilled people to work in regions is seen in record numbers of vacancies for skilled tradespeople, professionals and managers in regions. This represents both an opportunity and challenge for regions, and the availability of talent will be critical to further improvements in regional innovation. The RAI has estimated that fixing the skills deficit in regions will add *\$25 billion per year* to regional and national economies.

In order to support innovation and productivity development, regional Australia needs opportunities and support such as:

- The ability to grow its own talent through regional learning systems
- World class digital infrastructure
- Innovation and entrepreneurship incubation
- Investment attraction, and
- Measures to ensure regional liveability, including housing supply.

PRODUCTIVITY IN REGIONAL AUSTRALIA

Growth in national productivity is the key to securing Australia's medium term economic future. The 2021 Intergenerational Report (the IGR) has highlighted that the Australian economy is expected to grow more slowly over the next 40 years, at an average rate of 2.6%, as opposed to 3%, over the last 40 years. The IGR notes that this reduction in output will largely be attributed to structural changes in Australia's population and the subsequent reduction in workforce participation.

As such the payoffs of increased productivity will be significant for Australia: increasing incomes, increased output, increased economic efficiency.

National productivity growth in Australia has been very slow in recent years, and this has underpinned the slow growth in real per capita incomes in Australia. Between 2009 and 2019 Australia's per capita income slipped from 10th to 13th amongst OECD countries.

The IGR illustrated Australia's slowing labour productivity growth. This decline is in line with the progression of other advanced economies, and has been affected by:

1. The slowing rate of innovation and subsequent technological adoption and reallocation of resources
2. Structural shifts in our economic activity, and in particular the rise of the service economy and shifts in population demographics
3. The challenges in measuring service and technology delivery in terms of productivity
4. Lower business investment
5. Slower growth in education attainment and lower labour quality¹

This report summarises four key aspects of regional (and national) productivity:

1. Regions lead capital cities in output per worker in five of the 19 main industries, and are fractionally behind in another three industries;
2. The biggest productivity gains are available to regional cities where agglomeration economies are still ripe for harvesting. But innovation is needed to create new jobs in new industries to offset the expected job losses from industries shedding staff as worker productivity continues to improve;
3. More balanced population growth will add significant consumer spending into regional economies; and
4. Further growth in regional productivity is being hampered by lack of skilled (qualified) workers in regions.

Bringing regional Australia into the national productivity picture will yield significant national benefits. This Discussion Paper highlights where productivity gains are available, and poses a series of policy questions to stimulate thinking around how we can best 'rebalance the nation' and maximise our economic growth.

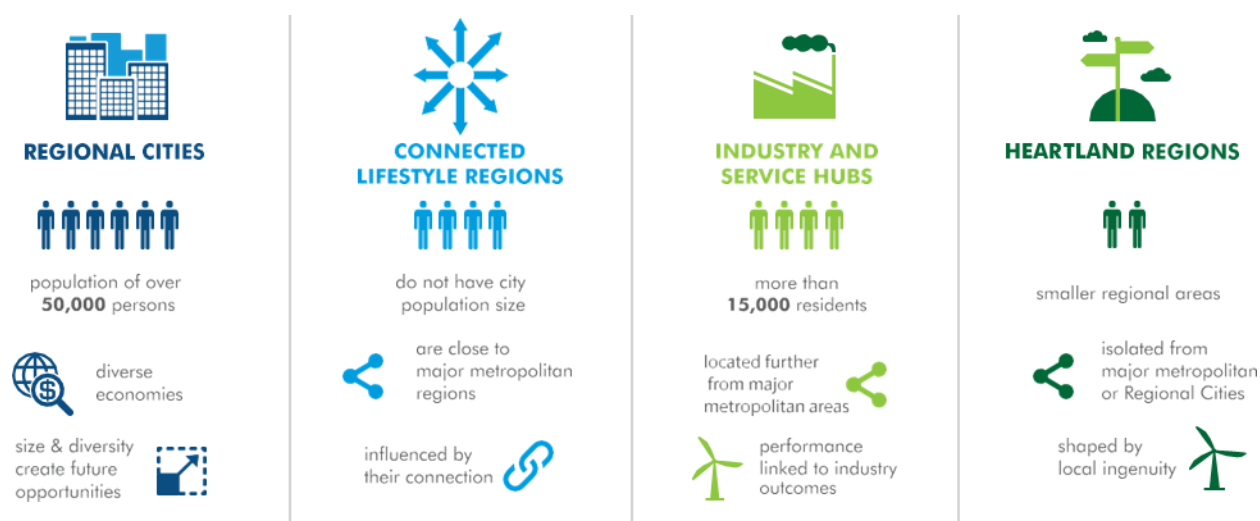
¹ Commonwealth of Australia (2021) 2021 Intergenerational Report: Australia over the next 40 years, <https://treasury.gov.au/publication/2021-intergenerational-report>

REGIONS LEADING PRODUCTIVITY

The RAI analysed regional productivity trends in its 2015 report *The Economic Contribution of Regions to Australia's Prosperity*, and found that regional Australia performs a critical balancing role when the national economy is hit by external economic challenges like the Global Financial Crisis, and that it led the nation in productivity in several industries.

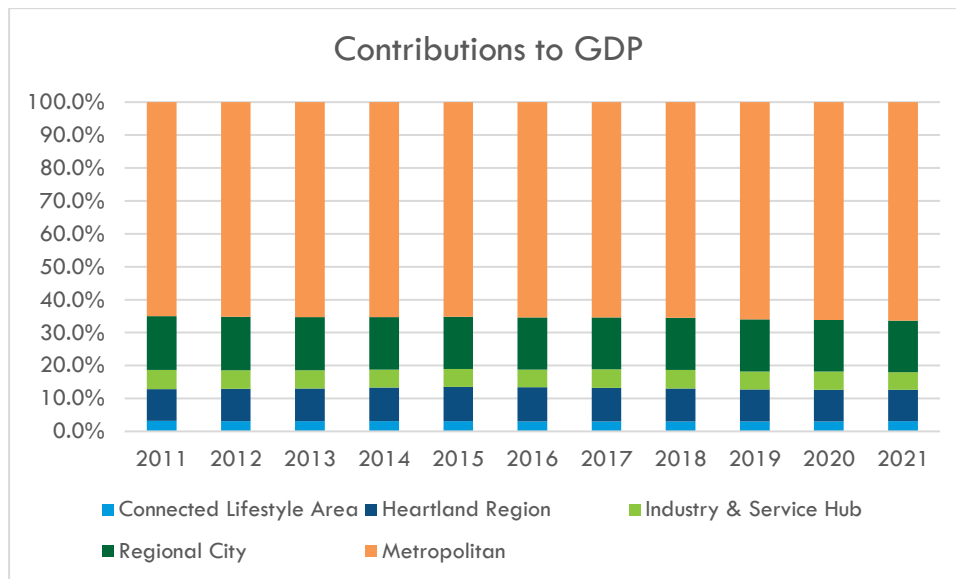
Updated analysis completed in 2022² has shown that Australia's four different regional types (Figure 1) account for over 34% of GDP.

Figure 1 RAI Regional Types



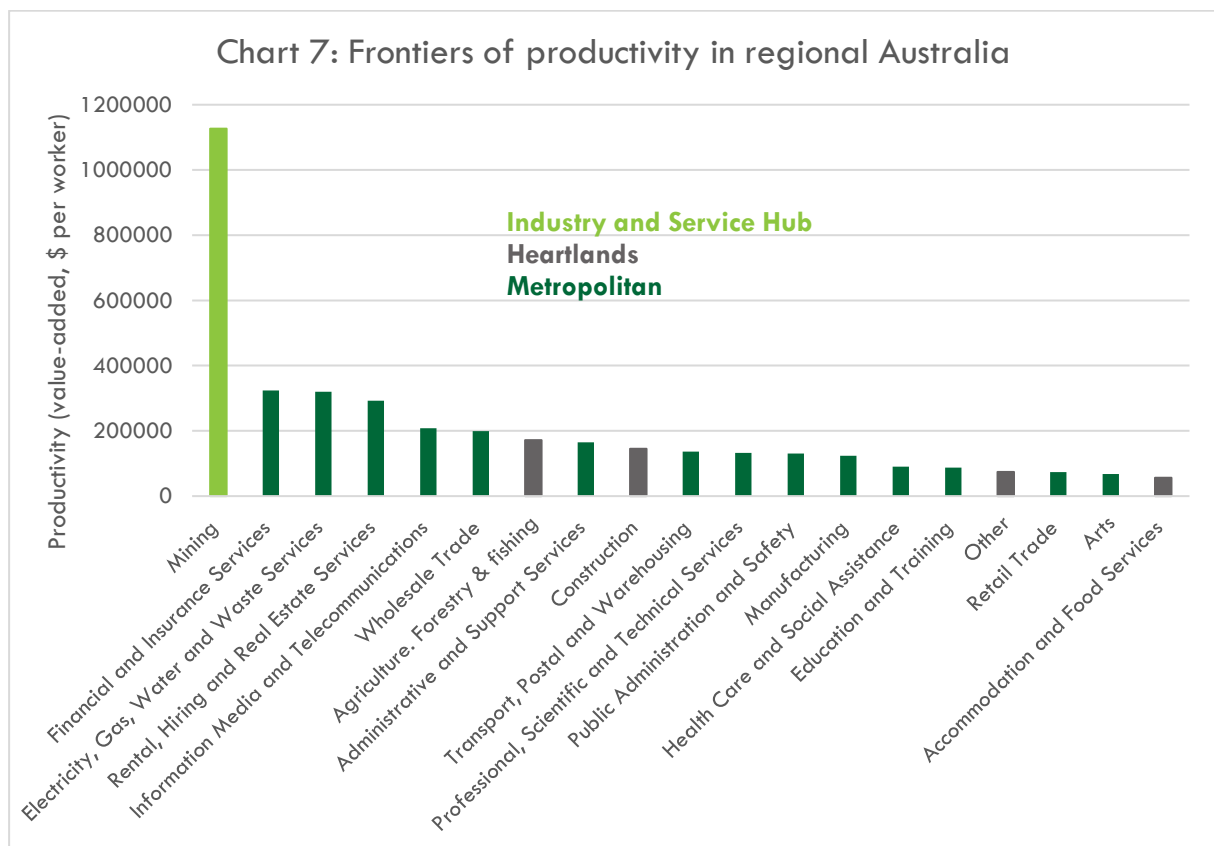
Each of the four regional types made a significant contribution to national economic activity over the last decade (Figure 3), though the overall share of regions in GDP has been declining slowly from 35.0% in 2011 to 33.6% in 2021.

² Regional output and productivity analysis prepared for the RAI by National Economics.



In five industries (Mining, Agriculture Forestry & Fishing, Construction, Other Services and Accommodation & Food Services) regions show the highest levels of productivity (Figure 2, dollars of value-added per worker) and are fractionally behind metropolitan Australia in another three industries (Manufacturing, Health Care and Public Administration)).

Figure 2 Frontiers of Productivity in Regional Australia



Over the last decade regional Australia has gained ground on metro areas in productivity terms in most industries where it was behind.

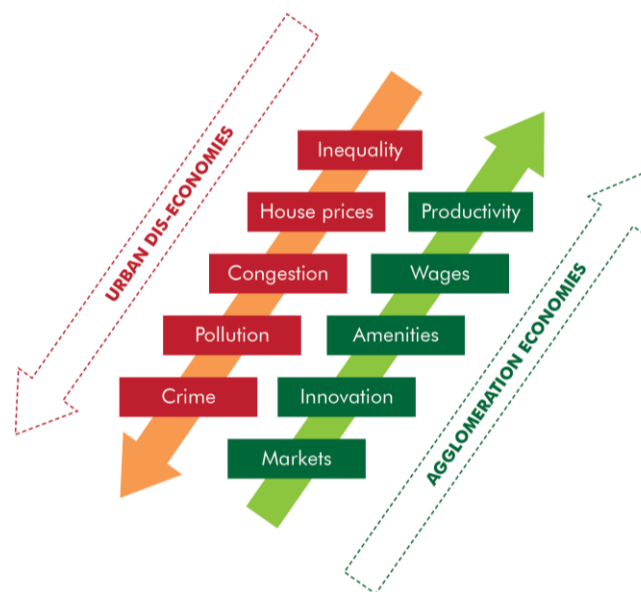
However, whilst this leading role in commodity production has contributed greatly to regional growth, there is a more nuanced story to tell in relation to regional productivity, particularly after the Global Financial Crisis (GFC). Our Heartland Regions have tended to exert a stabilising effect on overall economic growth with their contribution to economic output remaining stable over this time - this has been strongly attributed to agriculture and mining. In the aftermath of the GFC (2009 and 2010) regional Australia accounted for half of national economic growth, whilst metropolitan areas experienced a considerable slow-down.

Similarly, during the COVID-19 pandemic, the regions have shown a proclivity for driving the economy. The significant growth in regional job vacancies and the regions' experience of near full employment in the upheaval of the pandemic, coinciding with the significant up-turn in the agricultural sector due to drought-breaking rain in much of eastern Australia, has seen a quicker rebound for regional economies.

DISECONOMIES OF SCALE ... WHY BIGGER IS NOT BETTER

In the OECD economic and productivity growth is coming not from the capitals but from the second-tier cities³. This is due to there being costs as well as benefits in concentrating people and firms in one location (see Figure 3 The upsides and downsides of being a big city).

Figure 3 The upsides and downsides of being a big city



Reinforcing the importance of this focus, the OECD has found that countries with a greater number of cities, through a network of cities or polycentric urban systems, have higher per capita GDP⁴. These countries are also more likely to be resilient to place-specific shocks so that economic or environmental impacts in one place have a lower overall effect on the nation.

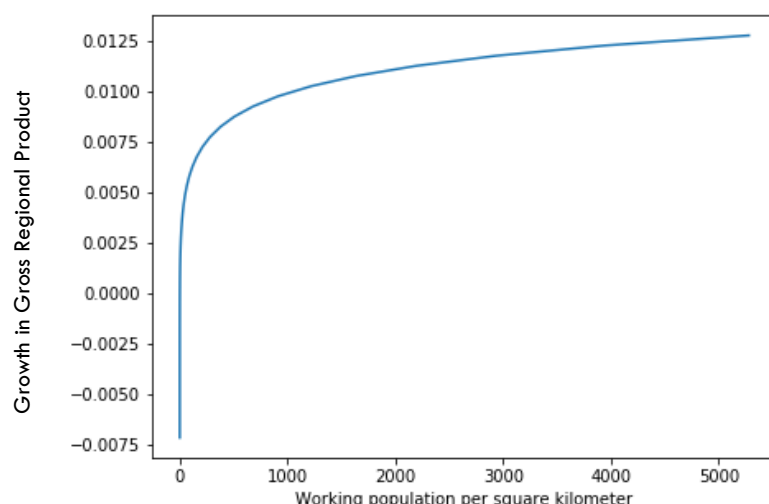
Dense cities are thought to create 'agglomeration economies' where economic efficiency is increased due to a mixture of benefits flowing from having businesses and workers in close proximity. These

³ Regional Australia Institute (2016) Deal or No Deal: Bringing Regional Cities into the National Agenda , <http://www.regionalaustralia.org.au/home/wp-content/uploads/2016/04/Deal-or-No-Deal-Bringing-Small-Cities-into-the-National-Cities-Agenda-April-2016-FINAL.pdf>

⁴ OECD (2013) OECD Regions at a Glance 2013, OECD Publishing, Paris

benefits include increased network building, lower transactions costs (e.g., communications and recruitment), and reduced transport costs. Given the importance of the agglomeration discussion in population debates, the RAI worked with Southern Cross University to develop new quantitative estimates of its contribution to growth nationally. Agglomeration economies refer to the benefits that accrue when large numbers of worker and firms cluster together, and this research examines the scale of these benefits with Australian data⁵. The results showed that there are rapidly diminishing returns for agglomeration benefits as our cities get very large. This is because the costs of being big – congestion and high cost of living – undermine the benefits of having additional people (see Figure 4).

Figure 4 Growth in regional GDP and workforce density - agglomeration effects



The results also found that the marginal gains from further densification in the CBDs of the capital cities are very small. This means that Sydney and Melbourne CBDs are already at their peak in terms of marginal gains from increased density.

In Australia places where high rates of increase in output per worker are possible with greater density are places with a workforce density of around 500 workers per square km. This looks more like the middle ring of suburbs around our capitals (e.g., Frankston or Dandenong in Melbourne, Belmont or Nedlands in Perth, and Mitcham in Adelaide) and the employment lands of regional cities, rather than the CBDs of our capitals. Importantly, once places reach these 500 workers per square km, diminishing returns begin to set in. In contrast, most other areas in Australia were well below their optimum level and are open to the full benefit of agglomeration economies.

⁵ Regional Australia Institute (2019) Regional Population Growth - Are We Ready? The economics of alternative settlement patterns, http://www.regionalaustralia.org.au/home/wp-content/uploads/2019/08/RAI_2019_RegionalPopulationGrowthReport_WebFinal-1.pdf

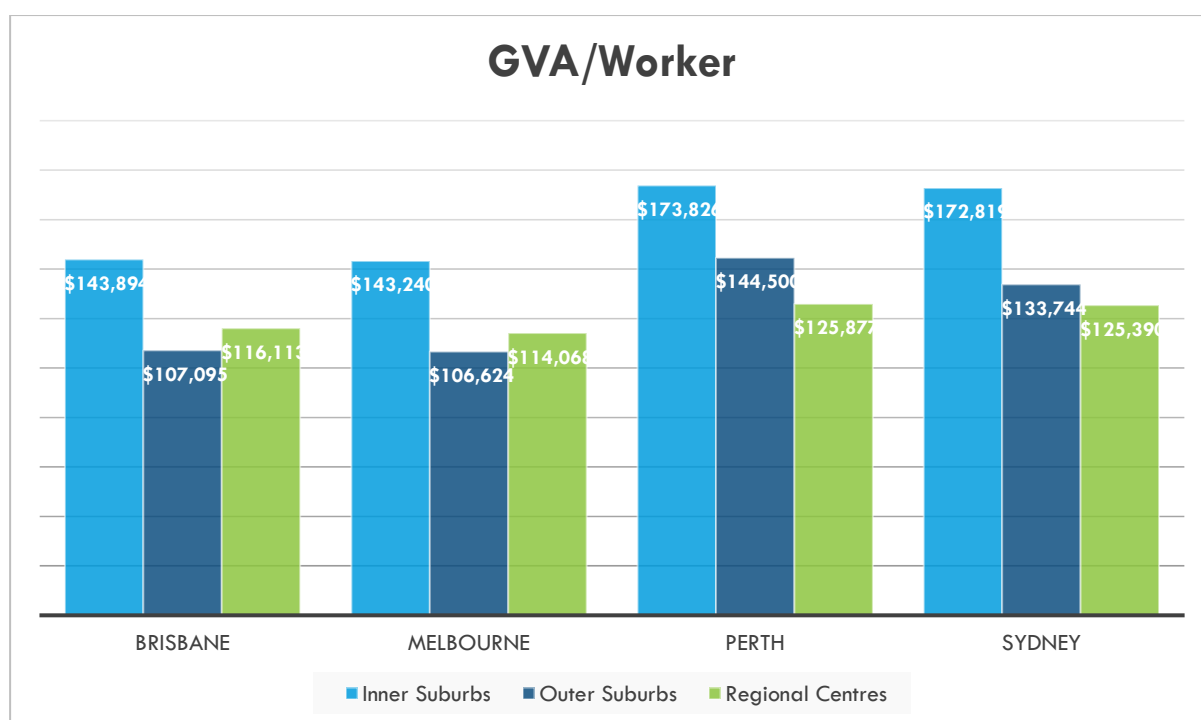
ECONOMIC BENEFITS FROM DISTRIBUTED CITY GROWTH

There are significant household and national benefits from a more dispersed pattern of future growth which rebalances growth towards our second-tier regional cities and away from our largest capitals.

The benefits stem from the similarities between many aspects of outer suburban economies and regional city economies – with the big differences being much more favourable housing and commuting costs in regional cities.

While the inner cities are clearly leaders in urban labour productivity, in fact regional centres are just as productive as the outer suburbs when it comes to gross value added per worker. In the cases of Brisbane and Melbourne regional productivity is higher than in outer suburban area.

Figure 5 Gross value added per worker



The socio-economic characteristics of outer suburban capital cities are quite close to those of regional cities. For example, in the outer suburbs of Frankston, Campbelltown and Ipswich, the mean income in 2018-19 was similar to that of the regional cities of Bendigo, Wagga Wagga and Toowoomba. The difference being between 2% and 6%.⁶ However, a stark contrast emerges when comparing average house prices. In the outer suburb of Frankston, the average home was valued at \$770,000, while in Victoria's regional city of Greater Bendigo, the figure was 32% lower at \$525,500.⁷ Similarly, in the suburb of Campbelltown of outer Sydney, the average price was \$760,000, in comparison to Wagga Wagga in which the median price was \$460,000. Bucking this trend is Ipswich, in the outer areas of the Greater Brisbane Region. However, this is in line with the general position of the Brisbane housing market in comparison to Sydney and Melbourne.

⁶ Australian Bureau of Statistics (2021) Personal income in Australia, <https://www.abs.gov.au/statistics/labour/earnings-and-work-hours/personal-income-australia/latest-release#:~:text=Data%20downloads-.Key%20statistics,87.1%25%20of%20total%20personal%20income>

⁷ CoreLogic (2021) November Quarter 2021 – Median Dwelling Prices

Table 1 Outer city suburb versus regional city

Outer City Suburb			Regional City		
LGA	Average Income 2018-19	Median Dwelling Price Nov2021	LGA	Average Income 2018-19	Median Dwelling Price Nov 2021
Frankston, VIC	\$59,308	\$770,000	Greater Bendigo, VIC	\$57,341	\$525,500
Campbelltown, NSW	\$57,545	\$760,000	Wagga Wagga, NSW	\$61,488	\$460,000
Ipswich, QLD	\$57,589	\$445,000	Toowoomba	\$56,655	\$420,000

For every additional 100,000 Australians who choose to live in small cities rather than capital cities, the RAI estimates⁸ that around \$42 billion dollars would be released into the economy over the next 30 years through reduced interest payments on mortgages alone. Released back into the consumption economy, this would represent a considerable national economic stimulus.

Small city growth can also play a role in reducing congestion problems in Australia's major cities. The avoidable cost of congestion in Australia's capital cities was \$16.5 billion in 2015. This takes into account both the value of private and business time, as well as vehicle operating costs and air pollution costs⁹.

Accordingly, for every 100,000 Australians who choose to live in small cities rather than our major cities, the savings in congestion costs would be in the order of \$292 million per year or \$4.9 billion over 30 years.

Figure 6 Regional migration impacts

**100,000 more
in regional
cities and less
in capitals**



**Avoided costs
of congestion
\$292 million p.a.**



**Liberated
mortgage
payments
\$42 billion
over 30 years**

⁸ Regional Australia Institute (2016) Deal or No Deal: Bringing Regional Cities into the National Agenda
http://www.regionalaustralia.org.au/home/wp-content/uploads/2019/08/RAI_2019_RegionalPopulationGrowthReport_WebFinal-1.pdf

⁹ BITRE (2015) Traffic and Congestion Cost Trends for Australia's Capital Cities,
https://bitre.gov.au/publications/2015/files/is_074.pdf

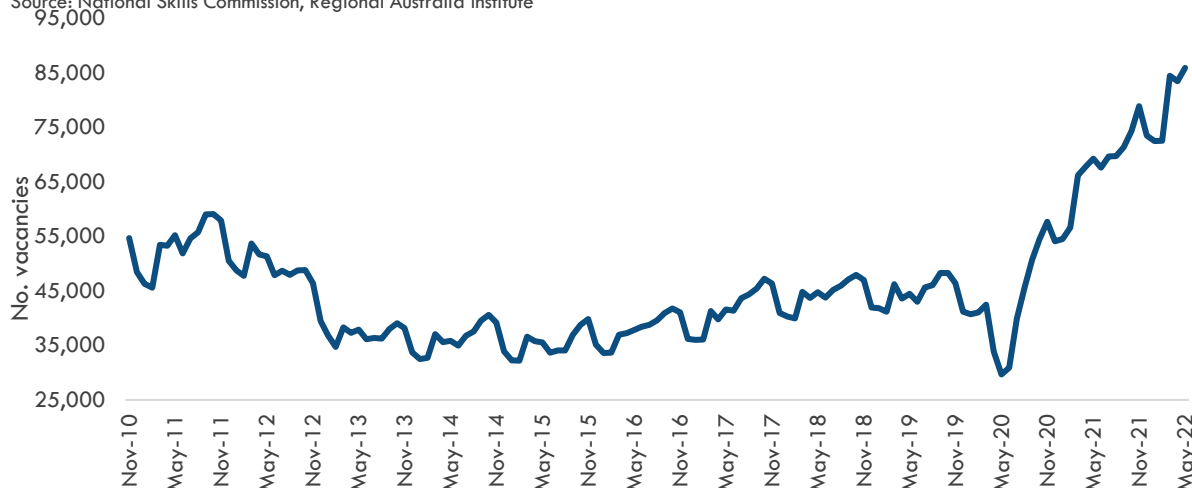
PRODUCTIVITY BENEFITS OF IMPROVING REGIONAL LABOUR MARKETS

Further growth in regional productivity is being hampered by lack of skilled (qualified) workers in regions.

There were over 86,000 job vacancies advertised across regional Australia in May 2022 – a new record. The number of regional job vacancies has nearly tripled from the low in May 2020. Most regional labour markets are very tight, with an average regional unemployment rate of just under 4%.

Regional Australia job vacancies

Source: National Skills Commission, Regional Australia Institute



Demand for labour is spread across regions and across occupations.

Number of advertised job vacancies	May-21	Apr-22	May-22	% change (monthly)	% change (annual)
Regional Australia	69,236	83,465	85,928	3.0%	24.1%
Regional NSW	21,244	23,739	24,415	2.8%	14.9%
Regional VIC	10,060	13,085	13,319	1.8%	32.4%
Regional QLD	18,910	24,025	24,986	4.0%	32.1%
Regional SA	1,495	1,753	1,824	4.0%	22.0%
TAS	2,726	3,298	3,494	5.9%	28.2%
Regional WA	5,250	6,346	6,463	1.8%	23.1%
NT	2,605	3,032	3,238	6.8%	24.3%
ACT	6,945	8,187	8,190	0.0%	17.9%
Mainland Capital Cities	161,987	201,303	208,162	3.4%	28.5%

Regional Australia is demanding higher-skilled labour, with advertised vacancies for Managers, Professionals (notably education, health and business professionals) and Tradespeople (notably automotive, engineering and construction trades) accounting for over half all advertised vacancies in most Australian regions.

There is some evidence emerging¹⁰ that some regional employers are holding off on investing for expansion due to concerns about not being able to find and retain the skilled staff they need to service that expansion.

¹⁰ *Training for Your Future*, public report from a survey of regional employers by Verto, forthcoming

Re-invigorating the quality and availability of post-school learning *in regions* is a critical part of resolving this widening skills gap.

Our regional learning systems play a critical role in driving innovation and productivity in regional Australia, and in supplying the skills that innovative businesses need. But our regional learning systems have been weakened due to the significant falls in the availability of post school learning in regions, as documented in the National Regional, Rural and Remote Tertiary Education Strategy (the Strategy)¹¹.

The Strategy's seven recommendations set out actions which will build a tertiary education system which supports equal opportunity and access for individuals from regional, rural and remote areas. The Strategy's recommendations were endorsed by the then Commonwealth Education Minister, and a Regional Education Commissioner has recently been appointed to progress the Strategy's recommendations.

The combination of declining regional learning options with increasing demand for skilled workers in regions is creating a perfect storm of workforce shortages, particularly high-skill workforce shortages which will subsequently impact on local innovation outcomes. This supply issue is evident in the proportion of the population in regional Australia with a Bachelor degree: 11.4%, in comparison to 19.5% of the Metro population. For regional Australia to match its metro counterparts, it would require another 447,856 people with degrees. Demand for degree qualified workers in regional Australia is high, with over 300,000 jobs for degree qualified people (Professionals and Managers) advertised in regional Australia in the year to May 2022.

There is a net economic impact from these weaknesses. Anecdotal feedback from many regional employers that their underlying concerns about attracting and retaining the skilled workers is holding back the investment and expansion plans for their own businesses. There is also an economic impact for regional communities in employing more highly trained people. The median salary of people employed full-time with an undergraduate degree (in FY2015-2016) was \$57,900. Multiplying this median salary by the difference in the number of people with a bachelor degree in Regional Australia and metro areas (461,760 people), would potentially translate into **\$26,735,915,732** being added to median salaries¹². There are currently around 30,000 degree-qualified vacancies being advertised across regional Australia each month (averaging over 300,000 per year), which indicates the underlying need for this imbalance to be addressed.

To further illustrate this, if skilled vacancies in 2020 in the below regions were subsequently able to be filled by people from within the community, the uplift in salaries (as per employee earnings August 2021) would be on average \$189,469,345.

Table 2 Regional vacancies and salary uplifts

Vacancy Map Region	Yorke Peninsula & Clare Valley	Tamworth and North West NSW	Port Augusta & Eyre Peninsula	Riverina & Murray	Ballarat & Central Highlands
2020 Internet vacancies	542	1691	860	4822	1763
Total salary if professional vacancies were filled	\$53,088,879	\$165,531,990	\$84,152,803	\$472,025,580	\$172,547,473

¹¹ DESE (2020) National Regional, Rural and Remote Education Strategy, <https://www.dese.gov.au/reviews-and-consultations/national-regional-rural-and-remote-education-strategy>

¹² This calculation is based on 2016 ABS Census data of qualifications by geography, and the associated median salaries.

REGIONAL INNOVATION

Labour productivity helps international competitiveness, but in regions increasing productivity is often experienced as fewer jobs in industries with increasing output. Increasing capital intensity in primary and extractive industries like agriculture, forestry fishing and mining have seen steady reductions in the number of workers needed to produce a unit of output.

Innovation does and will continue to play an important role in regional economies and overall economic growth and productivity – in expanding the economic base and creating new jobs in new industries. While regional Australia dominates employment in primary production and extractive industries, when we look at what industries are important to regional communities, we see service industries are accounting for ever increasing shares of employment. This is particularly so in higher value services such as finance and insurance services and professional and scientific services, which have seen their share of regional employment grow. This diversity in employment can stabilise industry shocks and create new regional competitive advantages.

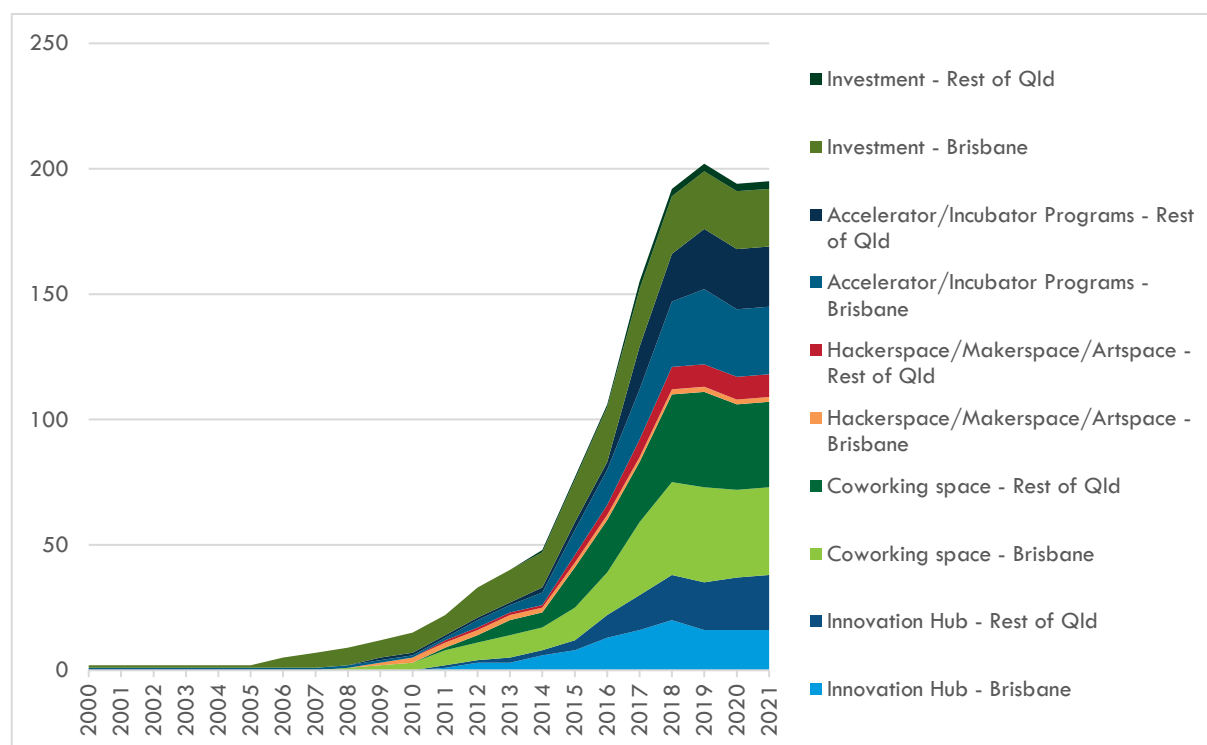
A well-developed regional innovation ecosystem will also provide a diversity of occupations for local people – everything from entry level and part time work through to high income professional roles. This helps lift per capita incomes and increase regional spending, which will in turn stimulate business formation and growth in servicing that increasing spending.

The Australian innovation ecosystem has expanded and matured over the past several years with significant government support. Significant examples of this across all levels of government include:

- **Australian Government** released the \$1.1 billion, four-year National Innovation & Science Agenda program designed to “drive smart ideas that create business growth, local jobs and global success.”
- **Queensland's** \$650 million investment into the Advance Queensland innovation program
- **Victoria's** two-year \$150 million Victorian Jobs and Investment fund allocating \$10 million to the startup-focused LaunchVic program
- **Western Australia's** \$16.7 million New Industries Fund
- **The Northern Territory's** \$89 million local jobs fund
- **Tasmania's** \$1.1 million investment into innovation hubs
- **New South Wales** support for multiple precincts including a projected \$4.3 million into a new Sydney Innovation and Technology Precinct
- **South Australia's** \$551 million investment into the Adelaide City Deal which includes the Lot Fourteen innovation hub
- **Rockhampton Council's** development of a “Smart Hub”
- **Ipswich City Council's** 2016 investment in establishing and managing the Fire Station 101 innovation hub.

In conjunction with this range of government policies and funding initiatives, has been the increase in the innovation organisations and programs across Australia – there are over 700 innovation hubs, coworking spaces, hackerspaces, accelerator programs, and risk capital investment groups established between 2014 and 2019. However there has since been a rationalisation of innovation assets, due largely to saturation, and this has only been increased by the COVID-19 pandemic which has stifled funding streams. As seen in Figure 7, there was a downturn, for example, in the number of innovation operations in Queensland since the commencement the pandemic.

Figure 7 Growth of innovation ecosystem actors in Queensland, 2000 to 2020 (Renando, 2021)¹³



DEVELOPING INNOVATION ECOSYSTEMS

In developing a regional innovation ecosystem there is the need for a systems wide and integrated approach, with an opportunity for government to impact on a range of activities in the system. Government's role is currently pointed at creating environments conducive to entrepreneurialism and corporate investment. This happens through activities such as:

- Infrastructure support
- Enhancing the connection between university and government labs to industry
- Development and delivery of regulatory policy including conducive tax policy
- Efficient contract legislation, and reducing risk inherent to bankruptcy
- Enabling education and talent development
- Enhancing attractiveness for international investors
- Advocacy for technology
- Innovation and entrepreneurship; and
- Active support and delivery of consultation and incubation programs and spaces.¹⁴¹⁵

¹³ Renando, C. (2021). The role of innovation hubs in building community resilience. [Unpublished doctoral dissertation]. University of Southern Queensland.

¹⁴ Jung, Kwangho, Jong-Hwan Eun, and Seung-Hee Lee. 2017. "Exploring Competing Perspectives on Government-Driven Entrepreneurial Ecosystems: Lessons from Centres for Creative Economy and Innovation (CCEI) of South Korea." *European Planning Studies* 25 (5): 827–47. <https://doi.org/10.1080/09654313.2017.1282083>.

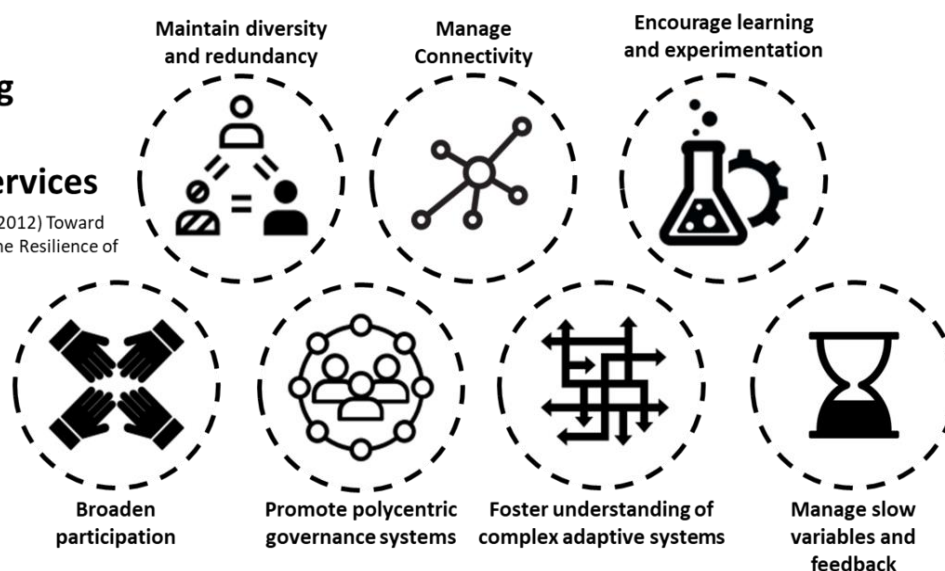
¹⁵ Lerner, Josh. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do about It*. Princeton University Press.

As outlined in Figure 9, there is a shared set of principles important to reliably develop approaches to developing local innovation ecosystems. These are based on research into shared experiences from regional leaders for ecosystem development that apply across social and ecological ecosystems.

Figure 8 Seven principles for enhancing innovation ecosystem services

7 principles for enhancing innovation ecosystem services

Sourced from Biggs et al (2012) Toward Principles for Enhancing the Resilience of Ecosystem Services



REGIONAL INNOVATION ACROSS AUSTRALIA

The regional distribution of innovation ecosystem support services across Australian states and territories is dependent on the population distribution and number of unique population centres. Regional communities tend to measure lower against a range of innovation indicators, in comparison to their metro counterparts (see Table 3 Performance against innovation indicators). These include lower business investment in R&D, lower engagement with risk capital, and fewer per capita high growth firms. Business expenditure on research and development per capita in regional areas is on average 85% lower than the amount of R&D spend in greater capital cities. Other indicators of innovation activity are similarly lower in regional areas, including patent applications (average 57% lower), trademark applications (average 59% lower), and new business entries (average 27% lower).¹⁶

¹⁶ Hassan, Samira, Francy Bulic, Stan Bucifal, Paul Drake, and Luke Hendrickson. 2015. "Australian Geography of Innovative Entrepreneurship." Department of Industry, Innovation and Science.

Table 3 Performance against innovation indicators

Region	Business R&D expenditure (\$m) per 10,000 inhabitants (2008-2016)	Annual patent applications per 10,000 inhabitants (2008-2016)	Annual trademark applications per 10,000 inhabitants (2008-2016)	Annual business entries per 10,000 inhabitants (2008-2014)
Greater Sydney	12.5	5.8	37.0	153
Rest of New South Wales	1.8	2.6	11.1	94
Greater Melbourne	11.6	5.1	34.0	145
Rest of Victoria	1.5	1.9	10.2	103
Greater Brisbane	9.5	4.7	25.9	132
Rest of Queensland	1.6	3.2	18.4	133
Greater Adelaide	4.4	4.1	24.1	110
Rest of South Australia	1.0	1.4	11.3	91
Greater Perth	16.4	5.0	19.8	136
Rest of Western Australia	1.9	2.0	7.8	108
Greater Hobart	2.6	1.9	12.7	88
Rest of Tasmania	2.2	1.6	7.9	81
Greater Darwin	6.0	1.4	8.5	124
Rest of Northern Territory	0.6	0.5	2.5	56
ACT / Canberra	2.3	7.0	22.2	103

However, the diversity of population distribution across a range of population centres is important. This supports greater complexity in the innovation ecosystem in Queensland than in other states and territories, with a greater proportion of economic activity derived from the regions (measured by share of the state's Gross State Product). Similarly regional Western Australia, with only 21% of the state's population, contributes nearly 44% of the state's GSP. This is largely due to extensive agriculture and mining activities in the regional Queensland and Western Australia. In contrast, Sydney and Melbourne encompass 65% and 77% of their states' population respectively and contribute 75% and 83% of their state's GSP (see Table 4).¹⁷

¹⁷ Australian Bureau of Statistics. 2019. "Data by Region, 2013-18, Cat. No. 1410.0." c=AU; o=Commonwealth of Australia; ou=Australian Bureau of Statistics. May 17, 2019. <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1410.02013-18?OpenDocument>.

Australian Bureau of Statistics. 2021. "Regional Population, 2019-20 Financial Year | Australian Bureau of Statistics." November 29, 2021. <https://www.abs.gov.au/statistics/people/population/regional-population/latest-release>.

Australian Bureau of Statistics. 2022. "Counts of Australian Businesses, Including Entries and Exits, July 2017 - June 2021 | Australian Bureau of Statistics." February 17, 2022. <https://www.abs.gov.au/statistics/economy/business-indicators/counts-australian-businesses-including-entries-and-exits/latest-release>.

Table 4 Regional Population and GRP shares

Region	Population	Share of Population - State	Share of GSP - State
Sydney	5,230,330	65.48%	75.10%
Regional NSW	2,757,911	34.52%	24.90%
Melbourne	4,963,349	76.82%	82.82%
Regional Victoria	1,497,326	23.18%	17.18%
Brisbane	2,462,637	49.14%	49.58%
Regional QLD	2,548,579	50.86%	50.42%
Adelaide	1,345,777	77.50%	78.95%
Regional SA	390,645	22.50%	21.05%
Perth	2,059,484	79.36%	56.35%
Regional WA	535,708	20.64%	43.65%
Tasmania	528,201		
Northern Territory	247,327		
ACT / Canberra	420,960		
Australia	24,988,234		

The following case studies highlight a range of businesses and clusters successfully operating in Regional Australia. These businesses and clusters predominantly operate across the advanced manufacturing and innovation sectors. They each have in common the capacity to build on their local competitive advantages and innovate as required to improve their businesses and the local economy and community. Across these businesses and clusters there are a number of common challenges, including access to and the ability to attract a skilled local workforce and the availability of suitable and local learning institutions, which are and will continue to hamper their ability to grow.

Schmaggmann, Laura, Marcus Spiller, and Francesca Ghinami. 2019. "Economic Performance of Australia's Cities and Regions 2018-2019 (December 2019)." SGS Economics and Planning. https://www.sgsep.com.au/assets/main/Publications/SGS-Economics-and-Planning_Economic-Performance-of-Australian-Cities-and-Regions-UPDATED-191223.pdf.

BELL BAY ADVANCED MANUFACTURING ZONE - TASMANIA

The Bell Bay Advanced Manufacturing Zone (BBAMZ) was established in 2015 by a group of local businesses as an economic development group, which has transitioned to an industry precinct with 45 members. The need for the cluster came from the reliance of businesses in the area on one component of the supply chain (the two local smelters), where now they have developed their models, networks and supply chains to be more diverse. The BBAMZ feel its success lies in good business maturity, and understanding of the need to work and grow together.



Source 1 <https://bbamz.com.au/the-bell-bay-story>

Originally the cluster was funded through a co-funding arrangement between industry, local and state government, and auspiced by RDA Tasmania. Whilst government support was important to establishing cluster, it has always been important that it is industry led, sustainable and positioned for competitive processes. The BBAMZ now operates as a separate company owned by local businesses and employs six full-time staff. It has also successfully achieved funding for a hydrogen cluster manager and won a contract for a jobs hub in the Northern Tasmania region.

The people and businesses involved in the cluster have been in the area for 40 years and have a strong connection with the community and want to give young people in Bell Bay employment and career opportunities. However the BBAMZ is experiencing trade labour shortages, which have only been exacerbated by the COVID-19 pandemic, and foresees labour shortages continuing over the next five to 10 years. Other COVID-19 challenges have included access to materials and increases in costs associate with compliance, however some companies have also leveraged opportunities out of the pandemic. One member company developed a walk-through temperature measurement system for COVID-19.

In response to the workforce challenges, and in an effort to develop the local labour force, the BBAMZ has established a group training organisation and provided apprentices with the opportunity through the various businesses involved in the cluster, for six months at a time, giving them a variety of experiences and learning opportunities. Whilst this approach leverages the advantage of the co-located businesses, there have been mixed results, as some apprentices prefer to stay with one business. The BBAMZ is also working with RTOs and TAFE to consider how to deliver training in different ways to better suit apprentices, including moving away from blocks of training.

NAMBUCCA VEHICLE BODY MANUFACTURING CLUSTER -NEW SOUTH WALES

The Nambucca Vehicle Body Manufacturing Cluster has been operating in Nambucca for the last two decades and is now a key driver of the region's economy. The cluster was established in 1998 by Express Coach Builders and Mid Coast Trucks, which together could see the geographical opportunity of being located on Pacific Highway, the low cost of land, and an available workforce (due to the recent closure of the local abattoir). Other local advantages include lower wage costs and lower costs of living for staff.

Collectively the companies involved in the cluster directly employ 250 people and involve bus, trailer and truck manufacturing, including the region's largest bus manufacturer. The cluster has succeeded in growing its collective income. In 2009, cluster group companies generated 98% of their combined \$30 million income from outside the region, a significant increase from \$16.7 million in 2005.

The cluster has struggled in the development of local learning systems that can support the growth of the local workforce. Skilled migration was trialled, however the COVID-19 pandemic closed this option down (as well as driving up input costs). During the pandemic some businesses in the cluster struggled to maintain operations and solvency due to the shortage of tradespeople. The cluster has also had to compete with the growth of other local industries, such as aged and disability care. The introduction of the NDIS, whilst creating many jobs in the region, also drew workers from the cluster's workforce, again affecting operations.

However the success of the cluster has driven the demand for industrial precincts that can accommodate growing businesses. The Nambucca Valley Council is building a new \$20 million industrial park which the cluster will be able to access. This estate is supported by \$15 million from the state and federal governments. This relationship with the local council has been a cornerstone of the cluster, with council advocating on behalf of the cluster, supporting it to undertake development applications and developing the required infrastructure.



Source 2

https://www.nambucca.nsw.gov.au/files/VEHICLE_CLUSTER_PLAN_2010.pdf

ALL INDUSTRIES GROUP - QUEENSLAND

The All Industries Group (AIG) is an innovative and multi-disciplinary engineering and fabrication specialist operating in Yeppoon, in Central Queensland. The business was established in 2014 with five employees and has subsequently grown to 40 staff members. AIG operates in the mining services, defence and transport markets with clients locally, nationally and internationally, and utilises lean manufacturing methodologies. The business is the largest manufacturer in the region and the only business in steel manufacturing. AIG has focused its development on incremental growth through systems improvements and customer relations.



The benefit for the business in operating in regional Australia has been lifestyle and liveability, as well as Yeppoon's

Source 3 <https://www.allindustries.com.au/about-us>

connectedness to a larger national network. As a business AIG has a desire to increase the scale of the local economy, whilst maintaining this liveability. The business has been keen to build relationships with local and state government, and is working with the Queensland Government's Manufacturing Hubs program.

A key component of this business is its focus on culture and skill development. Whilst AIG currently has between 35 and 40 FTE, it was once larger, but hit a brick wall. It has since scaled back operations, with a focus on creating a sustainable manufacturing eco-system, supporting human capital. AIG works with local schools and community to develop its workforce pipeline, including through the Gateway to Industry schools program, which is focused on industry-based collaborative learning. The business currently has a mechatronics engineering cadet, undertaking remote learning through Central Queensland University. Once AIG attracts staff, it focuses on skills, capability and leadership development. Whilst many regional businesses are trying to fill high-skill vacancies, AIG is not experiencing a skills shortage.

AGRISTART - WESTERN AUSTRALIA

Agristart is located in southwest Western Australia and is focused on agtech and regional innovation programs, providing accelerator and incubator programs for regional businesses. The organisation works in partnership with the Department of Primary Industries and Regional Development and the Grains Research and Development Corporation to deliver these programs, which provide support to businesses through mentorship, skills development, networking, and investment opportunities.



Agristart have subsequently been able to run five accelerator programs and six regional incubator programs. These programs have sought to help businesses and start-ups overcome distance and population challenges, develop confidence to grow, and attract investment from both in and outside of Western Australia. However, the COVID-19 pandemic has required Agristart to develop its programs into a hybrid model, which has reportedly reduced the networking and investor exposure aspects of the program.

Source 4 <https://www.agristart.com.au/>

While Agristart was established in Perth, the business has since relocated to southwest Western Australia. The benefits moving the business to regional Australia are predominantly lifestyle related – proximity to nature whilst maintaining proximity to the office. Acknowledging the expertise available in the regions, Agristart have sought to grow the business locally and contribute to the economy by hiring locally.

BOWHILL ENGINEERING - SOUTH AUSTRALIA

Bowhill Engineering is a family-owned South Australian business, that over the last 30 years, has evolved from a diesel mechanic business to structural engineering. The business specialises in heavy and complex structural steel and has completed projects across Australia.

Bowhill Engineering works with its clients to understand problems early, and develop innovative and bespoke solutions that capitalise on



Source 5 <https://boweng.com.au/our-story/>

competitive advantage. This includes the business's regional location on the Murray River which has allowed it to utilise transport project components, such a hull for a Murray River ferry, completed in 2018. Whilst Bowhill's regional location can at times be seen as a negative, the business finds that the lifestyle available to people in the region wins prospective employees over. Bowhill is also strongly integrated into the local community, as a large employer and at times as the local post office, after the local store burnt down.

Bowhill Engineering is looking to grow its current staff of 40 to 140 over the next 10 years and grow its revenue from \$10 million to \$40 million. The business also has plans to undertake significant facility upgrades. However, it is facing significant recruitment challenges, particularly as it competes with mining and defence for skilled workers. Whilst the business has enough work for 2022, their capacity is limited by staff numbers. A considerable amount of government investment in infrastructure in eastern Australia is driving demand, but the business is finding there isn't the staff to do the work.

The availability of housing is also having an impact on Bowhill Engineering's ability to attract and retain staff. is considering a range of strategies including a drive-in, drive-out model that includes free on-site accommodation from Monday to Thursday; offering staff free rent for six months; and a rent-to-buy scheme with the aim of keeping apprentices in the area. Bowhill is also considering using any on-site accommodation as Airbnbs on the weekend.

SPEE3D - NORTHERN TERRITORY

The founders of Spee3d established the business to fill a gap in the advanced manufacturing market – cost-effective, efficient and accurate manufacturing of metal parts. Spee3d has combined the newer technology of 3D printing with an older coating technique to develop its one-of-a-kind cold spray technology.

The business operates in Darwin (Research and Development) and Melbourne (Manufacturing), and currently employs approximately 60 staff.

With experience in manufacturing all over the world, Spee3d find Australia, and Darwin in particular, a great environment

for innovation and advanced technology development. Australia has the right knowledge and qualifications, in combination with the need and drive to solve efficiency issues, as well as the space and safety to do. Darwin offers a great lifestyle with reduced commute times, which compliments the problems solving nature of work at Spee3d. The business finds it doesn't often have staff shortages.

The business's Darwin location during the COVID-19 pandemic meant lockdown impacts were minimal. Further, the nature of the business, in providing onsite manufacturing allows for it to truncate supply chains- a highly valuable proposition for clients and partners.

Spee3d also works with a range universities and research groups across Australia and sees an opportunity for Australia to become a world leader in advanced manufacturing and make 'innovation' a major export. This would compliment Australia's existing mineral industries, value adding advanced manufacturing to the sector.



Source 6 <https://www.spee3d.com/about/>

CLEAR DYNAMICS – VICTORIA

Clear Dynamics was established six years ago and is the only company building enterprise platforms for any industry, automating the platform development process.

The business is located in Bendigo, which has a reputation of being a liveable city, but has staff all over the country. It is 1.5 hours from Melbourne and is known for its proximity to the natural environment.



Clear Dynamics has capability in research and development, artificial intelligence and machine learning, due to staff relocating from all over the world to work in regional Victoria. Staff have chosen to make the move to Bendigo due to its liveability: a reduced cost of living, easy access to parking and educational choices. The COVID-19 pandemic also provided a silver lining for the company, with more people giving greater consideration to a regional lifestyle.

Clear Dynamic's development has been driven by its regional location and associated liveability benefits, as well as its use of technology and mindfulness practices. This has been supported by a strong local innovation ecosystem, including the presence of other large enterprises and organisations, such as Bendigo Health and Bendigo Bank. This presence supports a community of knowledge and capability. Clear Dynamics is also engaged with the local university and TAFE and has a range of graduates working in the business.

Clear Dynamics has also found its regional location has not limited its ability to network with large corporates internationally and regionally. The company notes there is also a legitimate conversation emerging within the IT industry about the benefits of working in the regions.

DISCUSSION QUESTIONS

It is evident that regional Australia plays a crucial role in the productivity and growth of the Australian economy, and that capacity for regional businesses and economies to utilise innovation to increase productivity is integral to this. However, the factors affecting regional Australia's capacity for innovation relate to economies of scale and deep business clusters, and to the ability to train and retain a local workforce. It is critical that regional communities can grow their own workforce from within as well as continue to bring workers in from other parts of Australia and overseas. With diverse learning options and regional student support, the lifestyle and amenity advantages to living and working in regional Australia will attract and keep these people in the regions.

1. How can we introduce measures to strengthen regional innovation systems (including implementing measures of innovation), and accelerate the take up of innovative systems and practices in regional businesses?
2. How can we better connect efforts to foster innovation at the local, regional state and federal levels, based on the seven principles?
3. How can we promote investment prospects for regional Australia – including investment to support the supply of regional housing?
4. How can we develop agreement on a National Population Plan for Regional Australia – a blueprint for more balanced population growth?
5. How can we redress the decline in availability of post school learning (VET and tertiary) in regions and fast track implementation of responses to the seven recommendations of the National Regional, Rural and Remote Tertiary Education Strategy?
6. What examples can you provide from your jurisdiction, of policy responses aimed at driving productivity and innovation?