



Australian Government
Productivity Commission

Transitioning Regional Economies

Productivity Commission
Initial Report

April 2017

This initial report has been prepared for further public consultation and input. The Commission will finalise its report after these processes have taken place.

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The Productivity Commission

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website (www.pc.gov.au).

Opportunity for further comment

You are invited to examine this initial report and comment on it by written submission to the Productivity Commission by Monday 31 July 2017. Further information on how to provide a submission is included on the study website at www.pc.gov.au/inquiries/current/transitioning-regions/make-submission.

The final report will be prepared after further submissions have been received and further consultations have been undertaken, and will be published in December 2017.

Commissioner

For the purposes of this study the Commissioner is Paul Lindwall.

Terms of reference

A study on the transition of regional economies following the resources boom

I, Scott Morrison, Treasurer, pursuant to Parts 2 and 4 of the Productivity Commission Act 1998, hereby request that the Productivity Commission undertake a study into the geographic impacts of the transition of the Australian economy following the resources investment boom.

Background

The transition from the mining investment boom to broader-based growth is underway. This transition is occurring at the same time as our economy is reconciling the impacts of globalization, technological and environmental change.

By its nature, the geography of our economic transition will not be consistent across the country.

The combination of forces driving the transition of our economy will unavoidably create friction points in specific regional areas and localities across the country, while being the source of considerable growth and prosperity in others.

The different impacts across the geographic regions of the Australian economy occur because of variable factors such as endowments of natural resources and demographics. Some regions may also have limited capacity to respond to changes in economic conditions; for example, due to different policy or institutional settings.

Scope of the research study

The purpose of this study is to examine the regional geography of Australia's economic transition, since the mining investment boom, to identify those regions and localities that face significant challenges in successfully transitioning to a more sustainable economic base and the factors which will influence their capacity to adapt to changes in economic circumstances.

The study should also draw on analyses of previous transitions that have occurred in the Australian economy and policy responses as reference and guide to analysing our current transition. The Commission should consult with statistical agencies and other experts.

In undertaking the study, the Commission should:

1. Identify regions which are likely, from an examination of economic and social data, to make a less successful transition from the resources boom than other parts of the country at a time when our economy is reconciling the impacts of globalization, technological and environmental change.
2. For each such region, identify the primary factors contributing to this performance. Identify distributional impacts as part of this analysis.
3. Establish an economic metric, combining a series of indicators to assess the degree of economic dislocation/engagement, transitional friction and local economic sustainability for regions across Australia and rank those regions to identify those most at risk of failing to adjust.
4. Devise an analytical framework for assessing the scope for economic and social development in regions which share similar economic characteristics, including dependency on interrelationships between regions.
5. Consider the relevance of geographic labour mobility including Fly-In/Fly-Out, Drive-In/Drive-Out and temporary migrant labour.
6. Examine the prospects for change to the structure of each region's economy and factors that may inhibit this or otherwise prevent a broad sharing of opportunity, consistent with the national growth outlook.

Process

The Commission is to undertake an appropriate public consultation process including consultation with Commonwealth, State and Territory governments, as well as local government where appropriate.

The final report should be provided within 12 months of the receipt of these terms of reference, with an initial report provided in April.

The Hon Scott Morrison MP
Treasurer

[Received 15 December 2016]

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Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
APVMA	Australian Pesticides and Veterinary Medicines Authority
ASIC	Australian Securities and Investments Commission
BLADE	Business Longitudinal Analysis Data Environment
CBD	central business district
COAG	Council of Australian Governments
FIFO	fly-in, fly-out
GDP	gross domestic product
GRP	gross regional product
IAC	Industries Assistance Commission
IC	Industry Commission
NBN	National Broadband Network
OECD	Organisation for Economic Cooperation and Development
PC	Productivity Commission
PCA	Principal components analysis
RDA	Regional Development Australia
RGF	Regional Growth Fund
SA2	Statistical Area Level 2
SA4	Statistical Area Level 4
SEIFA	Socio-Economic Indexes for Areas

OVERVIEW

Key points

- The mining boom has caused transitional pressures, but it has also made Australians substantially better off in the long term. A mobile workforce (including fly-in, fly-out) has spread the benefits of the boom across workers living in other regions, as well as reduced the cost of both the investment phase and the ongoing production phase.
- About 80 per cent of regions have had positive employment growth over the past five years.
- Even though overall employment growth has been positive, all regions have had highly variable growth in employment over time, with most also experiencing decreases at times.
- Adjustment from the mining boom may not be the largest source of dissatisfaction outside of capital cities. Over the past five years, employment and population falls are evident in some agricultural and a small number of mining regions.
- In agriculture, employment decline is driven by efficiencies and technological innovation, leading to growth in production using less labour. At the same time, there has been a pattern of consolidation from smaller towns to larger regional centres, affecting the social fabric of these communities and engendering a feeling of being left behind as Australia prospers more generally.
- Caution is required if making policy decisions based on the rankings of regions using the estimated metric of relative adaptive capacity in this initial report. There is unavoidable uncertainty about its estimated value for each region, and actual adaption to any specific disruption would be affected by factors beyond the metric.
- The factors shaping adaptive capacity include: people-related factors (educational achievement, employment rates, skill levels, personal incomes and community cohesion); the degree of remoteness and accessibility to infrastructure and services; natural endowments (such as agricultural land) and industry diversity.
- Most mining regions appear to be resilient and have relatively high adaptive capacity.
- Regions with a greater dependency on manufacturing have relatively low adaptive capacity.
- Remote and very remote regions (including Indigenous communities) also tend to have relatively low adaptive capacity.
- There is no 'one size fits all' approach that will promote successful adaptation in all regions, although there are 'no-regrets' policies that should be pursued as soon as practicable.
- Strategies for successful adaptation and development are those that focus on supporting people in regional communities to adjust to changing economic circumstances. Strategies work best when they are:
 - identified and led by the local community, in partnership with all levels of government
 - aligned with the region's relative strengths
 - supported by targeted investment in developing the capability of the people in the local community to deal with transition, adaptation, and securing an economic future
 - designed with clear objectives and measurable performance indicators and subject to rigorous evaluation.
- Although government expenditure on projects can create short-term employment, it often does little to support transition and long-term sustainable growth in regions.
- The initial findings in this report could change when data from the 2016 Census of Population and Housing become available in October and further research is undertaken.

Overview

The most recent investment boom in the resources sector (which ended in about 2013) was a confluence of high commodity prices, increased demand, substantial construction of new mining capacity and a sustained increase in production levels. A larger than usual commodity cycle has been notable (box 1). Although the cyclical nature of mining activity is unsurprising, the amplitude of the most recent cycle was relatively large. This resources cycle has presented both opportunities (short- and long-term) and challenges for workers, business owners, people in communities and governments.

The transitional pressures (both in the investment and post-investment operational phases) have been distributed across regions. For example, in Western Australia, the employment effects have been distributed across the state, particularly in the Pilbara, the greater metropolitan area of Perth and regions south of Perth. A significant number of people who were employed in construction and mining lived in Perth and southern regions, which collectively supplied about 70 per cent of the fly-in, fly-out workers for the north-west of the state during the construction phase. This has alleviated transition pressures and enabled a larger number of workers and businesses to share in the opportunities. There is a similar story in Queensland.

Overall, Australia has benefited substantially (and will continue to benefit) from the resources boom. It has led to higher incomes on average for individuals, larger profits for many companies engaged in mining, and increased revenues for State and Territory governments and the Australian Government. The slowing of the investment phase has caused transitional pressures. Many Australians and some governments assumed wrongly that the investment phase would stay stronger for longer and were unprepared for its winding down. Yet Australia as a whole is better off because of the boom.

It is against this backdrop that the Australian Government has asked the Commission to undertake a study into the geographic impacts of the transition of the Australian economy following the resources investment boom.

At the same time, there are other long-term transitions taking place in regions. There is increasing urbanisation driven partly by the long-term trend of productivity improvements in the agricultural sector and associated consolidation and growth of regional towns and centres. The trend to urbanisation and the relative growth in services is not confined to Australia — many OECD countries have experienced a similar long-term trend.

It is important to note that Australia's regions have enjoyed overall employment growth and improved social connections as technology is helping bring people closer together.

This has provided new opportunities for many regional towns and helped cement their long-term viability and vitality.

However, there are some regions that have been more directly affected by the pressures of changing economic circumstances and some that face substantial challenges in forging a sustainable future. It is these regions that are a focus of this study.

Box 1 **The mining commodity and investment cycle was large**

Western Australia

Economic growth peaked at 9.1 per cent in 2011-12 and business investment accounted for over 34 per cent of economic growth in 2012-13 (the average was about 12 per cent between 1989-90 and 2004-05). Following the end of the investment phase, economic growth slowed and in 2015-16 was the lowest in 13 years, at 1.9 per cent. While economic growth has remained positive, 88 000 people were unemployed (on average in the year to February 2017) compared to less than 40 000 people in 2008. The unemployment rate rose from about 3 per cent in 2008 to over 6 per cent in the year to February 2017. Total employment has also decreased by about 10 000 people (nearly 1 per cent) over the past year (on average to February 2017).

Queensland

Construction expenditure in Queensland rose to unprecedented levels during the boom, peaking in 2013-14 at \$36.6 billion, and subsequently decreased by about 70 per cent. Unemployment in Queensland also decreased to about 80 000 people on average in 2008, but has since almost doubled, reaching about 155 000 people in the year to February 2017. During this period the unemployment rate rose from less than 4 per cent to over 6 per cent.

What the Commission has been asked to do

In essence, the task for this study is to:

- identify regions that face significant challenges in successfully transitioning to a more sustainable economic base
- establish a single economic metric to rank regions most at risk of failing to adjust
- for regions considered at risk of failing to adjust, identify factors that influence their capacity to adapt to changes in economic circumstances
- devise an analytical framework for assessing the scope for economic and social development in regions, and examine prospects for, and inhibitors to, change to the structure of regional economies.

The Commission has been asked to publish an initial report by April 2017. To meet this deadline, the Commission has delivered a streamlined initial report and tailored its consultation processes. A full final report will be published in December.

Following the publication of the initial report, the Commission will consult widely in regions, seeking feedback and suggestions from interested persons and organisations on its initial report, findings and information requests.

In light of this, there is a high likelihood that the analysis and findings will change for the final report, due to:

- access to the 2016 Census of Population and Housing data in October 2017, which is paramount to this study
- consultation and feedback from participants
- scope to undertake further research that was not practical for the initial report.

Documentation for the single metric will be published on the website for this study by the end of June.

Framework for assessing adaptation and development

All regions are considered

All regions of Australia (both urban and non-urban) are considered in this study (box 2), not just those directly affected by mining investment, such as the Pilbara, Surat and Bowen basins, and the Hunter Valley. The mining investment boom has had widespread effects on regions through:

- an expansion of mining capacity and increased production in mining regions
- the mobility of workers between regions induced by the construction phase (and the operational phase) through relocation; fly-in, fly-out; and drive-in, drive-out workers
- many mining workers (including construction) working principally in capital cities and not on-site in mining regions
- the contribution of the boom and its end to the rise and fall in the real value of the Australian dollar, which has affected regions with significant non-mining export sectors (such as agriculture) and import-competing sectors (such as manufacturing, which is often based in major cities)
- the associated rise in energy prices in eastern Australia, particularly as the domestic gas market links to the world market and domestic prices move towards export parity.

There are also some regions that are subject to transitional pressures from other sources, such as environmental, energy and climate change policies (for example, the Latrobe Valley and Port Augusta/Leigh Creek) and other economic and policy changes affecting

industries in regions (examples include vehicle manufacturing in Geelong and North Adelaide).

Box 2 What is a region?

'Regions' can be defined in many ways, and the way that they are best defined is likely to depend on the policy purpose of the analysis. For example, the definition used in this study is likely to be different from the definition used in a study of the Murray-Darling Basin, where environmental issues regarding water are the main policy interest.

Within the context of this study, there is no clear answer as to how regions are best defined. 'Regions' could be based on economic characteristics ('mining' or 'manufacturing' regions), administrative units (such as local government areas), or the effects of the resources boom (for example, towns that are interrelated because of fly-in, fly-out workers).

Due to the widespread effect of the resources boom and the variability in the data across regions that might be considered similar, the Commission has used geographical regions defined under the ABS Australian Statistical Geography Standard.

Most of the analysis uses regions defined at the Statistical Area Level 2 (SA2) and Statistical Area Level 4 (SA4). There are 2196 SA2s, each representing communities that are linked socially and economically. There are 88 SA4s which represent larger geographical areas — for example, inner Perth is represented by one SA4 region, and includes 14 SA2 sub-regions (including Perth City and Cottesloe).

Key elements of the framework

The study of the economic resilience and adaptation of local and regional economies has gained momentum since the global financial crisis. The ideas have found their way into policy debates about building regional economic resilience. A major challenge is that there is no generally accepted way to measure economic resilience and adaptive capacity (indeed, there are not even common definitions of these terms). As such, caution is needed with the interpretation of the information presented in this report and its application to policy making aimed at building resilience and promoting economic development in regions.

There are three key elements to the framework adopted for this study, discussed below.

Economic performance over time

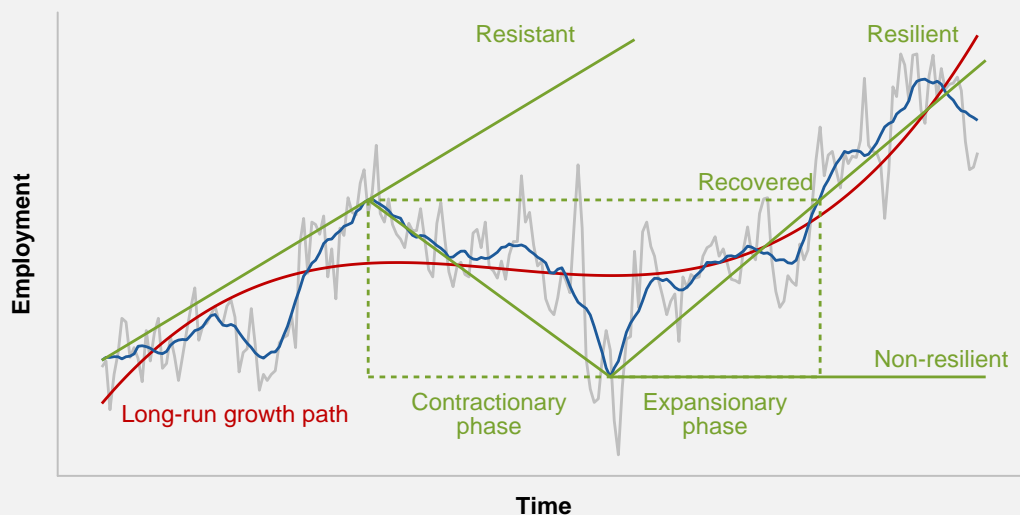
The first element is to observe change in the economic performance of regions over time. From this, insights can be gained about how regions have transitioned or are transitioning from economic disruptions (box 3).

Box 3 An illustration of the concept of economic resilience

The goal is to identify 'disruptive events' in regional economies by examining the path of economic growth over time. If a disruptive event is identified, then the growth experience following the event can be used to categorise the region as:

- resistant, whereby the event does not disrupt the growth path. The identification of this type of region is problematic unless the event is identified externally by means other than observing growth in the region
- resilient, whereby following the disruption the regional economy recovers and returns to a positive growth path
- non-resilient, whereby the region is unable to recover from the disruption.

It is challenging to distinguish between genuine 'disruptive events' and the normal cyclical ups and downs and variability in performance. The stylised example here is for a disruptive event that has a negative impact on the growth path. It is also possible to have a short-term disruptive event that is positive, such as an investment boom.



From an examination of economic growth over time, it might be possible to identify regions that have experienced a significant disruptive event, and determine whether they recovered (were resilient in an absolute sense) or whether their growth path stagnated or deteriorated (were non-resilient). If such regions can be identified, it would then be possible to examine factors associated with observed resilience and, in principle, to direct policy to increasing resilience.

In practice, operationalising this concept has proved challenging with the time series data available and the level of regional disaggregation possible. It has been difficult to observe events at a regional level that are out of the ordinary (using criteria such as the amplitude and duration of business cycles). This is not to say that at a personal level, workers and business owners have not experienced significant pressures.

The analysis of employment data suggests that regions are continually experiencing ups and downs, as illustrated in box 3. There are also longer-term trends across classes of regions, including those that are predominantly focused on mining or agriculture, or that are regional population centres (towns and cities). These observations are used to paint a picture of changes taking place across classes of regions and to examine the factors at play in shaping their development path.

Single economic metric of relative adaptive capacity

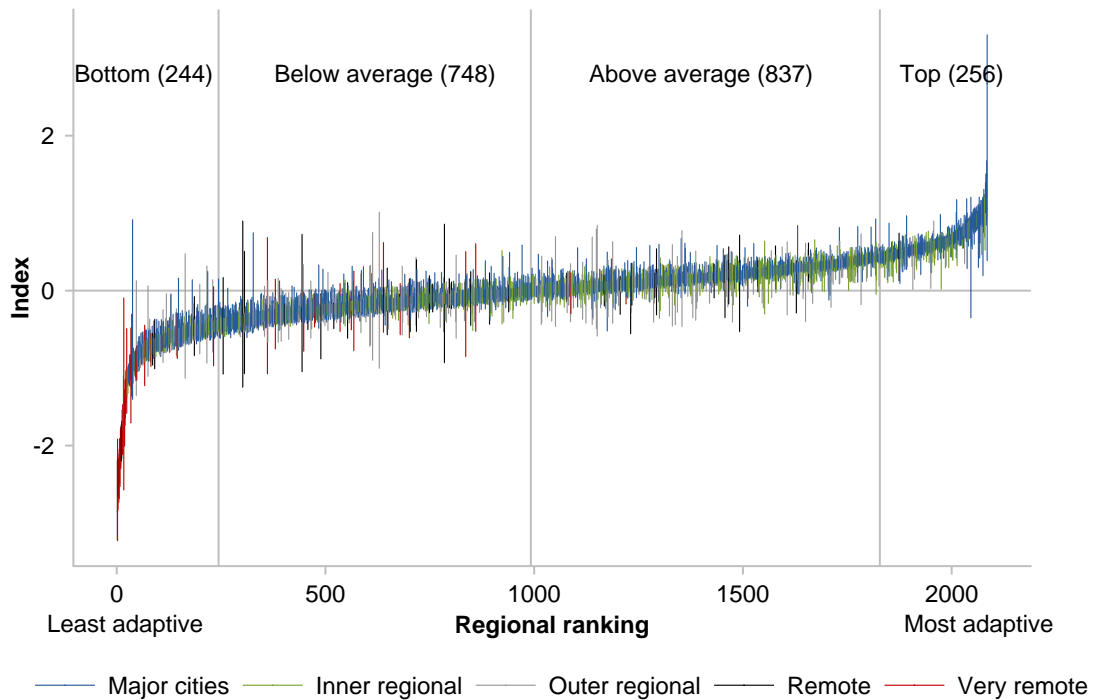
The Commission has been asked to develop a single economic metric that can be used to rank and identify regions most at risk of failing to adjust successfully to economic disruptions. This is the second element of the approach adopted in this study and is achieved by creating an index of the relative adaptive capacity for each region using data from the 2011 Census of Population and Housing for regions at the Statistical Area Level 2.¹

Relative adaptive capacity is an unobservable attribute of a region that can be inferred using a set of observable factors considered important in shaping adaptive capacity. It is not a measure of resilience or actual adaptation to disruptive events, which can vary in magnitude and type across regions. Rather, it is a summary of the complex set of factors, including the skills and education of regional workforces, access to infrastructure and services, availability of natural resources, financial resources available to business owners and individuals and the diversity of industries. It is a relative measure, derived using data across all regions. Principal component analysis has been used to construct the metric. This is a method applied to develop similar metrics, such as the ABS Socio-Economic Indexes for Areas (SEIFA). In general, regions with higher adaptive capacity have attributes that are associated with increased potential to transition successfully following an economic disruption.

It is difficult to capture the unique features of diverse regions in a single metric. Obtaining data on a consistent basis for all regions has proven challenging. Imperfect proxies have been used to measure a number of the underlying factors thought to shape adaptive capacity, particularly social factors and natural resources. Sensitivity analysis provides insights into the uncertainty about the estimated value of the index score for each region, and therefore their relative rankings. There are a large number of regions whose rankings could change substantially when different variables are included within the analysis, illustrated by the large ranges in the scores for each region (figure 1).

¹ For the final report, the Commission intends to use data from the 2016 Census which, importantly, were collected after the end of the mining investment boom.

Figure 1 High uncertainty in the rankings of adaptive capacity
 Index values for each region and their 90 per cent confidence intervals, regions sorted from lowest to highest



Even if adaptive capacity could be measured accurately, on its own it does not identify whether regions will be successful in transitioning to a more sustainable economic base following a disruption. Actual outcomes depend on how sensitive a region is to a particular disruption and the opportunities available to regional communities. It depends on the many decisions made by people within those communities as they respond to change in a way that is in their best interests. This limits the suitability of the metric as a guide for policy decisions. However, the metric can be used to explore some broad themes and patterns of adaptive capacity in Australia's regions.

Framework for economic and social development

The third element is a policy framework to assess the scope for economic and social development in regions and the factors that may inhibit adaptation to changing circumstances. The framework (outlined later) is intended to provide guidance to governments that choose to support adaptation and development in regions.

Strategies for successful adaptation and development are those that focus on supporting people in regional communities to adjust to changing economic circumstances. Strategies work best when they are led by the local community (in partnership with all levels of

government), are aligned with a region's relative strengths, and are supported by rigorous evaluation of projects and targeted investment in the capabilities of people. Governments should focus on the people who reside in regions — both urban and non-urban — rather than the geographical areas themselves. The movement of people from one region to another can be important to their wellbeing.

A snapshot of regional growth and adaptive capacity

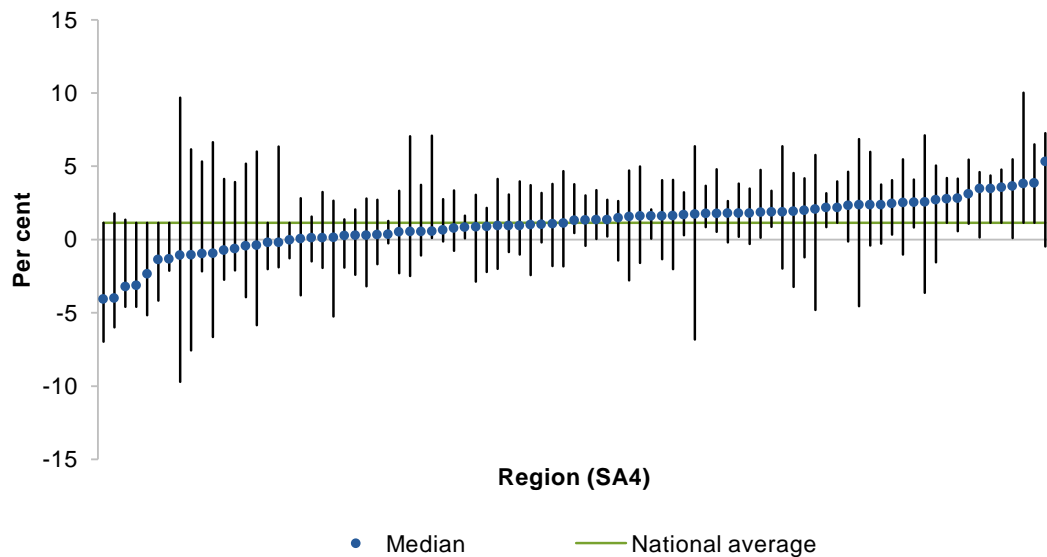
Insights into the performance and adaptive capacity of Australia's regions have been gained using the first two elements of the Commission's framework.

Recent trends in regional growth

The Commission attempted to identify regions that had experienced an out of the ordinary economic disruption (cycles that are larger than usually observed) using time series data for employment at the Statistical Area Level 4. This is the lowest level of aggregation for which a sufficient time series is available. Based on the information, it has not been possible to identify regions experiencing disruptive events. If it were possible to analyse employment data at a lower level of disaggregation over time, this might reveal regions experiencing disruptive events.

Most regions (about 80 per cent) have experienced overall positive growth in employment over the past five years (figure 2). However, almost all regions have displayed significant variability in growth rates, as indicated by the large ranges in the growth in employment.

Figure 2 Most regions have experienced positive employment growth
 Median annual employment growth and interquartile ranges, March 2012 to February 2017, year average data



An overview of the adaptive capacity of Australia's regions

Not all regions of Australia have the same capacity to adapt to change. Regional communities that are likely to have the least capacity to adapt (about 12 per cent of all regions²) are spread across all areas of Australia, in both remote and regional areas and in urban areas, including major cities (figure 3). Although remote and very remote regions cover large areas of Australia, they represent a small proportion of the total number of regions (and total population) in the 'least adaptive' category.

Major cities and very remote areas have a relatively higher representation in the least adaptive category of regions (figure 4). Over half of the people in the least adaptive regions reside in the greater metropolitan areas of Sydney, Melbourne and Adelaide. The total number of people living in the least adaptive regions was about 2.5 million.

² The 12 per cent of regions (244) with the lowest index value are those that are one standard deviation or more below the mean index value of all regions.

Figure 3 The adaptive capacity of Australia's regions

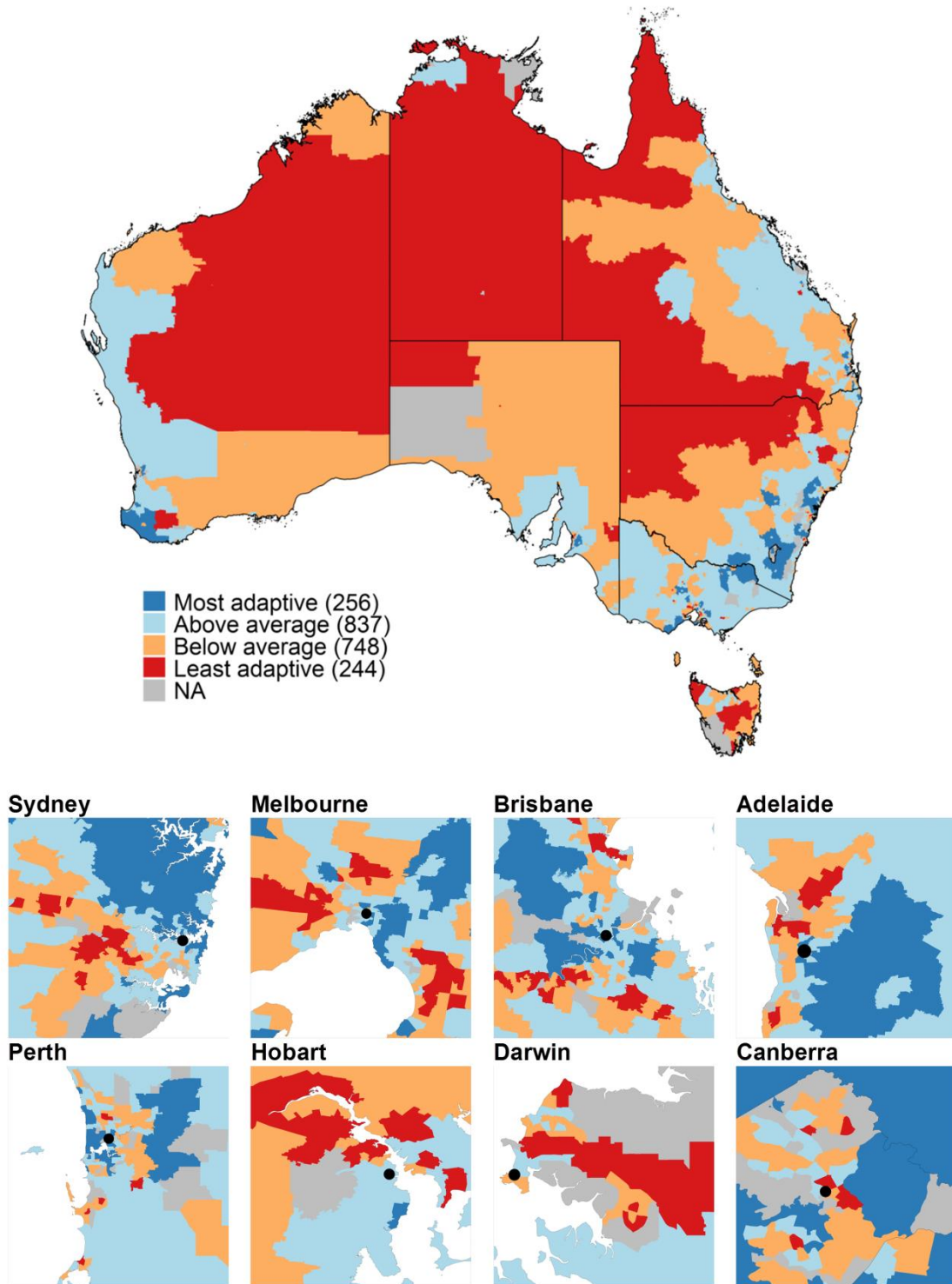
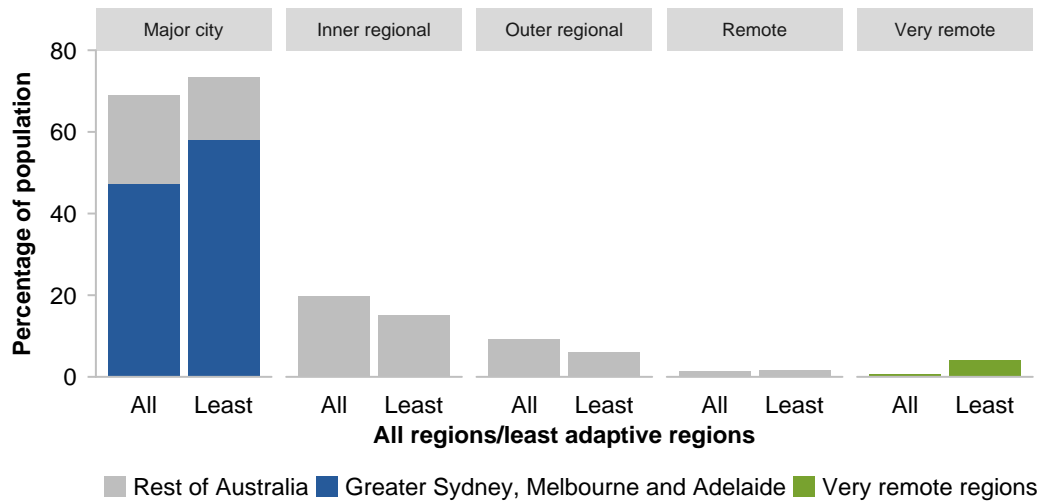


Figure 4 **Some major cities and very remote regions have a high representation in the least adaptive category**



The relativity of index values is driven by differences between regions’ levels of each factor used to construct the metric (skills, incomes, access to infrastructure and services, natural resources and so on). Factors relating to people (education, skills, employment and health) strongly influence adaptive capacity, particularly for communities in urban areas. For communities in remote areas, these and other factors associated with remoteness, such as accessibility to services and infrastructure, have the strongest influence on index results. It is unsurprising that the regions with the least adaptive capacity frequently have high levels of disadvantage.

Emerging themes of regional growth and adaptation

Australia’s regions are diverse, reflecting differences in their endowments of natural resources, economic geography, their history of development, and the mix and relative size of economic activities undertaken. Although this diversity has made it difficult to classify regions based on either the trends in performance or the metric of adaptive capacity, a number of general observations have emerged.

Regions whose economic base is large-scale mining have generally had the highest rates of growth in employment (since 2005), notwithstanding the end of the investment boom. Overall, employment in mining remains higher now than it was prior to the boom. That said, not all mining areas are prospering and some are in decline. These are typically areas that have marginally profitable mines or where existing mines are approaching the end of their economic lives (including coal mines dedicated to supplying local power stations that

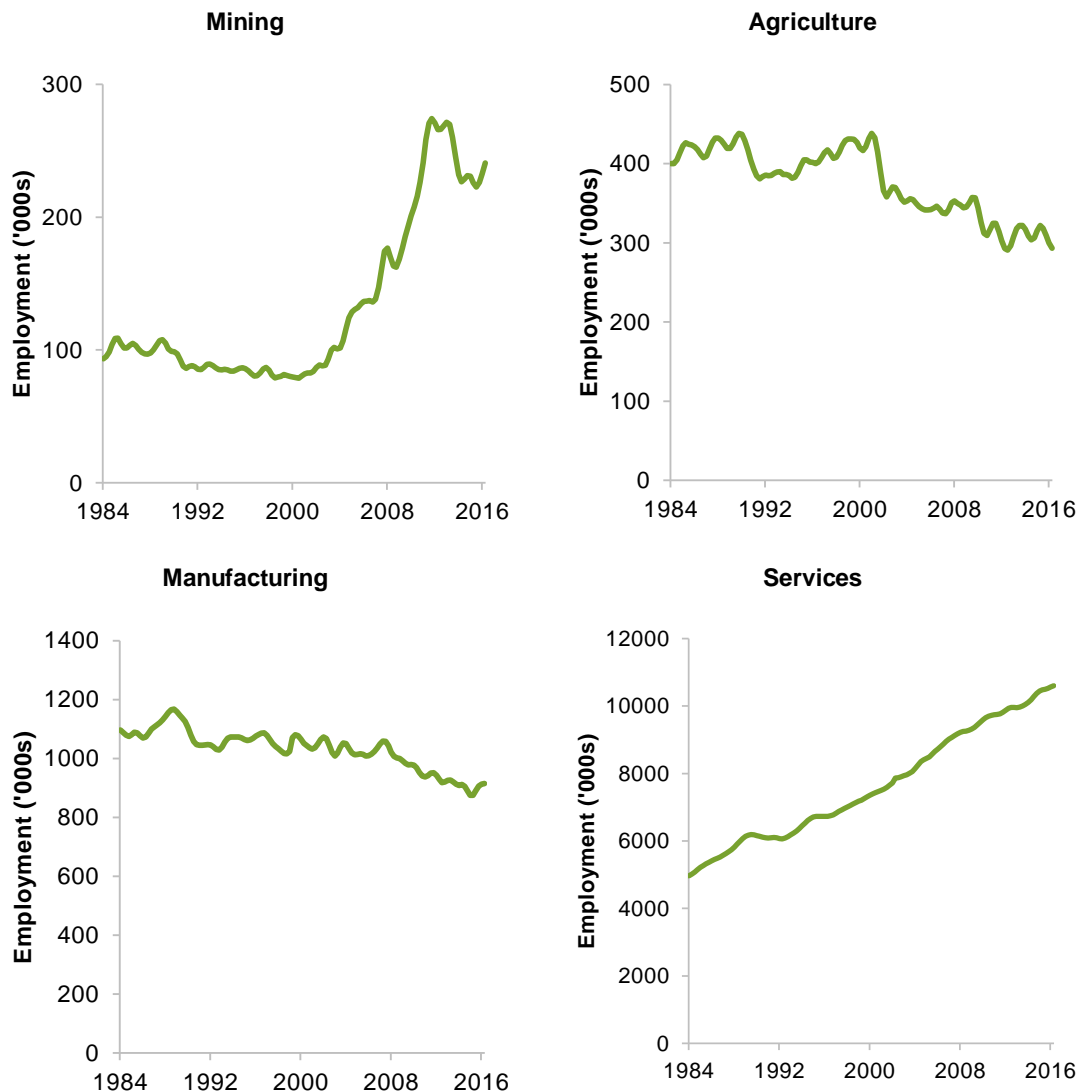
have been closed). Further, mining does not only affect regions containing mining operations. Many workers in the mining industry live and work in capital cities. In other cases, workers commute to capital cities or drive/fly to mining operations.

Regions that are predominantly based on agriculture, particularly broadacre cropping, tend to have lower rates of growth in employment. At the same time, there has been an improvement in the productivity of agriculture enabling output to increase with fewer workers. Agricultural regions have also experienced consolidation of small towns into larger regional towns.

Regions whose economic base is predominantly manufacturing tend to have relatively low rates of growth in employment and adaptive capacity. In contrast, regions whose economies are predominantly based on services (cities, large regional centres) tend to have higher rates of growth.

These observations (elaborated on below) reflect longer-term trends in employment and the move away from manufacturing and agriculture towards services (a trend observed in other advanced economies) as well as resource industries (figure 5). The extent to which regions are affected will therefore depend on their industry mix and the concentration of employment in particular sectors.

Figure 5 National trends in employment by industry



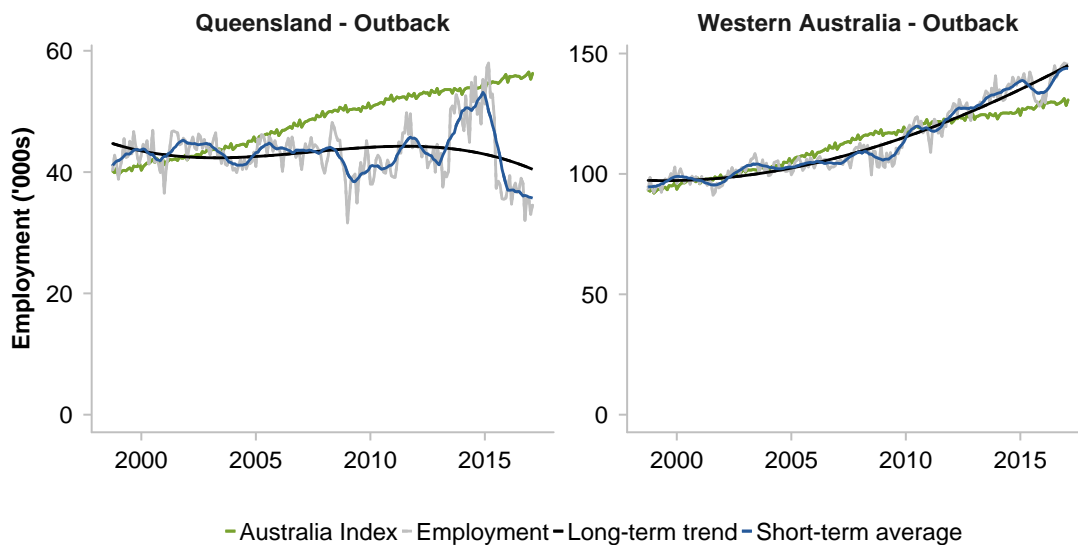
Trends in mining regions

Although commodity cycles are a common feature of the resources sector, the most recent resources investment boom was viewed by many to be one of the largest for Australia in recent generations. Its effects were widespread and felt to varying degrees across regions in Australia. The transition to the production phase has also had disparate effects, including on workers whose skills were highly valuable during the construction phase (and who had high levels of pay) but who are no longer needed in the mining production phase. Regions where mines are no longer viable in the current environment of lower commodity prices have also had to adjust.

Most resource regions are continuing to grow and have relatively high adaptive capacity

Most resource regions are continuing to grow. In Fitzroy (Queensland) and the Western Australian Outback, employment has continued on a strong upward trend. The Western Australian Outback has experienced one of the highest rates of employment growth in Australia, growing by almost 20 per cent in the past five years (figure 6).

Figure 6 **Illustrative trends in employment in mining regions**



The effects of the resources boom were particularly transformative in the Pilbara region. High commodity prices and demand for the Pilbara's resources spurred a large number of iron ore and gas investment projects aimed at a major expansion in the capacity of mining operations. Many people moved to the area to take advantage of lucrative employment opportunities, and income growth in the region was well above the national average (7.2 per cent compared with 4.9 per cent between 2005-06 and 2010-11). The spread of the benefits went beyond the regions where mining activity was taking place. There was strong growth in mining-related employment in other areas, including the Perth and Peel regions (box 4). The rest of Australia benefited through the additional taxation receipts, which in some cases were used to fund permanent increases in welfare payments or some cuts in taxes.

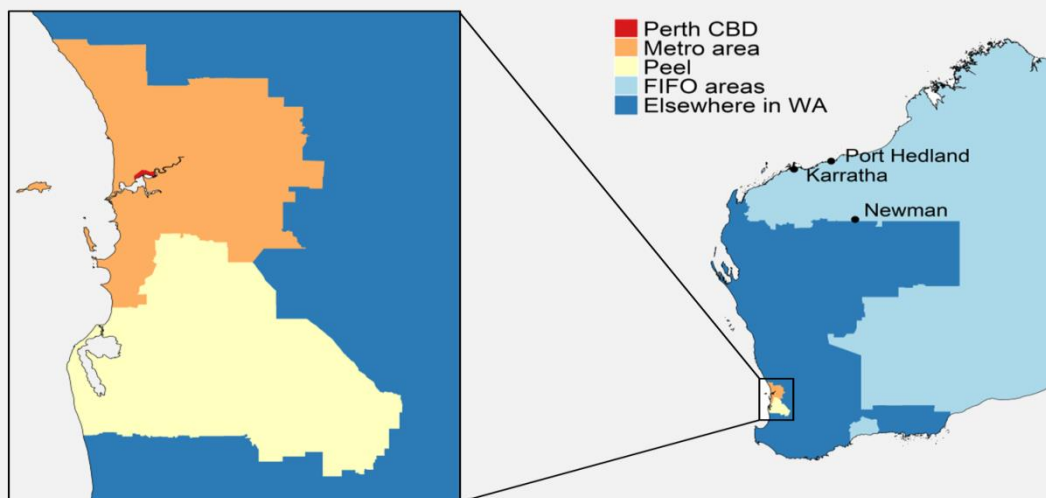
The influx of fly-in, fly-out workers and rapid population growth of a highly-paid workforce had a large impact on demand for goods and services in the region and widespread price increases occurred, from basic items such as coffee all the way through to housing.

Box 4 The geographic spread across regional labour markets

During the height of the resources boom, an estimated 50 000 people worked on fly-in, fly-out (FIFO) arrangements in the Pilbara. This was significant given the Pilbara's residential population of only 66 000 people. FIFO workers in the resources sector included those also working in construction (during the investment phase) and delivering other services to mining communities (for example, chefs, cleaners, personal trainers, and health professionals). Over two-thirds of FIFO workers in Western Australia were sourced from the Perth and Peel regions, with the remainder from elsewhere in Western Australia, interstate and overseas.

Employment of FIFO workers spread the impacts of the Pilbara's investment boom more widely throughout Western Australia. High incomes of many workers brought benefits to the local regions. FIFO arrangements also enabled families to avoid relocating to areas where local labour markets were temporary, allowing their partners to continue accessing the broader employment market and their families to access services and lifestyles in urban regions. The end of the investment phase saw a decrease in FIFO workers (particularly in construction) and a resulting increase in the unemployment rate in some regions, including Mandurah and Rockingham.

Not all mining sector workers in the Perth region were employed in a FIFO capacity. A relatively large proportion of mining workers lived and worked in the Perth and Peel regions, a long way from the major mining activity in the Pilbara.



Location of employment	Mining industry		Construction industry	
	Peel residents (%)	Perth metro residents (%)	Peel residents (%)	Perth metro residents (%)
Perth metro area (CBD)	22.2 (9.3)	69.1 (41.4)	35.9 (2.5)	93.3 (8.1)
Peel	37.1	1.4	53.8	0.9
FIFO areas (Pilbara, Kimberley and Goldfields)	35.3	25.0	6.5	4.3
Elsewhere in WA	5.4	4.5	3.8	1.5
Number of workers	2 844	32 870	4 260	57 246

Adjustment from the mining boom presents challenges for some regions

Just as the investment phase was large and fast, so too has been the transition to the production phase. The implications of a more mobile source of labour, now that the resources cycle has shifted from investment in capacity to production, is that both source and host regions for mining labour are subject to transitional forces. The cyclical nature of employment (demand for certain skills at particular points in time) does not diminish the effects of job loss (or lower wages) for people who expected continued employment and high wages.

During the boom, housing prices skyrocketed from a median of \$200 000 in 2001 to \$800 000 in Karratha and over a million dollars in Port Hedland in 2012. The housing market then experienced a rapid re-adjustment following the end of the resources boom, falling significantly in a number of areas including Karratha, Port Hedland, Moranbah and Mount Isa. Prices have returned to pre-boom levels, creating winners and losers in the process. Mortgagee sales in regional centres have been large and some property investment groups have entered into liquidation.

Ultimately, however, many mining regions are experiencing transition due to a re-adjustment to the production phase following the resources investment boom. Their large resource base and the expansion of capacity generated during the boom are likely to provide economic and employment opportunities for decades to come.

Some resource regions are in decline and have relatively low adaptive capacity

A number of other mining areas are experiencing significant decline following the resources investment boom. The Queensland Outback region (figure 6), which includes Mount Isa, has been adversely affected by falls in metals prices and the closure of depleted mines. Current employment levels are significantly below those of the past. Mount Isa is one of Australia's largest mining towns, and has historically drawn on its substantial resources of zinc, lead, silver and copper. It is a significant regional centre for Queensland's vast north west. Falling commodity prices, combined with declining ore quality, present challenges for the region. At the same time, other disruptions, such as drought, have had adverse impacts on agriculture (particularly cattle grazing) in the region. The future outlook for the region is likely to be significantly dependent on the identification of new commercial resources projects.

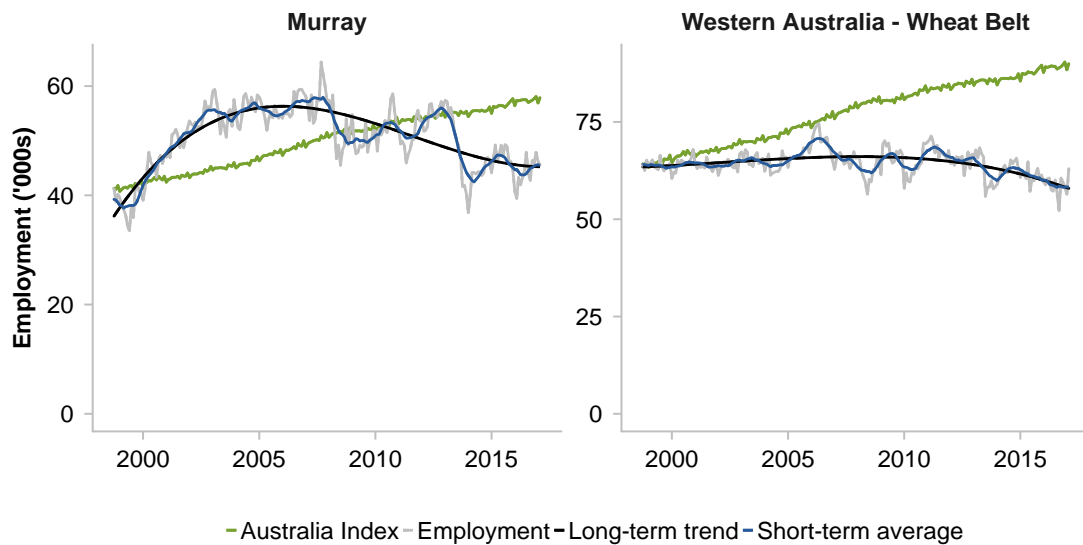
Very few mining regions have been found to be in the least adaptive category, as assessed using the metric. Although this makes it difficult to identify the factors that characterise 'at-risk' mining regions, there are some common features. All of the least adaptive mining regions are in very remote areas. Regions where mines have high cost structures that are only economically viable during periods of relatively high commodity prices face challenges from cyclical downturns in mining investment. For example, in the Kimberley region of Western Australia, three mines that accounted for 30 per cent of gross regional product (when iron ore prices were at their peak) are now in care and maintenance.

The availability of mineral resources in these regions presents both challenges and opportunities. It provides a source of employment (all of the least adaptive mining regions have a high share of their community employed in mining). Indeed, some towns were developed solely to service the mining industry (such as Leinster and Goldsworthy) and may not have existed were it not for the natural mineral endowments in the area. At the same time, this lack of industry diversity leaves the community exposed to loss of mining activity.

Trends in agricultural regions

Falling employment in many agricultural regions (figure 7) does not necessarily equate to a decrease in the value or quantity of production or a fall in incomes. Employment is growing slower or even decreasing due to improvements in productivity and innovation. There are several sources of productivity growth, discussed below.

Figure 7 **Illustrative trends in employment in agricultural regions**



On-farm productivity improvements

Many agricultural products are sold on competitive international markets. The prices that primary producers have received for these products have often not kept pace with the increase in prices for the inputs used. These include wages paid to workers and the price and availability of water, fertiliser, seeds and chemicals. Partly in response to these pressures on profit margins, primary producers have lowered their cost of production through productivity and technological innovation. Farm sizes have increased significantly

over time and more technologically advanced machinery and farm practices are being used. These changes mean that over time, there are fewer farm owners, farm families and workers. Those remaining in the sector are operating larger-scale properties and more intensive operations to supply agricultural produce.

Supply chain productivity improvements

Improvements in productivity have also taken place in the transport supply chain, from the farm gate to market. For example, larger trucks are being used to move grain from farms to fewer and larger receival sites (or even direct to port), which are often located closer to main rail lines. Once again, more produce is being moved using fewer workers, although, as recommended in the Commission's recently released *Regulation of Agriculture* inquiry report, there remains much that governments could do to reduce the burden of transport regulations.

Consolidation of services from small towns to regional centres

The services provided by smaller towns, such as banking and finance, retail, machinery repairs, professional services, education and health have consolidated to larger regional towns and centres. Wagga Wagga in the Riverina (New South Wales) is an example of these changes (box 5).

Once again, these trends are driven by productivity, technological change, demography, personal choices and increasingly connected regions through trade in services. The ease of transport today and the capacity to undertake transactions using the internet, mobile phones and satellite-based communications systems has facilitated this trend. There is also greater amenity associated with larger regional centres as well as access to a wider range of services (including schools, aged care services, hospitals and universities).

Box 5 Wagga Wagga and the Riverina region (New South Wales)

The Riverina is primarily a cropping region, with wheat (the major crop) grown along with rice, canola and barley. Over time, the region's population has increasingly centred on Wagga Wagga. The population of the region grew by about 11 000 people between 1991 and 2015, with Wagga Wagga growing by about 9500 (almost 90 per cent of the Riverina's growth). Much of the remaining increase was in the next largest town (Griffith), while most smaller towns remained stable or declined.

When initially settled, the population of the Riverina was more widely spread. A large number of small towns sprang up as service hubs to the surrounding farms. Wagga Wagga provided specialised services, and smaller towns offered machinery, fertiliser suppliers and marketing services for farm products.

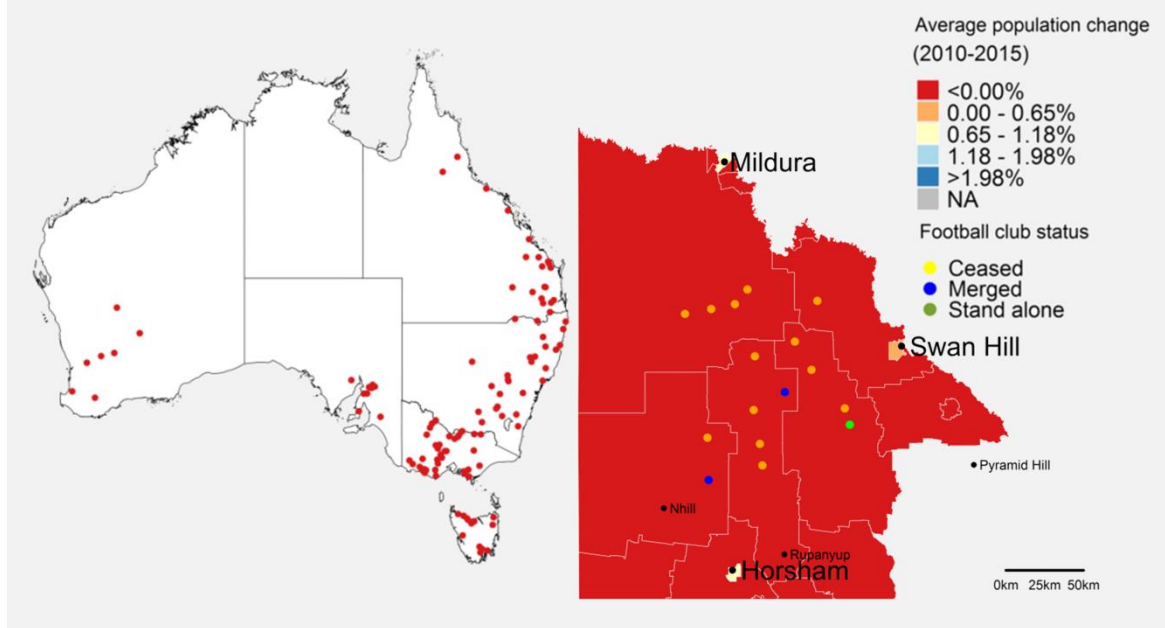
The advent of better personal transport increased competition and trade between service providers in previously less commercially-connected towns. Such providers had to 'get big or get out', creating pressure to consolidate into fewer, larger centres.

As a result of centralisation, many nearby smaller towns have experienced population decline. For example, while Boree Creek (with a population of 212 people in 2011) formerly housed an Australian Wheat Board receiver, its population declined steadily over recent history. That said, the experience of towns in the Riverina has not been uniform. For example, Junee has a correctional centre, providing an alternative employment base from traditional agricultural activities, and has staved off population decline.

There are now fewer people living in some smaller regional towns — a familiar story in the history of Australia's regions. Over the past century, many previously thriving regional towns have shrunk (box 6). When people and businesses leave a regional community to take up better opportunities elsewhere, this often generates greater value and so increases the overall wellbeing of the population as a whole. However, such changes can have adverse effects on people left behind. Individuals who depart the region to pursue other opportunities are also often those who played key roles in the community, such as leading local sporting clubs and similar organisations. A shrinking of the population can harm a community's social and cultural life, and reduce local leadership expertise and skills. As noted above, this is not a unique Australian trend, with many OECD countries experiencing similar trends. It is a trend that cannot, nor should be, thwarted.

Box 6 Shrinking Australian towns

The ebb and flow of towns has been a feature in the history of Australia's regions. Numerous localities that were classed as towns in both the 1911 and 1961 Census, with a population of at least 500 in either Census, had populations of less than 200 by the 2006 Census. Population decline impacts on the social fabric of regions. This is exemplified by the closure and merging of football teams in the Mallee region of Victoria between 1997 and 2015.



Urban areas with low adaptive capacity are dominated by manufacturing activity

Many of the urban areas with the least adaptive capacity are dominated by manufacturing — it is the largest source of employment for almost 75 per cent of the urban regions in the 'least adaptive' category. These regions are typically associated with high levels of industry diversity and have good access to services and infrastructure, which positively contribute to adaptive capacity. However, relatively high levels of social and economic disadvantage (in terms of skills, education levels and other factors that influence employment opportunities and wellbeing) limit adaptive capacity. This means that people within these communities are less able to take advantage of the opportunities arising from economic diversity and may face challenges finding re-employment following a disruptive event, such as the closure of a manufacturing plant.

Lower levels of community connections, engagement and social cohesion (forms of social capital) could also be contributing to the lower relative adaptive capacity of these regions. Measurement of social capital is difficult, and for this preliminary analysis has been limited to rates of volunteering.

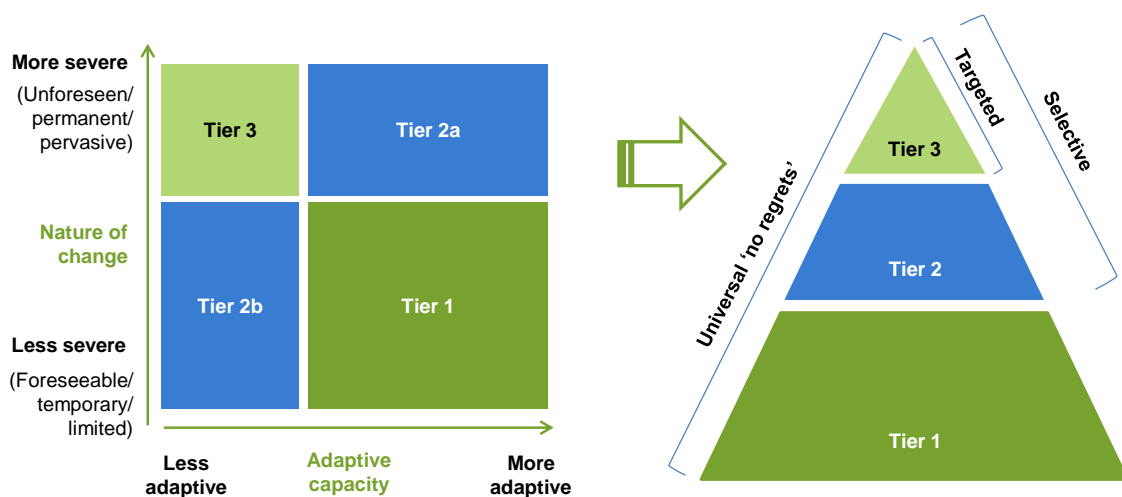
Strategies for successful transition and development

Regional economies are continually transitioning and adapting to pressures for change, not just those arising from large disruptions. A key element of development strategies should be about positioning local communities to adapt to such pressures. Strategies that facilitate successful transition and development are those that focus on supporting people in regional communities (rather than businesses or industries) to adjust to changing economic circumstances.

Deciding whether and how best to provide support to people in regional communities is a complex task for governments. There is no easy solution or ‘one size fits all’ approach that will facilitate transition and adaptive development in all regions of Australia. Each region is unique in its experiences and the risks and opportunities it faces. Some are well-resourced in terms of the skills of their workforce, access to infrastructure and natural assets. Others are less so. This means that regional strategies will vary. Managing transition (or decline) in areas that have limited opportunities for sustainable long-term economic activity is vastly different to facilitating regional development in areas where opportunities are abundant.

Strategies to support transition and development in regions should be guided by an examination of each region’s circumstances and the nature of the change it is experiencing, as well as its inherent strengths and weaknesses (figure 8).

Figure 8 A tiered model of policy support for regional communities



Regional communities that have the greatest capacity to adapt and develop and that are not facing significant challenges need the least support (tier 1 regions). Regional communities undergoing substantial change with limited adaptive capacity have the greatest need for support (tier 3 regions). Others may need support but for different reasons, either because

they are facing substantial adverse circumstances (tier 2a regions), or because they have limited capacity to adapt and develop on their own (tier 2b regions).

All regional communities (in tiers 1, 2 and 3) would benefit from the removal of obstacles that prevent people and businesses from taking advantage of opportunities, particularly those in which the region has a comparative advantage. Barriers include unnecessarily complex and costly regulatory processes and regulations that restrict what people (including business owners) can do. The Commission has previously made recommendations to reform regulations affecting regional communities, including in relation to planning, zoning and development processes, environmental regulations, and occupational licensing arrangements (box 7).

Box 7 ‘No-regrets’ policy reforms to support regional development and adaptation

All governments can support regional communities to adapt to changing circumstances and facilitate development by removing obstacles that prevent people and businesses from taking advantage of new economic opportunities as they see them.

There are some regulatory impediments that prevent business owners from operating efficiently and taking up potentially profitable opportunities. These include:

- *planning, zoning and development processes* — complex and excessively prescriptive arrangements impose costs and delays on businesses seeking to expand or take up new opportunities in regions, including tourism-related developments. These problems were found in the Commission’s study on the *Relative Costs of Doing Business in Australia: Retail Trade*, its review of *Australia’s International Tourism Industry* and its inquiries into *Business Set-up, Transfer and Closure* and *Regulation of Australian Agriculture*. Planning and zoning regulations also often fail to meet their objectives because they are not sufficiently adaptable for managing changing agricultural land uses. The quarantining of land for coal mining in the Latrobe Valley is another example of where planning regulation may be impeding development and adaptation in regional Victoria.
- *environmental regulations* — while essential to protect the environment, they can be unnecessarily onerous and complex, thereby imposing excessive costs and discouraging development in regions. In its inquiry into the *Regulation of Australian Agriculture*, the Commission found that native vegetation and biodiversity conservation regulations can have unnecessary costs on farm businesses and limit farmers’ capacity to adapt and to improve productivity.

There are other regulatory impediments that act to reduce mobility, making it difficult for people in regional communities to pursue employment or training opportunities. These include occupational licensing requirements, particularly where there are different arrangements across jurisdictions. Inefficient land-use planning (including delayed release of land for development) and stamp duty on property also contribute to distorted housing costs. These may prevent people moving between regions to take up new job opportunities.

Removing unnecessary regulatory barriers is a ‘no-regrets’ or ‘win-win’ policy option — these reforms are justifiable in their own right and create incentives and open up new opportunities for communities to adapt to change. They should be pursued by all

governments. Although the advantages of such reform are clear, adoption of previously recommended reforms has been patchy and slow. Given the challenges to regions highlighted in this report, governments should expedite these reforms. Failure to do so will unnecessarily increase the pressure faced by vulnerable communities and reduces their future prospects.

At times, governments have given false hope to people and businesses by signalling the long-term health and prosperity of particular industries through various subsidy schemes or protection from competition. Such measures are counterproductive, discouraging workers from acquiring new skills and reducing their future employment prospects. Business owners also have less incentive to become more innovative and productive and to plan for the future. This type of program is inherently risky and does not promote transition or sustainable development. There is a fine balance in calibrating regional development programs so that they are targeted towards a region's strengths and based on an assessment of the long-term sustainability of the region (which in some cases will be uncertain).

Tier 2 and 3 regions are likely to require more targeted support in the form of initiatives aimed at building the capacity of people to adjust to change. Additional assistance may need to be provided to support people who are the most vulnerable to hardship as a result of a change in their circumstances.

Guiding principles to support transition and development of regional communities

Governments should avoid providing 'ad hoc' support to regions without an underpinning framework that aligns with clear principles focused on supporting people in regional communities to transition to ever-changing circumstances. Where governments do decide to develop initiatives to facilitate transition and development, the initiatives should be strategic, built on a region's strengths (to work with rather than against the inherent advantages of the region), coordinated between governments, and focused on developing the capacity of the community and the connectivity of the region with domestic and international markets. It should also be locally-driven with effective and coherent partnerships between a regional community and all levels of government.

A locally-owned, strategic and coordinated approach

Support for regional development has the best chance of success when it involves regional communities taking a leadership role in planning their own development needs and identifying strategies for how best to facilitate development. Locally-developed strategic plans should analyse a region's strengths, opportunities and potential risks and set priorities for action. Many local governments already prepare strategic plans for their communities but their quality is highly variable. The importance of local leadership is exemplified in the case of Stawell in Victoria, where the local government took a lead role in seeking ways to repurpose a gold mine that had ceased operations (it will now be used

as an underground physics laboratory). Working in coordination with the Victorian and Australian Governments, it was able to find a new source of growth that builds on its existing strengths and resources.

Building on a region's strengths and endowments

Regional development should also work with, rather than against, the natural, historical or social advantages of a region, as these can facilitate new opportunities for growth. Environmental assets, proximity to major cities or regional centres, access to infrastructure and the skill profile of the local population are all examples of attributes that influence the types of activities that are likely to be successful in a region. An example is the Geelong Regional Alliance's Regional Economic Development Strategy, which identified the region's main sustainable competitive advantages, such as a strong manufacturing and engineering skills base, significant capacity in health and medical services, environmental assets and proximity to Melbourne. These advantages are informing the Alliance's approach to transforming the region from its historical focus on heavy manufacturing towards areas such as higher-technology manufacturing, healthcare, education and other services.

Investing in the capabilities of people and regional connectivity

Regional adaptation and development can be supported through well-planned investment in the adaptive capacity of people in regional communities and in investments that link regions and markets. This may involve investing in capabilities found to be inadequate in some regions, particularly skill levels of the labour force and physical infrastructure. It can also include supporting regional communities to access new markets, domestically or internationally. The National Broadband Network, for example, is Australia's largest infrastructure project. The uniform pricing strategy adopted for broadband services across regions is aimed at significantly narrowing the digital divide between rural, regional and urban Australia. Broadband is a fundamental enabler of distant trade in goods and services, allowing non-urban communities to find new markets in Australia and overseas.

At the same time, investment in a region's capacity and actions to promote its access to markets should align with a strategic view of the region's inherent strengths and constraints. Governments should avoid 'picking winners' and should not use scarce taxpayer funds to support investment that could crowd out commercially attractive private investment. Focusing principally on investments in people, rather than businesses, will best ensure that this risk is avoided.

Governments also need to take into account the effects of policies on the incentives they create for individuals and business owners. All proposed major regional programs funded by governments should be preceded by rigorous and transparent assessments, including explicit and detailed consideration of available alternatives, to ensure that taxpayer funds are directed to their most valuable use. Governments should clearly state the objectives of the program and how its success or failure will be measured.

Importantly, governments should not discourage the movement of people from a region in order to shore up its population. After all, the priority for governments should be the people who live in a region, not the geographic region itself. Where government programs reduce the incentive for people to move, they reduce the wellbeing of people who would otherwise find new skills or employment, and can also increase long-term unemployment.

Achieving sustainable regional development

Adaptation and regional development initiatives are most likely to be viable and sustainable over the longer-term when they have been designed in line with the above principles. That is, where adaptation and development have been designed to invest in a region's strengths, and are led by the regional community in partnership with all levels of government.

The 2016 City Deals program, which aims to support the development of selected regional centres through coordinated public and private investment, is indicative of efforts to establish partnerships and improve collaboration between all levels of government, communities and the private sector (box 8). It is still too early to assess the effectiveness of these partnerships in achieving successful outcomes for the target regions (they should be formally evaluated). However, the principle of all levels of government working together on locally-developed programs is consistent with the principles outlined in this report.

With respect to the first wave of UK City Deals (the inspiration for the Australian City Deals), the UK National Audit Office found that governments' understanding of the impact of the program would remain limited unless they developed a shared approach to monitoring and evaluation. This is a lesson for all Australian governments as well, emphasising the need to ensure clarity regarding a performance measurement framework for each City Deal initiative (before and after the deal), and indeed for all regional development initiatives.

Few evaluations have been published that assess the effectiveness and value for money of regional development initiatives. Further, governments have not always adhered to good principles for the design and implementation of programs. For example, a Victorian Auditor General report found inadequacies in the design, implementation and governance of the \$570 million *Regional Growth Fund*, including a lack of transparency and rigour in the selection of infrastructure projects. Similarly, the Western Australian Auditor General's review of the Royalties for Regions program reported a number of problems with the selection, monitoring, and evaluation of projects — \$6.9 billion has been dedicated to over 3700 infrastructure and community projects since 2008. The review concluded that the long-term benefits of the projects funded by the program is essentially unknown. With such large sums, it is especially important that taxpayers are getting value for money. This highlights the need for governments to have systematic arrangements for project assessment, monitoring and evaluation — not only of whether project outputs were delivered or short-term benefits were gained, but whether long-term outcomes and benefits to the community were achieved.

Box 8 **City Deals — all levels of government working together**

As part of the Australian Government's *Smart Cities Plan*, the City Deals program is aimed at promoting economic growth, employment, affordable housing and environmental sustainability through coordination between governments, communities and the private sector. Each City Deal involves a specific regional or metropolitan urban centre, with three deals having been announced so far (Townsville, Launceston and Western Sydney).

City Deals are intended to be tailored to local circumstances, objectives and opportunities, while being organised and governed according to common principles, including:

- partnerships between all three levels of government
- clearly defined outcomes and actions
- Australian Government funding linked to regulatory and policy reform
- coordinated, targeted investment in infrastructure
- clear governance arrangements, timeframes for delivery and accountability between levels of government
- assessment of performance (using identification and measurement of key performance indicators).

A substantial amount of government expenditure has also been dedicated to regional areas in Queensland. For example, the Queensland Government has provided over \$4.4 billion to regional areas through a range of initiatives, including its *Building our Regions* initiative and its *Jobs and Regional Growth Package*. An additional \$10.7 billion was committed to capital works in the 2016-17 Budget. Almost half of this (\$4.9 billion) is targeted at regional Queensland.

Caution should also be exercised in encouraging industry diversification in its own right as a strategy for achieving regional development. Although diversification can support a successful transition, there are costs associated with diverting resources away from the activities that provide the highest value (such as from mining into tourism in areas that do not have natural or locational advantages for tourism activity).

The above principles are a guide only. They do not supplant the role of undertaking comprehensive and transparent analysis of proposed projects, including rigorous evaluation and analysis. Nor do they replace the need for strong stakeholder and community engagement. All regional development initiatives should be tailored to the specific attributes, needs and contexts of individual regional communities.

Targeted support to facilitate transition in regional communities

Governments cannot and should not shield people in regional communities from all possible adverse events or ongoing pressures for change. There will always be some people who are disproportionately affected by change. Business owners may close their businesses and move elsewhere, and workers may become unemployed. Some people might find it

difficult to obtain employment elsewhere because their skills are no longer in demand or because there are limited job opportunities in the region in which they have chosen to live. And some regional communities face challenges because they are already disadvantaged.

At times, governments may wish to provide targeted support to people in regional communities who are disproportionately affected by severe economic, social or environmental pressures and who do not have the capacity to adapt. The fairest and most equitable way of supporting the many thousands of people in Australia who experience involuntary job loss every year is through the social security and tax systems.

There are also good equity-based reasons for governments to provide additional assistance to people who have the most difficulty becoming re-employed and who are already disadvantaged. Additional support might involve training assistance and provision of information on industry needs and employment opportunities.

It is important that any targeted support facilitates change and helps people adapt, instead of preventing change from occurring (for example, by supporting industries that are commercially unsustainable without ongoing government support). Governments have at times chosen to provide assistance to a specific industry or to regions as a whole, to support investment in infrastructure and preserve jobs. There can be benefits in targeting investment in infrastructure that can help regional communities more easily take advantage of economic opportunities. However, in the past, regional adjustment assistance has often been costly and ineffective in facilitating a region's adaptation to changing economic circumstances.

There may be instances where environmental or economic change in regions and the accompanying transition process result in continued decline in employment and economic activity that cannot be feasibly reversed. As noted earlier, circumstances like this are not new. Some mining and agriculture settlements that were once thriving have become depopulated. Environmental and technological change along with lifestyle choices of workers and families are all factors in the ongoing transition of Australia's regions.

Where regions face decline, with limited prospects for long-term sustainable development, the efforts of governments should be directed at managing depopulation and facilitating movement. It will also be necessary to ensure that residents who remain in a region (for lifestyle, cultural or historical reasons) have access to a minimum level of services. This does not mean that services should be provided within all towns or at the same level as might be expected in a major urban or regional centre. Rather, in making decisions about how best to manage declining regions, government should strike a balance between ensuring remaining residents have access to services that support their wellbeing, and promoting equitable outcomes across the population as a whole.

Further work to inform strategies for transition and development in regions

As noted above, substantial expenditure has been dedicated to regional areas, both to facilitate development and transition and to overcome disadvantage. Expenditure programs have often been ineffective in facilitating transition and it is notable that most existing regional programs have not been evaluated.

The transparent evaluation of programs by all levels of government is essential and should be a high priority. There is scope to achieve better outcomes for regional communities by better targeting existing expenditure.

There may also be scope to trial exemptions of regulations that unnecessarily inhibit people and business owners from responding to changes in economic circumstances in regions. The Commission has previously recommended fixed-term exemptions from regulatory requirements that inhibit entry or new business growth. There are many regulations that could be candidates for regulatory exemptions in regions, including aspects of planning, zoning and development assessments (box 7). Conditional exemptions could be granted for regional communities that are facing severe adjustment pressures. The Commission seeks feedback from participants on regulations and regions where pilot regulatory exemptions could be conducted.

For the final report, the Commission also intends to undertake further analysis of the effectiveness of policy responses implemented in previous transitions. The aim of this analysis is to identify specific strategies and programs that have worked well and those that have not. The Commission will also examine expenditure on major regional assistance programs.

Initial findings

INITIAL FINDING 2.1

There is no widely accepted method to define and measure the economic resilience and adaptive capacity of regions. Noting this, an index of relative adaptive capacity has been estimated but caution is required in interpreting and applying it to policy making aimed at building resilience and promoting economic development.

INITIAL FINDING 3.1

All regions experience significant variation in their growth in employment, including periods of negative growth. Even so, most regions (69 out of 87) have seen net employment growth over the past five years.

INITIAL FINDING 3.2

Australia's regions are diverse, reflecting differences in their endowments of natural resources, climate, economic geography, history of settlement and development, and in the relative mix of industries. This makes it challenging to group regions based on similar factors affecting their resilience and adaptive capacity.

INITIAL FINDING 3.3

Many regions with a high concentration of activity based on mining have experienced high employment growth and have relatively high adaptive capacity.

There are some, however, that have experienced a decline in employment and have relatively low adaptive capacity. These regions tend to have mining operations that are smaller in scale, are economically marginal or are approaching the end of their economic lives.

INITIAL FINDING 3.4

Many workers employed in the investment phase of the mining boom lived in regions outside mining areas, such as capital cities and other regional centres. In addition, many mining workers work in capital cities and their greater metropolitan areas.

The slowdown in mining investment has affected labour markets and economic outcomes across the country, including many regions outside of traditional resource areas.

INITIAL FINDING 3.5

Regions predominantly based around agriculture tend to have lower growth in employment. Even so, these regions are growing, with efficiencies and technological innovation generating higher levels of production using less labour. There is also a pattern of consolidation from smaller towns to larger regional centres, which affects the social fabric of these communities and engenders a feeling of being left behind as Australia prospers more generally.

INITIAL FINDING 4.1

A single metric of relative adaptive capacity cannot capture the unique attributes of each regional community, nor can it be used with any precision to rank regions. There is significant uncertainty about the index values estimated for each region.

Moreover, adaptive capacity does not identify whether a region will be successful in transition following a disruption.

The metric can be used to explore some broad themes and patterns of adaptive capacity across broad classes of regions.

INITIAL FINDING 4.2

The main factors shaping the index value of relative adaptive capacity for each region relate to:

- people-related factors (including education achievement, employment rates, skill levels, personal incomes and community cohesion)
- the degree of remoteness and accessibility to infrastructure and services
- natural endowments, such as agricultural land
- industry diversity.

Data from the 2016 Census and other sources of data not available for the initial report are likely to change the regional rankings of adaptive capacity in the final report.

INITIAL FINDING 4.3

Regions with an economic base concentrated in manufacturing tend to have lower employment growth and relatively low adaptive capacity. Many of these regions are located in the greater metropolitan areas of capital cities.

INFORMATION REQUEST 4.1

The Commission is seeking feedback on:

- *the methodology that has been used to construct the index of adaptive capacity, including whether other methods might be superior for the purpose*
- *the factors (variables) that have been included in the index and whether there are other variables and data sources that could be used.*

INITIAL FINDING 5.1

There is no single approach that will facilitate adaptation and sustainable development in all regions.

It is unclear if strategies for adaptation and development have been successful as evaluation is usually not attempted. Strategies that focus on supporting people in regional communities to adjust to changing economic circumstances appear more likely to be successful. The best strategies are those that:

- are identified and led by the regional community itself, in partnership with all levels of government
- remove barriers to people or businesses relocating, both within or to other regions
- are aligned with the region's relative strengths and inherent advantages
- are supported by targeted investment in developing the capability of the people to deal with adjustment and the connectivity of the region to other regions and markets
- facilitate private economic activity that is not dependent on ongoing government financial support (beyond general government transfers).

INFORMATION REQUEST 5.1

The Commission invites participants to comment on the relevance and applicability of the policy framework set out in this chapter. Where practicable, participants are asked to support their views with evidence of effective and/or ineffective approaches that have been used to facilitate transition and development following disruptive events or ongoing pressures in regional areas (in Australia or overseas).

INITIAL FINDING 5.2

Governments can facilitate successful transition and development across all regions by removing regulatory barriers that impede people and businesses from taking advantage of economic opportunities, where such regulations are unjustified by the benefits they provide. Expediting regulatory reforms previously recommended by the Commission would assist in this regard.

This would benefit all regions, regardless of their circumstances or adaptive capacity, and helps to improve the operation of the economy generally — making it a ‘win-win’ or ‘no-regrets’ way of supporting regional communities. However, it is particularly important to regions that do not have the advantages and range of opportunities found in capital cities and major regional centres.

INITIAL FINDING 5.3

City Deals initiatives that genuinely develop strategic, coordinated partnerships between all levels of government, communities and the private sector are more in line with the Commission’s principles but require effective monitoring and evaluation. It is essential that all governments ensure there is a clear performance measurement framework for each City Deal program, and publicly review the efficacy and cost-effectiveness of the first wave of City Deals within four years of their commencement.

INITIAL FINDING 5.4

Strategies for adaptation and development are most likely to be successful and sustainable where they:

- have clear objectives and measurable performance indicators
- are preceded by rigorous and transparent analysis and explicit consideration of available alternatives
- include transparent community consultation, public reporting and evaluation (before and after implementation) of the efficacy and cost-effectiveness of programs.

INITIAL FINDING 5.5

There is substantial funding devoted to regional programs across all levels of government. The effectiveness of most of these programs has not been evaluated.

There is scope to achieve better outcomes for regional communities by better targeting existing expenditure.

INITIAL FINDING 5.6

Individual specific adjustment assistance (beyond generally available measures) is best reserved for unexpected circumstances and highly vulnerable groups of people, and should be aimed at helping individuals make a successful transition to employment. Assistance that creates false expectations about the future success of an industry or economic activity can lead to confusion and reduce individuals' incentives to plan and adapt to changing circumstances.

Assistance to industries and regions has often been costly, ineffective, counter-productive, poorly targeted and inequitable. To avoid these problems, support to assist people to adapt is best provided within the context of a coordinated, strategic development framework designed to capitalise on a region's strengths and to facilitate self-sustaining growth.

INFORMATION REQUEST 5.2

The Commission invites participants to comment on where a regional community could benefit from a trial exemption from regulations that are unnecessarily inhibiting transition or development.

1 About this study

The Australian Government has asked the Commission to undertake a study into the geographical impacts of the transition of the Australian economy following the resources investment boom.

The mining investment boom (from about 2002 to 2013) provided widespread benefits for the economy as well as challenges for workers, business owners, communities and governments. By 2013, it was estimated that the resources boom had raised average real wages by 6 per cent, raised real per capita household disposable income by 13 per cent and lowered the unemployment rate by about 1.25 percentage points (Downes, Hanslow and Tulip 2014, p. 1).

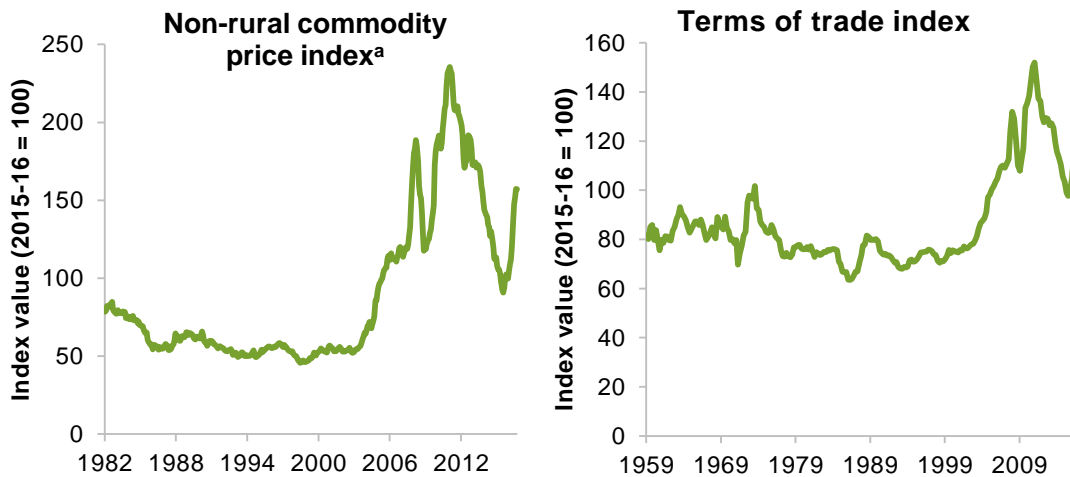
The mining boom was driven by a rapid increase in demand for commodities and a dramatic increase in the price of Australia's mining exports. This price rise is reflected in the non-rural commodity price index (figure 1.1). The index increased by over 300 per cent from the average of the early 2000s to the peak in 2011. Together with the associated increase in the Australian exchange rate this translated into a dramatic improvement in Australia's terms of trade.³ As can be seen in figure 1.1, the terms of trade followed a similar pattern to commodity prices, rising dramatically from the mid-2000s and peaking in late 2011. The resource sector responded to the price increase by expanding its capacity. Investment in the mining industry increased from an average of about 2 per cent of GDP before the boom and peaked at just under 8 per cent in 2012.

Since then, the price of commodities has fallen considerably and then somewhat recovered (figure 1.1). Meanwhile investment in the mining sector has, as expected, declined as the industry has been transitioning from the investment phase to the production phase. As a result, employment in the sector has fallen and wage growth has slowed. Nonetheless, the mining sector has experienced a sustained increase in production levels, exports and employment compared to before the boom (figure 1.2). As the Western Australian Department of Regional Development noted:

Despite the fall in investment over recent years, the resources industry remains a significant contributor to the State and the national economy. (sub. 27, p. 3)

³ An increase in the terms of trade enables Australia to buy more imports for a given quantity of exports and thereby increases domestic real income.

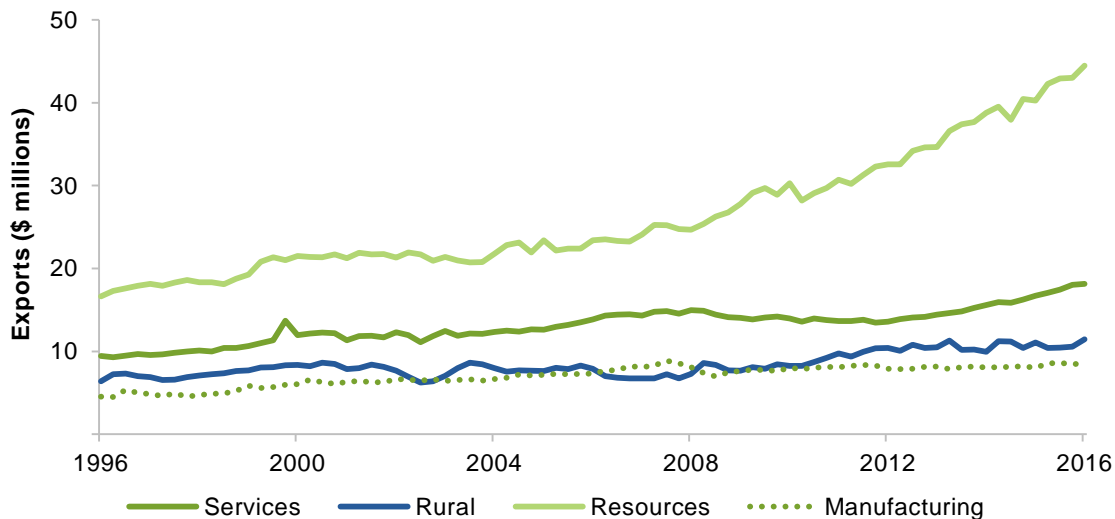
Figure 1.1 A larger than usual commodity cycle



^a Special Drawing Right terms.

Sources: ABS (*Australian National Accounts: National Income, Expenditure and Product, Dec 2016*, Cat. no. 5206.0); RBA (2017).

Figure 1.2 Quarterly export values
December 1996 to December 2016



Source: ABS (*Balance of Payments and International Investment Position, Australia, Dec 2016*, Cat. no. 5302.0).

A similar sentiment was expressed by the Queensland Resources Council.

The medium to long term demand fundamentals for Queensland’s resource commodities remains strong, so the resource industry will remain an engine for growth in many regional

economies in Queensland for decades to come. The resource sector's expansion in Queensland over the past decade is unprecedented and even though many sectors are adjusting to the current global oversupply of many commodities, the resources industry in Queensland continues to generate substantial numbers of regional jobs, widespread regional economic activity and royalties for the State. (sub. 16, pp. 1–2)

The resources sector is now a larger sector (and share) of the Australian economy compared to before the boom.

The economic cycle has been significant and has had varying impacts across different geographic regions of Australia. During the boom, economic activity was particularly strong in Western Australia and Queensland. For example, in Western Australia, annual economic growth peaked at 9.1 per cent in 2011-12, with business investment accounting for a significant share of the growth. Since the end of the investment phase, economic growth in Western Australia has slowed and was 1.9 per cent in 2015-16 (ABS 2016b). Although economic growth has remained positive, unemployment has been trending up. On average in the year to February 2017, 88 000 people were unemployed compared to about 37 000 on average during 2008 (ABS 2017b). Similarly, Queensland experienced unprecedented levels of construction expenditure during the boom (approximately \$36.6 billion in 2013-14), which has subsequently decreased by about 70 per cent (Queensland Government, sub. 26. p. 20). The unemployment rate in Queensland has also risen from less than 4 per cent in 2008 to over 6 per cent in 2017 (ABS 2017b).

1.1 What has the Commission been asked to do?

The terms of reference for this study (set out at the beginning of this report) essentially ask the Commission to:

- identify regions that face significant challenges in successfully transitioning to a more sustainable economic base and establish an economic metric to rank regions most at risk of failing to adjust
- identify, for such regions, factors that influence their capacity to adapt to changes in economic circumstances
- devise an analytical framework for assessing the scope for economic and social development in regions, and examine prospects for, and inhibitors to, change to the structure of regional economies.

While the terms of reference highlight the slowing of the mining investment boom as one type of adjustment pressure to which regions are currently responding, the Commission has not limited its analysis to 'mining regions' or the effects of the mining investment boom. This is because the boom has had a widespread effect on Australia's regions, and in some cases other pressures — such as changes in government policies, advances in technology, and the closure of major employers — have played a more important role in transitions in

some regions. The analysis in this study includes all regions across Australia, and considers the many different forces that have shaped their development.

The Commission has been asked to submit an early initial report to the Australian Government in April 2017, with its final report to be published in December 2017.

1.2 The Commission's approach

The Commission's approach to this study is one of many that could have been used to address the terms of reference. Regions are complex, unique and dynamic systems, and the people within them are similarly diverse. Therefore, there is no single way to capture this diversity and how they each might respond to change. In analysing the various approaches that could have been applied, the Commission settled on an approach which it considers best meets the requirements of the terms of reference, although it acknowledges that this may be contested.

In undertaking this study, the Commission has drawn on methodologies that have been used in the economic literature to measure economic resilience and adaptive capacity, and applied a framework it judged most suitable for the analysis. The framework involves three key elements.

- *Observing change in Australia's regions over time.* This allows the Commission to identify regions facing transitional pressures, analyse their responses, and observe their development paths. From this, an understanding of the factors that influence economic resilience and adaptation can be reached and regions that might be at risk of failing to adjust can be identified. This analysis is the focus of chapter 3.
- *Constructing a measure of adaptive capacity.* This is another way of identifying regions that might be at risk of failing to adjust, and is the focus of chapter 4.
- *Devising a policy framework* to assess the scope for economic and social development in regions and the factors that may inhibit change in regions. The framework and guiding principles are discussed in chapter 5.

These elements are discussed in more detail in chapter 2 (which sets out the framework that underpins the Commission's analysis). Throughout the report, case studies have also been used to illustrate how different factors have influenced the transition of regions. Not only do case studies provide useful insights into the factors that affect transition, but they also highlight the uniqueness of Australia's regions and the complex forces that shape their development. Regions that appear to have similar characteristics or levels of adaptive capacity may respond very differently to similar adjustment pressures.

As required by the terms of reference, the Commission has developed a single metric of adaptive capacity. There are inherent difficulties in reducing the multidimensional nature of adaptive capacity into a single indicator. The metric obscures the uniqueness of regions,

and its development has been limited by inadequate and inconsistent data across regions. The limitations of the metric are discussed in chapters 2 and 4.

There are inherent limitations to this initial report, including access to data that are paramount to this study, specifically the 2016 Census of Population and Housing, which contains data relating to industry and occupation by region and is expected to be released in October 2017. That Census was conducted after the conclusion of the mining investment boom.

The work presented in this initial report should be seen as very much a work in progress, and is likely to change for the final report given the scope to undertake further research using additional data and consultation that was not practical during preparation of the initial report. The Commission is particularly interested in hearing from interested parties about the methodology it has adopted in the initial report and suggestions on how to improve the analysis.

1.3 Conduct of the study

The terms of reference for this study were received from the Treasurer on 15 December 2016. Given the short timeframe for this initial report, the Commission did not release an issues paper, however it did invite public submissions. In response, the Commission received 36 submissions. Submissions are available on the Commission's website.

The Commission held limited consultations with a range of organisations, individuals, industry bodies and government agencies and conducted a limited visit program to some regions. Appendix A provides details of the individuals and organisations that have participated in the study to date.

The Productivity Commission thanks all study participants for meeting with the Commissioner and staff, making submissions, and providing helpful information and looks forward to continued engagement with participants in the lead up to the final report.

Further opportunities for participation

This is an initial report and feedback is sought to assist in preparing the final report. Documentation for the single metric will also be published on the website in June 2017.

Interested people and organisations are invited to examine and comment on this initial report and the supporting documentation by written submission to the Productivity Commission. Participants should provide evidence to support their views, including data and specific examples where possible. Submissions should be provided to the Commission **no later than 31 July 2017** for consideration in the final report. Further information on how to provide a submission is included on the study website at <http://www.pc.gov.au/inquiries/current/transitioning-regions>.

Further consultations in, and visits to, regional areas, as well as a series of roundtables on particular aspects of the study, will be undertaken in the months following the release of this report.

The final report will be forwarded to the Australian Government by 15 December 2017 and released on the Commission's website a short time later.

2 Framework

Key points

- The regions considered in this study are not limited to those affected by the mining investment boom. The study looks at all regions across Australia, and considers the many adjustment pressures that affect regional economic performance.
- There are three key elements to the framework adopted for this study.
 - The first is to observe change in regions over time. From this, insights are gained about how regions have transitioned and are transitioning, and these insights are then used to identify regions that might be having difficulty transitioning to current and prospective economic circumstances.
 - The second is to create an index of the relative adaptive capacity of Australia's regions. This index combines many attributes that are considered important in shaping the capacity of a region to adapt.
 - The third is a framework to assess the scope for economic and social development in regions and the factors that may inhibit change. This provides a guide as to how governments might support regional development and transition.
- Successful (or unsuccessful) transitions are difficult to define, and can have differing effects on people. The focus ought to be on the wellbeing of people rather than regions, although this study uses data at a regional scale to assess transitions.
- Many factors influence the way that regional communities (that is, workers, business owners and people living in the region) respond to changing economic circumstances.
 - Adaptive capacity is a summary of these factors. It is influenced by a broad range of attributes and resources that regional communities can draw on when considering how to respond to changing economic circumstances, including the skills of workers, connectivity to other regions and social factors such as leadership and networks.
 - In general, regions with higher adaptive capacity are more likely to transition successfully from a given disruption. However, adaptive capacity is not a good predictor of actual outcomes because outcomes are the result of many decisions made by individual workers and businesses, as well as the type and magnitude of the disruption.
- Principal component analysis has been used to construct the Commission's metric of adaptive capacity. This is a commonly used statistical technique for constructing such indexes.
- A framework has been put forward to identify factors that could inhibit or assist people in a region to transition, and to guide regional development policy. In general, the role of government in supporting regional development depends on the adaptive capacity of a region and the nature of the changes it is facing. The lower a region's adaptive capacity and the more severe the change, the stronger the case for targeted policy approaches.

2.1 Setting the scene

The task that the Commission has been asked to undertake is challenging, both conceptually and statistically. There is neither a simple nor an agreed way to define and measure a ‘successful transition’ or the ‘adaptive capacity’ of a region. And regions can be defined in different ways depending on the policy purpose of the analysis. For example, the definition of a ‘region’ for this study is likely to be different from the definition used for a study of the Murray-Darling Basin, where environmental issues regarding water are the main policy interest.

Even within the context of the present terms of reference, there is no clear answer as to how regions are best defined. The Western Australian Department of Regional Development (sub. 27) pointed out that the way regions are defined for the purposes of regional development policy in Western Australia is different from how they are defined by the Australian Government, and therefore caution is warranted when comparing analyses. Denis O’Malley (sub. 4) also highlighted that regions could be defined in terms of their functions or as administrative units (such as local government areas), and suggested the former in order to avoid misleading results.

The mining investment boom has had a significant effect on Australia’s regions, and these effects can be considered in a number of ways. For example, regions can be analysed in terms of how they have been affected by capital investments, the movement of workers (relocation; fly-in, fly-out; drive-in, drive-out) or exposure to overseas economic conditions. Moreover, regions are interrelated, and the effect of changes in one region can quickly flow on to others.

Geographically, the downturn has not been confined to areas where there are mining operations, such as the Pilbara, Mid West, Goldfields Esperance and Kimberley. While these areas have certainly been affected by the slowdown in activity, other areas of the state with related industries or a significant fly in fly out workforce have also suffered the effects of the downturn. (WALGA, sub. 22, p. 3)

The mining investment boom has also affected the value of the Australian dollar, and this has in turn influenced the international competitiveness of many of Australia’s industries.⁴ For example, the Cairns Regional Council and Advance Cairns (sub. 13) said that the relatively higher exchange rate over recent years negatively affected the region’s tourism industry. Conversely, the Queensland Government (sub. 26) noted that the currently lower exchange rate is likely to benefit many industries. Most, if not all, of Australia’s regions are likely to have been affected by the high exchange rate that accompanied the mining investment boom. That said, there is little doubt that the nation would be worse off had the boom not occurred.

⁴ The mining investment boom led to an increase in Australia’s terms of trade, improving national income. A floating exchange rate meant that, rather than high levels of inflation in the domestic economy, the Australian dollar appreciated. This, in conjunction with a relatively flexible labour market, reduced the extent of the “Dutch Disease” where a booming sector crowds out other sectors.

Regions are also affected by other (predictable and unpredictable) forces, such as changes in energy and environmental policy, advances in technologies and the application of new technologies, natural disasters and drought, closures of major employers, and changes in consumer preferences. In many cases, these pressures have had a more significant effect on regional performance than the mining investment boom. The Tasmanian Government Minister for State Growth said that:

While Tasmania has not experienced the adverse after-effects of the decline in the resources boom to the extent of other states and territories, it is experiencing the impacts of other economic transitions in a number of our regional areas. These changes have been triggered by the emergence of new industries as historic industries decline, and the associated workforce implications this brings. Some industrial decline would no doubt stem from the loss of competitiveness experienced in non-mining industries that had to contend with high exchange rates that accompanied the resources boom. (sub. 21, p. 1)

Given the widespread effect of the mining investment boom, and the presence of other factors that significantly affect regional performance, the Commission has taken the view that all regions should be included in its analysis. In addition, the scope of the study has not been limited to the effect of the mining investment boom, and ‘regions’ have not been defined rigidly. In many cases, data availability has required the use of statistical definitions of regions, however the focus is on the wellbeing of people in regional communities rather than precise geographical boundaries, as people are what ultimately matter.

Understanding regional economic resilience

The capacity of regional communities to adapt and transition from a disruptive event or pressure is of increasing interest to researchers and policy makers. The idea of ‘economic resilience’ is often invoked in discussions about the transition and development of regions, and is often referred to as a desired feature that should be promoted. For example, the Western Australian Department of Regional Development said that:

While targeted to jobs, economic growth and capable people, the Portfolio’s activities and investments also serve to improve economic and social resilience. (sub. 27, p. 4)

The Tasmanian Government Minister for State Growth (sub. 21, p. 3) said that the Tasmanian Government was ‘committed to continuing to support growth and regional resilience’, and Regional Development Victoria (2016) stated that its programs aim to ‘build prosperous, stronger regional communities’.

Despite strong interest in the notion of economic resilience, there is as yet no consensus about how to define it (box 2.1). Economic resilience is complex and multidimensional, and has been interpreted in different ways in the economic literature. Determining whether a regional community was resilient or adaptive following a disruptive event is also far from straightforward. In undertaking this study, the Commission has drawn on the relevant literature and applied a framework judged suitable for the analysis, while highlighting its limitations.

Box 2.1 What is economic resilience?

Economic resilience is a term commonly used to discuss how regions respond to disruptions. However, there is currently a lack of conceptual and theoretical clarity about its meaning (Martin and Sunley 2015, p. 3; Pike, Dawley and Tomaney 2010, p. 16), and it has been assigned multiple meanings by different authors. For example, Hill et al. defined it as:

the ability of a region ... to recover successfully from shocks to its economy that throw it substantially off its growth path. (2011, p. 2)

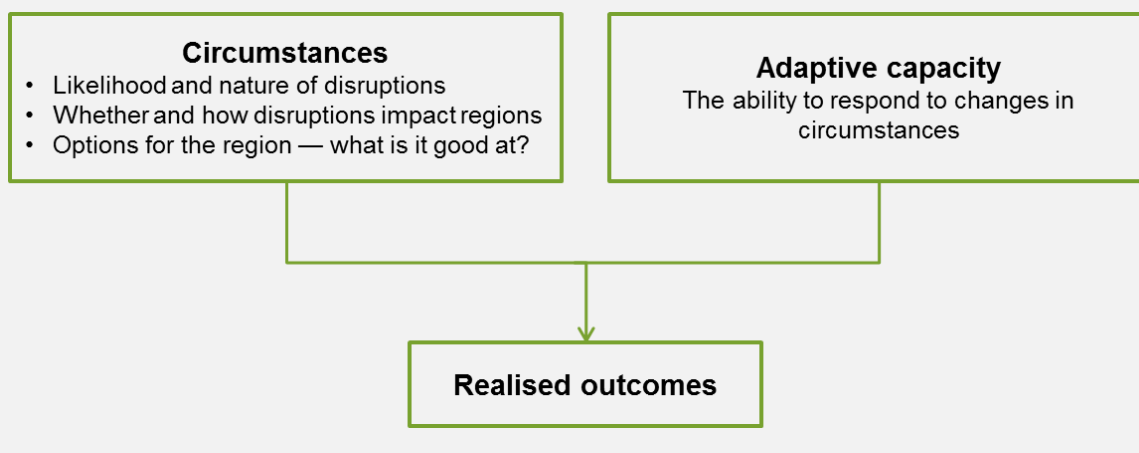
On the other hand, Martin and Sunley interpreted it more broadly as:

the capacity ... to withstand or recover from market, competitive and environmental shocks to its developmental growth path, if necessary by undergoing adaptive changes to its economic structures and social and institutional arrangements, so as to maintain or restore its previous developmental path, or to transit to a new sustainable path characterised by a fully and more productive use of its physical, human and environmental resources. (2015, p. 13)

These definitions contrast the competing notions of resilience in the economic literature as 'bounce back' to a pre-existing state, and as adapting in a way that may require changes to a region's economic base (Boschma 2015; Hill et al. 2011; Martin and Sunley 2015; Sensier, Bristow and Healy 2016).

Some have questioned the usefulness of the notion of resilience, contending that it does not add anything to existing concepts such as regional competitiveness, economic sustainability and path dependence (Hanley 2001; Hassink 2010). However, Martin and Sunley (2015, p. 16) suggest that it is useful because it draws attention to how regions respond to specific shocks or disruptions, as opposed to slow, long-term change.

Discussions of economic resilience often refer to regions' 'adaptive capacity'. However, while these two ideas are related, they are distinct. Regions with high adaptive capacity are not necessarily 'resilient' — adapting to change could involve a decline in economic activity as resilient *individuals*, acting in their own best interests, relocate to other regions. Adaptive capacity is also a poor predictor of resilience outcomes, which depend on both circumstances and adaptive capacity (ABARE–BRS 2010; Alasia et al. 2008; Briguglio et al. 2008; Zaman and Vasile 2014) (figure below).



INITIAL FINDING 2.1

There is no widely accepted method to define and measure the economic resilience and adaptive capacity of regions. Noting this, an index of relative adaptive capacity has been estimated but caution is required in interpreting and applying it to policy making aimed at building resilience and promoting economic development.

An important distinction for the purposes of this study is between resilience or adaptive *outcomes* and resilience or adaptive *capacities* (Sensier, Bristow and Healy 2016, p. 131). Outcomes are observed, and can be measured in terms of indicators such as economic growth, employment and population. On the other hand, capacities are not directly observable, but have a material impact on outcomes. Adaptive capacity is influenced by a broad range of interacting factors, including natural attributes and connectivity to other regions and markets, and only some of these factors can be observed and measured (section 2.3).

The remainder of this chapter sets out the framework that underpins the Commission's analysis. There are three key elements to the framework (chapter 1), and these correspond to the remaining sections of this chapter.

- Section 2.2 lays the groundwork for analysing the performance of regions over time. This analysis is conducted in chapter 3.
- Section 2.3 outlines the approach for developing the single metric of adaptive capacity. The results of the metric are discussed in chapter 4.
- Section 2.4 gives an overview of the policy framework that has been devised for government support for regional development. This is set out in chapter 5.

2.2 Observing the performance of regions

One way of identifying regions at risk of failing to adjust is to observe the performance of regions over time. This involves:

- first, observing patterns and trends across regions
- second, identifying regions that have experienced disruptions and how they have been affected
- third, attempting to explain the findings in terms of the various factors and processes involved.

This broad approach to understanding the resilience of regions has been used in various studies, and is sometimes referred to as the business cycle or adaptive cycle approach (Hill et al. 2011; Sensier, Bristow and Healy 2016). However, measuring the effects of a disruption is far from straightforward. Business cycles vary in amplitude and duration, and peaks and troughs can be difficult to date. Choosing a counterfactual against which to

assess the performance of a region can also be contentious. There is no single approach to measuring disruptions and their effects.

Disruptions can vary along many dimensions (box 2.2), and one way that their effects can be observed is by examining a region's development path. Development paths capture changes in economic activity over time, and are a proxy for community wellbeing. They reflect the long-term evolution of regions as well as their reactions to disruptions and adjustment pressures.

Box 2.2 **How could disruptions affect regions?**

Disruptions can occur in many ways, and their effects can vary along the following dimensions.

- **Severity** — the magnitude of the disruption and its impacts.
- **Speed** — the rate at which the disruption occurs and its impacts are felt. For example, a natural disaster could be a discrete event with an immediate impact, whereas the effect of an ageing population unfolds over a longer period of time.
- **Permanence** — whether the disruption is a one-off or periodic event, or whether it is a permanent change with no foreseeable return to previous conditions.
- **Extent** — whether the disruption affects many regions or sectors (including through flow-on effects), or whether it is more localised.
- **Predictability** — whether the change could have reasonably been foreseen. Periodic events are likely to have relatively high predictability (for example, a drought as opposed to an unanticipated change in demand for a major product produced in a region).
- **Sequencing** — whether the disruption is related to other (past or future) disruptions.

Source: RIRDC (2014).

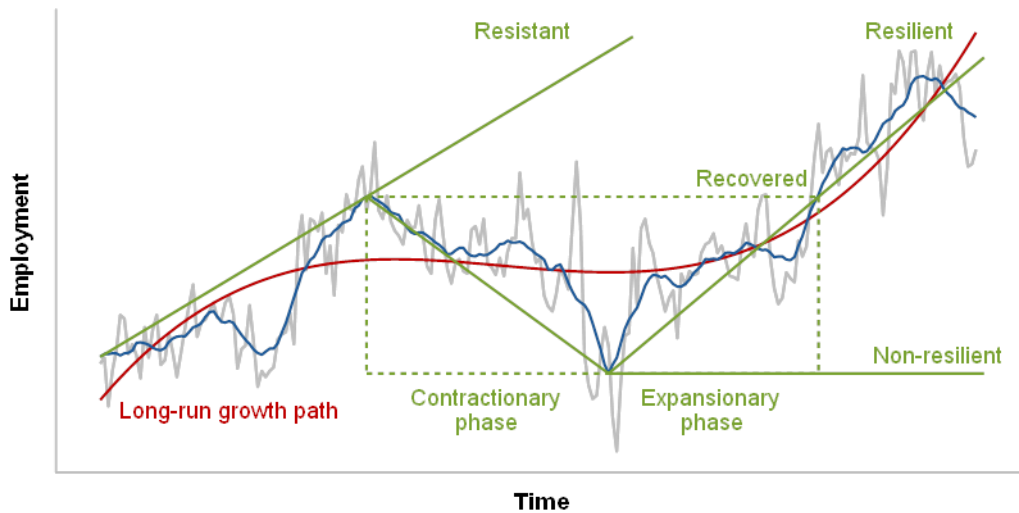
A region's pathway following a disruption can be captured in three broad outcomes (figure 2.1).

- A region may exhibit positive growth. It may continue to grow at an equal or faster rate than previously (as in the case of a 'positive shock'). This type of outcome has been termed 'shock-resistant' by Hill et al. (2011).
- A region could experience a downturn followed by a return to positive growth. This growth rate could be higher or lower than the region's previous growth rate. Regions that exhibit this pattern are sometimes referred to as 'resilient'.
- A region could experience a persistent decline in economic activity and its developmental path. These regions are 'non-resilient'.

In reality, regional economies are constantly responding to multiple pressures. This can make it difficult to identify substantial 'disruptions' in time series data — their effect on overall economic growth may be indistinguishable from cyclical patterns, numerous smaller (but more pervasive) forces, or longer-term structural change. This has been found

to be the case in this study. The level of aggregation of the data can also make it difficult to identify disruptions that have been experienced at a local scale.

Figure 2.1 **Stylised development path of a region following a disruption**



Source: Adapted from Hill et al. (2011).

Individuals and business owners can respond to disruptions in different ways. For example, they could:

- return to carrying out the same economic activities in the same manner as they had previously. Regional Development Australia Pilbara (sub. 6) suggested that if the recent increases in commodity prices were to be sustained, investments that were previously put on hold due to decreasing commodity prices would go ahead.
- adjust by adopting more efficient ways of carrying out economic activities. For example, in the face of falling commodity prices and other forces, mining companies have sought to remain competitive by focusing on innovation, cost reduction strategies and consolidation (Matysek and Fisher 2016, p. 24). This follows a period of falling productivity as mining companies sought to expand production as much as possible to take advantage of very high prices (Matysek and Fisher 2016, p. 4).
- choose to engage in new activities that are made relatively more attractive (even if returns are lower). For example, many of those affected by the closures of the Holden manufacturing plant and the Port Augusta power stations in South Australia have sought to acquire new skills in other areas (Regional Development Australia Far North, sub. 9). Tasmania's King Island has also been 'transitioning from a largely manufacturing based workforce to a service based sector, following the closure of the on-island abattoir' (Tasmanian Government Minister for State Growth, sub. 21. p. 5).

It is not immediately clear which kinds of responses would be associated with a ‘successful’ (or ‘unsuccessful’) transition. As the Regional Australia Institute explained, many different outcomes could be considered equally successful.

Success might mean a return to pre-boom equilibrium, or pre-boom prices, or might mean a stabilisation of employment or output growth at ‘sustainable’ rate – ie rates that, like the national economy growth/inflation trade-off enable a region to grow without abnormal price growth. A successful transition could take several forms:

- A return to the pre-boom equilibrium (resistance to change)
- Adjustments in economic activity (resilience)
- Movement to a different economic mix (transformation). (sub. 12, p. 5)

Economic activity also varies over time, and whether or not a transition is considered successful is likely to depend on the point of time in question (and the point in time used as a comparison). A region could initially experience a large upturn, then rapid decline followed by a return to its long-term trend. This has been the recent experience of some mining regions (WALGA, sub. 22).

Moreover, disruptions can have differing effects on individuals, and it is difficult to aggregate these to determine success at the regional level. A transition could involve some unemployed workers moving out of a region and finding employment elsewhere, which could increase their wellbeing relative to what it would have been if they had remained in the region. However, for those who are unable or unwilling to relocate, a disruption could result in a decrease in wellbeing, since a smaller community is less able to support services and is likely to have fewer amenities. In addition, communities facing population decline may need to face the challenge of maintaining their asset bases (such as infrastructure) with fewer financial resources.

Ultimately, the success of a transition should be determined by its effect on the wellbeing of people rather than geographical regions. The focus should also be on wellbeing *across* regions rather than in individual regions. That said, the wellbeing of people is difficult to define and measure, and this study uses indicators such as employment levels and average wage and salary incomes of households as proxies (chapter 3).

What determines regional economic resilience and adaptation?

Observing the various ways that transitions have taken place (or are taking place) across Australia’s regions provides a foundation for understanding the factors that affect performance and why regions differ in their observed resilience or adaptation. The ability of regional communities to respond to change and take advantage of the opportunities available to them is influenced by a range of factors, including the attributes of people (skills, education and financial resources), and the natural resources and attractiveness of the area (Alasia et al. 2008; Hill et al. 2011).

The outcomes of previous transitions also matter. For example, a previous transition that attracted high-skilled workers would reinforce a region's capacity to adapt to future disruptions, whereas a transition where workers moved to other regions would likely weaken it. Some factors that affect adaptive capacity are relevant for all regions (although their relative importance may vary from region to region), and others relate only to specific regions (Martin and Sunley 2015, p. 25).

A diversified economic base is generally considered to have a positive effect on economic performance and adaptive capacity, and is often raised as an important factor in facilitating transition (Chisholm 1995; Dissart 2003; Haslam-McKenzie and Stehlik 2005). For example, the Illawarra Business Chamber suggested that:

It is important that in transitioning to a post-resources boom, regions like the Illawarra have a diversified economy enabling it to better adapt to changes to the national and international economy over time. (sub. 15, p. 4)

Regional Development Australia Mackay-Isaac-Whitsunday also said that it needed to:

... build a more diverse economy to soften the impact of any transition in what is historically a cyclical industry. (sub. 25, p. 1)

However, reliance on a small number of industries does not always mean that a region has lower adaptive capacity. A region with a single trade-exposed industry could be highly adaptable if businesses expect to be affected by international competition, exchange rate fluctuations and overseas economic conditions, and take steps to prepare for this.

In addition, while economic diversity may increase adaptive capacity, in some cases it may lower overall wellbeing. This would occur if a region could generate the highest possible income by devoting all of its resources to one economic activity, but chose instead to diversify. As Regional Development Australia Pilbara explained:

There are currently some opportunities for economic development and "transitioning" in the Pilbara, through diversification, although the scale of diversification in terms of value is nowhere near the value of the resources sector. (sub. 6, p. 13)

Diversification for its own sake is not always better — regions should focus on producing goods or services that can earn them the highest income. (That said, where individuals invest heavily in housing assets in towns with a narrow economic base, they increase their exposure to an adverse event).

Some participants to this study felt that it is the existence of particular industries, rather than industry diversification, that enables regions to adapt well. For example, Denis O'Malley (sub. 4, p. 5) pointed to the need for 'transaction services' to facilitate trade in regional economies. Transaction services comprise industries that facilitate business transactions such as financial services, retail and wholesale trade, media and communications.

Others suggested that regions should develop industries where they have a natural, historical or social advantage, as this would give them the best chance of sustainable long-term growth.

A region's comparative advantage can stem from various resources, such as its geographical location, availability of natural resources, the existence of industry clusters, access to infrastructure or the skill profile of the local population. These underlying attributes influence the types of economic activity that are likely to be successful. They also have implications for development initiatives, which are generally more effective where they build on an existing strength. (RDA Far North, sub. 9, p. 2)

... concentrating regional development policies on economic activities where regions have a comparative advantage will, all else equal, provide the best chance of fostering growth and prosperity. (CME of Western Australia, sub. 28, p. 7)

Some highlighted the importance of connectivity to other regions through transport and telecommunications (James Cook University, sub. 24; Regional Cities Victoria, sub. 23).

The lack of air flights from Central Western Queensland and the Bowen Basin to Rockhampton maximised the impact of the coal industry downturn for the Rockhampton Region. This lack of flights to Rockhampton was especially strongly felt by the Region's boarding schools which found it more difficult to complete with offerings from South and North Queensland. (Rockhampton Regional Council, sub. 10, p. 3)

Good telecommunications infrastructure and services are fundamental to regional economies having the opportunity to transition successfully from the resources boom to a more diverse and sustainable economy. (Telstra, sub. 18, p. 3)

Social factors such as leadership were also considered to be important.

Experience with transitions shows consistently that while economic endowments play a role in framing the overall parameters of what the next economic state might look like, the path to a new economic state will be strongly influenced by the social factors embedded in the region. These include local leadership, networks and connections; social and cultural strengths and weaknesses; and the ability of a region to drive initiatives to support endogenous growth in alternative industries. (RAI, sub. 12, p. 6)

The Commission also heard an example of the importance of local leadership and other factors in Stawell, Victoria (box 2.3). While a large body of literature suggests that social factors have an important influence on economic performance and the ability of communities to adapt⁵, these factors can be somewhat nebulous and difficult to measure. Researchers have therefore tended to rely on proxies such as the level of participation in community groups and attitudinal surveys (Boulila, Bousrih and Trabelsi 2008; Sherrieb, Norris and Galea 2010).

⁵ For example, Alasia et al. (2008), Dinh et al. (2016), Helliwell and Putnam (1995), Hervas-Oliver, Jackson and Tomlinson (2011), Hill et al. (2011), Lawton et al. (2014) and Sherrieb, Norris and Galea (2010).

Box 2.3 **Stawell: the importance of leadership**

The town of Stawell, Victoria (approximately 230 kilometres northwest of Melbourne) provides an illustration of the importance of leadership and social networks in enabling a region to transition and develop.

The town has historically relied on mining, with gold discovered during the Victorian gold rush and the first recorded mining activity in 1853 (Lenaghan 2012; Osborne and Doronila 2005, p. 85). The Stawell Gold Mine opened in 1982, but ceased operations in December 2016 due to declining profitability. The mine and its processing facility were a large source of employment for the town, providing about 380 direct jobs in a town of just over 6000 people in 2012 (Lenaghan 2012).

When the possibility of a mine closure began to take shape in 2007, the Northern Grampians Shire Council immediately took a leadership role in preparing for this event. In June 2007, it held focus groups with community members, councillors, mine staff and council staff to identify community values, priorities and preferences that would inform council planning for life after the mine (*The Stawell Times-News* 2007, *The Stawell Times-News* 2013). The Council also commissioned the Stawell Gold Mine Future Possibilities Study in 2013 to identify viable alternative uses for the mine site, and established a set of criteria so that only 'feasible' options would be considered. Thus, tourism was ruled out in the early stages of the study (Northern Grampians Shire Council 2013, p. 17).

Ideas from the feasibility study included establishing an emergency training centre or hydroponic horticulture production facility (SED Advisory 2014). In addition, a chance contact with an astrophysicist at the Swinburne University of Technology — through professional networks — yielded a novel proposal: a physics laboratory for dark matter detection experiments. An underground mine was considered ideal because the rock would act as a natural radiation shield. Further, because the mine site at Stawell was still in operation at the time, infrastructure and utilities such as electricity, ventilation and internet access were already in place (Clausen 2016).

The Stawell Underground Physics Laboratory is currently being constructed on part of the former mine site, and, when complete, will be the first underground dark matter detector in the Southern Hemisphere. The local government expects the laboratory to provide about 215 direct jobs (Northern Grampians Shire Council 2015, p. 3), and the community expect that it will provide a stable industry for the town, attract skilled workers and increase the number of local youth pursuing higher education in science (Clausen 2016). Part of the former mine site will also be used to develop a large-scale hydroponic glasshouse facility, which is expected to create 70 new jobs in the region. The ability of the region to undertake this development so soon after the closure of the mine has been directly attributed to the Council's foresight and leadership (Pulford, J. 2017).

Ultimately, a region's ability to deal with change is made up of the adaptive capacity of individuals, workers, business owners and organisations in the community. For example, a business owner who wants to change the way their business operates must be able to find workers with the necessary skills, access finances for machinery and new investments, motivate employees through leadership and so on. There are a multitude of factors that can affect the adaptive capacity of individuals, and their importance is likely to vary between individuals.

Many of the factors that affect adaptive capacity are related, and can be grouped together to make interpretations of the analysis simpler. The ability to cluster factors based on their similarities is especially useful for the Commission’s metric of adaptive capacity (section 2.3). Factors can be grouped in different ways, and this study has grouped them according to the five capitals framework (box 2.4). An indicator of economic diversity has also been included in the metric, which is in line with other studies in this area (Dinh et al. 2016; Lawton et al. 2014; Nelson et al. 2009b).

Box 2.4 Categorising factors that affect adaptive capacity

One way of categorising factors that affect adaptive capacity is to use the five capitals framework (Dinh et al. 2016; Nelson et al. 2009b). Under this framework, factors are grouped under one of five ‘capitals’, which represent the types of resources that regions draw on to re-orient their livelihoods in times of change.

- Human capital — labour and influences on the productivity of labour, including work experience, education, skills and health.
- Social capital — the ability of a community to coexist, share ideas and work towards common goals.
- Natural capital — land, water and other natural resources, attractiveness of the area and location relative to other regions and transport routes.
- Physical capital — investment in man-made or modified items. This includes improvements to the natural environment, infrastructure, equipment and technology.
- Financial capital — means to invest, including savings and credit.

Others have grouped factors in other ways, including by modifying the capitals above. For example, Flora and Flora (2007) separated political and cultural capital from social capital, while Lawton et al. (2014) combined natural and physical capital. Martin and Sunley (2015, p. 26) used a different framework, categorising the determinants of regional resilience according to four economic subsystems: the structural and business subsystem, the labour market subsystem, the financial subsystem and the governance subsystem.

2.3 Measuring adaptive capacity — a single metric

It is not possible to predict with any certainty how a regional community will respond or adapt to any particular disruptive event, so we cannot identify regions most at risk of failing to adjust on this basis. But as noted above, adaptation *outcomes* are influenced by the adaptive *capacity* of communities. The Commission’s approach to developing an index to rank regions most at risk of failing to adjust (as required by the terms of reference for this study) is to develop a measure of the *adaptive capacity* of regional communities.

There are significant challenges associated with developing a single metric of adaptive capacity. As noted above, adaptive capacity is influenced by a complex set of factors (both social and economic), and reducing these factors into a single metric will, to some extent, disguise the unique characteristics of regions. Obtaining data on a consistent basis for each

region is also challenging, and the analysis in this study is necessarily limited by this. Further, the metric is likely to be highly sensitive to the variables that are included in the analysis. This highlights the importance of sensitivity testing and cautious interpretation of the results.

There is also no agreed method for how best to combine the large set of factors that are thought to affect adaptive capacity into a single metric. A number of approaches could be used (OECD and JRC 2008), and the choice is largely based on judgment. The Commission has chosen to use principal component analysis (PCA), a technique that has previously been used by the ABS and others to construct indexes of socioeconomic disadvantage, vulnerability, resilience and adaptive capacity (box 2.5).

Box 2.5 Indexes based on principal component analysis

- The ABS Socio-Economic Indexes for Areas (SEIFA) consist of four indexes that measure different aspects of relative socioeconomic advantage and disadvantage.
- The Australian Bureau of Agricultural and Resource Economics — Bureau of Rural Sciences (2010) developed an Index of Community Vulnerability for the Murray-Darling Basin Authority to compare the vulnerability of communities across the Basin. This was based on the five capitals framework (box 2.4).
- Baum, Mitchell and Flanagan (2013) from the Centre of Full Employment and Equity at the University of Newcastle created an Employment Vulnerability Index to rank regions according to risk of job loss.
- Dinh et al. (2016) from the University of Canberra created an index of potential community economic resilience at a small regional level. They grouped factors under the five capitals, and also included levels of economic diversity and accessibility to service centres.
- Nelson et al. (2009a) created an index of adaptive capacity for Australian farms based on the five capitals framework.

PCA enables the construction of a single index by summarising the data on factors that are thought to affect adaptive capacity, and presenting them in terms of the elements that explain the most variation. These elements are called principal components. Principal components can then be used to create indexes and rank regions.

The factors that have been included in the metric are those identified as important for adaptive capacity, based on those mentioned in the economic literature and by study participants (discussed above). In many cases, the data that would best capture the factors are unavailable, and other surrogate variables have been used (table 2.1).

Variables were grouped according to the five capitals framework (box 2.4), and PCA was conducted on each group of variables to create sub-indexes. Sub-indexes were then aggregated into an overall index. A benefit of using this approach, rather than conducting a PCA on all variables at once, is that it makes it easier to examine which factors are most important within each group of related factors, and which groups are most important in the overall index.

Table 2.1 Indicators of adaptive capacity

Ideal indicators and those for which data are available

<i>Type of factor</i>	<i>Ideal indicators</i>	<i>Is this available?</i>	<i>Available indicators (included in metric)</i>
Human capital	<ul style="list-style-type: none"> • qualifications or skills in different fields 	<ul style="list-style-type: none"> • some 	<ul style="list-style-type: none"> • proportion of working-age people with year 12 educational attainment • proportion of employed people working in high-skilled occupations
	<ul style="list-style-type: none"> • average number of years spent in employment 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • employment rate
	<ul style="list-style-type: none"> • youth engagement in work and study 	<ul style="list-style-type: none"> • yes 	<ul style="list-style-type: none"> • proportion of 15–19 year olds engaged in work or study
	<ul style="list-style-type: none"> • entrepreneurial skills 	<ul style="list-style-type: none"> • some 	<ul style="list-style-type: none"> • proportion of employed people who manage their own business
	<ul style="list-style-type: none"> • capacity to work 	<ul style="list-style-type: none"> • some 	<ul style="list-style-type: none"> • proportion of working-age people who need assistance with core activities
Financial capital	<ul style="list-style-type: none"> • net wealth of the community 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • proportion of people earning high incomes • median property sale prices • proportion of people living in owner-occupied dwellings • proportion of people receiving a government pension or allowance
Physical capital	<ul style="list-style-type: none"> • existence of road, rail and air transport 	<ul style="list-style-type: none"> • some 	<ul style="list-style-type: none"> • remoteness, based on the Accessibility / Remoteness Index of Australia (ARIA) (proxies travel distance to regional centres and capital cities)
	<ul style="list-style-type: none"> • availability, speed and bandwidth of telephone and internet services 	<ul style="list-style-type: none"> • some 	<ul style="list-style-type: none"> • proportion of people with access to broadband internet
	<ul style="list-style-type: none"> • resale value of existing machinery 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • value of non-residential building approvals per person
Natural capital	<ul style="list-style-type: none"> • value of discovered and undiscovered minerals 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • proportion of land used as national parks or nature reserves • proportion of people employed in mining
	<ul style="list-style-type: none"> • quantity and quality of land that could be used for agriculture 	<ul style="list-style-type: none"> • some 	<ul style="list-style-type: none"> • proportion of land used for agriculture
	<ul style="list-style-type: none"> • access to fresh water 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • none
	<ul style="list-style-type: none"> • liveability of a region 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • none
Social capital	<ul style="list-style-type: none"> • leadership capacity of individuals 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • none
	<ul style="list-style-type: none"> • ability of a community to work together or achieve common goals 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • proportion of people involved in volunteer work
	<ul style="list-style-type: none"> • willingness to contribute to the community 	<ul style="list-style-type: none"> • no 	<ul style="list-style-type: none"> • proportion of people involved in volunteer work
Industry diversity	<ul style="list-style-type: none"> • concentration of industries people are employed in 	<ul style="list-style-type: none"> • yes 	<ul style="list-style-type: none"> • Herfindahl index of industry concentration

The analysis is conducted at the Statistical Area Level 2 (SA2) drawn from the ABS Australian Statistical Geography Standard. This definition aims to represent a community that interacts together socially and economically (ABS 2011a), and many key sources of nationally consistent data, such as the ABS Census of Population and Housing, are available at this level. There are 2196 SA2s in Australia with an average population of 10 000, ranging from less than 100 to 25 000. However, some SA2s were excluded because:

- they had very small populations (less than 10 dwellings or 100 working-age residents)
- they represented Australian territories other than the ACT or the Northern Territory.

The final index was calculated for 2085 of the 2196 regions.

The index measures the extent to which regions are ‘different’ to others. An index score is computed for each region, with higher (lower) scores indicating higher (lower) adaptive capacity relative to other regions. Regions are then ranked according to their score to identify those most at risk of failing to adjust. It is important to note that the index measures relative, rather than absolute, adaptive capacity — regions ranked highly by the index do not necessarily have high adaptive capacity, rather they only have *higher* adaptive capacity relative to other regions.

In addition, the index does not provide a prediction of a region’s development path. Observed outcomes depend on a region’s circumstances as well as its adaptive capacity (box 2.1), and the index does not account for the circumstances that regions face or how these might change in response to an economic disruption.

In chapter 4, the Commission is seeking further information about the methodology used to construct its index of adaptive capacity, and whether there are other variables and data sources that could be used to inform its analysis.

2.4 Regional development and scope for change

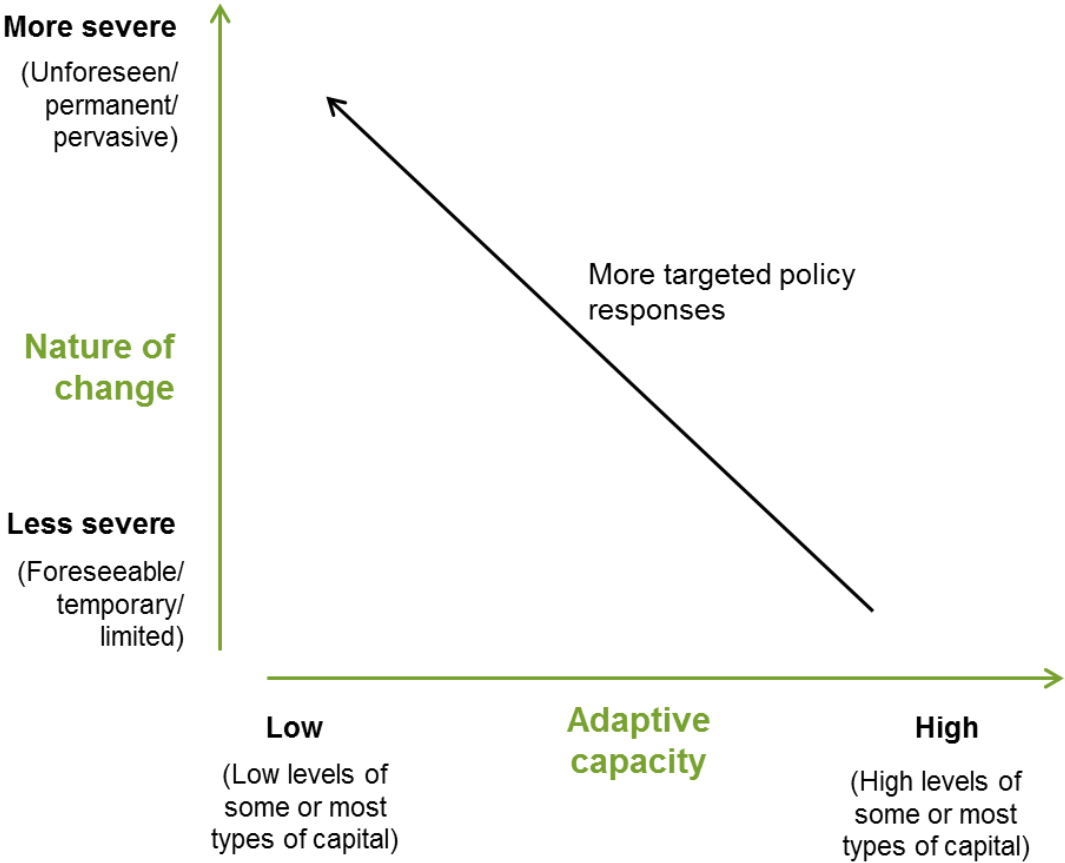
The final part of the terms of reference requires the Commission to examine prospects for, and inhibitors to, change to the structure of regional economies, and to devise a framework for assessing the scope for economic and social development. These issues have been considered within a framework for government support for regional development, which is outlined below and discussed in further detail in chapter 5.

The type of government action that is most appropriate depends on the nature of the change that is occurring as well as a region’s characteristics (its adaptive capacity). In general, the more severe the change and the lower a region’s adaptive capacity, the stronger the case for targeted government policies (figure 2.2).

As discussed in section 2.2, the development path of a region reflects its long-term evolution as well as its reactions to disruptions and adjustment pressures. Therefore,

regional development is a summary of all changes occurring in a region. Workers, business owners and individuals are constantly changing the way they conduct their economic activities, and these changes are not always driven by specific events or pressures.

Figure 2.2 **How should governments support regional development?**



In some cases, the changes that people would like to make could be inhibited by government policies or regulations. These barriers include complex regulatory processes, high compliance costs, and regulations that restrict what people can do (for example, requirements for occupational licensing, environmental regulations and so on). Although many of these regulations have sound objectives, governments must ensure they are the minimum required to achieve their objectives. Removing unnecessary barriers to doing business, as well as the cost of government services, is a ‘no-regrets’ policy that should be pursued by all governments (PC 2016e).

In other cases, regional communities may be able to identify opportunities for change (or the need for change), but cannot take advantage of these due to limited capacities or other forces. In such cases, governments may choose to support regional development through selected interventions. These could aim to increase a region’s adaptive capacity so that it

can better respond to circumstances, or it could help uncover alternative sources of economic activity.

Governments can best support regional development through policies that are:

- coordinated, coherent, strategic, and led by the regional community
- built on a region's natural strengths
- aimed at investing in a region's assets and its connections to other regions and markets
- sustainable, in that policies lead to projects, programs and businesses being viable in the long-term without government support.

However, even with this type of government support, individuals and communities may at times face severe disruptions to which they might have difficulty responding. When these situations occur, governments may choose to further support communities by undertaking more targeted interventions, such as providing adjustment assistance. It is important that targeted actions facilitate change and help people adapt, rather than prevent change from occurring (for example, by supporting uncompetitive industries). In some cases, continued population decline and the subsequent loss of critical services means that maintaining economic activity in a region is likely to come at a high cost, and may not be viable in the long term without ongoing government support.

The following two chapters discuss the results of the analyses described in sections 2.2 and 2.3, and chapter 5 discusses the role of government in facilitating adjustment and regional development.

3 Change in Australia's regions

Key points

- The Australian economy is adaptive and resilient in the face of adjustment pressures. However, not all regional communities have the same resilience.
- Employment is growing in most regions (about 80 per cent), although some regions (about 15 per cent) have experienced population decline.
- It is difficult to distinguish specific disruptions from the natural variation in economic and social indicators. However, some general patterns can be observed.
 - Workers in resource regions (mining, oil and gas production) had, on average, higher and faster growing incomes than other regions during the mining investment boom.
 - ... Labour mobility, largely through fly-in, fly-out workers, has spread the geographic effects of the transition; diluting the impact but increasing its reach to other regions.
 - ... However, the rapid rise (and subsequent fall) of house prices in some mining areas has had negative wealth effects on some people who bought during the boom.
 - Agricultural regions are continuing to adjust to the long-term decline of agricultural employment and the centralisation of the population in larger regional centres.
 - ... Many of the regions with falling employment and declining populations are agricultural regions. However, this does not prove that adjustment outcomes are poor, as many people have responded by moving to areas of greater opportunity.
 - ... Furthermore, the agricultural sector has continually increased its productivity over a long period of time, improving the wellbeing of a shrinking pool of farmers.
 - Regional centres have more diverse and services-driven economies, but outcomes are highly variable — both across centres and for groups within each centre.

The current Australian economy bears little resemblance to the economy of the early twentieth century. Although Australia has continued to enjoy a sustained period of economic growth, there has been substantial transformation in the nature of businesses and jobs over the past few decades. This provides evidence that the Australian economy is adaptive and resilient overall. This does not mean that all regions are growing in line with the national trend and that all regional communities are capable of responding to adjustment pressures.

Drawing on the framework presented in chapter 2, the Commission attempted to identify regions that have experienced an out-of-the-ordinary economic disruption (cycles that are larger than usually observed). Data for employment are at the Statistical Area Level 4 (SA4) (87 regions across Australia). The SA4 level is the lowest level of aggregation for

which a sufficient employment time series is available.⁶ Data on population and incomes are available at the more disaggregated Statistical Area Level 2 (SA2). These more disaggregated data have been used, where appropriate, in the report. Even the use of data at an SA2 level (there are just over 2000 SA2 regions) may hide population falls in townships.

Based on the information available, it has not been possible to identify many examples of regions experiencing disruptive events. Rather, regions are continually experiencing ups and downs. In addition, there appear to be long-term trends across classes of regions, including those that are predominately focused on mining or agriculture or are regional population centres (towns and cities). These trends, and the factors that have shaped the performance of particular regions, are explored further in this chapter.

This chapter starts with an examination of recent economic and demographic trends in regions throughout Australia (section 3.1). Drawing on the themes emerging from this analysis, the chapter then explores change in three types of regions: resource regions (section 3.2), agricultural regions (section 3.3) and regional centres (which are larger population centres outside of Australia's capital cities — section 3.4).

3.1 Recent trends in regional growth

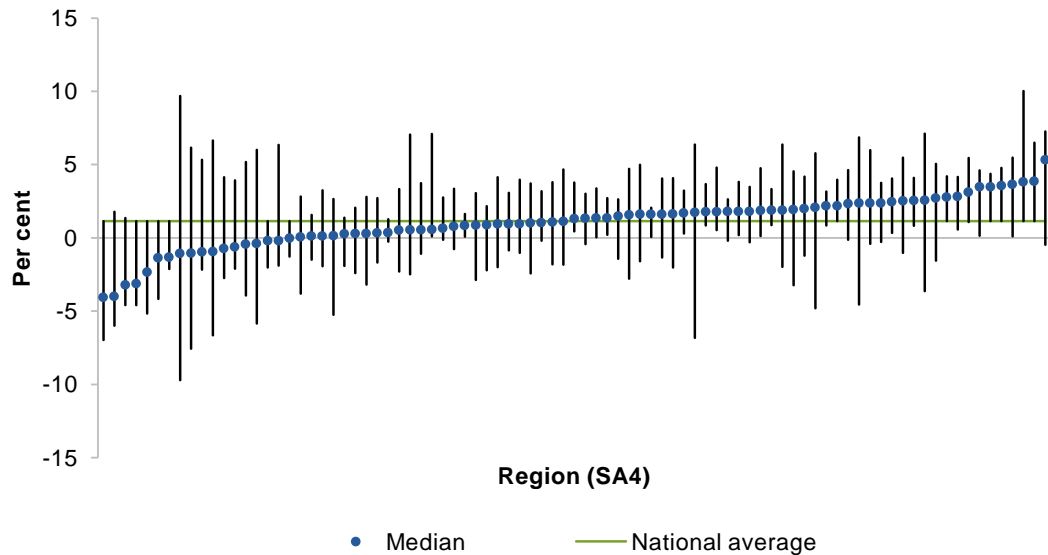
Most regions have experienced employment growth

Almost all regions have displayed significant variability in growth rates, as indicated by the large interquartile ranges in the growth in employment (figure 3.1).⁷ Even so, most regions have experienced overall positive growth in employment (about 80 per cent of all regions defined at the SA4 level). Most also display negative rates of growth from time to time. A number have also experienced an overall fall in employment in recent times. The geographic distribution of regional growth in employment is shown in figure 3.2.

⁶ The ABS also defines smaller regions, but there are fewer data about employment over time because the source is surveys. The survey sample size is generally too small to be able to use it at the more disaggregated level.

⁷ The data in figure 3.1 are year average employment growth rates. Unadjusted data show even greater variability.

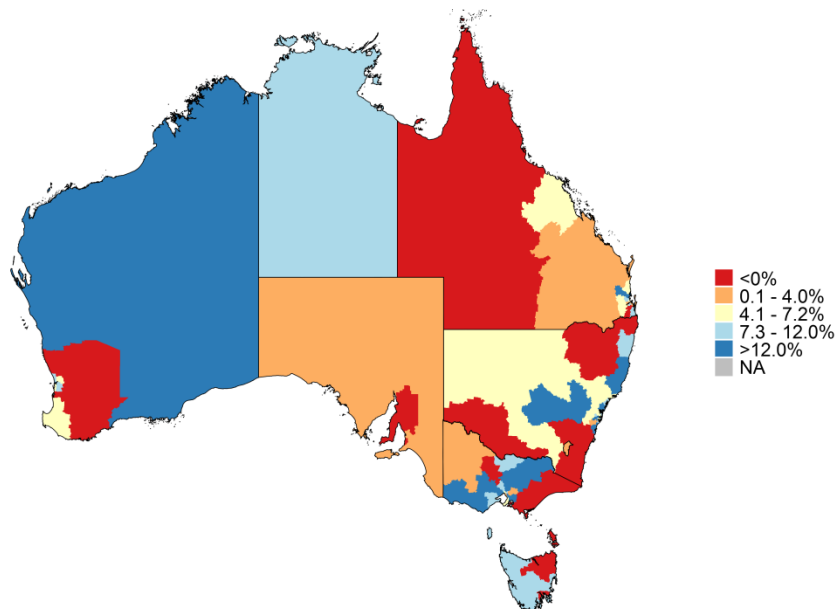
Figure 3.1 Employment growth is variable^a
 Employment growth, year average data, March 2012 to February 2017



^a Each blue dot represents, for each region, the median annual employment growth over the period. The black lines extend to the annual growth rate for the 25th and 75th percentile.

Source: ABS (*Labour Force, Australia, Detailed – Electronic Delivery, Feb 2017, Cat. no. 6291.0.55.001*).

Figure 3.2 Employment is growing in most regions
 Growth from year ending February 2012 to year ending February 2017



Source: ABS (*Labour Force, Australia, Detailed – Electronic Delivery, Feb 2017, Cat. no. 6291.0.55.001*).

An emerging theme from this analysis is that regions that have experienced the lowest rates of employment growth are those that have a large agricultural base. For example, between 2012 and 2017 employment fell by more than 10 per cent in Western Australia – Wheat

Belt and in Murray in New South Wales (as illustrated in figure 3.13 later in this chapter), although there has been variation in growth. This is reflective of the long-term decline in employment in agriculture over many decades. In contrast, mining employment has been reasonably stable until a period of rapid acceleration from 2005. Even though employment has since declined, the number of people now employed in mining is more than double what it was prior to the recent resources investment boom. For example, Western Australia – Outback, which is heavily mining dependent, experienced one of the highest rates of employment growth, although again there has been variation in growth (discussed later and illustrated in figure 3.7).

INITIAL FINDING 3.1

All regions experience significant variation in their growth in employment, including periods of negative growth. Even so, most regions (69 out of 87) have seen net employment growth over the past five years.

Regional population is growing although some towns are in decline

The majority of regions at the SA4 level across Australia experienced growth in population between 2010 and 2015. Only three regions recorded a decline in population. Those regions were: North West; Warrnambool and South West (both in Victoria); and West and North West (in Tasmania) (ABS 2017c).

The populations of mining regions have grown (in the five years to 2015) in line with, or above, the national average. In contrast, all agricultural regions had population growth below the Australian average, with most growing at less than half the Australian average. A number of agricultural regions, including Far West and Orana (in New South Wales) and Shepparton (in Victoria), have experienced very low population growth (less than 2 per cent between 2010 and 2015).

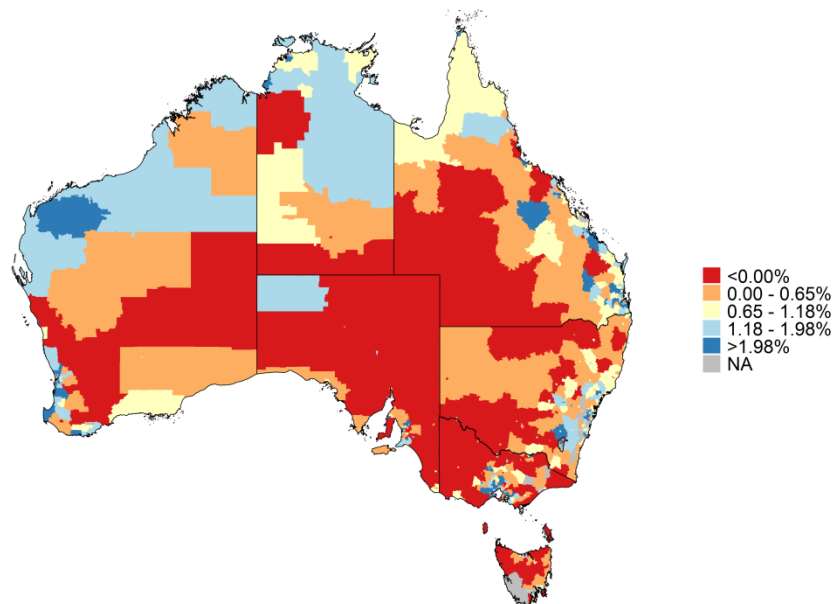
Much larger changes in population can be observed at a smaller regional scale (using SA2 regions). About 15 per cent of SA2 regions recorded a population decline, on average, between 2010 and 2015 (figure 3.3).

The largest identified population decrease exceeded 50 per cent. That occurred in Nhulunbuy in the Northern Territory — a bauxite mining area where the alumina refinery was recently shut down (examined in more detail in box 3.1). Reductions of between 8 and 15 per cent over a five year period are also common in small towns in north western Victoria (which have seen population decline by 2 to 4 per cent a year). Some of the largest population declines were in agricultural areas, such as West Wimmera, Buloke, Swan Hill Region and Mildura Region (all in North West Victoria), Mukinbudin (Western Australia – Wheat Belt), the Naracoorte region and Wattle Range (South Australia – South East).

Areas facing adjustment pressures may experience large population changes — either as people are attracted to regions with better employment and lifestyle prospects, or leave regions where they see limited opportunities. Many of the fastest growing regions are in urban areas (cities and regional centres) in Victoria and Western Australia. Some areas near to capital cities (Moreton Bay South and Mandurah) and some regional centres (Bunbury) have experienced relatively high rates of population growth.

Figure 3.3 Population decline has been predominantly in inland regions

Annual average population growth by SA2 region, 2010 to 2015



Source: ABS (*Regional Population Growth, Australia*, Cat. no. 3218.0).

Income growth has been strongest in mining intensive regions

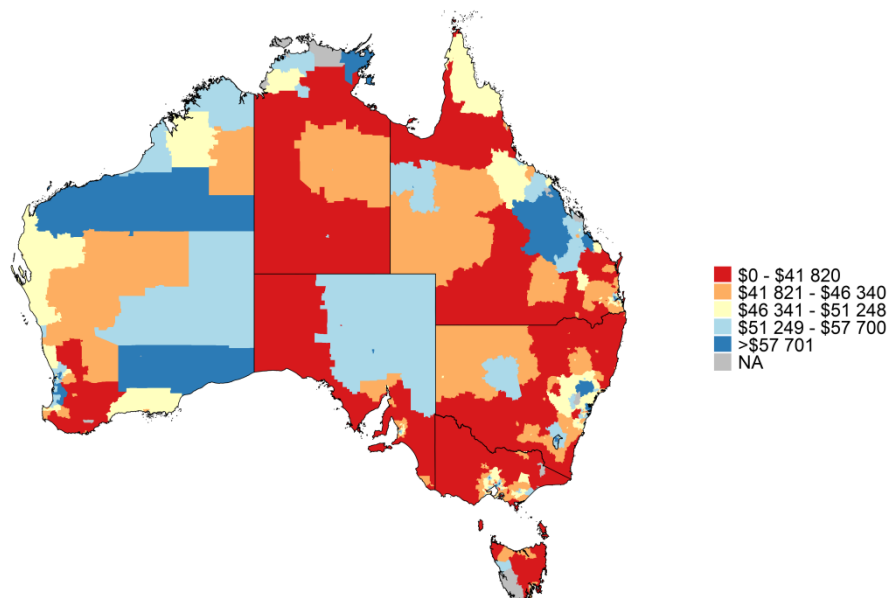
Average wage and salary income is generally higher in mining-intensive regions than in other parts of the country (figure 3.4). Indeed, some mining areas, including Port Hedland and Newman in the Pilbara, are among the regions that had the highest average incomes in Australia in 2011 (near the height of the mining investment boom).⁸

Incomes in mining regions also grew strongly during the recent mining investment boom. Between 2005-06 and 2010-11, annual average income growth in mining regions ranged from 5.5 to 6.7 per cent, considerably higher than the Australian average of 4.9 per cent.

⁸ Income data are for the period 2005-06 to 2010-11. This was during the period of the resources investment boom. Incomes may have declined from this time. More up-to-date income data will be available for the final report.

Figure 3.4 In 2010-11, incomes were highest in mining regions

Average wage and salary income by SA2 regions



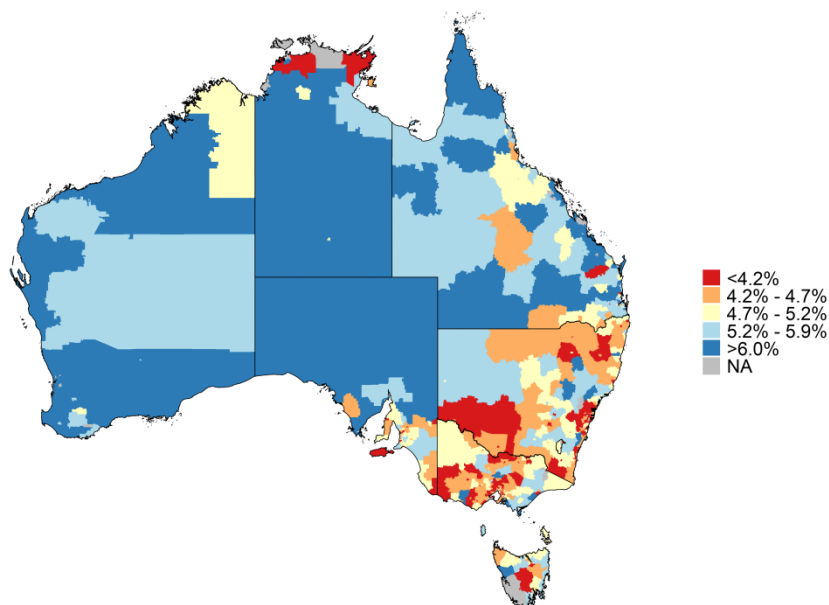
Source: ABS (*Wage and Salary Earner Statistics for Small Areas, Time Series, 2005-06 to 2010-11*, Cat. no. 5673.0.55.003).

Income growth across most agricultural regions was variable (figure 3.5). Between 2005-06 and 2010-11, agricultural regions in Queensland, Western Australia and Tasmania all had average annual income growth higher than the Australian average. In contrast, the agricultural regions in New South Wales, Victoria and South Australia all had average annual income growth rates below the Australian average.

A theme emerging from this analysis is that regions in which mining is a predominant industry (regions in Queensland and Western Australia), had higher income growth than non-mining regions (figure 3.5). As discussed further below, mining employment has an effect on regions not usually associated with mining operations because of labour market linkages, particularly fly-in, fly-out (FIFO) and drive-in, drive-out workers, and because many mining employees work in cities.

Figure 3.5 **Strong income growth in resource regions from 2005-06 to 2010-11**

Change in average wage and salary income by SA2 region



Source: ABS (*Wage and Salary Earner Statistics for Small Areas, Time Series, 2005-06 to 2010-11*, Cat. no. 5673.0.55.003).

Emerging themes for further analysis

The above analysis points to regions being diverse, reflecting differences in their endowments of natural resources, economic geography, their history of development, and the mix and relative size of economic activities undertaken. Although this diversity has made it difficult to classify regions based on either the trends in performance or the metric of relative adaptive capacity (chapter 4), a number of general observations have emerged which are explored further in this chapter.

Regions whose economic base is large scale mining have generally had the highest rates of growth in employment (from 2005), notwithstanding the end of the investment boom. That said, not all mining areas are prospering — some are in decline. Some regions have marginally economic mines, some have existing mines that are approaching the end of their economic lives and some have coal mines that are in decline because of the closure of power stations (section 3.2).

Regions that are predominantly based on agriculture, particularly broadacre cropping and pastoralism, tend to have lower rates of growth in employment and have also experienced consolidation of small towns into larger regional towns (section 3.3). At the same time, there has been an improvement in the productivity of agriculture, enabling output to increase with fewer workers.

Regions whose economic base is predominantly manufacturing tend to have lower growth and lower relative adaptive capacity. In contrast, regions whose economies are predominantly based on services (cities, large regional centres) tend to have higher growth. The relative adaptive capacity of manufacturing regions is discussed in chapter 4.

These observations reflect underlying longer-term trends in employment in the wider economy. There has been a sustained move away from manufacturing and agriculture towards strong growth in services and to a lesser extent in mining (figure 3.6). This is also a trend seen in other OECD economies.

The long-term transition away from agriculture and towards resources in regional Australia was noted by several participants. The Regional Australia Institute (sub. 12, p. 24) noted the steady reduction in agricultural employment across much of regional Australia, with the Chamber of Minerals and Energy of Western Australia (sub. 28, p. 22) linking this to reduced labour requirements driven by capital intensification of broadacre agriculture.

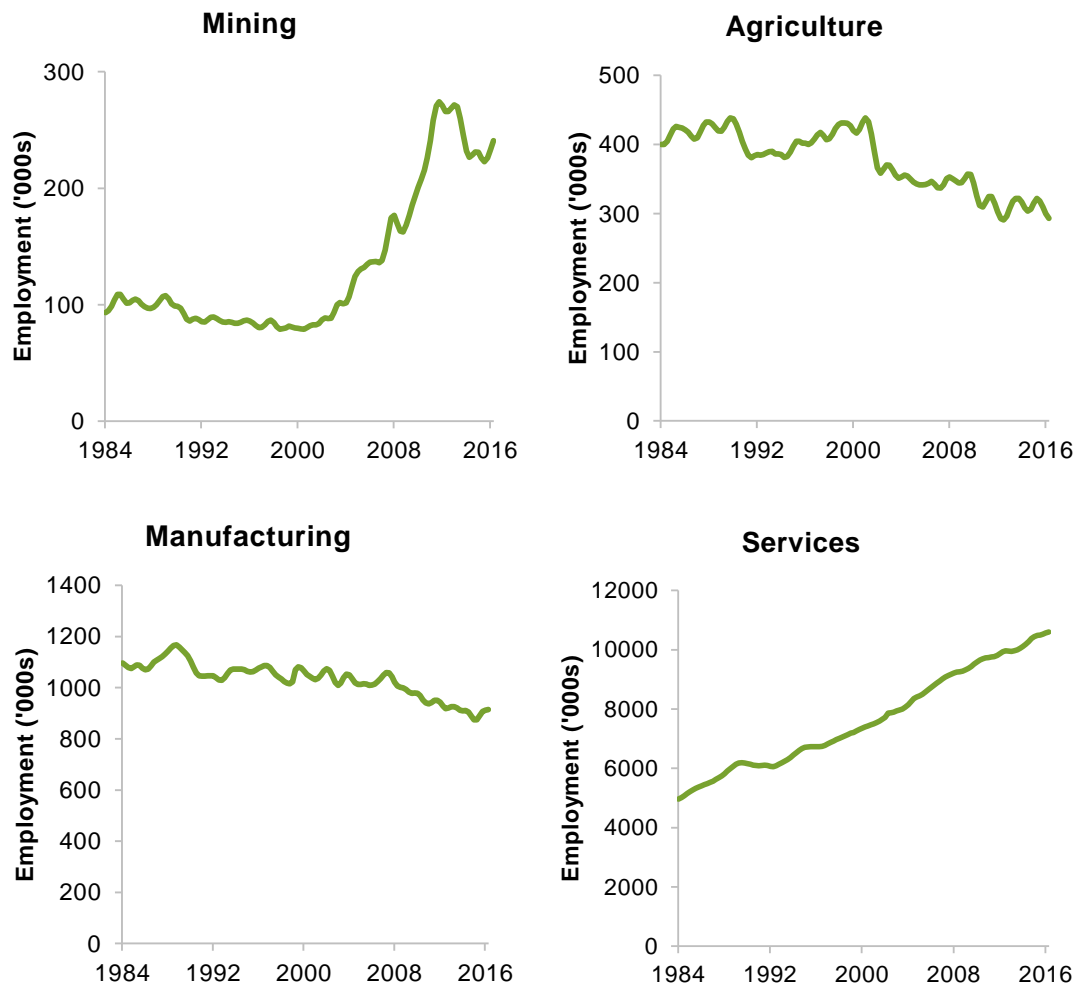
The extent to which regions are affected by long-term structural changes in the broader Australian economy depend on their industry mix and how concentrated employment is in particular sectors.

Labour mobility, particularly with regard to FIFO and drive-in, drive-out workers in remote resources projects, is emphasised in the study's terms of reference and was also a key issue raised by study participants.⁹ The implications of FIFO work are complex. FIFO workers can connect resource regions to labour 'source' regions, affecting income and employment outcomes well beyond where resources extraction occurs (RAI, sub. 12, pp. 9–14). The mining booms impact on labour mobility is explored in section 3.2.

Although much of the analysis in this chapter is necessarily undertaken at a high level, changes *within* regions themselves are often important. For example, the Hunter Business Chamber (sub. 19, p. 3) highlights that while Newcastle itself is performing well in terms of economic activity, smaller towns in the Hunter region are not faring as well. Similarly, areas considered to be successfully transitioning in Queensland were not those hardest hit by the slowdown in resource investment (CCIQ, sub. 17, p. 2). Changes in regional centres can indeed obscure what is happening in the wider region.

⁹ For example, Cairns Regional Council and Advance Cairns (sub. 13), Western Australian Department of Regional Development (sub. 27), Western Australian Local Government Association (sub. 22).

Figure 3.6 National trends in employment by industry



Source: ABS (*Labour Force, Australia, Detailed, Quarterly*, Cat. no. 6291.0.55.003).

INITIAL FINDING 3.2

Australia's regions are diverse, reflecting differences in their endowments of natural resources, climate, economic geography, history of settlement and development, and in the relative mix of industries. This makes it challenging to group regions based on similar factors affecting their resilience and adaptive capacity.

3.2 Exploring trends in resource regions

Commodity cycles are a common feature of the resources sector. However, the most recent resources investment boom was one of the 'largest shocks to hit the Australian economy in

generations' (Downes, Hanslow and Tulip 2014, p. 1). It provided widespread benefits because prices stayed high for a long period. By 2013, it was estimated that the resources boom had raised average real wages by 6 per cent, raised real per capita household disposable income by 13 per cent and lowered the unemployment rate by about 1.25 percentage points (Downes, Hanslow and Tulip 2014, p. 1).

The economic and social contribution of the resources sector continues to be significant. For example, the Western Australian Department of Regional Development stated that:

Iron ore exports are driving an increase in State net exports, which are forecast to grow by 19.25 per cent in 2016-17. Strong export growth is expected over the forward estimates as LNG production ramps up. (sub. 27, p. 3)

Even though the transition from the mining construction and investment phase to the production phase was widely expected, there were some disparate impacts. Significant adjustment has occurred for workers whose skills were in high demand during the construction and investment phase (and for whom wages and salaries were high) but were not required in the mining production cycle. In some regions where mines are no longer viable in the new environment of lower commodity prices, fewer workers are being employed.

The impacts have not been confined to regions with mining operations. Other areas with related industries or regions where FIFO workers are sourced have also been affected by the transition away from mining construction and investment. Further, some mining employees work in cities. The cyclical nature of employment (demand for certain skills at particular points in time) does not diminish the effects of job loss or lower wages for people who expected continued employment at higher wages.

The drivers of transition experiences in resource regions are diverse

Diversity in the performance of resource regions¹⁰ cannot be explained by a single factor. As discussed in chapter 2, a number of dynamic interconnected factors drive regional resilience and adaptation. As such, towns that appear to be similar in many ways do not always follow the same path. This is apparent in the different experiences of Nhulunbuy (in the Northern Territory) and Weipa (in Queensland) (box 3.1).

¹⁰ Resource regions are defined as those regions with over 7 per cent of employment in mining (on average, over the past 10 years). The following SA4 regions are defined as resource regions: Hunter Valley excluding Newcastle, Mackay, Fitzroy, Queensland-Outback and Western Australia-Outback.

Box 3.1 Similar mining towns can follow very different paths

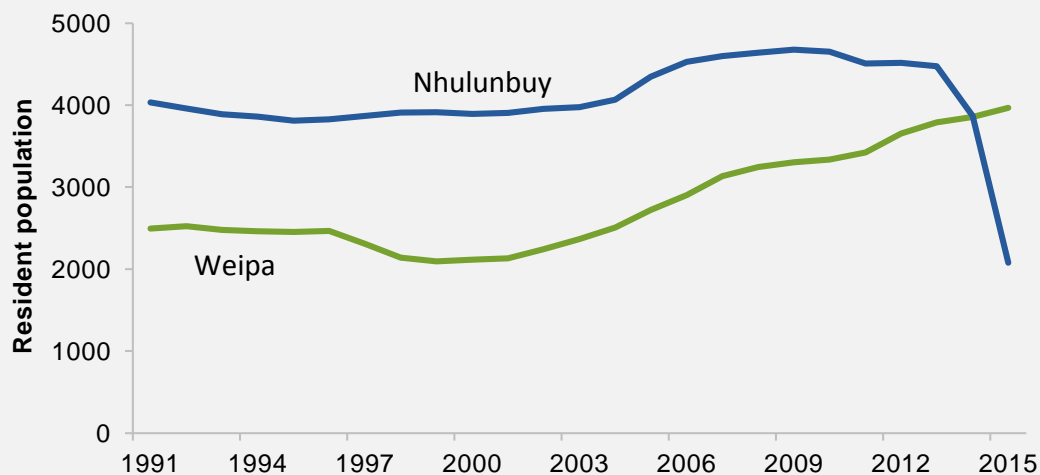
Small differences in circumstances between similar communities can drive them in different directions in response to economic disruptions. Nhulunbuy (in Arnhem Land, Northern Territory) and Weipa (Cape York, Queensland) demonstrate this phenomenon. The two towns have many similarities: both were founded during the 1960s and 1970s solely to house workers for new bauxite mines.¹¹ Supporting industries, including retail and healthcare, soon followed, and both towns are now important service centres for their respective regions (East Arnhem Land Tourist Association nd; Weipa Town Authority 2014).

Nhulunbuy and Weipa both produce for export and are exposed to volatile world prices, as well as the Australian exchange rate. However, the two towns differ in industry composition: Weipa, with the largest bauxite mine in the world, ships most of its ore to domestic smelters in Gladstone, as well as directly exporting unprocessed bauxite (Rio Tinto 2017). By contrast (until recently) bauxite was processed into alumina at Nhulunbuy.

The Nhulunbuy alumina plant employed about 1100 people in a town of 4500, and its shutdown in May 2014 had major effects on the township. The population has since more than halved (below figure). The loss of population has resulted in fewer services being provided — for example, flights between Nhulunbuy and Darwin have been suspended, and the last medical general practice closed in 2016 (La Canna and Oaten 2016).

Prior to the closure of the alumina refinery, the populations of both towns had followed a similar trajectory. Weipa, while exposed to similar commodity price movements, did not experience a comparable shock. Bauxite mining activity is expanding around Weipa, with the approval of the Amrun bauxite mine south of the township, and the population is also steadily growing (Rio Tinto 2017).

Sharp decline in the number of Nhulunbuy residents



Source: ABS (*Regional Population Growth, Australia, 2014-15*, Cat. no. 3218.0).

That said, some common features appear to explain the experiences of certain types of mining regions (box 3.2).

¹¹ Bauxite is a source of aluminium.

Box 3.2 Drivers of transition in resource regions

The Chamber of Minerals and Energy of Western Australia described three types of mining regions that will experience different transitions.

- Regions (such as the Pilbara) that enjoy an advantage in regional markets for mineral and energy commodities will experience a relatively smaller transitional impact. During the investment boom these regions benefited from significant investments in new projects and project expansions which will provide an economic and employment base for decades to come, largely independent of commodity market cycles.
- Regions with high cost structure mines that are only economically viable during periods of relatively high commodity prices will experience a significant impact from the cyclical downturn in commodity prices. For example, in the Kimberley Region of Western Australia, three mines that accounted for 30 per cent of gross regional product at the peak of the iron ore commodity price are now in care-and-maintenance.
- Regions that are highly prospective for mineral and/or petroleum resources, but relatively under-explored because of relatively high exploration costs and/or accessibility challenges will also experience a significant transitional impact. When specific commodity prices are relatively high, risk capital markets have a greater propensity to invest in exploration in these regions. Investments are also more likely to occur where new technologies reduce the cost of mining. (sub. 28, p. 4)

Many other factors affect a mining region's ability to transition. In particular, submissions to this study discussed industry concentration or the relative reliance of the mining industry for growth as a key factor. The Regional Australia Institute commented:

The resilience (sustainability) of these local areas to external circumstances depends on the extent to which these economies rely on mining, and how diversified these economies are. Thus, the extent to which they are affected by mining depends on how important a role the mining industry plays in each regional economy. (sub. 12, p. 8)

Regional Development Australia Mackay-Isaac-Whitsunday submitted that increased diversification would be important for the region's ability to transition.

Based upon Remplan data dated 31st December 2016, the mining sector currently provides 17.1% of the jobs in our region, 67.1% of our regional exports and 38.1% of our regional expenditure. The industry remains critical to our region, however we need to build a more diverse economy to soften the impact of any transition in what is historically a cyclical industry. (sub. 25, p. 1)

However, as noted in chapters 2 and 5, caution should be exercised in pursuing diversification as the primary strategy to build adaptive capacity. There are costs associated with diverting resources away from their highest value use and towards lesser value economic activities.

Other factors that affect a mining region's ability to transition include: demography, capacity in existing processing and logistical infrastructure; regional cost structures (which are a function of remoteness, relevant regulations and local economies of scale); the availability of other employment opportunities; and a region's liveability.

Many resource regions are continuing to grow

Just as the mining investment boom had varying effects across regions, the impacts of the transition following the investment boom are also being felt to varying degrees across regional Australia.

Across most measures of economic progress (employment, population and value of production), resource regions have generally continued growing, although differences in employment patterns are emerging across regions (figure 3.7). In Fitzroy (Queensland) and in Western Australia-Outback, employment has continued on a strong upward trend.¹² Employment grew by almost 20 per cent in the past five years in Western Australia-Outback. In contrast, the Hunter Valley (not including Newcastle) and Mackay (not shown in figure 3.7) experienced volatility in employment and growth has been slower in recent times.

Some submissions noted the ongoing strength of resource regions. The Queensland Government (sub. 26, pp. 28–29) stated that ‘Mackay’s economy is showing positive signs of adjustment from the resources boom’ (p. 28) and that ‘employment in the Fitzroy region rose 5.3% in 2016, compared with growth of 0.5% in employment across Queensland’ (p. 29).

However, past employment patterns are not necessarily a good indicator of future employment prospects. Submissions to this study were more cautious about future growth. The Queensland Government (sub. 26, p. 27) noted that in Mackay, notwithstanding a recent spike in coal prices, sustained weakness in the sector in recent years has ‘prompted major mining companies to announce production cuts and associated workforce reductions in 2015-16’.

Other mining regions are in decline

While most mining regions in Australia are continuing to grow in the wake of the resources boom, a number are experiencing decline. The RAI commented that:

Mining boom-bust cycles have significant, but varying impacts on regional economies in Australia. The regions are exposed to changes in commodity prices, exchange rates, and other external shocks; and as a consequence, there has been clear fluctuation in population in mining-dependent regions due to these changes in past decades. For example, Mt Isa and Whyalla have experienced boom-bust cycles, caused by changing commodity prices and business competitiveness. During the periods of downturn they had [a] higher degree of population loss. The peak to trough of population [was] 34,000 to 20,000 in Mt Isa, while the decline in Whyalla was from 33,000 to 25,000. (sub. 12, p. 8)

The Queensland Government (sub. 26 pp. 23–4) also noted that the Queensland – Outback region (which includes Mount Isa (box 3.3)) has been adversely impacted by falls in metals

¹² These employment figures do not account for FIFO employment in these regions.

prices and the closure of depleted mines. Employment in Queensland – Outback was significantly higher than the long-term trend but, by 2016, this pattern had reversed (figure 3.7). More recently, employment levels have been significantly below the long-term trend.

Figure 3.7 Different patterns of employment growth are occurring in mining regions



Source: ABS (*Labour Force, Australia, Detailed – Electronic Delivery, Feb 2017, Cat. no. 6291.0.55.001*).

Box 3.3 Mount Isa: the challenge of transitioning

Mount Isa (with a population of about 21 800 in 2015) is one of Australia's largest mining towns and a significant regional centre for Queensland's vast north-west (ABS 2016a). Historically, Mount Isa's economy has been based on natural resources (lead, silver, copper and zinc). Other major industries are cattle grazing and tourism.

Mount Isa has historically relied on the resources industry to provide population and employment growth and to maintain services. However, the cyclical nature of the resources sector has meant that the town has experienced significant upswings and downturns. The winding down of the resource investment boom has had a significant economic and social impact.

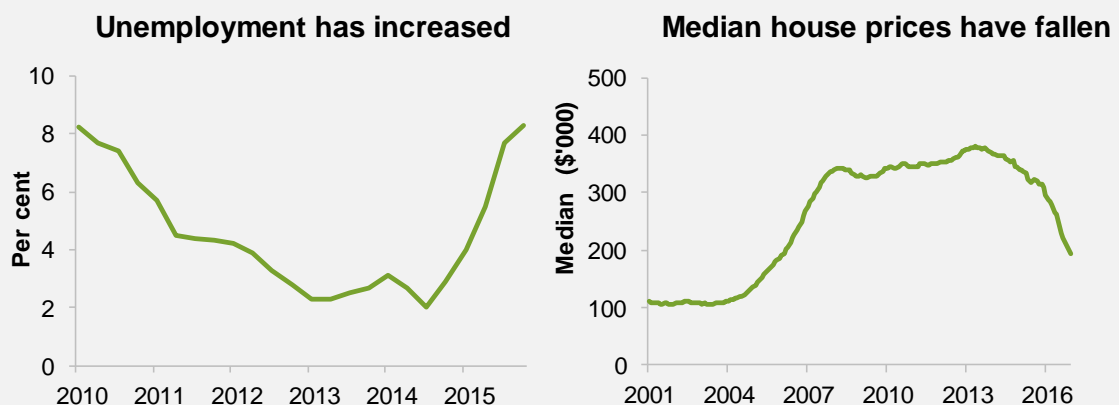
- Between 2013 and 2015, population fell by over 1 per cent (ABS 2016a). This is in contrast to a population increase of over 3 per cent between 2007 and 2008 (at the height of the construction phase).
- Plant closures and redundancies have had a significant impact on unemployment rates in the region. The figure below charts unemployment from a low of 2 per cent in 2015 to a high of over 8 per cent in 2016.
- Property prices have also dropped significantly since 2013 (figure below).

Drought has also had a recent impact on the Mount Isa community. The Queensland Government commented that:

The majority of the Outback region [including Mount Isa] remains drought declared. The severe drought conditions have impacted the livelihood of agricultural producers in the region (primarily cattle graziers), with flow on effects to small businesses and the broader community. (sub. 26, p. 23)

The lower ore quality of the remaining reserves also poses challenges to Mount Isa's transition from the resources investment boom. The Queensland Government said that:

The North West Minerals Province (NWMP) (centred on Mount Isa) faces short and longer term challenges related to declining ore grades and maturing operations. Importantly, the region continues to have substantial mineral endowments which may offer significant future development opportunity, with the future outlook for the region heavily dependent on the identification and development of new commercial resource projects. (sub. 26, p. i)



Source: Department of Employment *Small Area Labour Markets* and Commission estimates based on CoreLogic data.

The case of the Pilbara

The recent mining investment boom has been transformative for the Pilbara. During a time of buoyant commodity prices, decisions were made to commence a range of large-scale iron ore and gas projects in the region. These projects required large upfront investment. Companies expected that these investments would be profitable through decades of large-scale production in the future. As a result of these investments, the Pilbara's contribution to national output grew from 2 per cent in 2005 to 6 per cent in 2014 (RDA Pilbara, sub. 6, p. 6).

The construction phase of the investment boom necessitated bringing in a large number of workers, as well as equipment and materials to the Pilbara region. This influx of people (typically earning high wages) and building activity changed the physical, social and economic environments of the local towns. Demand for many goods and services expanded substantially, and widespread price increases occurred. Price rises were reported on basic items such as coffee all the way through to rents and house prices (House of Representatives Standing Committee on Regional Australia 2013, pp. 2, 65, 67, 149; Lannin 2013; Perriam 2009; Piottrowki 2013).

As each project moved from construction to production, the number of workers required substantially declined. In addition, as commodity prices eased, mining companies began looking for cost savings, which further reduced employment levels. Despite these changes, employment levels in the Pilbara are expected to remain well above pre-investment boom levels for the foreseeable future (Deloitte Access Economics 2014, p. 5).

In effect, two shocks have affected the Pilbara region — the expansion phase associated with construction, and the end of the expansion phase associated with the transition to the production phase. Opinions about whether the Pilbara (or key towns in the region) are experiencing a boom or a bust are likely to be coloured by personal experiences during these different phases, but the fact remains that the production capacity of the Pilbara has substantially increased. Iron ore sales in Western Australia increased from 233 million tonnes in 2004-05 to 756 million tonnes in 2015 (WA DMP 2016, p. 4; WA DSD 2016, p. 1).

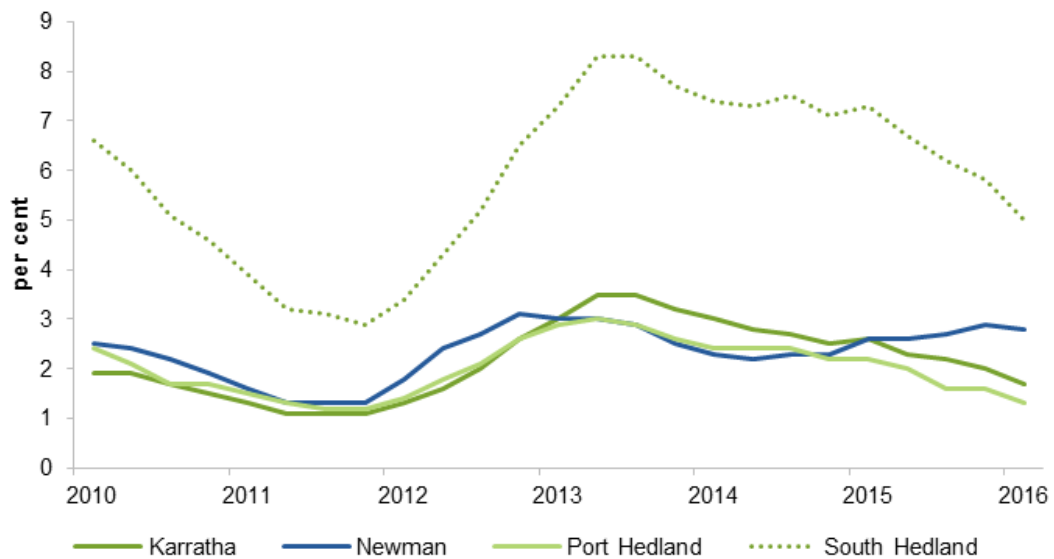
Local employment impacts

During the investment boom, the Pilbara experienced population growth as people moved to the area to take advantage of the lucrative employment opportunities. The population grew by over 5 per cent a year (compared with the national average of less than 2 per cent) (ABS 2016a). Average annual income growth for the Pilbara was 7.2 per cent between 2005-06 and 2010-11, well above the 4.9 per cent national average (ABS 2013d).

The slowing of construction has seen the size of both the FIFO and residential workforces decline (Deloitte Access Economics 2014, p. 22). As a result, population growth in the region has slowed and the population of the Pilbara fell slightly in 2015 (0.7 per cent).

The impact of the end of the mining investment boom on the local labour markets has been moderate and has been cushioned to some extent because most construction workers were FIFO workers. Unemployment in the major Pilbara centres peaked in 2014, and has since declined (figure 3.8).

Figure 3.8 Cyclical unemployment in the Pilbara^a
Unemployment rate, selected regions, 2010 to 2016



^a At SA2 Level.

Source: Department of Employment *Small Area Labour Markets*.

Impacts of the resources boom on the local housing market

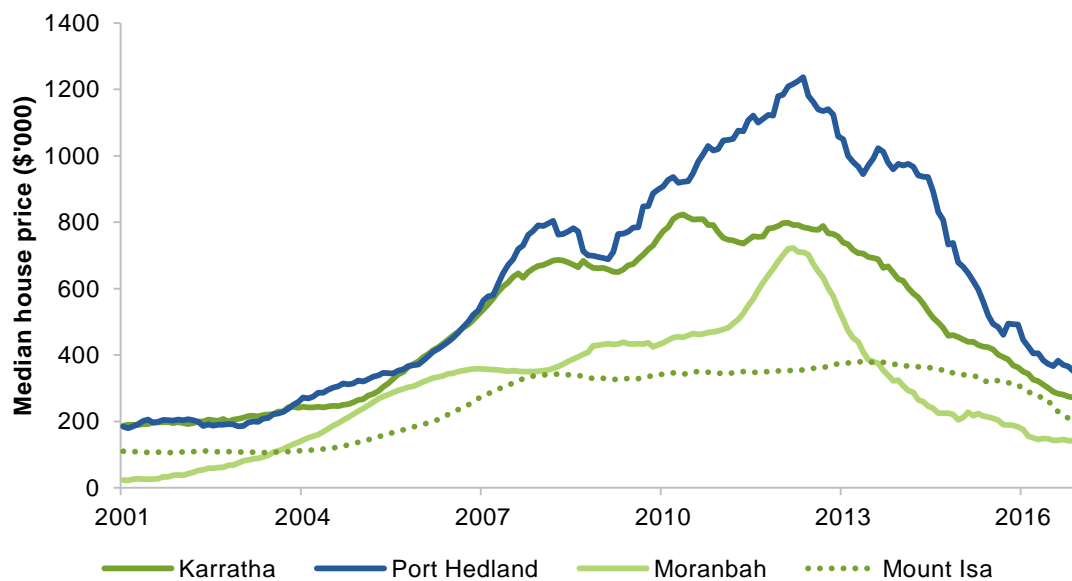
House prices have fallen significantly from their high points in a number of mining areas — including Karratha, Port Hedland, Moranbah and Mount Isa (figure 3.9). Smaller mining townships (such as Coolgardie and Kambalda), which do not act as major service centres, tended to see a much sharper fall in median selling prices than in larger townships.

The influx of a large number of workers (including some FIFO workers who sought out local accommodation) led to rapidly increasing rents and house prices. The potential for high rental returns also saw property investors buy into the market. Over the course of the investment boom, median house prices in Karratha increased from \$200 000 to \$800 000 and the median house price peaked at over one million dollars in Port Hedland (figure 3.9).

The housing markets in these regions also experienced rapid re-adjustment at the end of the boom, with prices quickly returning to pre-boom levels, creating winners and losers. Local residents have been affected by the lower prices and mortgagee sales in regional centres have been large (Barrett 2015; Richardson 2015; Stephens 2017). Some investors

(including those in major cities) have been affected by lower prices too; often having purchased properties sight-unseen in mining towns with expectations of high rates of return on their investment (Taylor 2012). These impacts have also been felt by some property investment groups, with some going into liquidation due to the rapid house price declines in the Pilbara (Wilkie 2016).

Figure 3.9 House prices have fallen to pre-boom levels in some regions
Median house prices, selected regions, 2001 to 2016



Source: Commission estimates based on CoreLogic data.

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Many regions with a high concentration of activity based on mining have experienced high employment growth and have relatively high adaptive capacity.

There are some, however, that have experienced a decline in employment and have relatively low adaptive capacity. These regions tend to have mining operations that are smaller in scale, are economically marginal or are approaching the end of their economic lives.

Mobile labour has spread the geographical impact of the transition

During the resources investment boom, the proliferation of FIFO practices was viewed as instrumental in attracting sufficient workers to mining regions. However, significant nonresident populations have also been said to undermine human and social capital in resource regions (RDA Mackay-Isaac-Whitsunday, sub. 25, p. 3).

The increase in the supply of FIFO labour during the resources investment boom also spread the benefits of the boom to labour source regions. However, now that the resources cycle has shifted from investment to production, both host and source regions are grappling with adjustment. The RAI reported that:

Long distance commuting is spreading the impact of the mining boom, widening the spatial impact of the boom-bust cycles. We have identified 16 regions which are significant suppliers of mining labour, but which host very few mining industry jobs themselves. These mining ‘dormitory towns’ are mostly located in Western Australia, along with the Upper Spencer Gulf and Hunter Valley, will experience a similar scale of friction in their labour markets as will the regions hosting mine sites themselves, and need to be considered as part of any successful transition. (sub. 12, pp. 3–4)

Implications of the mining boom on the Western Australian labour market

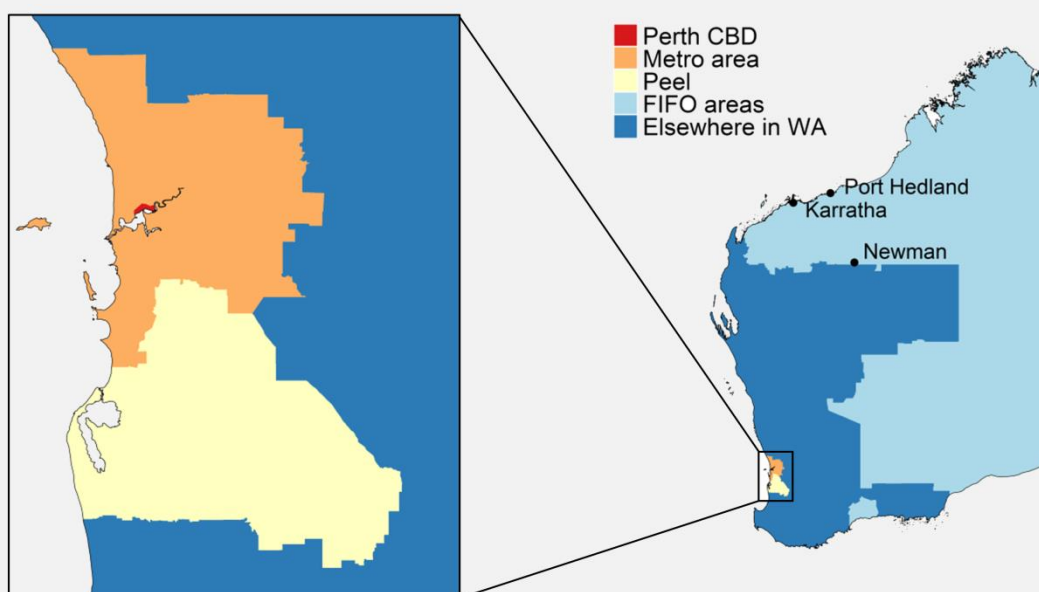
The resources boom did not only affect regions containing mining operations. Many workers in the mining industry live and work in cities, although mining workers are a very small proportion of the workforce in Australia’s major cities (including Perth). In other cases, workers commute to capital cities or fly or drive to mining operations.

The mining industry workforce

During the boom, a large proportion of mining workers residing in Perth and Peel were employed in the mining industry, despite being physically distant from the major mining sites in the Pilbara. Most mining workers from these regions were employed in head offices in the Perth central business district, or in mining operations in the Peel region (box 3.4).¹³ Mining sector workers in the Perth region were not employed in a FIFO capacity, with many working in the CBD. A smaller proportion of residents worked in FIFO areas. Compared with the mining industry, an even smaller proportion of construction workers worked in FIFO areas, with very high proportions working in their local areas.

¹³ The figures in box 3.4 should be interpreted with caution because of the way in which location of employment is estimated from the Census. The proportion of workers on FIFO arrangements may be understated if location of work is derived from the head office address, which may differ to location of work for FIFO workers.

Box 3.4 Geographic spread of the mining boom in Western Australia



Location of employment		Mining industry		Construction industry	
		Peel residents	Perth metro residents	Peel residents	Perth metro residents
Perth metro area (CBD)	%	22.2 (9.3)	69.1 (41.4)	35.9 (2.5)	93.3 (8.1)
Peel	%	37.1	1.4	53.8	0.9
FIFO areas (Pilbara, Kimberley and Goldfields)	%	35.3	25.0	6.5	4.3
Elsewhere in WA	%	5.4	4.5	3.8	1.5
Employment	no.	2 844	32 870	4 260	57 246

Source: Commission estimates based on ABS (*Census of Population and Housing, 2011, Cat. no. 2001.0*).

FIFO workers

FIFO work has been a significant component of the mining industry, particularly in Western Australia where major mining operations are in very remote places. At the height of the mining boom, it is estimated that 50 000 people worked under FIFO arrangements in the Pilbara. This was a significant addition to the Pilbara’s residential population of only 66 000 people (WA DRD 2014). FIFO workers are not exclusively involved in the operation of mines. They also include those in construction (as part of the investment in mining capacity and general infrastructure to accommodate mining activity) and in delivering other services to mining communities (for example, chefs, cleaners, personal trainers and health professionals).

It was estimated that over 70 per cent of FIFO workers in Western Australia were sourced from Perth or the Peel region. The remainder were sourced from elsewhere in Western Australia and interstate, with less than 2 per cent sourced from overseas (Deloitte Access Economics 2014, p. 39). Outside of Perth, workers were sourced from towns in south-west Western Australia (such as Margaret River, Busselton and Northam).

Within the Perth metropolitan area, the largest numbers of FIFO workers came from outer suburban areas such as Rockingham, Swan, Wanneroo and Joondalup.¹⁴ Within the Peel region, the largest numbers came from the Mandurah and Murray areas. Approximately 55 per cent of these FIFO workers worked on operational mining activities while 17 per cent were employed in construction and 28 per cent were involved in other services.

Within Perth and the Peel region, FIFO workers only accounted for a small proportion of the workforce. For example, in Mandurah only 3.8 per cent of the workforce worked in the Pilbara, Kimberley or Goldfields. Other southern (local government area) regions such as Murray (3.4 per cent), Rockingham (2.9 per cent) and Serpentine-Jarrahdale (2.4 per cent) had the largest proportion of their workforce employed on a FIFO basis (ABS 2013a).

The proportion of FIFO workers in each region involved in mining, construction and other services was relatively consistent across the local government areas in Perth and Peel. As such, the areas which had the highest proportion of their workforce employed as FIFO workers in the construction industry were Mandurah, Murray and Rockingham (0.6 per cent in total) (ABS 2013a).

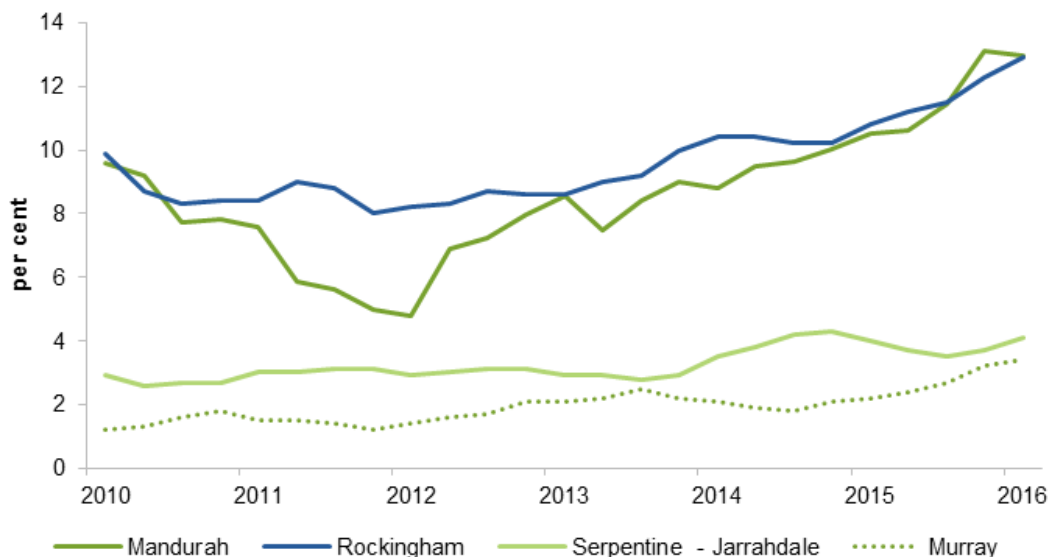
Distributional impacts of FIFO workers

The employment of FIFO workers more widely spread the impact of the Pilbara's investment boom throughout Western Australia. Evidence suggests that FIFO workers' high incomes brought large economic benefits to their local regions through multiplier effects. FIFO work also enabled many families to avoid relocating to areas where local labour markets were weakening (Haslam-McKenzie and Hoath 2014, p. 51).

Just as FIFO workers spread the wealth of the mining investment boom to the regions where they lived, so too did they spread the impact of the end of the boom. The decrease in the number of FIFO workers (particularly in construction) had flow on effects to the areas from which they were sourced. The end of the boom saw the unemployment rate in some source regions grow, although some regions were less susceptible (figure 3.10). By spreading the impact of the end of the boom, FIFO arrangements thus reduced the potential magnitude of the impact on the people in any particular region.

¹⁴ FIFO workers are defined as working in the Pilbara, Kimberley or Goldfields.

Figure 3.10 Unemployment rates have increased in FIFO source regions^a



^a At SA2 level except for Mandurah which represents broader the Mandurah region including Mandurah - North, East and South SA2 regions.

Source: Department of Employment *Small Area Labour Markets*.

INITIAL FINDING 3.4

Many workers employed in the investment phase of the mining boom lived in regions outside mining areas, such as capital cities and other regional centres. In addition, many mining workers work in capital cities and their greater metropolitan areas.

The slowdown in mining investment has affected labour markets and economic outcomes across the country, including many regions outside of traditional resource areas.

3.3 Agriculture and the consolidation of towns

Many regions of Australia remain, by and large, strongly connected to the performance of the agricultural sector. Agriculture is highly diverse across the country, ranging from large-scale cattle properties in the Northern Territory and the Bowen region of Queensland, to intensive irrigated horticulture in the Murray-Darling Basin. The drivers affecting

agricultural regions¹⁵ also differ. Whether a region contains irrigated or dryland agriculture, produces commodities exposed to international competition, specialises in livestock or cropping, or undertakes land-intensive or small-scale production affects how exposed the region is to various disruptions, such as currency movements, commodity price volatility and the weather.

Although this diversity presents challenges in identifying common patterns across agricultural regions, some broad trends have impacted on agriculture generally. In particular, farms are now larger and more productive. This has in part resulted in agriculture employing fewer workers than it once did. There has also been a centralisation of rural populations in larger regional centres which has resulted in a decline in the populations of some small towns initially established for farming communities.

Larger, more productive farms

Many agricultural products are sold on competitive international markets and, in some cases, increasingly compete with imported produce. The prices that primary producers receive for these products have often not kept pace with the increase in prices for the inputs used. This includes wages paid to workers and the price and availability of water, fertiliser, seeds and chemicals. Notwithstanding a small recent improvement in prices for farm products (largely reflecting a depreciation of the Australian dollar), the agricultural terms of trade¹⁶ in 2015-16 were 31 per cent lower than in 1974-75 (figure 3.11).

Partly in response to pressures on profit margins, primary producers have lowered their cost of production through productivity improvements and technological innovation, especially in cropping. Drivers of productivity growth have included better and larger machinery, use of technology (including autonomous vehicles), new crop varieties (including genetically modified varieties), precision agriculture (the precisely measured application of fertiliser and water using sensor technology) and the increasing size of farms. However, productivity improvements have not been equal across different types of agriculture. From the late 1970s, dairy (average productivity growth of 1.6 per cent a year) and broadacre cropping (1.5 per cent) have seen large improvements in productivity. These have exceeded productivity improvements for beef (0.9 per cent) and sheep (0 per cent) (Gray, Oss-Emer and Sheng 2014, p. 10).

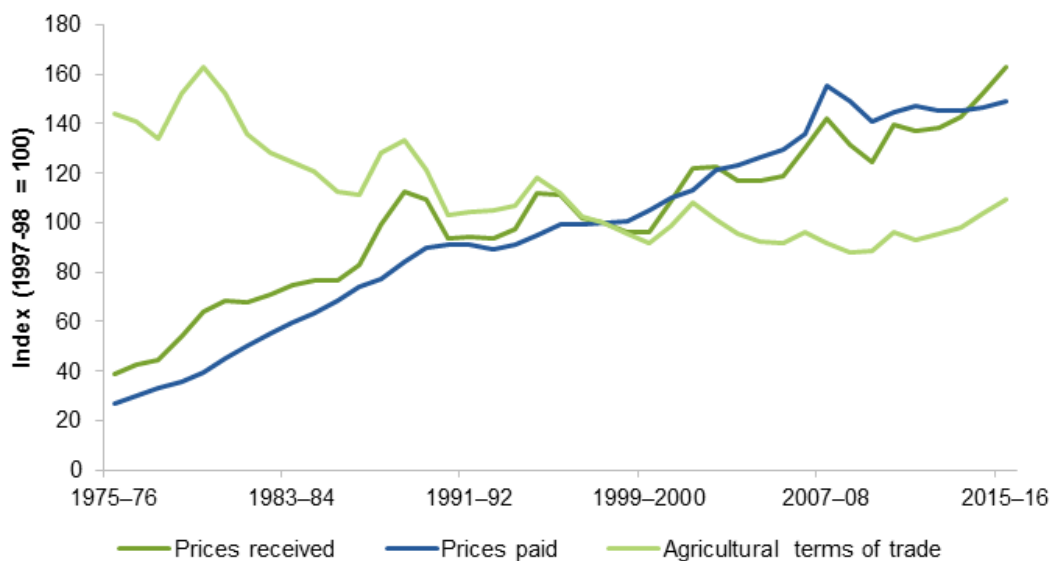
Improvements in productivity have also taken place in the transport supply chain from the farm gate to market. For example, larger trucks are used to move grain from farms to fewer

¹⁵ A region with at least 12 per cent of employment in agriculture, forestry or fishing is considered an agricultural region. Those SA4 regions are: Far West and Orana, Murray, New England and North West, Riverina, Shepparton, Warrnambool and South West, Victoria – North West, Darling Downs – Maranoa, Queensland-Outback, Barossa – Yorke – Mid North, South Australia – South East, Tasmania – South East and Western Australia – Wheat Belt.

¹⁶ The agricultural terms of trade refer to the ratio of prices received for agricultural outputs to the prices paid by farmers for agricultural inputs.

and larger receival sites (or even direct to port), which are located closer to main rail lines. More produce is being moved using fewer workers. There is further potential for productivity gains in this area. For example, there is substantial scope for improvements in transport regulations, such as better processing of heavy vehicle road permits, that would further reduce the burdens faced by agricultural producers (PC 2016e, p. 362).

Figure 3.11 Long-term decline of the agricultural terms of trade



Source: ABARES (*Agricultural commodity statistics 2016*).

Higher productivity has meant that national agricultural production has increased over time, while requiring fewer inputs, including workers. The value of real agricultural production increased by about two and a half times over the four decades to 2003-04 (PC 2005, p. 17). This was achieved without an increase in the number of agricultural workers. More recent productivity estimates for the industry indicate that two thirds of industries had experienced productivity growth¹⁷ between 1989-90 and 2014-15. The average rate of productivity growth was 0.9 per cent, with the agriculture, forestry and fishing industry having the highest growth (2.6 per cent) (PC 2016d, pp. 9–10).

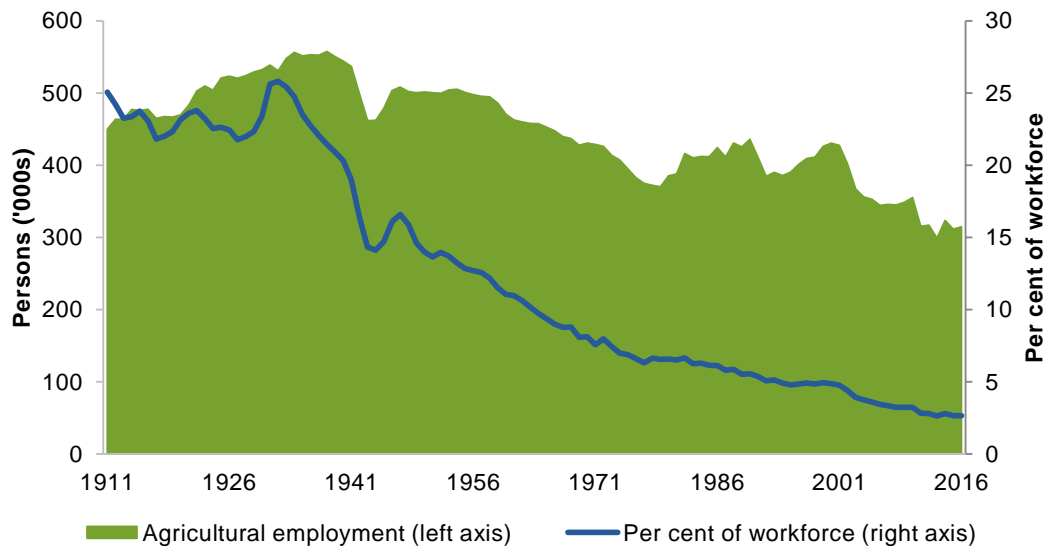
As a result of these productivity improvements (and the associated reduction in demand for agricultural workers), national employment in agriculture has fallen from 6.1 per cent of Australian workers in 1984 to 2.6 per cent in 2016. This reflects a much longer term decline in the agricultural workforce from the 1930s (figure 3.12).

For those regions that have historically relied on agriculture, the reduction in employment in agriculture has resulted in ongoing adjustment. Fewer jobs in a region can have a

¹⁷ Measured as multifactor productivity.

number of simultaneous effects, including out-migration, growth in other industries, and unemployment. Off-farm income has also become increasingly important for agricultural workers (PC 2005, pp. 110–113).

Figure 3.12 Employment in agriculture has declined over a long period



Sources: Commission estimates using Withers, Endres and Perry (1985) and ABS (*Labour Force, Australia, Detailed, Quarterly*, Cat. no. 6291.0.55.003).

Populations in agricultural regions are consolidating into larger towns

There are now fewer people living in some smaller regional towns that were initially established for farming communities. Improved access to personal transport has meant that many people can now live in regional centres (where there is better access to services) while working in rural areas. The historical linkage between the development of regional towns and primary industry has also become less important (BITRE 2014, pp. 201–226). Indeed, those towns most reliant on expenditure by farmers have tended to have the lowest population growth (Levantis 2001, p. 34).

The services provided by smaller towns, such as banking and finance, retail, machinery repairs, professional services, education and health have consolidated to larger regional towns and centres. Service providers in small towns have had to compete with those in larger towns, which are often cheaper (because of economies of scale) and able to provide a wider range of services (BITRE 2014, pp. 227–252). Some small town businesses have become unviable and closed as a result. Once it becomes necessary for residents of small towns to travel regularly to larger towns for some services, demand for other local service providers falls further (BITRE 2014, p. 235). Wagga Wagga in the Riverina is an example of these changes (box 3.5).

The decline of small towns is not a new phenomenon. Over the past century, a number of towns have lost many of their residents, with some towns depopulating entirely (box 3.6).

Box 3.5 A Wagga Wagga-centric Riverina

The Riverina, in southern New South Wales, is primarily a cropping region, with wheat (the major crop) grown alongside rice, canola and barley. Over time, the region's population has increasingly centred on Wagga Wagga at the expense of smaller towns. The Riverina region grew by about 11 000 people between 1991 and 2015, with Wagga Wagga growing by about 9500 (almost 90 per cent of the Riverina's growth). Much of the remaining growth was in the next largest town (Griffith), while most smaller towns remained stable or declined.

When the Riverina was settled, the population was spread more widely. A large number of small towns sprang up, providing services to the surrounding farms as well as housing (including for farm workers). While the major city (Wagga Wagga) provided specialised services, these smaller towns housed machinery and fertiliser suppliers and marketed farm products.

During the 20th century, the Riverina has seen a steady consolidation of the population into the regional centre. Improved transport facilities (especially roads and vehicles) increased competition between services providers in previously separated regional towns. Such providers had to 'get big or get out', creating pressure to consolidate into fewer, larger centres. Centres were often those residing on major transport routes, such as Wagga Wagga.

As a result of centralisation, many nearby smaller towns have experienced population decline. For example, the population of Boree Creek (which formerly housed an Australian Wheat Board receiver) has declined steadily over recent history (to 212 people by 2011). That said, the experience of towns in the Riverina was not uniform. For example, Junee has a correctional centre, providing an alternative employment base from traditional agricultural activities, and has staved off population decline.

Sources: ABARES (2016a); ABS (2013a, 2017a); Stayner (1996).

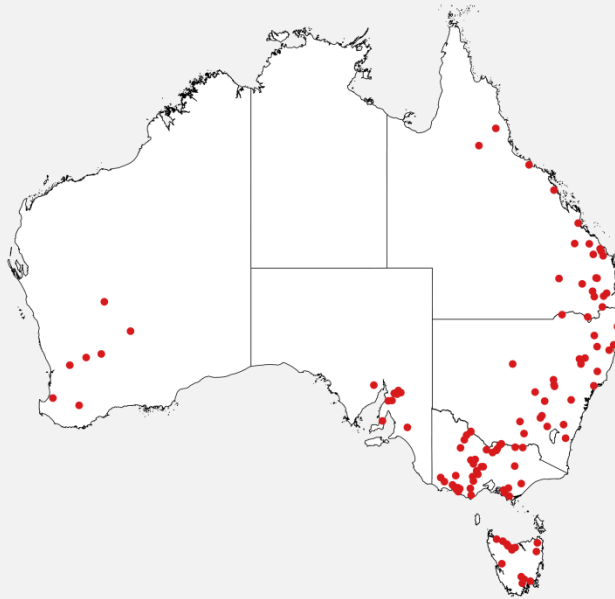
Towns with fewer services become less attractive for residents. In the absence of a local industry or other social connections, people will often relocate closer to regional centres, and if the population becomes too small, a cycle of business closures and further population decline can set in. This is particularly true after the closure of critical services such as medical general practitioners, schools and post offices.

Population decline and the loss of services impacts on the people remaining in these communities. People who are the most mobile (and therefore most likely to depart the region to pursue other opportunities) are also often those who play key roles in the community, for example by leading local sporting clubs or volunteer organisations (box 3.7). Population decline can result in a deterioration of a community's social and cultural life, and a loss of local leadership expertise and skills. This is not a unique Australian trend, with many OECD countries experiencing similar trends.

Box 3.6 Shrinking Australian towns — historical examples

Population movements have been an ongoing feature in the history of Australia's regions. As reported by the Bureau of Infrastructure, Transport and Regional Economics (2014, p. 78), numerous localities that were enumerated as towns in both the 1911 and 1961 Census, with a population of at least 500 in either Census, had populations of less than 200 by the 2006 Census (figure below).

'Lost' towns



Source: BITRE (2014).

Historical examples of depopulated Australian towns include Irvinebank (Queensland), Farina (South Australia) and Joadja (New South Wales).

... the town of Irvinebank in Queensland, 80 kilometres south-west of Cairns, had a mining and tin smelting operation that grew to around 1300 persons by 1911 ... However, during the twentieth century the town went into decline ... [with] a population fall to below 150 persons by 1961. (BITRE 2014, p. 78)

Farina, 640 kms north of Adelaide in the Lake Eyre Basin, grew from the gibber plain to become, between 1882 and 1884, the railhead for the Great Northern Railway. The town's population peaked at 300 in 1894 but then began the slow, inexorable decline as hotels, post office, school and police station were closed until only the station owner and his family remain today. Drought, rabbits, relocation of the rail and the coming of the motorcar all are factors in the decline. (Olston 2008, p. 101)

... Joadja's vast shale deposits became a vital part of colonial life. Seams were excavated and the shale used to produce crude oil and kerosene, giving a power source and much-needed economic boost to the colony. ... At its peak, 1100 people lived in the Joadja valley, most of them working for the area's key landowner and employer, the Australian Kerosene Oil and Mineral Company. ...

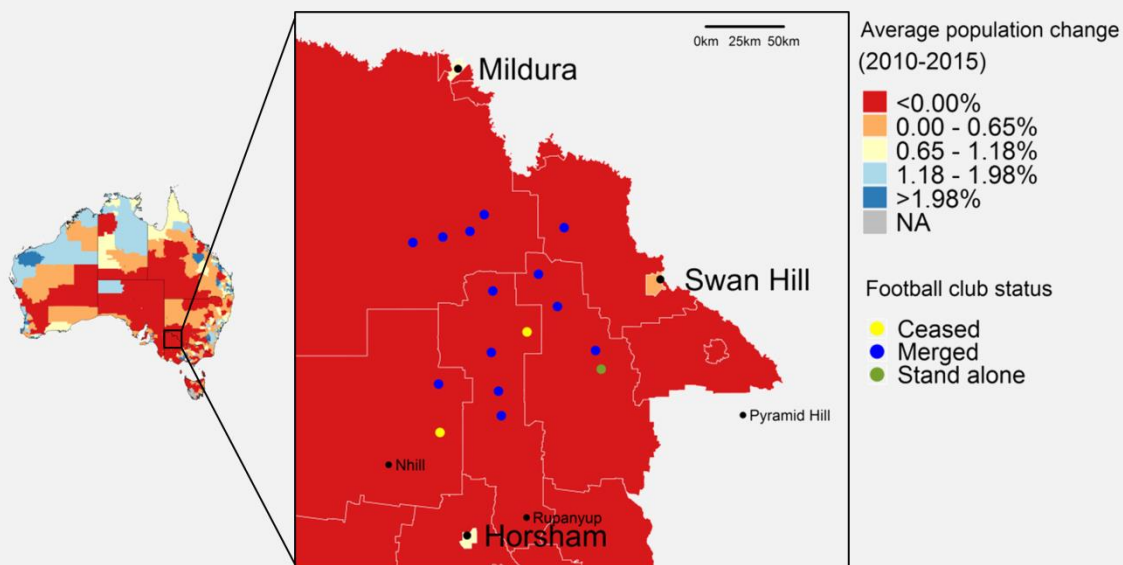
Shale was exported from Joadja to markets across the world from 1870 until 1904, when cleaner and cheaper methods of oil production were discovered. For several years after the mines shut down, people continued to live in the remote valley but by 1911 all had left (Stubbs 2012)

Box 3.7 Social fabric of communities — sport and the Mallee

Sport can play an important part in the social and cultural life of rural communities, contributing to ‘community identity, sense of place, social interaction and good health’ (Tonts 2005, p. 137). However, when population decline occurs, towns often face a difficult battle to retain their sporting clubs. The challenge is not just to maintain sufficient players, but also to fill the various administrative positions required to keep teams and leagues operating (Jackson 2011, p. 16).

The decline of Australian Rules football clubs in the Mallee region of North West Victoria provides a clear (but not isolated) example. The Mallee has experienced significant population decline and, as a result, the number of viable football teams has decreased. At the start of the 1980s, 16 teams were competing in two football leagues — the Northern and Southern Mallee competitions. These two leagues merged in 1997, and in 2015 the combined league was disbanded altogether. Of those original 16 teams, one team is still playing in their own right and two have disbanded. The remaining 13 teams have been through rounds of mergers to eventually form four teams that now play in neighbouring competitions (figure below).

Population decline and social impacts – North West Victoria



Some locals have reflected upon the social and economic costs of the demise of the league. The former President of the league, Alan Malcolm, noted:

You lose the football team, the town suffers. Every town wants to keep their football and netball team because it's such an important social fabric of the community. (Malcolm 2015)

A local publican, Greg Wallace, highlighted some of the ways that the demise of local teams could be adversely affecting the community.

It's a really good way for farmers to talk to each other. It's like a men's shed where they can talk to somebody and it doesn't matter ... I am worried about depression in the future. (Malcolm 2015)

Wallace also added some economic concerns with having the remaining teams playing in neighbouring competitions.

Everybody will be going towards major towns to do their shopping, because they'll go to places like Swan Hill every second week, Horsham every second week or Mildura every second week, so while they're there they'll do their shopping, That'll make a big difference to our business. (Malcolm 2015)

Many small towns across Australia are attempting innovative approaches to address declining populations and the associated social and economic impacts. For example, the town of Nhill has addressed declining population by attracting immigrants to the region. Both the availability of jobs (at the local duck processing plant) and leadership were viewed as crucial in attracting people to the town (ABC 2015).

A report by Deloitte Access Economics and AMES, a settlement agency, stated that this initiative has added more than \$40 million and 70 full time equivalent jobs to the local economy (AMES and Deloitte Access Economics 2015, p. 4).

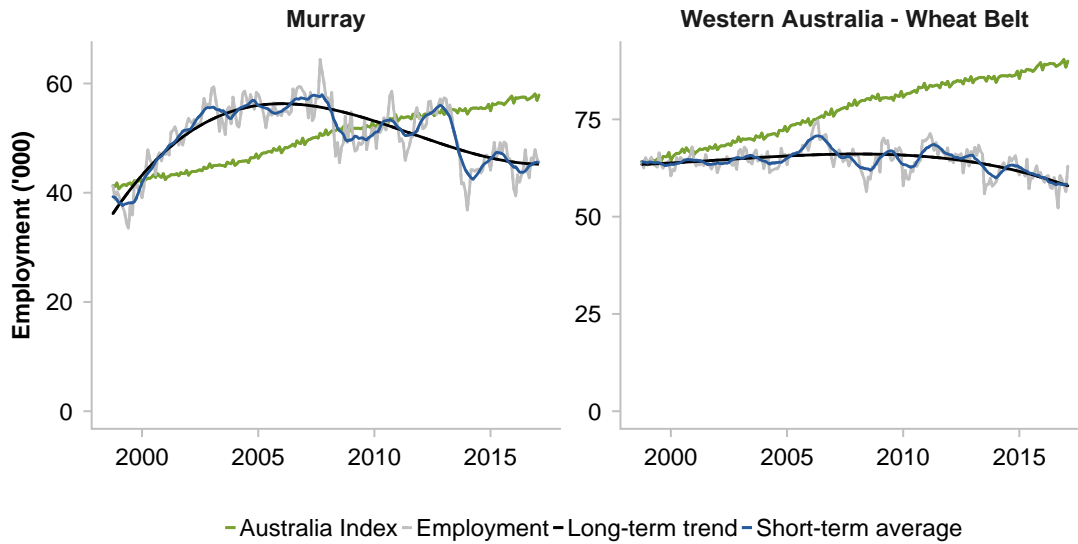
Similarly, the pig industry in Pyramid Hill in central Victoria has attracted Filipino immigrants to the area. The Loddon Shire Council reported that:

Shops in the township are fully occupied, residential development is on the rise and Pyramid Hill's two schools are defying the enrolment decline experienced in many rural townships. (Loddon Shire Council 2016)

What does this mean for agricultural regions?

The combination of the above trends has contributed to a common pattern of declining employment in agricultural regions, but positive growth in (most) regional centres. As some agricultural regions also include regional towns, the overall impact on employment and population can differ substantially. For example, two agriculturally-focused regions which have had particularly strong downward trends in employment over a long period (notwithstanding some volatility) are Western Australia – Wheat Belt and Murray (NSW) (figure 3.13). Employment in other agricultural regions has fluctuated, but there is no clear long-term pattern, particularly in those regions that also have regional centres.

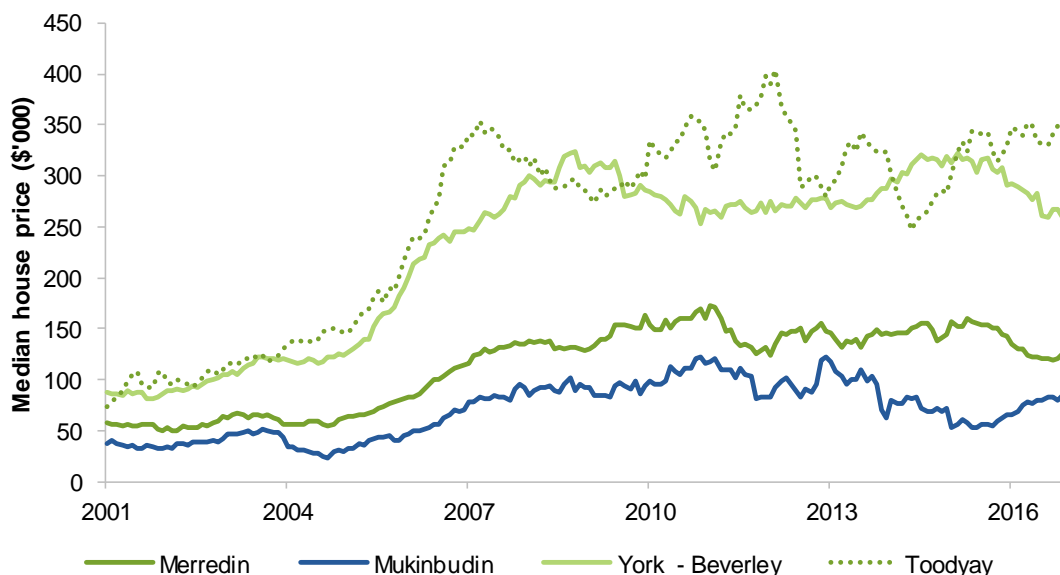
Figure 3.13 Employment has been declining in some agricultural regions



Source: ABS (*Labour Force, Australia, Detailed – Electronic Delivery, Feb 2017, Cat. no. 6291.0.55.001*).

House prices in agricultural regions have tended to grow, although the growth has been slower than for other types of regions. There has also been some divergence in house prices across agricultural regions. Prices in areas that are closer to Perth (Toodyay and York – Beverley) experienced faster growth than areas further from Perth (Merredin and Mukinbudin) (figure 3.14). Not only are Merredin and Mukinbudin further from Perth, but they also have substantially lower annual rainfall levels, making the agricultural lands surrounding the towns more marginal for grain growing.

Figure 3.14 **Rapid house price increases at the onset of the boom**
Selected Western Australia — Wheat Belt regions



Source: Commission estimates based on CoreLogic data.

INITIAL FINDING 3.5

Regions predominantly based around agriculture tend to have lower growth in employment. Even so, these regions are growing, with efficiencies and technological innovation generating higher levels of production using less labour. There is also a pattern of consolidation from smaller towns to larger regional centres, which affects the social fabric of these communities and engenders a feeling of being left behind as Australia prospers more generally.

3.4 Further exploration of regional centres

While many regions outside of Australia's largest cities are highly mining- or agriculture-intensive (discussed above), some large regional centres are much more economically diverse. They are often access points for services, employment and education as well as logistics or transport hubs around ports or airports. They can also act as 'dormitory suburbs' for capital cities or mining regions, and as lifestyle areas with high natural amenity. Regional centres¹⁸ are often exposed to different opportunities and economic disruptions than the broader regions in which they exist, and have undergone diverse changes over recent times.

¹⁸ Regions with a population exceeding 80 000 people, but which are outside of Australia's capital cities.

One of the long-term trends in regional Australia is the centralisation of the population into larger regional centres. While this pattern has already been identified for agricultural regions (section 3.3), other regions have also experienced centralisation, with people and businesses coalescing around towns on transport routes, or to towns with higher amenity or key services (such as hospitals) (BITRE 2014, pp. 91–128).

Another trend affecting regional centres is the strong growth of services industries, with agriculture and manufacturing falling as a share of employment over time (section 3.1, figure 3.6). Many regional centres have grown along with the increased demand for services, particularly health, education and aged care.

There is variation in the economic conditions of regional centres

In general, the populations of regional centres in Australia are growing. Some regional centres have had significant population growth in recent times, with some growing by more than 10 per cent between 2012 and 2016 (ABS 2017a). While some of the fastest growing regional centres are recently booming mining towns such as Karratha (Western Australia) and Emerald (Queensland), others are coastal towns, like Busselton and Bunbury (Western Australia) and Hervey Bay (Queensland). Growth in these centres is influenced by domestic migration, with individuals attracted (at least in Western Australia) by lifestyle factors and lower costs of living (RAI, sub. 12).

Similarly, employment has grown very strongly in many SA4s that incorporate regional centres. Newcastle and Lake Macquarie, Ballarat and Geelong (and their surrounds) all experienced employment growth of about 10 per cent between February 2012 to February 2017 (ABS 2017c). In Illawarra (which includes Wollongong) the growth rate was nearly 20 per cent over the same period — much faster than the national growth rate of 6 per cent. These regions also performed strongly on a range of other labour force indicators. In February 2017, the unemployment rate in each of these regions (except Illawarra) was at, or below, the rate for Australia as a whole. Participation rates and employment-to-population ratios also increased in all these regions in the past five years (ABS 2017c).

This positive story is widespread but not universal. In contrast, the populations of 14 significant urban areas¹⁹ (out of 101) declined between 2012 and 2016, including inland New South Wales and Victoria as well as mining regions in Queensland and Western Australia (ABS 2017a). However, only three non-metropolitan regional centres — Broken Hill in western New South Wales, Moe-Newborough (part of the Latrobe Valley in Victoria) and Port Pirie in South Australia — had a lower population in 2016 than they did in 2006.

¹⁹ This section uses the ABS definition of a ‘significant urban area’ (SUA) to classify regional centres.

Rapid changes in population can lead to adjustment pressures

Adjustment pressures can arise from large increases in employment or population. A sudden influx of people can result in shortages of key services or facilities, particularly if the characteristics of the population change. For example, many regional centres are ageing more rapidly than the capital cities (DIRD 2015, pp. 12–33). An ageing population also lowers labour market participation, as well as changing the types of services demanded.

For some coastal areas, retirees may relocate from capital cities to seek a lower cost of living and more favourable lifestyle, contributing to the ageing of the local population. An example of a ‘retirement town’ is Hervey Bay, about 300 km north of Brisbane on the Queensland coastline, where a quarter of the population is older than 65 (Queensland Government, sub. 26).

Population decline also represents costs for regional centres. For example, falling populations reduce local government revenue, hampering efforts to maintain infrastructure designed to service (and be funded by) a larger population (GHD 2015, p. 32).

An example of this can be seen in Whyalla. In 1958, BHP decided to build an integrated steelworks at their site in Whyalla. New workers began moving to Whyalla, and its population quickly rose, from about 14 000 people in 1961 to about 28 000 people in 1968. The construction of the Whyalla Steelworks was completed in 1968 and the workforce of BHP reached about 7000 people in 1970. Preliminary planning by the Department of Lands around that time was allowing for a city of 100 000 people. Following this, Whyalla’s population peaked at about 33 000 in 1976, but it has since been affected by a worldwide downturn in the steel industry and closure of the Whyalla Shipyards in 1978 (Whyalla City Council 2017). Whyalla’s population subsequently declined and is now about 23 000 people (ABS 2016a).

Unemployment in some centres has increased sharply

Some regional centres have seen fewer employment opportunities over the past five years, including higher unemployment (particularly among young job seekers) and falling participation rates. Some examples are Townsville (Queensland) (box 3.8), Mandurah (Western Australia) and Launceston (Tasmania). These trends have occurred alongside population growth in some areas, particularly Mandurah.

There are diverse causes of regional unemployment, and outcomes are more variable over time in some regions than in others. For example, unemployment in Cairns has been volatile due to its strong reliance on tourism. Currency movements and the variability of international tourism demand can have a significant effect on employment in the region (Queensland Government, sub. 26; Cairns Regional Council and Advance Cairns, sub. 13).

Box 3.8 Townsville: limited labour market opportunities

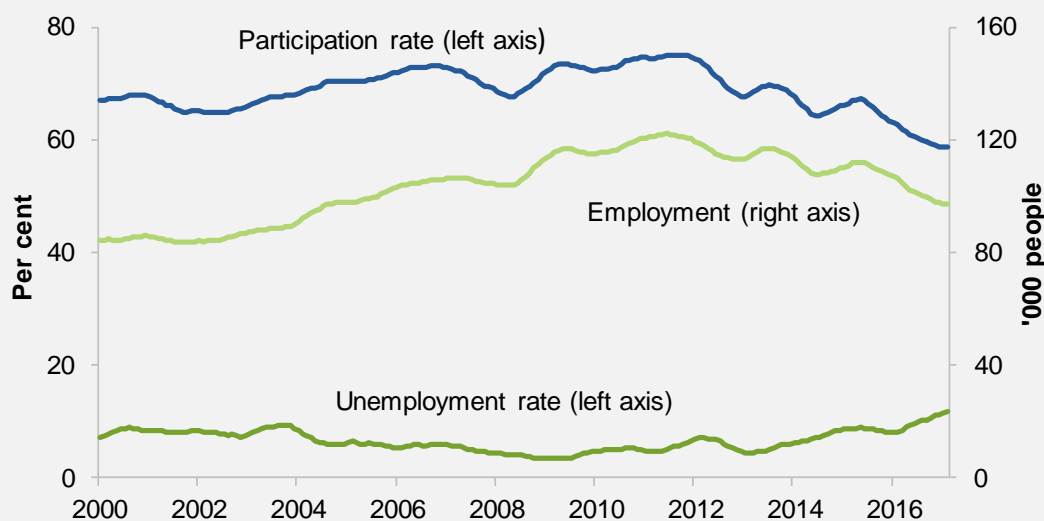
Unemployment in Townsville (located on the north Queensland coast) has more than doubled since employment peaked during the mining investment boom in 2011 (figure below).

While the direct contribution of mining to Townsville's economic activity is relatively small, many downstream businesses, such as mineral processing and professional services, have been affected by slowing mining investment. Particularly prominent was the March 2016 closure of the Yabulu nickel refinery, with the loss of about 550 jobs.

Townsville is also a source of fly-in, fly-out (FIFO) construction and mining workers to Queensland mines, mainly around Mount Isa. About 4000 Townsville workers undertook FIFO work in other parts of Queensland in 2011. However, the use of FIFO has fallen considerably since, with lower demand for labour following the closure of some mines in central Queensland and the end of mine expansion works around Mount Isa. Most remaining FIFO workers are sourced from Brisbane and other capital cities.

Although Townsville has a relatively diverse economy, many alternative jobs require skills or other attributes that may not be possessed by workers returning from FIFO arrangements or retrenched from manufacturing. This may be reflected in the labour market participation rate, which has fallen by 15 percentage points since 2011 as discouraged job seekers leave the labour market.

A transitioning labour market, smoothed data for Townsville (SA4)



Sources: Queensland Government, sub. 26; ABS (2017c); Robins (2016).

Connectivity has been a major influence on opportunity

Contributions to the study have emphasised the importance of connectivity (in terms of broadband, telecommunications, roads, rail, ports and airports) to economic opportunity in regional centres.²⁰ Connectivity is a function of both location and physical infrastructure — the actual ‘time to market’ being the critical factor. For example, a location could be closer to a key market, but if transportation linkages are poor, they will be disadvantaged compared with a more connected regional centre.

Better transport infrastructure has enabled people in regional centres to access larger labour markets and more opportunities for employment following economic disruptions. This trend has contributed to growth in ‘commuter cities’ in the peri-urban fringe of capital cities (for example Ballarat, box 3.9). Access to major trading routes and product markets generally provides centres with more economic opportunities.

Box 3.9 **Ballarat: a commuter city**

Ballarat, a city of more than 100 000 people in Victoria, has been a relatively successful regional centre over recent history. Located about 110 km north-west of Melbourne, Ballarat was originally founded as a gold mining town, but over a long period has diversified and now performs relatively well on most indicators of regional performance.

Part of Ballarat’s relative success can be linked to connectivity. Compared with Melbourne, Ballarat has a lower cost of living and less urban congestion. Ballarat has been connected to Melbourne via a freeway since the 1990s. The commencement of a fast train service in 2006 has made commuting to Melbourne more viable — whether for work, education or to take advantage of the wider social activities available in the Victorian capital.

Sources: Regional Cities Victoria, sub. 23; Regional Capitals Australia, sub. 30, p. 4; Litras (2006).

²⁰ For example: Robert Tilleard, sub. 2; Illawarra Business Chamber, sub. 15; Telstra, sub. 18; Regional Cities Victoria, sub. 23; Regional Capitals Australia, sub. 30.

4 Regional adaptive capacity

Key points

- Developing a single metric of regional adaptive capacity is challenging due to the complexity of identifying, measuring and weighting a set of systemic factors that influence a community's ability to deal with change.
- Sensitivity analysis demonstrates that the index cannot be estimated with a high degree of confidence. There are a large number of regions whose relative rankings could change substantially when different variables are included within the analysis.
- Even if relative adaptive capacity could be measured accurately, on its own it does not identify whether regions will be successful in transitioning to a more sustainable economic base following a disruption.
- Overall, the metric is not suited to guiding policy decisions, including the allocation of funding to specific regions. However, the metric can be used to explore some broad themes and patterns of adaptive capacity in Australia's regions. This provides a guide to the community about which regions may be at risk of failing to adapt to change.
- The analysis shows that people-related factors (including education, skills, employment and health) strongly shape adaptive capacity, particularly for communities in urban areas. For communities in remote areas, these and other factors associated with remoteness, such as accessibility to services and infrastructure, have the strongest influence on results.
- A substantial proportion of the regions with the lowest adaptive capacity (the 244 regions with the lowest index value) are in major cities. Almost all of these regions are dominated by manufacturing activity.
- Most regions that have mining as their main source of employment have relatively high adaptive capacity, as assessed using the metric. There are very few (less than five) mining areas among the regions identified as having the lowest adaptive capacity.
- The Commission's analysis is preliminary and could change substantially when additional data (including the 2016 Census) becomes available. Feedback is being sought on whether improvements could be made to the approach used to construct the index, and whether there are other data sources available.

The Commission has been asked to develop a metric, combining a series of indicators, to assess the degree of economic dislocation/engagement, transitional friction and local economic sustainability of regions across Australia and to rank those regions to identify those most at risk of failing to adjust.

The approach to this task is to measure the relative adaptive capacity of regional communities and to use this as an indicator of a region's risk of failing to adjust. This is a challenging task due to the complexity of identifying (and measuring) a set of systemic

factors that influence a community's ability to deal with disruption to its economic circumstances.²¹ There is no agreed approach to measuring adaptive capacity and the concept itself is contested (chapter 2).

The framework and the factors that have been used as indicators of adaptive capacity are outlined in chapter 2. The single metric of adaptive capacity is preliminary and subject to change. The Commission has had to rely primarily on variables available from the 2011 Census of Population and Housing, as data from the 2016 Census will not be available until October 2017 (these will be incorporated in the final report). Additional detail on the index and the methodology used to construct the index will be made available on the Commission's website by the end of June 2017.

Broadly speaking, regions with a high index value of adaptive capacity are in a relatively better position to respond to changes in their economic circumstances. However, the realised outcomes in a region arising from a disruption depends on a number of matters, including:

- how sensitive and exposed the region is to a particular set of changes
- the opportunities available to communities to transition into other economic activities or to build on existing strengths and comparative advantages
- whether there are any impediments to adjustment, such as policy or regulatory barriers.

Ultimately, the changes experienced in communities are driven by the individual decisions of workers, business owners and others in the community as they seek to do what is in their best interests given the circumstances.

4.1 How should results from the metric be interpreted?

The index of relative adaptive capacity cannot be estimated with a high degree of confidence. A single metric cannot capture the unique attributes of each regional community nor can it be used with any precision to rank regions. As noted by James Cook University:

Each region has its own culture, natural environment, climate, identity and a unique competitive advantage. The remote, Indigenous-led Arnhem Land, for example is a very different region from Queensland's sugar and tourism-driven Wet Tropics. (sub. 24, p. 2)

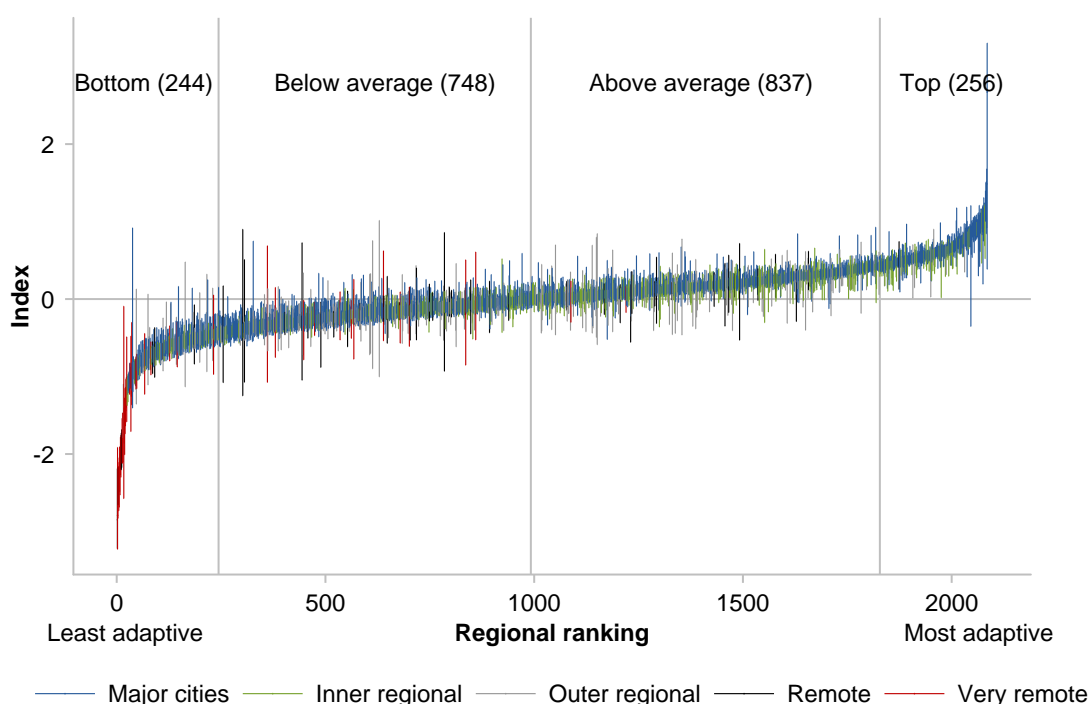
Further, factors which increase adaptive capacity in response to one type of disruption might decrease adaptive capacity for a different type of disruption. As such, any single measure of relative adaptive capacity for all Australian regions will have limitations.

Sensitivity analysis has been undertaken to understand and illustrate the degree of certainty in the estimated index.²² This provides insights into the extent to which variables included

²¹ Systemic factors are those defined and measured consistently across all regions in the analysis.

in the dataset, such as levels of education, incomes and remoteness, influence confidence in the index score for each region. The larger the confidence intervals for index scores of regions, the less reliable the ranking. Figure 4.1 highlights the degree of confidence in the individual index scores for each region.

Figure 4.1 High uncertainty in the rankings of adaptive capacity
 Index values for each region and their 90 per cent confident intervals, regions sorted from lowest to highest^a



^a Regions are defined by the ABS Statistical Area Level 2 classification. The top and bottom group of regions are defined as those above and below one standard deviation of the mean index value of adaptive capacity across all regions. Regions are ordered based on their final index value, where the whiskers represent the upper and lower 5 percentiles (90 per cent confidence intervals) of the region's index value across sensitivity analysis. Remoteness of regions is represented in the colouring of the lines. Of the bottom 244 regions, 126 are in major cities, 45 are inner regional, 35 outer regional, 8 remote and 30 very remote.

Source: Productivity Commission estimates.

²² Statistical bootstrapping has been applied to gain insights into the accuracy (defined here in terms of confidence intervals) for the metric. The technique uses random sampling methods. In each case, random sampling has been applied to regions within the dataset and the variables (factors) that have been used in forming principal components.

There are a large number of regions whose relative rankings could change substantially when variables are included or excluded from the analysis. Larger confidence intervals appear to be associated with the degree of remoteness of regions (box 4.1).

Box 4.1 Factors influencing the relative rankings of adaptive capacity

Sensitivity analysis reveals a number of issues associated with the relative ranking of the regions according to the index. Although many regions have similar levels of confidence, there are a smaller number of regions (less than 10 per cent) that have substantially lower levels of confidence.

Factors related to remoteness play a key role in determining the sensitivity of a region's ranking. This is primarily due to physical and natural capital factors. A number of remote and very remote regions are dependent on natural resources (in particular mining and agriculture) or are particularly disadvantaged by multiple physical factors, including access to infrastructure and services.

The index is highly sensitive to a small number of significant factors which, when removed, dramatically change the rankings of regions. For example, a manufacturing region that has average scores for all factors *except* year 12 completion rates (which could be very low), would have a low score for most index calculations (which would include, and largely be driven by, the year 12 variable), but would have a more mid-level ranking for the small number of sensitivity runs where the year 12 education variable was excluded.

A number of the variables included in the metric analysis are imperfect proxies of the underlying factors thought to shape adaptive capacity (which is itself difficult to define). The ranges presented in figure 4.1 should therefore be thought of as lower-bound estimates of the sensitivity of the results.

Even if adaptive capacity could be measured accurately, it does not identify on its own whether regions will be successful in transitioning to a more sustainable economic base following a disruption. As noted earlier, this depends on how sensitive a region is to a particular disruption (which can vary by magnitude and probability), the opportunities available to regional communities and the actions of people within those communities. As such, the metric has limited suitability as a guide for policy decisions, including the allocation of funding. However, the metric can be used to explore broad themes and patterns of adaptive capacity in Australia's regions.

INFORMATION REQUEST 4.1

The Commission is seeking feedback on:

- *the methodology that has been used to construct the index of adaptive capacity, including whether other methods might be superior for the purpose*
 - *the factors (variables) that have been included in the index and whether there are other variables and data sources that could be used.*
-

FINDING 4.1

A single metric of relative adaptive capacity cannot capture the unique attributes of each regional community, nor can it be used with any precision to rank regions. There is significant uncertainty about the index values estimated for each region.

Moreover, adaptive capacity does not identify whether a region will be successful in transition following a disruption.

The metric can be used to explore some broad themes and patterns of adaptive capacity across broad classes of regions.

Relationship between adaptive capacity and socioeconomic disadvantage

Many of the factors that influence the adaptive capacity of communities are related to social and economic advantage and disadvantage, such as the level of skills and education of people within a community and the financial resources they have to draw upon. As such, the Commission's metric could be expected to be highly correlated with indexes of social and economic disadvantage, such as the ABS Socio-Economic Indexes for Areas (SEIFA) (box 4.2).

Box 4.2 Relationship between the Commission's adaptive capacity index and the SEIFA

The Socio-Economic Indexes for Areas (SEIFA) are a series of indexes produced by the ABS used to rank all regions in Australia based on relative socioeconomic advantage and disadvantage. Each of the SEIFA indexes — the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD), the Index of Relative Socio-Economic Disadvantage (IRSD), the Index of Economic Resources (IER) and the Index of Education and Occupation (IEO) — are derived from different subsets of variables within the Census in order to characterise different aspects of socioeconomic advantage and disadvantage.

The socioeconomic advantage and disadvantage of people within a region is an important contributor to a region's adaptive capacity. Many of the variables included within the SEIFA are similar to those included within the Commission's adaptive capacity index (chapter 2). As such, the SEIFA would be expected to be relatively highly correlated with the Commission's index of adaptive capacity. The correlations are shown below.

Correlation between the SEIFA and the Commission's adaptive capacity index

	<i>IRSAD</i>	<i>IRSD</i>	<i>IER</i>	<i>IEO</i>
PC index	80%	82%	73%	66%

Source: Productivity Commission estimates based on ABS (2013b).

4.2 Some emerging themes of adaptive capacity

A map of the results of the index is shown in figure 4.2. Further detail for each state and territory is provided in appendix B. The least adaptive regions (the 244 regions with the lowest index value²³) are spread across all areas of Australia, including remote, regional and urban areas (including in major cities). This is reflective of the diversity of Australia's regions, and the distribution of Australia's population, which spans settlements in city, regional, and remote areas, both coastal and inland.

Index of adaptive capacity and population

While maps are useful to illustrate the geographical spread of the adaptive capacity of regions, they do not precisely reveal the number of *regions*, or the number of *people*, within the least adaptive category of regions.

A substantial proportion of the total number of *regions* in the least adaptive category are in major cities.²⁴ Further, some major cities (Sydney, Melbourne and Adelaide) along with very remote regions, have a higher representation in the least adaptive category of regions compared to all regions (figure 4.3).

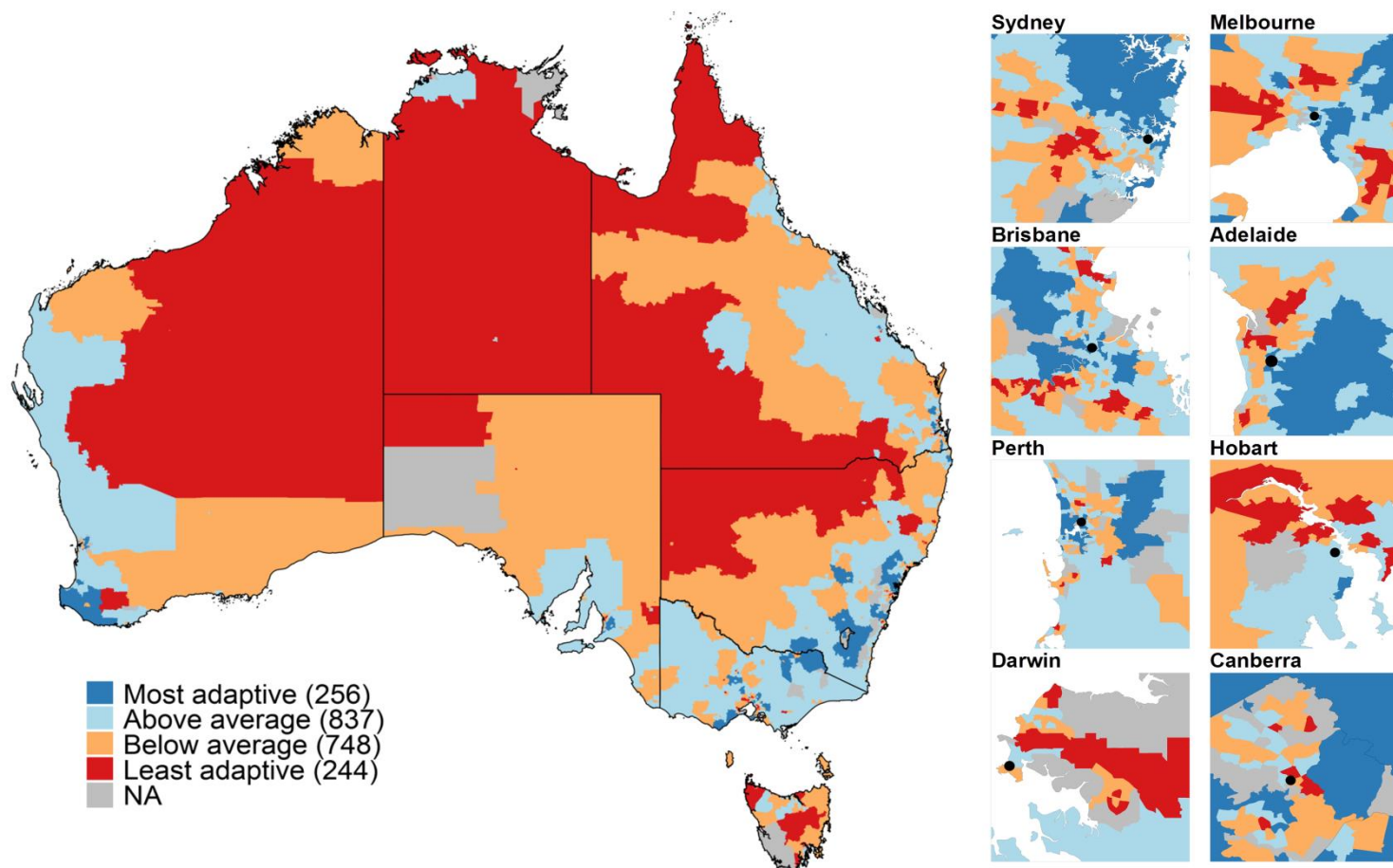
There is an even higher representation of *people* in the least adaptive category of regions, particularly those in the metropolitan areas of Sydney, Melbourne and Adelaide — over half of the people in the least adaptive regions reside in these three areas (figure 4.4). By contrast, there is a lower share of people (compared to regions) in very remote areas in the least adaptive category. Although very remote regions cover large areas of Australia, they are sparsely populated compared to major cities and smaller urban and regional areas. Major cities are heavily populated areas of Australia. Indeed, most Australians live in capital cities, with levels of population declining as remoteness increases.

The total number of people living in the least adaptive regions was about 2.5 million.

²³ The least adaptive regions are those that fall below one standard deviation of the mean index value of all regions. There are 244 regions (out of 2085 regions) below one standard deviation of the mean.

²⁴ Regions have been classified based on the remoteness areas structure in the Australian Statistical Geography Standard. There are five categories of regions. These are: major cities (which includes most capital cities and their greater metropolitan areas, as well as other cities, such as Geelong, Newcastle, and Ipswich); inner regional areas (such as Hobart, Ballarat and Toowoomba); outer regional areas (such as Cairns and Darwin); remote areas (such as Port Hedland and Karratha); and very remote areas (such as East Pilbara).

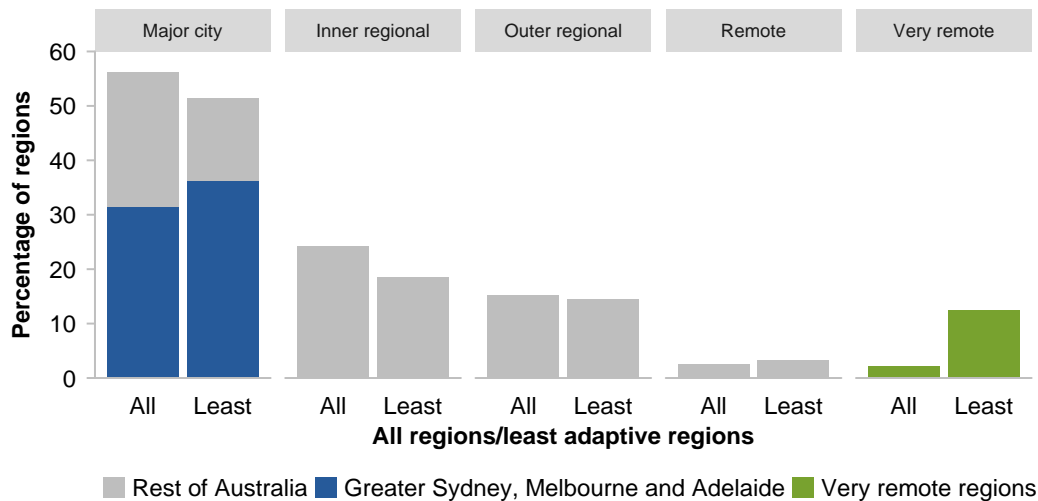
Figure 4.2 Adaptive capacity of Australia's regions^a



^a Regions are defined by the ABS Statistical Area Level 2 classification. NA represents regions that were excluded from the analysis due to insufficient data. Least (most) adaptive regions are defined as those below (above) one standard deviation of the mean index value of adaptive capacity across all regions.

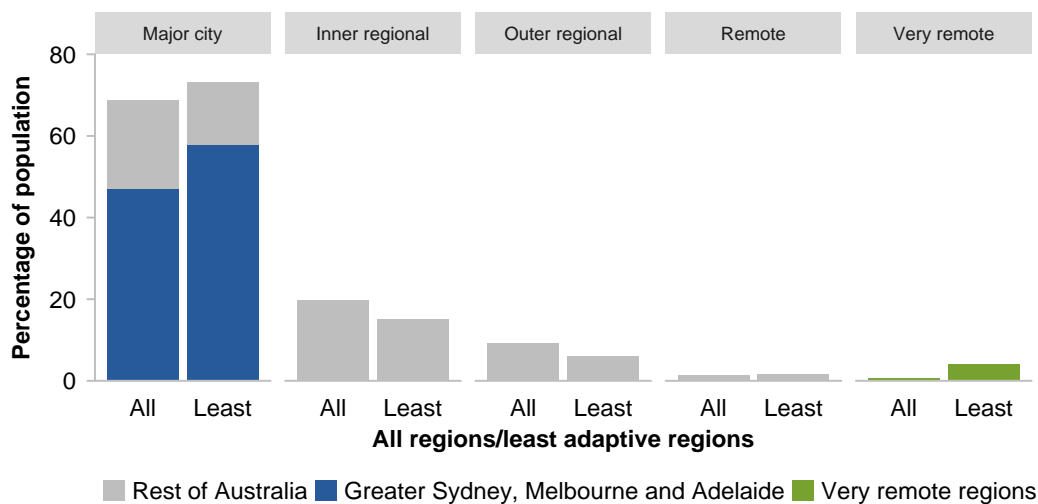
Source: Productivity Commission estimates.

Figure 4.3 A relatively large share of regions in the least adaptive category are in major cities and very remote areas



Source: Productivity Commission estimates.

Figure 4.4 A higher share of the population in the least adaptive regions reside in major cities and very remote areas



Source: Productivity Commission estimates.

Factors affecting regional rankings of adaptive capacity

There is no simple explanation for why the adaptive capacity of communities varies so markedly. Although the index value for each region is driven by the many factors included in the index, people-related factors (including education, skills, employment and incomes) appear to have a strong influence, particularly for communities in urban areas. For communities in remote areas, these and other factors associated with remoteness, such as accessibility to services and infrastructure, have the strongest influence on results.

Overall, communities in cities and inner regional areas have the highest capacity to adapt, due to their intrinsic economic diversity, higher population density, connectivity with other regions and markets, and the diverse skills and higher education levels of their workforce. Where city and inner regional areas have more limited adaptive capacity, this is frequently attributable to general social and economic disadvantage.

Remote areas with low adaptive capacity are typically those with limited access to resources that underpin economic and social wellbeing. Access to infrastructure and services is more limited in these areas and people within these communities have lower levels of education and fewer employment opportunities due, in part, to limited industry diversity.

Youth engagement (in work or study) is particularly low in very remote communities (regardless of adaptive capacity) — 52 per cent on average compared with 77 per cent for all other types of regions. For remote (rather than ‘very remote’) regions identified as least adaptive, youth engagement is similar to very remote regions, but across all remote regions average youth engagement is higher (66 per cent). Low youth engagement can mean greater risk of unemployment and cycles of low pay and employment. Youth engaged in work or study may reflect both opportunities as well as people’s intrinsic motivation to pursue these opportunities (DIRD 2015).

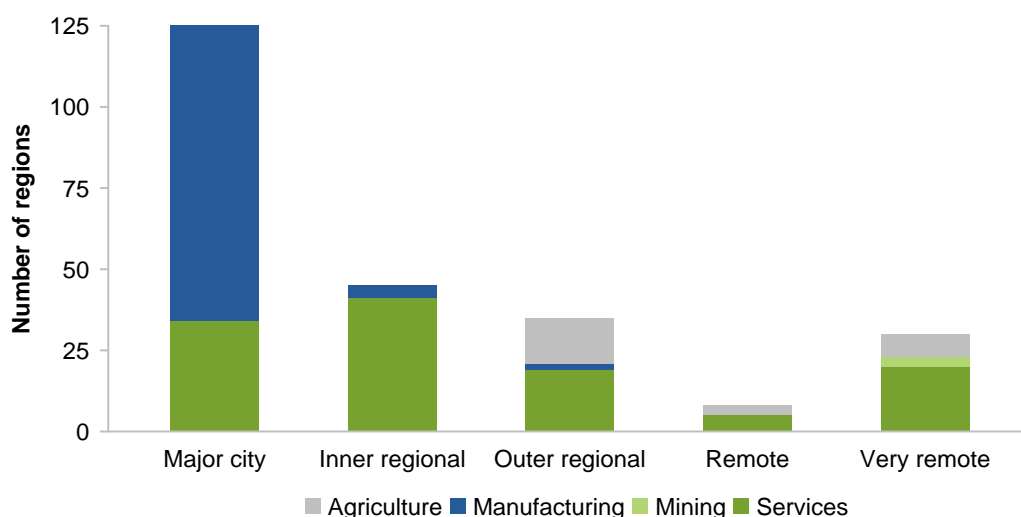
However, some remote regions, such as Port Hedland and Esperance in the Western Australian Outback, have relatively high adaptive capacity due to greater economic diversity, higher incomes and natural assets, including mining resources and national parks, which provide a basis for economic activities and generating incomes.

A clearer story emerges when examining the main sources of economic activity in the regions that have been found to have the lowest adaptive capacity (figure 4.5). For urban areas with the lowest adaptive capacity, manufacturing is the main source of employment. As remoteness increases, agriculture, and to a lesser extent mining, plays a more prominent role.

Although this observation reflects where such businesses are typically located, manufacturing regions are more highly represented in the least adaptive regions. Manufacturing is the main source of employment for about 40 per cent of the regions in the least adaptive category. For all other regions that are not in the least adaptive category, only 11 per cent have manufacturing as their main source of employment.

In contrast, the share of services in regions that are the least adaptive is much lower than for all other regions — about 50 per cent compared to 75 per cent.

Figure 4.5 Main source of employment for the least adaptive regions by class of remoteness



Source: Productivity Commission estimates.

INITIAL FINDING 4.2

The main factors shaping the index value of relative adaptive capacity for each region relate to:

- people-related factors (including education achievement, employment rates, skill levels, personal incomes and community cohesion)
- the degree of remoteness and accessibility to infrastructure and services
- natural endowments, such as agricultural land
- industry diversity.

Data from the 2016 Census and other sources of data not available for the initial report are likely to change the regional rankings of adaptive capacity in the final report.

Manufacturing activity dominates in urban areas with low adaptive capacity

Manufacturing is the largest source of employment for almost three-quarters of the major city regions in the ‘least adaptive’ group. Almost all of these regions are located in Victoria

and New South Wales and to a lesser extent South Australia, Queensland, and Western Australia.

These regions are typically associated with high economic diversity and have good access to services and infrastructure (factors which positively contribute to adaptive capacity). However, high levels of social and economic disadvantage, in terms of skills, education levels and other factors that influence employment opportunities and wellbeing, result in relatively low levels of adaptive capacity. This means that people within these communities are less able to take advantage of the opportunities arising from economic diversity. An inadequate skill base in some areas has been identified as an impediment to development in regional communities of Australia (chapter 5).

On average, only 15 per cent of employees in these regions were employed in high-skilled occupations, compared with nearly 30 per cent for Australia as a whole. People from lower-skilled occupations with limited qualifications or with poor English proficiency are likely to face greater challenges finding re-employment following a disruptive event, such as the closure of a manufacturing plant (OECD 2013). Re-employment opportunities may be further limited due to the ongoing decline in manufacturing businesses that would have been their main source of employment. As noted in chapter 3, the share of people employed in the manufacturing sector has been steadily declining over the past several decades. Some of this decline is a result of the shift of businesses that are relatively labour intensive and reliant on low-skilled workers to countries with lower labour costs. Technological innovation within the manufacturing sector may also contribute to reduced demand for lower-skilled manufacturing workers. More recently, the contribution of the mining investment boom to the rise and fall in the value of the Australian dollar has affected import-competing sectors such as manufacturing.

One lesson from these developments is that efforts by government to resist long-term structural changes in the economy can be not only futile but counterproductive to the incentives of workers to retrain and build skills in other occupations.

Unemployment and social disadvantage are also impediments to adaptation in these areas. This can be illustrated by comparing the regions of North Adelaide and Geelong, both of which are facing similar adjustment challenges following the closure of car manufacturing plants (box 4.3). However, differences between the regions in terms of labour market conditions, dependence on manufacturing and the economic performance of major cities to which they are linked, are likely to affect how the people in these areas adapt to their changed circumstances.

Another factor that could be contributing to the low adaptive capacity of these regions is low 'social capital'. Manufacturing regions tend to have lower levels of volunteers compared to regional and remote areas. Although the level of volunteerism is not a precise indicator of social capital (which includes community connections, engagement and social cohesion), volunteers help to build social networks and shared values through their contribution to a wide range of organisations (ABS 2011c), which can help communities to

work towards common goals. Social capital is inherently difficult to measure, although it can be an important contributor to the adaptive capacity of communities (chapter 2).

INITIAL FINDING 4.3

Regions with an economic base concentrated in manufacturing tend to have lower employment growth and relatively low adaptive capacity. Many of these regions are located in the greater metropolitan areas of capital cities.

Box 4.3 Adaptive capacity in North Adelaide and Geelong

The announced closure of the Holden automobile factory in North Adelaide by the end of 2017, following the closure of Ford's Geelong engine plant in October 2016, will bring an end to passenger vehicle manufacturing in Australia. The two factories, along with local parts suppliers, have been important employers in both regions. The closure of the industry will spur significant adjustment in both regions as many retrenched workers seek to find new work and some take early retirement.

Opportunity varies between regions and their residents

Although the disruptions in North Adelaide and Geelong are similar, there are significant differences between the two regions that are likely to affect how they adjust to the closures

- **Labour market conditions.** Unemployment was 11.5 per cent in North Adelaide, compared to 6.9 per cent in Geelong in December 2016 (DoE 2017). Around one in three unemployed workers in North Adelaide had been unemployed for more than a year in 2016 (ABS 2017c).
- **Local dependence on manufacturing.** The economies of both regions are concentrated on relatively few industries, compared with the national economy. However, North Adelaide is more specialised in manufacturing (17 per cent of employment) while Geelong is more reliant on services, primarily health care and social assistance (14 per cent) (ABS 2013a). Manufacturing employment has largely been in decline nationally, while jobs are being created in services (chapter 3).
- **Economic conditions in connecting regions.** Around 10 per cent of Geelong workers already commute via rail to Melbourne (BITRE 2015), where employment growth is relatively high (averaging 2.2 per cent per year between 2006 and 2016). By contrast, North Adelaide is part of the Greater Adelaide labour market where employment growth has been considerably lower than Melbourne (averaging 0.8 per cent per year over the same period) (ABS 2017c).

The capabilities of a region's residents are another key factor affecting the success of an economic transition. It follows that differences in these capabilities are likely to contribute to adjustment outcomes. Human capital, including educational attainment, age, English proficiency and the length of previous employment, affects the job search skills of residents and their ability to reskill, adding to the costs of adjustment (PC 2014a). On average, residents of North Adelaide have fewer formal qualifications (7.5 per cent with a bachelor degree or higher qualification, compared with 15 per cent in Geelong) and are more likely to be 'blue-collar' workers (43 per cent, compared with 35 per cent in Geelong) (ABS 2013a).

Most mining regions have relatively high adaptive capacity

There is considerable interest (as reflected in the terms of reference for this study) in considering whether regions affected by the resources investment boom are likely to be at risk of failing to adjust.

Most regions that have mining as their main source of employment have relatively high adaptive capacity, as assessed using the metric.²⁵ There are very few (less than five) mining areas among the regions identified as being in the ‘least adaptive’ category. This makes it difficult to identify common factors that characterise at-risk mining areas, particularly given the physical nature of the mining regions identified as least adaptive.

They are all located in very remote regions, which means they cover large geographic areas with sparse populations. The size and characteristics of these areas means that there could be a number of factors at play within the region. The Pilbara region, for example, which covers an area of 502 000 km² (20 per cent of Western Australia’s land mass) (RDA Pilbara, sub. 6), is captured in several Statistical Area Level 2 (SA2) categories used in the metric analysis. Larger population centres in the Pilbara, such as Karratha, Port Hedland, and Newman (which are not in the least adaptive category) are captured in three separate SA2s. These places are well serviced with electricity, water, accommodation and other services. In contrast, the East Pilbara SA2 is almost entirely desert, and is sparsely populated by a small number of Indigenous communities (RDA Pilbara, sub. 6).

As noted by James Cook University (sub. 24, p. 5), classifying regions based on common characteristics potentially enables inferences in data-poor areas, however there is a risk that incomplete or incorrect data could lead to ‘wrong’ typologies. The unique attributes of regions means that seemingly similar towns or regions may experience very different development paths due to small differences. This is apparent in the experiences in Nhulunbuy (in the Northern Territory) and Weipa (in Queensland) (chapter 3).

That said, some factors have been identified that are common to the small number of least adaptive mining regions. These relate primarily to three dimensions: physical infrastructure, natural assets, and the characteristics of the communities in the region.

Data on physical infrastructure on a regional basis are limited. The data that are available suggests that the least adaptive mining regions have relatively low rates of broadband access and very high levels of remoteness. Although these factors in themselves are unlikely to be the main driver of adaptive capacity, they could be indicators of other unobserved factors. For example, highly remote regions with low broadband connectivity may also have limited access to electricity, water and road infrastructure. This could be reflective of the small and dispersed populations of these regions and the high costs of providing services.

²⁵ It is worth emphasising that the mining boom observed in recent years was a mining investment boom — building up capital for future production. While mining investment has slowed, mining production remains strong in many areas, as can be seen in Western Australia.

Regions with mines that have high cost structures (and that are therefore only economically viable during periods of relatively high commodity prices) face challenges from cyclical downturns in mining investment. For example, in the Kimberley region of Western Australia, three mines that accounted for 30 per cent of gross regional product when iron ore prices were at their peak are now in care and maintenance (chapter 3).

Natural assets present both opportunities and risks for the least adaptive mining regions. Mining provides opportunities for employment within these communities — the least adaptive mining regions have some of the highest concentration of employment in the industry, with almost half of all people employed in mining-related jobs. Some of the towns in these regions may not exist were it not for the mineral endowments in the area. Indeed, some towns were developed solely to service the mining industry, and a number of these have since been abandoned.

The new towns built to service the mining industry in the 1960s and 1970s were located immediately adjacent to the major resources (e.g. Tom Price and Mt Tom Price, Newman and Mt Whaleback, Leinster and Leinster Nickel Operations) and the port facilities (e.g. Dampier and Dampier Port, Wickham and Cape Lambert). Some towns that were located near resources that have become exhausted have subsequently been removed entirely — such as Goldsworthy and Shay Gap. (CME of Western Australia, sub. 28, p. 18).

However, a lack of diversity can present a challenge as it leaves the communities exposed to disruptions that could negatively impact the value of mining activity and lead to the collapse of economic activity that was once feasible in the region.

People-related factors are also important contributors to the disadvantage faced by the least adaptive mining regions. Although their levels of education, skills and labour market participation are similar to other regions in the ‘least adaptive’ category, they are much lower than other mining regions (that have relatively high adaptive capacity).

The small number of mining regions identified as having the lowest adaptive capacity suggests that mining regions in general have relatively high adaptive capacity. Even when compared to all regions, communities in mining regions typically have substantial financial resources to draw upon. Some mining areas, including Port Hedland and Newman in the Pilbara, are among the regions with the highest incomes.

Mining regions that are not in the ‘least adaptive’ category are typically accompanied by services, such as retail trade, construction, health, and public administration and safety. Indeed, for most mining regions, more people are employed in these types of services than in mining. In some instances, this may be due to resource established towns becoming ‘normalised’ as the communities have become more diversified, either through more than one resource company operating in the area or through different industries (CME of Western Australia, sub. 28, p. 18). The Western Australian Department of Regional Development (sub. 27, p. 5) noted that improved social and community infrastructure in the Pilbara, particularly Port Hedland and Karratha, ‘is encouraging people to stay in town, educate their children locally and plan a future in the region’.

Although mining regions are exposed to commodity cycles, many have proven to be sustainable in the longer term where there are secure resources that can be mined economically. As noted in chapter 3, regions (such as the Pilbara) that have a comparative advantage in markets for minerals and commodities have benefited from significant investments in new projects and expansions during the investment boom. This will likely provide an economic and employment base in these regions for decades to come, largely irrespective of commodity market cycles.

4.3 Opportunities for change

The above analysis sought to identify regions that might be at risk of failing to adjust on the basis of their adaptive capacity. This does not identify whether regions will be successful in transitioning to a more sustainable economic base following a disruption.

The actual ability of a community to adjust depends on the precise challenge it faces, and the actions of people within communities as they seek to take advantage of opportunities available to them. In many regions of Australia, particularly in very remote areas, there may be limited opportunities to generate income through additional or alternative economic activities.

Participants to this study pointed to a number of opportunities for future development, including through diversification into other activities, such as agriculture, renewable energy or tourism, or by better utilising existing infrastructure assets and building on industry specialisation (box 4.4).

The opportunities and prospects for change for regional communities depend on a range of factors, many of which relate to the unique attributes of a region, such as its geographical location and proximity to other communities and markets, its endowments of natural resources and attractions, and the skills of the local population. Others relate to forces that are external (and beyond the control of the community), such as advances in technology and changes in consumer preferences for the goods and services provided by regional communities.

Box 4.4 Participant views on opportunities for change

Regional Development Australia Pilbara (sub. 6, pp. 15–16):

The Pilbara has very substantial renewable energy potential, primarily in solar and wind energy. Solar power potential is based on the high number of sunlight hours in the region ...

A particular niche market opportunity exists in luxury tourism, which is the leading growth sector in tourism. ... The Pilbara has several sights that could be considered for luxury tourism development, including the Dampier peninsula.

Linda Nadge (sub. 1, p. 3):

My idea is to grow Broken Hill by basing a space industry here.

Cairns Regional Council and Advance Cairns (sub. 13, pp. 40–41):

Given large expanding markets in Asia, cattle exports are predicted to grow. Technological improvements, including better stock, better infrastructure and investment in properties is underpinning ability to expand supply. ... Cape York is likely to prove a major area for increased production.

There are strong prospects for expanding [agricultural] production beyond current limits around the Tablelands. ... A number of industries in the area, including sugar, only need more water to expand.

Illawarra Business Chamber (sub. 15, p. 5):

The fastest growing sector over the next 20 years in the Illawarra is expected to be health care, driven primarily by an ageing population ... Education and training is also expected to grow strongly.

The Illawarra's proximity to Sydney and Canberra also provide substantial opportunities for tourism growth in the region. ... For the region to benefit from these growth areas and opportunities, we need improved transport connectivity to and from the region.

Upper Spencer Gulf Common Purpose Group (sub. 20, p. 1):

There is considerable potential to build on these comparative strengths and reposition the economy as a hub for renewable energy generation and testing; defence; intermodal transport and logistics; value-adding and innovation in agriculture; event and marine-based tourism; advanced manufacturing to support the mining and energy sectors; and as centres for delivery of government services and higher education/research.

Tasmanian Government Minister for State Growth (sub. 21, p. 2):

We have also been working to facilitate the growth of emerging and high growth industries, such as aged care and NDIS linked programs, agriculture, transport and tourism.

Western Australian Local Government Association (sub. 22, pp. 13–14):

Mining will remain an important part of the WA economy, and there remains considerable and ongoing opportunities to supply raw materials to Asia. However, there are also opportunities for WA to build on its knowledge and expertise in resources production to become a major supplier of mining technology and services.

Beyond commodities, there are also significant opportunities for WA to supply consumer goods and services to the [Asia] region ... which is demanding more 'luxury' goods such as premium food and wine products and services as their incomes increase.

Queensland Government (sub. 26, pp. 16, 27):

There is also a role of cultural tourism in transitioning regional economies to reflect Tourism Australia's finding that half (51%) of all International visitors to Australia are cultural and heritage visitors.

The tourism industry is a potential bright spot for the Mackay region, with the Whitsundays being a major tourist attraction. The lower AUD is expected to encourage more Australians to travel domestically and attract more tourism from overseas.

How successful regional communities are in adjusting to change depends on whether they are able to take advantage of available opportunities. Regional communities are best placed to drive change, and in this context local leadership and entrepreneurship have a strong role to play. Governments are not best placed to pick which industries or projects are likely to succeed in the future. As noted by the Western Australian Local Government Association:

It is important that the policy focus is not around ‘picking winners’, but instead about creating an environment that will improve the efficiency and competitiveness of the economy in general. (sub. 22, p. 13)

A key role for government is to ensure that their regulations and policies do not unnecessarily inhibit change or prevent workers and business owners from flexibly responding to new opportunities. Governments may also choose to take an active approach through policies that facilitate sustainable regional development. And it may be necessary for governments to support regional communities during difficult transitions, particularly where there are significant social and distributional challenges.

The approach to regional development will be different in each of these circumstances. Managing transition or decline in areas that have limited opportunities for sustainable long-term economic activity is vastly different to facilitating regional development in areas where opportunities are abundant.

The role of government in facilitating adjustment and longer term regional development is discussed in the next chapter.

5 Strategies for successful transition and development

Key points

- The ability of regional communities to adapt and develop depends not only on the opportunities available to them in activities where they have a relative strength, but on the extent of any impediments to taking advantage of these opportunities.
- Strategies to support transition and development in regions should be guided by an examination of each region's circumstances, the nature of the change it is experiencing, and its inherent strengths and advantages.
- Governments can help support regional transition and development by ensuring that their policies and regulations do not act as unnecessary barriers to change.
 - Streamlining regulatory processes in areas such as planning and development can make it easier for businesses to find new sources of income and growth (where they have relative strengths). These are 'no-regrets' or 'win-win' policies which have been highlighted in a number of Productivity Commission reviews (such as its *Regulation of Agriculture* report) and in submissions to this study.
 - Reducing barriers to people taking up job opportunities in other industries, occupations and geographic locations by promoting mobility is also important.
- In many cases, government assistance to industries and regions has been costly and ineffective. Governments should avoid providing 'ad hoc' support to regions without an underpinning framework that aligns with clear principles that focus on supporting people in regional communities to adapt to change.
 - Where governments do decide to develop initiatives to facilitate transition and development, the initiatives should be strategic, built on a region's strengths, coordinated between governments, and focused on developing regional communities' capacity and connectivity with other regions and markets.
 - Substantial funding has been directed to regional projects and initiatives in recent years, but it is often unclear whether these initiatives have generated long-lasting benefits in terms of supporting transition and development. Adhering to principles for effectively planning and selecting projects for regional development would assist governments in ensuring such funding achieves value for money (a net benefit to Australia), and would help promote sustainable regional development.
- Good policy cannot protect against all possible adverse events. Where a regional community has experienced severe and pervasive changes in economic circumstances, and is least able to adapt to these changes, specific adjustment assistance may help ease the transition for people who are most vulnerable (such as those with highly specific skills and limited re-employment opportunities).

5.1 How can governments best facilitate regional transition and development?

Regional economies are continually transitioning and adapting to pressures for change, and not just those arising from large disruptions. A key element of development strategies should be about positioning local communities to adapt to such pressures. Strategies that facilitate successful transition and development are those that focus on supporting people in regional communities (rather than businesses or industries) to adjust to changing economic circumstances.

How and whether governments should support people in regions so that they can adapt to challenges and opportunities in a sustainable way is a contentious issue. Governments are often under pressure (usually during times of crisis) to respond to competing demands and to achieve multiple objectives. Furthermore, as demonstrated in earlier chapters, Australia's regions are highly diverse in their characteristics and experiences, and in the risks and opportunities they face. This makes it a complex task for governments to:

- determine whether and how best to support regional communities in their efforts to make a successful transition
- identify priorities
- avoid exacerbating regional problems through badly selected, incoherent and costly interventions.

Strategies to support transition and development in regional communities are likely to be most effective where they are implemented through a coherent framework, as outlined in the following sections; and where they adhere to overarching goals of efficiency, equity and sustainability in regions (box 5.1).

Box 5.1 Overarching goals of government support for regional transition and development

The overarching goals of government support for regional communities can include:

- economic efficiency — enabling people, investment and other resources to move to the economic activities that generate the highest value (wellbeing) to the community — these will typically be the activities in which regions have a comparative advantage — by ensuring there are no unnecessary impediments to such movement (PC 2013a)
- equity — creating a fairer distribution of the benefits from economic activities and growth. This is particularly relevant where the transition process 'severely impacts those with the least capacity to adapt' (Aither 2014, p. 9)
- sustainability — supporting regions to develop in ways that are viable in the long term. Sustainable regional communities are those that can 'meet the needs of their current residents while considering the needs of future communities' (DSEWPC 2013, p. 1). Sustainability means that ultimately, the region is able to be successful without permanent government support (beyond general government transfers such as the age pension).

Governments face trade-offs between these goals. For example, assistance programs aimed at achieving more equitable outcomes by providing support to particular activities or regions can also impede efficiency by preventing or discouraging people, investment and other resources from moving to the economic activities where they can get the best return. Such programs may also be unsustainable in that they require ongoing government assistance. Governments should expect industries and businesses to be self-sustaining in the long term, although some regional communities may require ongoing government transfers to ensure access to essential services.

However, it is not always the case that these goals are conflicting. For example, policy responses ‘directed to a particularly hard hit group of society that encourage and facilitate transition at minimal public cost may be both efficient and equitable’ (Aither 2014, p. 20).

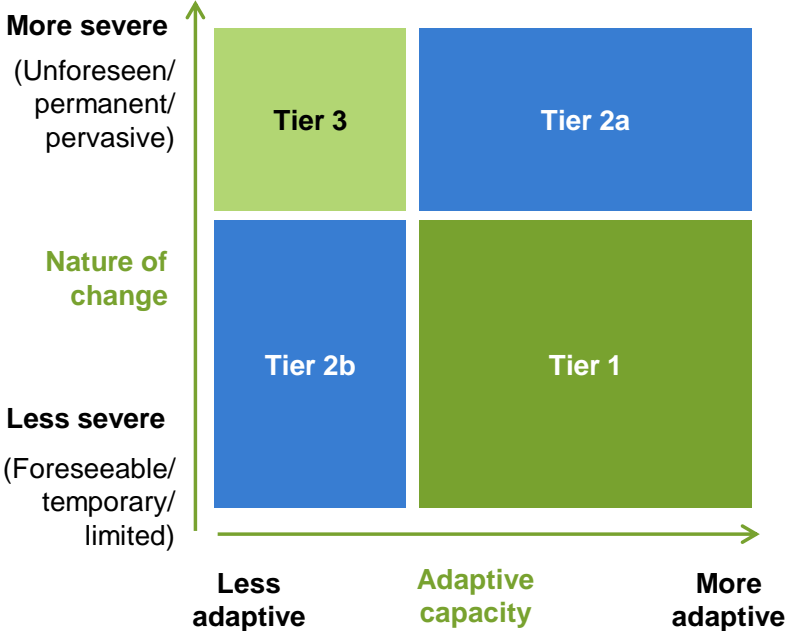
A tiered model of support for transition and development

There have been unexpected, severe and pervasive economic changes in some of Australia’s regions, while other regions have seen long-term restructuring in key industries (chapter 3). Some regions are relatively well-resourced in areas such as human capital, infrastructure and natural assets. Others are less so. This means regions will vary in terms of the level of support required for efficient, equitable and sustainable adaptation and development. Additionally, the nature of government actions may vary — from managing transition (or decline) to facilitating (or ‘unlocking’) development in regions that have significant untapped potential. However, governments should be careful not to gamble on the future of a region with untapped potential, as there have been many past instances of ‘white elephant’ projects, some highlighted in the Commission’s (2014d) *Public Infrastructure* inquiry report. As recommended in that report, projects should be subject to rigorous and transparent cost-benefit analysis, taking care to avoid optimism bias — the systematic tendency for large complex projects to have underestimated costs and overstated benefits.

The framework set out here is both a ‘transition’ and a ‘development’ framework, in that it is intended to guide governments where they choose to support regions both to make a successful transition in the face of changing circumstances and to achieve sustainable economic development. Although transition and development are distinct concepts, for practical purposes, strategies to facilitate a regional community’s economic development are the same as those that enable it to adapt well to changing circumstances. In practice, a regional community does not ‘decide’ to develop or transition; it seeks to create an environment so that members of the community can achieve the highest possible wellbeing, given its strengths, resources and opportunities. People within these communities make decisions that are in their best interests, given the circumstances that they face. As such, the principles set out below are applicable to initiatives to facilitate transition and development of regional communities.

Governments have a finite capacity to assist regions, and must balance supporting those people in regional communities who are in greatest need with promoting conditions for transition and development among all regions. Prioritisation of government support should be based on a regional community’s circumstances as well as on its inherent strengths and capabilities (comparative advantage). Support should be structured according to the nature of change affecting a region and the region’s adaptive capacity (figure 5.1). In this figure, tier 1 represents regions with the greatest capacity to adapt and develop, and the least need for support, and tier 3 the greatest need for support. Tier 2a and 2b regions are those with some need for support, but for different reasons (tier 2a due to severe adverse circumstances, and tier 2b due to a relatively low capacity to adapt and develop). Differentiated support could be provided to regions in each of tiers 1, 2, and 3 (figure 5.2).

Figure 5.1 **Assessing a region’s need for government support**



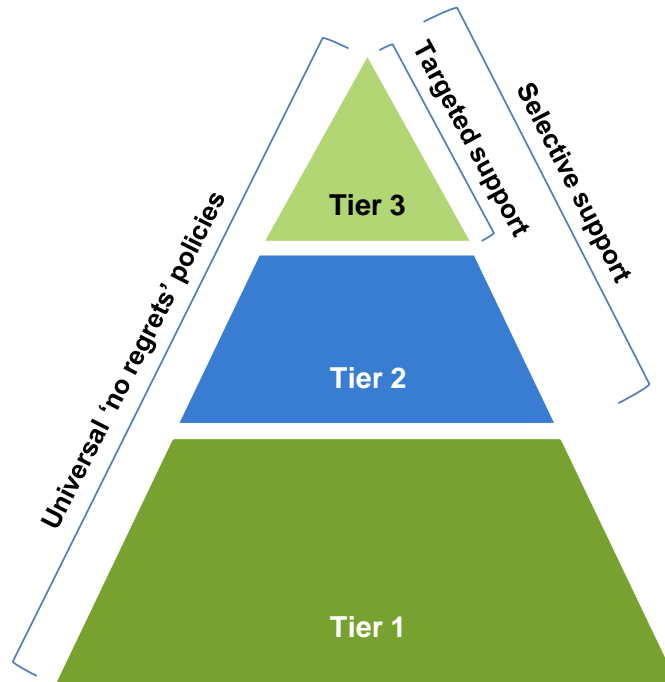
Note that these tiers do not align with the analysis of regions in chapter 4, as the metric presented in that chapter measures only the adaptive capacity dimension of this framework, not the second dimension of the nature of change.

For governments to gauge which regions fit into these categories, they will need to assess the severity of the circumstances facing an individual region. This is a task best undertaken at a local level and on an ongoing basis, to take account of local knowledge and changing circumstances specific to the area.

Under this framework, all regional communities would benefit from governments removing regulatory barriers that impede people (including business owners) from

exploiting innovative opportunities, particularly those in which they have a comparative advantage.

Figure 5.2 Tiered model of policy support



For regions in tier 1 — facing less severe changes and having the greatest capacity to adapt to change — this would be the only form of government support received (besides generally available measures, such as transfers made via the Commonwealth Grants Commission). Such support would be ‘before the fact’, meaning that it should be done in any case rather than only after an economic disruption. This form of policy response is discussed in section 5.2.

Regions in tiers 2 and 3 would receive targeted and selective support in the form of regional development programs aimed at building the capacity of people to adjust to change and enhancing the connectivity of regions (section 5.3). This could involve investing in human capital through education and training programs and identifying and taking advantage of opportunities to use existing resources. This type of support can be undertaken proactively, without waiting for an economic shock to occur. Note that regions in tiers 2a, 2b and 3 have diverse needs, and so regional policy responses should be tailored accordingly.

Tier 2a regions

Regions in tier 2a are those with good adaptive capacity, but that are facing severe adverse economic circumstances. Programs for these regions should focus mainly on assisting them

to undertake existing activities more productively (‘doing what they do better’) or to uncover alternative sources of economic activity that build on their existing strengths and assets (‘doing something else’).

Tier 2b regions

Regions in tier 2b are characterised by low adaptive capacity. Development policy for these regions should focus primarily on building the capacity of people and regional connectivity in ways that align with the region’s relative strengths (subject to the principles set out in this section). Crucially, it also involves enhancing regional communities’ capacity to make judgments about relative strengths and where best to invest their resources, to enable better decision making at the local level.

Tier 3 regions

Regions in tier 3 are those experiencing the most severe economic changes while having the least capacity to adapt. Those people who are most vulnerable within these communities could receive specific adjustment assistance to enable them to make a successful transition. These policy responses, which would be undertaken following a change in circumstances, are discussed in section 5.4. Note that tier 3 regions also benefit from the kinds of support provided to regions in tiers 1 and 2. Indeed, such support is likely to reduce the future costs of tier 3 support.

Principles for supporting transition and development

Traditional approaches to regional policy have often involved governments providing funding for infrastructure projects and for regional industries to reduce income and wealth disparities among Australia’s regions (Tomaney 2010). However, in recent decades regional policy has gradually evolved from a focus on redistribution to a desire to enhance the capabilities and competitiveness of each regional community in order to achieve self-sustaining growth (Beer 2014). This is analogous to the evolution in Australia’s international aid policy from an emphasis on transfers to developing countries to a recognition of the need for strong institutions and policies in developing countries to enable sustainable, locally-driven growth (DFAT 2014).

Reflecting this shift, contemporary views on regional policy favour ‘place-based’ approaches that aim to promote economic and employment growth in regions ‘through encouraging each region to make greater use of its own opportunity and potential’ (RAI, sub. 12, p. 23). Place-based approaches emphasise ‘the ability of places to grow drawing on their own resources, notably their human capital and innovative capacities’ (Tomaney 2010, p. 6). As the OECD said:

In response to poor outcomes, regional policy has evolved, and continues to evolve, from a top-down, subsidy-based group of interventions designed to reduce regional disparities, into a

much broader family of policies designed to improve regional competitiveness. ... The new regional approach is based on the principle that opportunities for growth exist in the entire territory, across all types of regions. The aim is to maximise national output by encouraging each individual region to reach its growth potential from within. Before, policy makers regarded regional policies as a zero sum game. Recent reforms of regional policy in a number of OECD countries provide evidence that this thinking has undergone a paradigm shift. (2009, p. 5)

Place-based approaches have also been endorsed in Australian government policy documents, such as the Victorian Government's recent review of regional economic development issues.

This Review found that a 'place-based' approach to regional development is critical. Regions must play a leading role in developing their own growth strategies and government must organise itself to enable local decision making and integrated services. This approach continues to be essential to building regional prosperity. (VicDEDJTR 2015, p. 7)

Some study participants echoed these ideas. For example, James Cook University argued that:

... *Place is Powerful*. *Place* provides a contextual platform for conceptually organizing and theorizing regional development; ensuring that material conditions of life, such as the environment, resources and capabilities are taken into account and integrated locally.

... Each region has its own culture, natural environment, climate, identity and a unique competitive advantage. The remote, Indigenous-led Arnhem Land, for example is a very different region from Queensland's sugar and tourism-driven Wet Tropics. There is no effective alternative to empowering individual (and generally self-defined) regions to set the direction for, manage and monitor progress towards their own economic destiny. [*italics original*] (sub. 24, p. 2)

The Commission agrees that place-based policies are likely to be more effective than subsidy-based policies, although the latter remains a significant part of government policy. Guided by this way of thinking, strategies to support regional transition and development should:

- take a coordinated, strategic approach, led by the regional community
- build on a region's relative strengths (comparative advantage)
- invest in the capacity of people in regional communities and the region's connections with other regions and markets
- promote sustainability, so that projects and programs are viable without long-term government financial support.

These four principles are discussed in turn.

First, transition and development strategies should be owned and led by the regional community itself, in coordination with governments and community stakeholders. This involves regional communities taking an active role in planning and making decisions

about their own development needs, opportunities and objectives, and strategies for achieving these objectives (James Cook University, sub. 24; RDA Tasmania, sub. 3; Tomaney 2010; VicDEDJTR 2015). Local ownership can also refer to regional communities having a financial stake in investments or projects, which can ‘ensure projects are valued by communities and enhance a project’s potential for success’ (RASC 2013, p. 6).

Many submissions highlighted the need for local governments and regional communities to take a leadership role in policy and planning. Regional Development Australia (RDA) Tasmania (sub. 3, p. 2) argued that ‘[r]egional communities need to take ownership and the responsibility for structured decision making and strategic planning’. Others echoed these sentiments.

[M]uch of the responsibility for economic development needs to be taken on by local and regional leadership. Regional Economic Development Strategies need to be undertaken at a regional level, rather than handed down by Commonwealth or State Governments. (Northern Tasmania Development Corporation, sub 7, p. 3)

Centralised decision making ‘to’ the region and not ‘with’ the region; duplication by different levels of government and agencies ... continue to frustrate local initiatives and efforts. (Upper Spencer Gulf Common Purpose Group, sub. 20, p. 1)

Second, strategies should work with, rather than against, a region’s innate strengths or endowments. These are the natural, historical or social advantages enjoyed by a regional community that can be potential sources of economic growth (CED 2016). Endowments can include, for example, natural resources (including environmental quality), travel time to major cities and so on. The importance of endowments in determining the direction of regional development has been recognised in previous studies (CED 2016; CEDA 2016; OECD 2009) as well as by participants in this study. For example, the Chamber of Minerals and Energy of Western Australia (sub. 28, p. 1) said ‘Policies ... must also take into account comparative advantage of a region based on factors such as installed infrastructure and natural resource endowments’. Others also expressed the importance of building on a region’s endowments (CME of Western Australia, sub. 28, p. 1; Queensland Government, sub. 26, p. 12; RAI, sub. 12, p. 23; RDA Far North, sub. 9, p. 2).

The development of new infrastructure will play an important role in assisting regional economies’ transition from the resources boom and the opening up of new industries, especially those that harness the competitive strengths of regional Queensland. (Queensland Government, sub. 26, p. 12)

[N]ational output can be maximized through encouraging each region to make greater use of its own opportunity and potential – with a stream of this work actively supporting ‘smart specialisation’ to rebuild regions on growth in demonstrated economic strengths. (RAI, sub. 12, p. 23)

Third, governments can facilitate regional transition and development through carefully targeted investment in a region’s capacity and in its connections with other regions and markets. This may involve investing in the kinds of capabilities found to be inadequate in some regions, particularly human capital and physical infrastructure. It can also include

supporting regional communities to access new markets, domestically or internationally. Crucially, investment in a region's capacity (whether physical infrastructure or other resources and capabilities) should align with a strategic view of a region's individual strengths and constraints, rather than what might be perceived as 'the next big thing'. That is, governments should avoid 'picking winners' in regional communities by investing heavily in specific industries that are speculated to be future growth areas. This point was recognised in some submissions (RDA Tasmania, sub. 3, p. 2; WALGA, sub. 22, p. 2).

'Picking winners' is not the business of government and therefore any planning must be community driven, long term and strategic. Project development should consider future employment, a region's liveability and skill development. (RDA Tasmania, sub. 3, p. 2)

Finally, strategies for transition and development should be sustainable, meaning that regional communities can be self-sustaining in the long term without requiring government assistance (beyond generally available government transfers). To a large extent, this feature follows from the previous three: where a transition pathway has been based on a region's strengths and resources, and has been led by the regional community in partnership with all levels of government, it is more likely to be viable rather than to be dependent on ongoing government support.

A number of submissions highlighted the need for governments to prioritise those projects that build long-term capacity for sustainability within regional communities.

This includes supporting economic projects that deliver long term outcomes for the region, not necessarily projects that just have short term popularity [sic] within the community or are short term focused. (RDA Tasmania, sub. 3, p. 2)

These grants and funding have provided mainly short term opportunities in the form of new infrastructure and programs, with a few of them providing opportunities for longer term outcomes including employment. (RDA Far North, sub. 9, p. 12)

Applying these principles to regional transition and development initiatives

The above principles can inform the planning, implementation and evaluation of programs designed to facilitate transition and development in regions. However, governments should be mindful that these principles are intended as a guide only, rather than a formal checklist. They do not supplant the role of undertaking comprehensive analysis of proposed projects, programs or initiatives, including analysis of the costs and benefits to the regional community as well as to surrounding regions and (where relevant) Australia as a whole.

Further, they do not replace the need for rigorous, transparent processes, stakeholder consultation and good governance arrangements, or the need for establishing clear and specific objectives and a robust monitoring, reporting and evaluation framework. Rather, the principles described above are intended to complement best practice approaches to planning, selecting, implementing, monitoring and evaluating projects, by highlighting aspects most relevant to regional policy. In practice, governments should ensure that they

plan regional programs in line with best practices as set out by the Commission and others elsewhere (PC 2014d; Victorian Auditor-General 2015).

Governments should also ensure that any regional programs are tailored to the specific attributes and contexts of individual regional communities. There is no ‘one size fits all’ approach that will promote successful adaptation and development in all regions of Australia. This is because regions vary greatly in many respects — including their distance from raw materials and markets, their industrial structures, population size and composition, infrastructure, workforce skill levels and living costs. Attempting to use a generic policy or strategic plan for individual regions not only risks wasting significant resources on projects and programs where there is no underlying comparative advantage, it also diminishes the role and knowledge of local leadership. This was highlighted by several study participants, who emphasised the importance of tailored approaches.

There are tendencies to ‘one policy fits all’ attitudes that do not recognise regional differences. This is affecting investment in the region. (Cairns Regional Council and Advance Cairns, sub. 13, p. 7)

... areas where enhanced support and policy focus at a national level is critical [include] ... [d]eveloping tailored regional solutions aligned with regional strengths and opportunities (Queensland Government, sub. 26, p. 12)

... ‘one size fits all’ policy approaches to regional transition also continue to frustrate local initiatives and efforts. (Upper Spencer Gulf Common Purpose Group, sub. 20, p. 1)

... a coordinated approach would reduce duplication of services, initiatives and programs and drive a tailored rather than a one-size-fits-all response to local needs. (South Australian Government, sub. 34, p. 13)

For some regions, where many workers face job loss as a result of reduced labour demand in certain industries (particularly in mining, manufacturing and agriculture), the main challenges may lie in helping these regions identify and pursue new sources of economic growth. For others, such as urban regions facing entrenched poverty and disadvantage, and regions with a large Indigenous Australian population, the key focus might be on finding ways to address these social and economic challenges in order to lift participation in employment, education and training. Although the most appropriate policy measures will in practice be very different, the guiding principles still apply.

In addition, governments should be cautious about encouraging industry diversification as the prime way of achieving regional development and adaptation. Some participants suggested that diversification can support a successful transition (Illawarra Business Chamber, sub. 15, p. 4). However, other participants highlighted the cost of diverting resources away from their highest-value uses and toward lesser-value economic activities (such as from mining and into tourism, for some regions) (RDA Pilbara, sub. 6, p. 13).

Addressing these competing concerns, the Regional Australia Institute observed that although increasing industrial diversification can be a characteristic of successful regional adjustment, other regions may experience growth alongside a narrowing industrial base.

... there is no single ‘best’ path in all circumstances ... successful transitions can take place without economic diversification. (sub. 12, p. 21).

The NSW Centre for Economic Development concluded that:

An industrial base comprised of an inevitably small number of relatively unrelated industries based on endowments would appear to offer the best hedge against cyclical variation in economic performance. (CED 2016, p. 14)

INITIAL FINDING 5.1

There is no single approach that will facilitate adaptation and sustainable development in all regions.

It is unclear if strategies for adaptation and development have been successful as evaluation is usually not attempted. Strategies that focus on supporting people in regional communities to adjust to changing economic circumstances appear more likely to be successful. The best strategies are those that:

- are identified and led by the regional community itself, in partnership with all levels of government
- remove barriers to people or businesses relocating, both within or to other regions
- are aligned with the region’s relative strengths and inherent advantages
- are supported by targeted investment in developing the capability of the people to deal with adjustment and the connectivity of the region to other regions and markets
- facilitate private economic activity that is not dependent on ongoing government financial support (beyond general government transfers).

INFORMATION REQUEST 5.1

The Commission invites participants to comment on the relevance and applicability of the policy framework set out in this chapter. Where practicable, participants are asked to support their views with evidence of effective and/or ineffective approaches that have been used to facilitate transition and development following disruptive events or ongoing pressures in regional areas (in Australia or overseas).

5.2 Removing barriers to regional transition

All governments can support regional communities to adapt to changing circumstances and facilitate development by removing obstacles that impede people and business owners from taking advantage of economic opportunities. This includes:

- removing regulations that get in the way of businesses developing new products or services, accessing new markets, working more efficiently or further exploiting their

comparative advantages, where these regulations are unjustified or excessively burdensome

- ensuring that policies from different governments work together rather than in opposition.
- removing unnecessary impediments to people gaining new skills and finding employment in more profitable and viable industries or occupations.²⁶

Of course, many regulations are important for protecting public health and safety, equity and environmental quality. However, where regulations impose costs on businesses and people that are not justified by the community-wide benefits that they provide, there is a case for removing them. Or, where regulations have a sound rationale but are poorly designed and/or implemented, there is justification for reforming them. Doing so is not a region-specific policy response, but one that can benefit all regions by enabling them to adapt to changing economic conditions and exploit opportunities as they arise. It aligns with the overarching principle that governments should, in the first instance, seek to ‘do no harm’ by removing any unnecessary barriers.

As such, the reforms in this ‘tier’ of the policy model help to improve the operation of the economy generally, including that of regional economies. Such reforms are sometimes referred to as ‘no-regrets’ or ‘win-win’ policy measures — they are justifiable in their own right while also enhancing the ability of regional communities to adapt to change. Surprisingly, though, despite being obvious areas of ‘no regrets’ there can be significant inertia in removing such barriers, particular where some parties might receive monetary benefits from the regulation.

Removing unnecessary impediments to doing business

Many previous Commission studies have identified unnecessary impediments to businesses operating efficiently and taking up potentially profitable opportunities (box 5.2). These issues were also raised by many study participants.

Planning, zoning and development processes were identified by several participants as an impediment to regional adaptation and growth. In line with previous Commission findings, participants reported that complex and excessively prescriptive arrangements impose costs and delays on businesses seeking to expand or take up new opportunities.

²⁶ Where governments have given people false hope about the likely sustainability of an activity, this can have the effect of reducing incentives for individuals to gain new skills, thus exacerbating adjustment difficulties faced when an unsustainable activity collapses.

Box 5.2 Regulatory impediments affecting regional businesses

Planning, zoning and development processes

The Commission has previously found that regulatory processes relating to planning, zoning and development can be a costly barrier to business entry and investment (PC 2011, 2015b).

- In its study on the *Relative Costs of Doing Business in Australia: Retail Trade*, the Commission identified ‘planning and zoning regulations that are complex, excessively prescriptive, and often anticompetitive’ (PC 2014e, p. 2).
- In its review of *Australia’s International Tourism Industry*, the Commission found that state and territory development assessment frameworks can ‘impose unnecessarily high costs and delays on proposed tourism-related investments, especially small and low-impact investments’. Participants in that study reported that development approval processes act as a major impediment to tourism investment. The study found that the burden imposed by the approval process resulted, in part, from duplication of regulatory processes across different levels of government (PC 2015a, p. 22).
- In its report on *Regulation of Australian Agriculture*, the Commission found that many planning, zoning and development processes are ‘unnecessarily complex, time consuming and costly’. The Commission also identified that planning and zoning regulations often ‘fail to meet their regulatory objectives because they are not adaptable or targeted for managing agricultural land uses’ (PC 2016e, p. 17).
- The Commission’s agriculture report also found that restrictions on the use of Crown land place excessive burdens on farmers that lease this land, with pastoral leases creating insecurity of tenure and restricting farmers’ ability to use the land for alternative purposes (PC 2016e, p. 16).

Environmental regulation

The complexity and cost of environmental regulation was highlighted in the Commission’s agriculture inquiry. The Commission found that native vegetation and biodiversity conservation regulations can have unnecessary costs on farm businesses and limit farmers’ capacity to adapt and improve productivity. The Commission identified complex, inflexible and duplicative regulations as responsible for this excess regulatory burden (PC 2016e, p. 105).

Other agriculture-related regulation

Agriculture is a key sector for many of Australia’s regions (chapter 3). In its report on agriculture regulation (PC 2016e), the Commission identified concerns relating to regulations that impeded the ability of farm businesses to operate efficiently, attract investment and respond to changing market and technological conditions. These areas included:

- transport regulation, where the Commission recommended more consistent and streamlined arrangements for regulating heavy vehicle road access (PC 2016e, p. 345)
- foreign direct investment, where the Commission recommended increasing the screening thresholds for examination of foreign investments in agricultural land and agribusinesses by the Foreign Investment Review Board (PC 2016e, p. 527)
- genetically modified crops, where the Commission recommended the removal of moratoria on genetically modified crops (PC 2016e, p. 24). Some stakeholders argued that the moratoria ‘deny farmers access to technological advances that are critical to remaining competitive internationally’ (PC 2016e, p. 9).

For example, Regional Development Australia (RDA) Pilbara submitted that:

The high cost of approvals, permits and licences for development in the mining sector continues to impose a constraint to development. Recently, the proprietors of the Roy Hill iron ore development in the West Pilbara stated that thousands of approvals, permits and licences were required to develop the mine. (sub. 6, p. 25)

Some participants also expressed concern about the effect of environmental impact assessments, arguing that onerous requirements can impose excessive costs and inhibit development. For example, Cairns Regional Council and Advance Cairns expressed the view that:

Realisation of opportunities in the Cairns region are variously being held back by extreme environmental policies ... Major additional costs ... are currently being imposed on the urgently needed deepening of Cairns seaport to take increasing size of ships needing to use the port, by requiring on-shore placement of dredged material. The cost of upgrading the Kuranda Range Road, Cairns' main westward link in the region has been 'blown out' by excessive costs of meeting extreme environmental parameters. (sub. 13, pp. 45–46)

RDA Pilbara stated that:

Developers and other businesses incur high environmental costs. These costs apply to all businesses in the Pilbara where environmental impact is a factor. The Pilbara is home to a fragile ecosystem that also contains rare flora and fauna that requires detailed EIA [environmental impact] assessments before any major project development. (sub. 6, p. 25)

In addition, there have been concerns that restrictions on alternative uses of land (such as farm land) have undermined the capacity of regional businesses to adapt to change.

... the planning regime can act as a constraint on development, particularly in the case where new activities are not permitted land use under the existing Local Planning Scheme. ... in situations where the development activity does not fall within the permitted uses, this will require the Scheme to be amended. Typically, the process to review and adopt a new Local Planning Scheme to accommodate land uses not covered previously has been unwieldy and time consuming. This can act as a barrier to new development and the diversification of the economy. (WALGA, sub. 22, pp. 19–20)

These issues have often been raised in other regional economic studies and reviews. For example, the issues of planning approvals and environmental assessments were raised in a review commissioned by the Victorian Government, which concluded that:

A transformational regulatory reform package is required to make Victoria competitive in a global market for earth resources projects, particularly to overcome the excessively lengthy, costly and uncertain process to obtain environmental and planning approvals, while maintaining safeguards to protect public health, other land uses and the environment. (VicDEDJTR 2015, p. 50)

The quarantining of land for coal mining in the Latrobe Valley is one such instance in which planning policy and regulations may be impeding development and adaptation in Victoria (box 5.3).

Box 5.3 Coal reserves and land use planning in the Latrobe Valley

The Victorian Government has identified the Latrobe Valley's reserves of brown coal as a resource of state significance, protected under state planning policy. The Government's *State Planning Policy Framework* (clause 14) stipulates that land use planning in the Latrobe region should:

Protect the brown coal resource in Central Gippsland by ensuring that:

- Changes in use and development of land overlying coal resources ... do not compromise the winning or processing of coal. (VicDELWP 2017, p. 104).

Accordingly, the Gippsland Coalfields are the subject of State Resource Overlay 1 under the Latrobe Planning Scheme. The purpose of this overlay is to protect the coal reserves as 'a secure long term energy source for base load power generation in Victoria' (VicDELWP 2017, p. 497). Applications to develop land affected by this overlay (for example, applications to develop the land for agricultural uses) are assessed with regard to 'the need to ensure development of the land does not inhibit the eventual development and use of the coal' (VicDELWP 2017, p. 498).

These arrangements have had the effect of constraining alternative uses of large areas of land within the Latrobe region. As observed by the Latrobe City Council (2016, pp. 3–6):

... significant areas of Farming Zoned land across the municipality are encumbered by State Resource Overlays (SRO) or other heavy industry buffers ...

Coal resources place significant constraints on large expanses of land within Latrobe City, and there is a desire to consider allowing more intensive agricultural uses of this land, whilst recognising the purpose of the SRO.

In its submission to this study, the Latrobe City Council (sub. 35, attachment, pp. 4–5) further commented that:

Latrobe City's association with coal mining has delivered economic benefit, but has also constrained the way in which land can now be used and developed.

... These planning controls establish significant constraints on the availability of land within Latrobe City, as land uses within these areas need to meet a range of criteria. It should be recognised that the State Government ... have undertaken work to review the coal policy and zoning on a number of occasions. However to date there have not been meaningful changes that alter the current coal policies across the Gippsland area Planning Schemes.

The Council also cited several examples in which plans to develop land for alternative uses were thwarted due to the coal-related planning restrictions (Latrobe City Council, sub. 35).

There is a potential conflict between these policy and regulatory arrangements, on the one hand, and a stated desire to transition away from reliance on brown coal in the long term. This tension was apparent in the *Regional Economic Development and Services Review*.

The state's brown coal reserves have historically provided considerable value to Victoria's economy; emerging carbon prices and changes to the economics of supply require new consideration be given to the use of this resource. New and emerging technologies may have the potential to convert brown coal into value-added products such as hydrogen, fertiliser and transport fuels, but this potential has not been realised to date.

... The future role of Victoria's energy resources in the regional economy will be shaped by the need to develop technologies consistent with a carbon-constrained future, community perceptions on the development and operations of the resources, infrastructure requirements, and land use competition issues. The Victorian Government should explore options to clarify its long-term policy position on the use of these resources. A shared view between community, industry and the government on how best to develop the resources is needed. (VicDEDJTR 2015, p. 41)

A further issue noted by some participants relates to the challenges around ownership of Indigenous land, and the scope for development of such land and its resources by or with Indigenous communities. James Cook University considered that current legislative and regulatory arrangements may be impeding Indigenous Australians from gaining the full economic benefits associated with their land and resource holdings.

The economic value of assets held by Indigenous Australians is presently unable to be fully realized given the lack of suitable financial and banking instruments. In addition, for investors looking to northern Australian projects, there is a lack of coherency in the legislative and regulatory regimes. (sub. 24, p. 4)

These concerns were echoed by the Senior Officers Working Group's *Investigation into Indigenous Land Administration and Use* (a report prepared for COAG by officials from the governments of Australia, New South Wales, Northern Territory, Queensland, South Australia and Victoria). Among other matters, the review recommended that all Australian governments commit to streamlining legislative and regulatory arrangements in order to enable Indigenous land owners and native title holders to use their rights and interests in land for economic development and to raise capital for investment (Senior Officers Working Group 2015, p. 3).

Regulatory arrangements in relation to temporary migrant workers constitute another area that can affect the ability of farm businesses to adapt and respond to changing conditions. Many farmers rely on temporary migrant workers to fill labour shortages, mostly through the Working Holiday Maker, Seasonal Worker and Temporary Work (Skilled) (subclass 457) visa programs (PC 2016b, pp. 381–382, 2016e, p. 30). A number of participants in those inquiries said that excessive compliance costs and administrative complexity within these programs (and the requirements around identifying skill shortages in the subclass 457 program) were impeding their ability to employ temporary migrant workers. The adoption of the recommendations of an independent review of the subclass 457 program (Azarias et al. 2014) are expected to address some of these concerns (PC 2016b, p. 369, 2016e, p. 443). In addition, some of those previous inquiry participants expressed concern about the impact of changes to the tax status of Working Holiday Makers on farmers' ability to attract working holiday makers to fill labour shortages.²⁷

Removing such impediments can better equip businesses to handle future changes. For example, removing onerous development restrictions would make it easier for businesses to expand to new locations, with the flow-on effect of increasing a regional community's

²⁷ As of 1 January 2017, working holiday makers are taxed at 15 per cent on earnings up to \$37 000, and at ordinary marginal tax rates above this amount (ATO 2017). Prior to this, working holiday makers were given resident tax treatment (including the tax-free threshold), generally if they were visiting Australia for more than six months (PC 2016e, p. 449). Some participants in the Commission's *Regulation of Australian Agriculture* inquiry expressed concern that this change would discourage working holiday makers from coming to Australia, as countries such as the United Kingdom, Canada and New Zealand generally treat working holiday makers as residents for tax purposes. These participants argued that the change would make it difficult for agricultural businesses to source labour for seasonal work (PC 2016e, pp. 449–450).

physical and financial assets. In turn, this accumulation of resources can buffer a region against future shocks or other adverse circumstances.

In addition, one participant drew attention to the effect of constraints on local governments' ability to raise 'own-source' revenue. These constraints are typically in the form of state government legislative prescriptions with respect to local government fees and charges (such as building permits).

These restrictions limit the efficiency of the [local government] sector and the ability to appropriately raise own-sourced revenue or manage assets in the best interests of their communities. These constraints also restrict the sectors' ability to invest in productivity enhancing infrastructure, and provide important services for the community — which will be critical to ensuring the successful transition in the local economy. (WALGA, sub. 22, p. 18).

The capacity of local governments to manage and deliver services, and provide and maintain infrastructure, has implications for the costs of doing business in regional communities. The Commission has previously set out a number of principles to guide local governments in revenue raising, decision making and financial management (PC 2008). These include, for example, ensuring that services are provided at the lowest achievable cost while maintaining desired service quality and standards, and using competitive tenders and other commercial arrangements with the private sector to enable more cost-effective provision of services. Adhering to such principles can help enable local governments to be financially sustainable and so to better meet the costs of providing services and maintaining infrastructure in ways that benefit their communities.

Removing unnecessary barriers to people taking up new opportunities

There are many reasons why people may not wish to take up job opportunities that require them to change occupations, industries or geographic locations. These include personal and social reasons, such as family commitments, lifestyle preferences and a region's social infrastructure and amenities (RAI, sub. 12, pp. 15–16).

But there are also regulatory arrangements that can make it more difficult for people in regional communities to pursue employment or training opportunities (box 5.4), and that act to reduce mobility. These include:

- occupational licensing requirements, particularly where there are different licensing schemes across states and territories — as noted by the Regional Australia Institute (sub. 12, p. 17)
- land use planning restrictions (contributing to a lack of affordable housing) and stamp duty (increasing the cost of buying and selling property) — which work to discourage people from moving between regions to take up job opportunities.

Box 5.4 **Regulatory impediments to moving between regions — examples**

The Commission has previously identified some regulatory arrangements that can affect people's decisions to move between regions.

Occupational licensing

In its *Geographic Labour Mobility* study, the Commission (2014b, p. 24) noted that 'a large number of occupations in some sectors of the Australian economy are governed by jurisdictional occupational licensing, which may create a barrier for individuals who are considering working interstate'. This mainly applies to tradespeople, real estate agents and other building-related occupations.

In its reviews of the operation of the Mutual Recognition Agreement (which enables licensed workers to work in different jurisdictions), the Commission found that although these arrangements have increased labour mobility in Australia, there remain concerns with mutual recognition of occupations across jurisdictions (PC 2003, 2009b, 2015c). The Commission also found that governments' 'failure to progress occupational licensing reforms has negative consequences for geographic labour mobility, and community wellbeing more broadly' (PC 2014b, p. 31). It recommended expanding the use of automatic mutual recognition to increase geographic labour mobility (PC 2015c, pp. 13–15). Australian Heads of Government and the New Zealand Prime Minister expect that the Cross Jurisdictional Review Forum will present a response to the report's findings to (DET 2017).

Housing

A well-functioning housing market is critical for labour mobility across regions. Participants in the Commission's *Geographic Labour Mobility* study cited insufficient housing supply and a lack of affordable housing as barriers to geographic labour mobility (PC 2014b, pp. 22–23). Two regulatory areas were frequently cited as contributing to distorted housing costs and acting as an impediment to people moving:

- inefficient land use planning processes and the delayed release of land for residential development, which can limit housing availability
- stamp duty, which imposes additional costs on property transactions and discourages the buying and selling of property.

Removing such barriers enables people and businesses in regions to make better use of their existing resources. For instance, removing impediments to re-employment in other industries or occupations allows people to put their skills and knowledge to new uses. Removing unnecessary planning and development barriers also enables businesses to direct their financial resources to more profitable ends.

In some cases, barriers may exist in the form of inadequate information about alternative employment and business opportunities. Industry bodies and governments can help to remove this impediment by 'providing adequate information on changes in labour market and business environments to stakeholders across regions' (RAI, sub. 12, p. 16). Some Australian governments already provide such information online.

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- The South Australian Government’s *WorkReady* website provides information on growth industries, related occupations and the education and training required for each occupation (SA DSD 2017)
 - The Australian Government’s *Job Outlook* website includes information on 5-year projected employment growth in occupations, with links to job vacancies, education and training courses and knowledge, skills and abilities required for each occupation (DoE 2015).

The Commission has made many previous recommendations on leading practices related to removing regulatory impediments. These include having simple, streamlined and transparent regulatory processes, strong community engagement in overall regional planning (so that less consultation is required for each individual development proposal), and coordination between regulators to avoid duplication and to reduce the overall regulatory burden (PC 2011, 2012a, 2013b). However, many of these practices have not been fully implemented (PC 2015b). Implementing these recommendations would help make it easier for businesses and people in regional communities to adapt to changing economic circumstances. Indeed, given the challenges to regions highlighted in this report, governments should expedite the implementation of these policy reforms previously recommended by the Commission. Failure to do so will increase the pressure faced by our vulnerable regions and reduce their future prospects.

INITIAL FINDING 5.2

Governments can facilitate successful transition and development across all regions by removing regulatory barriers that impede people and businesses from taking advantage of economic opportunities, where such regulations are unjustified by the benefits they provide. Expediting regulatory reforms previously recommended by the Commission would assist in this regard.

This would benefit all regions, regardless of their circumstances or adaptive capacity, and helps to improve the operation of the economy generally — making it a ‘win-win’ or ‘no-regrets’ way of supporting regional communities. However, it is particularly important to regions that do not have the advantages and range of opportunities found in capital cities and major regional centres.

5.3 Facilitating transition and development in regions

As discussed in earlier chapters, transition and long-term sustainable development depends on a region’s:

- innate strengths, advantages and resources — including human capital, environmental and natural resources, infrastructure, financial assets and social capital
- connections with other regions and markets (national and international).

Governments may seek to support regional communities that are facing severe disruptions or ongoing adjustment pressures. Where they choose to do so, they should use carefully targeted initiatives that facilitate long-term development in selected regional communities. This is about building the capacity of people (including business owners) in the regional community to withstand economic pressures and to identify and pursue profitable, sustainable sources of growth.

However, governments should avoid providing ‘ad hoc’ support to regions without an underpinning framework that aligns with the principles set out in section 5.1. How these principles may be applied, and the extent to which they have been applied by governments, is discussed in this section.

A locally-owned, strategic and coordinated approach

Local ownership requires strong consultation and coordination between all levels of government and the stakeholders in a community. Such collaboration is crucial because all three levels of government (Australian, State and Territory, and local) share responsibility for regional economic development (RASC 2013). Coordination is vital to avoid duplication, ‘fragmented effort and low value for money outcomes’ in development programs (Northern Tasmania Development Corporation, sub. 7, p. 2). It is also critical to ensure that programs do not act against each other.

A strategic, coordinated approach involves a regional community preparing a clear strategic plan for economic and social development in the region, including:

- analysis of the region’s strengths, opportunities and potential risks
- identification of challenges and impediments to sustainable development
- priorities for action and for any support required (RASC 2013).

Such a plan helps to ensure that development programs and projects have specified objectives, avoiding duplication and an ‘ad hoc’ approach to development initiatives, and promoting coordination between and across levels of government (RASC 2013). Being clear about objectives is also vital for effective monitoring and evaluation (PC 2016c).

Many local governments across Australia have prepared strategic plans for their communities, in accordance with the relevant State or Territory government legislative requirements. For example, the Victorian Government requires all local governments to prepare a medium-term strategic plan (‘council plan’), which establishes ‘strategic objectives, strategies for achieving the objectives, strategic indicators for measuring progress and the resources required’ for implementation. These must be based on ‘stakeholder and community engagement’ (VicDELWP 2016, p. 6). The quality of strategic plans is highly variable. In some jurisdictions, state governments have reviewed local governments’ strategic planning to identify models of good practice. For example, the NSW Government has highlighted 18 local governments as demonstrating good practice in

the preparation of community strategic plans (NSW OLG 2014). The Western Australian Government evaluated the Shire of Irwin as having demonstrated a ‘high level’ of integrated planning and reporting in its preparation of community and business strategic planning documents, including ‘robust community engagement’, clear strategic objectives and key performance indicators for each objective (WA DLGC 2015, pp. 18–19).

Local leadership is exemplified in the case of Stawell (Victoria), where the local government took a lead role in seeking ways to redevelop and repurpose a gold mine for use as an underground physics laboratory (chapter 2). By engaging in community consultation and working in partnership with the Victorian and Australian Governments, Stawell was able to find a new source of economic growth that built on its existing strengths and resources.

In other instances, however, there is room for improvement in the extent to which strategic planning is coordinated across levels of government. For example, the Upper Spencer Gulf Common Purpose Group gave evidence that a lack of coordination had resulted in duplication of government efforts in that region.

The need to avoid duplication of time, effort and resources in supporting the transition of the region has been sharply brought into focus over the previous year with the establishment of several SA Government committees, including the ‘Upper Spencer Gulf and Outback Taskforce’, ‘Arrium Whyalla Taskforce’, ‘Port Pirie Transformation Taskforce’, ‘Upper Spencer Gulf Economic Transition Forum’ and ‘Port Augusta Power Stations Committee’, along with the new Federal Government ‘Upper Spencer Gulf Regional Jobs and Investment Local Planning Committee’.

None of these committees involve the local Councils. (sub. 20, p. 2)

Similarly, the Northern Tasmania Development Corporation (sub. 7, p. 2) expressed concern that:

... there appears to be an over-abundance of services paid for by governments of all levels that work in isolation, are competitive in nature, that gives the strong impression of fragmented effort and low value for money outcomes in the community.

Echoing this sense of frustration, local governments and state-based local government associations interviewed by Pugalis and Tan (2017) expressed concern about inadequate strategic coordination at the State or Territory Government level. The authors reported comments from some local governments voicing this frustration.

The current Tasmanian government does not have an economic development strategy. Local governments feel they are working in a vacuum. (Local government officer, regional or rural council, TAS)

The lack of a state or national level policy on settlement patterns and population shifts means that councils are working in a vacuum. They end up competing against each other to attract residents and businesses in what seems to be a zero sum game. There is no policy context within which local communities can operate and contextualise their work to build on their strategic advantages and develop their communities. (Regional/peak body, WA) (quoted in Pugalis and Tan 2017, pp. 131–132)

The 2016 City Deals program, which aims to support the development of selected regional centres through coordinated public and private investment, is indicative of efforts to establish partnerships and improve collaboration between all levels of government, communities and the private sector (box 5.5). Although it is still too early to assess the effectiveness of these partnerships in achieving successful outcomes for the target regions, the concept of all levels of government working together on locally-developed programs is consistent with the principles outlined in this chapter. It will be important for the City Deals initiatives to be transparent in their intentions and provide scope for other regions to leverage off the initiative in a cost-effective manner. This program should be formally evaluated.

With respect to the first wave of UK City Deals (the inspiration for the Australian City Deals), the UK National Audit Office found that governments' understanding of the impact of the program would 'remain limited' unless they develop a shared approach to monitoring and evaluation.

Developing a robust, shared approach to measurement will be key to understanding what initiatives have the biggest impact on growth and therefore provide value for money in a more devolved environment. (NAO 2015, p. 10)

Although the Australian context differs from that of the United Kingdom, this finding nevertheless emphasises the need for Australian governments to ensure clarity around a performance measurement framework in order to support effective monitoring and evaluation of each City Deal initiative.

INITIAL FINDING 5.3

City Deals initiatives that genuinely develop strategic, coordinated partnerships between all levels of government, communities and the private sector are more in line with the Commission's principles but require effective monitoring and evaluation. It is essential that all governments ensure there is a clear performance measurement framework for each City Deal program, and publicly review the efficacy and cost-effectiveness of the first wave of City Deals within four years of their commencement.

Box 5.5 **City Deals — all levels of government working together**

The purpose of the City Deals program (a key component of the Australian Government's *Smart Cities Plan*) is to promote economic growth, employment, affordable housing and environmental sustainability through coordination between governments, communities and the private sector (DPMC 2016).

Inspired by the UK-based City Deals, Australian City Deals may involve an entire city and surrounds, or a specific regional or metropolitan urban centre (DPMC 2016). To date, three City Deals have been announced — Townsville, Launceston and Western Sydney (Taylor 2016).

The specifics of each City Deal will be tailored to local circumstances, objectives and opportunities, but common themes will include:

- partnerships between all three levels of government
- clearly defined outcomes and actions
- Australian Government funding linked to regulatory and policy reform (such as in land use planning)
- coordinated, targeted investment in infrastructure
- clear governance arrangements, timeframes for delivery and accountability between levels of government
- assessment of performance (using identification and measurement of key performance indicators).(DPMC 2016).

Several study participants welcomed the City Deals initiative. The Queensland Government expressed the view that:

... City Deals give local authorities greater involvement in the coordination of investment in infrastructure across all three governments. They also enable local governments to leverage off other government funding programs which are geared towards better economic and transformative outcomes for their region.

For example, through the Townsville City Deal, the first to be signed in Australia, governments will work with the private sector to promote Townsville's advantages by revitalising the city and Waterfront Priority Development Area, growing the Townsville Port and attracting investment to the State Development Area. The deal will be underpinned by a new approach to investment which will enable stronger partnerships between the public and private sectors to deliver more infrastructure and better outcomes for the community. (sub. 26, p. 15)

Regional Capitals Australia stated that it:

... welcomed the Government's announcements in 2016 in relation to the regional cities stream of the Smart Cities — City Deals process. This is the first time that a government has begun to plan for the unique urban challenges that sit outside the major metropolitan cities. It is RCA's position that the development of a network of socially and economically thriving RCCs [regional capital cities] is critical to the nation's growth, and many of our members have cited the receipt of a City Deal as a game-changer for their community and economy. (sub. 30, p. 4)

As well as through partnerships with other levels of government, local governments' capacity to engage in strategic planning and leadership on behalf of their communities can be enhanced in other ways. For example, local governments in neighbouring regions could work collaboratively to share resources to support decision making (such as sharing expertise with respect to identifying areas of comparative advantage). This is an area where regional development organisations (such as the 55 RDA Committees across Australia) can assist in bringing together knowledge and expertise of local governments, private sector organisations and other stakeholders in adjoining regions.

Building on a region's relative strengths

The concept of endowment-based growth is about providing support to regional communities to focus on their areas of relative strength. As the NSW Centre for Economic Development (2016, p. 4) has emphasised, 'attempts to retain or establish industries without an underpinning endowment are unlikely to succeed'.

Endowment-based transition and development could involve governments and community leaders working together to assess each region's particular strengths, and using these to develop a 'distinctive brand' that promotes the economic opportunities of the state both nationally and internationally (CEDA 2016, p. 33).

This can be seen, for example, in the *Regional Economic Development Strategy* prepared by the Geelong Region Alliance (2014), which sets out economic and social development objectives and strategies for what it brands 'G21' — five municipalities within the Geelong region and surrounds (Colac Otway, Golden Plains, Greater Geelong, Queenscliffe and Surf Coast). The strategic plan includes identification of the G21 region's 'key sustainable competitive advantages', such as a strong manufacturing and engineering skills base, significant existing capacity in health and medical services and in education and research, environmental assets and proximity to Melbourne (G21 Geelong Region Alliance 2014, p. 16). These strengths inform the Alliance's strategic approach to transforming the region from its historical focus on heavy manufacturing into areas such as higher-technology manufacturing, healthcare, education and other sectors. (The Geelong region is discussed in greater detail in a case study in chapter 4.)

As another example, the *Mid West Regional Blueprint* — a strategic plan for the Mid-West region of Western Australia — highlights the key advantages and strengths of the region as a basis for planned regional development (Mid West Development Commission 2015, p. 6). These advantages include the region's mineral, energy and environmental assets as well as its strategic location of infrastructure (such as the Geraldton port's proximity to South East Asia) and recent infrastructure investment (such as the installation of the national broadband network (NBN) and improved mobile coverage in parts of the region). These endowments are linked with development opportunities — such as in the establishment of a regional data centre to take advantage of the NBN connection (Mid West Development Commission 2015, p. 6).

Government approaches to regional development have not always been clearly aligned with a region's strengths. This can be seen, for example, in policies that seek to promote the development of regional communities through the relocation of public sector jobs to regional centres. Some participants endorsed this form of policy support, particularly for regions facing difficulty in adapting to changing circumstances.

Broken Hill cannot transition to any other type of economy, eg technology, tourism or agriculture, because government policy does not influence or redirect investment dollars here. However, governments can and do influence and redirect investment into cities and targeted regions by establishing investment parks, relocating call centres for government departments, assisting irrigators, and so on. (Linda Nadge, sub. 1, pp. 2–3)

In Victoria, for example, several government agencies have had central offices relocated to regional cities, including the Transport Accident Commission (Geelong), State Revenue Office (Ballarat) and Rural Finance Corporation (Bendigo) (Daley and Lancy 2011, p. 29). The Australian Securities and Investments Commission (ASIC) conducts registry functions out of its office in Traralgon, Victoria (Cormann 2015; Latrobe City Council, sub. 35). More recently, the Australian Pesticides and Veterinary Medicines Authority (APVMA) has been in the process of moving from Canberra to Armidale, New South Wales (Towell 2017). Reviewing the effectiveness of this form of regional assistance, Daley and Lancy (2011, p. 29) concluded that such initiatives are typically too small in scale to have any 'discernible effect on an individual town', as the jobs relocated have tended to amount to less than 0.1 per cent of the relevant regional centre's labour force. Furthermore, the authors found that there would not necessarily be overall net benefits from relocating jobs that, by nature, are typically most efficiently located in major urban centres (Daley and Lancy 2011, p. 28).

In the case of the APVMA, an independent analysis of the relocation found that it would impose a net economic cost of \$23 million (which includes the costs and benefits to all stakeholders, not only to the Australian Government), and that it would involve significant risks (Ernst & Young 2016). Chief among these assessed risks was that the regulator would be unable to relocate or replace key executive, managerial and technical staff (Ernst & Young 2016, p. 4). This was echoed by the Community and Public Sector Union (2016, p. 6), which expressed concerns that the regulator would lose a large proportion of its scientists, as most of them would be unwilling to relocate from Canberra to Armidale. On the other hand, the ASIC registry in Traralgon employs almost 350 people onsite (Latrobe City Council, sub. 35, p. 1), and the Australian Government recently abandoned a competitive tender for private sector bids to operate the registry, stating that the bids received would not deliver a net benefit to the Commonwealth (Cormann 2016).

These contrasting examples suggest that although public sector agencies can operate effectively in regional centres, attempts to relocate employment as a form of regional assistance can have unintended consequences, and each instance needs to be considered in its own right. The nature of the skills required in relocation proposals is critical. Where the skill requirements are highly technical and specific, relocation to a region might diminish the organisation's effectiveness. It may be that the types of jobs required by the ASIC

registry can be easily found in Traralgon, but finding qualified scientists for the APVMA in Armidale might be problematic. As highlighted by the ACT Office of the Chief Minister (sub. 33, p. 1), relocation to regional areas may result in a ‘loss of agglomeration benefits when public servants are dislocated from the concentrations of knowledge and expertise easily accessible in the ACT’. There is an increased risk that the move to Armidale will weaken the APVMA, increasing the costs borne by the Australian Government and taxpayers, and hampering the organisation’s work. In turn, this could exacerbate the regulatory delays cited in the Commission’s Regulation of Agriculture inquiry report (PC 2016e, pp. 293–310).

Investing in the capabilities of people and regional connectivity

In many regions, as demonstrated in chapter 4 and noted in some submissions, there is scope for enhancing human capital. Inadequate human capital (skills, education, experience and so on) has emerged as a key factor contributing to low adaptive capacity in Australia’s regions, particularly in outer suburban metropolitan areas (chapter 4). A number of previous reviews have also cited an inadequate skills base as an impediment to economic development and adaptation in Australia’s regions.²⁸ The need to improve regional human capital as a precursor to overcoming high unemployment and persistent socioeconomic disadvantage was also emphasised by the Upper Spencer Gulf Common Purpose Group, which observed ‘a lack of relevant higher education and vocational training opportunities in the region perpetuating an unfortunate trend in “fly-in, fly-out” technical and professional services’ (sub. 20, p. 1).

The factors surrounding inadequate human capital in urban, regional and remote communities are complex, and include entrenched social and economic disadvantage as well as the challenges facing Indigenous Australian communities. The links between persistent disadvantage and other outcomes, including health, education and employment outcomes, has been canvassed in detail by the Commission in other work (McLachlan, Gilfillan and Gordon 2013; SCRGSP 2014). Delving into these complex issues is beyond the scope of this study, and beyond the focus of this chapter on a framework for regional development and adaptation.

With that said, governments can encourage human capital investment in regional communities through initiatives such as:

- promoting relationships between local industries and education providers to ensure education and training programs meet industry needs
- encouraging skilled workers to relocate into regional areas, such as by promoting the lifestyle benefits of a region and improving its amenity and attractiveness. This can be seen, for example, in the G21 Geelong Regional Alliance’s objective of developing a

²⁸ Centre for Economic Development (2016, p. 11); Howard Partners (2013, p. 9); Tennant Creek Regional Economic Development Committee (2014, p. 28); Victorian Department of Economic Development, Jobs, Transport and Resources (2015, p. 18).

‘vibrant and active region’ characterised by cultural diversity and nationally significant events and activities, as a means of attracting ‘educated, skilled and interesting people’ (2014, p. 21)

- collecting and providing information about skills in demand within a region (RASC 2013, p. 17).

Improving the social infrastructure and amenities of a region (such as the provision of quality health and education services) can also assist in attracting and retaining a skilled workforce (CEDA 2016, p. 28).

Building capacity in regional communities may also involve investment in physical infrastructure, particularly infrastructure that facilitates the movement of goods, services and people. A number of study participants commented that improved connectivity via investment in infrastructure would enable people and businesses in regional communities to take advantage of existing or new economic opportunities (box 5.6).

The Committee for Economic Development of Australia emphasised that many industries in regional Western Australia rely on freight supply chains for transporting products to domestic and international markets, and argued that ‘high transport costs and poor linkages in the Regions are limiting connectivity, including into new export markets’ (2016, p. 26). In the same report, inadequate telecommunications infrastructure (including a lack of mobile coverage in many regions) was identified as undermining regional communities’ ability to take advantage of economic opportunities (CEDA 2016, p. 26). Regional businesses’ need for improved mobile and broadband infrastructure has also been highlighted in other reviews (RTIRC 2015; VicDEDJTR 2015, p. 13). Significant reform of Australia’s coastal shipping regulations is also required to help reduce the burden of shipping costs adversely affecting Australia’s regions (PC 2014f).

The Australian Government is undertaking a major investment in delivering broadband connectivity to all Australian premises (on demand) via its investment in the NBN. As has been highlighted in the Commission’s *Telecommunications Universal Service Obligation* inquiry, quality broadband services are critically important to a region’s integration with other parts of Australia and the world, and government spending (through the NBN and other programs) should be designed to deliver a cost-effective baseline broadband service (including voice) (PC 2016f).

Box 5.6 Participants' views on improving connectivity in regions

Linda Nadge (sub. 1, p. 1):

... what is missing in my area that will make my business grow bigger and stronger ... is access to reliable, fast, cable internet and affordable air travel to my region.

Regional Australia Institute (sub. 12, p. 17):

One of the main institutional impediments is poor transportation connections in some regions, as this precludes long distance commuting.

Regional Development Australia Central West (sub. 14, p. 2):

... the provision of wide reaching and future-proof telecommunications infrastructure, including mobile and broadband internet coverage, remains one of the greatest challenges for the region in terms of bridging the digital divide in health, safety and education, transforming the world of work through automation, and facilitating remote work and service delivery. Telecommunications has the potential to attract and develop new industries, and diversify the economy of the Central West into the future.

Telstra (sub. 18, p. 3):

Beyond workforce participation enabled by remote working, regional broadband offers a host of current and future benefits that will help underpin sustained economic activity in regional Australia. These include precision agriculture, telemedicine, remote education, better disaster management, better water management, and more efficient energy generation, distribution, storage and use.

However, despite generally good (and constantly improving) access to telecommunications technology in regional areas, regional consumers currently lag behind urban consumers in their adoption and use of broadband, as identified in the Digital Inclusion Index Report 2016. Policies that address adoption and usage of broadband in regional areas should support regional economic resilience.

Regional Cities Victoria (sub. 23, p. 2):

The development of high quality transport corridors such as roads, passenger and freight rail – and a comprehensive regional airport network – are vital to encouraging investment and increasing opportunities across regional and rural Victoria.

... According to the Regional Australia Institute, in 2015 68.1 per cent of regional Australian households had an internet connection. This contrasts with 80.7 per cent of households in major capital cities. This disconnect in availability and take up of services is a severe barrier to regional growth, both at home and in business.

Queensland Government (sub. 26, p. 12):

Digital infrastructure, particularly high-speed broadband, is also a critical component in transitioning regional economies. Most regional economies are planning to embrace knowledge-intensive industries to replace the slowing activities in mining and other industries. The availability of reliable, inexpensive and high-capacity telecommunications infrastructure is essential to the transition process.

Illawarra Business Chamber (sub. 15, p. 6):

According to the recent assessment of transport connectivity within the Illawarra and between the region and Sydney, the Illawarra has the lowest overall transport connectivity score by comparison with three other Australian regional cities and areas: Central Coast (New South Wales), Geelong (Victoria) and Gold Coast (Queensland) ... The key factors contributing to this performance is that the [Illawarra] region has the lowest overall network coverage due to a poor freight rail connection, and comparatively poor road speed for both passenger and freight transport, and public transport ...

However, it is imperative that governments' decisions about investment in infrastructure in Australia's regions align with the same principles that should be used to guide public infrastructure investment more generally (echoing the idea of 'doing no harm' in regional

policy). This means governments' planning and selection of infrastructure projects should be informed by:

- rigorous and transparent cost–benefit analysis, preferably prior to projects being announced (and if projects are announced without doing so, their implementation should be conditional on the findings of such an analysis)
- robust public consultation, public reporting and evaluation
- explicit and detailed consideration of available alternatives, such as improved use of existing infrastructure
- transparent and competitive processes for selecting private sector partners (PC 2014d).

Furthermore, governments would need to take care to ensure that actions to invest in infrastructure are additional to private sector investment, and would not replace (or 'crowd out') private investment that would have otherwise occurred. Focusing principally on investments in people, rather than businesses, will best ensure that this problem is avoided.

Governments have not always adhered to the above principles for regional development programs and initiatives. For example, the Victorian Auditor-General (2015) found inadequacies in the design, implementation and governance of the Regional Growth Fund (RGF), which provided over \$570 million in grants for regional initiatives in Victoria during 2011–2015. The audit found evidence of a lack of transparency and rigour in the selection of infrastructure projects, as well as inadequate monitoring, evaluation and performance reporting.

Weaknesses in the design and implementation of the RGF mean that the Department of Economic Development, Jobs, Transport & Resources (the department) cannot fully demonstrate that value for money and the goals and objectives of the RGF have all been achieved.

... Pre-application and assessment processes for major Economic Infrastructure Program projects of the RGF were subjective and lacked evidence upon which to base funding decisions, particularly as there was no documentation of the pre-application process. ... There was also a general absence of sufficient benchmarks and targets for assessing applications and assuring that value for money is likely to be achieved.

... Monitoring and reporting activities primarily focused on jobs and investment leveraged. However, the figures reported are potentially misleading as they inflate the actual achievements of the RGF. Reported job numbers primarily relate to expected, rather than actual jobs created. Consequently, reported RGF figures do not provide an accurate picture of actual achievements. (Victorian Auditor-General 2015, p. x)

On the other hand, there are instances in which governments appear to have undertaken rigorous selection processes for proposed regional infrastructure projects. For example, Infrastructure Australia recently assigned the proposed development of a Western Sydney Airport as a high priority on its *Infrastructure Priority List*. This followed an analysis of the business case for the proposed development and its estimated impact on the Western

Sydney region (including a stated benefit–cost ratio of 1.9) (Infrastructure Australia 2017, p. 25).

Beyond investing in physical infrastructure, governments and government-funded bodies have been undertaking initiatives to facilitate connections between businesses and market opportunities. For example:

- in 2012, the Victorian Government’s China Super Trade Mission took 650 people to China to develop business relationships and promote access to Chinese export markets. The mission involved 2000 business-to-business meetings, with approximately one-third of businesses coming from regional Victoria, and was claimed to have ‘secured hundreds of millions of dollars in exports and investment into Victoria in manufacturing, ICT, finance and other sectors’ (RASC 2013, p. 23)
- RDA Illawarra, as one of 55 RDA committees across Australia, works with its regional community to enhance the capabilities and opportunities of local businesses. Its programs include a monthly networking event for small-business owners and a two-year leadership training program conducted in partnership with the Sydney Business School, the University of Wollongong and the Illawarra Connection (RDA Illawarra 2014).

Not all of the initiatives above will be cost-effective or reasonable for all regions. As highlighted in previous Commission inquiries into migration and tourism, a key question in relation to business and regional promotion initiatives is whether they generate additional economic activity, or merely support activities that would have occurred anyway (PC 2015a, p. 10, 2016b, pp. 466–467).

Answering this question involves, among other things, isolating and quantifying the effect of a policy or program on targeted businesses. The recently established Business Longitudinal Analysis Data Environment offers promise as a tool for evaluating government programs and initiatives that seek to support businesses. Developed by the ABS in partnership with the Department of Industry, Innovation and Science, the Business Longitudinal Analysis Data Environment integrates administrative tax data from the Australian Taxation Office with ABS survey data and enables analysis of business performance over time (Kalisch 2016). It could be used to gain insight into the factors affecting the performance of regional businesses, including government export assistance programs, as well as the impact of product and market diversification (DIIS 2016). Such analysis could help to inform decisions about which kinds of policy support are most effective and offer the best ‘value for money’.

Development for the long term

In recent years, there have been numerous regional programs and initiatives aimed at supporting regional development, often involving significant amounts of funding. For example, the Western Australian Government’s Royalties for Regions (RfR) program has directed over \$6.9 billion of the state’s mining and onshore petroleum royalties into over

3700 infrastructure and community projects since its inception in 2008 (WA DRD 2015, sub. 27, p. 5). The Queensland Government (sub. 26, pp. 6–10) has committed over \$4.4 billion to regional areas through a range of initiatives, including its *Building our Regions* initiative and its *Jobs and Regional Growth Package*. An additional \$10.7 billion was committed to capital works in the 2016-17 Budget, with almost half (\$4.9 billion) being targeted at regional Queensland (Queensland Government, sub. 26, p. 12). At the national level, the NBN is Australia’s largest infrastructure project, with the Australian Government having committed almost \$30 billion to this project to date (PC 2016f). However, the extent to which such infrastructure projects will yield long-term, self-sustaining economic growth is not yet clear, partly due to a lack of evaluation.

Findings on the impact of the WA Royalties for Regions projects have been mixed. The Western Australian Auditor-General reported a number of problems with Royalties for Regions project selection, monitoring, benchmarking and evaluation (box 5.7). It concluded that ‘what long term benefits these projects were expected to deliver and how projects are actually contributing towards achieving the RfR objectives is essentially still unknown’ (OAG 2014, p. 5). However, over 80 per cent of respondents to a 2014 survey of Royalties for Regions project managers (commissioned by the WA Department of Regional Development) considered that their project had met all of its objectives (URS Australia 2014, p. 14). (The survey was completed by 45 project managers, a response rate of 16 per cent.) About half believed that their project had delivered benefits to the community that would last many generations, which was reported as evidence of the sustainability of the program (URS Australia 2014, p. 29).

Box 5.7 Western Australian Auditor-General’s review of Royalties for Regions — key findings

- Projects were submitted for Cabinet approval that did not clearly indicate outcomes to be delivered or demonstrate long-term sustainability.
- Since 2009, the Department had been developing indicators to benchmark and measure the impact of projects against the six Royalties for Regions (RfR) objectives, but these indicators had still not been implemented.
- Not all RfR projects were clearly aligned with one or more of the six RfR objectives, and only half of project business cases reviewed complied with the Department’s requirement to include specific and measurable outcomes.
- At the time of audit, the Department had completed only seven evaluations of RfR projects (which included 12 case studies), but these evaluations only reported on outputs delivered, rather than on whether the projects achieved their intended outcomes.
- The Department had no monitoring system to oversee the progress of individual projects and of the overall RfR program, despite over 3500 projects having been approved (at the time of audit).

Source: OAG (2014).

With such large sums, it is especially important that taxpayers are getting value for money. This highlights the need for governments to have systematic arrangements for project assessment, monitoring and evaluation — and not only considering whether project outputs were delivered or short-term benefits were gained, but whether long-term outcomes and benefits to the community were achieved. This does not appear to have happened.

Inadequate data may be one factor inhibiting effective monitoring and evaluation of projects. Regional Capitals Australia commented that:

Examining the wider regional impact for comparison between regions ... presents a challenge. This is largely due to the unavailability of required data sets.

... RCA found large data gaps associated with understanding the level and drivers of growth and investment in RCCs [regional capital cities] alone. There was almost no data available to understand the comparative impact on a city through regional funding or the impact on a regional area where investments into a city had occurred. [emphasis original] (sub. 30, p. 6)

Improvements to the capacity of government agencies and other trusted parties to access and use public sector and research data could assist in developing and evaluating regional policy (PC 2016a, p. 89).

INITIAL FINDING 5.4

Strategies for adaptation and development are most likely to be successful and sustainable where they:

- have clear objectives and measurable performance indicators
- are preceded by rigorous and transparent analysis and explicit consideration of available alternatives
- include transparent community consultation, public reporting and evaluation (before and after implementation) of the efficacy and cost-effectiveness of programs.

INITIAL FINDING 5.5

There is substantial funding devoted to regional programs across all levels of government. The effectiveness of most of these programs has not been evaluated.

There is scope to achieve better outcomes for regional communities by better targeting existing expenditure.

5.4 Specific adjustment assistance

The impact of economic changes and transitions may place a disproportionate burden on some groups of people. Some workers may become unemployed, some firms may go out

of business and some towns may disappear or decrease significantly in size (as has been the case throughout Australia's history). This can have significant social and distributional effects on people in regional communities.

As noted in chapter 2, successful adaptation is not easy to define. Some people may question the 'success' of regional adaptation where it results in workers and businesses leaving to take up opportunities elsewhere. These changes often generate greater value and so increase the wellbeing of the population overall, but can also have adverse effects on those left behind.

... we are seeing a net out-migration of skilled workforce, because those with skills in demand will leave (and have done so) in the pursuit of employment elsewhere. This leaves regions vulnerable, particularly those who rely on single-industries. (RDA Far North, sub. 9, p. 9)

Given these impacts, governments may at times wish to provide more targeted assistance to people in regional communities who have been disproportionately affected by economic, social or environmental changes and pressures. Under the framework presented in section 5.1, such a policy response would be targeted to the most vulnerable people in tier 3 regional communities. There may also be selected groups of individuals who, although residing in regional communities that are generally performing well, are themselves vulnerable and have particular needs for support in order to make a successful transition.

Guidelines for providing specific assistance

Adjustment assistance in Australia has often been ad hoc and directed at multiple policy objectives. These have included:

... securing employment for displaced workers or business owners, supporting an industry as it goes through a time of change, compensating property owners for the loss of rights or other economic opportunities, and generating new economic opportunities in communities affected by change. (Beer 2015, p. 24)

Historically, assistance has been more likely if a change is policy-induced, or where a region has experienced the loss of a major employer or industry. A recent review of regional adjustment experiences found that governments almost always provided adjustment assistance after a sudden external shock to a rapidly growing industry, though assistance was also common in regions where there had been a longer-term, gradual decline in particular industries (Aither 2014, p. 8).

As a general principle, assistance is best aimed at promoting adaptation and easing the transition process for people, rather than at preserving industries and regions (Aither 2014; PC 2001). Where governments choose to provide specific assistance to facilitate adaptation, consideration should be given to the effectiveness of different kinds of specific assistance.

Assistance to individuals

Governments often wish (and are expected by the community) to provide some assistance to workers facing job losses,²⁹ to compensate for a loss of income, to find new employment or to retrain. Generally available measures, such as those provided under the social security and tax systems (including income support and job search assistance), can help cushion the distributional effects of economic changes (PC 2012b, 2014a).

People are affected by economic changes all the time, and many of those who are adversely affected do not receive any assistance beyond these generally available measures (PC 2001). Relying on tax and income support systems in the first instance promotes fairness and equity among the many thousands of Australians who experience involuntary job losses every year (PC 2012b, pp. 71–72). Some participants expressed concerns about inequitable outcomes when particular industries or regions receive specific assistance while others do not.

Conveniently, there seems to be help for ‘some’ when they get into strife, i.e. communities near capital cities that provide workers for auto, aviation and steel. Yet when one of the ‘other’ communities suffers, the convenience of ‘globalisation’ rises to defend domestic political decisions. (Linda Nadge, sub. 1, p. 2)

On the other hand, there can be good reasons for governments to provide additional assistance (over and above generally available measures) in certain circumstances (IC 1993; PC 2001). Such additional assistance might involve, for example:

... training assistance, advice on establishing a small business, job fairs, information seminars on employment opportunities, assistance and advice on writing job applications and in preparing a contemporary CV for employment and measures to recognise prior learning. (Beer 2015, p. 28)

This additional assistance may be warranted, on equity grounds, where:

- the effects of economic change are sudden, severe and disproportionately affect groups of people who are already vulnerable
- a change is large relative to the affected region’s industry base
- there is limited alternative employment (Aither 2014; PC 2001, p. 59).

In some cases, additional assistance may also be justified on economic efficiency grounds (PC 2014a), where it enables highly vulnerable people to transition into re-employment or retraining rather than entering (or continuing) a ‘downward spiral’ of persistent unemployment and disadvantage. As well as having financial and social impacts, long-term unemployment can make it harder for people to regain employment due to

²⁹ The private sector should also assist displaced workers. It is important that government programs do not relieve businesses of their obligations to assist such workers, including through actions to mitigate ‘phoenix’ activity (where corporate entities are deliberately liquidated in order to avoid paying employee entitlements and other liabilities) (PC 2015b).

erosion of skills, professional networks, confidence and related factors (ABS 2011c). For example, assistance might be provided to overcome information problems about employment and housing prospects in other locations (IC 1993). (Removing regulatory barriers, as discussed in section 5.2, will also help facilitate such transitions and so would reduce the cost of tier 3 assistance.)

Individual specific adjustment assistance (beyond generally available measures) should be reserved for those who would have the most difficulty becoming re-employed (PC 2014a, p. 28). This may be because the affected workers are older or have highly specific skill sets (PC 2001, p. 59). In an evaluation of the effectiveness of worker assistance programs, Beer (2015, p. 29) found that such programs can have benefits, including:

- enabling individuals to retain, enhance and make full use of their skills
- reducing reliance on income support payments
- stimulating economic growth
- ameliorating the social, family and health impacts of unemployment.

In the case of government assistance programs for the Tasmanian forestry industry, targeted re-employment programs assisted people to find alternative employment (box 5.8).

On the other hand, such programs can be misdirected, such as where training provision does not align with contemporary business needs or where displaced workers are encouraged to transition ‘into well-known industries and employment opportunities rather than sectors with long-term prospects’ (Beer 2015, p. 28).

Problems can also arise when governments contribute to false expectations in regional communities about the likely future success of an industry, or when successive governments’ assistance policies create conflicting incentives. This may have occurred in government policy responses to the automotive industry (PC 2014a) and the Tasmanian forestry industry (box 5.8). In the latter case, assistance was initially directed towards encouraging workers and businesses to exit the industry, but a change of government and policy direction led to assistance programs supporting the industry to continue. Conflicting policies can reduce individuals’ incentives to retrain or otherwise plan for changing circumstances.

As well as carefully targeting individual assistance to meet the needs of a regional community, governments must also ensure that assistance is delivered transparently. Transparency aids in promoting public accountability as well as supporting monitoring and evaluation of the effectiveness of assistance measures (PC 2001, p. 84).

Box 5.8 **Transitioning away from forestry in Tasmania**

The forestry industry in Tasmania is relatively small, accounting for only 2 per cent of Gross State Product (Macintosh 2013, p. 2). Market conditions in the industry have been increasingly tough in recent decades, due to increased global competition and changes in demand. In particular, demand for wood products has shifted away from hardwood native forest products to softwood plantation products. These effects were exacerbated by the global financial crisis, the high Australian dollar, the cessation of Gunns Ltd hardwood operations in 2011 and their subsequent liquidation in 2013, causing the size of the forestry industry in Tasmania to shrink (Tasmanian Department of Treasury and Finance 2013).

In 2011, the Australian and Tasmanian Governments signed the Tasmanian Forests Intergovernmental Agreement (TFA), designed to transition away from forestry to a more diverse and sustainable economic base. The agreement involved grants to incentivise industry exit or structural adjustment for businesses involved in harvesting, haulage and sawmilling. Additional support was given to retrenched forestry employees and those voluntarily leaving the industry, to enable them to retrain and find new employment. These schemes appear to have been successful. For example, 95 per cent of retrenched workers who went through Forestworks' Workers Assistance Service were able to find new work (Callan and Bowman 2015, p. 24).

The TFA appears to have been relatively successful in transitioning workers from the forestry industry to other industries. However, it is unclear if this would have been the case without the support packages. Evaluating the TFA, Macintosh (2013) argued that the buyouts and structural adjustment support came at a high cost yet did not meet harvest reduction targets. He was critical of the amount of support provided to the forestry industry given the agreement's stated intention to transition away from forestry.

A change of government in 2014 saw the agreement scrapped, with the new government focused on reforming Forestry Tasmania (the government business enterprise responsible for the management of public forests). Since 2014, Tasmanian forestry production has been growing (ABARES 2016b).

Finally, governments can reduce the need for assistance to individuals after economic disruption by promoting their ability to adapt and respond to changes before they occur. An analogy can be made to policy support in relation to natural disasters. In that context, the Commission has previously cited the need for a greater focus on preparedness and mitigation, and for policies to promote insurance availability and individual financial reliance. Governments should provide relief only in the most extreme events (PC 2014c). When applied to the context of regional assistance more generally, this suggests governments should support individuals' capabilities and assets that enable them to make a successful transition (as discussed in section 5.3), reserving assistance after the fact as a last resort for unexpected circumstances and highly vulnerable groups of people.

Assistance to industries and regions

Often, governments have chosen to provide assistance to specific industries or regions as a whole, to support investment and preserve jobs. Such assistance may be directed at retaining particular industries, or given to infrastructure and community projects in order to

boost economic activity in a region. Historically, this has often been the case where industries have faced structural adjustment as a result of changing policy or market conditions, and where these industries have had strong connections with particular regions; as seen, for example, in the assistance provided to Australia’s automotive industry (Daley and Lancy 2011; PC 2014a).

As noted in the previous section, there can be benefits in targeted investment in infrastructure that can help regional communities more easily take advantage of economic opportunities. However, in the past, regional adjustment assistance has often been a costly and ineffective approach to facilitating transition in regions affected by economic shocks or as part of a broader development strategy (PC 2014a, 2016g). For example, Grattan Institute analysis (Daley and Lancy 2011, p. 22) found that regional and industry assistance programs have often been ‘badged’ as regional economic development projects, despite often doing ‘little to create sustainable economic growth’ or to ensure that benefits accrue to regions in greatest need. In particular, the authors reported that:

- regional job attraction schemes (which subsidise businesses to establish or expand in particular regions) have generally not been economically worthwhile — often imposing significant budget costs and redistributing the location of jobs at a high cost
- regional structural adjustment packages (such as assistance provided to retain automotive manufacturers in a region, and grants provided in response to plant closures) have often come at a high cost per job created (between \$20 000 and \$60 000) and do not appear to have had a significant impact on a region’s long-term employment trends or overall economic performance (compared to similar regions that did not receive such assistance) (Daley and Lancy 2011, p. 26).

The cost of poorly directed assistance was highlighted by Swann, Ogge and Campbell.

When limited resources are spent on supporting capital intensive industries that employ few people, or industries that have little prospect of success due to market conditions, those resources are likely to be wasted. (2016, p. 51)

As well as being costly in terms of governments’ limited resources, poorly designed adjustment assistance programs can also be inequitable (by treating individuals in similar circumstances differently). This was seen, for example, in some aspects of the adjustment assistance provided to Australian farm businesses facing drought (PC 2009a).

In some circumstances, assistance measures may be conducive to successful adaptation where it facilitates the transition of businesses out of an industry — if their position is not self-sustaining. Under severe and unexpected circumstances (such as natural disasters), offering the option of adjustment assistance might be more efficient than no assistance, particularly if an industry has been under sustained pressure and is receiving other government support. As illustrated in the case of assistance to north Queensland banana growers (box 5.9), some businesses might benefit from the option of receiving exit assistance. However, governments can face community pressure to assist businesses to continue operating, as shown in the change of policy with respect to the Tasmanian

forestry industry (away from supporting voluntary exits and towards attempting to rebuild the industry) (box 5.8).

Box 5.9 Assistance for north Queensland banana growers

The cyclone and government response

A severe cyclone caused extensive damage to people's lives, homes and businesses in northern Queensland in 2011, with damage estimated at \$1.4 billion (PC 2014c). Given the extent of the destruction, the Australian and Queensland governments provided emergency relief as well as assistance to help people with the cost of repairing or rebuilding their homes. In addition, grants and loans were provided to businesses to help them retain staff and rebuild their businesses.

Impact on the banana industry

Cyclone Yasi crossed the coast at Mission Beach, a small town between Innisfail and Cardwell that was home to the major suppliers of bananas in Australia (Australian Banana Growers Council 2016). The banana farms in the area were severely impacted, with most trees destroyed, as well as damage to equipment, buildings and houses. In addition, the same region had been struck by Cyclone Larry five years earlier.

The loss of the banana trees was a particular challenge for the banana industry. Prior to the cyclone, plantations could not be insured, and the cost of replacing tree stock is significant.

Australian banana production recovered more quickly following cyclone Yasi than after cyclone Larry (figure). This was possibly a result of the industry assistance provided.

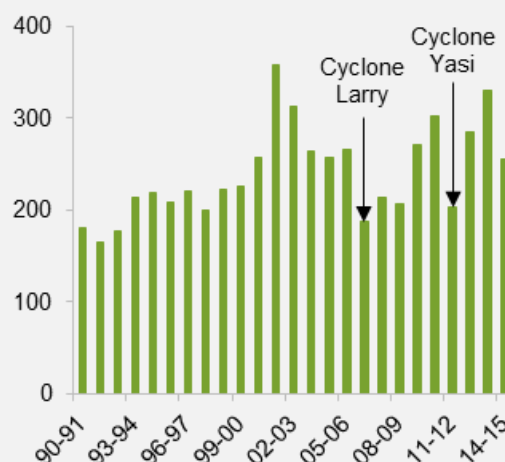
Adjustment in the banana industry and the impact on individual growers

Banana growers in the region had been under sustained financial pressure for about a decade. Just prior to Cyclone Larry, they were affected by a significant disease outbreak (black sigatoka), requiring costly eradication efforts over a number of years (2001–2003). The disease control program was partially subsidised by the Australian and Queensland governments (Shoebridge 2003). The disease outbreak also reduced production levels and the associated quarantine procedures limited what markets (if any) they were allowed to sell in.

By the time Cyclone Yasi struck, some farmers had very high debt levels. The industry was also undergoing significant structural adjustment, with a focus on mechanisation and increasing farm size (Lindsay et al. 2012). The number of growers has also been decreasing — from about 1000 growers in Queensland in 1999 (Queensland Government 1999), to only 294 Australia wide by 2010-11 (Hall and Gleeson 2013).

Australian banana production

Recovery from cyclones (Mt)



Source: FAO (2016).

To help avoid these problems, regional programs should be designed in accordance with the policy principles set out in section 5.3. That is, support should be provided within the context of a strategic development framework designed to build the adaptive capacity of people and businesses in a regional community, to capitalise on a region's strengths and to facilitate self-sustaining growth. Governments should avoid using industry or regional adjustment assistance as 'de facto regional policy' (Beer 2015, p. 22) without a coordinated, strategic regional development policy approach.

INITIAL FINDING 5.6

Individual specific adjustment assistance (beyond generally available measures) is best reserved for unexpected circumstances and highly vulnerable groups of people, and should be aimed at helping individuals make a successful transition to employment. Assistance that creates false expectations about the future success of an industry or economic activity can lead to confusion and reduce individuals' incentives to plan and adapt to changing circumstances.

Assistance to industries and regions has often been costly, ineffective, counter-productive, poorly targeted and inequitable. To avoid these problems, support to assist people to adapt is best provided within the context of a coordinated, strategic development framework designed to capitalise on a region's strengths and to facilitate self-sustaining growth.

There may be some cases in which economic change and the accompanying transition process results in continued decline in employment, and economic activity cannot be sustainably reversed by government assistance. Such circumstances are not new; population movements in Australia leading to regional decline have been an ongoing concern, with many previously thriving settlements shrinking and in some cases disappearing (chapter 3).

Where a region faces long-term, continued decline, with limited prospects for sustainable development, it may be that governments' efforts are best directed at 'manag[ing] population decline gracefully and efficiently' through enabling continued service delivery to residents who wish to remain (RAI, sub. 12, p. 22). This does not necessarily mean that services should be provided within all towns or at the same level as might be expected in a major urban or regional centre. This would likely come at a high cost to the community as a whole. As noted by the Queensland Government (sub. 26, p. 17), effective and efficient delivery of human services and social infrastructure to regional and remote communities 'is complicated by the challenges of distance, isolation, coordination, cost and unique community characteristics'.

By choosing to live in particular geographic areas — whether metropolitan, regional or remote — people make trade-offs between ease of access to (and costs) of goods and services and other lifestyle factors. At the same time, some people may have little practical choice about where they live, such as where they have grown up in a regional community and have strong social ties, including caring responsibilities. Indigenous Australians may

face significant costs in moving away from their communities, including loss of cultural and familial connections and risk to their ability to claim native title.

Taking all these factors into consideration, governments might reasonably seek to ensure remaining residents have access to a minimum level of services, whether these are provided in neighbouring regions or through remote access arrangements. In making decisions about how best to manage declining regions, governments must strike a balance between ensuring remaining residents have access to services that support their wellbeing, and promoting equitable outcomes across the population as a whole.

5.5 Further work to inform strategies for adaptation and transition in regions

As discussed in this chapter, governments have dedicated substantial amounts of money to supporting Australia's regions, yet these have often been ineffective and few have been rigorously evaluated.

The transparent evaluation of programs by all levels of government is essential and should be a high priority. There is scope to achieve better outcomes for regional communities by better targeting existing expenditure.

There may also be scope to trial exemptions of regulations that unnecessarily inhibit people and business owners in regional communities from responding to changing economic circumstances. The Commission has previously recommended fixed-term exemptions from regulatory requirements that inhibit business entry or new business growth, particularly where this involves innovative business models and new products or services (PC 2015b). Specifically, in its *Set-up, Transfer and Closure* report, the Commission recommended legislative reforms in all Australian jurisdictions to give regulators:

... greater capacity to exercise discretion, in particular through the ability to provide a conditions-based regulatory exemption to foster innovation and business entry while still ensuring overarching policy objectives are met and such an exemption would be subject to a public benefits test. (PC 2015b, pp. 223–224)

That review also noted that such an approach could inform regulatory review by giving regulators time 'to watch and assess the risks and benefits of such activity, thereby ensuring policy objectives are maintained while determining the appropriate longer term regulatory response' (PC 2015b, p. 225).

There are many regulations that could be candidates for trial regulatory exemptions to facilitate successful regional transition and development, particularly among those regional communities that are facing the most severe adjustment pressures. These include aspects of planning, zoning and development assessments (box 5.2). The Commission seeks feedback

from participants on regulations and regions where pilot regulatory exemptions could be conducted.

For the final report, the Commission also intends to undertake further analysis of the effectiveness of policy responses implemented in previous transitions. This will be aimed at helping governments avoid repeating past policy mistakes and to achieve the best value for money from both their current and future efforts to support regional communities. The Commission will also examine expenditure on major regional assistance programs.

INFORMATION REQUEST 5.2

The Commission invites participants to comment on where a regional community could benefit from a trial exemption from regulations that are unnecessarily inhibiting transition or development.

A Public consultation

In keeping with its standard practice, the Commission has actively encouraged public participation in this study. However, the Commission has been asked to deliver an initial report in April 2017, which is much earlier than usual for a 12 month study. To meet this deadline, the Commission tailored its initial processes.

An issues paper was not released. However the Commission invited public submissions by 15 February 2017. A total of 36 submissions were subsequently received (table A.1). These submissions are available online at <http://www.pc.gov.au/inquiries/current/transitioning-regions>.

As detailed in table A.2, consultations were held with representatives from the Australian, and State and Territory and regional government departments, agencies and peak bodies, in each of the sectors covered in this study.

The Commission thanks all parties who have contributed to this study and now seeks additional input and participation for its final report. The Commission welcomes further submissions to discuss the substance of the initial report, including responses to the information requests and initial findings.

Table A.1 Submissions^a

<i>Individual or organisation</i>	<i>Submission number</i>
ACT Office of the Chief Minister	33
Association of Mining and Exploration Companies (AMEC)	5
Cairns Regional Council and Advance Cairns	13
Centennial Coal Company	29
Chamber of Minerals and Energy (CME) of Western Australia	28
Chamber of Commerce and Industry Queensland (CCIQ)	17
Head, Brian	36
Hunter Business Chamber	19
Illawarra Business Chamber	15
James Cook University	24
Jobs Australia	31
Latrobe City Council	35 #
Morandini, John	8
Nadge, Linda	1
National Rural Health Alliance	32
Northern Tasmania Development Corporation	7
O'Malley, Denis	4
Queensland Government	26
Queensland Resources Council	16
Regional Australia Institute (RAI)	12
Regional Capitals Australia	30
Regional Cities Victoria (RCV)	23
Regional Development Australia (RDA) Central West	14
Regional Development Australia (RDA) Far North	9
Regional Development Australia (RDA) Mackay-Isaac-Whitsunday (MIW)	25
Regional Development Australia (RDA) Peel WA	11
Regional Development Australia (RDA) Pilbara	6
Regional Development Australia (RDA) Tasmania	3
Rockhampton Regional Council	10 #
South Australian Government	34
Tasmanian Government Minister for State Growth	21
Telstra	18
Tilleard, Robert	2
Upper Spencer Gulf Common Purpose Group	20
Western Australian Department of Regional Development	27
Western Australian Local Government Association (WALGA)	22

^a A hash (#) indicates that the submission includes attachments.

Table A.2 Consultations

Individual or organisation

VICTORIA

Australian Bureau of Statistics (ABS)
PwC Australia
Latrobe Valley Authority
Latrobe City Council
Lifeline Gippsland
Dr Ernesto Valenzuela
Victorian Department of Economic Development, Jobs, Transport and Resources

QUEENSLAND

Queensland Department of State Development
Queensland Treasury
Regional Development Australia (RDA) Townsville and North West Queensland
Townsville City Council
Townsville Enterprise

SOUTH AUSTRALIA

Centacare
Cowell Electric
Housing SA
Petro Diamond Australia
Primary Industries and Regions SA
Regional Development Australia (RDA) Whyalla and Eyre Peninsula
SA Department of State Development
Sudel Industries
TAFE SA
University of South Australia (UniSA)
Whyalla and Eyre Peninsula Heavy Industry Cluster
Whyalla Aged Care Incorporated
Whyalla Chamber of Commerce and Industry
Whyalla City Council
Whyalla Steelworks, Arrium

WESTERN AUSTRALIA

University of Western Australia (UWA) Centre for Regional Development
WA Department of Regional Development and Regional Development Commissions
WA Department of Treasury
WA Department of Finance
WA Department of State Development
WA Local Government Association (WALGA)

(continued next page)

Table A.2 (continued)

Individual or organisation

AUSTRALIAN CAPITAL TERRITORY

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
Australian Treasury
Australian Local Government Association (ALGA)
Bureau of Infrastructure, Transport and Regional Economies (BITRE)
Department of Employment
Department of Industry, Innovation and Science (DIIS)
Department of Infrastructure and Regional Development (DIRD)
Department of Prime Minister and Cabinet
Minerals Council of Australia
National Centre for Social and Economic Modelling (NATSEM)
Office of the Treasurer
Regional Australia Institute (RAI)

Video/teleconference

NSW Department of Industry, Skills and Regional Development
NT Department of the Chief Minister
NT Department of Infrastructure
NT Department of Primary Industry and Resources
NT Department of Trade and Business Innovation
NT Department of Treasury and Finance
James Cook University
Peel Development Commission
Pilbara Development Commission
Primary Industries and Regions South Australia (PIRSA)
Queensland Treasury
Queensland Department of State Development
Queensland Department of Premier and Cabinet
Queensland Department of Agriculture and Fisheries
SA Department of State Development
Tasmanian Department of Premier and Cabinet
Tasmanian Department of State Growth
Tasmanian Department of Treasury and Finance
WA Department of Regional Development

B Each region's adaptive capacity

This appendix contains maps for each state and territory (with insets for capital cities) showing the relative adaptive capacity of each Statistical Area level 2 (SA2) region based on the index developed for this study. An interactive map of the ABS statistical area structure can be found at <https://tinyurl.com/m8agpcz>.

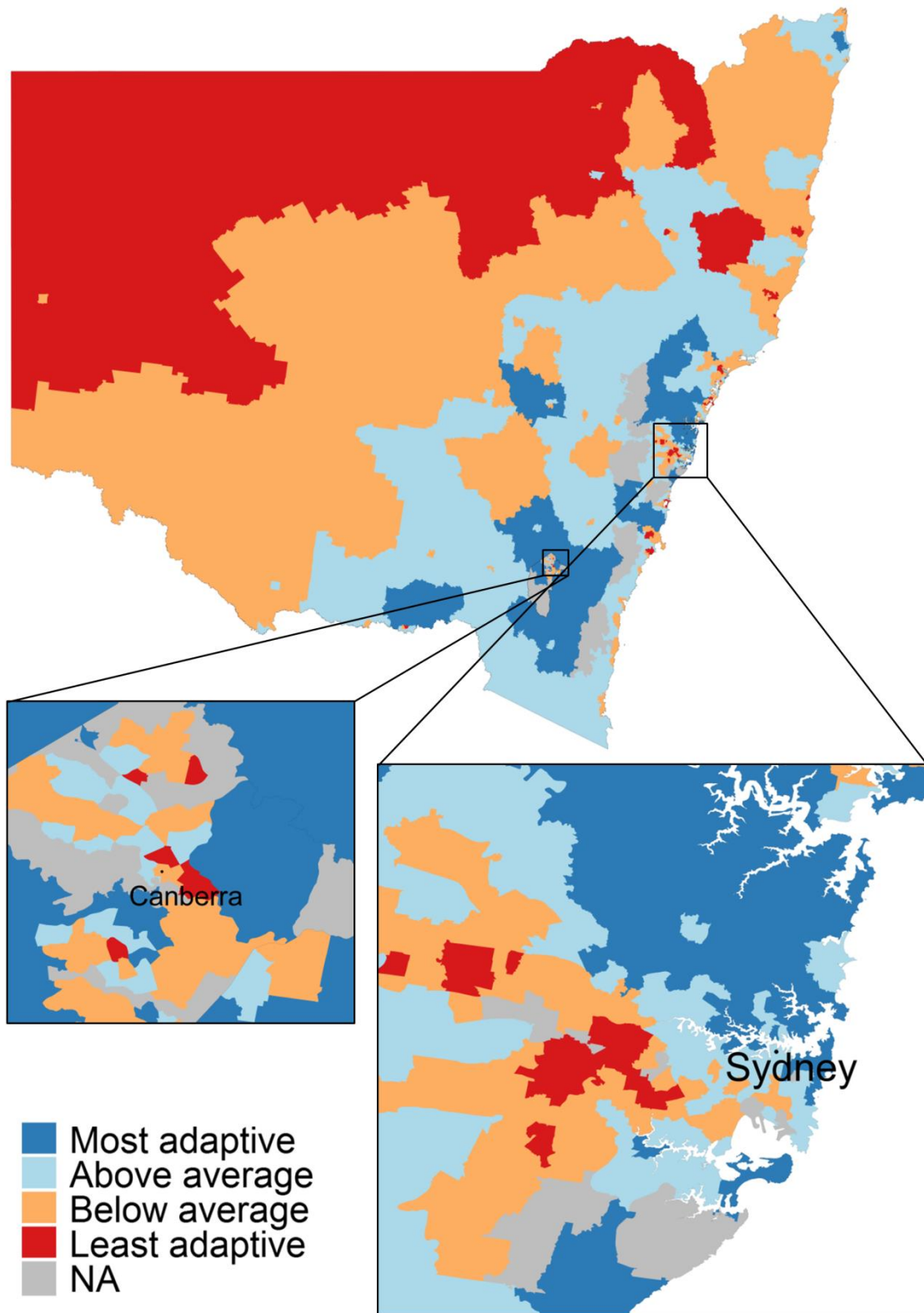
This appendix also contains tables listing which regions are in each category of adaptive capacity based on the index results. The regions are tabled by category of adaptive capacity and listed in alphabetical order for each state/territory.

There are four categories of adaptive capacity.

- *Most adaptive* regions are those whose index value was more than one standard deviation above the mean (256 regions in table B.1).
- *Above average* regions are those above the mean index value and within one standard deviation of the mean (837 regions in table B.2).
- *Below average* regions are those below the mean index value and within one standard deviation of the mean (748 regions in table B.3).
- *Least adaptive* regions are those whose index value was more than one standard deviation below the mean (244 regions in table B.4).

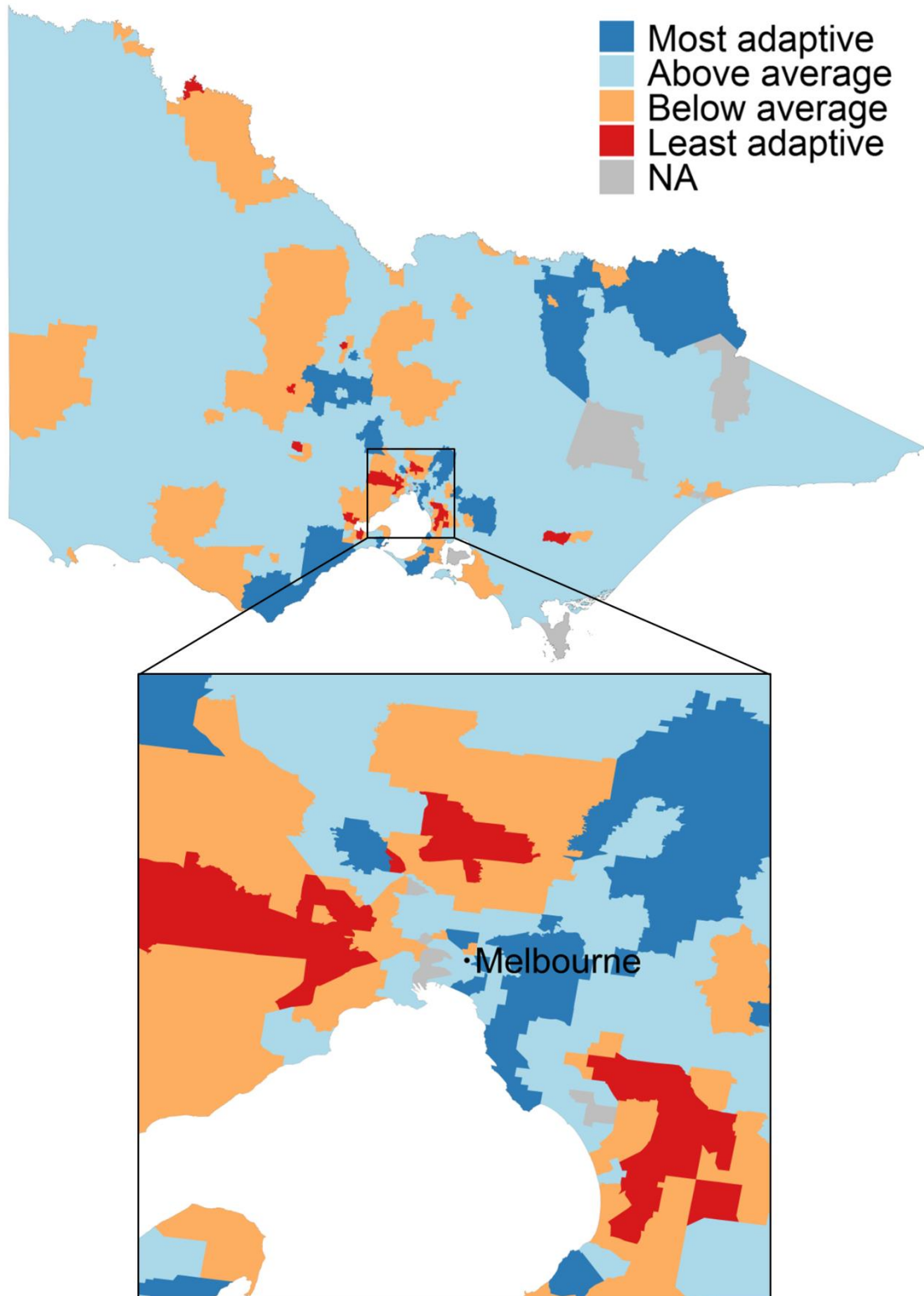
There were 111 SA2 regions not included in the index of adaptive capacity because they lacked the relevant data for the analysis (table B.5). These areas include, but are not limited to, national parks, airports and industrial areas. As such, the final index was calculated using 2085 of the 2196 SA2 regions.

Figure B.1 New South Wales and ACT



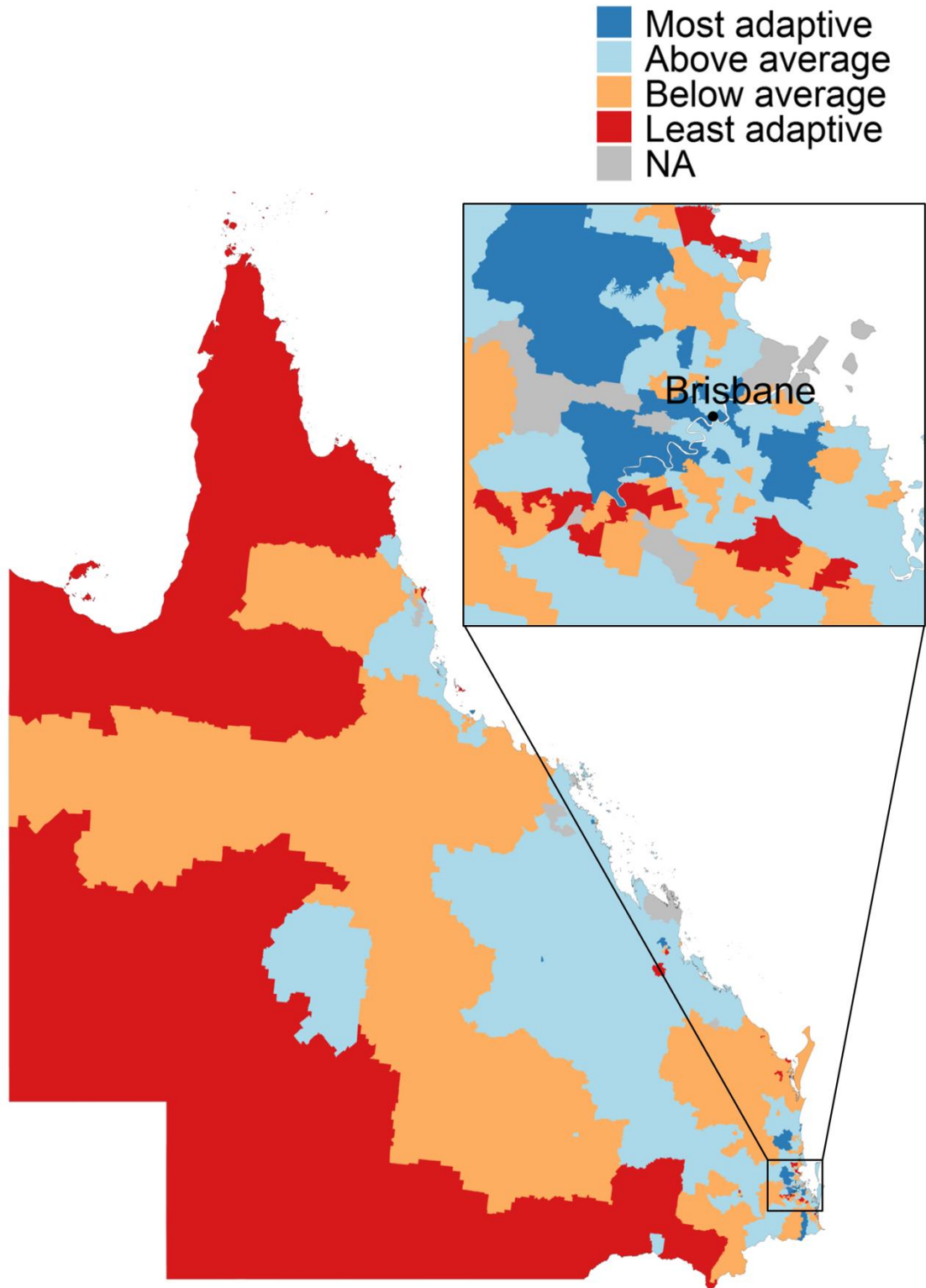
Source: Productivity Commission estimates.

Figure B.2 **Victoria**



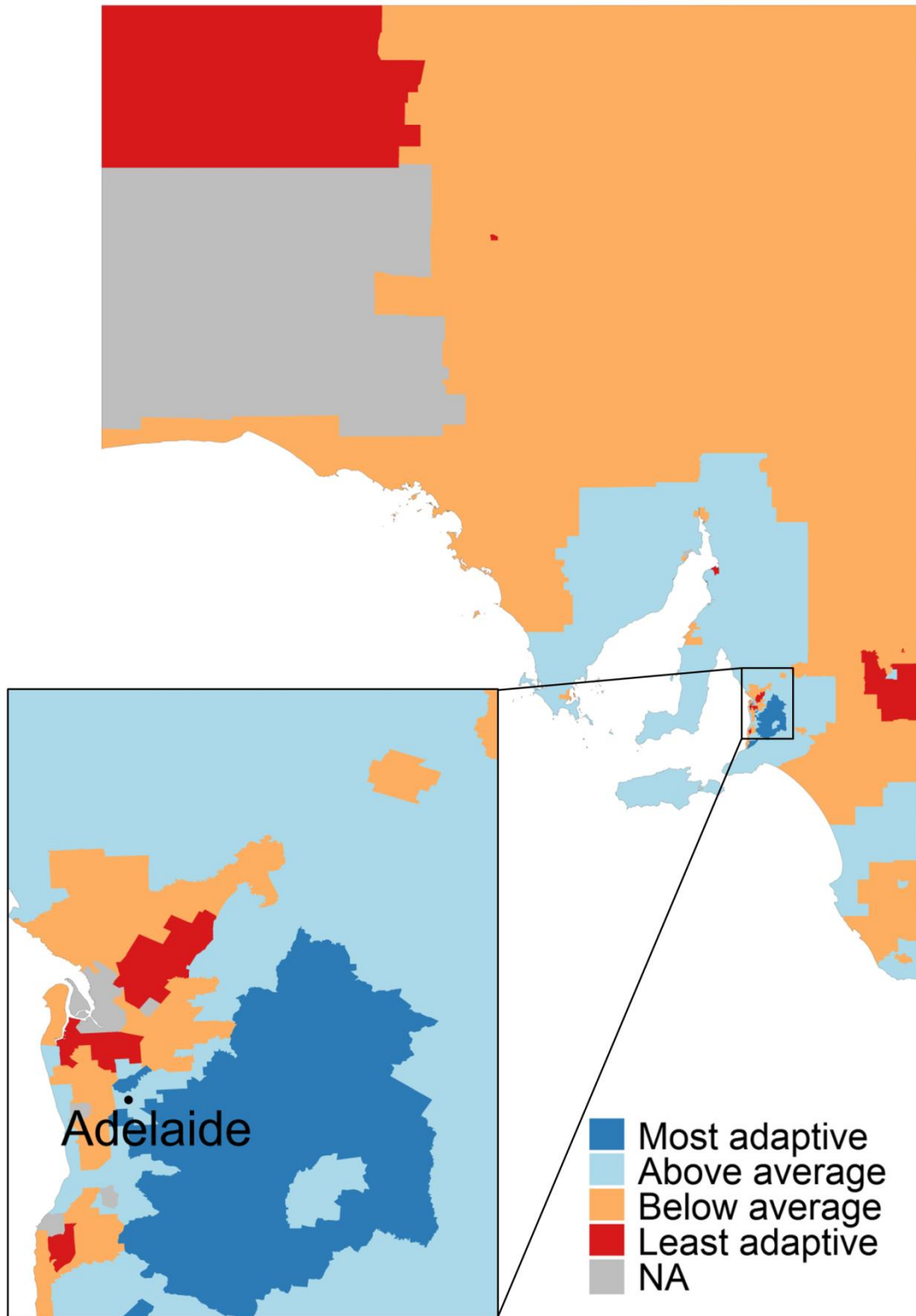
Source: Productivity Commission estimates.

Figure B.3 Queensland



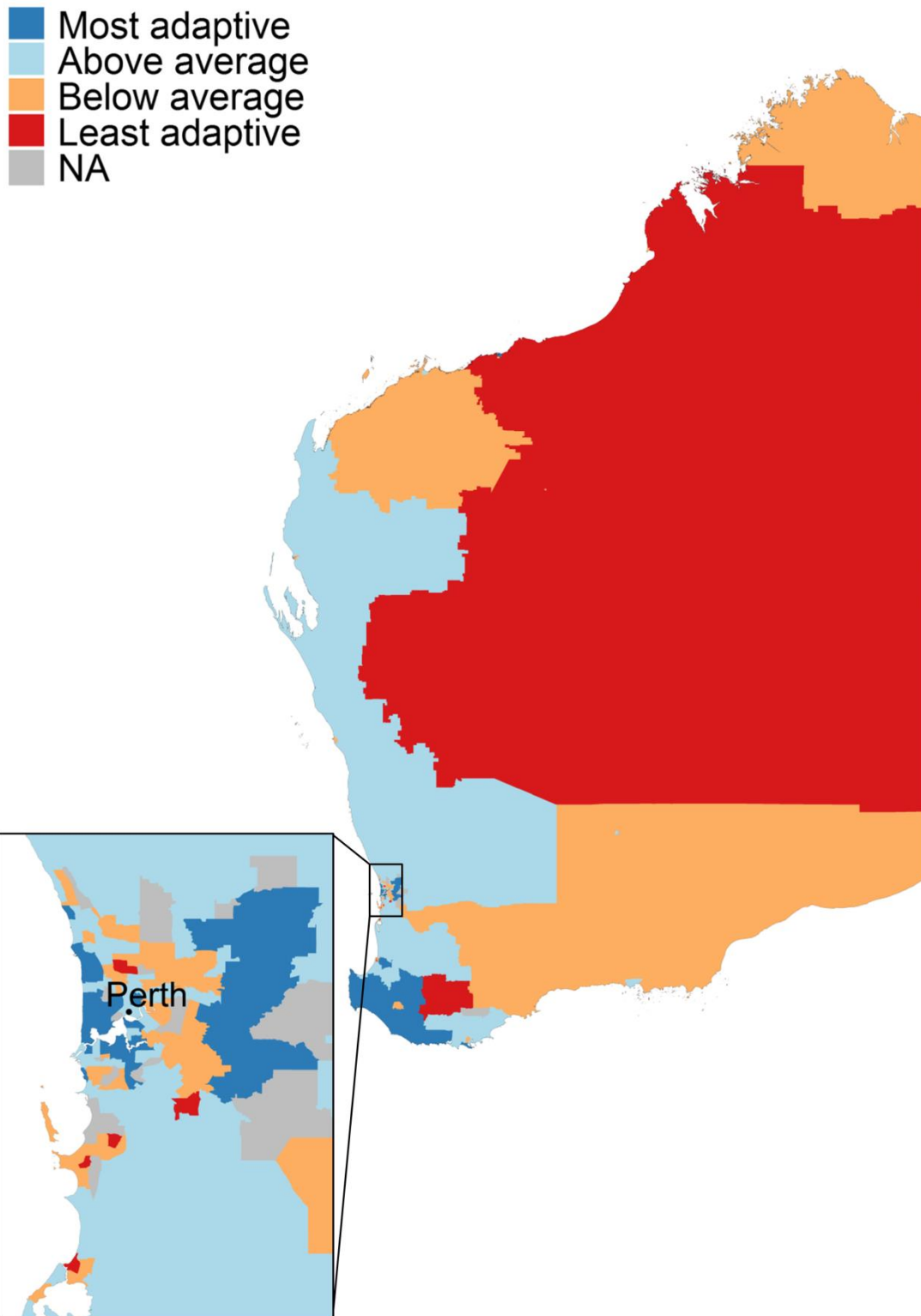
Source: Productivity Commission estimates.

Figure B.4 **South Australia**



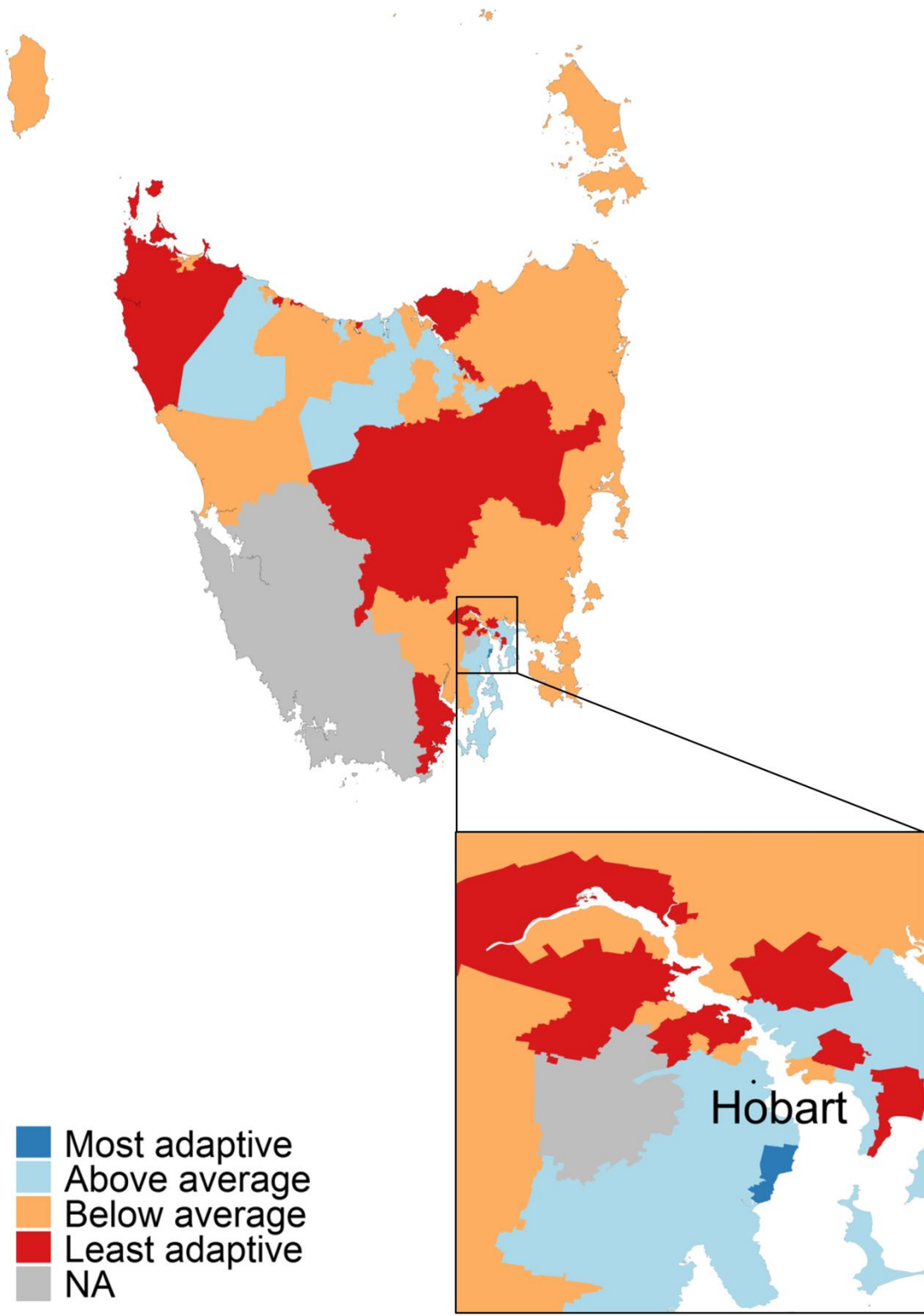
Source: Productivity Commission estimates.

Figure B.5 **Western Australia**



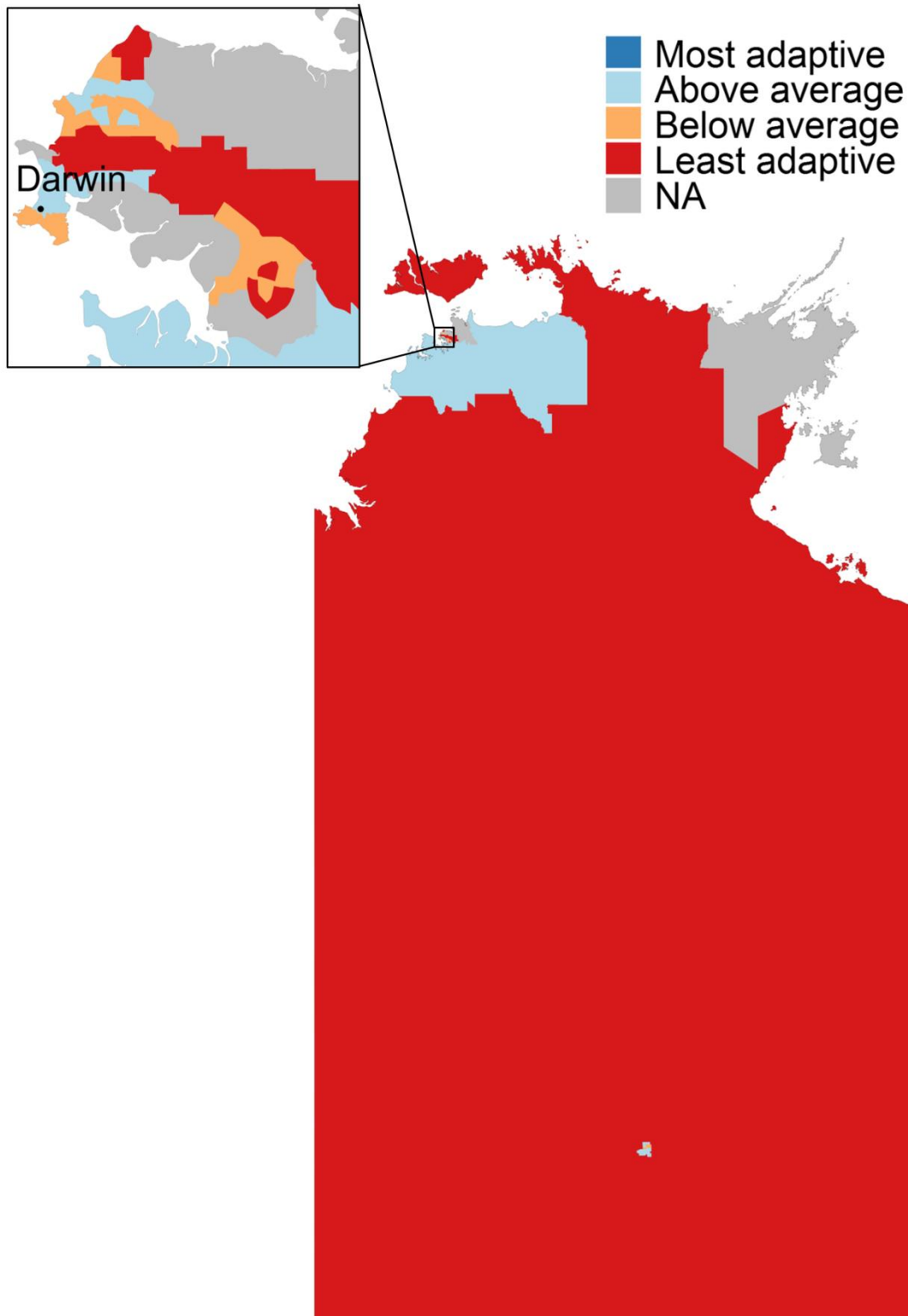
Source: Productivity Commission estimates.

Figure B.6 **Tasmania**



Source: Productivity Commission estimates.

Figure B.7 Northern Territory



Source: Productivity Commission estimates.

Table B.1 Most adaptive (256 regions)

New South Wales		
Albury Region	Dover Heights	Newport - Bilgola
Asquith - Mount Colah	Drummoyne - Rodd Point	Normanhurst - Thornleigh - Westleigh
Avalon - Palm Beach	Dural - Kenthurst - Wisemans Ferry	North Rocks
Balgowlah - Clontarf - Seaforth	Epping - North Epping	North Ryde - East Ryde
Balmain	Forestville - Killarney Heights	North Sydney - Lavender Bay
Bangalow	Frenchs Forest - Belrose	Orange Region
Baulkham Hills (West) - Bella Vista	Galston - Laughtondale	Paddington - Moore Park
Bayview - Elanora Heights	Gladesville - Huntleys Point	Pennant Hills - Cheltenham
Berowra - Brooklyn - Cowan	Glenhaven	Pymble
Berry - Kangaroo Valley	Gordon - Killara	Queanbeyan Region
Bilpin - Colo - St Albans	Heathcote - Waterfall	Robertson - Fitzroy Falls
Bondi - Tamarama - Bronte	Helensburgh	Rose Bay - Vacluse - Watsons Bay
Bondi Beach - North Bondi	Hunters Hill - Woolwich	Singleton Region
Box Head - MacMasters Beach	Illawong - Alfords Point	Southern Highlands
Braidwood	Jilliby - Yarramalong	St Ives
Calga - Kulnura	Kiama Hinterland - Gerringong	Terrey Hills - Duffys Forest
Castle Hill	Lane Cove - Greenwich	Thirroul - Austinmer - Coalcliff
Chatswood (West) - Lane Cove North	Lindfield - Roseville	Turramurra
Cherrybrook	Maitland - North	Wahroonga - Warrawee
Coogee - Clovelly	Manly - Fairlight	Warriewood - Mona Vale
Cooma Region	Manly Vale - Allambie Heights	West Pennant Hills
Cremorne - Cammeray	Merewether - The Junction	Willoughby - Castle Cove - Northbridge
Cronulla - Kurnell - Bundeena	Mosman	Woollahra
Double Bay - Bellevue Hill	Mullumbimby	Yass Region
Victoria		
Albert Park	Caulfield - South	Kew
Armadale	Chiltern - Indigo Valley	Kew East
Ashburton (Vic.)	Donvale - Park Orchards	Lorne - Anglesea
Balwyn	East Melbourne	Macedon
Balwyn North	Elsternwick	Malvern - Glen Iris
Beaumaris	Eltham	Malvern East
Blackburn	Emerald - Cockatoo	Melbourne Airport
Brighton (Vic.)	Flinders	Mount Dandenong - Olinda
Brighton East	Gisborne	Mount Eliza
Bunyip - Garfield	Glen Iris - East	Otway
Camberwell	Hampton	Panton Hill - St Andrews
Carlton North - Princes Hill	Hawthorn	Parkville
Castlemaine Region	Hawthorn East	Plenty - Yarrambat
Caulfield - North	Ivanhoe East - Eaglemont	Queenscliff

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Table B.1 (continued)

Research - North Warrandyte	Surrey Hills (West) - Canterbury	Warrandyte - Wonga Park
Sandringham - Black Rock	Toorak	Winchelsea
South Yarra - West	Torquay	Woodend
Strathfieldsaye	Towong	Yackandandah
Surrey Hills (East) - Mont Albert	Wangaratta Region	Yarra - North
Queensland		
Ascot	Emerald	Norman Park
Ashgrove	Fig Tree Pocket	Paddington - Milton
Balmoral	Frenchville - Mount Archer	Peregian
Bardon	Glenlee - Rockyview	Pinjarra Hills - Pullenvale
Bellbowrie - Moggill	Grange	Red Hill (Qld)
Belmont - Gumdale	Hamilton (Qld)	Rochedale - Burbank
Bridgeman Downs	Hawthorne	Samford Valley
Brisbane City	Hendra	Seventeen Mile Rocks - Sinnamon Park
Brookfield - Kenmore Hills	Indooroopilly	Sherwood
Bulimba	Jindalee - Mount Ommaney	South Brisbane
Caloundra Hinterland	Kenmore	Tamborine - Canungra
Camp Hill	Magnetic Island	Tarragindi
Carindale	Maroochy Hinterland	The Gap
Chapel Hill	McDowall	Westlake
Chelmer - Graceville	Middle Ridge	Wilston
Corinda	Mount Pleasant - Glenella	Yeronga
Dayboro	New Farm	
Eatons Hill	Noosa Heads	
South Australia		
Adelaide Hills	Glenside - Beaumont	North Adelaide
Aldgate - Stirling	Goodwood - Millswood	Toorak Gardens
Belair	Hahndorf - Echunga	Uraidla - Summertown
Burnside - Wattle Park	Lobethal - Woodside	Walkerville
Clarendon	Mitcham (SA)	Willunga
Coromandel Valley	Mount Barker Region	
Western Australia		
Applecross - Ardross	Dardanup	Kalamunda - Maida Vale - Gooseberry Hill
Augusta	Denmark	Karrinyup - Gwelup - Carine
Bateman	Duncraig	Leeming
Booragoon	East Fremantle	Lesmurdie - Bickley - Carmel
Bridgetown - Boyup Brook	Floreat	Little Grove - Elleker
Bull Creek	Gidgegannup	Manning - Waterford
Busselton Region	Glen Forrest - Darlington	Margaret River
City Beach	Hillarys	Melville
Claremont (WA)	Iluka - Burns Beach	Mosman Park - Peppermint Grove
Cottesloe	Jandakot	Mount Hawthorn - Leederville

(continued next page)

Table B.1 (continued)

Mount Lawley - Inglewood	Riverton - Shelley - Rossmoyne	The Vines
Mundaring	Roleystone	Trigg - North Beach - Watermans Bay
Nedlands - Dalkeith - Crawley	Sorrento - Marmion	Wembley - West Leederville - Glendalough
North Coogee	South Perth - Kensington	Wembley Downs - Churchlands - Woodlands
Pemberton	Subiaco - Shenton Park	Winthrop
Port Hedland	Swanbourne - Mount Claremont	
Tasmania		
Taroona - Bonnet Hill		
Northern Territory		
Australian Capital Territory		
ACT - South West	Forrest	Red Hill (ACT)
Chapman	Hall	Yarralumla
Deakin	Majura	
Fadden	O'Malley	

Source: Productivity Commission estimates.

Table B.2 Above average adaptive capacity (837 regions)

New South Wales

Adamstown - Kotara	Coramba - Nana Glen - Bucca	Jindabyne - Berridale
Albion Park - Macquarie Pass	Corowa Region	Junee
Albury - East	Cromer	Kariong
Albury - South	Crows Nest - Waverton	Katoomba - Leura
Armidale	Croydon Park - Enfield	Kellyville
Armidale Region - South	Darlinghurst	Kensington - Kingsford
Avoca Beach - Copacabana	Dee Why - North Curl Curl	Kiama
Balgownie - Fairy Meadow	Deniliquin	Kiama Downs - Minnamurra
Ballina Region	Dorrigo	Kingsgrove (North) - Earlwood
Bathurst	Douglas Park - Appin	Kingsgrove (South) - Bardwell Park
Bathurst Region	Dubbo Region	Korora - Emerald Beach
Baulkham Hills (East)	Dulwich Hill - Lewisham	Kurrajong Heights - Ebenezer
Beacon Hill - Narraweena	Dungog	Kyogle
Bega - Tathra	Eastwood - Denistone	Lawson - Hazelbrook - Linden
Bega-Eden Hinterland	Elderslie - Harrington Park	Leichhardt - Annandale
Bellingen	Emu Plains - Leonay	Lennox Head - Skennars Head
Blackheath - Megalong Valley	Engadine - Loftus	Lilyfield - Rozelle
Blaxland - Warrimoo - Lapstone	Erina - Green Point	Lismore Region
Blayney	Ermington - Rydalmere	Lithgow Region
Bombala	Ersleville - Alexandria	Macquarie Park - Marsfield
Bondi Junction - Waverly	Eurobodalla Hinterland	Malabar - La Perouse - Chifley
Botany	Figtree - Keiraville	Maroubra
Bowral	Five Dock - Abbotsford	Menai - Lucas Heights - Woronora
Branxton - Greta - Pokolbin	Forbes	Miranda - Yowie Bay
Broulee - Tomakin	Freshwater - Brookvale	Mittagong
Brunswick Heads - Ocean Shores	Glebe - Forest Lodge	Moama
Bulahdelah - Stroud	Glenmore Park - Regentville	Morisset - Cooranbong
Burwood - Croydon	Glenwood	Mortdale - Penshurst
Byron Bay	Gloucester	Moss Vale - Berrima
Camden - Ellis Lane	Goulburn Region	Mudgee
Canterbury (North) - Ashbury	Gundagai	Mudgee Region - East
Caringbah - Lilli Pilli	Gunnedah	Mudgee Region - West
Carlingford	GyMEA - Grays Point	Mulgoa - Luddenham - Orchard Hills
Cessnock Region	Haberfield - Summer Hill	Murwillumbah Region
Charlestown - Dudley	Hill Top - Colo Vale	Muswellbrook
Chatswood (East) - Artarmon	Homebush	Muswellbrook Region
Cobbitty - Leppington	Homebush Bay - Silverwater	Narrabeen - Collaroy
Concord - Mortlake - Cabarita	Hornsby - Waitara	Narrabri
Concord West - North Strathfield	Horsley - Kembla Grange	Nelson Bay Peninsula
Cooma	Horsley Park - Kemps Creek	Neutral Bay - Kirribilli
Cootamundra	Huskisson - Vincentia	Newcastle - Cooks Hill

(continued next page)

Table B.2 (continued)

Newtown - Camperdown - Darlington	Redhead	Terrigal - North Avoca
Niagara Park - Lisarow	Rouse Hill - Beaumont Hills	The Oaks - Oakdale
Oatlands - Dundas Valley	Ryde - Putney	Tocumwal - Finley - Jerilderie
Oatley - Hurstville Grove	Sans Souci - Ramsgate	Tomerong - Wandandian - Woollamia
Orange - North	Saratoga - Davistown	Tumbarumba
Ourimbah - Fountaindale	Scone	Tumut Region
Oyster Bay - Como - Jannali	Scone Region	Ulladulla Region
Panania - Milperra - Picnic Point	Seaham - Woodville	Umina - Booker Bay - Patonga
Parkes (NSW)	Shellharbour - Flinders	Unanderra - Mount Kembla
Parklea - Kellyville Ridge	Singleton	Valentine - Eleebana
Peakhurst - Lugarno	South Hurstville - Blakehurst	Wagga Wagga - East
Petersham - Stanmore	Springwood - Winmalee	Wagga Wagga - North
Picton - Tahmoor - Buxton	St Leonards - Naremburn	Wagga Wagga Region
Pitt Town - McGraths Hill	Strathfield	Wamberal - Forresters Beach
Point Clare - Koolewong	Surry Hills	Wangi Wangi - Rathmines
Port Macquarie - East	Sutherland - Kirrawee	Warragamba - Silverdale
Port Macquarie Region	Swansea - Caves Beach	Wentworth Falls
Potts Point - Woolloomooloo	Sydenham - Tempe - St Peters	West Ryde - Meadowbank
Pymont - Ultimo	Sydney - Haymarket - The Rocks	West Wyalong
Quakers Hill - Acacia Gardens	Sylvania - Taren Point	Winston Hills
Queanbeyan West - Jerrabomberra	Tamworth Region	Woonona - Bulli - Russell Vale
Randwick	Tea Gardens - Hawks Nest	Yarramundi - Londonderry
Redfern - Chippendale	Temora	Yass
Victoria		
Abbotsford	Bendigo Region - South	Carrum - Patterson Lakes
Alexandra	Bentleigh - McKinnon	Castlemaine
Alfredton	Bentleigh East	Cheltenham - Highett (East)
Alphington - Fairfield	Berwick - North	Cheltenham - Highett (West)
Ararat Region	Blackburn South	Chirside Park
Ascot Vale	Box Hill	Churchill
Ashwood - Chadstone	Box Hill North	Clifton Springs
Aspendale Gardens - Waterways	Bright - Mount Beauty	Colac Region
Bacchus Marsh	Brunswick	Collingwood
Bacchus Marsh Region	Brunswick East	Corangamite - North
Ballarat	Brunswick West	Cranbourne South
Bannockburn	Bruthen - Omeo	Creswick - Clunes
Beaconsfield - Officer	Bulleen	Croydon Hills - Warranwood
Beaufort	Buloke	Daylesford
Beechworth	Buninyong	Dingley Village
Belgrave - Selby	Burwood	Docklands
Benalla	Burwood East	Doncaster
Benalla Region	Camperdown	Doncaster East
Bendigo Region - North	Carnegie	Drouin

(continued next page)

Table B.2 (continued)

East Bendigo - Kennington	Maiden Gully	Prahran - Windsor
Edithvale - Aspendale	Mansfield (Vic.)	Richmond (Vic.)
Elwood	Maribyrnong	Riddells Creek
Essendon - Aberfeldie	Melbourne	Ringwood
Euroa	Mentone	Ringwood East
Fitzroy	Mildura Region	Ringwood North
Fitzroy North	Mitcham (Vic.)	Rochester
Flora Hill - Spring Gully	Moira	Romsey
Forest Hill	Monbulk - Silvan	Rosedale
Foster	Montmorency - Briar Hill	Rowville - Central
Frankston South	Montrose	Rowville - North
Gannawarra	Moonee Ponds	Rowville - South
Glen Waverley - East	Moorabbin - Heatherton	Rutherglen
Glen Waverley - West	Mooroolbark	Sale
Glenelg (Vic.)	Mordialloc - Parkdale	Seddon - Kingsville
Golden Plains - North	Mount Baw Baw Region	Shepparton Region - East
Golden Plains - South	Mount Evelyn	Shepparton Region - West
Gordon (Vic.)	Mount Martha	Smythes Creek
Greensborough	Mount Waverley - North	South Melbourne
Greenvale - Bulla	Mount Waverley - South	South Yarra - East
Hamilton (Vic.)	Moyne - West	Southbank
Healesville - Yarra Glen	Mulgrave	Southern Grampians
Heidelberg - Rosanna	Murrumbeena	St Arnaud
Highton	Myrtleford	St Kilda
Horsham	Nagambie	St Kilda East
Horsham Region	Narre Warren North	Stawell
Hughesdale	Newport	Strathmore
Hurstbridge	Newtown (Vic.)	Sunbury
Irymple	Nhill Region	Swan Hill
Ivanhoe	Niddrie - Essendon West	Taylors Lakes
Keilor	North Melbourne	Templestowe
Kensington	Northcote	Templestowe Lower
Kerang	Numurkah	Thornbury
Kinglake	Nunawading	Trafalgar (Vic.)
Knoxfield - Scoresby	Oakleigh - Huntingdale	Upper Yarra Valley
Koo Wee Rup	Ocean Grove - Barwon Heads	Upwey - Tecoma
Korumburra	Orbost	Vermont
Kyabram	Ormond - Glen Huntly	Vermont South
Kyneton	Pascoe Vale South	Viewbank - Yallambie
Leongatha	Paynesville	Wallan
Lilydale - Coldstream	Pearcedale - Tooradin	Wandin - Seville
Lockington - Gunbower	Phillip Island	Wantirna
Longford - Loch Sport	Point Cook	Wantirna South
Lysterfield	Point Nepean	Warragul
Maffra	Port Melbourne	Warrnambool - North

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Table B.2 (continued)

Warrnambool - South	Williamstown	Yarraville
Wattle Glen - Diamond Creek	Yallourn North - Glengarry	Yarriambiack
Wheelers Hill	Yarra Valley	Yea
Whittlesea	Yarram	
Queensland		
Agnes Water - Miriam Vale	Chermside West	Hills District
Airlie - Whitsundays	Chinchilla	Holland Park
Albany Creek	Clayfield	Holland Park West
Albion	Clear Island Waters	Hope Island
Alderley	Clermont	Ingham Region
Andergrove - Beaconsfield	Cleveland	Ipswich - North
Annandale	Clifton Beach - Kewarra Beach	Jacobs Well - Alberton
Annerley	Clinton - New Auckland	Johnstone
Aspley	Coolum Beach	Kangaroo Point
Auchenflower	Coorparoo	Karalee - Barellan Point
Babinda	Cornubia - Carbrook	Karana Downs
Banana	Crows Nest - Rosalie	Kedron - Gordon Park
Belgian Gardens - Pallarenda	Currumbin Valley - Tallebudgera	Kelvin Grove - Herston
Benowa	Daintree	Kingaroy Region - South
Biloela	Daisy Hill	Kuraby
Birkdale	Diddillibah - Rosemount	Kuranda
Bohle Plains	East Brisbane	Landsborough
Boonah	East Mackay	Lockyer Valley - West
Boondall	Eight Mile Plains	Logan Village
Bouldercombe	Eimeo - Rural View	Longreach
Boyne Island - Tannum Sands	Elimbah	Macgregor (Qld)
Bribie Island	Esk	Mackay Harbour
Brighton (Qld)	Eumundi - Yandina	Main Beach
Brinsmead	Everton Park	Malanda - Yungaburra
Broadbeach Waters	Fairfield - Dutton Park	Manly - Lota
Broadsound - Nebo	Fortitude Valley	Manly West
Buddina - Minyama	Freshwater - Stratford	Mansfield (Qld)
Buderim - North	Geebung	Marcoola - Mudjimba
Buderim - South	Gladstone Hinterland	Middle Park - Jamboree Heights
Bundall	Glass House Mountains	Miles - Wandoan
Burpengary - East	Goondiwindi	Mitchelton
Calamvale - Stretton	Gracemere	Moorooka
Cambooya - Wyreema	Greenbank	Moranbah
Cannon Hill	Greenslopes	Morayfield
Carina	Guanaba - Springbrook	Morningside - Seven Hills
Carina Heights	Gympie Region	Mount Gravatt
Carseldine	Helensvale	Mudgeeraba - Bonogin
Cashmere	Herberton	Mundingburra
Central Highlands - East	Highfields	Murarrie
Central Highlands - West	Highgate Hill	Narangba

(continued next page)

Table B.2 (continued)

Newmarket	Robina	Tingalpa
Newstead - Bowen Hills	Rochedale South - Priestdale	Toowong
Noosa Hinterland	Rockhampton Region - East	Toowoomba - East
Noosaville	Rockhampton Region - North	Toowoomba - West
Norman Gardens	Rockhampton Region - West	Townsville - South
North Lakes - Mango Hill	Roma	Townsville City - North Ward
Northern Beaches	Runaway Bay	Tully
Northgate - Virginia	Salisbury - Nathan	Underwood
Nudgee - Banyo	Sandgate - Shorncliffe	Upper Caboolture
Nundah	Sarina	Upper Kedron - Ferny Grove
Ooralea - Bakers Creek	Scarborough - Newport	Wakerley
Ormiston	Seaforth - Calen	Walkerston - Eton
Oxley (Qld)	Shailer Park	Wambo
Pallara - Willawong	Sheldon - Mount Cotton	Wamuran
Palmwoods	Shoal Point - Bucasia	Wavell Heights
Paradise Point - Hollywell	Sippy Downs	Wellington Point
Parkinson - Drewvale	Southern Downs - East	West End
Petrie	Spring Hill	West Mackay
Pioneer Valley	Springwood	Whitfield - Edge Hill
Pittsworth	St Lucia	Windsor
Proserpine	Stafford Heights	Wishart
Rangeville	Sunnybank	Wolffdene - Bahrs Scrub
Redland Bay	Sunnybank Hills	Woodford - D'Aguilar
Redland Islands	Sunshine Beach	Woolloongabba
Redlynch	Taringa	Woolloowin - Lutwyche
Reedy Creek - Andrews	Telina - Toolooa	Worongary - Tallai
Ripley	Tewantin	Wynnum
Riverhills	The Range - Allenstown	Yeppoon
Robertson	Thornlands	
South Australia		
Aberfoyle Park	Glenelg (SA)	Loxton
Adelaide	Golden Grove	Lyndoch
Athelstone	Goolwa - Port Elliot	Mallala
Barossa - Angaston	Goyder	Mannum
Bellevue Heights	Grant	Marino - Seaview Downs
Blackwood	Hallett Cove	McLaren Vale
Brighton (SA)	Happy Valley	Mount Barker
Clare	Henley Beach	Murray Bridge Region
Colonel Light Gardens	Highbury - Dernancourt	Nailsworth - Broadview
Eyre Peninsula	Jamestown	Nairne
Flagstaff Hill	Kadina	Naracoorte
Flinders Ranges	Kangaroo Island	Norwood (SA)
Fulham	Kimba - Cleve - Franklin Harbour	One Tree Hill
Gawler - North	Kingston - Robe	Panorama
Gilbert Valley	Light	Payneham - Felixstow

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Table B.2 (continued)

Peterborough - Mount Remarkable	Strathalbyn	Wakefield - Barunga West
Port Pirie Region	Strathalbyn Region	West Beach
Prospect	Tanunda	West Lakes
Redwood Park	Tatiara	Yankalilla
Rostrevor - Magill	Unley - Parkside	Yorke Peninsula - North
St Peters - Marden	Victor Harbor	Yorke Peninsula - South
Western Australia		
Albany	Exmouth	Mundijong
Albany Region	Forrestdale - Harrisdale - Piara Waters	Murdoch - Kardinya
Anketell - Wandi	Fremantle	Murray
Australind - Leschenault	Fremantle - South	Narrogin
Baldivis	Gelorup - Dalyellup - Stratham	Noranda
Banjup	Geraldton - North	North Perth
Bassendean - Eden Hill - Ashfield	Geraldton - South	Northam
Bayonet Head - Lower King	Gingin - Dandaragan	Northampton - Mullewa - Greenough
Bayswater - Embleton - Bedford	Greenwood - Warwick	Ocean Reef
Beeliar	Halls Head - Erskine	Padbury
Bicton - Palmyra	Harvey	Parkwood - Ferndale - Lynwood
Bullsbrook	Hazelmere - South Guildford	Perth City
Busselton	Heathridge - Connolly	Pinjarra
Byford	Helena Valley - Koongamia	Plantagenet
Canning Vale - East	Huntingdale - Southern River	Port Kennedy
Canning Vale - West	Innaloo - Doubleview	Scarborough
Capel	Irwin	Serpentine - Jarrahdale
Carramar	Joondalup - Edgewater	Singleton - Golden Bay - Secret Harbour
Casuarina - Wellard (East)	Kalgoorlie	Stirling - Osborne Park
Chidlow	Kalgoorlie - North	Stratton - Jane Brook
Chittering	Karratha	Success - Hammond Park
Collie	Katanning	Tapping - Ashby - Sinagra
Como	Kingsley	Toodyay
Coogee	Madeley - Darch - Landsdale	Victoria Park - Lathlain - Burswood
Cunderdin	Mandurah - East	Wagin
Currambine - Kinross	Mandurah - North	Waroona
Dawesville - Bouvard	Merredin	Wattleup
Dianella	Mindarie - Quinns Rocks - Jindalee	Willetton
Donnybrook - Balingup	Moora	Woodvale
Dowerin	Morawa	Yanchep
East Victoria Park - Carlisle	Mount Nasura - Mount Richon - Bedfordale	Yokine - Coolbinia - Menora
Ellenbrook	Mukinbudin	York - Beverley
Esperance	Mullaloo - Kallaroo	

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Table B.2 (continued)

Tasmania		
Bruny Island - Kettering	Launceston	Sandy Bay
Cambridge	Legana	South Arm
Deloraine	Lenah Valley - Mount Stuart	South Hobart - Fern Tree
Geilston Bay - Risdon	Lindisfarne - Rose Bay	Trevallyn
Grindelwald - Lanena	Margate - Snug	Turners Beach - Forth
Hadspen - Carrick	Mount Nelson - Dynnyrne	Waratah
Hobart	Norwood (Tas.)	West Hobart
Howrah - Tranmere	Perth - Evandale	West Launceston
Kingston - Huntingfield	Port Sorell	
Kingston Beach - Blackmans Bay	Riverside	
Northern Territory		
Alligator	Larapinta	Stuart Park
Anula	Leanyer	Virginia
Brinkin - Nakara	Mount Johns	Wanguri
Fannie Bay - The Gardens	Parap	Weddell
Humpty Doo	Rapid Creek	Woolner - Bayview - Winnellie
Jingili	Ross	
Australia Capital Territory		
Acton	Flynn (ACT)	Macarthur
Ainslie	Fraser	McKellar
Aranda	Garran	Melba
Conder	Giralang	Nicholls
Cook	Hackett	O'Connor (ACT)
Curtin	Hawker	Pearce
Dickson	Holder	Spence
Duffy	Hughes	Theodore
Evatt	Isaacs	Torrens
Farrer	Kaleen	Weetangera

Source: Productivity Commission estimates.

Table B.3 Below average adaptive capacity (748 regions)

New South Wales

Albion Park Rail	Coffs Harbour - South	Holsworthy - Wattle Grove
Albury - North	Condell Park	Hoxton Park - Horningsea Park
Anna Bay	Condobolin	Hurstville
Armidale Region - North	Coonabarabran	Ingleburn - Denham Court
Arncliffe - Bardwell Valley	Corowa	Inverell
Ashfield	Corrimal - Tarrawanna - Bellambi	Inverell Region - West
Badgerys Creek - Greendale	Cowra	Jamisonstown - South Penrith
Ballina	Cowra Region	Karabar
Bargo	Culburra Beach	Kempsey Region
Bass Hill - Georges Hall	Dapto - Avondale	Kincumber - Picketts Valley
Bateau Bay - Killarney Vale	Deniliquin Region	Kingscliff - Fingal Head
Batemans Bay	Doonside - Woodcroft	Kingswood - Werrington
Batemans Bay - South	Dubbo - East	Kogarah
Bathurst - East	Dubbo - South	Kogarah Bay - Carlton - Allawah
Belmont - Bennetts Green	Dubbo - West	Kurri Kurri - Abermain
Belmont South - Blacksmiths	Eden	Lake Munmorah - Mannering Park
Belmore - Belfield	Edensor Park	Lalor Park - Kings Langley
Bexley	Edgeworth - Cameron Park	Lambton - New Lambton
Blacktown (East) - Kings Park	Erskine Park	Laurieton - Bonny Hills
Blacktown (North) - Marayong	Evans Head	Leeton
Blacktown (South)	Forster	Lemon Tree Passage - Tanilba Bay
Bolton Point - Teralba	Forster-Tuncurry Region	Leumeah - Minto Heights
Bonnells Bay - Silverwater	Gilgandra	Lidcombe - Regents Park
Bossley Park - Abbotsbury	Girraween - Westmead	Lismore
Bradbury - Wedderburn	Glen Innes	Lithgow
Broken Hill	Glendale - Cardiff - Hillsborough	Macksville - Scotts Head
Budgewoi - Buff Point - Halekulani	Goonellabah	Maclean - Yamba - Iluka
Callala Bay - Currarong	Gosford - Springfield	Maitland
Cambridge Park	Goulburn	Maitland - East
Campbelltown - Woodbine	Grafton	Maitland - West
Canterbury (South) - Campsie	Grafton Region	Marrickville
Casino	Green Valley - Cecil Hills	Maryland - Fletcher - Minmi
Casino Region	Greenacre - Mount Lewis	Mascot - Eastlakes
Castlereagh - Cranebrook	Grenfell	Mayfield - Warabrook
Casula	Greystanes - Pemulwuy	Merimbula - Tura Beach
Cessnock	Griffith (NSW)	Minto - St Andrews
Chipping Norton - Moorebank	Griffith Region	Monterey - Brighton-le-Sands - Kyeemagh
Chittaway Bay - Tumby Umbi	Gunnedah Region	Moree
Claymore - Eagle Vale - Raby	Hamilton - Broadmeadow	Moruya - Tuross Head
Cobar	Hassall Grove - Plumpton	Mount Annan - Currans Hill
Coffs Harbour - North	Hay	Murwillumbah

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Table B.3 (continued)

Nambucca Heads Region	Richmond - Clarendon	Tweed Heads
Narara	Riverstone - Marsden Park	Tweed Heads - South
Narooma - Bermagui	Riverwood	Ulladulla
Narrandera	Rockdale - Banksia	Urunga
Narromine	Rooty Hill - Minchinbury	Wagga Wagga - South
Narwee - Beverly Hills	Roselands	Wagga Wagga - West
North Nowra - Bomaderry	Rosemeadow - Glen Alpine	Wallsend - Elmore Vale
North Parramatta	Sawtell - Boambee	Waratah - North Lambton
Northmead	Seven Hills - Toongabbie	Warners Bay - Boolaroo
Nyngan - Warren	Shellharbour - Oak Flats	Warnervale - Wadalba
Oberon	South West Rocks	Waterloo - Beaconsfield
Old Bar - Manning Point - Red Head	St Clair	Wauchope
Orange	Stockton - Fullerton Cove	Wellington
Padstow	Summerland Point - Gwandalan	Wentworth - Buronga
Pagewood - Hillsdale - Daceyville	Sussex Inlet - Berrara	Wentworth-Balranald Region
Parkes Region	Tamworth - East	West Wallsend - Barnsley - Killingworth
Parramatta - Rosehill	Tamworth - North	Wickham - Carrington - Tighes Hill
Port Macquarie - West	Taree Region	Williamtown - Medowie - Karuah
Pottsville	Tenterfield	Windsor - Bligh Park
Prestons - Lurnea	The Entrance	Wollongong
Queanbeyan	Thornton - Millers Forest	Woolgoolga - Arrawarra
Queanbeyan - East	Toongabbie - Constitution Hill	Woy Woy - Blackwall
Quirindi	Toronto - Awaba	Wyoming
Raymond Terrace	Tuggerah - Kangy Angy	Young
Revesby	Tumut	Young Region
Victoria		
Airport West	Bundoora - North	Croydon
Altona	Bundoora - West	Delacombe
Altona Meadows	Cairnlea	Dromana
Altona North	Carlton	Echuca
Ararat	Caroline Springs	Endeavour Hills
Avoca	Chelsea - Bonbeach	Epping
Bairnsdale	Chelsea Heights	Ferntree Gully
Ballarat - North	Clarinda - Oakleigh South	Flemington
Ballarat - South	Clayton	Footscray
Bayswater	Cobram	Frankston
Bayswater North	Coburg	Geelong
Belmont	Coburg North	Geelong West - Hamlyn Heights
Bendigo	Colac	Gladstone Park - Westmeadows
Berwick - South	Corangamite - South	Glenroy - Hadfield
Boronia - The Basin	Craigieburn - Mickleham	Grovedale
Braybrook	Cranbourne East	Hastings - Somers
Bundoora - East	Cranbourne North	Heathcote

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Table B.3 (continued)

Heidelberg West	Mooroopna	Somerville
Hillside	Mornington	South Morang
Hoppers Crossing - North	Moyne - East	Sunbury - South
Hoppers Crossing - South	Narre Warren	Sunshine
Kangaroo Flat - Golden Square	Narre Warren South	Swan Hill Region
Keilor Downs	North Geelong - Bell Park	Sydenham
Keilor East	Pakenham - North	Tarneit
Keysborough	Pakenham - South	Taylor's Hill
Kilmore - Broadford	Pascoe Vale	Traralgon
Kilsyth	Portarlington	Truganina
Kingsbury	Portland	Wangaratta
Lakes Entrance	Preston	Watsonia
Langwarrin	Red Cliffs	Werribee
Lara	Reservoir - East	Werribee - South
Leopold	Reservoir - West	West Footscray - Tottenham
Loddon	Rosebud - McCrae	West Wimmera
Lynbrook - Lyndhurst	Rushworth	West Wodonga
Maryborough Region	Seabrook	White Hills - Ascot
Melton	Seaford (Vic.)	Wodonga
Melton West	Seymour	Wonthaggi - Inverloch
Merbein	Seymour Region	Wyndham Vale
Mildura	Shepparton - North	Yarrawonga
Mill Park - North	Shepparton - South	
Mill Park - South	Skye - Sandhurst	
Queensland		
Aitkenvale	Boronia Heights - Park Ridge	Carrara
Alexandra Hills	Bowen	Chambers Flat - Logan Reserve
Algester	Bracken Ridge	Charleville
Aroona - Currimundi	Branyan - Kensington	Charters Towers
Arundel	Brassall	Chermside
Ashmore	Bray Park	Churchill - Yamanto
Atherton	Bundaberg East - Kalkie	Clifton - Greenmount
Ayr	Bundaberg North - Gooburrum	Clontarf
Bald Hills	Bundaberg Region - North	Collingwood Park - Redbank
Barcaldine - Blackall	Bundaberg Region - South	Collinsville
Bargara - Burnett Heads	Burdekin	Condon - Rasmussen
Beachmere - Sandstone Point	Burleigh Heads	Cooloola
Beaudesert	Burleigh Waters	Coomera
Beerwah	Burpengary	Coopers Plains
Bellbird Park - Brookwater	Burrum - Fraser	Craignish - Dundowran Beach
Bentley Park	Cairns City	Cranbrook
Bethania - Waterford	Caloundra - Kings Beach	Currumbin - Tugun
Biggera Waters	Caloundra - West	Currumbin Waters
Bli Bli	Camira - Gales	Dakabin - Kallangur
Booral - River Heads	Capalaba	Dalrymple

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Table B.3 (continued)

Darling Heights	Kingaroy Region - North	Palm Beach
Darra - Sumner	Kirwan - East	Park Avenue
Deagon	Kirwan - West	Parkhurst - Kawana
Deeragun	Lakes Creek	Parkwood
Douglas	Lawnton	Parrearra - Warana
Drayton - Harristown	Lockyer Valley - East	Pimpama
Durack	Loganholme - Tanah Merah	Port Douglas
Eagle Farm - Pinkenba	Lowood	Raceview
Earlville - Bayview Heights	Mackay	Redcliffe
Edens Landing - Holmview	Mareeba	Regents Park - Heritage Park
Edmonton	Margate - Woody Point	Rockhampton - West
Elanora	Maroochydore - Kuluin	Rocklea - Acacia Ridge
Emu Park	Maryborough Region - South	Roma Region
Enoggera	Mermaid Beach - Broadbeach	Rosewood
Forest Lake - Doolandella	Mermaid Waters	Runcorn
Garbutt - West End	Merrimac	Slade Point
Gatton	Miami	South Mackay
Gayndah - Mundubbera	Millbank - Avoca	South Townsville - Railway Estate
Gin Gin	Millmerran	Southern Downs - West
Gladstone	Moffat Beach - Battery Hill	Southport
Golden Beach - Pelican Waters	Molendinar	Springfield
Gordonvale - Trinity	Monto - Eidsvold	Springfield Lakes
Gowrie (Qld)	Mooloolaba - Alexandra Headland	Stafford
Gulliver - Currajong - Vincent	Morayfield - East	Stanthorpe
Gympie - North	Mount Isa	Stanthorpe Region
Gympie - South	Mount Isa Region	Strathpine - Brendale
Hermit Park - Rosslea	Mount Louisa	Surfers Paradise
Highland Park	Mount Sheridan	Tablelands
Hillcrest	Mount Warren Park	Taigum - Fitzgibbon
Hyde Park - Pimlico	Mountain Creek	Thorneside
Ingham	Munruben - Park Ridge South	Tinana
Innisfail	Murrumba Downs - Griffin	Toowoomba - Central
Ipswich - Central	Nambour	Trinity Beach - Smithfield
Ipswich - East	Nanango	Upper Coomera - Willow Vale
Jimboomba	Nerang - Mount Nathan	Upper Mount Gravatt
Jondaryan	Newtown (Qld)	Varsity Lakes
Kanimbla - Mooroolbool	North Mackay	Victoria Point
Kelso	North Toowoomba - Harlaxton	Walkervale - Avenell Heights
Keperra	Northern Highlands	Warwick
Kilcoy	Oonoonba	Weipa
Kilkivan	Ormeau - Yatala	West Gladstone
Kin Kora - Sun Valley	Oxenford - Maudsland	Wulguru - Roseneath
Kingaroy	Pacific Pines - Gaven	Wurtulla - Birtinya

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Table B.3 (continued)

Wynnum West - Hemmant	Yorkeys Knob - Machans Beach	Zillmere
South Australia		
Aldinga	Mitchell Park	Renmark Region
Barmera	Modbury Heights	Reynella
Berri	Moonta	Richmond (SA)
Beverley	Morphett Vale - East	Roxby Downs
Ceduna	Morphettville	Salisbury East
Christies Beach	Mount Gambier	Seaford (SA)
Edwardstown	Munno Para West - Angle Vale	Seaton - Grange
Flinders Park	Murray Bridge	Sheidow Park - Trott Park
Gawler - South	Naracoorte Region	St Agnes - Ridgehaven
Greenwith	North Haven	The Coorong
Hackham - Onkaparinga Hills	Northgate - Oakden - Gilles Plains	Virginia - Waterloo Corner
Hindmarsh - Brompton	Nuriootpa	Waikerie
Hope Valley - Modbury	Outback	Walleroo
Ingle Farm	Para Hills	Warradale
Karoonda - Lameroo	Paradise - Newton	Wattle Range
Largs Bay - Semaphore	Penola	West Coast (SA)
Le Hunte - Elliston	Plympton	Whyalla
Lewiston - Two Wells	Pooraka	Windsor Gardens
Lockleys	Port Augusta	Woodcroft
Millicent	Port Lincoln	Woodville - Cheltenham
Western Australia		
Alexander Heights - Koondoola	Coolbellup	Maddington - Orange Grove - Martin
Ashburton (WA)	Craigie - Beldon	Mandurah - South
Balcatta - Hamersley	Eaton - Pelican Point	Manjimup
Ballajura	Esperance Region	Marangaroo
Beckenham - Kenwick - Langford	Falcon - Wannanup	Maylands
Beechboro	Forrestfield - Wattle Grove	McKail - Willyung
Belmont - Ascot - Redcliffe	Geraldton	Middle Swan - Herne Hill
Bentley - Wilson - St James	Geraldton - East	Midland - Guildford
Bertram - Wellard (West)	Gnowangerup	Morley
Boulder	Gosnells	Newman
Brookton	Greenfields	Nollamara - Westminster
Broome	Hamilton Hill	Rivervale - Kewdale - Cloverdale
Bunbury	High Wycombe	Rockingham
Butler - Merriwa - Ridgewood	Kambalda - Coolgardie - Norseman	Roebourne
Calista	Kelmscott	Safety Bay - Shoalwater
Camillo - Champion Lakes	Koombana	Seville Grove
Cannington - Queens Park	Kulin	South Hedland
Carnarvon	Kununurra	South Lake - Cockburn Central
Clarkson	Lockridge - Kiara	Spearwood

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Table B.3 (continued)

Swan View - Greenmount - Midvale	Waikiki	Willagee
Thornlie	Wanneroo	Yangebup
Tuart Hill - Joondanna	Warnbro	
Tasmania		
Austins Ferry - Granton	Longford	Sorell - Richmond
Beauty Point - Beaconsfield	Miandetta - Don	South Launceston
Bellerive - Rosny	Montrose - Rosetta	Southern Midlands
Brighton - Pontville	New Town	St Helens - Scamander
Burnie - Ulverstone Region	Newstead	Summerhill - Prospect
Cygnets	Old Beach - Otago	Triabunna - Bicheno
Derwent Valley	Parklands - Camdale	Ulverstone
Devonport	Penguin - Sulphur Creek	West Coast (Tas.)
Dilston - Lilydale	Prospect Vale - Blackstone	West Moonah
Dodges Ferry - Lewisham	Quoiba - Spreyton	West Ulverstone
Forestier - Tasman	Romaine - Havenview	Westbury
Huonville - Franklin	Scottsdale - Bridport	Wynyard
King Island	Sheffield - Railton	Youngtown - Relbia
Latrobe	Smithton	
Northern Territory		
Alawa	East Side	Nightcliff
Bakewell	Flynn (NT)	Palmerston - North
Charles	Karama	Tiwi
Coconut Grove	Larrakeyah	Wagaman
Darwin City	Malak - Marrara	Woodroffe
Driver	Millner	Wulagi
Durack - Marlow Lagoon	Moil	
Australian Capital Territory		
ACT - East	Forde	Macquarie
Amaroo	Franklin	Mawson
Banks	Gilmore	Monash
Belconnen	Gordon (ACT)	Narrabundah
Bonner	Gowrie (ACT)	Ngunnawal
Bonython	Greenway	Oxley (ACT)
Bruce	Griffith (ACT)	Page
Calwell	Gungahlin	Palmerston
Casey	Higgins	Reid
Charnwood	Holt	Richardson
Chifley	Isabella Plains	Rivett
Chisholm	Kambah	Scullin
Civic	Kingston - Barton	Stirling
Downer	Latham	Wanniassa
Dunlop	Lyneham	Waramanga
Fisher	Lyons (ACT)	Watson
Florey	Macgregor (ACT)	Weston

Source: Productivity Commission estimates.

Table B.4 Least adaptive (244 regions)

New South Wales		
Ashcroft - Busby - Miller	Gorokan - Kanwal - Charmhaven	Penrith
Auburn	Granville - Clyde	Punchbowl
Bankstown	Greenfield Park - Prairiewood	Shortland - Jesmond
Beresfield - Hexham	Guildford - South Granville	Smithfield - Wetherill Park
Berkeley - Warrawang - Windang	Guildford West - Merrylands West	St Georges Basin - Erowal Bay
Bidwill - Hebersham - Emerton	Inverell Region - East	St Johns Park - Wakeley
Blue Haven - San Remo	Kempsey	St Marys - Colyton
Bonnyrigg Heights - Bonnyrigg	Lakemba - Wiley Park	Tamworth - West
Bourke - Brewarrina	Lavington	Taree
Cabramatta - Lansvale	Lethbridge Park - Tregear	Toukley - Norah Head
Cabramatta West - Mount Pritchard	Liverpool - Warwick Farm	Tuncurry
Canley Vale - Canley Heights	Macquarie Fields - Glenfield	Walcha
Chester Hill - Sefton	Merrylands - Holroyd	Walgett - Lightning Ridge
Coonamble	Moree Region	Warilla
Fairfield	Mount Druitt - Whalan	Wingham
Fairfield - East	Mount Hutton - Windale	Wyong
Fairfield - West	Nambucca Heads	Yagoona - Birrong
Far West	Narrabri Region	
Glendenning Dean Park	Nowra	
Victoria		
Ardeer - Albion	Fawkner	Noble Park North
Broadmeadows	Frankston North	Robinvale
California Gully - Eaglehawk	Hallam	Rockbank - Mount Cottrell
Campbellfield - Coolaroo	Hampton Park - Lynbrook	Roxburgh Park - Somerton
Carrum Downs	Kings Park (Vic.)	Springvale
Clayton South	Lalor	Springvale South
Corio - Norlane	Laverton	St Albans - North
Cranbourne	Maryborough (Vic.)	St Albans - South
Cranbourne West	Meadow Heights	Sunshine North
Dandenong	Melton South	Sunshine West
Dandenong North	Moe - Newborough	Thomastown
Deer Park - Derrimut	Morwell	Tullamarine
Delahey	Newcomb - Moolap	Wendouree - Miners Rest
Doveton	Noble Park	
Queensland		
Ashfield - Kepnock	Caboolture	Deception Bay
Aurukun	Caboolture - South	Eagleby
Balonne	Cape York	Far Central West
Beenleigh	Carpentaria	Far South West
Berserker	Coolangatta	Goodna
Browns Plains	Coombabah	Granville
Bundaberg	Crestmead	Heatley
Bundamba	Croydon - Etheridge	Inala - Richlands

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Table B.4 (continued)

Inglewood - Waggamba	North Ipswich - Tivoli	Torquay - Scarness - Kawungan
Kingston	Northern Peninsula	Torres
Kowanyama - Pomppuraaw	Palm Island	Torres Strait Islands
Labrador	Pialba - Eli Waters	Urangan - Wondunna
Leichhardt - One Mile	Point Vernon	Wacol
Logan Central	Redbank Plains	Waterford West
Loganlea	Riverview	Westcourt - Bungalow
Manoora	Rockhampton City	White Rock
Manunda	Rothwell - Kippa-Ring	Wilsonton
Marsden	Slacks Creek	Woodridge
Maryborough (Qld)	Svensson Heights - Norville	Woree
Mount Morgan	Tara	Yarrabah
South Australia		
APY Lands	Enfield - Blair Athol	Port Pirie
Christie Downs	Hackham West - Huntfield Heights	Renmark
Coober Pedy	Loxton Region	Royal Park - Hendon - Albert Park
Craigmore - Blakeview	Morphett Vale - West	Salisbury
Davoren Park	Parafield Gardens	Salisbury North
Elizabeth	Paralowie	Smithfield - Elizabeth North
Elizabeth East	Port Adelaide	The Parks
Western Australia		
Armadale - Wungong - Brookdale	East Pilbara	Mandurah
Balga - Mirrabooka	Girrawheen	Meekatharra
College Grove - Carey Park	Halls Creek	Parmelia - Orelia
Cooloongup	Kojonup	Roebuck
Derby - West Kimberley	Leinster - Leonora	
Tasmania		
Acton - Upper Burnie	George Town	North West
Berriedale - Chigwell	Glenorchy	Northern Midlands
Bridgewater - Gagebrook	Invermay	Ravenswood
Burnie - Wivenhoe	Kings Meadows - Punchbowl	Risdon Vale
Central Highlands	Moonah	Rokeby
Claremont (Tas.)	Mornington - Warrane	Somerset
Derwent Park - Lutana	Mowbray	Waverley - St Leonards
East Devonport	New Norfolk	
Geeveston - Dover	Newnham - Mayfield	
Northern Territory		
Barkly	Gulf	Petermann - Simpson
Berrimah	Howard Springs	Rosebery - Bellamack
Daly	Katherine	Sandover - Plenty
Darwin Airport	Ludmilla - The Narrows	Tanami
Elsey	Lyons (NT)	Tennant Creek
Gray	Moulden	Thamarrurr

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Table B.4 (continued)

Tiwi Islands	West Arnhem	
Victoria River	Yuendumu - Anmatjere	
Australian Capital Territory		
Braddon	Crace	Phillip
Campbell	Harrison	Turner

Source: Productivity Commission estimates.

Table B.5 Regions not included**New South Wales**

Banksmeadow	Holsworthy Military Area	Rookwood Cemetery
Blue Mountains - North	Illawarra Catchment Reserve	Royal National Park
Blue Mountains - South	Lord Howe Island	Smithfield Industrial
Centennial Park	Newcastle Port - Kooragang	Sydney Airport
Chullora	Port Botany Industrial	Wetherill Park Industrial
Deua - Wadbilliga	Port Kembla Industrial	Wollangambe - Wollemi
Ettrema - Sassafras - Budawang	Prospect Reservoir	Yennora Industrial

Victoria

Alps - East	Flemington Racecourse	Port Melbourne Industrial
Alps - West	French Island	West Melbourne
Braeside	Lake King	Wilson's Promontory
Essendon Airport	Moorabbin Airport	

Queensland

Brisbane Airport	Eungella Hinterland	North Burnett
Brisbane Port - Lytton	Greenbank Military Camp	Shoalwater Bay
Callemondah	Lake Manchester - England Creek	South Trees
Cape Conway	Lamb Range	Wooroonooran
Carole Park	Mount Coot-tha	
Enoggera Reservoir	New Chum	

South Australia

Adelaide Airport	Happy Valley Reservoir	Torrens Island
Dry Creek - North	Lonsdale	Western
Dry Creek - South	Parafield	Whyalla - North

Western Australia

Ashendon - Lesley	Jandakot Airport	O'Connor (WA)
Avon Valley National Park	Kalgoorlie Airport	Osborne Park Industrial
Bibra Industrial	Kewdale Commercial	Perth Airport
Bibra Lake	Kings Park (WA)	Rockingham Lakes
Canning Vale Commercial	Kwinana Industrial	Stirling Range National Park
Davenport	Malaga	Trafalgar (WA)
Henderson	Malmalling - Reservoir	Walyunga National Park
Herdsmen	Melaleuca - Lexia	Welshpool
Hope Valley - Postans	Neerabup National Park	

Tasmania

Mount Wellington	Wilderness - East	Wilderness - West
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Northern Territory

Anindilyakwa	East Arnhem	Koolpinyah
Buffalo Creek	East Arm	Nhulunbuy
Charles Darwin	East Point	Palmerston - South

Australian Capital Territory

Gooromon	Hume	Lawson
Gungahlin - East	Kowen	Mitchell
Gungahlin - West	Lake Burley Griffin	Molonglo

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Table B.5 (continued)

Mount Taylor	Parkes (ACT)	
Namadgi	Tuggeranong	
Other Territories		
Christmas Island	Cocos (Keeling) Islands	Jervis Bay

References

- ABARE–BRS (Australian Bureau of Agricultural and Resource Economics – Bureau of Rural Sciences) 2010, *Indicators of Community Vulnerability and Adaptive Capacity across the Murray-Darling Basin — a Focus on Irrigation in Agriculture*.
- ABARES (Australian Bureau of Agricultural and Resource Economics and Sciences) 2016a, *Agriculture, Fisheries and Forestry in the Riverina Region of New South Wales, 2016*, About my region, Canberra.
- 2016b, *Australian Forest and Wood Products Statistics: March and June Quarters 2016*, ABARES Project 43559.
- ABC (Australian Broadcasting Corporation) 2015, ‘Study reveals refugees boosting Nhill economy’, *ABC News*, 24 April.
- ABS (Australian Bureau of Statistics) 2011a, *1270.0.55.001 - Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas, July 2011*, ABS, <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/88F6A0EDEB8879C0CA257801000C64D9> (accessed 2 March 2017).
- 2011b, *Australian Social Trends*, September, Cat. no. 4102.0, ABS, Canberra.
- 2013a, *Census of Population and Housing 2011*, 28 March, Cat. no. 2001.0, Third release.
- 2013b, *Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011*, Cat. no. 2033.0.55.001.
- 2013c, *Wage and Salary Earner Statistics for Small Areas, Time Series, 2005-06 to 2010-11*, 20 December, Cat. No. 5673.0.55.003.
- 2016a, *3218.0 - Regional Population Growth, Australia, 2014-15*.
- 2016b, *Australian National Accounts: State Accounts, 2015-16*, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5220.02015-16?OpenDocument> (accessed 7 March 2017).
- 2017a, *3218.0 - Regional Population Growth, Australia, 2015-16*.
- 2017b, *6202.0 Labour Force, Australia, Feb 2017*.
- 2017c, *6291.0.55.001 - Labour Force, Australia, Detailed, Electronic Delivery, Feb 2017*, ABS.
- Aither 2014, *Structural Adjustment in Regional Australia: Learning from Experience, Improving Future Responses*, RIRDC, Canberra.

-
- Alasia, A., Bollman, R., Parkins, J. and Reimer, B. 2008, *An Index of Community Vulnerability: Conceptual Framework and Application to Population and Employment Changes 1981 to 2001*, Statistics Canada, Ottawa.
- AMES and Deloitte Access Economics 2015, *Small Towns, Big Returns: Economic and social impact of the Karen resettlement in Nhill*, March.
- ATO (Australian Taxation Office) 2017, *Tax Rules to Change for Temporary Working Holiday Makers*, <https://www.ato.gov.au/General/New-legislation/In-detail/Direct-taxes/Income-tax-for-individuals/Tax-rules-to-change-for-temporary-working-holiday-makers/> (accessed 2 March 2017).
- Australian Banana Growers Council 2016, *Key Facts*, <http://abgc.org.au/banana-industry-2/our-industry/key-facts/> (accessed 28 February 2017).
- Azarias, J., Lambert, J., McDonald, P. and Malyon, K. 2014, *Robust New Foundations: A Streamlined, Transparent and Responsive System for the 457 Programme*, Independent Review into Integrity in the Subclass 457 Programme, September.
- Barrett, J. 2015, 'WA property woes: the \$1.3m house no one wants for \$420,000', *Financial Review*, 25 August.
- Baum, S., Mitchell, W. and Flanagan, M. 2013, *Employment Vulnerability in Australian Suburbs*, Centre of Full Employment and Equity, University of Newcastle, Newcastle.
- Beer, A. 2014, 'Structural adjustment and the automotive industry: Insights for regional policy and programmes', *Regional Studies, Regional Science*, vol. 1, no. 1, pp. 96–101.
- 2015, 'Structural adjustment programmes and regional development in Australia', *Local Economy*, vol. 30, no. 1, pp. 21–40.
- BITRE (Bureau of Infrastructure, Transport and Regional Economics) 2014, *The Evolution of Australian Towns*, 136, Department of Infrastructure and Regional Development, Canberra.
- 2015, *Australia's commuting distance: cities and regions*, Information sheet, 9 November, 73.
- Boschma, R. 2015, 'Towards an evolutionary perspective on regional resilience', *Regional Studies*, vol. 49, no. 5, pp. 733–751.
- Boulila, G., Bousrih, L. and Trabelsi, M. 2008, 'Social capital and economic growth: Empirical investigations on the transmission channels', *International Economic Journal*, vol. 22, no. 3, pp. 399–417.
- Briguglio, L., Cordina, G., Farrugia, N. and Vella, S. 2008, *Economic Vulnerability and Resilience: Concepts and Measurements*, Research Paper No. 2008/55, United Nations University World Institute for Development Economics Research.
- Bristow, G. and Healy, A. 2014, 'Regional resilience: An agency perspective', *Regional Studies*, vol. 48, no. 5, pp. 923–935.

-
- Callan, V.J. and Bowman, K. 2015, *Industry Restructuring and Job Loss: Helping Older Workers Get Back into Employment*, Research Report, Department of Education and Training.
- CED (Centre for Economic Development) 2016, *Regional Economic Growth Enablers*, NSW Department of Industry.
- CEDA (Committee for Economic Development of Australia) 2016, *CEDA State of the Regions Series: Regional Development in Western Australia*, Melbourne.
- Chisholm, D.A. 1995, 'Maintaining a sustainable economic base in rural towns: a case study of Leeton', *Australian Geographer*, vol. 26, pp. 156–163.
- Clausen, L. 2016, *Digging for Dark Matter*, <http://www.sbs.com.au/topics/science/fundamentals/feature/digging-dark-matter> (accessed 20 February 2017).
- Cormann, M. 2015, *ASIC Registry Competitive Tender Process Begins*, Media release, 24 June.
- 2016, *Conclusion of ASIC Registry Competitive Tender Process*, Media release, 19 December.
- CPSU (Community and Public Sector Union) 2016, *Submission to the Productivity Commission Regulation of Agriculture Inquiry*.
- Daley, J. and Lancy, A. 2011, *Investing in Regions: Making a Difference*, May, Grattan Institute, Melbourne.
- Deloitte Access Economics 2014, *2015–2025 Western Australian Resources Sector Outlook*, Chamber of Minerals and Energy Western Australia.
- DET (Australian Government Department of Education and Training) 2017, *Mutual Recognition*, <https://www.education.gov.au/mutual-recognition> (accessed 15 March 2017).
- DFAT (Australian Government Department of Foreign Affairs and Trade) 2014, *Australian Aid: Promoting Prosperity, Reducing Poverty, Enhancing Stability*, June, DFAT, Canberra.
- DIIS (Australian Government Department of Industry, Innovation and Science) 2016, *Australian Industry Report 2016*, DIIS, Canberra.
- Dinh, H., Freyens, B., Daly, A. and Vidyattama, Y. 2016, 'Measuring community economic resilience in Australia: Estimates of recent levels and trends', *Social Indicators Research*, June, pp. 1–20.
- DIRD (Australian Government Department of Infrastructure and Regional Development) 2015, *Progress in Australian Regions: State of Regional Australia 2015*, DIRD, Canberra.
- Dissart, J. 2003, 'Regional Economic Diversity and Regional Economic Stability: Research Results and Agenda', *International Regional Science Review*, vol. 26, no. 4, pp. 423–446.

-
- DoE (Australian Government Department of Employment) 2015, *Job Outlook*, <http://joboutlook.gov.au/default.aspx> (accessed 28 February 2017).
- 2017, *Small Area Labour Markets - December Quarter 2016*, 17 March.
- Downes, P., Hanslow, K. and Tulip, P. 2014, *The Effect of the Mining Boom on the Australian Economy*, Research Discussion Paper, August, 2014-08.
- DPMC (Australian Government Department of the Prime Minister and Cabinet) 2016, *Smart Cities Plan*, DPMC, Canberra.
- DSEWPC (Australian Government Department of Sustainability, Environment, Water, Population and Communities) 2013, *Sustainable Regional Development Program*, DSEWPC, Canberra.
- East Arnhem Land Tourist Association nd, *Nhulunbuy*, archive.eastarnhemland.com.au/about/nhulunbuy.html (accessed 23 March 2017).
- Ernst & Young 2016, *Cost Benefit and Risk Analysis of the Potential Relocation of the APVMA*, 1 August, Department of Agriculture and Water Resources, Canberra.
- FAO (Food and Agriculture Organisation of the United Nations) 2016, *FAOSTAT online*, www.fao.org/faostat/en/#data/QC (accessed 28 February 2017).
- Flora, C.B. and Flora, J.L. 2007, *Rural Communities: Legacy and Change*, 3rd edn, Westview Press, Boulder, Colorado.
- G21 Geelong Region Alliance 2014, *G21 Region Economic Development Strategy*, Geelong.
- GHD 2015, *Infrastructure Maintenance: A Report for Infrastructure Australia*, March, Sydney.
- Gray, E., Oss-Emer, M. and Sheng, Y. 2014, *Australian Agricultural Productivity Growth: Past Reforms and Future Opportunities*, ABARES Research Report, February, 14.2, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
- Hall, H. and Gleeson, J. 2013, *Value of the Australian Banana industry to Local and National Economies*, Horticulture Australia.
- Hanley, N. 2001, 'Resilience in social and economic systems: a concept that fails the cost-benefit test?', *Environment and Development Economics*, vol. 3, no. 2, pp. 221–262.
- Haslam-McKenzie, F. and Hoath, A. 2014, 'The socio-economic impact of mine industry commuting labour force on source communities', *Resources Policy*, vol. 42, pp. 45–52.
- and Stehlik, D. 2005, 'Futures for the Wheatbelt — is 2030 already here?', *Australian Journal of Agricultural Research*, vol. 56, pp. 537–551.
- Hassink, R. 2010, 'Regional resilience: a promising concept to explain differences in regional economic adaptability?', *Cambridge Journal of Regions, Economy and Society*, vol. 3, no. 1, pp. 45–58.
- Helliwell, J. and Putnam, R. 1995, 'Economic growth and social capital in Italy', *Eastern Economic Journal*, vol. 21, no. 3, pp. 295–307.

-
- Hervas-Oliver, J.-L., Jackson, I. and Tomlinson, P. 2011, “‘May the ovens never grow cold’: Regional resilience and industrial policy in the North Staffordshire ceramics industrial district - with lessons from Sassoulo and Castellon’, *Policy Studies*, vol. 32, no. 4, pp. 377–395.
- Hill, E., St. Clair, T., Wial, H., Wolman, H., Atkins, P., Blumenthal, P., Ficenec, S. and Friedhoff, A. 2011, *Economic Shocks and Regional Economic Resilience*, Working paper, Building Resilient Regions Network Institute of Governmental Studies, Berkeley.
- House of Representatives Standing Committee on Regional Australia 2013, *Cancer of the Bush or Salvation for Our Cities? Fly-in, Fly-Out and Drive-in, Drive-Out Workforce Practices in Regional Australia*, Canberra.
- Howard Partners 2013, *Regional Economic Development Strategy for Canberra and the Capital Region*.
- IC (Industry Commission) 1993, *Impediments to Regional Industry Adjustment*, Report no. 35, Canberra.
- Infrastructure Australia 2017, *Infrastructure Priority List: Australian Infrastructure Plan Project and Initiative Summaries*.
- Jackson, P. 2011, *Review of Football in Country Victoria*, October, AFL Victoria.
- Kalisch, D.W. 2016, ‘The transformation of official statistics: Creating longitudinal insights from existing data sources’, presented at National Longitudinal Data Conference: Powerful Data - Strong Evidence - Informed Policy, Canberra, 27 October.
- La Canna, X. and Oaten, J. 2016, ‘Last GP clinic closing its doors in Nhulunbuy, Arnhem Land’, *ABC News*, 17 September.
- Lannin, S. 2013, ‘The cost of living falls in WA’s mining towns but coffee and rents remain high’, *ABC News*, 31 December.
- Latrobe City Council 2016, *Submission to Animal Industries Advisory Committee (Discussion Paper)*, 25 January.
- Lawton, A., Duffy, M., Valenzuela, E., Morgan, D. and Joiner, T. 2014, *Developing a Regional Resilience Monitor*, Federation University, Gippsland, Victoria.
- Lenaghan, P. 2012, *A Golden Town Loses Its Lustre*, <http://www.abc.net.au/local/stories/2012/07/16/3546738.htm> (accessed 20 February 2017).
- Levantis, C. 2001, ‘Country towns: Impact of farmers’ expenditure on employment and population’, *Australian Farm Surveys Report 2001: Financial performance of Australian farms 1998–99 to 2000–01*, Canberra, pp. 29–35.
- Lindsay, S., Kernott, I., Hickey, M. and Williams, B. 2012, *Industry Situation Statement*, <http://www.hin.com.au/resources/industry-situation-statement-bananas> (accessed 28 February 2017).
- Litras, P. 2006, ‘Ballarat train exceeds “fastest” time’, *The Age*, 4 September.

-
- Loddon Shire Council 2016, *Pyramid Hill success story*, www.loddon.vic.gov.au/Our-documents/News-and-announcements/Media-releases/2016-releases/Pyramid-Hill-success-story (accessed 21 March 2017).
- Macintosh, A. 2013, *Chipping Away at Tasmania's Future*, Institute Paper No. 15, The Australia Institute.
- Malcolm, S. 2015, 'Mallee Football League disbandment to hit small towns', *ABC News*, 10 July.
- Martin, R. and Sunley, P. 2015, 'On the notion of regional economic resilience: conceptualization and explanation', *Journal of Economic Geography*, vol. 15, no. 2015, pp. 1–42.
- Matysek, A.L. and Fisher, B.S. 2016, *Productivity and Innovation in the Mining Industry*, April, 2016.1, BAEconomics.
- McLachlan, R., Gilfillan, G. and Gordon, J. 2013, *Deep and Persistent Disadvantage in Australia*, Productivity Commission Staff Working Paper, Canberra.
- Mid West Development Commission 2015, *Mid West Regional Blueprint: Executive Summary*.
- NAO (United Kingdom National Audit Office) 2015, *Devolving Responsibilities to Cities in England: Wave 1 City Deals*, July, NAO, London.
- Nelson, R., Kokic, P., Crimp, S., Martin, P., Meinke, H., Howden, M., de Voil, P. and Nidumolu, U. 2009a, 'The vulnerability of Australian rural communities to climate variability and change: Part II — Integrating impacts with adaptive capacity', *Environment Science and Policy*, vol. 13, no. 2010, pp. 18–27.
- , Kokic, P., Crimp, S., Meinke, H. and Howden, S.M. 2009b, 'The vulnerability of Australian rural communities to climate variability and change: Part I — Conceptualising and measuring vulnerability', *Environment Science and Policy*, vol. 13, no. 2010, pp. 8–17.
- Northern Grampians Shire Council 2013, *Minutes of Ordinary Meeting 6 November, 2013*, Stawell, Victoria.
- 2015, *Economic Partnerships Project February 2015*, 2 March, Stawell, Victoria.
- NSW OLG (NSW Office of Local Government) 2014, *Examples of Community Strategic Plans*, <https://www.olg.nsw.gov.au/councils/integrated-planning-and-reporting/process/examples-community-strategic-plans> (accessed 28 February 2017).
- OAG (Office of the Auditor General for Western Australia) 2014, *Royalties for Regions: Are Benefits Being Realised?*, 13.
- OECD and JRC (Organisation for Economic Co-operation and Development and Joint Research Centre, European Commission) 2008, *Handbook on Constructing Composite Indicators: Methodology and User Guide*, Ispra.
- OECD (Organisation for Economic and Co-operative Development) 2013, *Back to Work: Re-employment, Earnings and Skill Use after Job Displacement*.

-
- 2009, *How Regions Grow*, Policy Brief.
- Olston, R. 2008, 'Farina: From gibbers to ghost town', *Journal of the Historical Society of South Australia*, no. 36, pp. 101–111.
- Osborne, J. and Doronila, A. 2005, 'Mine community relationships: the experience of Stawell Gold Mine, Australia', *International Journal of Surface Mining, Reclamation and Environment*, vol. 19, no. 2, pp. 85–86.
- PC (Productivity Commission) 2001, *Structural Adjustment: Key Policy Issues*, Commission Research Paper, Canberra.
- 2003, *Evaluation of the Mutual Recognition Schemes*, Research Report, Canberra.
- 2005, *Trends in Australian Agriculture*, Commission Research Paper, Canberra.
- 2008, *Assessing Local Government Revenue Raising Capacity*, Research Report, Canberra.
- 2009a, *Government Drought Support*, Report no. 46, Canberra.
- 2009b, *Review of Mutual Recognition Schemes*, Research Report, Canberra.
- 2011, *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments*, Research Report, Canberra.
- 2012a, *Performance Benchmarking of Australian Business Regulation: The Role of Local Government as Regulator*, Research Report, Canberra.
- 2012b, *Trade and Assistance Review 2010-11*, Annual Report Series, Canberra.
- 2013a, *On Efficiency and Effectiveness: Some Definitions*, Staff Research Note, Canberra.
- 2013b, *Regulator Engagement with Small Business*, Research Report, Canberra.
- 2014a, *Australia's Automotive Manufacturing Industry*, Inquiry Report no. 70, Canberra.
- 2014b, *Geographic Labour Mobility*, Research Report, Canberra.
- 2014c, *Natural Disaster Funding Arrangements*, Report no. 74, Canberra.
- 2014d, *Public Infrastructure*, Report no. 71, Canberra.
- 2014e, *Relative Costs of Doing Business in Australia: Retail Trade*, Research Report, Canberra.
- 2014f, *Tasmanian Shipping and Freight*, Report no. 69, Canberra.
- 2015a, *Australia's International Tourism Industry*, Commission Research Paper, Canberra.
- 2015b, *Business Set-up, Transfer and Closure*, Draft Report, Canberra.
- 2015c, *Mutual Recognition Schemes*, Research Report, Canberra.
- 2016a, *Data Availability and Use*, Draft Report, Canberra.
- 2016b, *Migrant Intake into Australia*, Inquiry Report No. 77, April, Canberra.

-
- 2016c, *National Education Evidence Base*, Draft Report, Canberra.
- 2016d, *PC Productivity Update 2016*, April, Canberra.
- 2016e, *Regulation of Australian Agriculture*, Report no. 79, Canberra.
- 2016f, *Telecommunications Universal Service Obligation*, Draft Report, Canberra.
- 2016g, *Trade and Assistance Review 2014-15*, Annual Report Series, Canberra.
- Perriam, J. 2009, 'Checkout these grocery prices', *ABC News*, 18 August, abc.net.au/local/stories/2009/08/17/2645387.htm (accessed 23 March 2017).
- Pike, A., Dawley, S. and Tomaney, J. 2010, 'Resilience, adaptation and adaptability', *Cambridge Journal of Regions, Economy and Society*, vol. 3, no. 1, pp. 59–70.
- Piotrowski, D. 2013, 'The towns where a pub steak costs you \$45', *news.com.au*, 27 February.
- Pugalis, L. and Tan, S.F. 2017, 'Metropolitan and Regional Economic Development: Competing and Contested Local Government Roles in Australia in the 21st Century', presented at the *ANZRSI Conference 2016 Refereed Proceedings*, Australia New Zealand Regional Science Association International.
- Pulford, J. (Minister for Agriculture and Regional Development) 2017, *Media Release: 70 New Jobs for Stawell*.
- Queensland Government 1999, *Regulatory Impact Statement for SL 1999 No. 310 - Plant Protection Act 1989: Plant Protection (Banana Pest Quarantine) Regulation 1999*, Brisbane.
- RASC (Regional Australia Standing Council) 2013, *Framework for Regional Economic Development*, Department of Regional Australia, Local Government, Arts and Sport, Canberra.
- RBA (Reserve Bank of Australia) 2017, *Index of Commodity Prices*, RBA, <http://www.rba.gov.au/statistics/frequency/commodity-prices/2017/> (accessed 28 March 2017).
- RDA Illawarra (Regional Development Australia Illawarra) 2014, *About RDA Illawarra*, <http://rdaillawarra.com.au/#about-rda-illawarra> (accessed 3 April 2017).
- Regional Development Victoria 2016, *Regional Development Victoria (RDV) is the lead agency in developing rural and regional Victoria*, <https://www.rdv.vic.gov.au/> (accessed 8 March 2017).
- Richardson, J. 2015, *The Pilbara's property market descent*, Property Observer, <http://www.propertyobserver.com.au/finding/location/wa/40361-the-pilbara-s-property-market-descent.html> (accessed 20 March 2017).
- Rio Tinto 2017, *Weipa*, <http://www.riotinto.com/aluminium/weipa-4732.aspx> (accessed 17 March 2017).
- Robins, B. 2016, 'Clive Palmer's 550 refinery workers set to lose jobs', *The Sydney Morning Herald*, 10 March.

-
- RTIRC (Regional Telecommunications Independent Review Committee) 2015, *Regional Telecommunications Review 2015*, RTIRC.
- SA DSD (South Australian Department of State Development) 2017, *Growth Industries*, <http://www.skills.sa.gov.au/careers-jobs/skills-needed-in-south-australia/growth-industries> (accessed 28 February 2017).
- SCRGSP (Steering Committee for the Review of Government Service Provision) 2014, *Overcoming Indigenous Disadvantage: Key Indicators 2014*, Productivity Commission, Canberra.
- SED Advisory 2014, *Stawell Gold Mine Future Possibilities*, Ballarat, Victoria.
- Senior Officers Working Group 2015, *Investigation into Indigenous Land Administration and Use*, Report to the Council of Australian Governments, December, Department of the Prime Minister and Cabinet.
- Sensier, M., Bristow, G. and Healy, A. 2016, 'Measuring regional economic resilience across Europe: Operationalizing a complex concept', *Spatial Economic Analysis*, vol. 11, no. 2, pp. 128–151.
- Sherrieb, K., Norris, F. and Galea, S. 2010, 'Measuring capacities for community resilience', *Social Indicators Research*, vol. 99, no. 2, pp. 227–247.
- Shoebidge, J. 2003, *Tully Set to Recover from Black Sigatoka*, <http://www.abc.net.au/landline/stories/s898051.htm> (accessed 15 March 2017).
- Stayner, R. 1996, *Farm Sector Linkages to Regional Economies*, Research Paper no. 13, Parliamentary Research Service, Canberra.
- Stephens, K. 2017, 'Mum and dad investors lose hundreds of thousands of dollars as mining downturn continues to bite', *news.com.au*, 26 February.
- Stubbs, B. 2012, 'Ghosts and the machines (Traveller)', *Sydney Morning Herald*, 10 March.
- Swann, T., Ogge, M. and Campbell, R. 2016, *Jobs Growth in Queensland: Trends and Prospects*, Discussion Paper, April, The Australia Institute.
- Tasmanian Department of Treasury and Finance 2013, *Structural Change in the Tasmanian Economy: Information Paper*.
- Taylor, A. 2016, *Encouraging City Deal Proposals*, Media release, 9 November.
- Taylor, P. 2012, 'Pilbara property hits a "pot hole"', *The Australian*, 4 October.
- Tennant Creek Regional Economic Development Committee 2014, *Tennant Creek and Barkly Region Strategic & Action Plan 2014 - 2016*, Northern Territory Government.
- The Stawell Times-News* 2007, 'Focus group meets', 3 July.
- The Stawell Times-News* 2013, 'Centre study', 5 March.
- Tomaney, J. 2010, *Place-Based Approaches to Regional Development: Global Trends and Australian Implications*, Report for the Australian Business Foundation, Australian Business Foundation.

-
- Tonts, M. 2005, 'Competitive sport and social capital in rural Australia', *Journal of Rural Studies*, vol. 21, no. 2, pp. 137–149.
- Towell, N. 2017, 'Public servants working at Maccas after Armidale move', *Canberra Times*, 1 March.
- URS Australia 2014, *Royalties for Regions Six Year Impact Survey (2008-2014): A Survey of the Impact of Royalties for Regions Program Delivery in Regional WA*, Western Australia Department of Regional Development, Perth.
- VicDEDJTR (Victorian Department of Economic Development, Jobs, Transport and Resources) 2015, *Regional Economic Development and Services Review*, VicDEDJTR, Melbourne.
- VicDELWP (Victorian Department of Environment, Land, Water and Planning) 2016, *Local Government Better Practice Guide 2015-16*, VicDELWP, Melbourne.
- 2017, *Latrobe Planning Scheme*, VicDELWP, Melbourne.
- Victorian Auditor-General 2015, *Regional Growth Fund: Outcomes and Learnings*, Victorian Auditor-General's Report, September, Melbourne.
- WA DLGC (Western Australian Department of Local Government and Communities) 2015, *Better Practice Review: Shire of Irwin*, WA DLGC, Perth.
- WA DMP (Western Australian Department of Mines and Petroleum) 2016, *Statistics Digest: 2015-16*, November, East Perth.
- WA DRD (Western Australian Department of Regional Development) 2014, *Pilbara: A Region in Profile 2014*, Perth, www.drd.wa.gov.au/regions/Pages/Pilbara.aspx (accessed 27 February 2017).
- 2015, *What is Royalties for Regions?*, <http://www.drd.wa.gov.au/rfr/whatisrfr/Pages/default.aspx> (accessed 22 February 2017).
- WA DSD (Western Australian Department of State Development) 2016, *Western Australia Iron Ore Industry Profile: March 2016*, Perth.
- Weipa Town Authority 2014, *Western Cape History*, About Weipa, <http://www.weipatownauthority.com.au/western-cape-history> (accessed 23 March 2017).
- Whyalla City Council 2017, *History 1960 to 1980*, Whyalla City Council, <http://www.whyalla.sa.gov.au/page.aspx?u=945> (accessed 31 March 2017).
- Wilkie, D. 2016, 'Crawford victim of Pilbara property plunge', *Business News*, 29 July.
- Withers, G., Endres, T. and Perry, L. 1985, *Australian Historical Statistics: Labour Statistics*, Source paper no. 7, Australian National University, Canberra.
- Zaman, G. and Vasile, V. 2014, 'Conceptual framework of economic resilience and vulnerability at national and regional levels', *Romanian Journal of Economics*, vol. 39, 2(48), pp. 5–18.