Australian Government | Infrastructure Australia

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Regional Strengths and Infrastructure Gaps

Overview

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Infrastructure Australia would like to acknowledge the contribution of Jonathan Cartledge, Peter Colacino, Helen Machalias, Carmen Pennisi, David Tang, Sandra Qian, Matt Gijselman, Steve Brogan and the extended Infrastructure Australia team to the development of this report. We also acknowledge the support received from the Regional Development Australia network, WSP Australia, National Farmers' Federation, Business Council of Australia, Regional Australia Institute and Regional Capitals Australia.

Cover image: Tailem Bend, South Australia.

Acknowledgement of Country

Infrastructure Australia proudly acknowledges the Traditional Owners and Custodians of Australia, and their continuing connections to the land, waters and communities. We pay our respects to them and to their Elders past, present and emerging. In preparing for the future of our infrastructure, we acknowledge the importance of looking beyond the immediate past to learn from Aboriginal and Torres Strait Islander peoples' unique history of land management and settlement, art, culture and society that began over 65,000 years ago.

We have actively engaged with First Nations communities and organisations throughout this project, both through inviting representatives to regional stakeholder forums across Australia and by conducting additional workshops with key First Nations stakeholders in Tropical North Queensland, the Northern Territory and the Kimberley.

As part of Infrastructure Australia's commitment to reconciliation, we will continue to develop strong, mutually beneficial relationships with Aboriginal and Torres Strait Islander partners who can help us to innovate and deliver better outcomes for Aboriginal and Torres Strait Islander communities, recognising their expertise in improving quality of life in their communities.

Note on the artwork

The artwork Moving Along Pathways was created by Kamilaroi/Gamilaraay artist Dennis Golding, specifically for Infrastructure Australia's first Reconciliation Action Plan. The artwork depicts examples of Australia's first infrastructure.

Pathways and river systems are prominent in the artwork and reference the pathways First Nations peoples formed on land and water for transport and communication of knowledge and stories. Images of waterholes, campsites and boomerangs within the artwork acknowledge First Nations cultural practices, technology and places for gathering that continue to be operated today.

Consultation

We welcome your comments on this report

Infrastructure Australia has developed this report to provide a common understanding of the strengths of Australia's regions and the infrastructure gaps they face, for communities, industry and governments of all levels. We have used the Regional Development Australia (RDA) boundaries in this analysis in order to support a comprehensive view of the nation.

The report provides a foundation to understand Australia's regions and was developed through engagement with more than 1,000 stakeholders, including focused engagement in each region. Stakeholder engagement has been a focus in preparing the report, however we acknowledge we may not have considered all relevant data, evidence or local conditions. Through the publication of this report we invite comments that can strengthen the evidence base or provide new data.

Infrastructure Australia welcomes your views on your region by providing an expanded evidence base or potential future areas of analysis. If you would like to share your views, we would like to hear them.

How was the data to inform the report identified?

Various government and industry data sources have been drawn upon to illustrate Regional Strengths and Infrastructure Gaps for each region. However, while we have prioritised contemporary data sources for each region, the availability of data both in terms of timing and availability for each region varies.

Regional Strengths and Infrastructure Gaps provides a consolidated source of data using RDA boundaries and drawing on our definitions of Australia's regional geography. Current data at an RDA scale has been utilised where possible, however in instances where it is not available, data at local government or alternative regional boundary level is used.

New sources of information are regularly made available, and may not be reflected in this version of the report.

What will we do with comments?

The Infrastructure Australia team will consider all comments received in response to the report. Where the balance of submissions, a strong foundation of evidence and/or our team support an amendment to our report they will be incorporated. A refresh will be released later in 2022.

When should comments be provided?

The period for comment on this report will be more than six weeks. Comments are requested by **29 April 2022**. The submissions period, or the period for individual submissions, may be extended by Infrastructure Australia. Preference will be given to early requests for extensions. Please contact mail@infrastructureaustralia.gov.au to request an extension.

How should comments be provided?

Infrastructure Australia's website https://www.infrastructureaustralia.gov.au/publications/2022-regional-strengths-and-infrastructure-gaps hosts a webform as the preferred method for the communication of comments on the report. Comments should clearly identify the relevant section of the report to which they are intended to apply. Submissions using the webform and with clearly identified regions, strengths or gaps will be prioritised.

Chair's foreword

Infrastructure Australia has long acknowledged the importance of Regional Australia to the national economy. From our food bowls and resource regions to our tourism and service centres, this report looks beyond our largest Fast-growing Cities to present the evidence for increased investment in our regions. Our focus draws on the knowledge that our economic capability is highest when we fully realise the potential of Regional Australia.

Infrastructure is critical to our quality of life, however service quality gaps in Australia's regions are deeply pronounced and can be defining for communities. Investment in modernising or expanding infrastructure plays a critical role. This is more vital now, as we recover from the pandemic and experience a record-breaking population boom, as it has ever been.

Digital and physical connectivity are critical for all communities, but so too is access to life-supporting and job-creating social infrastructure. It is not adequate to just connect regions, but it is essential to invest in their identity, leverage incumbent strengths and identify opportunities for continued growth. Consultation highlighted many regions are eager to capitalise on new opportunities and embrace new industries. However, for regional Australia to be able to tap these opportunities, it needs to have robust, reliable and resilient infrastructure networks. Governments at all levels, businesses and communities themselves, have acknowledged the need to address these challenges for many years, however too often work in isolation. This report aims to focus future effort to ensure government, business and community can work together in areas of mutually acknowledged need, leveraging the assets of industry and the community, alongside the contribution of government.

Each of Australia's regions is unique, and so too are their infrastructure needs and the resources available to the community to meet these needs. Infrastructure Australia's role is to embed these differences in decision-making and advocacy to ensure that accessible, high-quality and affordable infrastructure is available to all Australians, regardless of where they live. The lived experience for communities in areas such as water security, social infrastructure, digital connectivity and road and rail networks reflect many of the challenges addressed more broadly through the *2021 Australian Infrastructure Plan*.

In developing the recommendations of the *2021 Australian Infrastructure Plan*, Infrastructure Australia was provided with additional funding to examine the impacts of COVID-19 on the infrastructure sector and the needs of Australia's regions. This report acts on the recommendations included in the *2021 Australian Infrastructure Plan* to develop a regional strengths and gaps infrastructure prioritisation framework. It does not reinvent the wheel, but builds on existing local infrastructure and regional development strategies across governments to identify regional infrastructure gaps informed by industry and community consultation.

This report has been developed over more than 12 months and brings together the lived experience of the Infrastructure Australia team and Board, who have lived, studied and worked in many of Australia's regions. While we cannot speak for the community of every region, we have drawn on this rich experience as well as our partnership with the Australian Government -funded Regional Development Australia network and engagement with communities to articulate a perspective on Australia's regions.'

The Regional Strengths and Infrastructure Gaps identified in this report are just the starting point. The next step is not to build, but to plan.

For communities in Regional Australia, our hope is that the reforms and investments evidenced by this project realise our unique competitive advantages and ultimately deliver better outcomes and an improved quality of life for all Australians.

Col Murray

Chair, Infrastructure Australia

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Yamba, New South Wales

I. Executive Summary

The strength of Australia lies in the diversity of its regions, its industries and the communities that make it home. The challenges and opportunities that have and continue to shape our regions are equally broad. Shifting economic fortunes and patterns of trade, changes in population, settlement, productivity, liveability and technology, natural disasters and climate change all continue to redefine what it means to live in regional Australia.

In recent years the COVID-19 pandemic has accelerated many of these challenges and associated trends, as highlighted in our 2020 report *Infrastructure Beyond COVID-19*. But in parallel we have also seen the opportunities from a new regional renaissance as more Australians have realised the advantages of not just visiting, but being able to live and work across Australia's regions.

Responding to these challenges and opportunities, the *2021 Australian Infrastructure Plan* recommended the development of a *Regional Infrastructure Gaps Prioritisation Framework*, and the identification and prioritisation of regional Infrastructure Gaps based on existing regional development strategies across government, informed by industry and community consultation.

Regional Strengths and Infrastructure Gaps delivers on these recommendations, establishing a new evidence base to support reform and investment through:

- identifying and prioritising regionally significant Infrastructure Gaps
- identifying the strengths of regions including physical assets, incumbent growth industries and natural endowments
- increasing the awareness of regional Infrastructure Gaps through improving understanding of place-based infrastructure needs.

Direct engagement with communities in Australia's regions in collaboration with the Regional Development Australia (RDA) network has helped inform this project, and identified shared perspectives on challenges and opportunities, and common themes related to infrastructure planning and delivery for Australia's regions.

Understanding Regional Strengths

This project identifies those key strengths and established competitive advantages which set each of our regions apart and signal new opportunities for investment. Within the context of this project, the Regional Strengths of a region reflects its key existing assets and key regional growth industries.

Key existing assets may include natural, economic or social assets which provide value, competitive advantage, and/or a point of difference for the region. Key regional growth industries are those which have a strong existing presence in the region and show potential for growth and/or to develop competitive advantage.

Together these Regional Strengths provide the basis for the development of regional competitive advantage. They are resources to be leveraged in the development of infrastructure responses.

Table 1: Number of regions with identified key existing assets

Key existing assets	Number of regions
Natural environments	45
Gateway ports	33
Education and research institutions	32
Natural resources	26
Transport infrastructure	23
Strategic location	22
Cultural heritage	16
Climate and topography	15
Health infrastructure	14
Water infrastructure	13
Specialised precincts	10
Energy infrastructure	9
Defence assets	7
Community infrastructure	5
Major attractions	5
Tourism brand	4

Table 2: Number of regions with identified key regional growth industries

Key regional growth industries	Number of regions
Agriculture, forestry and fishing	34
Tourism	31
Energy	19
Knowledge sector	14
Healthcare and social assistance	14
Manufacturing	13
Mining	13
Transport	6
Defence	6
Aerospace	3

Cape York, Queensland

Prioritising Infrastructure Gaps

Alongside these strengths, reviews of existing regional, state and national infrastructure strategies and direct consultation with government, industry and community representatives from across Australia's 48 RDA network regions has identified 479 Infrastructure Gaps across Australia.

For the first time for Australia's regions, the development and application of a *Regional Infrastructure Gaps Prioritisation Framework* has enabled the identification of 3-4 priority Infrastructure Gaps in each of these regions.

While the needs of regions vary, the five Infrastructure Gaps most frequently highlighted through this process are identified as:

- **Availability, diversity and affordability of housing** to meet the growing and changing demands of regional Australian communities is a major constraint in attracting and retaining skilled workers, growing regional productivity and maintaining liveability.
- **Broadband and mobile connectivity** is an enduring concern across many communities and increasingly crucial to the economic and social wellbeing of regional Australia, particularly through the COVID-19 pandemic with increasing reliance on digital connectivity for access to essential services and products.
- **Water security** to meet fundamental residential and commercial requirements is crucial to the productivity of the traditional 'engine' industries of regional Australia, including agriculture, mining and manufacturing, as well as emerging industries.
- **Access to further education and skills training**, aligned to a region's existing employment opportunities and industry growth profile, is critical to enabling economic growth and attracting and growing local skills particularly in critical service sectors.
- **Capacity, connectivity and quality of public transport infrastructure** within and between our regions is essential to access services, employment, education and economic opportunities.

Addressing these gaps presents an opportunity to complement the changes taking place across regional Australia, and to capitalise on those identified Regional Strengths.

Table 3: Infrastructure Gaps identified as a priority through the *Regional Infrastructure Gaps Prioritisation Framework*

Infrastructure gap	Number of regions where an Infrastructure Gap is identified as a priority through the *Regional Infrastructure Gap Prioritisation Framework*
Availability, diversity and affordability of housing	26
Broadband and mobile connectivity	23
Water security	22
Access to further education and skills training	19
Capacity, connectivity and quality of public transport	15
Capacity, connectivity and quality of freight infrastructure	12
Capacity, connectivity and quality of road infrastructure	9
Distribution, transmission and generation of energy	7
Industry enabling infrastructure to support growth and innovation	5
Access to and capacity of health and aged care infrastructure	3
Provision, quality and protection of green, blue and recreation infrastructure	3
Waste management and resource recovery	1
Natural disaster resilience	1
Capacity, quality and accessibility of early, primary and secondary education	1
Provision and quality of arts and culture infrastructure	0
Capacity, connectivity and quality of air transport	0

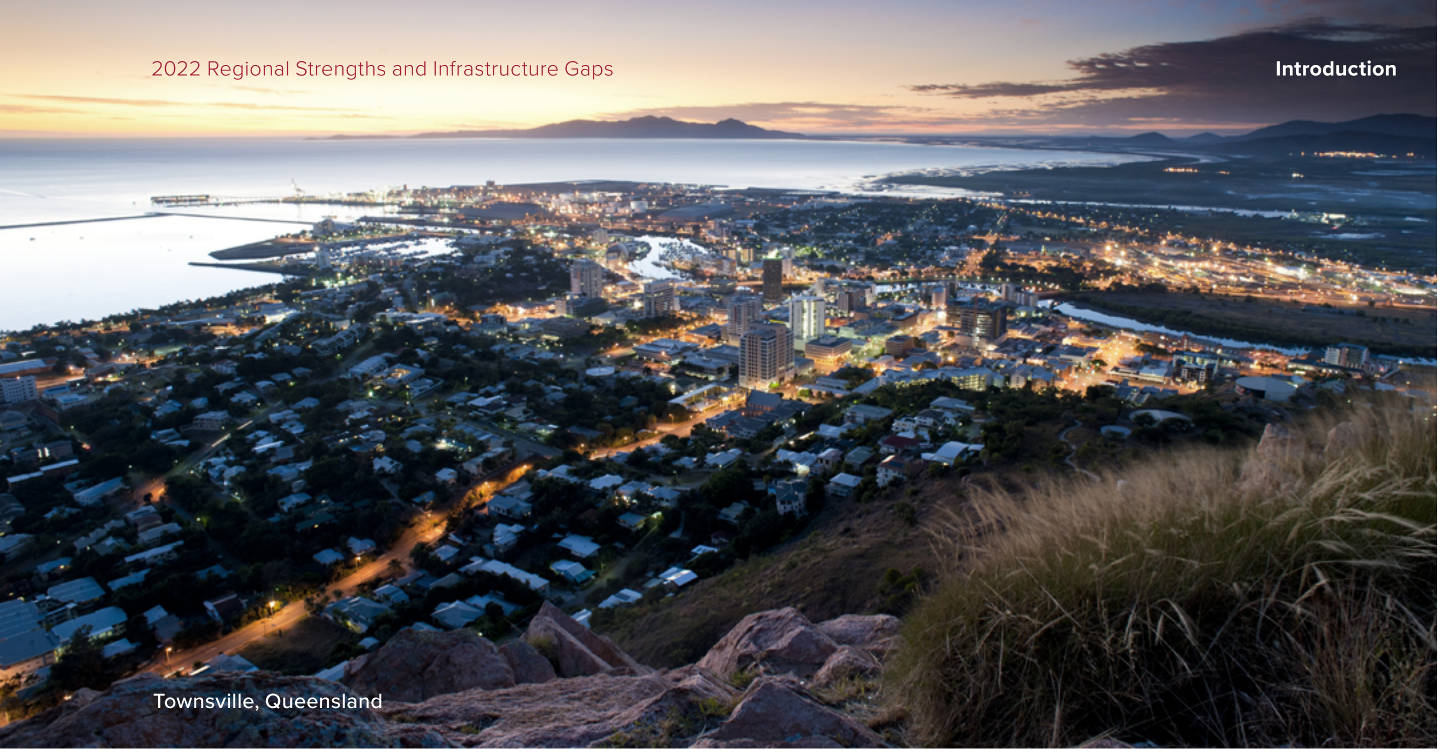
The Infrastructure Gaps relating to air transport and arts and culture infrastructure were identified as regionally significant Infrastructure Gaps, however were not identified as priority Infrastructure Gaps for regions through the *Regional Infrastructure Gaps Prioritisation Framework*.

Investing in collaboration and planning

As regional communities evolve, so too do the opportunities to improve their quality of life and grow their economies. A wide range of Regional Strengths and Infrastructure Gaps characterise our regions and this report looks for commonalities to promote collaboration and knowledge sharing. In this context, the Regional Strengths and Infrastructure Gaps identified for each region provide a lens to inform strategic planning, understand opportunities and consider priority initiatives for investment.

By identifying and spotlighting priority challenges and opportunities in each region, Infrastructure Australia hopes to encourage governments, industry and the community to collaborate and identify, develop and submit proposals to address these gaps with all levels of government.

Planning for solutions may be through reform initiatives or further consideration of proposals for physical infrastructure investments. Not all Infrastructure Gaps will be nationally significant, but in responding to these gaps we should seek to capture new advantages in our Regional Strengths and realise a better quality of life for communities across Australia.



Townsville, Queensland

1. Introduction

Box 1: Definitions of terms used in this report

- **region:** an administrative district with definable characteristics and a boundary
- **regional:** relating to the characteristics of a region
- **Australia's regions:** the collection of administrative districts that make-up Australia.
- **Regional Australia:** those settlements outside Australia's Fast-growing Cities, Smaller Capital Cities and Satellite Cities.

1.1 Realising a regional renaissance

The diversity and strength of Australia's regions is an under-utilised national asset. Our nation's economic potential is greatest when our regions are given the opportunity to fully contribute to national priorities. The important role of infrastructure in supporting economic and population growth is well understood. *Regional Strengths and Infrastructure Gaps* provides a foundation of data, knowledge and community perceptions that can be used to support future infrastructure planning, decision-making and network governance in our regions.

The *2019 Australian Infrastructure Audit* identified the challenges and opportunities in providing infrastructure and services in Regional Australia. Unlike our large Fast-growing Cities, there is often limited choice for infrastructure and associated services, with thin markets for alternative service providers to participate. Developments in the broader economy, regulation, technology and service delivery mean our infrastructure needs are changing, leaving some parts of Australia at risk of being left behind. The quality of infrastructure and access to services in our regions have the potential to lead to growing gaps in productivity and liveability. The findings of the *2019 Australian Infrastructure Audit* have been complicated by the impacts of the COVID-19 pandemic on population settlement in regions and changing patterns of trade.

Our 2020 report *Infrastructure Beyond COVID-19* highlighted the scale of the impact of the pandemic on infrastructure services and provision and opportunities from increased settlement and visitation. However, it also exposed vulnerabilities due to the pressure on existing infrastructure and services, and critical industries associated with rapid population shifts. Many Australians have appreciated the advantages of our regions as they have looked outside of our Fast-growing Cities during the COVID-19 pandemic. Many people have found new places to not only visit, but to live. These population shifts bring with them the need to develop new service models, and pressure to deliver infrastructure services on par, or comparable to, the expectations of large cities.

This report seeks to localise the analysis of both the *2019 Australian Infrastructure Audit* and *Infrastructure Beyond COVID-19*, to understand the challenges and opportunities faced by each of 48 Australian regions, defined by the Regional Development Australia (RDA) network regions outside of Fast-growing Cities.

As regional communities evolve, so too do the opportunities to improve their quality of life and grow their economies. Shifts in industry make-up and changes to the rate of population growth can necessitate changes in infrastructure requirements. This can create a need for investment in new or upgrade assets, but can also leave behind stranded assets with surplus capacity.

Through understanding existing endowments, in the form of both assets and industries, this report presents a series of strengths for regional communities to leverage when addressing identified Infrastructure Gaps. This approach, can inform an understanding of future investment and employment opportunities by setting out the foundation of regional competitive advantages.

Responding to these challenges, the *2021 Australian Infrastructure Plan* recommended the development of a *Regional Infrastructure Gaps Prioritisation Framework,* and the identification and prioritisation of regional Infrastructure Gaps based on existing regional development strategies across government, informed by industry and community consultation. The *Regional Strengths and Infrastructure Gaps* project delivers on these recommendations, establishing a new evidence base to support reform and investment through:

- identifying and prioritising Infrastructure Gaps
- identifying the strengths of regions including physical assets, incumbent growth industries and natural endowments. These strengths provide the basis for the development of regional competitive advantage. They are resources to be leveraged in the development of infrastructure responses
- increasing the awareness of regional Infrastructure Gaps through improving understanding of place-based infrastructure needs
- identifying common themes in challenges, opportunities and infrastructure across Australia's regions.

A wide range of Regional Strengths and Infrastructure Gaps characterise our regions and this report looks for commonalities to promote collaboration and knowledge sharing. The Regional Strengths and Infrastructure Gaps spotlighted in this report for each region provides a lens to prioritise and understand opportunities and priorities for investment. However, further planning is needed to better understand these challenges and opportunities and to identify the policy and investment reforms best placed to address them.

Blue Mountains, New South Wales

1.2 Shared perspectives on changing regions

Direct consultation with government, industry and community representatives from across Australia's 48 RDA regions has informed this analysis. This engagement has identified a shared perspective on challenges and opportunities across Australia's regions, and common themes related to infrastructure planning and delivery. These perspectives include that:

Australia's regional communities are experiencing unique impacts from the COVID-19 pandemic. The COVID-19 pandemic has resulted in a significant increase of sea and tree-changers moving to regional Australia, as well as greater adoption of remote working practices, and changes to the pattern and reliance on domestic tourism. Increased regional settlement was identified as a potential catalyst for change, but also highlighted the need for better infrastructure to support quality of life outcomes and growth.

> “The pandemic has the potential to be a real catalyst for change in our region. It's proved there is strong demand for the lifestyle we offer, but also shown that we need better infrastructure to be able to support that lifestyle as we grow.”

– Workshop participant, New South Wales.

There is a need for greater proactive planning to meet the infrastructure needs of Regional Australia. Proactive, integrated, strategic infrastructure planning is vital in delivering a long-term vision for Australia's regions.

> “It feels like we're always playing catch-up. Instead of anticipating future needs and planning accordingly, we're just fixing problems and getting by. We need to be more proactive and we need support from all levels of government to be able to do that.”

– Workshop participant, Queensland

Major regional infrastructure projects should be informed by local communities. Regional stakeholders expressed the importance of their voice and effective engagement in the identification, design, delivery and operation of projects and services which impact their local communities and environment.

> “We know our communities and what they need. Talk to us first and we won't end up with shiny new assets that nobody is using.”

– Workshop participant, Western Australia.

Regional Australia is responding to a changing social landscape. Regional Australia continues to evolve and respond to shifts in population and socioeconomic demographics over recent decades, with infrastructure playing a key role in accommodating demand shifts brought about by these trends.

> “We're struggling to attract skilled workers because we can't offer them what they need. We have to improve our housing supply and access to basic services like childcare and healthcare.”

– Workshop participant, South Australia.

First Nations stakeholders should be actively involved in infrastructure planning and delivery, with culture firmly at the centre of these conversations. There is a desire for more opportunities for First Nations communities to drive their own decision-making by providing options to pursue economic opportunities which align with their culture and connection to Country. First Nations communities continue to experience social and cultural dislocation, and infrastructure planning and delivery throughout regional Australia has a key role to play in closing the gap.

> “We need to lead the conversation.”

– Workshop participant, Queensland.

1.3 Capitalising on our Regional Strengths

The diversity and strengths of our regions are a prominent part of our national identity. This project identifies those key strengths and established competitive advantages which set each of our regions apart and signal new opportunities for investment.

These strengths can come in the form of key existing assets or regional growth industries, which deliver significant economic, social, governance or environmental value to the communities they are located in. The most commonly prevalent assets and growth industries that characterise Regional Strengths are listed below.

Regional Strengths may be identified where further investment will realise future competitive advantage, or include existing competitive advantages that will continue to realise benefits for communities or attract new investment.

Table 4: Number of regions with identified key existing assets

Key existing assets	Number of regions
Natural environments	45
Gateway ports	33
Education and research institutions	32
Natural resources	26
Transport infrastructure	23
Strategic location	22
Cultural heritage	16
Climate and topography	15
Health infrastructure	14
Water infrastructure	13
Specialised precincts	10
Energy infrastructure	9
Defence assets	7
Community infrastructure	5
Major attractions	5
Tourism brand	4

Table 5: Number of regions with identified key regional growth industries

Key regional growth industries	Number of regions
Agriculture, forestry and fishing	34
Tourism	31
Energy	19
Knowledge sector	14
Healthcare and social assistance	14
Manufacturing	13
Mining	13
Transport	6
Defence	6
Aerospace	3

1.4 Infrastructure Gaps

Alongside these strengths, reviews of existing regional, state and national infrastructure strategies and consultation across Australia's regions with government, industry and the community has identified 479 Infrastructure Gaps across Australia's regions. Addressing these gaps presents an opportunity to complement the changes taking place across Regional Australia, and to capitalise on our Regional Strengths.

Table 6: Infrastructure Gaps identified as a priority through the *Regional Infrastructure Gaps Prioritisation Framework*

Infrastructure Gaps	Number of regions where an Infrastructure Gap is identified as a priority through the *Regional Infrastructure Gap Prioritisation Framework*
Availability, diversity and affordability of housing	26
Broadband and mobile connectivity	23
Water security	22
Access to further education and skills training	19
Capacity, connectivity and quality of public transport	15
Capacity, connectivity and quality of road infrastructure	12
Capacity, connectivity and quality of freight infrastructure	9
Distribution, transmission and generation of energy	7
Industry enabling infrastructure to support growth and innovation	5
Access to and capacity of health and aged care infrastructure	3
Provision, quality and protection of green, blue and recreation infrastructure	3
Waste management and resource recovery	1
Natural disaster resilience	1
Capacity, quality and accessibility of early, primary and secondary education	1
Provision and quality of arts and culture infrastructure	0
Capacity, connectivity and quality of air transport	0

The Infrastructure Gaps relating to air transport and arts and culture infrastructure were identified as regionally significant Infrastructure Gaps, however were not identified as priority Infrastructure Gaps for regions through the *Regional Infrastructure Gaps Prioritisation Framework*.

The development and application of a *Regional Infrastructure Gaps Prioritisation Framework* (see *Appendix A: Methodology*) has enabled the identification of 3-4 priority Infrastructure Gaps in each region. While the needs of regions vary, the five common Infrastructure Gaps most frequently highlighted through this process include:

- **Availability, diversity and affordability of housing** is needed to meet the growing and changing demands of Regional Australian communities. Local stakeholders across Regional Australia highlighted a lack of appropriate housing as being a major constraint in attracting and retaining skilled workers to the regions, many of which are already experiencing skills shortages.[1] In this sense, poor housing availability, diversity and affordability in the regions is inhibiting capacity for population and economic growth. Housing is provided using a diversity of models. These can range from the model of private ownership, which is common in Australia and not commonly regarded as infrastructure; to provision through government and community social housing programs, which in delivering public good is infrastructure.
- **Water security** is needed to meet community and productive water demands. In addition to meeting fundamental residential and commercial requirements, a secure water supply is crucial to the productivity of the traditional 'engine' industries of Regional Australia, including agriculture, mining and manufacturing, as well as emerging industries such as hydrogen production from renewable energy.[2]
- **Broadband and mobile connectivity** is an enduring concern across many communities and increasingly crucial to the economic and social wellbeing of Australia's regions. The importance of high-quality telecommunications infrastructure has increased through the COVID-19 pandemic with increasing reliance on digital connectivity for access to essential services and products. The influx of new residents to regional areas and the increase of domestic tourism due to the pandemic has also increased pressure on telecommunications infrastructure. These connectivity challenges are also explored in detail through the Australian Government's *2021 Regional Telecommunications Review*, informed by public consultation with people in regional, rural and remote areas.[3]
- **Access to further education and skills training**, aligned to a region's existing employment opportunities and industry growth profile, is critical to enabling economic growth and attracting and growing local skills. Communities across Australia's regions are experiencing the effects of current and projected skills shortages, particularly in critical service sectors.[4]
- **Capacity, connectivity and quality of public transport** within and between our regions is essential to access services and economic opportunities. The dispersed nature of settlements and a dependency on personal car use have contributed to many regions across Australia lacking public transport network access and connectivity. A lack of public transport limits access to employment, education and services for communities in regional Australia. Poor public transport also inhibits long-term settlement for people maintaining distance working arrangements with employment centres.

Box 2: Impacts of the 2022 flooding in South Australia, Southeast Queensland and Northern New South Wales

This report and the identification of Regional Strengths and Infrastructure Gaps was undertaken and developed prior to the devastating floods of March 2022. We acknowledge the enormous challenges for our regions that continue to emerge from these events, and the importance of understanding the broader impact for these regions, their communities and supporting infrastructure. In responding to this paper we encourage consideration of these events as they point to new and emerging challenges and gaps for affected regions.

The increasing frequency, severity and interconnection of shocks and stresses such as those highlighted by the 2022 floods, highlight the increasingly complex role infrastructure now plays in supporting resilience. In 2021 Infrastructure Australia and Infrastructure NSW partnered in the development of A Pathway to Infrastructure Resilience.

This project provides two advisory papers considering:

Opportunities for systemic change identifying 10 directions for transformational and systemic change in infrastructure planning to achieve infrastructure for resilience

Cobar mine pit, New South Wales

Guidance for asset owners and operators in the short term identifying a series of short-term actions for asset owners and operators as the first steps towards this change alongside the reforms proposed in the 2021 Australian Infrastructure Plan, this whole-of-system response provides an important frame of reference as we consider how best we build resilience for our communities, and better outcomes from our infrastructure in response to these events.

1.5 Next steps

For the first time, this report applies a new *Regional Infrastructure Gaps Prioritisation Framework* to Australia's regions, effectively localising those challenges and opportunities identified in Infrastructure Australia's *2019 Australian Infrastructure Audit* and *Infrastructure Beyond COVID-19* report.

Alongside a detailed review of existing state and territory regional development strategies, and incorporating the direct perspectives of Australia's regional communities through a comprehensive consultation supported by the RDA network, this framework delivers an evidence base to prioritise and inform future investment and reform decisions.

Many of these challenges and opportunities are also identified by Infrastructure Australia as nationally significant as they are currently identified through the *Infrastructure Priority List* as it identifies opportunities to address issues such as Bulk Water Supply Security, Mobile Telecommunications Coverage in Regional and Remote Areas and many others. The work in this report helps to substantiate the existing listings in the *Infrastructure Priority List*. It also provides new evidence for decision-makers and presents an opportunity for new proposals to be submitted for review against the *2021 Infrastructure Australia Assessment Framework*.

By identifying and spotlighting priority challenges and opportunities in each region, Infrastructure Australia hopes to encourage governments, industry and the community to identify, develop and submit proposals to address these gaps in the *Infrastructure Priority List* and future *Australian Infrastructure Plans*.

Solutions to address these gaps may be through reform initiatives or proposals for physical infrastructure investments; that capture new advantages in our Regional Strengths and realise a better quality of life for communities across Australia. Not all Infrastructure Gaps will be nationally significant. However, both existing Infrastructure Australia and third-party programs will benefit from the evidence and data developed through this report.

West Coast, Tasmania

2. Purpose and approach

2.1 Project purpose

The *Regional Strengths and Infrastructure Gaps* project aims to:

1. Identify the competitive strengths of regions across Australia
2. Build the infrastructure pipeline by identifying and prioritising regional Infrastructure Gaps
3. Increase awareness of regional gaps informed by place-based infrastructure needs
4. Identify common themes in infrastructure challenges and opportunities across regional areas.

The *Regional Strengths and Infrastructure Gaps* project does not identify or prioritise specific infrastructure projects. However, through building on this existing evidence base and delivering a targeted assessment of the key Regional Strengths and Infrastructure Gaps in each of Australia's regions, this work can assist government, industry and community in obtaining support for interventions which can address challenges or seize upon opportunities.

2.2 Geographic scope

The geographic scope of this project covers all communities outside of the Fast-growing Cities of Sydney, Melbourne, Brisbane and Perth.[5] Based on this approach, the *Regional Strengths and Infrastructure Gaps* project focuses on 48 regions across Australia as defined by RDA boundaries (see **Figure 1**).

Figure 1: Regional Development Australia (RDA) national map.[6]

Regional Development Australia (RDA)

RDA is an Australian Government initiative that brings together all levels of government to enhance the development of Australia's regions. A national network of RDA committees has been established to achieve this objective. The national network of committees comprises local leaders who work with all levels of government, business, and community groups to support economic and workforce development, local procurement, strategic regional planning and inform government programs and infrastructure investments.[7]

RDA region boundaries generally align with state regional development boundaries or structures where possible, and currently do not cross state and territory borders. In most cases they incorporate complete local government areas (LGAs) and, where necessary, Commonwealth Territories and/or unincorporated areas in any state. In a small number of cases a local government area may be divided between two RDA committees where a clearly definable district aligns better with one RDA committee, whilst the remainder aligns better with another RDA committee.

RDA regions have been selected as the regional geography to analyse Regional Strengths and Infrastructure Gaps for this project. However, it is noted that each state and territory undertakes regional infrastructure planning using different approaches to define and group areas, based on different local contexts and objectives. Metropolitan RDA regions in the Fast-growing Cities (Sydney, Melbourne, Brisbane and Perth) are focused on supporting broader regional economic development. Given their critical connecting role in supporting surrounding communities, they have been consulted on statewide needs but are not included in the scope of this analysis.

The challenge in the differing scale of geographic sizes of the RDA regions across the nation is acknowledged, with differing characteristics within a region being more pronounced in some regions. This has been captured where possible within the scope of the approach, noting that the methodology could be taken and applied to differing regional geographies. It is also noted that current data at an RDA scale has been utilised where possible, however in instances where this is not been available, data at LGA or a similar regional boundary level has been used.

The data and evidence used in the analysis of the report was limited by existing data availability. some data, notably relating to telecommunications, risks being outdated due to the passage of time. The most recent data available to Infrastructure Australia has been presented.

2.3 Approach

The approach to delivering the *Regional Strengths and Infrastructure Gaps* project was developed in four phases outlined below. The project methodology is outlined in greater detail in *Appendix A - Methodology*.

Consultation was key to the project approach, with the team engaging with over 1,000 stakeholders.

Phase 1: Research and surveys

Desktop research was conducted into each of the 48 RDA regions within the scope of this project. This phase of the project incorporated analysis of existing regional development strategies, research and policy from the Australian Government, state and territories, local government, the not-for-profit sector and industry. This existing evidence base was used to identify, analyse and consolidate existing information to develop a deeper understanding of the strengths, challenges and opportunities facing each region. In addition, a survey was distributed directly to each RDA committee to provide an opportunity to give contemporary insight into the most significant assets, industries, challenges and opportunities facing their region.

Separately, an industry survey and submissions process was also shared on Infrastructure Australia's website which allowed industry to provide comments on assets, industries and Infrastructure Gaps for their applicable region or regions or provide general feedback on Infrastructure Gaps relating to their sector. Infrastructure Australia received 92 responses from a range of stakeholders such as industry associations, peak bodies, academia, private businesses, local, state and territory governments.

The research and survey results from RDA committees and industry culminated in a draft list of strengths and Infrastructure Gaps for each region that were presented for discussion at the regional workshops.

Phase 2: Regional workshops

The outputs of Phase 1 acted as a key input for the regional workshops.

Regional workshops were designed to ensure local stakeholder knowledge and lived experience was applied to the research. Workshops were conducted in collaboration with the RDA network across Australia's regions who jointly identified key local participants. This resulted in over 100 hours of consultation conducted over an eight-week period in mid-2021. During this period, over 700 stakeholders participated in 51 workshops to provide local expertise and diverse perspectives on their local RDA region.

In these consultations the initial list of Infrastructure Gaps was presented, with workshop attendees ranking their first, second and third most important gaps for their region, as well as having the opportunity to add or remove Infrastructure Gaps according to their understanding of local priorities.

Phase 3: Identifying Regional Strengths

Combined research and consultation outputs from Phases 1 and 2 were analysed and categorised to produce a record of key existing assets and regional growth industries across each of Australia's regions.

Selected assets were identified as making a significant contribution to the economic, social or natural capital of a region. Key regional growth industries were selected on the basis of the existing strength of the industry in the region, as well as growth potential which may be offered through leveraging this existing capacity or seizing emerging opportunities in the market.

Phase 4: Development and application of the *Regional Infrastructure Gaps Prioritisation Framework*

A *Regional Infrastructure Gaps Prioritisation Framework* was developed as part of the *Regional Strengths and Infrastructure Gaps* project to identify priority Infrastructure Gaps for each region. Over the course of a three-stage process (refer to *Appendix A - Methodology* for more detail), gaps were analysed and prioritised by combining a multi-criteria analysis (MCA) score with priorities selected by local stakeholder during the workshops. Using the framework, 3-4 priority Infrastructure Gaps for each region were selected for inclusion in this report.

2.3.1 Indian Ocean Territories, Norfolk Island and Lord Howe Island

Infrastructure Australia acknowledges the Indian Ocean Territories, as well as Norfolk Island and Lord Howe Island, which are incorporated in the New South Wales Mid North Coast RDA boundary. However, direct engagement is ongoing and these regions will be included in the future update of this report. We welcome comments on these regions within the consultation process.

2.4 Alignment with Infrastructure Australia's existing work and activities

The *Regional Strengths and Infrastructure Gaps* project aligns with Infrastructure Australia's overarching purpose, to advise governments, industry and the community on the investments and reforms needed to deliver better infrastructure for all Australians.[8] In serving this purpose, Infrastructure Australia undertakes five key functions:

1. To evaluate business cases for nationally significant investment proposals seeking more than $250 million in Australian Government funding, guided by the *Infrastructure Australia Assessment Framework*.
2. Evaluate nationally significant infrastructure proposals for inclusion on the *Infrastructure Priority List*.
3. Identify challenges and opportunities facing the Australian infrastructure sector through the *Australian Infrastructure Audit*.
4. To set the policy agenda on the long-term opportunities for infrastructure reform that will improve living standards and national productivity through the *Australian Infrastructure Plan*.
5. To monitor market capacity and capability and to report on conditions and constraints through the *Market Capacity Program*.

The Regional Strengths and Infrastructure Gaps project seeks to inform these functions by localising challenges and opportunities identified in the *2019 Australian Infrastructure Audit* and *Infrastructure Beyond COVID-19* providing insight into priority infrastructure challenges and opportunities in Australia's regions, and help inform future planning and investment in infrastructure throughout Australia.

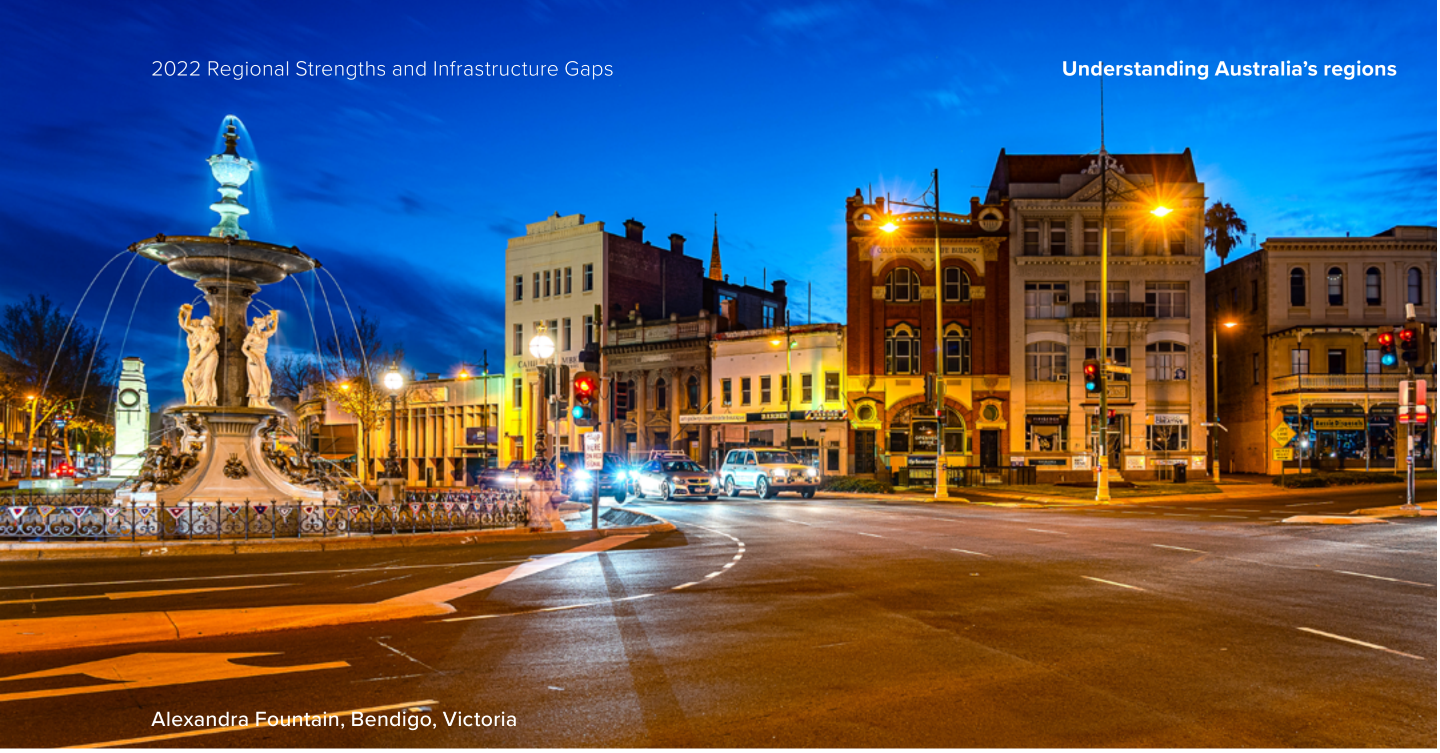
Regional Infrastructure Gaps are a precursor to the requirements of a Stage 1 Proposal for the *Infrastructure Priority List*.

- Regional Infrastructure Gaps have been developed to a simpler phase requiring quantification – to express the measure of scale or number within a specific geographic area.
- Stage 1 Proposals require the monetisation of the challenge or opportunity to be addressed. Monetisation involves expressing a challenge or opportunity in a specific geographic area through a measure of value or currency.
- Additionally, the *Infrastructure Priority List* is focused on proposals of national significance, while the Regional Strengths and Infrastructure Gaps project is focused on regional significance.

Subsequently, following the onset of the COVID-19 pandemic, the *Infrastructure Beyond COVID-19* report highlighted the role of infrastructure in meeting demands brought about by trends as a result of the COVID-19 pandemic, including increased digitisation, regionalisation and service innovation. The report identified a further six challenges and six opportunities, including the opportunity to capitalise on a regional renaissance. The report identified the need to ensure adequate infrastructure capacity in regions to support population growth. These trends created additional pressure on essential infrastructure due to a significant increase in movement to the regions, with 2019-2020 seeing an over 200% increase in net migration from capital cities to regional areas.[9]

The *Regional Strengths and Infrastructure Gaps* project also draws upon Infrastructure Australia's previous work. This includes the *2015 Northern Australia Audit,* which identified the key challenges and critical infrastructure requirements for Northern Australia across the transport, water, energy and communications sectors. More recently, in the *2021 Infrastructure Australia Assessment Framework,* we recognised the need to take a more holistic approach to determining the impact of infrastructure projects, particularly in Regional Australia. This revised approach for submissions to the *Infrastructure Priority List* includes guidance on calculating benefits for proposals in regional, rural and remote areas, with a focus on social benefits.

While our other research and publications focus on the needs of communities across Australia, this project specifically aims to provide a national view of the diverse strengths and challenges facing Australia's regions. Through taking a regional lens to areas for future planning and analysis, Infrastructure Australia hopes to encourage governments, industry and the community to come forward with solutions to address these local challenges and seize upon opportunities for growth and innovation.



Alexandra Fountain, Bendigo, Victoria

3. Understanding Australia's regions

3.1 Understanding place through Australia's geography

Australia is a landscape of interconnected yet diverse places. Place is best defined in collaboration with local people to identify a geographic area that is meaningful to them. In the context of Australia's regions a 'place' might be a region or larger area where economic, social, governance or environmental trends interact.

Along with functional regions, regions can also be administrative (connected to government functions and powers, e.g. local government areas) and statistical (for the purpose of collected statistical data, e.g. boundaries as defined by the Australian Bureau of Statistics (ABS)).[10] There is also no single definition of what constitutes a region, due to these definitions being developed for varying purposes.

Regional Australia is often those settlements outside Australia's Fast-growing Cities, Smaller Capital Cities and Satellite Cities.

Each place has specific needs and access to infrastructure varies based on location, demographic factors, remoteness and spatial characteristics. Australia's size and diversity of community needs make it difficult to ensure everyone can access affordable and good-quality infrastructure services.

There are a range of existing programs aimed at addressing the needs of regional areas, however there is no national plan or coordinated approach between different levels of government to align objectives for regional development and infrastructure investment. A common definition of regional boundaries and shared data pertaining to regional areas would help to support infrastructure investment prioritisation, analysis, planning, policy development and collaboration between settlements which have similar characteristics, challenges and opportunities.

As explored in the *2021 Australian Infrastructure Plan,* a place-based approach takes a cross-sectoral view of the interrelated infrastructure and amenity needs of a place, and connects infrastructure decision making with the needs of the community at a local level. When place is the starting point for infrastructure planning, it provides a clear lens for identifying the different needs of Australia's communities. Recognising the diversity of areas across Australia, Infrastructure Australia's *2019 Australian Infrastructure Audit* divided the country into the below four categories, each including different types of settlements.[11] This signaled a shift to considering the distinct and unique geographies at work across Australia and this categorisation has also been used as a basis for the *2021 Australian Infrastructure Plan* and the *Infrastructure Priority List.* This definition has been used to support the *Regional Strengths and Infrastructure Gaps* analysis, with all regions outside of the four Fast-growing Cities of Sydney, Melbourne, Brisbane and Perth incorporated in the scope of the research.

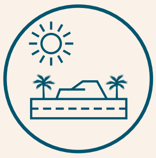
This chapter explores the definitions of settlement types to provide additional depth to understand the infrastructure challenges and opportunities in Australia's regions explored in this report. and the diversity of regions and settlements identified below.

Figure 2: Infrastructure Australia geographic definitions after the *2019 Australian Infrastructure Audit*

Fast-growing Cities
Sydney, Melbourne, Brisbane and Perth.

Smaller Capital Cities and Regional Centres
Smaller capital cities, Satellite Cities and Regional Centres home to more than 10,000 people.

Small Towns, Rural Communities and Remote Areas.
Small Towns with populations of fewer than 10,000 people and more than 200 people, rural communities with fewer than 200 people, and all remote areas outside of recognised settlements, including connecting infrastructure.



Northern Australia and Developing Regions
Developing regions with strong growth prospects and where industry composition is changing, and Northern Australia, including a mix of regions across the Northern Territory, and the northern parts of Queensland and Western Australia.

It is noted that the Smaller Cities and Regional Centres includes Regional Hubs as introduced through this report in section 3.2.

3.2 Infrastructure Australia's community classifications

The following classifications and descriptions have been developed as a starting point for a more nuanced consideration of regional Australia, rather than being intended to be universally applied across all sectors or contexts. Expanding on the four geographies included in the *2019 Australian Infrastructure Audit*, an additional description of Regional Hubs has been included to acknowledge the specific role these settlements play in their respective regions.

The classifications below includes populations as a common reference point, though not an absolute single or minimum threshold for inclusion. In developing these descriptions, greater emphasis has been placed on the broader attributes and role of a settlement in a greater region. These regions and classifications can also vary over time, for example areas can also have a substantial temporary population (e.g. due to tourism or temporary workers) which should also be considered alongside other unique attributes.

Infrastructure Australia proposes the use of a common set of regional definitions to support collaboration and knowledge sharing. Identifying commonalities and connections between communities supports collaboration through sharing solutions that can be effective at various scales. Other factors such as climate, population density and socioeconomic factors will also contribute to the characteristics of communities. Infrastructure Australia acknowledges classifying can create division, and therefore notes that communities may share characteristics with various definitions. Definitions should be used to support collaboration, not as a basis for exclusivity.

Figure 3: Infrastructure Australia's community classifications and key inter-dependencies

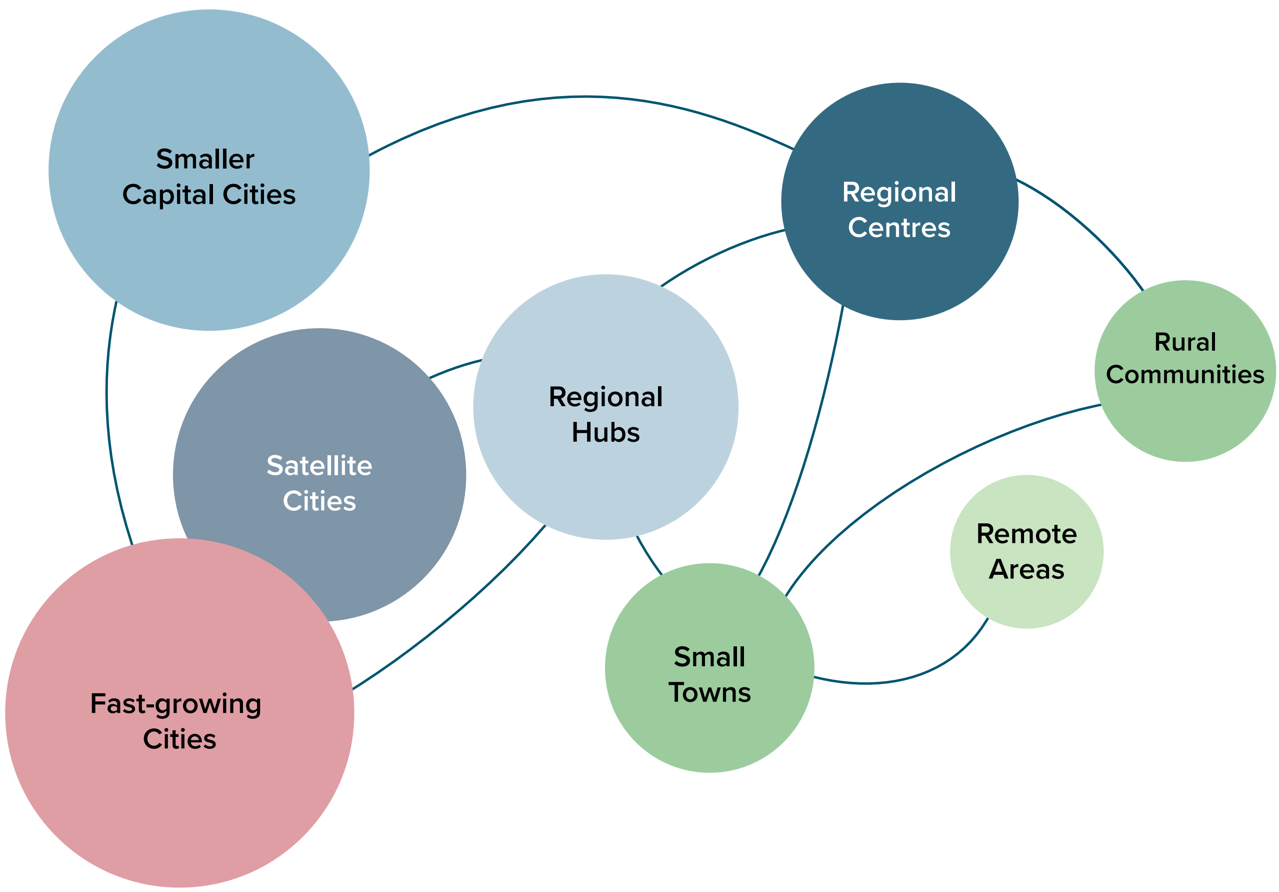


Table 7: Describing Infrastructure Australia's community classifications

	Description of common attributes	Examples	Population
Fast-growing Cities	As the capital of their respective state or territory, each capital city plays a significant role in their home state and the national economy. Fast-growing Cities are large capitals with diverse and dynamic economies, heavily connected to other major cities in the Asia-Pacific region, and with higher than average population growth.	Sydney, Melbourne, Brisbane and Perth	>2 million
Smaller Capital Cities	As the capital of their respective state or territory, Smaller Capital Cities have a collaborative metropolitan economy, with several established industries. They typically provide a range of important services to their surrounding regional settlements.	Adelaide, Canberra, Hobart and Darwin	<2 million
Satellite Cities	Satellite Cities have economies that are largely dominated by a few industries and typically provide a range of important services to their surrounding regions. They are within commutable distance of growing capitals and typically share major services, such as airports, water supply and major hospitals, with their larger neighbours.	Central Coast, Gold Coast, Geelong, Mandurah, Newcastle, Sunshine Coast, Wollongong	Typically >80,000
Regional Hubs	Regional Hubs typically have over 50,000 residents and are settlements which are not within commutable distance of a capital or satellite city. Instead, they provide key economic and social amenities for their network of surrounding communities. Regional Hubs may have multiple industry specialisations. They function as a central point of access to essential infrastructure, services and employment.	Albury–Wodonga, Alice Springs, Ballarat, Bendigo, Bundaberg, Cairns, Launceston, Mackay, Rockhampton, Townsville, Toowoomba, Tamworth, Wagga Wagga	Typically >50,000
Regional Centres	Regional Centres have populations above 10,000 which provide economic and social amenity for surrounding Small Towns, Rural Communities and Remote Areas. Local economies can have scale, however often have limited industry diversity with a concentration of a key industry or specialisation.	Broome, Dalby, Devonport, Gawler, Geraldton, Gladstone, Kingaroy, Mareeba, Ulverstone	>10,000
Small Towns	Small Towns with populations under 10,000 provide smaller scale services and rely on nearby Regional Centres or Regional Hubs. They typically have lower growth rates, one dominant industry and associated supporting life-services.	Casino, Castlemaine, Derby, Goolwa, Katherine, Wynward, Weipa, Yanchep	200 – 10,000

	Description of common attributes	Examples	Population
Rural Communities	Rural Communities are settlements with fewer than 200 people. These areas are categorised with low growth rates and often support the employees and families of single businesses, and their families. These communities may lack a clear and established centre.	Kiwirrkurra, Carrieton, Muttaburra	<200
Remote Areas	Remote Areas cover a wide expanse of the Australian continent outside of recognised settlements. These areas cater for significant economic activity, particularly associated with resources, agriculture and other primary industries. Some of these rates are characterised by seasonal growth, or relatively high growth rates. In absolute numbers, growth is often low.	This includes many outstations and homelands, as well as pastoral and resource leases.	<200

Cairns, Queensland

3.3 Understanding Regional Hubs, Regional Centres and critical success factors

Regional economies can vary in scale and complexity. As communities grow they increase in sophistication and complexity. Larger populations have the capacity to support a range of differing industries, moving beyond the vertical integration of economies that characterises Regional Centres, to Regional Hubs with the capability to support multiple specialisations, with limited connectivity, and the capacity to support trading patterns with a range of Regional Hubs and Regional Centres as well as larger cities.

Figure 4: Regional Communities increase complexity with scale

Characteristic		Regional Hubs	Regional Centres
Population		Typically >50,000	Over 10,000
Economic diversity	Trading patterns	Typically through a Fast-growing City with an export gateway	Typically directed through a Smaller Capital City, Satellite City or Regional Hub
	Economic specialisation	Multiple specialisations	Often single specialisation, with scale
	Industry structures	Diverse industry structures	Vertically integrated major industry
Catchment services		Social infrastructure service provision to communities within an expanded catchment, often including specialist care and tertiary education	Social infrastructure service provision often supported by a Regional Hub, Smaller Capital City of Fast-growing City
Examples		Albury–Wodonga, Alice Springs, Ballarat, Bendigo, Bundaberg, Cairns, Launceston, Mackay, Rockhampton, Tamworth, Toowoomba, Townsville, Wagga Wagga	Broome, Dalby, Devonport, Gawler, Geraldton, Kingaroy, Mareeba, Ulverstone,

In the classifications above, Regional Centres and Regional Hubs have been described in relation to three key attributes: catchment services, population and economic diversity. Population and scale is particularly important as it supports economies of certain sizes, as well as infrastructure and services, with interrelationships between the attributes. However, it is noted that there is a grey area between Regional Centres and Regional Hubs, which for some communities may prove difficult to draw the line between the two.

3.3.1 Population

In the classification applied here the indicative population for a Regional Hub is above 50,000, however the population boundary should not be treated as a hard and exclusive boundary, with other factors contributing to the dynamic of a settlement.

Many sources reference this as the point where a shift occurs to a large town[12] (ABS), regional centre (Modified Monash Model),[13] or a small city (Regional Australia Institute).[14] The Regional Australia Institute notes that settlements of 50,000 are sufficient to begin developing a diverse economy that fosters the kinds of innovation, markets and productivity exhibited in the major cities.[15]Places with a lower population are typically unable to combine the population size and economic diversity to drive city-style development.[16]

3.3.2 Economic diversity

As communities grow, dominant industries may develop due to a range of local factors, such as available natural or human capital. As communities develop these specialisations, associated industries develop creating vertical integration within a region and become a component of local identity. These economies of scale entrench dominant industries and provide a platform for growth and prosperity. However single specialisations can present vulnerabilities of communities to changes in industry fortune, such as the emergence of competition, substitutes or technological advancement.

As skills and resources become more diverse, the opportunity for diversification of local industry and business will emerge. This diversification can create economic resilience and support a broader cross section of workforce participation and growth the attractiveness of a community. However, successful diversification of specialization requires access to the skills and resources to support it. This is often dependent on overall community population and scale.

The population threshold to support diversification is impact by factors such as climate, remoteness, population density, socio-economic and other factors. The threshold can therefore vary based on conditions. This imprecise boundary complicates decision making in communities on the best path of economic growth. Communities with the characteristics of scale and relevant strengths may be best placed to pursue diversification while smaller communities with more narrow strengths may be better placed to build on incumbent strengths and getting that adjacency.

3.3.3 Catchment services

Both Regional Hubs and Regional Centres play a servicing role to the surrounding smaller communities in their catchments, providing economic and social amenities. This includes essential infrastructure, services and employment with examples including transport routes, telecommunications, energy, water and social infrastructure such as health and tertiary education facilities. Typically, Regional Hubs are able to provide more of a central point for more services, given their larger scale.

3.3.4 Leveraging strengths

While developing an identity built on local unique strengths is important for all places across Australia, it is particularly important for Regional Centres and Regional Hubs. These settlements are faced with significant demands from their neighbouring communities, but lack some of the structural advantages of their larger settlements and capital cities.

Strengths, or competitive advantages, of settlements in Australia's regions can be identified which include both infrastructure needs and other elements. Strengths provide the framework for a community to build a pathway for future economic growth and population attraction.

The Business Council of Australia also notes the need to identify regional growth areas around Australia that can make the greatest economic contribution to their regions, their states or territories and nation-wide.[17]

3.3.5 The role of regional classifications

Each region is unique, and this uniqueness is core to its identity. The strength of Australia lies in this diversity, but also in the ability of communities with shared experience to come together and to share knowledge and practice.

Infrastructure Australia's regional classifications support collaboration between communities by partnering analysis of Regional Strengths and Infrastructure Gaps with an understanding of the scale of a settlement. All Australian communities, of all scales, are important. Our objective is to support communities with shared characteristics to leverage common experience and shared resources to support growth.

Historically and by necessity, significant regional settlements have been labelled differently by governments, industry and communities themselves. The characteristics and objectives that support these classifications vary, for example from labour markets to water catchments. These classifications help support an understanding of appropriate policy responses, infrastructure investment and promote shared knowledge and practice.

Some classifications, including the Regional Development Australia (RDA) boundaries, incorporate relatively large spatial areas consisting of settlements of varying sizes and economic activity. This grouping of regions considers spatial proximity, grouping together places that are closely located. However, the RDA network includes regions of vastly different sizes, including the entirety of Tasmania, Northern Territory and Australian Capital Territory, to smaller regions in Southeast Queensland and coastal New South Wales. The scale of these regions can present challenges to policy makers and therefore needs to be partnered with an understanding of settlements within the region.

Infrastructure Australia's regional classification seeks to complement this spatial understanding by considering settlements within a region and their diversity. This includes examining the fundamentals of a community for infrastructure decision making, including population, population density, economic activity, economic diversification and rates of growth. These are however only some of the varying characteristics that shape communities. Infrastructure Australia has also considered climate and distance from other settlements in the development of the Northern Australia and Developing Regions category, which over lays Smaller Cities and Regional Centres as well as Small Towns, Rural Communities and Remote Areas, alongside our consideration of Satellite Cities.

The 2016 Senate Inquiry into the Future Role and Contribution of Regional Capitals to Australia explored the current and future contribution of regional capitals to Australia.[18] Regional Capitals Australia, which represents local governments in these areas, defines a regional capital as one that performs a capital city role for its residents and neighbouring communities. This was supported by many witnesses and submissions. The Senate inquiry reflected on the function and role that these settlements performed in communities, adding to consideration of size. It was also noted that a range of factors should be considered including population, natural resources, economic activity and proximity and relationships with other regions. Regional Capitals share many characteristics with Infrastructure Australia's Regional Hubs.

The Regional Australia Institute (RAI) Foundations of Regional Australia examines regional classifications and drew similar conclusions. The RAI definition of Regional Cities shares characteristics with Infrastructure Australia's Regional Hubs, while RAI's Industry and Service Hubs share characteristics with Regional Centre's. RAI also considered issues of proximity to other settlements.

While the use of consistent terminology to describe regions may present challenges to some stakeholders, it provides an opportunity to advance the discussion of both Australia's regions and Regional Australia.

> “A common language of regional classifications will support decision making and dialogue. It is a reference point not a rule.”

The creation of common terminology will allow increased collaboration on common issues, while bespoke classifications can be understood through the deviation from common language.

As the purpose of classifications vary, so too should the characteristics that are considered. However, a widely acknowledged common set of classifications would support an understanding of similarities, and variations, of bespoke classification schemes. For instance, the tropical cities of Townsville, Cairns and Darwin share similar challenges associated with issues like heat management, workforce attraction and urban amenity, despite Cairns and Townsville being classified as Regional Hubs and Darwin as a Smaller Capital City. Greater collaboration amongst those settlements on these and other issues should not be impeded by their differing regional classification.

3.4 Specialisation and diversification as growth paths

The characteristics of Australia's regional settlements helps to understand the potential growth paths for communities and the role of infrastructure in supporting that development.

As noted by the Regional Australia Institute and the University of South Australia in *The impacts of specialisation and diversification on Australia's mid-sized towns,* the optimal path to growth for a community will depend on a range of factors including the size of a settlement, its location and industry mix.

Smaller Towns and Regional Centres should focus planning and investment in the development of specialisation to create economies of scale. In turn, supporting efficiency, local skills, talent and resource attraction. The incumbent growth industries identified within the Regional Strengths in this report set out potential industries for specialisation.

As Regional Centres grow, additional opportunities exist for diversification. These opportunities could involve population services, such as healthcare or administration, as well as supporting industry, such as through transport. In many cases, examining adjacent industries or opportunities to leverage shared assets or resources, can accelerate growth. The Regional Strengths identified in this paper support planning for diversification, including both incumbent growth industries and key existing assets. Where a community pursues a path of growth in adjacent industries, regard should be given to the potential for workforce constraints, including wage pressures and potential shortages, as well as impacts on shared infrastructure.

As settlements reach more substantial scale, the opportunity to support unrelated diversification grows. An expanded workforce may benefit from diversification to support higher participation rates.

Strategies for industry specialisation and diversification should inform infrastructure planning in how they leverage existing assets and in the creation of new needs. Prioritisation should be given to shared facilities, and system-wide benefits considered from a place-based perspective to ensure cost-effective investment.

Regardless of whether a community has embraced diversification, continued support for incumbent industries and specialisation is often a key component of continued strong economic development and sustainable growth. However, as highlighted during the COVID-19 pandemic, communities with high exposure to vulnerable industries, for example the visitor economy, including food and accommodation and education, should consider the high risk associated with international economic vulnerability and changing trade patterns. Highly specialised communities may present greater risks, for example, high international trade exposure risking vulnerability of stranded assets, which can be costly to maintain, even during periods of low use.

Port Hedland, Western Australia

Cairns, Queensland

4. Common consultation themes

4.1 Impacts of the COVID-19 pandemic

The COVID-19 pandemic has resulted in a significant rise in growth in the regions. This is driven by a range of factors:

- **Longer-term settlement –** the increased adoption of remote working practices has created the opportunity for some professionals to relocate for long-term periods or perhaps permanently. This has involved a significant move to lower housing cost and attractive lifestyle locations. This has been seen in satellite suburbs and commuter regions, such as the Illawarra, Hunter, the Sunshine Coast, Gold Coast and Tasmania.
- **Short-term settlement** – with reduced internal visitation and increased workplace flexibility, increased short-term population movements has created pressure on smaller towns and holiday locations. While these stays may not be permanent they have increased in frequency increasing average infrastructure use. This behaviour has been seen across more disparate coastal locations, such as the NSW North and South Coasts.
- **Suspended exit** – Many smaller communities with limited education and employment opportunities were prior to COVID-19 characterised by population contraction. With increased service delivery and education opportunities, some residents were able to maintain their connect to these communities for longer, working or studying remotely. This has impacts some Rural Communities.
- **Fly-in, fly-out and remote family reunion** – with border restrictions and reduced face-to-face schooling, some families have relocated to the area of the main income earner, often involved in the resources or extractive industries, in areas such as the Pilbara.

The highest net inflow from capital cities to regional areas occurred in 2020, with a net 43,000 Australians moving to regional areas from capital cities, compared to 18,900 in 2019.[19] This was the highest net inflow to the regions on record, with regional Queensland having the biggest net inflow of all the states, followed by regional areas of Victoria and New South Wales.[20] These trends continued in the March 2021 quarter with capital cities having a net loss of 11,800 people from internal migration, the largest quarterly loss on record.[21] Stakeholders noted that these impacts have brought about or exacerbated demand for improved telecommunications, housing, tourism and road infrastructure.

The need for reliable and high-speed telecommunications connectivity to access employment and services was raised frequently in consultations. Participants noted that during periods of lockdown, the importance of digital connectivity was heightened, as online communication became the main method of social engagement and accessing essential services. Participants raised how as e-commerce became more prevalent, businesses needed an online presence, individuals had to adopt remote working practices, and young people engage in remote education. The influx of sea- and tree-changers has also brought additional expectations of metro-equivalent digital connectivity. These shifts have increased the need for reliable internet bandwidth and speeds to ensure Australia's regions are not disadvantaged. Digital connectivity challenges have also been raised by stakeholders through the Australian Government's *2021 Regional Telecommunications Review.*[22]

Sea and tree-changers and higher domestic tourism visitation has also exacerbated housing and accommodation availability and affordability issues for many regions. The COVID-19 pandemic has accelerated population growth and domestic tourism, raising demands for private and rental housing as well as accommodation offerings. As a result, many regions are experiencing greater housing shortages and increasing housing prices. This is particularly detrimental for low socioeconomic populations who can no longer participate in an unaffordable private market and must rely on social and affordable housing, which is often in limited supply.

Higher levels of regional tourism have also increased the need for better wayfinding and tourist amenity infrastructure, as well as improved access to landmarks. Road infrastructure is particularly important in enabling access to regional areas and subsequently, local tourism offerings. For many regional areas, better tourism infrastructure is necessary to enable growth of the local tourism industry and further capitalise on an influx of domestic tourists.

4.2 Strategic planning

Strategic planning is vital in providing a long-term vision for Australia's regions, through enabling sustainable and resilient infrastructure planning and delivery, as well as prudent public investment decisions which deliver the greatest social and economic benefits. Workshop participants raised concerns over short-sighted infrastructure decision-making occurring in the regions due to constraints, including limited funding, lack of resources, and an absence of existing strategic and integrated plans. As a result, stakeholders expressed the view that governments tend to have a reactive rather than proactive culture around planning for regional population changes.

Stakeholders consulted expressed a view that a clear political vision and cohesive plan to respond to growth in regions would be helpful in achieving national understanding and driving the right level of long-term strategic infrastructure funding. Local and place-based planning decisions are crucial to the success of Regional Australia.

4.3 Collaboration, funding and infrastructure delivery

Infrastructure plays a significant role in regional development. Firstly, infrastructure can encourage economic growth by removing barriers to industry investment, enabling job creation and creating an environment where businesses can expand.[23] Better collaboration in infrastructure policy and delivery, and clear ownership of responsibilities across the levels of government were raised as crucial to delivering on strategic priorities and infrastructure provisions. If governments are disconnected, the likelihood of delivering on strategic priorities, or realising the full benefits and desired outcomes of a project become difficult.

The impacts of increasing expectations for leadership in infrastructure planning and delivery from local government was identified as a capability and capacity barrier throughout consultation workshops. Community representatives suggested this change has often not been accompanied by a similar increase in funding and available resources. As a result, the ability of local government to deliver on service expectations, maintain existing infrastructure and deliver on future infrastructure needs is being compromised.

Cairns, Queensland

4.4 Impacts of major projects

Workshop participants identified the importance of ensuring that major planned infrastructure projects in the regions do not have unanticipated or adverse impacts, such as pressure on other local infrastructure networks.

Often major infrastructure projects in regional areas require external workers to be brought into the region. This additional impact needs to be carefully planned where it places additional pressure on local infrastructure, services and accommodation where capacity is often already limited. Planning should also identify opportunities to increase skills and knowledge creating new opportunities for the local workforce. This often requires early certainty of future investment and long lead times. This approach can ensure sufficient time for local industry to adjust, whereby maximising local industry engagement and employment. Participants recognised a need for major projects to anticipate and better manage negative impacts in parallel with capturing opportunities to realise new benefits for the local community.

Participants highlighted that if managed well, these major projects can deliver substantial economic benefits to Regional Australia, including as enablers for growth in key sectors with an emerging presence, such as advanced manufacturing, renewable energy, tourism, technology-enabled primary industries, critical minerals and food products.[24]

4.5 Socioeconomic inequality within regions

The centralisation of services to major centres, such as Regional Hubs, and an increase in regional population is contributing to greater socioeconomic inequality in smaller communities. Challenges are particularly pronounced where services are withdrawn without a commensurate focus on improved physical and digital connectivity. The centralisation of services was viewed as detrimental to the equitable access of healthcare, aged care, early childhood education and disability services. Participants identified service delivery models in Regional Australia as requiring a place-based and innovative approach, with the nature of geographically dispersed communities requiring a bespoke delivery model to meet service expectations.

Population and settlement trends in Regional Australia including, an influx of generally more affluent sea and tree-changers, and population shifts from rural and remote communities to service centres were also identified as factors contributing to broader socioeconomic inequality in Australia's regions.

4.6 Sociodemographic challenges

Many regional areas are struggling to attract a diverse and productive population due to an inability to provide the necessary social infrastructure and services to support liveability outcomes for young families, young people and older Australians.

For young families, access to quality of early, primary and secondary education infrastructure are key areas to ensure parents can remain productive in the workforce whilst their children receive the same opportunities provided in metropolitan areas.

For school leavers and young adults, adequate tertiary or vocational education offerings, in addition to social amenities and arts and cultural infrastructure, support the retention of young people within regions. These services and infrastructure, as well as employment pathways for young people, are crucial to ensuring young people study locally and remain in the region as they start their career.

Lastly, older Australians play a significant role for Australia's regions as they can inject significant capital into the local economy. However, older Australians are struggling to age in place as access to specialised healthcare, geriatric care and accessible community infrastructure and streetscapes are limited in the regions. As a result, many older Australians are forced to relocate closer to their children who are often in metropolitan areas or to a service centre where they can find additional support. There is a need to provide a greater variety of aged care options in regional Australia which retain social connection and allow older Australians to age in place.

4.7 Infrastructure needs of First Nations communities

Infrastructure Australia sought to directly engage with First Nations stakeholders throughout the *Regional Strengths and Infrastructure Gaps* project. In addition to extending invitations to key community leaders and representatives to participate in local workshops, we undertook three targeted workshops which engaged directly with stakeholders from First Nations communities, First Nations businesses and service providers who work closely with First Nations populations. These workshops took place in Broome, Darwin and Cairns to complement the in-person RDA workshops held in these regions (Kimberley, Northern Territory and the Tropical North).

Infrastructure Australia launched our first *Reconciliation Action Plan* in 2020 and is our public commitment to the national reconciliation movement.

4.7.1 Enabling industry growth and access to economic opportunity

Across Australia First Nations peoples are comparably lower across measures such as labour force participation, median income, engagement in further education, health and digital connectivity.[25] First Nations communities continue to experience social and cultural dislocation. Many communities hold a desire to be genuinely involved in infrastructure planning and delivery.

Stakeholders in the Northern Territory region in particular highlighted the need for more bespoke models to ensure First Nations communities benefit from infrastructure delivery associated with commercial activity, such as mining, gas, agriculture and tourism. Northern Territory workshop participants also identified the potential for renewable energy generation, observing the climate and geography as well-suited for solar generation, as well as offering potential opportunities for hydrogen production.

More broadly, greater investment in road infrastructure was noted as being a key enabler of growth in the tourism industry. Investigation of the potential for aerospace industry development in Remote Areas was also identified as a potential means of diversifying economic opportunities for these First Nations communities.


Darwin, Northern Territory

4.7.2 Placing culture at the centre of infrastructure planning

Participants indicated a desire for more opportunities for First Nations communities to drive their own decision-making by encouraging self-determination and providing options to pursue economic opportunities which align with their culture and connection to country. First Nations workshop participants expressed that this would require culture to be at the centre of First Nations infrastructure policy and planning.

Stakeholders in the Kimberley region highlighted a key issue for the region as being a lack of cultural infrastructure which supports connection to country and assists to maintain First Nations culture and language, emphasising the importance of community involvement in identifying these needs across community.

4.7.3 First Nations-led infrastructure and service delivery

To improve outcomes for First Nations peoples and drive meaningful change in infrastructure planning and delivery, there was a consensus view on the importance of greater opportunities for First Nations peoples to participate in decision making. Stakeholders from the Tropical North region highlighted that greater inclusivity in infrastructure planning and delivery this may lead to opportunities to upskill First Nations peoples and provide economic growth for the region.

Where responsibility for service delivery in First Nations communities has shifted from the National Indigenous Australians Agency (NIAA) to Aboriginal Community Controlled Organisations (ACCO), ACCO stakeholders identified a risk that many organisations were not receiving sufficient support, or in some cases funding, to deliver the required infrastructure to enable meaningful self-determination. In other communities, ageing and poorly maintained infrastructure assets were observed to exacerbate gaps in service access for First Nations populations.

Participants in the Kimberley region workshop expressed a collective concern over access to healthcare, justice and employment services to support ACCO.

4.7.4 Dealing with the impacts of climate change

Consultation also highlighted a common concern around the disproportionate impacts of climate change on remote communities, many of which are home to a significant proportion of First Nations peoples. Stakeholders from the Tropical North region, which encompasses the Torres Strait Islands, expressed community concerns in relation to rising sea levels and the threat of community displacement. Participants identified the need for more support for environmental management and resilience, particularly in these vulnerable areas and in response to increasing impacts from natural disasters. Opportunities were identified to draw upon local knowledge and land management practices with within First Nations communities to manage these risks.

4.7.5 Improving water security

An additional challenge facing First Nations communities in the regions is water security and responsible water resource management. In many regions, water security is expected to be an increasingly challenging issue as a result of longer and more intense dry periods necessitating redistribution from natural wells and private storage infrastructure. A lack of reticulated water systems is a major issue for remote First Nations communities, with some communities currently drinking untested water with unknown health impacts.[26] Many other communities have limited services for the treatment of wastewater and sewage.

Stakeholders in the Kimberley region noted that there are significant challenges in ensuring sustainable development of the Fitzroy River, which supports irrigated agricultural and pastoral lands.[27] In the Tropical North region, water infrastructure in remote communities was highlighted as an area of concern, with communities often relying on untreated water in back-up water supplies as a result of ageing water infrastructure assets.

4.7.6 Providing access to quality social infrastructure

Access to quality social and community infrastructure emerged as a common theme in consultation with First Nations stakeholders. In the Tropical North Region, workshop participants raised concerns over education services and attainment for remote communities. Education outcomes were identified as being significantly inferior to those provided in areas with a lower proportion of First Nations peoples.

The Northern Territory region also identified significant opportunities for the improvement of infrastructure to connect Remote Areas and reduce the level of disadvantage faced by residents. Stakeholders emphasised the need to improve access to health infrastructure which has the capacity to cater to the needs of Aboriginal and Torres Strait Islander communities. Access to aged care – both residential facilities and community care – was also raised as a key area of concern as many First Nations peoples, with the desire to age in place on country high amongst many communities.

In the Kimberley region, social and cultural infrastructure was identified as not keeping pace with population demands. Skills and training opportunities for First Nations peoples were considered to be limited. Participants also expressed collective concerns that the COVID-19 pandemic exposed major flaws in health and community infrastructure and access to basic services such as health. The need for lockdowns was reported to also have significant impacts on remote communities, bringing about shortages in supplies of essential goods and services.

4.7.7 Housing availability and affordability

The availability, affordability and quality of housing was highlighted across consultations as being a key issue for First Nations communities. The *2019 Australian Infrastructure Audit* (Challenge 126) identified that housing is not meeting the needs of First Nation communities across remote Australia, exacerbating health, education and well-being outcomes. Overcrowding is leading to poor outcomes for First Nations peoples in Remote Areas, which is also identified on our *Infrastructure Priority List*.

Stakeholders in the Northern Territory expressed concerns around how the supply of housing has impacted on the region's capacity for economic growth. This shortage was noted as being a challenge across the region, affecting both major cities such as Darwin and remote communities. Participants agreed that housing availability and housing overcrowding is a major issue within the region.

Housing shortages also came to the fore as a key issue in consultation with First Nations stakeholders in the Kimberley region, with a lack of housing affordability in the private market to accommodate workers and an undersupply of affordable and social housing throughout the region.[28]

Black Mountain, Canberra, Australian Capital Territory

5. Regional Strengths and Infrastructure Gaps

5.1 Infrastructure Gaps

An 'Infrastructure Gap' is a regionally significant challenge or opportunity. An Infrastructure Gap does not need to be of national significance, but goes beyond hyper-local, isolated issues. This report provides an examination of the identified Infrastructure Gaps, broken down by region.

Regional Strengths and Infrastructure Gaps does not identify, analyse or recommend solutions to these gaps; infrastructure solutions could potentially be addressed by investment or reform. Solutions can also be identified and delivered by any level of government as well as private industry or communities. It is noted that infrastructure interventions for these challenges and opportunities may only form part of the solution and this will vary with the context of each region.

5.1.1 Regional Infrastructure Gaps

A total of 479 Infrastructure Gaps were identified across Australia's regions. The full list of Infrastructure Gaps identified for each region can be found in **Appendix B - Infrastructure Gaps**. **Table 8** below lists the categories of these identified Infrastructure Gaps.

Table 8: Infrastructure Gap categories

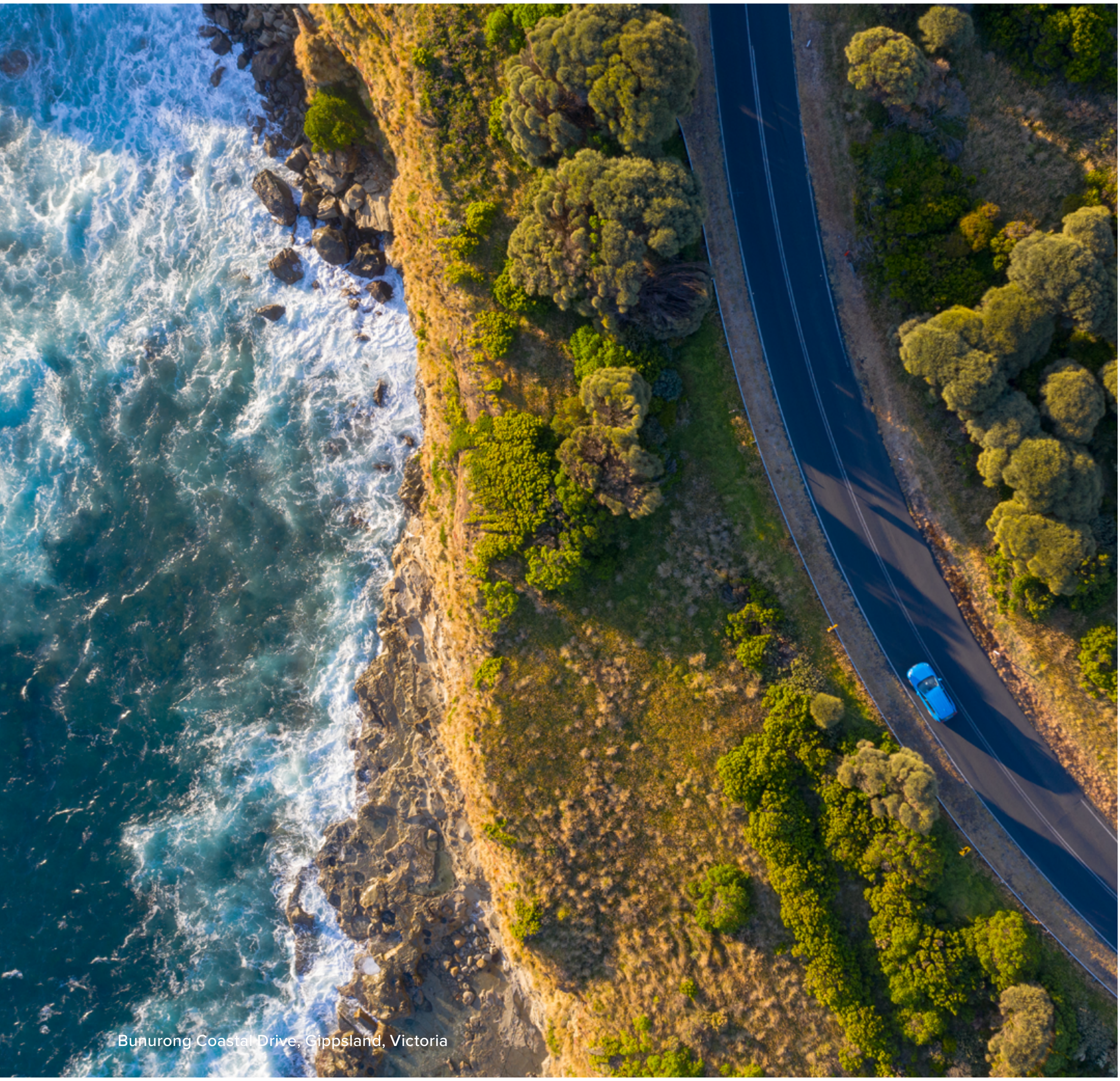
Sector	Infrastructure Gap	Challenges and opportunities
Social infrastructure	**Provision and quality of arts and culture infrastructure**	**Provision and quality of arts and culture infrastructure** has been identified as an Infrastructure Gap in regions where access to existing infrastructure is limited or where improvements in quality are needed. Arts and cultural infrastructure includes the buildings and spaces that accommodate or support cultural activities, production and events. Arts and cultural activities deliver a range of benefits such as improving social cohesion, enhancing liveability, facilitating economic development and increasing tourism potential.
	Provision, quality and protection of green, blue and recreation infrastructure	**Provision and quality of green, blue and recreation infrastructure** has been identified as an Infrastructure Gap in regions where access to existing infrastructure is limited, requires protection or where improvements in quality are needed. Green, blue and recreation infrastructure include both natural and built spaces which people may use for active transport, to play sports and exercise, to relax, to learn and connect with their communities. This infrastructure can provide a wide range of social, environmental, governance and economic benefits, build resilience and increase the health and wellbeing of communities. Green infrastructure refers to the range of natural and built landscape assets which incorporate vegetation. It includes areas of public and private land such as parks, fields, verges, rooftop gardens, green facades, walking and cycling tracks, street trees and backyards. Blue infrastructure refers to beaches and waterways, such as harbours and rivers, and the facilities that support them, including foreshores, surf lifesaving and water recreation clubs, jetties and wharves. Recreation infrastructure includes both small and large-scale sports and community facilities. Some examples include sports fields, grounds, stadiums, public swimming pools, playgrounds, skate parks, community centres, libraries and the public realm.

Sector	Infrastructure Gap	Challenges and opportunities
Social infrastructure	**Capacity, quality and accessibility of early, primary and secondary education**	**Capacity, quality and accessibility of early, primary and secondary education** has been identified as an Infrastructure Gap in regions where the existing infrastructure capacity is constrained, improvements in quality are needed or access is limited. Enhancing the capacity, quality and accessibility of early, primary and secondary education infrastructure is a key factor in delivering high-quality education, which has flow-on effects in building local capacity by attracting workers, families and long-term residents to the regions. Education infrastructure for early, primary and secondary education is the buildings, facilities and campuses which support the delivery of high-quality educational outcomes for children.
	Access to further education and skills training	**Access to further education and skills training** has been identified as an Infrastructure Gap in regions where access to tertiary education, TAFE or other skills training facilities is limited. The scope of this challenge varies relating to the context of the region and may also include where there is an identified needs to address sector shortages, support employment pathways, skills and economic development where infrastructure may form part of the solution. Tertiary education infrastructure includes TAFE, universities and other tertiary education facilities together with associated skills training policies and incentive programs.
	Access to and capacity of health and aged care infrastructure	**Access to and capacity of health and aged care infrastructure** has been identified as an Infrastructure Gap in regions where access to or capacity of full-service health and aged care facilities is limited. Access to this infrastructure is crucial in promoting and maintaining a healthy society, particularly in the face of population growth and an ageing population. Health and aged care infrastructure is delivered by a variety of public and private providers in a range of settings, and includes illness prevention, health promotion, the detection and treatment of illness, rehabilitation and end-of-life care.

Sector	Infrastructure Gap	Challenges and opportunities
Social infrastructure	**Availability, diversity and affordability of housing**	**Availability, diversity and affordability of housing** has been identified as an Infrastructure Gap in regions where there are housing supply needs affecting availability, need for increased diversity of dwelling types to support the existing and future population or affordability challenges. Housing and accommodation is critical to attracting and retaining residents and workers. Public and private housing markets are inextricably linked and there are flow-on effects from an undersupply of affordable and social housing which increases pressure on the private housing market. These issues constrain growth as workers and their families cannot find available, affordable and appropriate housing. Lack of appropriate housing can also exacerbate social issues and negatively affect health and wellbeing. In many instances demands on housing have been intensified by the COVID-19 pandemic.
Energy	**Distribution, transmission and generation of energy**	**Distribution, transmission and generation of energy** has been identified as an Infrastructure Gap in regions where there are opportunities to increase energy security, reliability, affordability or lower emissions. Regions have identified ensuring supply as critical for both residents and industry. There are challenges in maintaining and upgrading existing infrastructure (production, storage, transmission), as well as potential opportunities for expansion of existing capabilities to improve energy security or provide opportunity for scale, including in renewables. This includes existing generation and transmission networks alongside infrastructure for renewable energy, including solar, wind, tidal, biomass or emerging technologies such as hydrogen.
Place and economic development	**Industry-enabling Infrastructure to support growth and innovation**	**Industry-enabling infrastructure to support growth and innovation** has been identified as an Infrastructure Gap in regions where challenges are cross-cutting, such as digital connectivity, transport, water, and energy security that constrain growth and innovation in a range of sectors. A lack of effective precinct planning and associated infrastructure impedes new opportunities to support growth and innovation in key existing and emerging industries such as tourism, agribusiness, manufacturing, and the resources sector.
Resilience and sustainability	**Natural disaster resilience**	**Natural disaster resilience** has been identified as an Infrastructure Gap in regions where infrastructure resilience is a key area of concern, with a need to plan, design, build and operate infrastructure in a way that prepares for the increasing incidence of events such as bushfire, flooding, drought, heatwaves or severe storms.

Sector	Infrastructure Gap	Challenges and opportunities
Telecommunications	**Broadband and mobile connectivity**	**Broadband and mobile connectivity** has been identified as an Infrastructure Gap in regions where digital connectivity is a challenge and current infrastructure does not ensure user, business and industry needs are met. The impacts of this gap are wide-ranging, with some remote communities suffering from social exclusion as a result of limited or non-existent telecommunications infrastructure. Optimising the speed and capacity of existing digital connections in some major centres has been identified as a key enabler of growth.
Transport	**Capacity, connectivity and quality of freight infrastructure**	**Capacity, connectivity and quality of freight infrastructure** has been identified as an Infrastructure Gap in regions where there are opportunities to reduce conflict of uses, improve efficiency, access and support export markets and industry. Freight infrastructure encompasses roads, railways, ports and intermodal facilities and the capacity of these assets to facilitate the effective and efficient movement of freight.
	Capacity, connectivity and quality of road infrastructure	**Capacity, connectivity and quality of road infrastructure** has been identified as an Infrastructure Gap in regions where there are opportunities to allow for efficient movement of people by road. This is particularly crucial to rural and remote Australia, where access by road may be the only feasible means of reaching communities or primary industry operations.
	Capacity, connectivity and quality of public transport	**Capacity, connectivity and quality of public transport** has been identified as an Infrastructure Gap in regions where current infrastructure does not sufficiently connect people and places through public transport. This challenge has been raised by stakeholders in both rural and Remote Areas and growing centres. Enhancing public transport connectivity provides an opportunity to improve amenity, liveability and wellbeing for communities.
	Capacity, connectivity and quality of air transport	**Capacity, connectivity and quality of air transport** has been identified as an Infrastructure Gap in regions where there are opportunities to improve access to regional communities. This is a particularly pressing issue for some rural and Remote Areas, where air transport is a vital means of access for residents, workers and emergency services, particularly during the wet season.
Waste	**Waste management and resource recovery**	**Waste management and resource recovery** infrastructure has been identified as an Infrastructure Gap in regions where there are opportunities to more efficiently manage resources and waste. This includes opportunities for the regions to develop circular economy capacity through leveraging unique strengths such as biomass productions, however seizing these opportunities requires investment in specialised infrastructure.

Sector	Infrastructure Gap	Challenges and opportunities
Water	**Water security**	**Water security** has been identified as an Infrastructure Gap in regions where water supply is insufficient, unreliable or expensive. Water security is essential to life, as well as a crucial factor in enabling population and industry growth, feasibility of entry into new industry such as hydrogen production, and providing basic liveability for rural and remote populations which may lack access to quality reticulated water systems. Industry sectors such as agriculture, mining and manufacturing are particularly dependent on water quality and security.


Bunurong Coastal Drive, Gippsland, Victoria

5.1.2 Regional Infrastructure Gap trends

The list of Infrastructure Gaps derived from the examination of existing regional development and infrastructure strategies was assessed using the Regional Infrastructure Gaps Prioritisation Framework and 3-4 priority Infrastructure Gaps were selected for each region. **Table 9** summarises the frequency at which these priority Infrastructure Gaps appeared across all 48 regions included within the scope of the project.

Table 9: Infrastructure Gaps identified as a priority through the *Regional Infrastructure Gaps Prioritisation Framework*

Infrastructure gap	Number of regions where an Infrastructure Gap is identified as a priority through the *Regional Infrastructure Gap Prioritisation Framework*
Availability, diversity and affordability of housing	26
Broadband and mobile connectivity	23
Water security	22
Access to further education and skills training	19
Capacity, connectivity and quality of public transport	15
Capacity, connectivity and quality of freight infrastructure	12
Capacity, connectivity and quality of road infrastructure	9
Distribution, transmission and generation of energy	7
Industry enabling infrastructure to support growth and innovation	5
Access to and capacity of health and aged care infrastructure	3
Provision, quality and protection of green, blue and recreation infrastructure	3
Waste management and resource recovery	1
Natural disaster resilience	1
Capacity, quality and accessibility of early, primary and secondary education	1
Provision and quality of arts and culture infrastructure	0
Capacity, connectivity and quality of air transport	0

The Infrastructure Gaps relating to air transport and arts and culture infrastructure were identified as Infrastructure Gaps, however were not identified as priority Infrastructure Gaps for regions through the *Regional Infrastructure Gaps Prioritisation Framework*.

5.2 Regional Strengths

Within the context of this project, the 'Regional Strengths' of a region reflects its key regional assets and key regional growth industries. Regional Strengths are a key component of regional competitive advantage. Regional Strengths are the building blocks on which a competitive advantage can be developed and delivered. However, to become a competitive advantage they require deliberate planning and decision-making to support these outcomes.

Key regional assets may include natural, economic or social assets which provide value, competitive advantage, and/or a point of difference for the region. Key regional growth industries are those which have a strong existing presence in the region and show potential for growth and/or to develop competitive advantage. The process for identifying Regional Strengths is outlined in *Appendix A - Methodology*.

5.2.1 Key existing assets

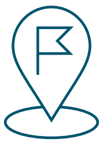
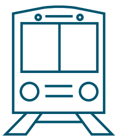
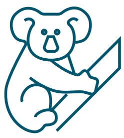
Australia's regions are home to countless and invaluable assets. The breadth of natural, economic and social assets held by the regions are not covered in their entirety within this report. However, through combining outputs from research and local consultation, we have highlighted some of the distinctive assets of each region.

In identifying these assets, Infrastructure Australia undertook extensive research on each region and presented the outcomes of this research to local stakeholders for feedback. Findings were categorised across 16 asset categories outlined in **Table 10** below.

Table 10: Key existing asset categories

Asset category	Description
Climate and topography	Favourable climatic conditions and a geography which enables high industry productivity are key enablers of growth for both traditional and emerging industries, including agriculture and forestry, tourism and renewable energy production.
Community infrastructure	Arts, cultural, sporting and recreational facilities which offer enhanced amenity and cohesion for residents, provide destinations to attract visitors and increase associated spend, and support community resilience in times of natural disaster.[29]
Cultural heritage	Australia's regions are home to a wealth of significant First Nations sites and landscapes which provide connection to country and culture. Beyond this significant cultural offering, Australia's regions are home to heritage-listed assets, locations and places which enhance social capital and contribute to unique settings which attract both residents and visitors.[30]
Defence assets	Regions with significant defence assets, including bases and training facilities, benefit both directly and indirectly from their presence. There are substantial flow-on effects from their presence, with employees contributing to the spending and services in regional economies.

Asset category	Description
Education and research institutions	Australia's regions are home to education and research facilities at every scale. Large tertiary institutions provide education and employment opportunities to locals, draw in international students, and deliver world-class research outputs. Skills training and specialised research facilities also deliver substantial social and economic value for local communities, in helping to address skills shortages and to develop emerging industries.
Energy infrastructure	Regions with effective energy infrastructure benefit from robust traditional energy supply, transmission or distribution infrastructure, or renewable energy generation, storage and distribution assets. This helps both enhance local energy security and offer economic opportunity through the transmission of power outside of the region.
Gateway ports	Gateway ports provide key access points for regions across Australia – both sea and air. These critical points of entry and exit support trade and economic development by supporting supply chains, providing access to goods which support industry and community demand.
Health infrastructure	Health infrastructure assets in Australia's regions vary greatly in their scope and size, from large-scale hospitals with world-leading research capacity to small-scale, community-run facilities in Remote Areas. This infrastructure can encompass primary, secondary or tertiary care facilities.
Major attractions	Australia's regions are home to many major attractions which support local employment and attract visitor spending. These attractions range from alpine resorts and zoos to theme parks and motorsports facilities.
Natural environments	From extensive coastline and World Heritage Listed landscapes to National Parks and the 'endless horizons' of our outback, the natural environments throughout Australia's regions not only attract tourism spend but deliver an enviable quality of life for residents and support vibrant flora and fauna.

Asset category	Description
Natural resources 	With most of Australia’s mining and resource extraction operations located in Regional Australia, the industry’s value to the regions is immense. Beyond economic value, these resources support substantial direct and indirect employment opportunities.
Specialised precincts 	As towns and centres grow, many of our regions are seeing the value in placemaking initiatives which deliver innovation and entrepreneurship through co-location. Examples include health, education and knowledge precincts; and the co-location of specialised industry operations.
Strategic location 	Our regions play a vital role in connecting communities and markets. Most of Australia’s freight and supply of goods moves through Australia’s regions, and a region’s strategic location in relation to key areas of production, supply or markets can play a critical role in supporting and growing its economy, as well as enhancing access to services.
Transport infrastructure 	Accessible transport infrastructure enhances physical connectivity for residents of a region and delivers economic stimulus by providing opportunity for high-productivity movement of goods. These assets may include significant road and rail routes which see heavy use by, or provide critical access for, freight or passengers.
Tourism brand 	Regional Australia’s distinct combination of natural, social and economic assets is central to its popularity as a destination for domestic and international visitors. Many regions across Australia are capitalising on strengths such as food and wine trails or natural environments to develop their tourism brand.
Water infrastructure 	Water is critical to the economic and social wellbeing of Australia’s regions. Access to high-quality water infrastructure encompassing supply, storage and distribution assets ensures regions can meet the competing demands and remain competitive.

5.2.2 Key regional growth industries

Australia's regions are powerhouses of both traditional and emerging industry. Over 30% of Australia's Gross Domestic Product is generated in Australia's regions, with the value of this contribution even greater when accounting for flow-on economic value derived from primary production.[31]

Research and evaluation of key existing and emerging industries across Australia's regions, combined with input from local stakeholders, have been used to select key regional growth industries for each of the 48 regions within the scope of this report. Whilst not exhaustive these key regional growth industry categories highlight some of the most significant generators of economic growth and job creation across the regions.

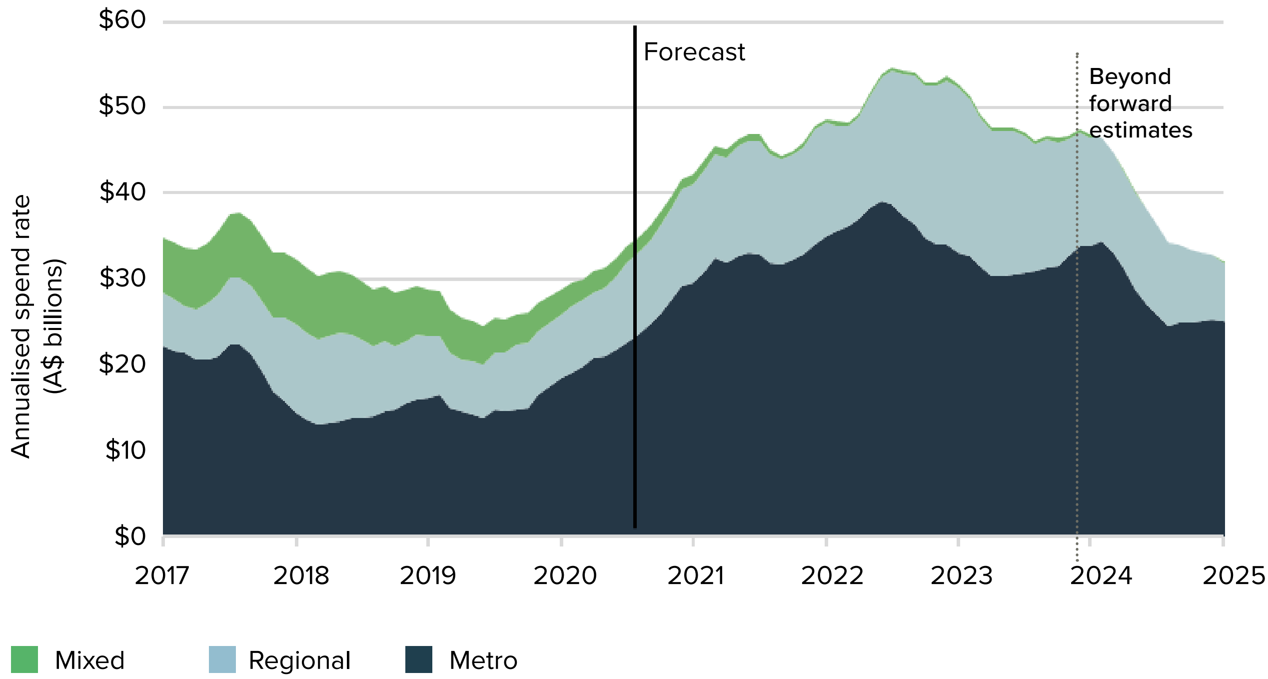
The key regional growth industries selected for each region reflect incumbent strengths, growth rates and potential, as well as alignment with existing regional development strategies. The existing potential of each of these key regional growth industries on a national scale – relevant to the regions – is outlined below. Details on the industries selected for each region can be found in Chapter 6.

The categories used below are further outlined in *Appendix A - Methodology,* noting partial alignment with the Australian and New Zealand Standard Industrial Classification (ANZSIC) categories. It is noted that Construction was not included as a category due to large contributions across Australia and crossover with other categories.

Infrastructure Australia's *2021 Infrastructure Market Capacity* report explores the capacity of the infrastructure industry to deliver a record investment in major public infrastructure projects. Australia is experiencing a record level of investment in infrastructure nationally with shortages expected in skills, labour and materials.

Over the next five years the proportion of expenditure in regional areas across Australia is expected to rise with rural spends forecast to increase from $6.9 billion to $15.6 billion between 2019-2020 to 2022-2023. The bulk of this rise is driven by regional transport projects, such as Inland Rail, although building and utilities sectors will experience sharp growth also. The risk ahead is the capability and capacity of regions to deliver such aggressive growth. Infrastructure Australia's research highlights skills for many regional infrastructure projects are often sourced from metro areas. Competition for skills in both markets will remain tight through to 2024. With constraints on key skills, higher quality skills run the risk of being quarantined to the highest bidder which is likely to see them focused on larger infrastructure projects in the larger states, with reduced capability available for smaller projects and smaller state and territory governments, as well as local government, and particularly in regional areas.[32]

Figure 5: Infrastructure investment in regions is forecast to rapidly rise[33]



Healthcare and social assistance

The health and social services industry, encompassing healthcare and social assistance, plays a critical role in the development of Australia's regions, as it directly contributes to community wellbeing and overall quality of life.[34] The economic contribution of these assets is often underappreciated, with significant direct impacts through employment and secondary impacts through workforce support.

Adequate health infrastructure and quality service delivery are vital in ensuring population wellbeing in regional areas, as well as enhancing liveability in these locations. The need is particularly pressing as rural and remote populations tend to experience poorer health outcomes than those in metropolitan areas.[35] Health infrastructure in Australia's regions is often smaller and more dispersed than in major cities, which can result in demand exceeding availability of primary, secondary, and tertiary healthcare in regional areas.[36]

Challenges

- A common trend among many regional towns is a lack of diversity in community health facilities and limited availability of local mental health, disability and other specialised healthcare services.[37,38,39] Residents in Remote Areas seeking specialised care often need to travel longer distances to access suitable facilities in major centres, or otherwise relocate altogether to be in closer proximity. This is also the case for social assistance services such as aged care.[40]
- In Australia, the health and social services industry contributes 14% of regional jobs, with the majority requiring specific expertise and qualifications.[41] A persistent challenge for Australia's regions has been attracting and retaining skilled labour in more rural and Remote Areas.[42] As a result, the health sector is frequently subject to staff shortages that compromise the quality and range of services delivered.[43]

Opportunities

- The changing health needs of regional communities have made it essential for the sector to improve diversity, capacity and quality of local healthcare through adequate infrastructure. In particular, additional aged care facilities will be needed to meet the demands of Australia's ageing population, with the proportion of over 65-year-olds in the total population rising 3.9% since 2000.[44]
- Regional Australia has significant opportunities for improving telehealth infrastructure, where digital capabilities can be used to improve accessibility and quality of healthcare for rural and remote communities.[45]
- Of the eight states and territories in Australia, five have reported health and social services as being their fastest growing employment industry over the past two decades.[46] The potential for ongoing growth is further supported by Australian Government initiatives such as the National Disability Insurance Scheme and targeted medical training programs in Small Towns, Rural Communities and Remote Areas that are aimed at addressing health sector skills shortages in Regional Australia.[47,48]

Manufacturing

Once a leading economic driver, the manufacturing sector has noticeably contracted from 8.1% of the Australian workforce in 2010 to 6.4% in 2021, exacerbated by the closure of onshore car manufacturers in 2017.[49,50] Nonetheless, this industry maintains a significant presence in Regional Australia, with regional manufacturers contributing almost one third of the nation's manufacturing economic and employment figures.[51]

Within this sector, food production, machinery, equipment and metal manufacturing dominate, powered by Regional Australia's strong primary production industries of agriculture and mining.[52]

The sector has also adjusted in recent decades through opportunities offered by advanced manufacturing.[53] Rural towns specialised in advanced manufacturing are typically supported by their commodity sector counterpart or by local skills that are unique to the region. In these regions, often only a few primary employers contribute to the majority of the regional employment and output.[54]

Challenges

- The competitiveness of Australia's manufacturing sector has been constrained by high labour costs, dispersed populations and remoteness to major export markets.[55]
- With a growing emphasis on value-adding processes, there is pressure to upskill local workforces, with 17.2% of Australian manufacturers noting that skills shortages inhibits overall business activity and performance, and 14% saying that it constrains innovative thinking.[56] A key area for development will be providing the necessary skills training infrastructure to foster a suitably skilled workforce.[57]
- Poor digital infrastructure was also identified as a limitation to industry growth and remaining globally competitive.[58]

Opportunities

- A greater focus on advanced manufacturing and diversification along the value chain has allowed Regional Australian manufacturers to drive a new wave of growth and opportunity. Rather than focusing on high-volume production, Australia has now recognised the benefits of specialising in high-value, customised goods that align with the country's reputation as a high-quality, premium producer. Regional areas have considerable opportunities in the fast-growing food manufacturing and agribusiness sectors, with projected annual growth of 3.6% to 2030 in national value.[59]
- The Australian Government's Sovereign Manufacturing Capability Plan – Tranche One outlines potential supply chain vulnerabilities for critical products and opportunities for Australian businesses to address them.[60]
- Additionally, Industry 4.0 will mobilise Australian technologies and innovation to enhance manufacturing processes and productivity to further support development in regional areas.[61] Regional growth will be driven by significant investment and priority given to strengthening advanced manufacturing capability in Australia's regions, such as the Modern Manufacturing Initiative, Supply Chain Resilience Initiative and Manufacturing Modernisation Fund.[62]

Agriculture, forestry and fishing

Australia's agriculture, forestry and fishing industries provide a large variety of goods both nationally and internationally. The gross value of Australian agricultural production in 2021-22 is forecast to be a record $78 billion.[63] These industries rely on the timely delivery of goods to markets,[64] requiring efficient and effective freight, logistics, energy and telecommunications infrastructure.[65]

Key goods produced by the agricultural industry include meats, unprocessed livestock products such as milk and wool, as well as grains, oilseeds, nuts, fruits, and vegetables. It includes horticultural and viticultural goods prior to undergoing processing to form new products, such as wine grapes.[66] Currently, 55% of Australia's land is used for farming, with most of this land located in Regional Australia.[67] In 2016, 82% of Australia's agricultural workforce lived in regional areas.[68]

In addition to agriculture, this sector includes the forestry industry, which encompasses the growing, maintaining and harvesting of forests for timber and other products. The scale of Australia's forestry industry is significant, with 132 million hectares of native forest, of which 0.06% is harvested annually,[69] and 1.95 million hectares of commercial plantations.[70]

The fishing industry comprises all economic activity relating to wild-catch fisheries and aquaculture operations.[71] Although the industry experienced a contraction in value due to the COVID-19 pandemic disrupting supply chains,[72] aquaculture is a growth sector in Australia. This is due to the growing demand for seafood globally, particularly for products derived from more sustainable operations.[73]

Challenges

- The agriculture, forestry and fishing industries are particularly vulnerable to severe weather events, soil erosion, water security and a changing climate. Climate research indicates that Australia will experience an increase in the frequency of droughts, bushfire, floods and extreme temperature events in coming decades.[74] These events reduce the production capacity of Australia's agriculture, forestry and fishing industries, with significant flow-on impacts on the livelihoods of many regional Australians.[75]
- Biosecurity is another concern for these industries, with imported pests and diseases having significant implications for the sector. The Australian biosecurity system has an estimated worth of $314 billion over 50 years, as a result of protecting national assets and industries.[76] The *Commonwealth Biosecurity 2030* strategy identifies biosecurity risks in Australia and how they will be mitigated.[77]
- Sustainable practice is a priority for agriculture, fishing and forestry. Agriculture is a source of nitrous oxide and carbon emissions,[78] with livestock directly accounting for approximately 10% of Australia's carbon emissions in 2019.[79] A changing policy environment related to reducing emissions may impact current practices and products.
- The agricultural industry has an ageing workforce. The median age of agriculture industry workers in 2016 was 49 – nine years higher than the average working age of other occupations.[80] This issue is exacerbated by a trend amongst young people in Regional Australia relocating to metropolitan areas to seek employment opportunities in emerging industries which offer career progression and growth potential.[81]

Opportunities

- Technological innovation has been identified as a key factor in supporting the growth of the sector. Forecasts indicate that technological adaptation could build a $100 billion agriculture industry by 2030.[82]
- Government investment has also brought about significant innovation opportunities for the agricultural industry, with the Australian Government committing $34 million in the *Federal Budget 2021–22* to agricultural innovation, alongside creation of the innovation marketplace, growAG, and establishment

of eight Drought Resilience Adoption and Innovation Hubs to continue developing this sector.[83]

- Global demand for timber is expected to quadruple by 2050.[83] Australia has committed to developing nine Regional Forestry Hubs. These hubs will support harvesting, processing and manufacturing operations, with ready access to freight networks to transport goods.[84]
- Australian aquaculture export volume is expected to rise to meet growth in global demand for seafood.[85] Despite slower forecast growth of 1.6% between 2022 to 2026 due the COVID-pandemic affecting international trade, the industry will still continue to expand with the growth in Australia's main export markets, and greater production value.[86]
- Techniques to reduce livestock greenhouse gas emissions may also provide opportunities to increase livestock productivity and resilience. These include animal breeding, diet supplements, feed alternatives, improved pastures, stocking rates and biological control.[87]


Wharf at Port Lincoln, South Australia

Energy

The energy industry involves the production of energy, as well as the supporting technologies and processes that enable it. Australia's wealth of renewable energy resources provides the country with a strong foundation to diversify its future energy mix and continue to tap into sustainable sources.

The renewable energy sector in Australia accounts for over 25,000 jobs.[88] As of October 2021, there were 105 large-scale renewable energy projects under construction, many of which were based outside of major cities and employing regional workers.[89] Growth in renewable energy capacity has largely been driven by wind and solar generation, which make up 72% of the Australia's clean energy generation.[90] Regional Australia's abundance of solar radiation in the northern and western regions, alongside powerful winds in the south, contribute significantly to the industry.[91] Hydro energy and battery storage activities are also responsible for 16% of Australian jobs in the renewable energy sector.[92]

Challenges

- While some regions have significant opportunities to expand their local renewable energy sector, a lack of fit-for-purpose transmission infrastructure inhibits further growth in many areas.[93]
- Variability in renewable energy generation can impact its stability as an electrical power source. The sector needs to consider energy storage options and develop infrastructure to ensure remote communities can attain reliable and cost-efficient electricity.[94]
- Skills shortages are also a common issue in the renewable energy sector, especially when attracting and retaining skilled staff in more remote and regional areas of Australia.[95] As technology continues to advance, the right qualifications and training will be needed to support further growth.

Opportunities

- Significant growth is expected as the Australian energy sector transitions away from coal-powered energy generation into cleaner and more sustainable sources to reach net zero emissions targets.
- Establishment of new Renewable Energy Zones (REZs) and expansion of existing REZs will support growth in the renewable energy sector and continue to contribute to regional development in Queensland, New South Wales, Victoria and South Australia.[96]
- Regional areas are well-positioned to benefit from emerging growth in bioenergy production. Organic materials and waste products used for bioenergy are often sourced from agricultural and industrial outputs, providing rural and Remote Areas of Australia with a distinct comparative advantage.[97]
- Clean hydrogen is gaining significant attention as a renewable energy source. The hydrogen industry has the potential to bring $11 billion annually to Gross Domestic Product by 2050.[2] Initiatives such as Australia's National Hydrogen Strategy have highlighted the opportunities hydrogen production will bring to Australia's regions, particularly inland regions and coastal regions suitable for deep-water ports.[98] Proposed Hydrogen Hubs and Carbon Capture and Storage (CCS) technologies are also likely to be based in regional areas where there are sources of coal and gas, providing greater opportunities for diversification in these regions.[99]

Aerospace

The aerospace industry in Australia consists of several sub-sectors including defence, parts manufacturing, Maintenance, Repair and Overhaul (MRO) services, aircrafts operations, training, Unmanned Aerial Vehicles (UAV) and the space industry.[100]

Aircraft based industry activity in Australia is supported by over 900 businesses, ranging from small to medium enterprises (SMEs) to major global organisations and specialised maintenance providers.[101] In 2019, the Australian aircraft manufacturing and repair services industry employed over 11,000 workers.[102] This sub-sector is particularly prominent in regional Queensland and New South Wales, where it is further supported by local aerospace innovation hubs, aviation precincts and regional defence industries.[103,104,105] Additionally, space technologies and satellites have emerged as significant sub-sectors, contributing an estimated $3.9 billion to the Australian economy in 2016.[106]

Challenges

- A growing skills shortage was identified as one of the biggest challenges experienced by the aerospace industry. A survey conducted by Innovation and Business Skills Australia (IBSA) in 2017 showed that the top three main concerns of industry stakeholders – an ageing workforce, skills shortages and inadequate training - were all related to an inadequate skills base in the industry.[107]
- Regional airports are a key enabler to development in local aerospace activity. However, airports in rural and Remote Areas are often subject to insufficient funding and low revenue, with 60% operating at a loss.[108] This inhibits further expansion of the industry.
- The COVID-19 pandemic has had major impacts on the industry, with reduction in commercial aviation activity causing the Australian aerospace industry to contract by 7%.[109] Implementation of policies and investments will be critical in supporting future recovery, especially in regional areas.

Opportunities

- There are opportunities for the Australian space industry to experience significant growth and become a $10 to $12 billion industry by 2030.[110] Several locations in rural and Remote Areas have been identified as being suitable for development of new technology that will assist with the space and communications sectors. Regional South Australia is home to one of southern hemisphere's largest rocket testing facilities, taking advantage of the region's vast open space and ideal location for space exploration and satellite activity.[111] Ground stations for commercial, defence and research use have also been established across several remote locations in different states.[112]
- Increased defence industry funding both regionally and globally is also likely to support employment opportunities in the aerospace industry.
- Regional Australia has the potential to further expand its presence in the aerospace industry as international flight demand grows. Larger aircraft fleets will present opportunities for attracting more MRO activity, with global demand for aerospace MRO services forecast to grow 5% annually from 2014 to 2024.[113]

Defence

The defence industry is a critical sector, supporting the Australia Defence Force through their skills, expertise, services and supplies.[114] This industry includes all people and businesses that provide the materials and knowledge necessary to meet defence capability needs, so that they can continue to safeguard national security.

Regional Australia accounts for 31% of the total defence workforce and is home to dozens of defence bases, facilities and training grounds.[115] There are various regions where the presence of defence activities have brought significant contributions and employment opportunities to the local economy, especially through Defence contracts and demand for supporting services.[116] In 2020, Base Service Contracts injected $310 million into regional economies when rurally located defence facilities utilised local supplies, skills and capabilities. Key regional defence activities include construction, maintenance, manufacturing and supply chain processes.[117]

Challenges

- Growth in the defence industry will be dependent on whether the local population has the adequate capabilities, capacity and infrastructure to meet defence needs.[118]
- Within the rapidly changing environment of the defence industry, there is a need to strengthen technical and specialised skills in the regional workforce in responding to new technologies. A major constraint has been difficulties in attracting and retaining skilled populations with the right expertise and capabilities. Collaboration between education, training, and research institutions will be imperative to uplifting local skills and driving innovation in the defence sector.[119]

Opportunities

- In Australia, the defence industry employs around 30,000 staff and this is projected to continue expanding with greater defence investments.[120] Regional Australia is well-positioned to capitalise on this growth as a result of the strategic advantage afforded by remote locations with small populations.
- The *2016 Defence White Paper* outlines the national strategy to harness cutting-edge defence technology and world-class research to support the country's defence sector.[121] Additional opportunities will stem from $270 billion in government investment that seeks to uplift defence capabilities.[122]
- The establishment of the National Naval Shipbuilding Enterprise is also forecast to generate major employment opportunities for regional areas, especially in Western Australia and South Australia where the main shipyards will be located.[123] An estimated $168 to $183 billion investment will build Australian capability for future shipbuilding and sustainment activities that will encourage further growth of the defence industry.[124]
- Further growth can also be expected from Regional Australia's defence manufacturing sector, driven by the increased investment that will stimulate greater demand in acquisition, support and maintenance activities.[125]

Tourism

The tourism industry broadly covers all activities that provide goods and services that enable visitors to enjoy leisure and conduct business.[126] Some businesses are directly linked to tourism, such as food and beverage, accommodation, recreational activities and transport.[127] However, the regional impacts of this industry are far-reaching, with flow-on effects to several other sectors in the local economy such as retail and other services. Tourism presents an opportunity for regional economic and employment diversification, which is especially important for areas reliant on primary resource production.[128]

Australia has a diverse range of unique offerings that attract both domestic and (pre-COVID-19) international visitors, with Regional Australia accounting for around 40% of this visitor expenditure.[129] For domestic visitors, food and wine activities are the most common reason to venture outside of major cities. Cultural and heritage tourism are also particularly prevalent in Regional Australia, along with nature-based activities that leverage Australia's coastlines, unique landscapes and rich biodiversity in marine ecosystems and wildlife.[130]

Challenges

- Currently, dispersal of tourism activity in Australia's regions tends to be concentrated around areas that have well-known attractions or are situated close to major cities, presenting a challenge for more rural and remote regions.[131]
- Some regions have experienced constrained growth due to labour shortages, as the seasonal nature of tourism employment can make it difficult for regional businesses to retain staff after the peak season.[132,133]
- Considering pre-COVID-19 pandemic patterns of tourism, international visitations to regional areas are generally less than domestic day visits, with regional expenditure only contributing to 15% of international spend, mainly due to the limited knowledge international visitors have of regional offerings.[134]
- Infrastructure constraints, such as an inadequate supply of accommodation and basic tourism infrastructure can also prevent regions from meeting rising visitor demand and further growth.[135]
- In 2020, the regional tourism industry was subject to major challenges, including bushfires, drought and the COVID-19 pandemic. The industry suffered significant job losses and business closures, with tourism employment falling by 6.6% in 2020, despite experiencing a 23% growth the year prior.[136,137] While overnight trips and tourism spending is down compared to pre-COVID September 2019 rates, regional areas continue to fare better than our capital cities.

  In September 2021 Australians took 2.4 million overnight trips to regional areas and spent $1.8 billion, in contrast with 1.1 million overnight trips to capital cities and spending of $854 million.[138]

Opportunities

- The tourism sector is one of the largest employers in Regional Australia, making up 8.1% of the regional workforce, and is expected to continue growing.[139] In the short-term, the regional sector will be driven by domestic visitors as the COVID-19 pandemic limits international travel.[140]
- Agritourism supports regional farms and local food production by introducing tourism opportunities into primary production industries. It builds upon already popular food, wine and agribusiness experiences that exist in Regional Australia. By 2030, it is expected that this sector will contribute $1.8 billion to domestic consumption and $3.6 billion from exports.[141]
- With Australia's strength in nature-based tourism, opportunities in high-value ecologically sustainable tourism activities are becoming increasingly popular, especially with a growing collective awareness of environmental impacts.[142]
- Regional Australia's wealth of open landscape and dark skies present a significant opportunity to expand the presence of emerging astrotourism offerings. This tourism approach involves scientific and recreational activities which focus on the study and appreciation of stars and constellations in the night sky.[143]

Mining

The mining industry includes activities related to the extraction and processing of minerals, metals and energy commodities.[144] This includes both the resources sector and the mining equipment, technology and services (METS) sectors.[145] The industry is a key source of economic benefit for Australia, accounting for the largest share of gross value added at 11.1% in 2019–2020.[146]

With many mining operations located in regional areas, the natural resources industry is a key contributor to local employment and local businesses. 51% of natural resources employees reside in non-metropolitan areas.[147] The industry also supports 1.1 million jobs, with 561,800 directly employed by resources and METS businesses.[148]

The industry relies heavily on infrastructure, including suitable rail and road networks, harbours, loading facilities, and electricity and gas pipeline networks which are needed for transportation of commodities.[149] This accompanies the infrastructure needed for their extraction and processing. The long lead times required to deliver this infrastructure necessitates cooperation between government, communities, investors and producers to optimise economic and social benefits.[150]

Challenges

- Commodity prices are highly cyclical. A decrease in commodity prices can lead to the closure of mines and regional job losses.[151] Investment in the resources industry also declines during price downturns.[152] This limits access to capital and puts strain on managing infrastructure at existing mines or developing infrastructure in new mining provinces.[153]
- Many resource operations have adopted fly-in/fly-out labour practices for mining operations, allowing workers to commute from metropolitan areas rather than supporting a local workforce. This reduces flow-on effects to local communities and can also place strain on existing regional infrastructure such as roads and healthcare.[154]
- The impact of the net zero transition will impact on the demand for certain commodities notably coal. Changes in domestic and international demand may impact certain regions and create the need for adjustment and transition.

Opportunities

- Australia currently derives substantial economic benefits from commodities trading, with this market accounting for 62% of total export revenue.[155] The Australian Government and state and territory governments previously committed through the Council of Australian Governments (COAG) to downstream value creation through increased commodity processing and manufacturing,[156] which will generate further value for regional communities.
- New technologies such as electric vehicles, renewable energy infrastructure and battery storage require minerals that are abundant in Australia.[157] Australia readily produces lithium and is a top-six resource holder of five other critical minerals and multiple rare earth elements.[158] Investment in resources infrastructure targeting emerging materials markets will leverage Australia's competitive advantage and broaden Australia's commodity market.
- Mining operations have previously been powered by diesel and natural gas.[159] As renewable energy becomes increasingly competitive, mining operations can introduce renewable and battery infrastructure to reduce carbon emissions.[160] There are already numerous examples where renewable-sourced hydrogen is actively used as an energy source and as a means for storing renewable energy in the mining industry.[161]

Knowledge sector

The knowledge sector relates to the use of knowledge, information and technology to drive economic growth and productivity.[162] The industry includes education and training, professional services, research and development, and high technology sectors.

Development of knowledge industries also depends on regional education and training opportunities. Education and training describe the teaching, training, and research activities conducted at schools, technical colleges, training centres and universities. In regional, rural and Remote Areas, higher-level tertiary participation rates are lower, at an average of 4.7% of the 15 to 64 years old regional population, compared to 7.3% in metropolitan areas. However, the Vocational Education and Training (VET) participation rate of 33.2% in regional areas is substantially higher than in major cities.[163]

Challenges

- Rural and Remote Areas are subject to lower levels of digital inclusion in terms of access, affordability and ability.[164] Digital connectivity supports new service offerings and the opportunity to create a more inclusive education environment for those living in Remote Areas, as well as enable growth for local businesses.
- While some regional cities rank highly in terms of innovation capability, a lack of research and development institutions prevent further collaboration between industry and research to translate these into commercial opportunities.[165,166]
- According to the 2016 census, completion rates of secondary school and tertiary education participation were lower in regional communities.[167] Australian Bureau of Statistics data on educational attainment indicates the achievement of post-secondary qualifications leads to greater opportunities in knowledge sector employment.[168] Failure to provide readily accessible and quality education facilities to regional areas inhibits the participation in local professional services and other skilled sectors needed to expand the knowledge sector.

Opportunities

- There are significant opportunities for regional areas to further strengthen their knowledge sector through technology. This sub-sector is forecast to increase from 1% to 1.7% by 2030.[169,170] AgTech, advanced manufacturing and technology in mining, water, energy and transport sectors will improve the productivity and sustainability of these industries and their contribution to regional economies.[171,172,173]
- In recent years, the Australian Government has established three Centres for Innovation in Regional Health that will foster greater collaboration between research and industry, and contribute to improvements in health and educational outcomes in rural and Remote Areas.[174]
- The Australian Government has introduced measures to support the education of regional Australians, targeting gaps in regional economies. Regional education facilities can mitigate the risk of young people moving away from regional Australia, with 66% of young people who are educated in regional Australia remaining in regional communities to work.[175] Current initiatives include reduced fees for courses in regional areas, 26 Regional University Centres to provide better access to regional students, and grants for regional universities to conduct research.[176]

Transport

The transport industry involves all forms of activity that facilitates movement of people and freight, through road, rail, air and water. Adequate transport infrastructure is vital for connecting rural and remote communities to major cities and their region, and for enabling regional development and economic growth.

In regional Australia, roads are the main form of transport infrastructure used for passenger travel.[177] The infrequent services offered by regional passenger rail and the dispersed population mean that rail is often subject to a lower rate of mode share, with cars and planes offering more efficient travel times and greater levels of convenience.[178]

Strong transport networks are also critical to regional freight and supply chain activity. The primary production sectors of agriculture and mining contribute to 13% of Gross Domestic Product and are largely supported by rural and Remote Areas.[179] Accessibility to major export markets and the necessary labour through sound transport infrastructure has a significant influence on regional prosperity.[180]

Challenges

- A key challenge for Regional Australia has been the maintenance of transport infrastructure, including roads, rails and airports.[181] The national road maintenance funding backlog was estimated to have increased from $1.96 billion to $2.2 billion between 2016 to 2018, while more than 60% of regional airports are operating at a loss.[182,183] Poorly maintained infrastructure can cause freight inefficiencies and constrain growth in reliant sectors such as agriculture and mining.[184]
- The transport sector is currently undergoing a major transformation to new vehicle propulsion technology as well as new connected and automated services. This transformation relies on the availability of new charging technology as well as in some case telecommunications networks, which may be limited in regional communities, or there may be a limited case for further investment.
- Transport infrastructure also serves to connect rural and remote communities to basic needs and services. Remote Areas that have limited access to public transport services are at greater risk of social exclusion and disadvantage.[185] Regional inequality can be further exacerbated by higher transport costs in more remote regions and a greater dependency on cars for travel.[186]
- Regional freight networks often extend through several states and territories to deliver Australia's goods. However, a persisting issue has been the fragmented network regulations caused by separate management of routes in different states, including rail, road and ports. The lack of integrated planning between the national government, state governments and private companies can result in costly and inefficient networks.[187]
- The COVID-19 pandemic has reduced total travel and triggered a mode shift to roads, as well as network shifts from CBDs to local centres and kerbside deliveries.[188]

Opportunities

- Opportunities for regional freight infrastructure improvements and expansions will be driven by increased demand for Australian exports. Freight volumes in Australia are forecast to grow more than 35% by 2040.[189] Some key initiatives include the Inland Rail, which will seek to create a dedicated freight connection between Brisbane and Melbourne.[190] The $100 million Beef Roads Program will also improve the main freight routes for cattle exports in Northern Australia.[191]
- Technological advancements in the transport sector will present significant opportunities for regional development and industry growth. Freight networks can become more efficient through the adoption of innovative technologies that track locations and log necessary data.[192] Other advancements, including telematics, will help to improve driver and passenger safety in regional areas.[193] *The National Freight and Supply Chain Strategy and associated National Action Plan,* agreed by all levels of Australian government with extensive input from industry, commits to national action in key areas to position Australia's freight supply chains.[194]

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