A REPORT FROM ADEPT ECONOMICS COMMISSIONED BY ANZ

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ANZ INSIGHT

Queensland: Future state

FOREWORD

Queensland has a great opportunity to accelerate its very strong economic growth. That's the key reason we want to expand our presence in the state and help shape a thriving community.

When we were assessing the benefits of acquiring Suncorp Group's banking operations, we saw a state endowed with positive demographic shifts, abundant natural resources, world class tourism and – very critically for ANZ, Australia's most international bank – great connectivity to the region.

However, we were also interested in other views. We commissioned Queensland-based Adept Economics for an overview of the state, to assess its direction and – most excitingly – outline a scenario where Queensland's outperformance is amplified.

Adept has produced *Queensland: Future state* with the Queensland Futures Institute adding its vision. According to Adept, Queensland's economy will grow 31 per cent by 2032–33 but it has the potential, the opportunity, of expanding 46 per cent by 2032–33. Adept calculates that would require a focus on particular growth sectors and around $1.3 trillion of private sector investment over the 10 years to the Olympics in 2032.

That 'seizing the opportunity' scenario sees Queensland building on its strengths but also benefiting from the transition to a net zero future, new technology in agriculture and the shift to a more mobile work force by giving new economy workers the chance to live in the Sunshine State.

Obviously, there will be challenges. Providing the infrastructure for more sustainability-based sectors, managing the workforce pressures of both population growth and the movement of populations following the opportunity, and attracting the private sector investment are all vital. That's where ANZ can play a key role.

We can help marshal capital, we have the network in Asia, we are a major player in Queensland's resource sector and we are working very closely with our customers on the transition to net zero.

And, of course, ahead of us is the Olympics. This is a once in a generation chance to harness the profile, the energy and the focus such a global event offers. Again, we know from history, these massive events bring challenges but, as *Queensland: Future state* makes clear, the view of the Olympics on the horizon is a great catalyst for growth.

Queensland: Future state gives us a baseline of where the state is today, how its strengths have evolved and the very real chance to further grow its share of Australia's economy, beyond the business-as-usual.

ANZ has the track record and the vision to help the state achieve that greater opportunity. We have the people, the intellectual capital, the products and services to help the state in its desire to outperform.

I highly recommend this report and encourage you to contact your ANZ banker to explore how we can help you participate in this growth.

Shayne Elliott Chief Executive Officer

GLOSSARY

ABS	Australian Bureau of Statistics
AEMO	Australian Energy Market Operator
APPEA	Australian Petroleum Production and Exploration Association
AR6	Sixth Assessment Report of the IPCC
ASEAN	Association of Southeast Asian Nations
BAU	Business as usual
CAPEX	Capital expenditure
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CO_2-e	Carbon Dioxide equivalent
COAG	Council of Australian Governments
CSG	Coal seam gas
DRDMW	Department of Regional Development, Manufacturing and Water
EDR	Economic Demonstrated Resources
FTA	Free Trade Agreement
FTE	Full-time equivalent
GOC	Government-owned corporation
GBR	Great Barrier Reef
GHG	Greenhouse gas emissions
GSP	Gross state product
IEA	International Energy Agency
IET	International education and training
IOC	International Olympic Committee
IPCC	Intergovernmental Panel on Climate Change
ISP	Integrated System Plan
LNG	Liquefied natural gas
METS	Mining Equipment, Technology and Services
MILVEHCOE	Military Vehicle Centre of Excellence
Mt	Megatonne (i.e. 1 million tonnes)
NEM	National Electricity Market
NIM	Net interstate migration
OCE	Office of the Chief Economist
QGSO	Queensland Government Statistician's Office
QREHJF	Queensland Renewable Energy and Hydrogen Jobs Fund
QRIDP	Queensland Resources Industry Development Plan
R&D	Research and development
RCEP	Regional Comprehensive Economic Partnership
RTDC	Regional Trade Distribution Centre
SEQ	South East Queensland
SDS	Sustainable Development Scenario
STEPS	Stated Policies Scenario
TEQ	Tourism and Events Queensland
TIQ	Trade and Investment Queensland
TIRP	Tourism Industry Reference Panel
UN	United Nations

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EXECUTIVE SUMMARY

KEY THEMES

- Queensland has a *consistent track record of growing more rapidly than the national average* due to strong population growth and a highly successful resources sector. But there is an opportunity to accelerate that outperformance and diversify traditional strengths with emerging sectors.
- Under a business as usual (BAU) scenario, Queensland's economy will grow 31 per cent over the ten years to 2032–33. But if new opportunities – for example critical minerals and hydrogen – are fully developed, a more optimistic scenario emerges, with the state economy expanding 46 per cent by 2032–33.
- For that optimistic 'Seizing the Opportunity' scenario to happen, we estimate the state will require around $230 billion in additional private sector investment, above the business-as-usual baseline, over the decade to hosting the Olympic Games in 2032.
- Central to the identified opportunities are leveraging and facing the challenges of Australia's fastest growing population and the transition to net zero. That needs to happen in tandem with policy settings that facilitate private sector investment.
- Despite large opportunities, there are major challenges. There is the potential for cost blowouts due to major projects competing for workers, uncertainty around energy markets and costs, and economic conditions becoming less predictable.

1.1 OVERVIEW

Broadly speaking, the future is very positive for Queensland, given the state economy's strong fundamentals. Yet a business as usual (BAU) approach will not necessarily deliver the best returns for the state, nor take advantage of opportunities to diversify risk.

This report emphasises the need for new capital investment and consistent policy to take advantage of the economic opportunities in the state. The report considers traditionally strong sectors such as agriculture, resources and tourism. It explores whether there is the potential for a rebound in manufacturing, a sector with a lot of promise in the so-called Fourth Industrial Revolution. It also notes the importance of the state's linkages with Asia, the opportunities and challenges associated with a rapidly growing population, hosting the 2032 Olympic Games in Brisbane, and an economy-redefining move towards decarbonisation.

The report focuses on Queensland's potential. It outlines what economic growth opportunities are possible but does not contain forecasts, given both economic and policy circumstances could change significantly over the ten-year period considered. Policy recommendations are outside the scope of this report.

1.2 THE SIZE OF THE ECONOMIC OPPORTUNITY

The Queensland economy is typically one of the fastest growing in Australia, due to faster population growth and resources sector expansion over recent decades (Figure 1.1). Queensland's more rapid population growth is expected to continue over the next decade. Due, at least in part, to this faster population growth, Queensland's economy is expected to expand by at least 31 per cent to 2032–33 compared with a 27 per cent expansion of the national economy.

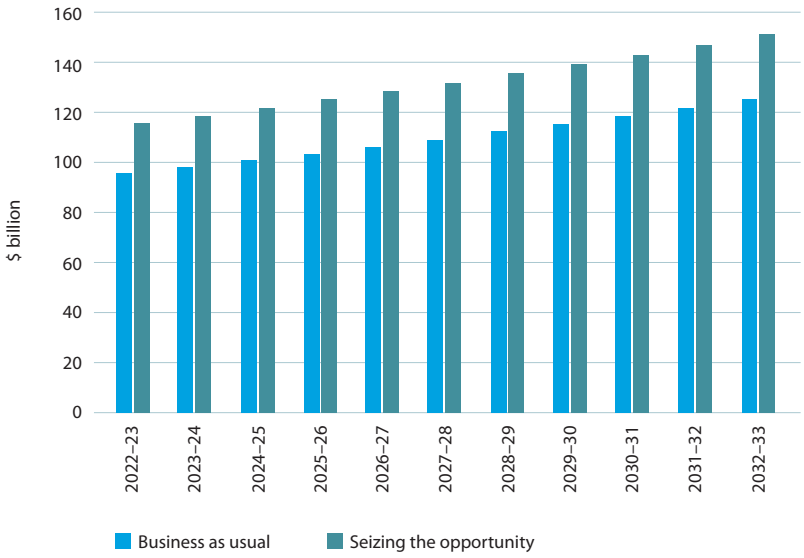
Figure 1.1 Average annual economic growth since 1999–00, Australian states

Source: ABS.

But Gross State Product (GSP) could credibly grow to over $600 billion in today's dollars if the most is made of the opportunities presented. That would require successful investment by the private sector in a large range of opportunities, including critical minerals, new tourism ventures, biotech and possibly hydrogen – if economically feasible. Such investment would need to be facilitated by supportive policy and possibly extra support from the public sector where it can be justified as addressing market failures (e.g. some assistance to support R&D and innovation).

Seizing the economic opportunities discussed in this report will require a substantial level of new capital expenditure, not only to expand capacity but also replace existing capital, particularly in decarbonising the economy. Capital investment is required in new housing, renewable energy and energy storage, including batteries and pumped hydroelectric dams, in new equipment to mine critical minerals, and across the economy more broadly as the economy continues to grow. Adept Economics estimates that, over the next 10 years, base-line private sector capital expenditure (CAPEX) required will be around $1,110 billion in 2022–23 dollars in a 'business-as-usual scenario' but would be substantially higher at around $1,340 billion in our 'Seizing the Opportunity' scenario (Figure 1.2). That is, the additional private sector CAPEX above business-as-usual would be around $230 billion. Through increasing the size of the state's capital stock, and by making workers and businesses more productive, this investment would increase Queensland's 2032–33 GSP (in 2022–23 dollars) by an additional $68 billion to $643 billion, compared with GSP in the BAU scenario of $575 billion.

Figure 1.2 CAPEX in business-as-usual and Seizing the Opportunity scenarios



Source: Adept Economics.

The Seizing the Opportunity scenario is based on the levels of private sector investment relative to GSP seen in the mining investment boom earlier this century, from around 2003–04 to 2013–14. Over this period, private sector investment averaged 26 per cent of GSP compared with 18 per cent over the last five years. Given the scale of the economic transformation required over the next 10 years, this is considered a realistic benchmark for the level of investment required.

In the Seizing the Opportunity scenario, the projected increase in the state's capital stock would result in a long-run increase in GSP, by 2032–33, of nearly 50 per cent over its level in 2021–22, compared to an increase of 34 per cent in the BAU scenario.[1] This would correspond to an average annual GSP growth rate of 3.9 per cent over the 10 years to 2032–33, compared with our BAU assumption of 2.75 per cent per annum. A 3.9 per cent growth rate would be around 0.2 percentage points higher than Queensland's average GSP growth rate since 1989–90 of 3.7 per cent.

The Seizing the Opportunity scenario would require a substantial increase in finance from banks, domestic and foreign investors, superannuation funds, and other fund managers. It will also require expansion of education and training – particularly in vocational and technical skills – related to new opportunities in renewable energy, possibly hydrogen, and agriculture and mining, as these sectors become increasingly electrified and automated. While difficult to model, it is important to recognise this investment would also serve to offset emerging risks – such as climate change – to a BAU economy, potentially increasing the benefit. There is likely an opportunity cost in not seizing the opportunity.

1.3 THE DEMOGRAPHIC SHIFT

Australians from other states are showing their confidence in Queensland's future by moving to the state in large numbers, at a rate of over 1,000 per week in 2022. With a net gain of over 55,000 people in the 12 months to 30 June 2022, Queensland has the highest rate of net interstate migration in Australia, and once again has the fastest growing population in Australia. Queensland's population will continue to grow, particularly as international migration returns after the pandemic, and by 2032–33 the state's population should be around 6.2 million compared with 5.38 million in January 2023.[2]

But that is simply an extrapolation. Of more interest is the opportunity presented by a post-COVID shift to new working patterns, particularly for white collar and technology workers who have historically gravitated to the more established urban centres of Melbourne and Sydney when co-location was essential. Queensland now has the opportunity to not just attract corporate centres in these fields but also remote workers – who want a Queensland lifestyle while working for major firms. Queensland's regions, rather than only SEQ, have this opportunity which could relieve some congestion pressure. This may require some additional public capital expenditure to boost regional liveability and connectivity, particularly in regional roads and communications connectivity. Additionally, there is opportunity to relocate government administrative activities to regional centres such as Townsville and Cairns.

[1] This is an estimate of the long-run increase in GSP through the effect of CAPEX on the state's capital stock, taking into account depreciation of existing capital. Possible short-run impacts on GSP, which could include multiplier effects associated with the CAPEX, have not been modelled.

[2] The QGSO website features a real-time population estimate for Queensland: https://www.qgso.qld.gov.au/. The Australian Government Centre of Population projects Queensland's population to be 6.156 million at the end of the 2032–33 financial year.

The demographic shift will require substantial additional private CAPEX to accommodate the additional people and to provide the goods and services they need. As with other states, housing availability is a major challenge and significant uplift in dwelling construction will likely be required. Housing availability, particularly rental, is at very low levels in many parts of Queensland.

1.4 CONNECTIVITY WITH ASIA

Queensland's proximity to and connectivity with Asia presents a multitude of opportunities for trade and tourism over the next decade. Major Asian economies like China, India, Japan, and South Korea serve as key destinations for Queensland exports, while China, India and the ASEAN bloc are also major sources of foreign students for Queensland universities and colleges. Exports are not limited to bulk commodities and tourism, as higher-value goods are increasingly being shipped via air freight to various destinations across the globe. Airports in Cairns and Toowoomba play important roles in these air freight exports, with high-value exports such as live seafood and quality agricultural produce heading into Asian markets.

As developing economies in Asia see their consumer-classes grow, these opportunities will grow with them. The post-COVID recovery in China will likely create significant potential in some of Queensland's traditional export markets. But beyond China, this shift to consumerism will be combined with rapid population growth in India and SE Asian markets, further enhancing opportunities for resources, education, tourism, and high-value agricultural exports.

1.5 AGRICULTURE

Queensland's agricultural sector is critically important for many of the state's regional economies and is an important export industry and recipient of inbound investment. It is also a leading adopter of innovation with AgTech figuring prominently in the industry's future. Over the next 10 years, while there will be fluctuations from year to year, traditionally strong performers such as beef and cotton should continue to perform well. Farmers will continue to diversify their cropping into newer high-valued commodities such as fruits and nuts, particularly macadamias where water is available. Over the next 10 years and beyond, the sector will continue to benefit from global population growth and more rapid food demand growth as emerging economies become wealthier. The FAO has projected global demand could increase by 70 per cent over the four decades to 2050.[3]

Opportunities also exist for greater value-adding to agricultural produce, particularly in food and beverage product manufacturing. Furthermore, blockchain technology is enhancing opportunities for traceability and creating a market and price premium for Queensland agricultural products whose provenance can be guaranteed. In November 2022, a shipment of sustainably-produced raw sugar was fully traceable (via blockchain) and exported from Townsville to South Korea.

Fully seizing opportunities in agriculture will require:

- ongoing investment by farmers in new technology to improve and optimise on-farm operations, particularly via the automatic collection and analysis of data, and in water-use efficiency infrastructure; and
- addressing agricultural workforce issues including a short-term lack of agricultural workers and accommodation in regional areas, shortages which could be exacerbated in the future by developments associated with the transition to net zero.

[3] Linehan, V. et al. (2012) Food demand to 2050: Opportunities for Australian agriculture, ABARES, Paper presented at the 42nd ABARES Outlook conference 6–7 March 2012, Canberra, ACT, p. 1.

1.6 RESOURCES

Queensland's resources sector has a rich history: coal mining across the state since European settlement, intensifying since the development of an export industry in the 1960s and 1970s, as well as gold mining in the north in the late 19th century, and copper, zinc, and other minerals mined in Mount Isa from the 1920s and 1930s. This century, coal seam gas (CSG) extraction has become an important new part of Queensland's resources sector.

The resources sector had a record year in 2021–22 due to high commodity prices associated with the war in Ukraine, with gross value added to the Queensland economy of around $74 billion compared with $27 billion the previous financial year.[4] Coal is Queensland's most valuable resources sector output and should continue to be over the next 10 years. Queensland is fortunate the bulk of its coal production is coking or metallurgical coal that is used in steel production, making the state's coal industry less vulnerable to global shifts in coal demand as the world moves to net zero greenhouse gas (GHG) emissions.

Nevertheless, longer term, Queensland's coal industry is expected to contract. But this contraction may be offset by the expansion of critical minerals production. Queensland is geologically blessed with substantial reserves of minerals in demand, for use in batteries, electric vehicles, and other equipment. For this opportunity, predictability in public policy settings and development approvals is vital.

Large-scale capital investment will likely be required in the resources sector to seize the opportunities provided by soaring demand for critical minerals. The total value of the Queensland mining industry's capital stock is over $200 billion and the bulk of that is related to coal mining. The growth of the critical minerals industry in Queensland will likely require investment of tens of billions of dollars over the next decade.

1.7 TOURISM AND INTERNATIONAL EDUCATION AND TRAINING

Queensland's current tourism taglines are 'Nothing beats Queensland' and 'Days like this' aiming to focus the mind of visitors globally on the state's natural and cultural attractions. Visiting the Great Barrier Reef (GBR) is considered a 'bucket list' experience, particularly in China, and the state's beaches including Surfers Paradise and Noosa are world renowned. The 2032 Olympic and Paralympic Games will shine a light on Brisbane, the Gold Coast and Queensland more broadly, potentially boosting tourism beyond 2032. There is an opportunity to use the Olympics to promote the whole state on the global tourism stage. Ensuring the Olympics extends well beyond Brisbane and the South East corner of the state into regional areas will allow for further expansion of sports and tourism opportunities which are already being exploited in some of those regions.

As the world moves beyond the pandemic, Queensland's tourism sector should return to its pre-pandemic strength and continue to grow, employing over 200,000 Queenslanders and generating over $30 billion of economic activity.[5] The future of the Queensland tourism sector will vitally depend on protecting the state's natural assets, particularly the GBR, and developing eco-friendly tourism options. The state has substantial opportunities to redevelop derelict GBR island resorts as well as opportunities in Indigenous tourism.

[4] Current price estimates of industry value added for the mining sector from ABS State Accounts.
[5] According to Tourism Research Australia estimates available at https://www.tra.gov.au/data-and-research/reports/state-tourism-satellite-account-2019-20/queensland-tourism-summary.

Prior to the COVID pandemic, international education and training (IET) was worth $4 billion (1.1 per cent of GSP) to the Queensland economy and was the state's largest, and fastest growing, services export sector. While the international travel restrictions in recent years saw that value decline sharply, the state has conducted an extensive review and recently released a strategy document[6] to guide the recovery of the sector in coming years.

1.8 MANUFACTURING

The future of manufacturing in Queensland, as in the rest of Australia, lies increasingly in high-value niche manufacturing, rather than in basic products which can be produced more cheaply elsewhere in the world. The Queensland manufacturing industry has strong potential to grow in subsectors aligned with the state's relative advantages, particularly in food and beverage manufacturing, defence and mining. In particular, with the transition to net zero worldwide, there is the possibility of Queensland seizing the 'Superpower' opportunity described by eminent economist Ross Garnaut, of using low-cost renewable energy to give Queensland minerals processing and other manufacturing a competitive advantage. Furthermore, with critical minerals demand soaring due to demand for EVs and other goods associated with the net zero transition, there is an opportunity to value-add to critical minerals, a large amount of which currently occurs in China.[7]

This transition towards high-value advanced manufacturing will require:

- cost-effective energy along with investments in sufficient storage to back up a grid increasingly powered by renewable energy;
- a high-quality education and training system with improvements in literacy in science, technology and mathematics (STEM), and the availability of qualifications and micro-credentials in the latest advanced manufacturing techniques;
- optimised regulatory and tax policy settings affecting manufacturing businesses; and
- ongoing R&D and innovation more broadly by manufacturers.

1.9 THE SHIFT TO NET ZERO

The Queensland Government's target to achieve 70 per cent renewable energy, as a share of total energy production by 2032, requires a large amount of capital investment in renewables and related storage such as batteries and pumped hydroelectric plants, as well as in transmission over the next decade. Various state and federal programs are supporting this transition but private sector investment is vital. The scale of the required investment is likely to be in the order of $100–150 billion over the next 10 years to 2032–33.[8] Not only will investment be required in energy generation but also in reducing emissions from heavy-emitting industrial processes such as cement manufacturing.

In Queensland the move towards net zero by 2050 will rest not simply on the increase of renewable energy generation but also on the development of a significant clean hydrogen industry for both the domestic and export sectors. The International Energy Agency and the World Energy Council have both identified Australia as a potential hydrogen production powerhouse. Queensland's regional centres of Gladstone, Townsville and Mackay are potentially locations for large-scale hydrogen production and export.

[6] Queensland International Education and Training Strategy 2022–2027; Study Queensland.
[7] Hendrix, C. (2022) "How to Avoid a New Cold War Over Critical Minerals", Foreign Policy; https://foreignpolicy.com/2022/11/22/critical-minerals-resources-us-china-competition-cold-war-supply-chains/
[8] This is based on 2022 estimates from Construction Skills Queensland discussed in chapter 9.

Construction Skills Queensland has estimated meeting the infrastructure requirements of the state's shift to renewable energy, meeting the net zero by 2050 target, and the development of a clean hydrogen industry for both domestic and international export markets will require capital expenditure of almost $13.9 billion on average each year in Queensland from now until 2050; a total of almost $400 billion over the course of the next 28 years. Capital markets are already innovating in financing sustainable investment and this is likely to play a role in the funding of the significant capital expenditure required.

This decarbonising transformation will require not only significant capital investment but also people. Construction Skills Queensland estimates up to 26,700 construction workers will be required from the early 2020s through to 2050 to help the state shift to net zero. Change of this scale will clearly need careful planning to provide a labour force capable of making this shift and avoiding major energy supply disruptions.

1.10 THE OLYMPIC AND PARALYMPIC GAMES

Hosting the 2032 Olympic and Paralympic Games is a large opportunity for Queensland but realising the benefits will be challenging. The record of host cities has been mixed. It will be important to ensure new capital investment has enduring value. In recognition of the mixed record of cities benefiting by hosting previous Olympic Games, in 2018 the International Olympic Committee (IOC) declared a 'new norm', providing more assistance and acknowledging host cities should make use of existing infrastructure as much as possible to reduce the cost of hosting the Games.

There will certainly be a short-term boost to the state economy between July to September 2032 when the Games are held but the impact in the lead-up is difficult to quantify. An initial estimate of $4.9 billion for the Games organisation budget (including nearly $1.3 billion for venue infrastructure and temporary infrastructure) has been provided by the government but again history warns managing costs involved in hosting of the Games is a challenge.[9]

Beyond 2032, the impact should be positive if cost-effective investments are made in new sporting and other infrastructure assets that are well-utilised afterwards. The right investments could promote both liveability for residents and attract tourists. Concepts such as the 'green spine' linking the Gabba and Suncorp Stadium are worth evaluating in this regard. Furthermore, if the Games can create a positive global impression of SEQ and Queensland more broadly, it could have an enduring impact on tourism. Certainly, cities like Barcelona have benefited substantially from hosting the Olympic Games in the past.

[9] IOC Future Host Commission Questionnaire Response (2021, p. 90–91); https://stillmed.olympics.com/media/Documents/International-Olympic-Committee/Commissions/Future-host-commission/The-Games-of-The-Olympiad/Brisbane-2032-FHC-Questionnaire-Response.pdf.

1.11 LONGER-TERM OUTLOOK

We have identified Queensland's many natural advantages. In addition to the sectors focused on in this report, Queensland has the potential for further expansion in the services sector. With an ageing population, health and social services activity – including in health services, aged and disability care – will continue to expand.

While smaller employers, emerging industries with potential include the screen industry and ICT, with Queensland home to a range of fintech and AI firms, among others. Fortitude Valley contains a cluster of creative and knowledge economy businesses, centred around the Precinct, a start-up hub. Queensland's regions have a major opportunity to exploit the shift to remote working. Benefits could include lowering regional disadvantage and alleviating congestion in SEQ.

At the same time, there will be challenges. Achieving net zero GHG emissions will be a challenge for Queensland, as it will be worldwide. Queensland's challenge is greater due to the importance of coal to the state economy and budget, for both energy generation and export industry revenue and employment in Queensland's regions. There is also the ongoing challenge of building enough housing and transport and other infrastructure for the ever-expanding population. Queensland will likely continue to have the highest rate of population growth in Australia in coming decades.

As always, appropriate policy settings will be required to ensure the state's ongoing prosperity. While Queensland is no longer the lowest-taxing state in Australia, successive governments have kept Queensland's taxes and charges below the national average. Lower taxes and charges should continue to support Queensland's relative attractiveness to interstate migrants and investors into the future.

Extrapolating from today, Queensland's outlook is bright and can potentially be brighter still. We see the major opportunities to exceed BAU forecasts as being:

- the mining of critical minerals and potentially value-added processing;
- the development of a green hydrogen export industry;
- an accelerated rate of investment in new energy generation and storage; and
- attracting further skilled labour and investment capital from interstate and overseas, and developing regional economies.

Over the next decade, seizing these opportunities will require, among other things:

- keeping Queensland's taxes and charges nationally competitive and favourable to employment, investment and economic growth;
- addressing any barriers to housing supply in both SEQ and the regions so the growing population of Queensland can be accommodated;
- ongoing efforts to improve education and training provision so Queenslanders are highly-skilled in new technologies in advanced manufacturing, ICT, and other knowledge-economy sectors; and
- consideration of, and potential support for, innovative financing arrangements such as green bonds, sustainability-based loans and biodiversity credits which could be utilised to help with financing the transition to net zero.

Seizing the opportunities the state is presented with will bring both economic and social benefits. Many of the opportunities relating to the net zero transition and in agriculture are based outside of SEQ. There is the potential for regional differences in economic and social outcomes to be addressed through this greater prosperity.

02

THE ECONOMIC OPPORTUNITY: GREAT PROMISE

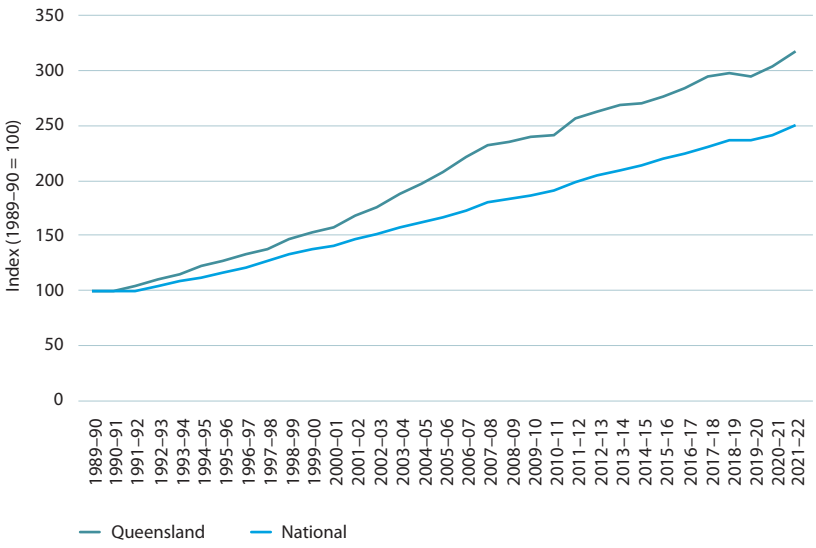
KEY THEMES

- Queensland's track record of stronger economic growth than the national average is expected to continue. The state should have an economic size of at least a half trillion dollars by the time the 2032 Olympics begins, with the potential for a higher level by making successful investments.
- Private sector capital expenditure of more than $1.3 trillion (compared with BAU of around $1.1 trillion) will likely be required over the next 10 years to seize the economic opportunities available to Queensland.
- In our Seizing the Opportunity scenario, by 2032–33 Queensland's GSP would be $68 billion higher than otherwise: $643 billion, compared with GSP in the BAU scenario of $575 billion (in 2022–23 dollars).

2.1 QUEENSLAND'S ECONOMIC GROWTH RATE EXCEEDING THE REST OF AUSTRALIA

As the third largest Australian state – in both population and economy – Queensland makes a large contribution to the national economy. In 2021–22, Queensland's Gross State Product (GSP) was $447 billion, placing it third in Australia after NSW ($697 billion) and Victoria ($515 billion).[10] Queensland has been growing faster than the national average and will probably continue to do so for the foreseeable future (Figure 2.1). Since 2000, the Queensland economy has grown at an average annual rate of 3.4 per cent compared with 2.7 per cent nationally. Over this period, Queensland was the second fastest growing state, coming second to Western Australia which grew at an average rate of 3.9 per cent. Queensland's average annual GSP growth rate of 3.4 per cent was much higher than NSW's (2.0 per cent) and Victoria's (2.6 per cent). This superior economic performance relates to both stronger population growth and strong growth in the resources sector, particularly over the last two decades. Compared with a generation ago, Queensland's economy is now three times larger while the Australian economy is 2.5 times larger.

Figure 2.1 The Queensland economy has been growing faster than the rest of Australia



Source: ABS.

While an upward trajectory is expected to continue, there will no doubt be cyclical fluctuations around the upward trend. These are not unimportant but are outside the scope of this report, which takes a longer-term perspective. Adept Economics' projections of future GSP are presented in section 2.3.

[10] Queensland's 2021–22 nominal GSP was boosted by high coal and oil prices which massively increased export prices. It was 22 per cent higher than the nominal GSP figure for 2020–21 of $368 billion.

2.2 HOW THE ECONOMY IS EVOLVING

Queensland's economy has evolved considerably in recent decades. The workforce has become more educated and skilled and the services sector has grown, particularly in health care and social assistance (Table 2.1). The strong mining industry, as discussed in chapter 6, has supported jobs and economic activity across a range of industries in the supply chain.

Table 2.1 Employed person by industry, Queensland, Census estimates

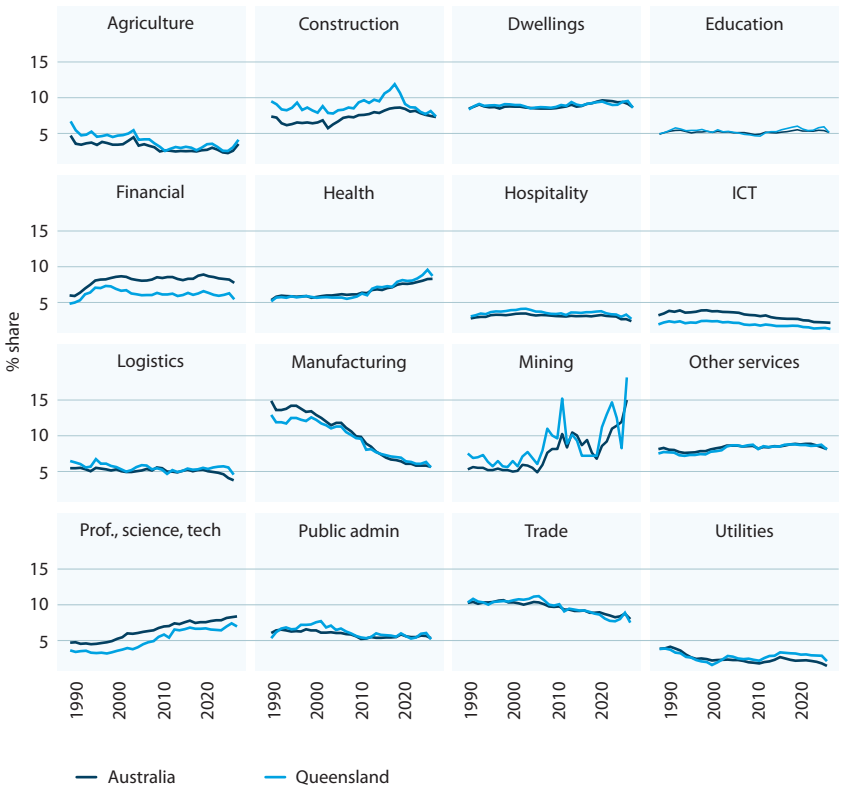
	Employed persons		Share of total		Growth since '06
	2006	2021	2006	2021	% change
Agriculture, Forestry and Fishing	59,504	62,384	3.5%	2.7%	4.8%
Mining	29,007	53,214	1.7%	2.3%	83.5%
Manufacturing	172,770	139,736	10.1%	6.0%	-19.1%
Electricity, Gas, Water and Waste Services	18,119	28,600	1.1%	1.2%	57.8%
Construction	154,898	221,409	9.0%	9.5%	42.9%
Wholesale Trade	69,820	56,559	4.1%	2.4%	-19.0%
Retail Trade	205,184	225,421	12.0%	9.7%	9.9%
Accommodation and Food Services	121,886	175,529	7.1%	7.6%	44.0%
Transport, Postal and Warehousing	87,936	114,978	5.1%	5.0%	30.8%
Information Media and Telecommunications	25,796	22,895	1.5%	1.0%	-11.2%
Financial and Insurance Services	51,201	61,337	3.0%	2.6%	19.8%
Rental, Hiring and Real Estate Services	37,416	42,839	2.2%	1.8%	14.5%
Professional, Scientific and Technical Services	100,826	161,950	5.9%	7.0%	60.6%
Administrative and Support Services	53,083	81,369	3.1%	3.5%	53.3%
Public Administration and Safety	118,693	148,424	6.9%	6.4%	25.0%
Education and Training	136,054	215,748	7.9%	9.3%	58.6%
Health Care and Social Assistance	181,029	374,629	10.6%	16.1%	106.9%
Arts and Recreation Services	23,867	37,606	1.4%	1.6%	57.6%
Other Services	66,646	95,498	3.9%	4.1%	43.3%
Total	**1,713,735**	**2,320,125**	**100.0%**	**100.0%**	**35.4%**

Source: ABS Census of Population and Housing. Note: excludes unknown, not stated, and inadequately described.

Industries experiencing contractions since 2006 – the last Census year for which comparable data is available – include wholesale trade, information, media and telecommunications, and manufacturing. Wholesale trade and information, media and telecommunications have been subject to disruption by the internet so the contractions in Table 2.1 are understandable. With regard to information – media and telecommunications specifically – there is a divergence in outcomes across states, with NSW and Victoria experiencing a small rate of growth of employment in this industry over the period. This may reflect a predominance of new economy and new media jobs in these states relative to Queensland and the other states, where net job losses occurred. The loss of traditional jobs (e.g. in regional newspapers) has not been offset by the creation of new jobs. The other contracting industry, manufacturing, is a challenging industry in Australia, partly due to relatively higher labour costs, and has struggled as import tariffs have reduced. But there are opportunities for the manufacturing industry to grow in Queensland over the next decade, as discussed in chapter 8.

Relative to the rest of Australia, Queensland is more reliant on the primary industries of mining and agriculture and has proportionately fewer workers and less value-adding in financial and professional, scientific and technical sectors (Figure 2.2).

Figure 2.2. Percentage shares of total Gross Value Added by sector, ABS estimates



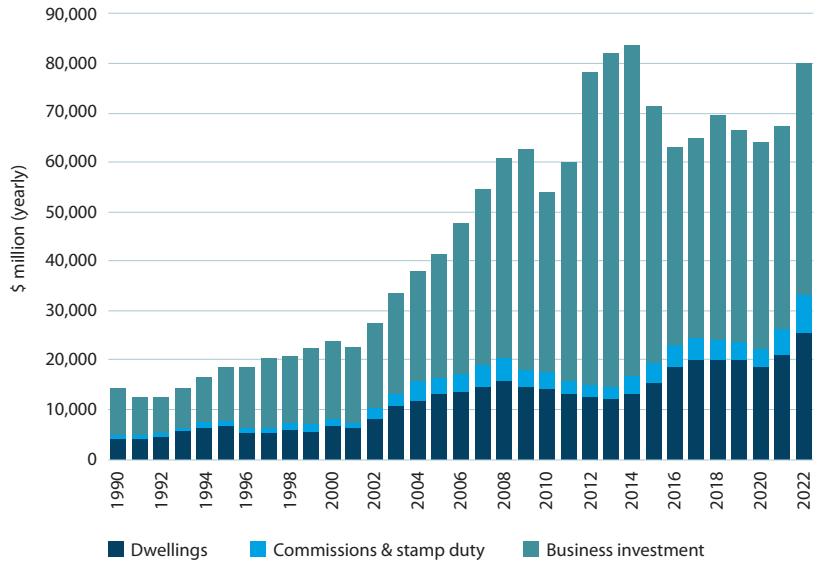
Source: ABS State Accounts.

Historically, NSW and Victoria have been home to more corporate headquarters than Queensland and this has been reflected in proportionately more professional jobs based in southern states. ABS data on businesses by employment size and main state of operation show, at the end of the 2022 financial year, Queensland had 784 businesses with 200 or more employees, compared with 1,672 in NSW and 1,238 in Victoria. NSW had 2.1 times and Victoria had 1.6 times more large businesses than Queensland, even though they had only 1.5 and 1.2 times the population of Queensland, respectively.

2.3 CAPITAL INVESTMENT TO FACILITATE GROWTH

Queensland's relatively strong population growth, the decarbonisation challenge and, to a lesser extent, the 2032 Olympics indicate very substantial private sector capital expenditure (CAPEX) requiring finance out to 2032–33. Our Business-as-Usual estimate is $1,109 billion while our Seizing the Opportunity estimate is $1,340 billion over the 10 years to the end of 2032–33 – that is additional CAPEX of $231 billion over 10 years compared with BAU. This is based on historical CAPEX data (Figure 2.3). The Seizing the Opportunity estimate is based on what would be required to replicate the rate of private sector CAPEX to GSP that was experienced during the mining boom earlier this century. This is considered a reasonable benchmark for the scale of CAPEX that is probably required to seize the opportunities available to the state.

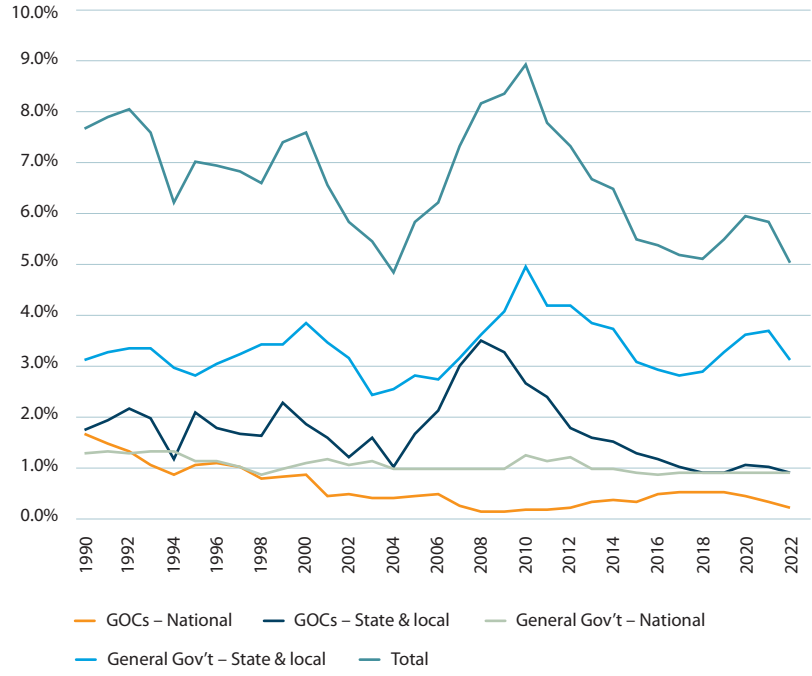
Figure 2.3. Private gross fixed capital formation, Queensland



Source: ABS.

The public sector will also have an important role in seizing the opportunities over the coming decade. One challenge, discussed in section 11, is balancing state debt accumulation while also funding necessary capital investments. Over the last decade public sector investment has been lower relative to GSP than previously (Figure 2.4). Even with its planned investments in renewable energy, Queensland Government's total CAPEX, including that of its government-owned corporations (GOCs), will only reach 3.0 per cent of GSP in 2025–26, the final year projected in the current State budget.[11] This is much lower than the peak level of 6.0 per cent of GSP reached in 2007–08[12] however much of the expected CAPEX will occur beyond the forward estimates, after planning, design, and approvals have been completed. This report does not make any recommendations regarding an appropriate level of public sector CAPEX. Instead, in the economic projections, it is assumed total public sector CAPEX (across all levels of government and GOCs) as a share of GSP remains at the long-run average of 6.5 per cent over the projection period. Figure 2.5. Public sector capital investment as a percentage of GSP.

Figure 2.4 Public sector capital investment as a percentage of GSP



Source: ABS. Note: GOC stands for Government-owned corporation.

[11] Queensland Treasury (2022) 2022–23 Budget Update, p. 41.
[12] Based on previous state budget papers.

For this report, Adept Economics has projected levels of private sector CAPEX consistent with a BAU scenario and a Seizing the Opportunity scenario. The level of CAPEX (in excess of depreciation) drives increases in the capital stock, making workers and businesses more productive, and increasing GSP. The BAU scenario assumes GSP growth up to 2023–24 consistent with Queensland Treasury mid-year budget update forecasts (2.5 per cent in 2022–23 and 2023–24) and beyond that to 2032–35 of 2.75 per cent growth. This assumption is based on the facts that:

- long-run productivity growth is expected by the Australian Treasury to equal 1.5 per cent per annum[13]; and
- the Australian Government Centre for Population has projected average annual population growth for Queensland of 1.3 per cent between 2023–24 and 2032–33.[14]

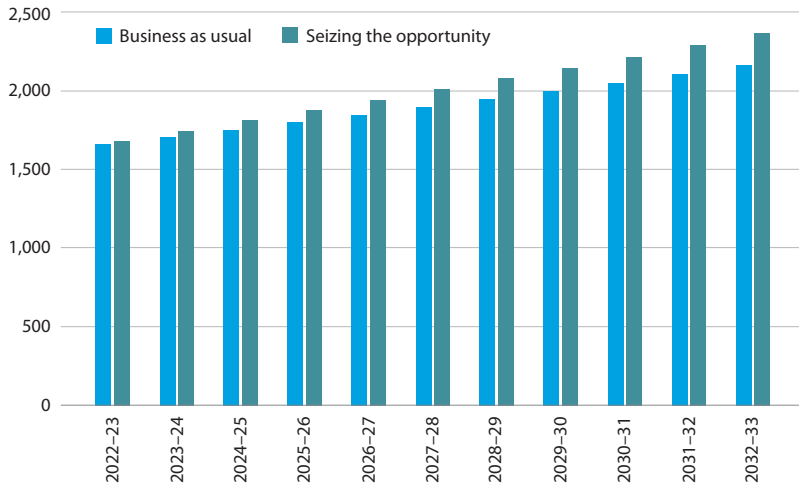
The level of private sector CAPEX and the total capital stock consistent with the growth path of GSP in the BAU scenario is then estimated. This is estimated at around 21.7 per cent of GSP which appears reasonable given average Queensland private sector CAPEX in non-mining booms (i.e. excluding 2003–04 to 2013–14) was around 21 per cent. Including the mining boom years, Queensland's private sector CAPEX has averaged 22.8 per cent.

As noted above, the Seizing the Opportunity scenario assumes private sector CAPEX is increased to the average over the mining boom years (26.2 per cent) and this value is applied to the GSP values estimated for the BAU scenario to determine the required CAPEX in the Seizing the Opportunity scenario (i.e. what is required to ultimately lift the level of GSP in the long run).[15] The impact on the state's capital stock is projected, as is the impact on GSP, assuming the same growth over the projection period as the state's capital stock. In projecting the capital stock, public sector CAPEX of 6.5 per cent of GSP, and a depreciation rate of 5 per cent is assumed, consistent with historical data.

In the Seizing the Opportunity scenario, the state's capital stock expands approximately 46 per cent between 2021–22 and 2032–33, compared with 34 per cent in the BAU scenario (Figure 2.5). Assuming the same proportionate increase in GSP, in 2032–33, Queensland's GSP is projected to be $643 billion in the Seizing the Opportunity scenario compared with $575 billion in the BAU scenario, a difference of $68 billion. This is an ongoing permanent increase in the level of GSP associated with the additional CAPEX of $231 billion over BAU.

[13] Australian Treasury (2021) Intergenerational Report 2021, p. 178.
[14] Australian Government Centre for Population (2023) Population Statement 2022, state and territory projections, 2021–22 to 2032–33; https://population.gov.au/data-and-forecasts/projections/population-statement-2022-state-and-territory-projections-2021-22
[15] This is a long-run projection to 2032–33. Short-run impacts from the additional CAPEX, which could include multiplier impacts, are not modelled.

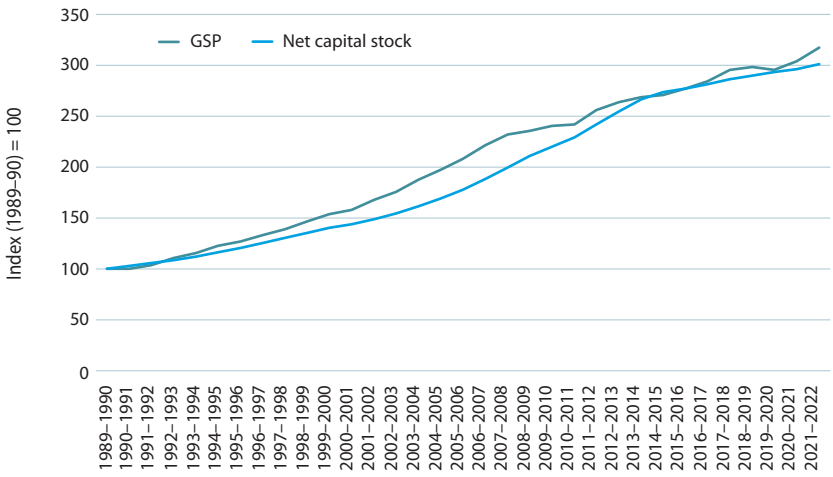
Figure 2.5 Queensland's net capital stock projections



Source: Adept Economics estimates based on ABS data and assumptions discussed in this report.

A proportional relationship between the net capital stock and GSP is a reasonable assumption given economic theory and the historical long-run relationship (Figure 2.6). However the projections model does not model the full range of variables which would be relevant, including labour supply among others, and hence the projections should be treated as indicative.

Figure 2.6 Long-run relationship between net capital stock and GSP



Source: ABS, Australian National Accounts: State Accounts.

The Seizing the Opportunity scenario would require a substantial increase in finance from banks, individual domestic and foreign investors, superannuation funds and other fund managers. It will also require a significant expansion of education and training, particularly in vocational and technical skills related to new opportunities in the renewable energy sector, possibly in hydrogen, and in agriculture and mining as these sectors become increasingly electrified and automated.

03

DEMOGRAPHY: MIGRATION CONTINUES

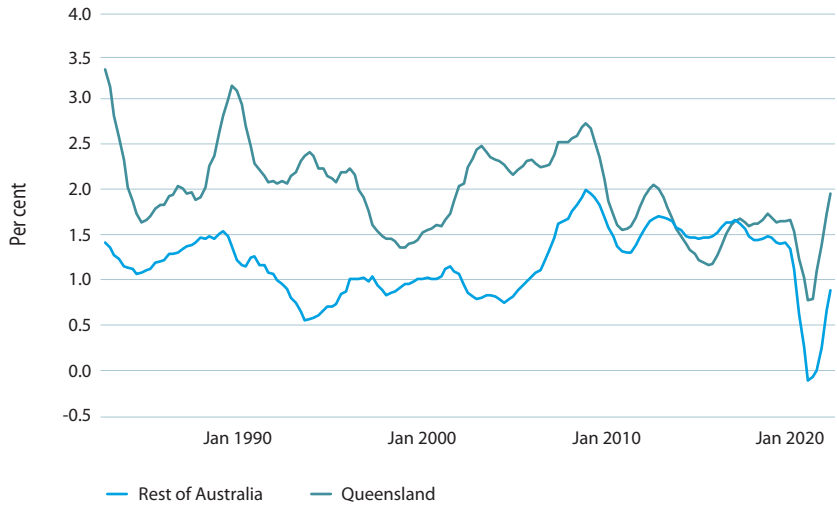
KEY THEMES

- Since the pandemic, Queensland's population has returned to being the fastest growing in Australia and this is expected to continue.
- Queensland's high rate of net interstate migration, which is adding over 1,000 people to Queensland's population each week, is a vote of confidence in the state's liveability and economy and is boosting the state's working-age population.
- As in other states and probably more so in Queensland, population growth is putting pressure on housing availability and increasing rents. Achieving adequate housing supply will be one of the state's most significant challenges over the next ten years.

3.1 QUEENSLAND LEADING THE NATION IN POPULATION GROWTH

During the pandemic, Queensland returned to being the fastest growing state in Australia. In the 12 months to 30 June 2022, Queensland's population increased by 104,400 people, comparable to adding a city the size of Mackay. Queensland's yearly population growth rate was 2.0 per cent compared with a national average of 1.1 per cent. The next fastest growing state or territory was Western Australia at 1.3 per cent, over half a percentage point lower than Queensland's growth rate (Figure 3.1).

Figure 3.1. Population growth, states and territories



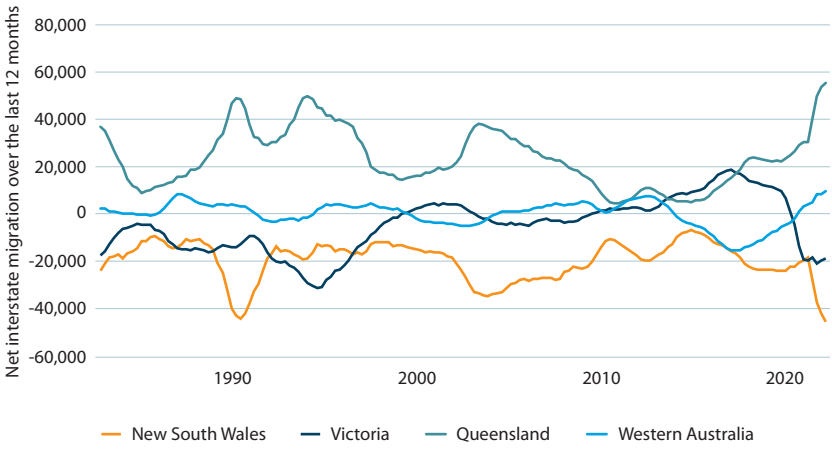
Source: ABS, National, state and territory population.

In early 2023, Queensland's population stood at 5.39 million.[16] In January 2023, the Australian Government's Centre for Population projected a population of 6.156 million for Queensland at the end of 2032–33.[17] The most recent Queensland Government's Statistician's Office projections, prepared in 2018, had medium series population projections for the state of 6.303 million on 30 June 2032, a few weeks before the commencement of the Brisbane Olympics, growing to 6.399 million by 30 June 2033. QGSO is expected to update these projections in early 2023.

A large part of the reason for the pick-up in Queensland population growth has been net interstate migration (more arrivals to fewer departures from Queensland), which is back to over 50,000 people yearly, a level not seen since the 1990s (Figure 3.2). This has major implications for housing and infrastructure requirements in Queensland.

[16] The QGSO provides a real-time estimate of the state population on its home page; https://www.qgso.qld.gov.au/
[17] Australian Government Centre for Population forecasts; https://population.gov.au/data-and-forecasts/projections/population-statement-2022-state-and-territory-projections-2021-22

Figure 3.2. Net interstate migration



Source: ABS.

Net interstate migration appears to be disproportionately young families rather than families with teenage children or retirees (Table 3.1). Migration to Queensland is likely affected by traditional drivers such as relative housing affordability and lifestyle. The November 2022 *ANZ Corelogic Housing Affordability* Report observed, "the relative affordability of housing across Brisbane and the rest of Queensland compared to NSW in particular, is one potential 'pull' factor that drove higher migration to the state through to early 2022, lifting property prices."[18]

[18] ANZ and Corelogic (2022) ANZ Corelogic Housing Affordability Report, p. 3.

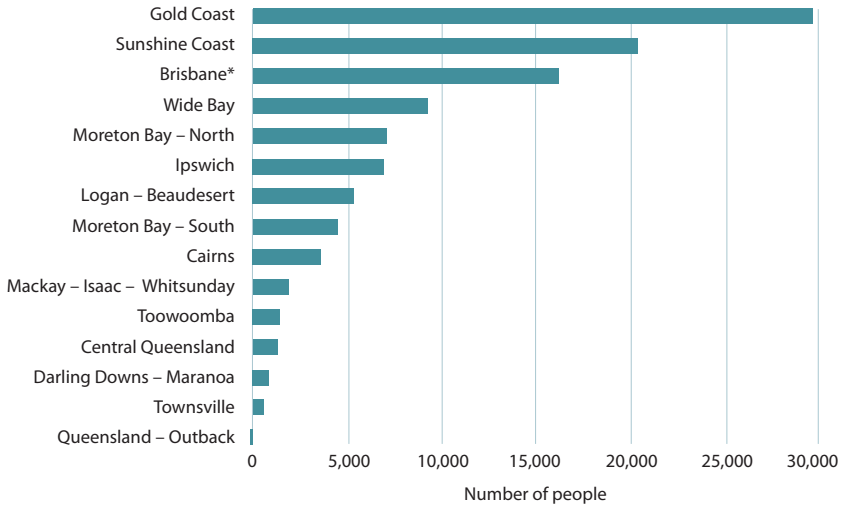
Table 3.1 Net interstate migration (NIM) age structure compared with Queensland population age structure, 2021

Age group	NIM	Population	NIM (% shares)	Population (% shares)	Difference
0 to 4	3,960	304,431	7.9	5.8	2.1
5 to 9	4,410	336,748	8.8	6.4	2.4
10 to 14	3,690	353,679	7.4	6.7	0.6
15 to 19	2,380	323,856	4.7	6.2	-1.4
20 to 24	2,090	330,759	4.2	6.3	-2.1
25 to 29	1,990	356,346	4.0	6.8	-2.8
30 to 34	3,630	366,319	7.2	7.0	0.3
35 to 39	5,160	367,068	10.3	7.0	3.3
40 to 44	4,620	338,915	9.2	6.4	2.8
45 to 49	3,760	342,546	7.5	6.5	1.0
50 to 54	2,850	340,768	5.7	6.5	-0.8
55 to 59	2,810	318,984	5.6	6.1	-0.5
60 to 64	2,940	303,423	5.9	5.8	0.1
65 to 69	2,440	264,303	4.9	5.0	-0.2
70 to 74	1,750	237,201	3.5	4.5	-1.0
75 and over	1,700	379,697	3.4	7.2	-3.8
	50,180	**5,265,043**	**100.0**	**100.0**	

Source: ABS Data Explorer.

Popular regions in Queensland for people to move to include the Gold Coast, Sunshine Coast, and Greater Brisbane (Figure 3.3). Factors attracting people to South East Queensland (SEQ) include housing affordability (relative to southern Capital cities) as well as lifestyle factors – either the natural attractions of the Gold Coast or the cosmopolitan capital of Brisbane. Outside of SEQ, the Wide Bay region is popular for housing affordability and lifestyle regions for both retirees and interstate migrants.

Figure 3.3. Net interstate migration, over the prior five years of Census 2021

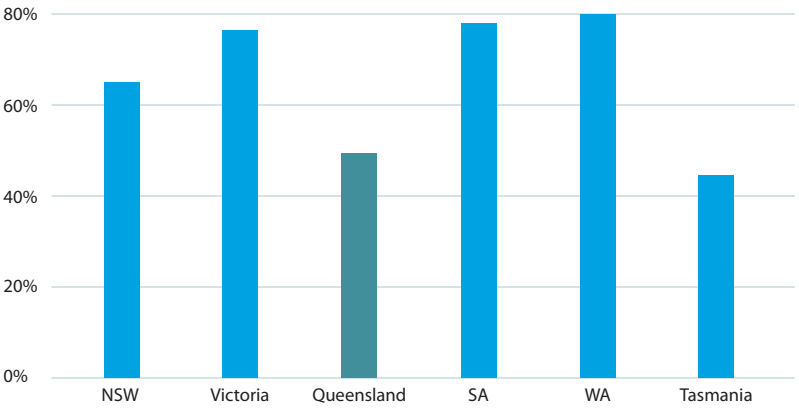


Source: ABS Census 2021.

3.2 QUEENSLAND'S POPULATION MAKEUP AND DISTRIBUTION

According to ABS estimates, Queensland's population has a similar age distribution to the Australian average, with the same median age of 38.4 years as the rest of the country, as at 30 June 2021. Notable differences with the overall Australian population include a higher proportion of people identifying as Aboriginal or Torres Strait Islander (4.6 per cent compared with 3.2 per cent nationally) and a higher proportion of people living outside the capital city than all other states except Tasmania (Figure 3.4). About 49 per cent of Queensland's population lives in the capital city, compared with 65 per cent in NSW and 76 per cent in Victoria.

Figure 3.4. Proportion of people living inside the capital city, as at 30 June 2021



Source: ABS.

While the proportion of people living in the capital city is relatively low, around two-thirds of the population live in SEQ, taking into account the large populations living on the Gold and Sunshine Coasts (Table 3.2). Outside SEQ, the largest cities are Townsville and Cairns, housing approximately 181,700 and 155,600 people respectively in their urban areas. The concentration of the state's population in SEQ suggests there is considerable scope for greater regional population growth in the future, possibly supported by the decentralisation of some government administrative activities.

Table 3.2. Queensland's population by significant urban area, as at 30 June 2021

Brisbane	**2,484,947**	Gladstone – Tannum Sands	**45,779**
Gold Coast – Tweed Heads*	**706,673**	Maryborough	**27,826**
Sunshine Coast	**355,631**	Gympie	**22,695**
Townsville	**181,665**	Yeppoon	**20,575**
Cairns	**155,638**	Mount Isa	**18,755**
Toowoomba	**143,994**	Warwick	**15,759**
Mackay	**85,435**	Emerald	**14,356**
Rockhampton	**80,240**	Kingaroy	**10,660**
Bundaberg	**74,433**	Outside a significant urban area	**791,720**
Hervey Bay	**58,235**		

Source: ABS. *The Gold Coast–Tweed Heads significant urban area includes around 60 thousand people who live in NSW in the Tweed Shire Council local government area.

Queensland has not previously offered the same attraction to these workers but there is now an opportunity to not only attract corporate centres in these fields but also remote workers who want a Queensland lifestyle while working for major enterprises. The November 2022 *ANZ-Corelogic Housing Affordability Report* observed the potential for remote workers to migrate to regions, given 38 per cent of full-time workers can possibly work remotely, according to the Productivity Commission. The migration of remote workers from other states to the Gold Coast and Sunshine Coast, who generally have higher incomes than existing residents, was seen as contributing to accommodation pressures on the coasts.[19]

There is an opportunity here to attract people to more regions in Queensland, rather than only to SEQ, which could relieve some of the congestion pressures in SEQ. This may require some additional public capital expenditure in regional liveability and connectivity, particularly in regional roads and communications connectivity. This could also help reduce differences in economic and social outcomes between the regions and SEQ.

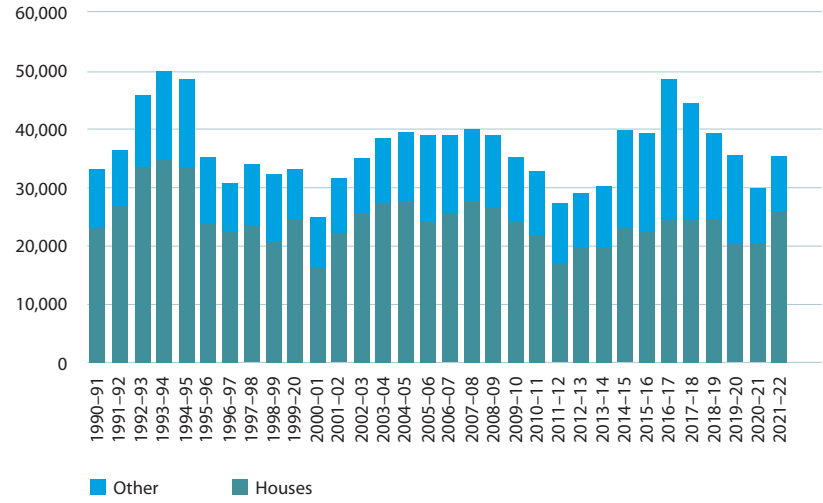
Queensland's workforce is generally well-aligned with the historical needs of industry in the state. Compared with the Australian average, Queensland has more certificate level qualifications (i.e. trades qualifications) than the national average and fewer tertiary-educated people. Of people aged 25 to 64, around 72.4 per cent have a non-school qualification in Queensland, somewhat lower than the national average of 73.8 per cent. If Queensland is to seize the available opportunities, the qualifications profile may need to evolve, with an increase in the proportion of people with non-school qualifications, particularly in fields related to traditional and emerging economic strengths.

[19] ANZ-Corelogic (2023, p. 4).

3.3 IMPLICATIONS OF GROWTH FOR HOUSING AND INFRASTRUCTURE

To accommodate all the additional people expected to make Queensland home over the next decade, the state will probably need to increase its rate of housing construction. Over the last decade, Queensland averaged around 37,000 new dwelling completions annually, around the same level as the 1990s average of 38,000 annually (Figure 3.6). However, while housing construction remained at similar levels, the average annual population increase has been 75,000 annually in the last decade compared with around 62,000 in the 1990s. This suggests an annual increase in dwelling construction of around 20 per cent is required, corresponding to an additional $50 billion of CAPEX in dwellings on top of a baseline of an expected $250 billion (in today's dollars over the next 10 years).

Figure 3.6. Dwelling unit completions per financial year in Queensland



Source: ABS.

There is an urgent need to address housing availability over the period covered by this report. If suitable accommodation is not provided, Queensland investment projects may not be able to secure a sufficient supply of local workers or would become more reliant on fly in, fly out (FIFO) workers. This would mean the state may not capture as great a share of the benefits as it otherwise would, particularly if workers are flown in from interstate. It may also affect the viability of some projects critical to the net zero transition or expanding critical minerals production.

04

ASIA:
THE NETWORK EFFECT

KEY THEMES

- Queensland will continue to benefit economically from its connectivity with Asia, with those linkages boosting trade, tourism and enrolments at the state's universities and colleges.
- While bulk commodities such as coal and LNG form the majority of Queensland's exports to the region and the wider world, increasingly air freight offers opportunities for primary producers to export high-value produce, such as live seafood or quality fruits, into overseas markets.
- Trade tensions with China will hopefully ease over the next decade. Regardless, Queensland's trading relationship with Asia extends across a range of economies, most notably Japan, Korea, Taiwan, India and increasingly the ASEAN economies.

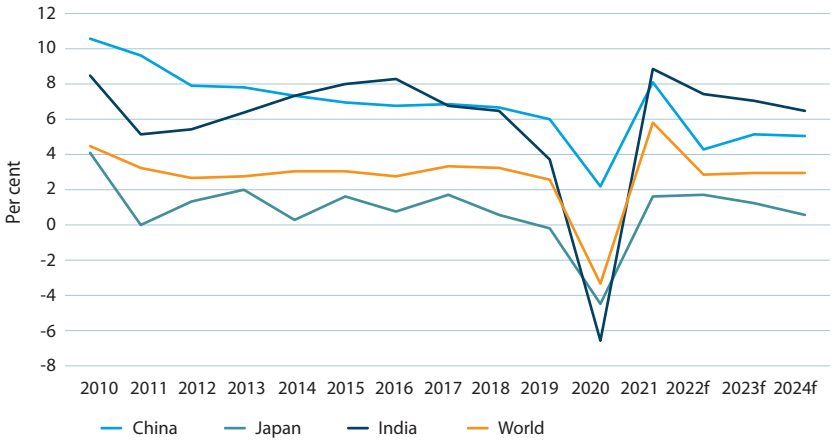
4.1 THE OPPORTUNITY: CONNECTIVITY WITH ASIA

Over the past five decades one of the most compelling economic stories has been the rate of growth in Asian economies. From the 1970s, when the Japanese economy shot to prominence on the back of a post-WWII recovery, to the present day where China now sits as the world's second largest economy, the story of the Asian economic miracle has been at the forefront of economic thought and planning.

Economic growth in India has also been impressive on the back of a series of reforms and an emerging consumer class (Figure 4.1). In the decade prior to the COVID pandemic, India's GDP grew by an average of 6.6 per cent per year, more than double the global rate of growth. India is already the world's fifth largest single economy and this impressive expansion is expected to continue. With more than one sixth of the world's population but contributing only about four per cent of the world's output, the potential for future growth is clear.

Today the ASEAN nations (formed by ten Southeast Asian nations[20]) is comprised of more than 450 million people who together make up the fifth largest economy in the world. In the next decade, ASEAN nations are well on track to becoming the fourth largest world economy. Over the past 30 years ASEAN annual GDP growth has averaged close to 5 per cent, compared with just 1.5 per cent for the world as a whole.

Figure 4.1 GDP Growth & Forecasts Japan, China, India and Global, Percentage growth year-on-year



Source: World Bank, DataBank.

As Asia continues to grow and decarbonise, we can expect to see a significant increase in the demand for green energy and the industries and their associated intellectual property and skills that go with that. As an example, while demand for steel in Asia will likely remain strong, the carbon emissions related to that steel production will be an area of particular focus and will heighten interest in technologies such as the use of green hydrogen and carbon capture in steel furnaces.

[20] The ASEAN nations are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

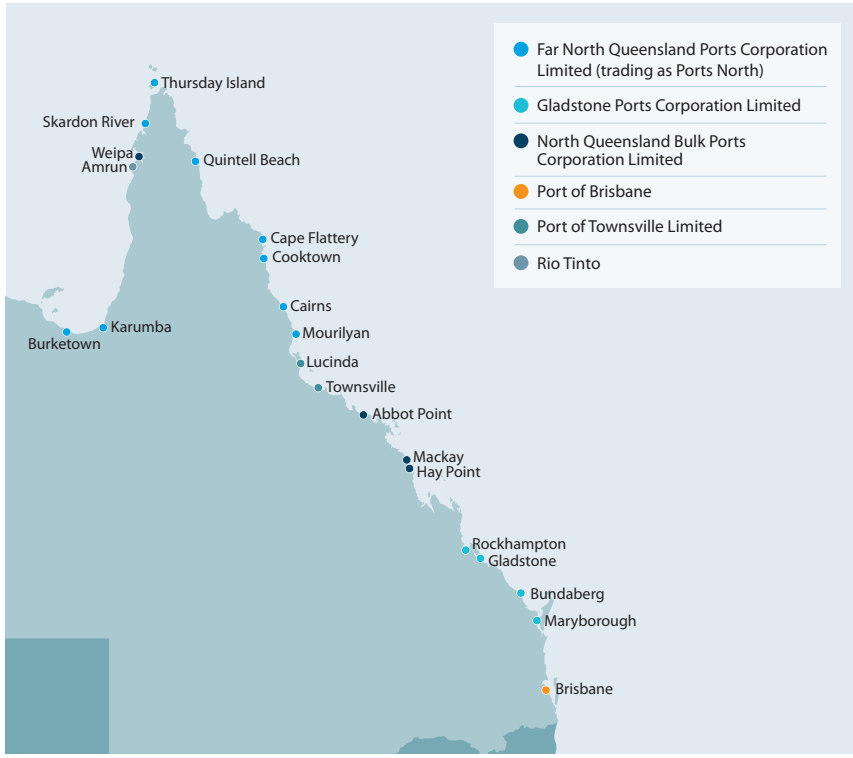
4.2 QUEENSLAND'S OPPORTUNITY

Queensland's engagement with Asia has a long history, with trade links dating back to pre-Federation days. Today those links are supported by a network of 19 Trade and Investment Queensland (TIQ) offices across the globe, 12 of which are in Asian countries[21]. In addition, the importance of the Asian market to the tourism industry in Queensland is demonstrated by the fact that Tourism and Events Queensland (TEQ) services the Asian market by maintaining four international hub offices, three of which are based in Asia[22].

Links with Asia run deeper than simply trade and tourism; cultural links are also significant. The 2021 Census shows that not only have the number of people born in Asia grown as a total percentage of the Queensland population but that those from India, China and the Philippines now sit in third, fourth and fifth spot in the state behind those identifying as being born in New Zealand and England.

Queensland is positioned close to the major trading nations of Asia with excellent, well-established trading relationships in place. The state has a total of 21 ports along the east coast and in the Gulf of Carpentaria, handling everything from containers, bulk commodities, coal, sugar, and LNG (Figure 4.2).

Figure 4.2. Queensland Ports

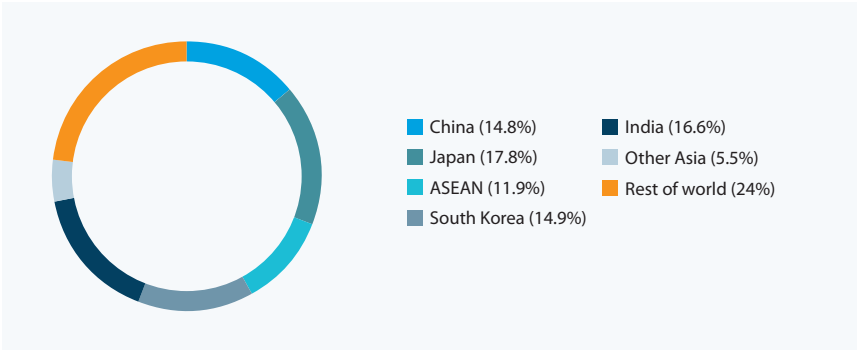


Source: Queensland Department of Transport and Main Roads, www.tmr.qld.gov.au/-/media/busind/Transport-sectors/Ports/queensland-port-locations.png?la=en

[21] TIQ Offices are found in Singapore, China (4), Hong Kong, Indonesia, Japan, S. Korea, India, Taiwan and Vietnam.
[22] TEQ Offices are found in China, Japan and Singapore.

In the 2021–22 financial year, the Queensland Treasury estimates more than three-quarters of Queensland's exports went to Asian countries (Figure 4.3). The very sharp move higher in coal prices seen since 2020 has meant coal accounted for 57 per cent of Queensland's total exports in 2021–22, up from an average of 41 per cent in the preceding decade. As a result, the importance of coal exports to Asia have become even more significant, making up almost 83 per cent of total coal exports and 47 per cent of all Queensland exports.

Figure 4.3. Queensland exports, percentage of total value by destination, 2021–22



Source: Queensland Government Statistician's Office, Queensland Treasury. Exports of merchandise goods to all states/territories of Australia by the commodity classification AHECC pivot tables 2022

Queensland offers excellent travel connectivity boasting five major international airports along the eastern seaboard offering direct flights to travel hubs throughout Asia, the Pacific and North America.[23] The state also enjoys a wealth of national and regional travel connections via air, road and rail which contribute to our connectivity with Asia.

Prior to the pandemic, Queensland was exporting 10,000 to 15,000 tonnes annually via air freight. An example of the capacity of Queensland to provide air freight connections with Asia is provided by the Cairns Regional Trade Distribution Centre. In 2019, the Queensland Government requested applications for funds to establish two Regional Trade Distribution Centres (RTDCs) to assist with providing access for exporters in regional Queensland into international markets. Air Freight Handling Services Pty Ltd was awarded up to $10 million from the Jobs and Regional Growth Fund to build the facility at Cairns Airport; the other facility was constructed at Wellcamp Airport by the Wagner Group.

Construction of the Cairns RTDC is nearing completion. The state-of-the-art facility will ultimately double the freight handling capacity at Cairns Airport to 2,000m^2 when the existing Qantas facility is decommissioned and relocated to the RTDC in a years' time. Freight forwarders will be able to co-locate at the RTDC (and a number are already contracted to be occupying office space) which will allow easy and direct air-side access to the freight handling area at the Cairns Airport.

[23] Brisbane, Gold Coast and Cairns operate as international airports all-year-round, while Townsville and Sunshine Coast host international flights on a seasonal basis.

The new RTDC includes the provision of four cold storage rooms and will allow for the handling and possible consolidation of exports, including FNQ speciality products such as live coral trout and lobster, tropical fruit and locally produced manufactured goods.

Prior to the pandemic, average international freight volumes through Cairns each month was about 350 tonnes. The challenge is to attract wide-bodied passenger or dedicated freighter flights to return to Cairns to provide access for exporters to the Asian market. The construction of the RTDC is a significant step along that road.

The hope is that within a decade the RTDC will be handling 800 tonnes of international freight a month (and the same volume domestically) with virtually all of that freight heading into Asia in general and Singapore in particular.

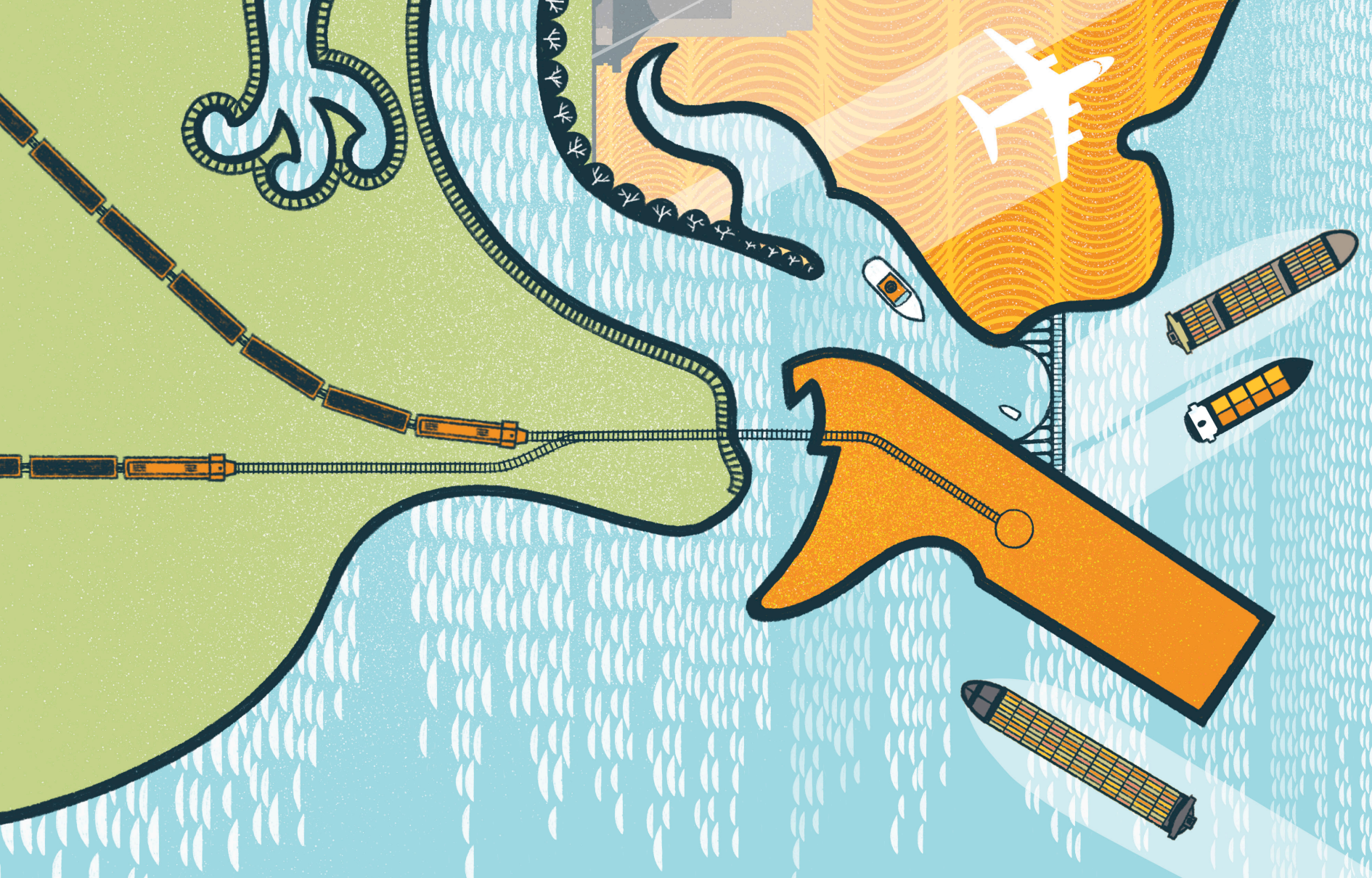
The proximity of the Asian markets to Far North Queensland and the variety and quality of FNQ produce were major determinants in the decision to locate the RTDC at Cairns. As international exports rebuild after the pandemic, the benefits that the RTDC can bring to primary producers, manufacturers, exporters and freight carriers, combined with the expected growth of the Asian markets, will likely produce significant rewards for the economy in the Far North.

Australia's geographic position and its important trading position with China, when combined with treaty arrangements such as ANZUS, put the country in a unique position to act as a crucial East–West bridge. No Australian state has a greater part to play in that role than Queensland.

Meanwhile, Queensland benefits from the existence of two Royal Australian Naval bases. HMAS Cairns has responsibility for the region between Rockhampton and Thursday Island, employs 900 Navy and civilian personnel and is the home port for seven naval vessels. As well as Patrol Boat and Hydrography services, and acting as a home base, HMAS Cairns also provides crucial refit and training services support for neighbouring Pacific Nations.

Significant investment into marine infrastructure and services has been made in Cairns in recent years. Earlier this year, a Cairns-based marine services business secured a $70 million contract from the Navy to establish the Cairns Regional Maintenance Centre to support the Navy's Cape class patrol boats.

In recent budgets at both State and Federal level, an additional $300 million has been locked in to deliver infrastructure investment in the Cairns Marine Precinct. This will capitalise on emerging defence and other marine industry opportunities and investigate reshoring shipbuilding to Cairns. Ahead of the Federal Government's Defence Strategic Review in 2023, submissions from Cairns Regional Council and Ports North – supported by advocacy group Advance Cairns – highlighted the region's strong ties to the Pacific and its strategic location as a national defence asset and have called for further resourcing and expansion of HMAS Cairns' facilities.



4.3 CHALLENGES

A significant challenge that will face Queensland over coming years will be the inevitable future shift away from coal. As the world moves towards net zero, decarbonised economies, Queensland's base of coal exports into Asia will be a source of considerable economic risk over the coming decades. However, over the next decade to 2032–33, coal demand may not decline significantly (as discussed in chapter 6). Queensland will benefit from the predominance of coking coal in total production and exports, providing protection against any reduction in demand for thermal coal.

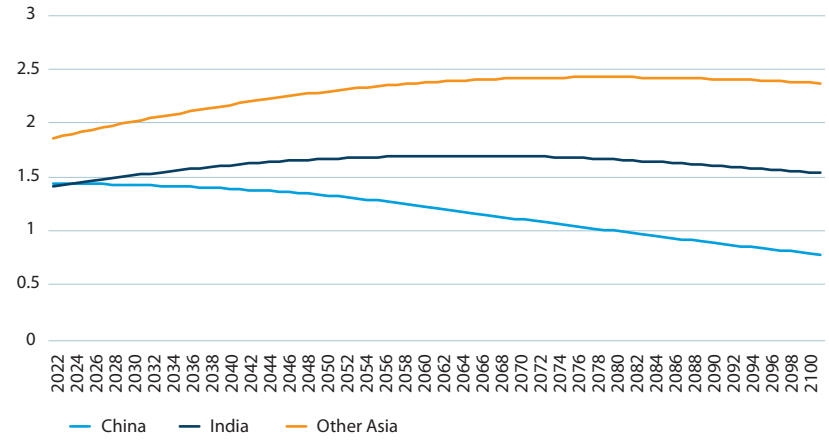
While the anticipated longer-term decline in coal exports will be a challenge, it is also an opportunity. Queensland's coal export markets in Asia will, like everyone else, be looking to meet their net zero targets. Part of this shift will undoubtedly be towards innovations such as renewable energy and low-carbon production technologies. The potential for green hydrogen markets in Asia could be significant and Queensland's well-established trade links should position it well to take advantage of that potential.

Over recent decades, while growth in Asia has been impressive, it is possible that this pace of expansion will slow in the future. There have been indications in recent years, not just because of aggressive zero-COVID policies, that economic growth in China was struggling to maintain its break-neck speed. As the World Bank notes[24]: *"Over the medium term, China's economy continues to confront a structural slowdown. Potential growth has been on a declining trend, reflecting adverse demographics, tepid productivity growth and rising constraints to a debt-fueled, investment-driven growth model."* How China handles this policy challenge will have major implications for Queensland's future economic performance. Nevertheless, even in the face of a slow-down in the China boom witnessed in recent years, China will continue to be the largest economy in the region and a significant trade partner for the state. While the political environment may wax and wane, and trade volumes shift accordingly as sanctions and policy positions take effect, the relationship between Queensland and China will continue to be an important one.

Outside of China, growth trends in Asia look more robust. Although the World Bank recently downgraded their expectations for growth in India for 2022–23 to 6.5 per cent from a previous projection of 7.5 per cent, this remains relatively healthy and will likely far outstrip most developed nations. The Asian Development Bank is projecting Southeast Asia (ASEAN plus Timor–Leste) to grow 5.0 per cent in 2023 and South Asia (which includes India and the Subcontinent) to grow by 6.5 per cent in the same year. Economic growth often comes hand-in-hand with population growth, and as the chart opposite makes clear, population projections show strong growth coming from many Asian countries other than China for much of the rest of the century (Figure 4.5). The importance of Asia to Queensland goes well beyond China.

[24] The World Bank (2022); www.worldbank.org/en/country/china/overview

Figure 4.5 Population projections for China, India, and other Asian economies, UN medium-variant projections



Source: UN Population Projections.

The geopolitical tensions and uncertainties mentioned earlier as opportunities for Queensland inevitably also hold some risk. If actual conflict were to erupt in the South China Sea, or China were to take a more militaristic stance towards Taiwan, this would clearly have significant impacts on travel and trade in the region.

4.4 CONCLUSIONS

The growth of Asian economies has been, and looks set to continue to be, one of the dominating global themes. As countries such as China, India and the ASEAN bloc develop larger middle classes and more sophisticated consumers, their importance as global markets will accelerate and the ability to connect with them will become a requirement for any economy wishing to take advantage of their growth. Queensland enjoys an enviable position on the doorstep of this region. The state has extensive and well-established trade and travel links with Asia as well as embedded, and expanding, cultural links.

Coal exports from Queensland to the region are an extremely important component in the state's economy and the inevitable long-term shift away from fossil fuels will be a major challenge. However, significant investment in, and support for, the development of alternative energy and low-carbon sectors in Queensland will mitigate some of that risk and potentially allow for the development of an extensive export market in Asia built on these new technologies. (See chapter 9)

The geo-political scenario the region finds itself in highlights the importance of Australia's naval capability; Queensland has a vital role to play here too and steps are already being taken to extend both defence and associated support service capabilities.

05

AGRICULTURE: MODERNISING, EXPANDING, DEEPENING

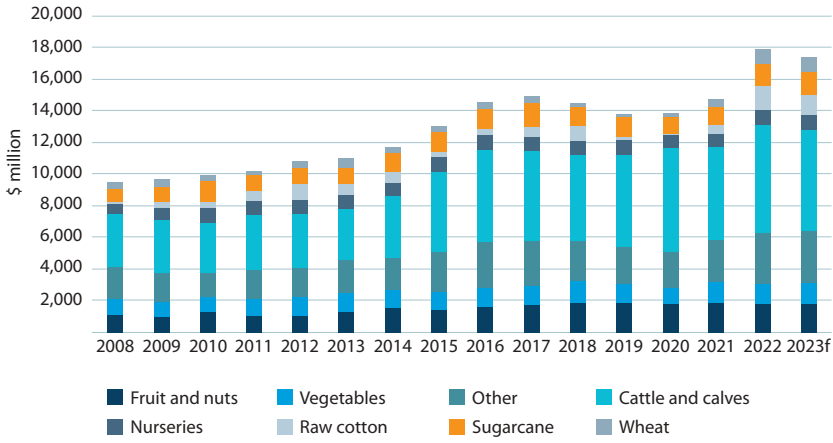
KEY THEMES

- Queensland agriculture will benefit from growing global demand, especially in Asian markets where Queensland has excellent connectivity. New technologies are helping the sector boost on-farm productivity, giving Australian farmers a competitive advantage in foreign markets.
- Free Trade Agreements are helping Australian farmers get greater access to foreign markets. While China has imposed some trade restrictions that have impacted local producers since 2020, there is hope these will be relaxed in the near term.
- Over the next decade, Queensland's agricultural sector will retain its foundations in producing beef, cotton, grains and sugarcane. Crops including fruit, nuts and soybean provide opportunities to diversify and capitalise on Queensland's strengths.

5.1 THE OPPORTUNITY: AGRICULTURE

Queensland is a major agricultural producer with over $15 billion of Gross Value of Production in 2021–22 (Figure 5.1). Beef, cotton and sugarcane remain Queensland's most important agricultural commodities.

Figure 5.1 Gross Value of Production of Key Queensland Agricultural Industries



Source: QLD Department of Agriculture and Fisheries Data.

Queensland's agricultural sector is well established as an important part of the state's economy. It is vital for many regional economies. As a predominantly export-oriented industry, global demand factors are most relevant to the future strength of Queensland agriculture. The key drivers of agricultural product demand globally are population growth and, to a lesser extent, per capita income growth, primarily through their influence on demand for food products. *The OECD-FAO Agricultural Outlook 2022–31* observes:

Global food consumption, which is the main use of agricultural commodities, is projected to increase by 1.4% p.a. over the next decade, and to be mainly driven by population growth.[25]

Adding to existing strengths, specific agricultural commodities likely to offer the most relevant opportunities for the Queensland sector include beef, sugar, grains, cotton, and fruit and nuts. Due largely to population growth, overall trends over the next decade are favourable for demand for agricultural commodities relevant to Queensland.

Other opportunities for Queensland agriculture will come from increases in consumption for a range of other commodities. In particular, the fruit and nut sector with a thriving global demand growing at over 5 per cent per annum, and to some extent demand for agricultural commodities for use as feedstocks for biofuel production.[26] Another opportunity comes from the current growing demand for plant protein, driven by consumers seeking more sustainable sources of protein. This provides growth opportunities for a range of commodities including nuts, chickpeas, beans and lentils among other sources of plant protein. The size of this opportunity has been quantified by the Commonwealth Scientific and Industrial Organisation (CSIRO), estimating that Australia's plant-based protein sector could grow from $140 million to $3 billion conservatively by 2030.[27]

[25] OECD/FAO (2022), OECD-FAO Agricultural Outlook 2022–2031, OECD Publishing, Paris, p. 17, https://doi.org/10.1787/f1b0b29c-en.
[26] Statista (July 2022); https://www.statista.com/outlook/cmo/food/fruits-nuts/worldwide

Globally, the use of sugarcane for biofuels is expected to increase 15 per cent over the decade to 2031. According to the OECD and FAO, biofuels-driven demand for agricultural commodities as feedstock has not proven to be as strong as previously expected, partly because of declines in government support in several economies.[28] In Queensland, demand will be driven to a large extent by domestic policy settings, because any use of sugarcane for biofuels would probably need to occur locally for economic reasons (i.e. transport costs would prohibit export).

5.2 QUEENSLAND'S OPPORTUNITY

5.2.1 Overview

As discussed in chapter 4, Queensland is exceptionally well connected with emerging markets in Asia. Additionally, Queensland producers benefit from the strong international reputation Australian farmers have for growing quality produce. The growth of global demand for agricultural commodities along with domestic demand should yield strong growth opportunities for Queensland's agricultural sector into the future. The state's abundance of productive agricultural land will enable it to increase agricultural production to cater for the future growth in demand or increases in market share that it may experience. Opportunities also exist for greater value-adding to agricultural produce, particularly in food and beverage product manufacturing and are discussed in chapter 8.

5.2.2 Favourable growing environment: dryland and irrigated

Of Queensland's 1.853 million square kilometres, 83–84 per cent is deemed to be suitable for cropping or grazing, with around 12 per cent of the state suitable for cropping.[29] Queensland's agricultural land is supported by an excellent climate for agriculture, with 288.6 days of sunshine annually supplemented by a mean annual rainfall of 1,148.8 mm.[30]

Queensland agriculture is well-supported by various irrigation schemes managed by the Queensland GOCs Sunwater, operating in regional Queensland, and Seqwater, which operates in SEQ. Schemes are spread across the state.[31] Many Queensland crops are heavily irrigated while the vast bulk of grazing land is not.[32]

Favourable climatic conditions and irrigation schemes provide major opportunities for the growth of high-valued fruit and nut production in Queensland. Additionally, Queensland's southern hemisphere location is also advantageous as the state offers a counter-seasonal supply of fruit and nuts, ideal for export to Europe and other northern hemisphere markets[33]. Given good future growth prospects and attractive prices there has been a large amount of additional investment in fruits and nuts.

5.2.3 Favourable trading relations

In recent decades, the Australian Government has pursued an ambitious trade policy to improve market access for Australian products, particularly agricultural products,

[29] Queensland Government, State of the Environment Report 2020; https://www.stateoftheenvironment.des.qld.gov.au/liveability/rural/soil-land-resources-availability-capability
[30] Bureau of Meteorology; http://www.bom.gov.au/climate/averages/tables/cw_040214.shtml
[31] Irrigation scheme information is available via https://www.sunwater.com.au/schemes/ and https://www.seqwater.com.au/irrigation.
[32] ABS, Water use on Australian farms; https://www.abs.gov.au/statistics/industry/agriculture/water-use-australian-farms/latest-release
[33] Johnson, Samuel (2021) "Citrus Fruit, Nut and Other Fruit Growing in Australia Report", IBISWorld, p. 12

with 16 free trade agreements (FTAs) now in place. These FTAs help to promote the growth of Queensland's agricultural sector. Notably, in January 2022, Australia entered into the world's largest free trade agreement, the Regional Comprehensive Economic Partnership Agreement (RCEP), comprising ten original parties, including China, Indonesia and Vietnam among others, reaching a potential market of two billion people. Another important agreement is the China–Australia FTA which outlines that almost 98 per cent of Australian products will enter the Chinese market with preferential treatment by 1 January 2029, providing an opportunity to boost Queensland's agricultural exports to China, the second most important destination market, just behind Japan.[34] While some agricultural exports to China, particularly of barley and beef, have been subject to trade restrictions in recent years, there is hope the restrictions will be relaxed in the future.

5.2.4 Attractive location for investment

Queensland has long been an attractive prospect for both domestic and foreign investment. As at 30 June 2021, approximately 15.6 million hectares or 12.2 per cent of the state's 128.7 hectares of agricultural land was held by foreign investors, spread across 1,693 properties.

In terms of required future CAPEX, ANZ estimates in their *Greener Pastures 2* report that, from 2021–2030, Australia will require $122 billion of investment to grow agricultural productive capacity to meet future demand, with a further $118 billion to finance the turnover of farms (i.e. the buying and selling of farms).[35] Based on Queensland's contribution to total Australian agricultural production of around 20 per cent, Queensland would require around $25 billion to expand capacity and around $24 billion to finance the turnover of farms.

5.2.5 Supportive policy settings

Agriculture in Queensland is supported by favourable policy settings at the national and state levels. For instance, the Queensland state budget has allocated $150 million over 10 years towards the *Queensland Trade and Investment Strategy*, an initiative that has identified Agriculture as a priority industry that will be key to the state's continued growth. The plan identifies synthetic biology as an area of interest that presents opportunities for diversification and expansion of the industry. The budget also commits $4.7 million to improving the Department of Agriculture's research and operational facilities and $2.6 million to new plant and equipment in 2022–2023 alone.

The agricultural sector will also benefit from various policy measures consistent with the transition to net zero. For example, the Queensland Government supports a carbon farming scheme for farmers. Farmers can earn carbon credits by implementing sustainable farming practices such as increasing carbon content in their soil, planting and managing native vegetation and reducing methane and nitrous oxide emissions. There are currently over 250 carbon farming projects in Queensland.[36] The value of carbon credits is likely to increase significantly with expected changes to the Australian Government's Safeguard Mechanism which will require major polluters to reduce their emissions by 4.9 per cent per year and to obtain equivalent carbon credits where they fall short.

[34] Queensland Department of Agriculture and Fisheries; https://www.daf.qld.gov.au/strategic-direction/datafarm/agricultural-exports
[35] ANZ (2022) "Greener Pastures 2", p. 19; (https://www.anz.com/institutional/industries/food-beverage-agribusiness/greener-pastures/#:~:text=ANZ%27s%20Greener%20Pastures%202%20takes,environmental%20awareness%20and%20investment%20flows.
[36] Queensland Government (July 2021); https://www.qld.gov.au/environment/climate/climate-change/land-restoration-fund/carbon-farming/australia

5.2.6 Opportunities in biofuels and bioenergy

As discussed in section 5.1.6, demand growth for some agricultural commodities will come from demand for them as feedstock for biofuels, particularly ethanol and biodiesel. Additional waste products associated with agriculture, such as the bagasse which remains after sugarcane is crushed, can be used to generate bioenergy. Queensland currently operates four biomass power plants over 25 MW in capacity and 14 smaller plants . Queensland has abundant supplies of biomass which could be used for bioenergy in the future. In 2020–21, bagasse helped generate 19 per cent of Australia's renewable energy.[38] This bioenergy both powers the sugar mills where it is generated and is also exported.

As noted by the OECD-FAO and discussed in section 5.1.6, opportunities in bioenergy and biofuels depend to a large extent on government policy settings. Relevant supportive policy settings in Queensland include the Queensland Government's biofuels mandates, which require a) Four per cent of the total volume of unleaded petrol sales must be 'biobased' (i.e. ethanol) and b) 0.4 per cent of diesel fuel is biobased.[39] Biofuels are also being supported by the Queensland Biofutures 10-Year Roadmap which is funded by the Queensland Jobs Fund. Various biofuel projects are being supported.[40]

5.2.7 Innovation, modernisation and automation

Queensland is home to a large amount of innovation within the agricultural sector. In recent decades, farmers have increasingly mechanised and automated their operations, with irrigation and other farm machinery increasingly being operated remotely. Automation could increase in the future with various companies such as Swarm Farm undertaking R&D to automate operations (e.g. robotic farm equipment) even further. ANZ's *Greener Pastures 2* indicates 'agtech' has the potential to alleviate labour shortages on farms.[41]

Modern farm machinery offers the potential to collect and analyse critical data in real time and adjust farming practices as required. For example, RDO Equipment's products take advantage of digital technology to offer additional benefits to its customers. Its equipment can help monitor fields, collecting data on temperature and soil moisture among other things, providing valuable data to farmers. Additionally, over coming decades, farming equipment will be increasingly electrified, meaning there is the prospect to power it with renewable energy, reducing a significant input cost for farms, that is diesel fuel.

Product innovation also provides opportunities to the Queensland agricultural sector. The concept of 'paddock to plate' could be used to attract consumers who seek the quality and freshness Australian agricultural products represent. A 'paddock to plate' product could provide traceability of produce, enabling consumers to view where their produce came from, how it was reared, transported and prepared. Due to the greater certainty surrounding the origins of the beef, it would be sold as a premium product, providing an opportunity for producers to sell a premium product.

[38] Department of Climate Change, Energy, the Environment and Water; https://www.energy.gov.au/data/renewables
[39] Business Queensland (2018); https://www.business.qld.gov.au/industries/manufacturing-retail/retail-wholesale/selling-fuel-qld/qld-biofuels-mandates
[40] Department of State Development, Infrastructure, Local Government and Planning (2022) "Queensland Biofutures: 10-year Biofutures Roadmap and Action Plan 2016–2026", Queensland Government, Edition 3, p. 6; https://www.statedevelopment.qld.gov.au/__data/assets/pdf_file/0023/72239/biofutures-roadmap-and-action-plan-june-2022.pdf
[41] ANZ (2022, p. 27).

Finally, blockchain technology is enhancing opportunities for traceability and creating a market and price premium for Queensland agricultural products whose provenance can be guaranteed. In November 2022, a shipment of sustainably-produced raw sugar was fully traceable (via blockchain) as it was exported from Townsville to South Korea.

5.3 CHALLENGES

An ongoing challenge to agriculture that became acute during the pandemic, is the availability of labour, both unskilled and skilled. With migration to Australia rebounding post-pandemic, it is hoped backpackers and other migrants can again contribute to meeting the labour needs of the sector, particularly around planting and harvesting periods, when there are seasonal surges in labour requirements.

Climate change, of course, is a global challenge. Queensland agricultural producers are expecting to see increased volatility in weather patterns, according to CSIRO modelling. Irrigators are expected to encounter challenges in the form of heightened uncertainty and variability around water supplies. Growers will need to continue to invest in water-use efficiency infrastructure such as more efficient irrigation equipment (e.g. centre pivot machines) or storage deepenings.

With regard to environmental challenges, the beef industry is one of the major sources of emissions of methane, a GHG. The Advance Queensland Industry Fellowships program is supporting technological initiatives to reduce methane emissions in Queensland's beef industry. One current research study is evaluating dietary supplements for cattle to reduce methane emissions using 'direct injection technology' from DIT AgTech, a Queensland agricultural technology company.[42]

5.4 CONCLUSIONS

Queensland's agricultural industry is multifaceted and well established with beef exports remaining strong and anticipated strong growth in cotton and other commodities including fruit and nuts. Farmers will need to continue to carefully manage their water supplies to ensure profitability and success of their businesses into the future.

Fully seizing opportunities in agriculture will require:

- ongoing investment by farmers in new technology to improve and optimise on-farm operations, particularly via the automatic collection and analysis of data, and in water-use efficiency infrastructure; and
- addressing agricultural workforce issues including a short-term lack of agricultural workers and accommodation in regional areas, shortages which could be exacerbated in the future by developments associated with the transition to net zero.

[42] Advance Queensland (February 2022), Queensland Government; https://advance.qld.gov.au/new-methane-mitigation-technology-increase-queensland%E2%80%99s-beef-industry-sustainability

06

RESOURCES: THE FUTURE

KEY THEMES

- Queensland's rich reserves of mineral and gas resources will continue to support its economy into the future.
- Due to Queensland's prominence in metallurgical coal, it will be more resilient to shifts to greener energy.
- Queensland's deposits of critical minerals will become more valuable as the transition to net zero accelerates.

6.1 THE OPPORTUNITY: RESOURCES

Strong global population and economic growth into the future will continue to deliver increasing demand for resources, although outcomes will differ substantially for different commodities. The state government's *Queensland Resources Industry Development Plan* (QRIDP) has identified several global trends that will reshape the resources industry in the following decades, including higher demand for resources in the Indo–Pacific region, changes in suppliers due to reputational factors, and emerging innovations in the industry.[43]

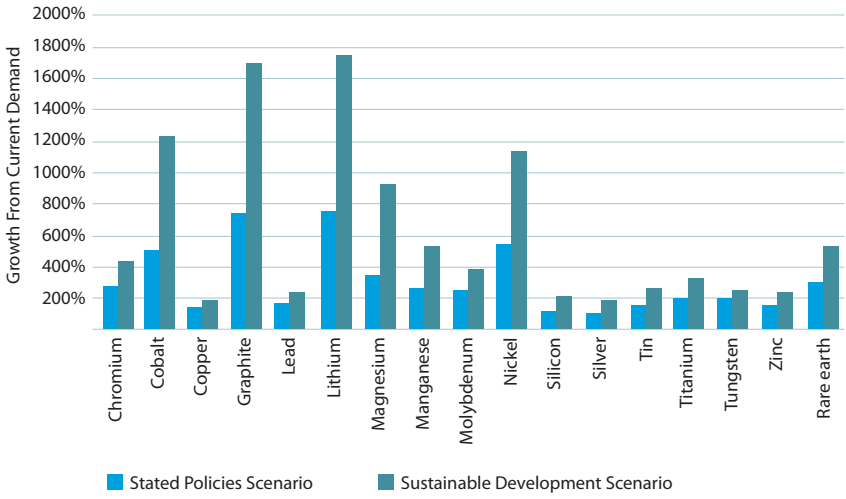
Over the next decade, coal demand may not fall substantially, given current policies across the world, while the outlook beyond the next decade depends substantially on global policies regarding GHG emissions abatement. The IEA's 'Stated Policies Scenario' for coal indicates global coal demand close to its peak in the first half of the 2020s, but 10 per cent lower by 2030.[44] Over the long term to 2050, there are large reductions expected in global coal demand, ranging from 32 per cent under stated policies to over 90 per cent if the world shifts to net zero GHG emissions.[45] That said, it is very difficult to forecast future demand given the current uncertainty around policy settings in major economies.

Another top export commodity for Queensland is liquefied natural gas (LNG) as global demand continues to be strong. The IEA estimates LNG global demand will increase, and it is expected to be concentrated in the Asia–Pacific region.[46] In particular, China is emerging as a fast-growing LNG importer, temporarily becoming the largest importer in 2021, before cutting back its imports substantially in 2022.[47]

The global demands for many critical minerals, particularly nickel, graphite, lithium and cobalt are expected to grow strongly into the future, partly due to their use in emerging technologies such as renewable energy and electric vehicles (Figure 6.1). The IEA estimates demand for critical minerals will increase between three and six times as efforts increase to achieve net zero outcomes. To an extent, this growth will be supported by policies favourable towards EVs and the transition to net zero.

[43] Department of Resources, (2021), Queensland resources industry development plan, draft for consultation, State of Queensland.
[44] Reported in Queensland Treasury (2022a) Queensland's Coal Industry and Long-Term Global Coal Demand, November 2022, p. 17; https://s3.treasury.qld.gov.au/files/Queensland%E2%80%99s-Coal-Industry-and-Long-Term-Global-Coal-Demand_November-2022.pdf
[45] Ibid., p. 21.
[46] International Energy Agency and Korea Energy Economics Institute (2019). LNG Market Trends and Their Implications. p. 2.
[47] Russell, C. (2022) "China to keep more LNG, but still buy less than last winter", Reuters, https://www.reuters.com/markets/commodities/china-keep-more-lng-still-buy-less-than-last-winter-russell-2022-10-18/

Figure 6.1 IEA forecasts of growth in demand for critical minerals from 2020 to 2030



Source: IEA, The Role of Critical Minerals in Clean Energy Transitions (2021). Notes: IEA report is based on two main scenarios: i) the Sustainable Development Scenario (SDS), which is a pathway that fully achieves the world's goals to tackle climate change according to the Paris Agreement, and ii) the Stated Policies Scenario (STEPS) which models current policies and energy sector plans.

6.2 QUEENSLAND'S OPPORTUNITY

6.2.1 Overview

Queensland's geological resources are abundant (Table 6.1), particularly in the northern regions of the state. Queensland is blessed with dozens of the worlds most wanted critical minerals including bauxite, cadmium, copper, gold, magnesite, nickel, vanadium, zinc, among others[48]. Queensland has some of the richest vanadium deposits in the world and this mineral can be used in producing long durable batteries, enhancing Queensland's renewable energy industry.[49]

[48] Geoscience Australia defines critical minerals as a metallic or non-metallic element with two features: i) it is essential for the functioning of modern technologies, economies or national security, and ii) there is a risk that its supply chains could be disrupted.
[49] Queensland Government (2022) What is vanadium and why are we mining it in Queensland?; https://www.statedevelopment.qld.gov.au/news/what-is-vanadium-and-why-are-we-mining-it-in-queensland
Geoscience Australia (2021) "Australia's identified mineral resources; https://www.ga.gov.au/digital-publication/aimr2021

Table 6.1 Australia and Queensland's Economic Demonstrated Resources (EDR) or potential supply of major commodities

Commodity	Unit	Australian EDR	Queensland EDR
Bauxite	Mt	5,132	2,361
Black coal (in situ)	Mt	87,645	58,722
Black coal (recoverable)	Mt	74,039	49,606
Copper	Mt	97	10
Gold	t	11,101	555
Lead	Mt	36	19
Ilmenite	Mt	274	38
Rutile	Mt	35	5
Zircon	Mt	79	8
Nickel	Mt	21	1
Silver	kt	93	44
Uranium	kt	1,239	50
Zinc	Mt	66	37

Source: Geoscience Australia (2021).[50]

Consistent with the state's abundance of resources, Queensland has a large mining industry (also known as the resources industry or sector). According to estimates prepared for the Queensland Resources Council (QRC) by Lawrence Consulting, in 2020–21 the resources sector made an economic contribution to Queensland of $39 billion and 54,900 full-time equivalent (FTE) jobs directly and $84 billion and 422,600 FTE jobs indirectly.[51] This economic contribution is spread across the state, with businesses and workers Queensland-wide supported directly or indirectly by the sector. Mines throughout the state are supported by extensive rail networks and 21 ports along Queensland's coast. The value of the mining sector capital stock in Queensland was estimated at $233 billion in 2015–16 by the ABS.[52]

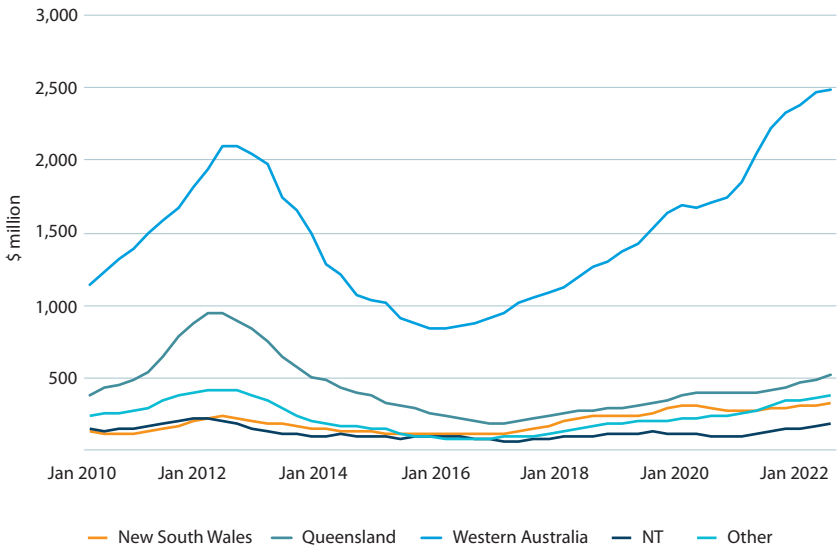
The Queensland resources sector supports over 800 companies in the Mining, Equipment, Technology and Services (METS) sector[53]. These companies provide a range of services to mines, including mine operation, maintenance, optimisation, and health and safety services among others. Many of these businesses are highly specialised and operate in regional clusters in centres such as Mackay, Townsville and Gladstone.[54] The METS sector is an important part of the Queensland resources sector's ongoing competitive advantage. RDO Equipment is a good example of a Queensland-based business which is benefitting from its relationship with the resources sector and could be classified as a METS business.

[50] Geoscience Australia (2021) "Australia's identified mineral resources; https://www.ga.gov.au/digital-publication/aimr2021
[51] Lawrence Consulting (2021) Economic Impact of Minerals and Energy Sector on the Queensland Economy 2020/21, Prepared for Queensland Resources Council; https://www.qrc.org.au/wp-content/uploads/2022/02/Economic-Impact-of-Resources-Sector-on-Qld-Economy-2020-21.pdf
[52] ABS cat. no. 5220.0.55.005 - Emphasising the State perspective: Experimental estimates of State capital stock , 2015–16.
[53] Advance Queensland (2017) "Queensland mining equipment, technology and services: 10-year roadmap and action plan, Queensland Government, Edition 2, p.8; https://www.statedevelopment.qld.gov.au/__data/assets/pdf_file/0030/17949/mets-10-year-roadmap-and-action-plan.pdf p.8
[54] Lytton Advisory (2020) MIW METS Industry Capability and Supply Chain Study. Prepared for the MIW METS Export Hub; https://www.resourceindustrynetwork.org.au/Portals/13/200915%20MIW%20METS%20Industry%20Capability%20Supply%20Chain%20Study%20Final%20Report.pdf

RDO Equipment is a major supplier of John Deere and Vermeer machinery, providing harvesters, tractors, excavators, dozers, drill rigs, trenchers and dump trucks to multiple industry sectors. These sectors include resources, agriculture, and construction in Queensland and all eastern and central states. Across Australia it employs around 1,000 people across 29 dealer locations and has a turnover in the order of $1 billion annually. The bulk of its business is in Queensland.

Given its capabilities and endowments, Queensland has great potential to develop new resources projects, and mineral exploration expenditure in Queensland is rising (Figure 6.2). In the twelve months to 30 September 2022, total exploration expenditure in Queensland was $527 million. However, current exploration expenditure remains below that seen during the previous mining boom and is much lower than in WA.

Figure 6.2 Mineral exploration expenditure, ABS estimates, four-quarter rolling sums



Source: ABS, Mineral and Petroleum Exploration, Australia.

Finally, Queensland is positioned second in Australia as a destination for resources investment. As at 31 October 2022, there are an estimated 98 projects (with total expected investment of between $113–151 billion) seeking to expand and improve the quality of resources, just behind Western Australia with 181 projects ($356–412 billion).[55]

[55] Office of the Chief Economist (2022) "Resources and energy major projects". Department of Industry, Science and Resources, Australian Government, p. 5.

6.2.2 Coal

Queensland's coal industry should be more resilient to the transition to net zero than that of other jurisdictions, at least in the next decade or so. This is due to around 65–70 per cent of Queensland's production being metallurgical, rather than thermal, coal.[56] Metallurgical coal is used in steelmaking whereas thermal coal is used in energy generation. In its assessment of long-term coal demand released in November 2022, Queensland Treasury commented:

Importantly for Queensland's coal industry, the outlook for metallurgical coal is more resilient than for thermal coal, as there are currently less readily available alternatives to coal for the steelmaking process than power generation.[57]

That said, the long-term reduction in global metallurgical coal production is expected to range from 28 per cent to 88 per cent, depending on how aggressively the world acts on climate change, according to IEA projections.[58]

Queensland continues to offer an attractive environment for coal investment, reflecting its numerous competitive advantages including high-quality hard coking coal, proximity to the Asian region, efficient supply chain, good infrastructure and skilled workforce.[59] Multiple projects are progressing (Table 6.2). Beyond 2023, there are over 20 projects planned with almost a third of them awaiting various approvals. If they are approved and go ahead, they could add more than 121 Mt of capacity in metallurgical coal production in Queensland.

Table 6.2 Queensland coking coal projects

Number of projects	Expected year for extracting	Capacity (Mt)	Major extracting firms
6	2022	12.3	Anglo-American and Mitsui, Fitzroy Australia Resources, Qcoal; among others
5	2023	24.2	Pembroke Resources, Shandong Energy Group, Futura Resources/Sojitz, Bowen Coking Coal
24	Beyond 2023	121.7	Stanmore Coal, BMA, Anglo American, BHP, among others

Source: Argus based on Office of the Chief Economist (OCE) resources and energy projects report, company reports.[60]

[56] Queensland Treasury (2022a) p. 28.
[57] Ibid., p. 28.
[58] Ibid., p. 21.
[59] Queensland Treasury (2022a, p. 28) identified the Queensland coal industry's "geographic location and quality of its coal, compared with many of its global competitors" as "key advantages".
[60] Clarke, J. (2022) "Queensland eyes 135mn t/yr of new coking coal capacity", Argus Media; https://www.argusmedia.com/en/news/2401985-queensland-eyes-135mn-tyr-of-new-coking-coal-capacity

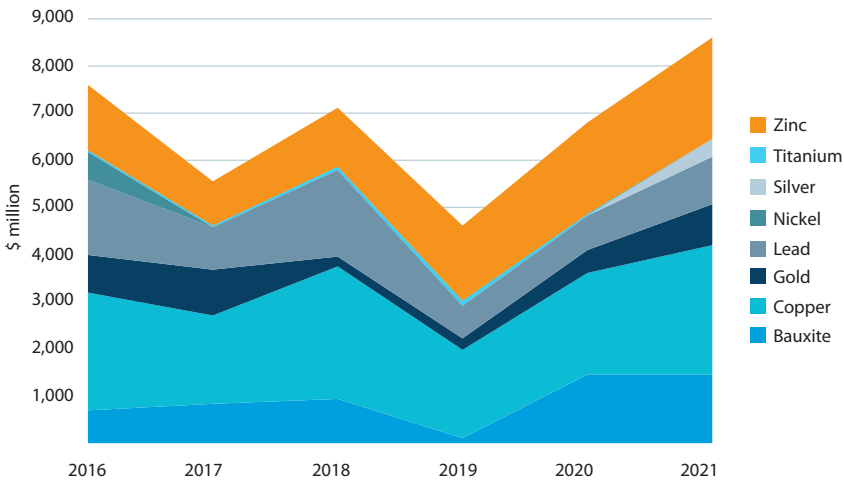
6.2.3 Gas

Gas is widely seen as a transition fuel in the move to net zero. Queensland's competitive advantage in oil and gas comes from coal seam gas (CSG) extraction. Most of Australia's CSG production occurs in Queensland and the bulk of it is liquefied at Curtis Island and exported. The majority of Queensland's gas reserves are located in the Bowen and Surat basins along its eastern coast. These reserves have not been extracted, due to low gas saturation, the long distance to markets and the high volumes of water which would be released during gas extraction. Galilee Energy has been investigating the feasibility of its Glenaras Gas Project in the Galilee Basin. Overall, there is potential to expand CSG extraction.

6.2.4 Critical minerals

Queensland should have a bright future as a producer of critical minerals, giving the state a major role to play in the transition to net zero. According to the Queensland Government, "Queensland has some of the world's richest endowments of critical minerals needed to build a decarbonised future."[61] Queensland's production of nickel, copper and zinc is substantial and will likely continue (Figure 6.3). Unlike Western Australia, Queensland has not been considered to have significant deposits of lithium. There has been exploration in North West Queensland and there is speculation that lithium mining could occur in the region in the future.

Figure 6.3 Gross production value of selected Queensland minerals



Source: Queensland Department of Resources.[62]

[61] Queensland Government (2022) Critical Minerals: Investment in Queensland, p. 4.
[62] Queensland Government (2022) Annual mineral and metal statistics - Dataset - Open Data Portal; https://www.data.qld.gov.au/dataset/annual-mineral-metal-and-petroleum-statistics
[63] Queensland Government (2020) Research and Development Priorities for Minerals in Queensland; https://www.resources.qld.gov.au/__data/assets/pdf_file/0011/1475498/rd-priorities-qld.pdf
[64] Queensland Government (2022) Coal Mining Safety and Health and Other Legislation Amendment Bill 2022; https://www.legislation.qld.gov.au/view/html/bill.first/bill-2022-021.

Queensland's highly developed mining sector, established supply chains and world leading METS sector put it in a prime position to effectively capitalise on critical mineral reserves. In 2020 the Queensland Government released a strategic plan[63] to guide research and development. Recent Queensland legislation[64] has allowed for the deferral of rents on certain critical mineral projects in the state.

6.3 CHALLENGES

The largest long-term challenge facing Queensland's resources sector is falling demand for coal and gas as the world moves to net zero. As discussed earlier, Queensland's specialisation in metallurgical coal will provide some protection, particularly over the next decade or so, but in the long-term the IEA expects metallurgical coal demand will also decline substantially, particularly if the world acts aggressively to cut GHG emissions. It is unclear at this stage to what extent the growth of critical minerals mining in Queensland will offset declining coal demand in future decades.

A related challenge for the resources sector relates to maintaining its social licence to operate. Over the last decade, mining projects have come under increasing challenge from community and environment groups, including in the legal system.[65]

6.4 CONCLUSIONS

Queensland is endowed with a substantial mineral and gas resources base from which it receives large economic benefits. It is likely the Queensland resources sector will undergo substantial changes over the next few decades as the world shifts to more renewable energy. Queensland's resources sector is relatively well positioned to adapt to the change with the potential to at least partly offset coal losses with opportunities in critical minerals related to their use in batteries and other technologies essential to the move to net zero.

[65] Hanmore, T. et al. (2022) Land Court refuses thermal coal mine on climate change and human rights grounds; https://www.minterellison.com/articles/land-court-refuses-thermal-coal-mine-on-climate-change-and-human-rights-grounds

07

TOURISM AND INTERNATIONAL EDUCATION AND TRAINING: VALUE ADDING

KEY THEMES

- Queensland continues to live up to the label 'beautiful one day, perfect the next' and the state's natural attractions, including the Great Barrier Reef (GBR), rainforests and beaches, should continue to attract visitors.
- The tourism sector is returning to its pre-pandemic strength, supporting over $30 billion of economic activity and more than 200,000 jobs.
- The sector will get a substantial bump in 2032 due to visitors attending the Olympic Games but long-run fortunes depend on whether capital investment occurs to refurbish old tourism assets, including some derelict GBR resorts, and the ongoing protection of the state's natural assets, particularly the GBR.

7.1 THE OPPORTUNITY

Prior to the COVID pandemic the travel and tourism sector contributed 10.3 per cent (US$9.63 trillion)[66] to global GDP, making it almost three times the size of the entire agricultural sector, and grew at around 3 per cent per annum for the preceding decade.

As travel for tourism has grown, so too has the international education sector. For many developed nations with world-class education systems, the international education and training sector can contribute as much as 1 to 2 per cent of total GDP. In Australia the international education sector was worth $40.3 billion in 2019 (approximately two per cent of GDP) although this fell to $22.5 billion in 2021.

The pandemic had a devastating impact on the sector, as travel both domestically and internationally in many parts of the globe, was restricted or ceased completely. Nevertheless, as vaccine coverage spread and the world began to 'live with COVID', the recovery in travel and tourism began in earnest. By 2021 the sector's contribution to GDP had increased to 6.1 per cent (US$5.81 trillion) and more than 18 million jobs had returned.

The expectations are that, assuming no further worsening of the pandemic, the sector will return to its pre-COVID growth trajectory. The World Travel and Tourism Council (WTTC) is predicting annual compounding growth of 5.8 per cent per annum for the decade from 2022. Such growth would return the sector to its 2019 highs by 2023 or 2024 (depending upon region) with Asia–Pacific recovering first and adding the most jobs. In Australia, the Tourism Research Australia projections[67] are for international visitor numbers to recover by 2025 and for domestic visitor-nights to exceed pre-pandemic levels in 2023.

Alongside the strong recovery in domestic tourism across the world in 2021, the first half of 2022 saw an encouraging return to international travel. The recovery was most dramatic in Europe and the Americas where international travel had returned to 26 and 43 per cent respectively below 2019. In the Asia–Pacific region, international passenger numbers were still 86 per cent below those seen in 2019.

The recovery from the COVID pandemic will clearly take some time, and in some regions perhaps a good deal longer than in others. It seems clear that in the medium term, travel and tourism will return to a healthy growth trajectory. One of the primary reasons likely to drive that expansion will be the growth of middle-class consumers in rapidly developing nations throughout Asia. It is this growth that has the WTTC projecting 65 per cent of new employment in the sector occurring in the Asia–Pacific region and for travel and tourism to grow at an average rate of 8.5 per cent per annum from 2022–2032.

Significant emerging themes in the tourism and travel sector were identified in the WTTC and *Trip.com report Trending in Travel; Emerging consumer trends in Travel & Tourism in 2021 and beyond*. These included a shift to longer stays – enabling people to fully immerse themselves in culture and place and have more meaningful travel experiences; a strong preference for rural, nature-based and lesser-known destinations, supporting local communities, and a greater focus on climate change and sustainability.

[66] World Travel and Tourism Council (2022) Travel and Tourism Economic Impact 2022: Global Trends August 2022; https://wttc.org/Portals/0/Documents/Reports/2022/EIR2022-Global%20Trends.pdf

[67] www.tra.gov.au/economic-analysis/tourism-forecasts-australia/tourism-forecasts-for-australia-2022–2027

7.2 QUEENSLAND'S OPPORTUNITY

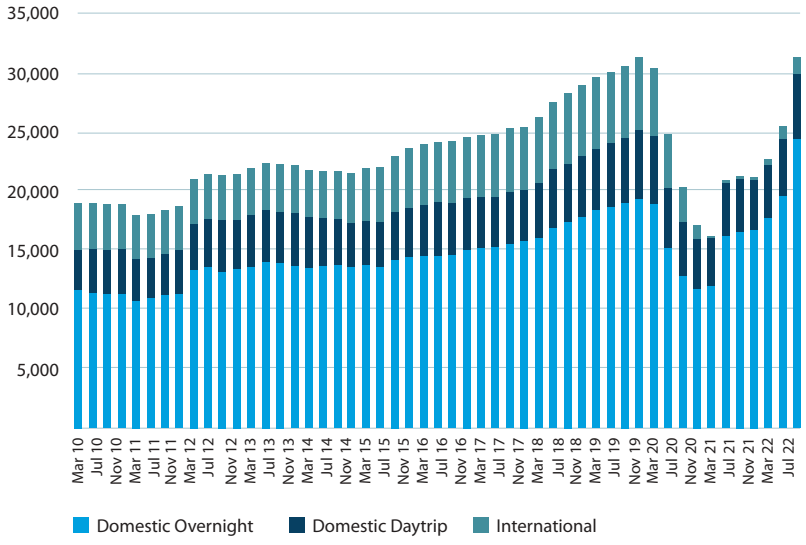
With a wealth of stunning natural beauty including islands, beaches, coral reefs, ancient rainforests and outback, Queensland is well known as a world-class tourism destination. It is home to five UNESCO World Heritage sites and is the most biodiverse of all Australian states. Added to those natural attributes is the enduring Indigenous culture, the vibrancy of Brisbane, the allure of the Gold Coast and Sunshine Coast and the hospitality of Queenslanders across the state.

In 2019, tourists spent more than $31 billion in Queensland and although that fell as low as $16 billion during COVID, the recovery is well underway. Expenditures broke back above $31 billion again in the year to September 2022 (where they sit just a whisker below the record high experienced in the year to December 2019).

For the decade prior to the COVID pandemic, tourism expenditure in Queensland had consistently represented 24–25 per cent of Australia's total tourism expenditure. Since 2020 that share has shifted higher and in the past few years has been sitting at around 26 per cent. This improvement has been led by a very strong recovery in domestic tourism in the Sunshine State, much of which has been focused on regional Queensland.

Queensland has a well-developed and mature tourism sector with major organisational linkages to government and industry. The tourism industry's peak body in Queensland, the Queensland Tourism Industry Council, and the state's tourism organisation, Tourism and Events Queensland, work together with regional and local bodies to promote and build the sector. The Griffith Institute for Tourism at Griffith University, based in southeast Queensland, is one of the world's premier providers of tourism research and education.

Figure 7.2 Tourism Expenditure in Queensland, yearly



Source: Tourism Research Australia.

In March 2021, as a part of the post-COVID tourism industry recovery process, the Queensland Government put in place a Tourism Industry Reference Panel (TIRP) tasked with scoping out a plan for recovery of the sector through to 2032. *The Towards 2032 Report*[68] produced by that Panel suggested both a low- and high-growth scenario. Under the high-growth scenario, total tourism expenditures would increase to $44 billion by 2032, while the low-growth scenario pared back that projection to $32 billion. Given the speed of the recovery in tourism expenditure in Queensland, even since the TIRP Report was produced in mid-2022, we might confidently forecast a result over the next decade that comes very close (perhaps even exceeding) the high-growth scenario in the Report. While growth in tourism employment is not anticipated to match the pace of growth in expenditures, we would certainly anticipate direct employment in the sector in Queensland to increase from the COVID-depressed level of 120,600 in June 2021[69] to a level well above that seen at the pre-COVID peak of almost 138,000. Direct employment in the sector could increase by 30,000–40,000 jobs in the next decade.

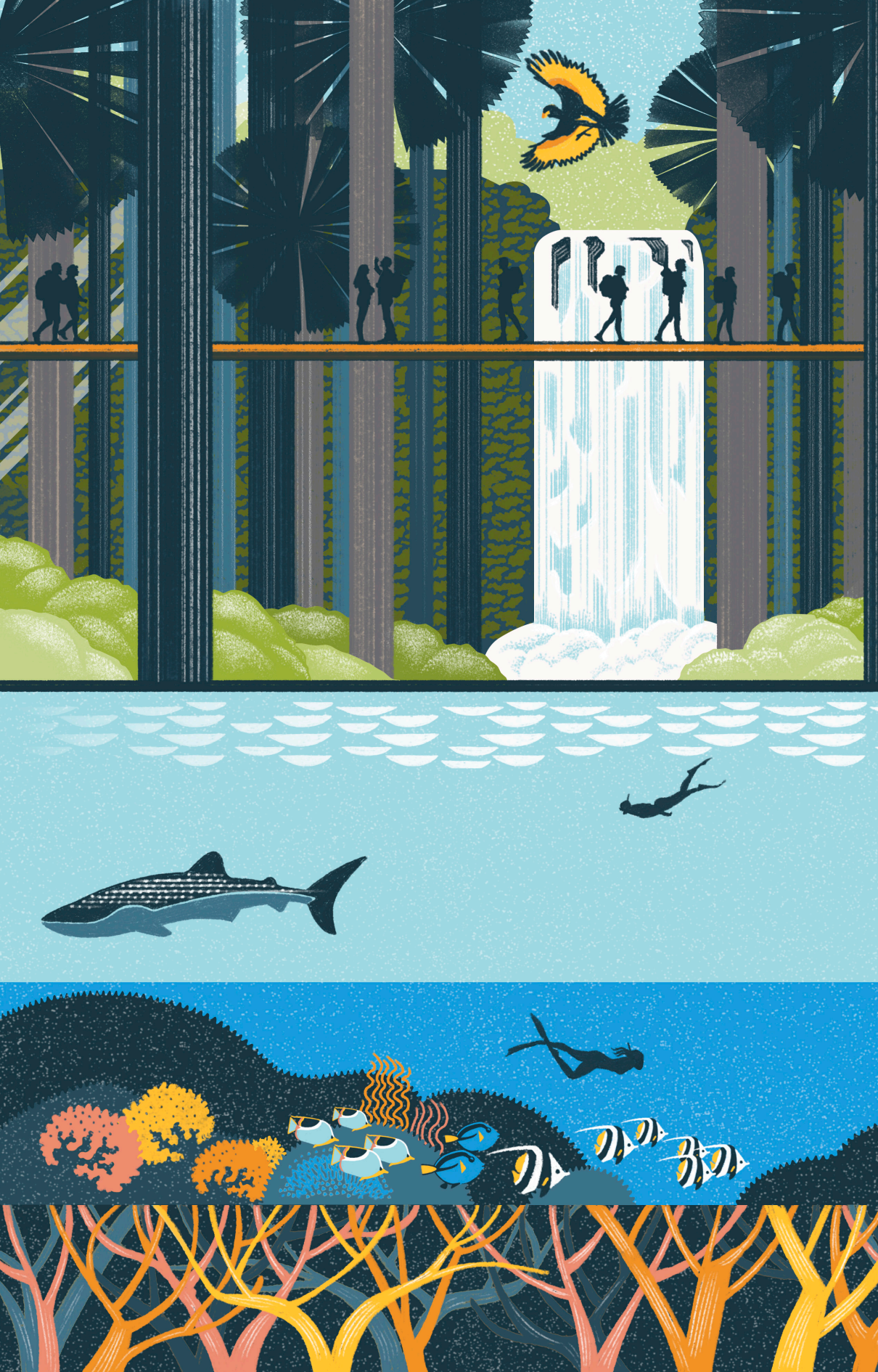
The TIRP report also notes the desire for tourism to be more experiential, aligning closely with opportunities in Indigenous and Eco-tourism. Since the release of the TIRP report in October 2021, the Queensland Government has committed an additional $1.1 billion in specific economic and recovery support funding for tourism, hospitality and events.

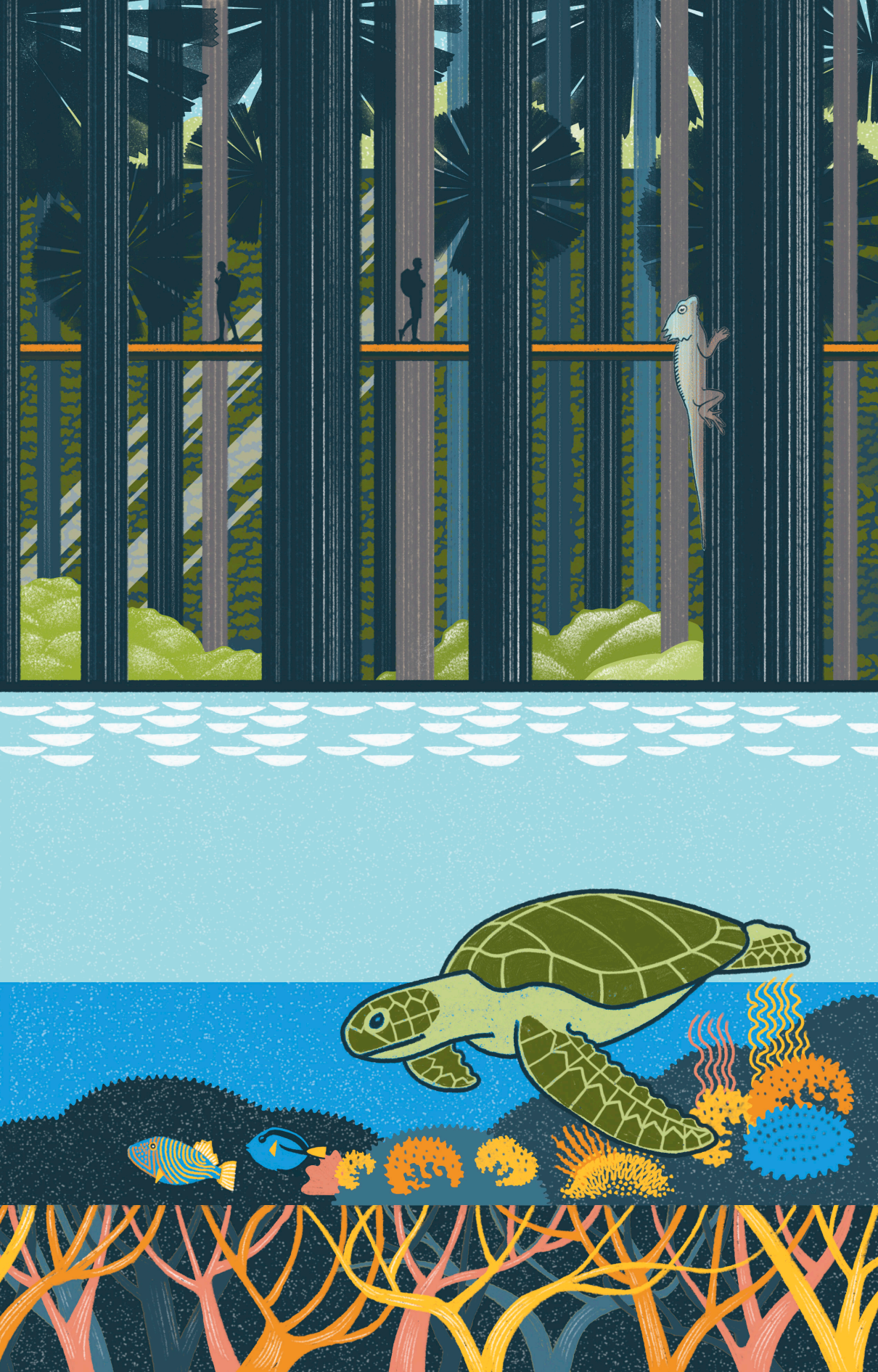
The recent emergence of more fuel-efficient, narrow-body aircraft with greatly extended flying ranges opens up the possibility for direct international access into smaller destinations. These aircraft are being quickly adopted and present a significant opportunity given the number of airports Queensland has and its proximity to the rapidly growing Asian markets.

In the last pre-COVID year (2018–19) international education and training (IET) in Queensland contributed more than $4 billion of Gross Value Add to the economy and was the state's fastest growing service export. By 2021, in the face of travel restrictions, that contribution had fallen to $3.2 billion, but the sector remained the state's largest services export[70]. The major source markets for international students to Queensland are China and India which together accounted for 36 per cent of total enrolments in 2020[71]. Queensland's collection of 10 universities, scattered across 32 campuses around the state, offers a unique opportunity for IET with students able to access services in Brisbane, southeast Queensland and many regional centres. For Queensland these international student visitors also represent a significant market opportunity not only for tourism by the students but also by encouraging their friends and family to visit Australia.

The 2032 Olympic Games will throw a spotlight on Brisbane and Queensland (see chapter 10) has the potential to launch the development of a more extensive sports and events tourism sector. Many regions have already started along this path. Tropical North Queensland has developed as a renowned mountain biking destination with Cairns hosting the UCI MTB World Championships in 2017 and other regions such as Mackay, the Sunshine Coast and the Gold Coast are looking at similar initiatives. The opportunity to provide world-class training facilities to athletes from Australia and other nations exists across the state.

[68] Queensland Tourism Industry Reference Panel (2022) Towards 2032: Reshaping Queensland's visitor economy to welcome the world; https://www.dtis.qld.gov.au/__data/assets/pdf_file/0004/1626448/towards-2032-reshaping-queenslands-visitor-economy.pdf
[69] www.tra.gov.au/ArticleDocuments/185/Appendix_State_Tourism_Satellite_Accounts_20-21.xlsx.aspx
[70] Queensland International Education and Training Strategy 2022–2027; Study Queensland
[71] International education & training snapshot: Queensland 2020; Study Queensland



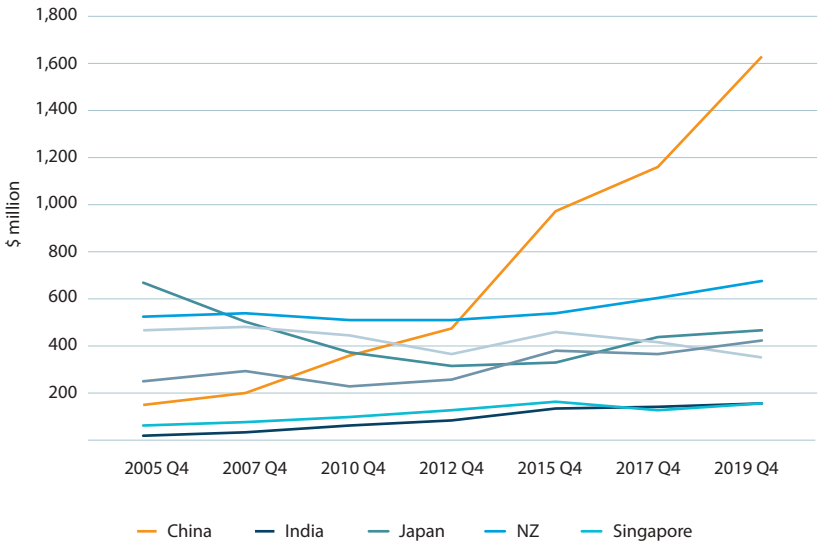


7.3 CHALLENGES

In the 20 years before COVID, Queensland's share of international tourism to Australia had fallen from 45 to 32 per cent and by June 2022 to just 25 per cent. That decline in share is even more worrying when we consider it in the context of the surge in Chinese visitation that was seen in Queensland in the decade before 2020. In order to achieve the targets set out in the Tourism Industry Reference Panel's report, the state will at least need to arrest that decline. The Report notes Queensland also needs to build on its interstate success and maintain the recent surge in intrastate travel. To address that challenge, a significant investment in tourism assets will likely be required in coming decades.

As the Japanese 'economic miracle' ran out of steam in the 2000s, Queensland saw a shift in the make-up of its international tourism sector. China became the dominant market for Queensland's international tourism by 2012 and the rise from then, until the emergence of COVID, was dramatic (Figure 7.3). Of particular concern for Queensland is the expectation that tourism from China is unlikely to return to its 2019 levels any time soon. How and when Chinese tourism will return in scale is still unknown. As a result, the *Towards 2032* Report highlights the need to diversify Queensland's international tourism markets. TEQ and regional tourism bodies are actively addressing that challenge with extensive marketing efforts into alternative international markets.

Figure 7.3 The changing face of Queensland's International Tourism: Select international expenditures in Queensland, $ million, four-quarter rolling sum



Source: TEQ, Tourism Data Explorer.

Despite these challenges and competition in the sector, Queensland is starting this race in a strong position, at least domestically, but will need to address its international offering if it is to grow its international market once again. *The Towards 2032 Report* outlines a number of strategies to achieve this and envisions that by 2032 Queensland will be *"Australia's destination of choice for domestic and global visitors seeking the world's best experiences".*

Similar challenges exist in the IET sector. Trade and Investment Queensland working with Study Queensland released *Queensland International Education and Training Strategy 2022–2027* to map out a recovery strategy including $20.6 million in funding to expand and promote an international network of education specialists and business development managers.

Labour shortages have become a constraining factor for many businesses, with the hospitality and food service sectors particularly impacted. A return to a more 'normal' flow of immigration into Australia is expected to alleviate some of these shortages but the challenge is likely to persist for some time for tourism operators in Queensland.

Some of Queensland's most iconic tourism assets, such as the Great Barrier Reef and the World Heritage Wet Tropics rainforests, face very real threats from the effects of climate change, water quality and habitat destruction. The recent UNESCO World Heritage Centre and IUCN report[72] into the status of the Great Barrier Reef World Heritage Area highlights some of those challenges. Monitoring efforts within these ecosystems are being enhanced with additional Government funding allocations and global efforts towards limiting green-house gas emissions will be required to ensure that they remain in a condition that maintains their status as world-class tourism drawcards. Increasing domestic and international interest in nature-based investing, such as green bonds and ecosystem and biodiversity credits, has the potential to provide funding to help address at least some of these concerns and to become a significant component of investment in Queensland.

7.4 CONCLUSIONS

Prior to the COVID pandemic tourism was on a strong growth trajectory around the world and the sector had become one of the world's economic powerhouses. Despite the problems caused by travel restrictions through 2020 and 2021, there are expectations the sector will return to pre-pandemic levels within a few years and continue to grow strongly from there. Domestic tourism in Australia held up well in the face of international travel restrictions and nowhere was that more evident than in Queensland.

The major trends in travel fit extremely well with the product offering from Australia and Queensland in particular. The plan for recovery in the tourism sector will look to capitalise on those natural advantages the state has for nature-based, experiential and healthy travel opportunities. Ensuring the protection of Queensland's unique natural assets will need to be a major component of those plans and Queensland is at the forefront of some new and exciting nature-based investment opportunities.

International education and training will also require some time to recover. The state has launched a recovery strategy aimed at maximising the opportunity by utilising its unique span of educational offerings and associated tourism markets. Tourism and the IET sector have always played an integral part in the Queensland economy and, even with a global pandemic, that is still the case today and will persist.

[72] Joint WHC/IUCN Reactive Monitoring mission to the Great Barrier Reef (Australia), March 2022.

08

MANUFACTURING: HIGH-VALUED AND NICHE

KEY THEMES

- Queensland has the opportunity to play to its traditional strength in food and beverage manufacturing while expanding into high-valued and niche manufacturing.
- Areas of potential growth include biotech, leveraging past investments in R&D, battery manufacturing and, given geopolitical tensions which may prompt additional defence spending over the coming decades, defence manufacturing.
- Optimism exists around the potential for Queensland to realise the 'Superpower' opportunity of using renewable energy to provide cheap energy for new minerals processing plants.

8.1 THE OPPORTUNITY

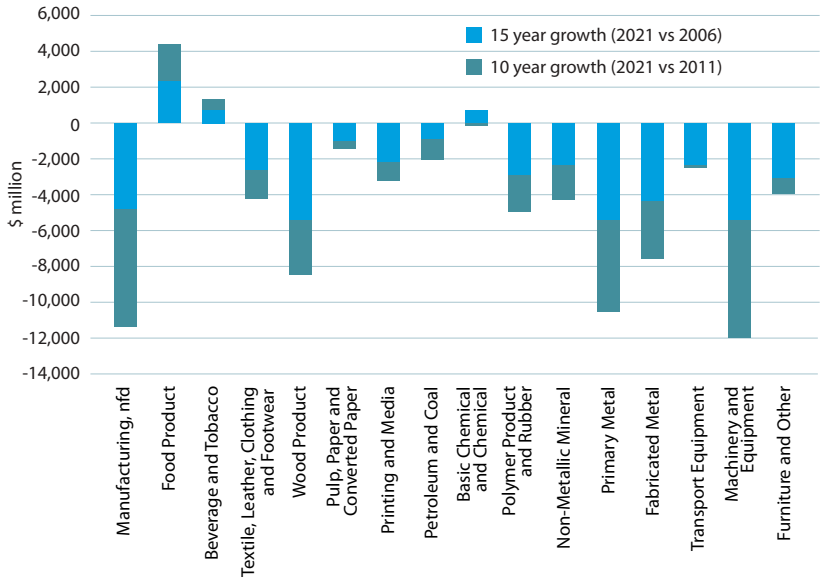
The opportunities in manufacturing are defined by several important trends:

- continuing population growth domestically and abroad, with the global population to increase from around 8 billion currently to 8.7 billion by the time of hosting the 2032 Olympic Games;
- the growing global middle class as emerging economies continue to catch up;
- increasing demand for customised and luxury products;
- global decarbonisation efforts, advantaging manufacturers with access to renewable energy and those providing the equipment necessary for the transition; and
- possibly some "reshoring" of manufacturing activity and jobs as the risks associated with global supply chains were highlighted during the pandemic.[73]

8.2 QUEENSLAND'S OPPORTUNITY

There is an opportunity for Queensland to reverse the relative decline in manufacturing of recent decades. According to the Queensland Government Minister for Regional Development and Manufacturing Glenn Butcher, "the sector is especially vital in Queensland's regions, with more than 40,000 people employed by regional manufacturing firms."[74] Major Queensland regional manufacturers include, among others, metal fabricator Sun Metals in Townsville, and the rail industry Downer Group in Maryborough. In terms of people employed, manufacturing has been on a downward trend in Queensland – and Australia – over the last couple of decades. However, there are some bright spots, particularly in industries linked with the state's comparative advantages. For example, food product and beverage industries have grown over the past decade (Figure 8.1).

Figure 8.1 Employed persons in manufacturing industries, long-run changes, Queensland



Source: ABS Census of Population and Housing data.

[73] UN World Population Prospects projections are available from https://population.un.org/wpp/.
[74] Queensland Government Department of Regional Development, Manufacturing and Water (DRDMW) (2022) Queensland Advanced Manufacturing: 10-Year Roadmap and Action Plan, Edition 3, p. 3.

Queensland's comparative advantage is in producing niche, high-value-added products rather than lower-value commodity products which are more cost-effective to produce in economies with abundant cheap, low-skilled labour. Biotech, or more broadly life sciences, is an industry with that potential. For instance, Springfield in SEQ hosts the BioPark Australia cluster, which is attracting various innovative life sciences businesses. In November 2022, Queensland Treasurer Cameron Dick announced a new $352 million manufacturing plant for Aegros, a plasma therapeutics company, in the Springfield BioPark.[75] This investment was partly supported by the Queensland Government's *Invested in Queensland* program.

Other examples of promising high-value-adding industries include Energy Storage Industries' Asia–Pacific $70 million battery manufacturing facility in Maryborough and Rheinmetall Defence Australia's Military Vehicle Centre of Excellence (MILVEHCOE) in Redbank, SEQ.

Rheinmetall's $170 million Military Vehicle Centre of Excellence (MILVEHCOE) at Redbank was completed in mid-2020 and will manufacture 211 Boxer combat reconnaissance vehicles, a component of the $4.3 billion LAND 400 Phase 2 contract managed by the Australian Department of Defence. The Queensland Government is closely involved in the project and oversaw the construction of the MILVEHCOE. It expects the Centre will contribute more than $1 billion to the state economy over its lifecycle and support 450 jobs, including both in the Centre and the supply chain.

Another Queensland manufacturing industry of promise is minerals processing. Eminent Australian economist Ross Garnaut has written about the 'Superpower' opportunity provided by Australia's huge potential to tap renewable energy to provide cost-effective power for the chemicals industry or for value-adding to minerals. In his 2019 book, *Superpower: Australia's low-carbon opportunity*, Garnaut identified Queensland's 'sugar coast', the region from around Bundaberg to Cairns, as being well-placed for providing biomass which could be used for aviation fuel or other forms of renewable energy.[76] Garnaut noted, "new industrial strengths will be built more easily in provincial cities with strong industrial traditions, and established energy, port, other transport, and training infrastructure."[77] He identified Gladstone, Townsville, and Mackay as Queensland cities satisfying these criteria.

Queensland's critical minerals provide downstream opportunities for value adding. Notably, Queensland Pacific Metals (QPM) will produce nickel sulphate and cobalt sulphate at its Townsville plant and has signed a deal with General Motors to provide nickel sulphate required to power increased EV production. Additionally, Australian Mines has announced their nickel and cobalt Sconi project at Greenvale, near Townsville, which is carbon neutral certified and is estimated to increase Gross Regional Product by $2.2 billion.[78] Arguably one important benefit of greater value adding to critical minerals domestically would be enhanced supply chain security. A large amount of critical minerals processing currently occurs in China (e.g. 80 per cent of lithium refining and 66 per cent of cobalt refining).[79]

[73] UN World Population Prospects projections are available from https://population.un.org/wpp/.
[74] Queensland Government Department of Regional Development, Manufacturing and Water (DRDMW) (2022) Queensland Advanced Manufacturing: 10-Year Roadmap and Action Plan, Edition 3, p. 3.
[75] Treasurer and Minister for Trade and Investment the Honourable Cameron Dick (2022) Game-changing biotech company coming soon to Springfield, Media Release, published Friday, 25 November, 2022.
[76] Garnaut, R. (2019) *Superpower: Australia's low-carbon opportunity*, La Trobe University Press, p. 123.
[77] Ibid., p. 124.
[78] See https://sconi.com.au/.
[79] Hendrix, C. (2022) "How to Avoid a New Cold War Over Critical Minerals", Foreign Policy; https://foreignpolicy.com/2022/11/22/critical-minerals-resources-us-china-competition-cold-war-supply-chains/

Over the next 10 years, hosting the Olympic Games may also contribute to demand for Queensland-based manufacturing, particularly cement and building materials produced locally. There are a range of developments which potentially would be favourable for manufacturing in the state.

8.3 CHALLENGES

The big challenges facing the Queensland manufacturing sector are energy costs and the higher cost of labour in Australia. In a 2020 study for APPEA, the Centre for International Economics (CIE) identified a number of issues including foreign exchange rates, rising unit labour costs and insufficient productivity improvement to offset these challenges.[80]

As with other industries, manufacturing faces the ongoing challenge of sufficient skilled labour for its operations. Future vocational education and training (VET) reforms currently being crafted by the federal, state and territory governments will need to ensure sufficient skilled workers are trained in the latest technologies, including via so-called micro-credentials.

8.4 CONCLUSIONS

Trends, including re-shoring, geopolitics and value-adding in primary industries, suggest manufacturing will be an important part of the Queensland economy's growth in coming decades. The transition towards a high-value advanced manufacturing sector will require:

- reliable and cost-effective energy along with investments in sufficient storage to back up a grid increasingly powered by renewable energy;
- a high-quality education and training system with improvements in literacy in science, technology and mathematics (STEM) and the availability of qualifications and micro-credentials in the latest advanced manufacturing techniques;
- favourable regulatory and tax policy settings; and
- ongoing R&D and innovation more broadly by manufacturers.

[80] CIE (2020) Australia's manufacturing industry: Determinants of performance, prepared for APPEA, p. 1.

09

NET ZERO:
A NON ZERO TARGET

KEY THEMES

- Queensland needs relatively more investment to decarbonise than the rest of Australia given the state's contribution to national greenhouse gas emissions.
- The state government's targets of 70 per cent renewable energy by 2032 and 80 per cent by 2035 require a large amount of CAPEX not just in wind farms and solar photovoltaic (PV) farms but energy storage and transmission infrastructure, including batteries and pumped hydroelectric power plants.
- There remains substantial uncertainty around the pathway to net zero.

9.1 THE OPPORTUNITY

The most recent *Sixth Assessment Report* (AR6) from the Intergovernmental Panel on Climate Change (IPCC) argues inadequate action is being taken globally to achieve the goal of the Paris Agreement; holding the increase in the global average temperature to well below 2°C, and pursuing efforts to limit the increase to 1.5°C, above pre-industrial levels. Not only is a broad-scale electrification of traditionally fossil fuel reliant sectors needed, most notably transportation, but also a shift to baseload electricity generation from renewable sources.

Globally the energy sector is the source of almost three-quarters of greenhouse gas emissions, therefore reducing emissions from this sector holds the key to achieving net zero targets. As noted in chapter 15 of the *Working Group III contribution to the IPCC Sixth Assessment Report*[81] "to avoid locking Greenhouse Gas emissions incompatible with remaining carbon budgets, implies a rapid scaling down of new fossil fuel-related investments, combined with a scaling up of financing to allow energy and infrastructure systems to transition." As the world progresses towards a net zero future, the opportunities for new technologies, innovations and product development are obvious.

One such major technological innovation is the move towards the production and use of clean hydrogen. In a 2022 report,[82] the IEA estimates in 2021 just 0.6 million tonnes of low-emission hydrogen were produced, less than 1 per cent of total hydrogen production. But the IEA notes a significant pipeline of investment projects is under development globally.

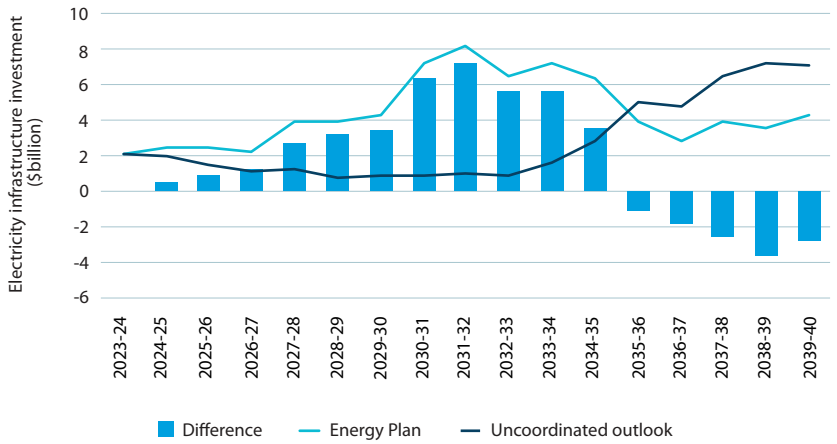
9.2 QUEENSLAND'S OPPORTUNITY

In Australia, the Commonwealth – along with every state and territory – has committed to achieving net zero by 2050. The Queensland Government has committed to a target of 70 per cent renewable energy by 2032, increasing to 80 per cent by 2035, in addition to its previously announced aim of net zero by 2050.

According to the Government's *Queensland Energy and Jobs Plan*, following $11 billion of investment since 2005, the state now generates a total of 3 Gigawatts (GW) of renewable energy (21 per cent of total). A further $36 billion of investment will take renewable energy generation to 16 GW (60 per cent) by 2030 and then an additional $26 billion of investment by 2035 takes renewable energy generation to 80 per cent, 25 GW. This total of $62 billion is estimated by the economic modelling[83] supporting the Plan to be $23.2 billion[84] more than the investment required for the supposed base-case, or 'uncoordinated outlook' (Figure 9.1).

[81] Working Group III (2021) Working Group III contribution to the IPCC Sixth Assessment Report, pp. 15–26.
[82] IEA (2022) Hydrogen Supply: Subsector overview; https://www.iea.org/reports/hydrogen-supply
[83] Department of Energy and Public Works (2022) Queensland Energy and Jobs Plan-electricity market and economic modelling outcomes.
[84] Net Present Value discounted at 7 per cent per annum to 2022–23.

Figure 9.1 Total Capital Investment in Generation, Storage and Transmission; Queensland Energy and Jobs Plan



Source: Queensland Energy and Jobs Plan-electricity market and economic modelling outcomes, Dept of Energy and Public Works 2022.

Construction Skills Queensland, in their report *Queensland's Renewable Future: investment, jobs and skills 2022*, estimate that Queensland already has a pipeline of $73.4 billion worth of green energy projects with almost $21 billion of those currently underway or scheduled to commence by 2025. Half of the existing pipeline of renewable energy investment projects are in large-scale solar installations, with many of these based in regional Queensland.

In Queensland the move towards net zero by 2050 will rest not simply on the increase of renewable energy generation but also on the development of a significant clean hydrogen industry for both the domestic and export sectors. In 2019, the Queensland Government released their *Queensland Hydrogen Industry Strategy 2019–2024*, committing $19 million to develop an industry it estimates could be worth $1.7 billion in exports for Australia by 2030.

When used within a fuel cell, hydrogen can be part of a catalytic process that generates electricity without combustion, and thereby eliminates greenhouse gas emissions. What is generally termed 'low-emission' hydrogen is both green or renewable hydrogen, which is hydrogen produced with the use of solely renewable energy sources, and blue hydrogen which uses fossil fuels but incorporates carbon capture technologies into the production process. This contrasts with most currently produced hydrogen which uses fossil fuels (without carbon capture) and is usually called brown or black hydrogen.

In their *2022 Hydrogen Supply tracking report*[85] the IEA notes "currently hydrogen is mostly produced and consumed in the same location, without the need for transport infrastructure. With demand for hydrogen increasing … there is a need to develop hydrogen infrastructure that connects production and demand centres."

One of the scenarios considered in the Australian Energy Market Operator's (AEMO) *Integrated System Plan* (ISP) is the highly ambitious Hydrogen Superpower scenario.

[85] See the "Supporting infrastructure" section of IEA (2022) Hydrogen Supply; www.iea.org/reports/hydrogen-supply

This is the only scenario within the ISP which is consistent with limiting global warming to 1.5°C. In the 2019 COAG Energy Council's *Australia's National Hydrogen Strategy* Dr Alan Finkel, as Chair of the Council's Hydrogen Working Group, noted that the "potential to export clean hydrogen is substantial, with the International Energy Agency and the World Energy Council both identifying Australia as a potential hydrogen production powerhouse."

Increased electricity generation from renewable sources, as well as the development of a significant clean hydrogen industry will also require major investment in the electricity transmission infrastructure, hydrogen production, transport and export facilities. One such example would be a possible renewable hydrogen plant being considered at the Dalrymple Bay Coal Terminal at Hay Point. Last year Dalrymple Bay Infrastructure, the operator of the terminal, signed an MoU with the former owner Brookfield Infrastructure, North Queensland Bulk Ports and one of Japan's largest general trading companies, Itochu Corporation to consider the feasibility of a future hydrogen plant and export facility. CS Energy is also undertaking significant feasibility testing of renewable hydrogen.

Storage capacity will also need to be dramatically increased. In Queensland this is planned to include battery storage, with $500 million available from the Queensland Renewable Energy and Hydrogen Jobs Fund (QREHJF), as well as two large-scale pumped-hydro facilities in regional Queensland.

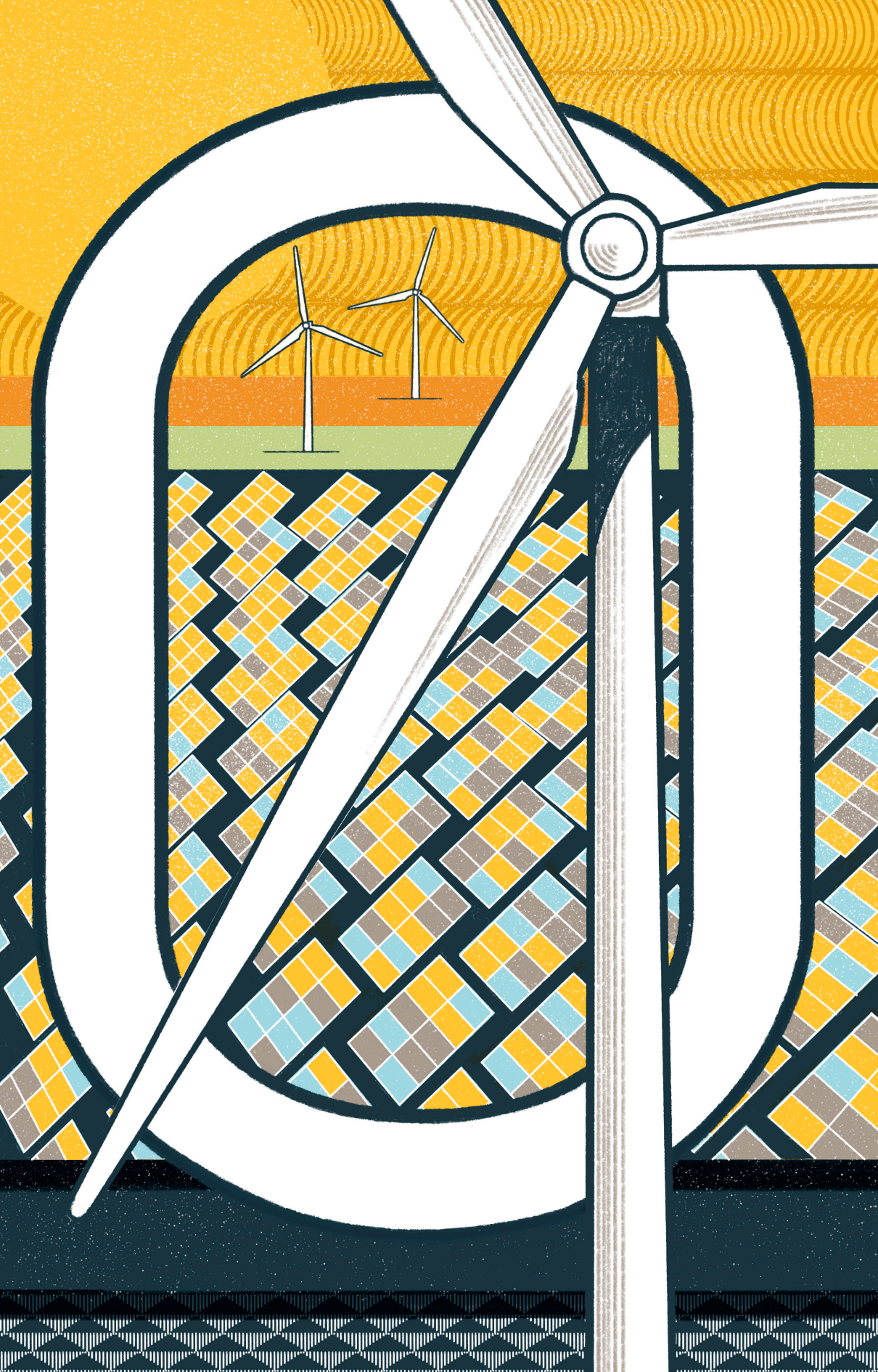
The Construction Skills Queensland report estimates that meeting the infrastructure requirements of the state's shift to renewable energy, meeting the net zero by 2050 target, and the development of a clean hydrogen industry for both domestic and international export markets will require capital expenditure of almost $13.9 billion on average each year in Queensland from now to 2050[86]; a total of almost $400 billion over the next 28 years.

This decarbonising transformation will require not only significant capital investment but also people. Construction Skills Queensland estimate up to 26,700 construction workers will be required in Queensland from the early 2020s through to 2050 to realise this shift to a net zero economy. A change of this scale will clearly require careful labour force planning to avoid causing major labour force disruptions.

Despite the many challenges, Queensland enjoys a number of advantages in the move towards a net zero and clean hydrogen future. These include:

- Queensland is already a substantial energy exporter of LNG and along with this established energy industry comes a sizeable skilled workforce.
- The Sunshine State's climate is ideal for solar power; almost 15 per cent of Queensland's electricity generation comes from large-scale and rooftop solar.
- The State Government has established the QREHJF with an injection of $4.5 billion to use the existing skills and expertise within the energy government-owned corporations to engage with market proponents and identify commercial investment.
- As with LNG, Queensland's proximity to the major markets in Asia provides a genuine advantage for a future hydrogen export market.

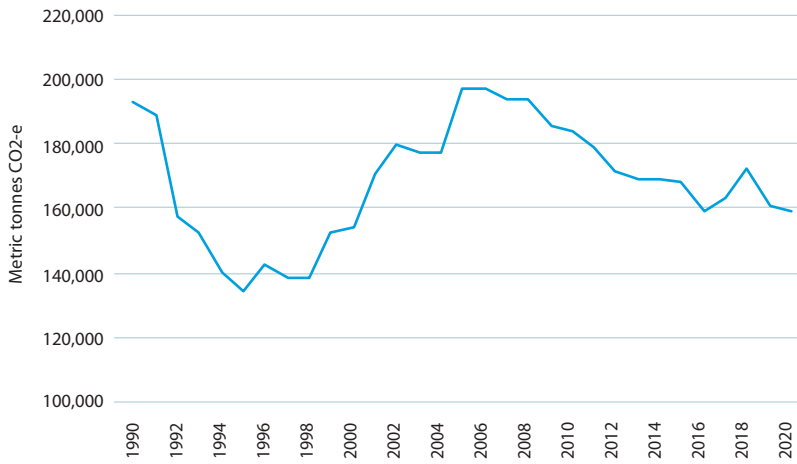
[86] See the "CAPEX Outlook" in Queensland Government (2022) Queensland's Renewable Future: investment, jobs and skills, p. 44.



9.3 CHALLENGES

The shift to net zero and the decarbonising of the economy will be a particular challenge for Queensland given the state ranks first in Australia in terms of carbon emissions, according to the *State Greenhouse Gas Inventory 2020*[87]. Although total greenhouse gas emissions in Queensland have fallen by 19.3 per cent from 2005 levels by 2020 (Figure 9.2), they still account for 32.0 per cent of the Australian total.

Figure 9.2 Queensland's GHG (CO2-e) emissions over time, kilotonnes

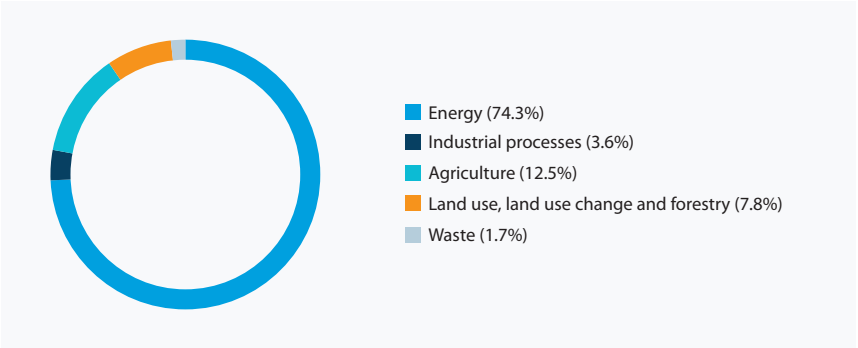


Source: State and Territory Emissions Inventory. Dept of Climate Change, Energy, the Environment and Water 2020.

In Queensland's case, the vast bulk of these greenhouse gas emissions (74.3 per cent in 2020) are coming from the energy sector generally, in particular fossil fuel consumption for energy generation (Figure 9.3). While it is anticipated within the *Queensland Energy and Jobs Plan* that all publicly owned coal-fired power stations will be operating as clean energy hubs by 2035, there are clear challenges with the provision of base-load energy generation as the state shifts away from fossil fuel generation. In its most recent *Inquiry into the National Energy Market May 2022, and the June 2022 Addendum* to that report, the ACCC acknowledges the challenges the National Energy Market (NEM) has been facing and makes particular note of the effect of shifts in the generation mix away from coal-fired towards more renewable generation.

[87] Australian Government Department of Climate Change, Energy, the Environment and Water (2020) National Greenhouse Accounts 2020; https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-2020

Figure 9.3 Queensland's net GHG (CO2-e) emissions mix



Source: State and Territory Emissions Inventory. Dept of Climate Change, Energy, the Environment and Water 2020.

Not only will there be challenges with the provision of reliable power to the grid but also major challenges, particularly in some regional areas, with the redeployment and potential reskilling of large-scale workforces within the generation sector. To address this challenge the Queensland Government will establish a $150 million Job Security Guarantee to provide for additional training or skills development, the ability to transfer between publicly owned energy corporations, and other support and services to the impacted workforce. There is also money being put aside to prepare the workforce and regional communities for the opportunities and challenges by way of a *Future Energy Workforce Roadmap*.

Careful planning around the environmental impacts of increased renewable energy generation will also be required. Large-scale wind farms, for example, will likely require significant clearing, and possible revegetation, of land. Therefore, careful consideration will need to be given to the physical location of such assets, revegetation efforts to mitigate any required clearing, and engagement with local communities and Traditional Owner groups.

The economic modelling underpinning the *Queensland Energy and Jobs Plan* (conducted by EY[88]) suggests a net benefit to Queensland Gross State Product (GSP) of some $25.7 billion over the period to 2040. This benefit accrues from electricity infrastructure investment, reduced electricity costs, reduced costs of carbon offsets and a 'green premium' whereby, according to the Queensland Energy and Jobs Plan modelling report:

> *capital markets are willing to accept a relative discount on yields in return for assurance their investment has a reduced environmental (and, in particular, greenhouse gas) footprint. The decarbonisation of the electricity grid under the Plan will mark Queensland as a green destination for investment, potentially yielding a green premium.*[89]

[88] EY (2022) The Queensland Energy and Jobs Plan – electricity market and economic modelling outcomes, report prepared for the Department of Energy and Public Works; https://www.epw.qld.gov.au/__data/assets/pdf_file/0010/33130/queensland-energy-plan-electricity-market-and-economic-modelling.pdf

[89] Ibid., section 5.2.4.

Recent developments in the capital markets, which will need to be tapped to finance the net-zero transition[90], demonstrate investors have begun to think in these terms and that such 'green premia' are already at play in the investment community. A substantial proportion (approximately half) of the modelled benefit to GSP derives from this green premium.[91]

The extended time-frame over which this transformation of Queensland's energy and productive economy will occur brings with it the challenge of ensuring that future governments can maintain the political will required to achieve the desired results.

9.4 CONCLUSIONS

Australia has committed to a net zero target by 2050. Queensland is aiming to have 80 per cent of electricity generated by renewable energy sources by 2035 and to establish a substantial clean hydrogen industry for domestic and export consumption.

Queensland has some compelling competitive advantages in this area given existing infrastructure, industry skills, climate, established export markets and proximity to Asia.

Significant challenges exist in reaching these ambitious goals, not the least of which will be ensuring a stable and effective NEM throughout the transition, managing the labour market dislocations and skills mismatches likely to occur, and funding the investment required for such a monumental shift in the state's economy.

While these challenges are undoubtedly real, the opportunities are also very real. Even if the full scale of Queensland's announced targets are unrealised, any substantial move in that direction will see a major shift in the state's economy.

[90] As an example, in 2019 ANZ announced its 2025 sustainable financing target of $50bn directly mapped to 6 Sustainable Development Goals

[91] Australian Government (2021) Australia's Long-Term Emissions Reduction Plan: Modelling and Analysis; https://www.dcceew.gov.au/sites/default/files/documents/australias-long-term-emissions-reduction-plan-modelling.pdf

10

THE 2032 OLYMPIC AND PARALYMPIC GAMES: AN ENDURING LEGACY, NOT JUST A SUGAR HIT

KEY THEMES

- The 2032 Brisbane Olympic and Paralympic Games will drive several billion dollars of construction activity in the lead up, stimulate tourism in 2032 and to some extent afterwards and ideally create an enduring positive legacy for the state.
- Queensland's existing sporting venues, combined with cost-effective investments in new or refurbished venues and other infrastructure, along with the state's strong experience in hosting international events, deliver optimism about positive outcomes during and after the 2032 Olympics.
- The Games need to be cost-effective to maximise the net benefits to Queensland.

10.1 THE OPPORTUNITY

The Olympic Games is the world's biggest sporting event, gathering more than 10,000 athletes from across the world and attracting a global audience.[92] For example, the London 2012 Olympics had a broadcasting audience record of an estimated 4.8 billion people.[93] The economic impacts and benefits of the Olympics can be thought of as occurring in three different phases: the lead up, the Games themselves, and after the Games.

In the lead up the impacts include the economic boost preceding the Games via public expenditure on new sporting venues, housing, transport and other infrastructure. There is no doubt this can be substantial. Clearly, capital investment needs to be well chosen to avoid an economic burden in the long run.

There will be some increase in international visitors and related spending during the Olympic Games themselves although empirical evidence suggests tourism is not always boosted significantly in the short term given that regular tourists might avoid visiting the crowded host city. For example, the Olympics in London 2012 and Beijing 2008 registered a drop of tourists during the Games.[94] On the other hand, the IOC reported that Rio 2016 brought 6.6 million tourists (a 4.8 per cent increase) in 2016 compared with the previous year.[95] The outcome for Brisbane 2032 will depend significantly on marketing efforts and the effective delivery of infrastructure in the lead up to the Games.

The potential long-term benefits of hosting the Olympics include a legacy of new or refurbished sporting venues to be used by future generations; improvements in other infrastructure or in housing availability stimulated by the Olympics; global media exposure which generates additional tourism in the long term; and additional foreign investment and trade.

Legacy of sporting venues

New and refurbished sporting venues can create a legacy. The Sydney Olympic Park, covering 640 hectares of green areas, parklands and sporting venues, attracts almost 10 million people every year.[96] However, in some cases, sporting venues built for the Olympic Games, such as for Athens 2004 or Rio 2016, are now abandoned.

Improvements in other infrastructure and housing availability

The Olympics can motivate and stimulate new investment in civic infrastructure (e.g. transport) and in additional housing and accommodation. A positive example is the reuse of the athletes' villages from Los Angeles in 1984 and Atlanta in 1996 as student accommodation for local universities.

Media attention generating additional tourism in the long term

The media attention associated with the Games is an important opportunity to attract more tourists in the future. A successful example is Barcelona which is now the 5th most popular tourist destination in Europe – it sat in 13th place before hosting the Olympic Games in 1992.[97]

[92] The first edition of the modern Olympics Games was held in Athens (Greece) in 1896, and for the Winter Olympic Games in Chamonix (France) in 1924. Currently, the Olympics has two types of Games: the Summer with 32 sports and the Winter with 8 sports.
[93] This includes traditional media, online and mobile platforms (The Olympic Museum, 2013).
[94] Baade et al. (2016).
[95] IOC (2017) Olympic Games Rio 2016 - Economic Legacy; https://olympics.com/ioc/news/olympic-games-rio-2016-economic-legacy
[96] Sydney Olympic Park (2016) Olympic Legacy: A Success Story.
[97] Zimbalist (2016).

Promoting foreign trade and investment

A possible benefit of hosting the Olympics is promoting foreign investment and international trade, due to potential investors and trading partners becoming more familiar with the host city and country. The academic literature produces mixed findings on this benefit, with some suggesting large benefits and others suggesting no benefit at all.[98] In summary, there is potential benefit but it is difficult to quantify.

10.2 QUEENSLAND'S OPPORTUNITY

The International Olympics Committee (IOC) said Brisbane was selected because it possesses 80 to 90 per cent of existing or temporary required venues and has experience hosting international sport events (e.g., the 2018 Gold Coast Commonwealth Games).[99] The process for selecting host cities was guided by the "New Norm" reforms laid down by the IOC in 2018 which encouraged utilising existing and temporary infrastructure.

The Queensland Government is aiming to deliver the Games cost-effectively and re-use existing infrastructure where possible. The Brisbane 2032 Olympic Games master plan comprises six new venues, eight upgraded venues and 23 existing or temporary venues. The plan has three main hubs: Brisbane with 21 venues, the Gold Coast with six, and the Sunshine Coast with three. There will be two Olympic villages, in Brisbane and the Gold Coast.

There are multiple sporting venues and infrastructure projects which need to be completed to deliver the 2032 Games. Additionally, there is a range of infrastructure construction either underway or planned which will help people move around during the Games. Work has begun on a raised pedestrian plaza which will connect the Gabba stadium with a new train station which forms part of the Cross River Rail project. Furthermore, the Cross River Rail subway system will add six new train stations and 10 kilometres of rail lines which will help connect Brisbane's Olympic venues.

The accessibility of Games venues is further enhanced by inner city Brisbane containing eight Olympic venues, hosting 14 sports, all within walking distance of each other. This area includes hundreds of cafes, bars, restaurants and hotels to cater for both visitors and locals. The Olympic Village will be transformed into residential housing after the Games.

The Queensland Government's *Values Proposition Assessment 2019* suggested the operational costs of the Olympics (around $4.45 billion) are expected to be cost neutral and at no cost to the state. According to the Queensland Government's assessment, the Brisbane Olympics is expected to register $7.4 billion of potential economic benefits, supporting 130,000 direct jobs and tens of thousands of indirect jobs. In addition, it estimates the Olympic Games will induce more than $20.2 billion in visitor expenditure between 2020 and 2036 and will increase export opportunities by up to $8.6 billion, among other benefits. History tells us predicting Olympic benefits is challenging.

[98] For example, Rose and Spiegel (2009) suggested a large benefit of hosting the Olympic Games on the level of exports, but Maenning and Richter (2012) corrected Rose and Spiegel's results and found weak empirical evidence about the positive association between hosting Olympic Games with trade and investment outcomes.

[99] IOC (2021) IOC Feasibility Assessment - Olympic Games. Brisbane. February 2021; https://stillmedab.olympic.org/media/Document%20Library/OlympicOrg/News/2021/02/IOC-Feasibility-Assessment-Brisbane.pdf

Beyond 2032, the impact of the Games should be positive if cost-effective investments are made in new sporting and other infrastructure assets that are well-utilised after the Games. The right investments could promote both liveability for residents and attract tourists. Concepts such as the 'green spine' linking the Gabba and Suncorp Stadium are worth evaluating in this regard. Furthermore, if the Games create a positive global impression of SEQ and Queensland more broadly, it could have an enduring impact on tourism. Certainly, host cities such as Barcelona have benefited substantially from being an Olympics host.

Meanwhile, Dr. Caroline Riot, a Director of Games Partnerships and Engagement at Griffith University, indicates the Olympics brings a unique opportunity to accelerate the transformation of Queensland and to address multiple challenges and critical issues including environmental sustainability and inclusivity.[100]

10.3 CHALLENGES

The challenges to delivering a successful Olympics are well known. Beyond that:

- The Olympics CAPEX will occur at the same time as a large amount of renewables CAPEX, causing competition among major projects for skilled labour and supplies.
- If not managed, there is a risk the sustainability of the Games and Queensland's record on sustainability could be questioned. Organisers are aware of this challenge.
- There may be temporary negative impacts on Brisbane's liveability during the construction phase.

Cost inflation is the major challenge. The estimated required CAPEX for the Brisbane Olympics has not yet been officially estimated but it is likely to be at least several billions of dollars, based on the costs of previous Olympics. A key challenge will be to avoid the cost blowouts of some previous Games.

A consideration of the historical total costs incurred by Games hosts from Seoul in 1988 to Tokyo in 2020 illustrates how these were substantially reduced after Beijing 2008. Nevertheless, even those post-2008 costs are high when compared with Atlanta 1996, the most profitable Olympic Games. The Brisbane Games starts out in a better position than most previous Games, considering that Brisbane has around 80–90 per cent of existing and temporary facilities necessary for the Games. Furthermore, given strong population growth, much of the expenditure which will be required for improving transport infrastructure (e.g. motorway upgrades between Brisbane and the Gold and Sunshine Coasts) may have been necessary even without the Olympics, and therefore could be regarded as 'no regrets' spending.

10.4 CONCLUSIONS

The 2032 Olympics provides a major opportunity for Queensland. It will likely motivate substantial new capital investment in the lead up, provide some boost to tourism, and leave a legacy of new and refurbished sporting infrastructure. Although there is no absolute guarantee the 2032 Brisbane Olympic Games will deliver net benefits to the state, there are important factors including a well-developed urban environment and infrastructure, existing sporting venues, and experience in hosting international sport events that encourage optimism. The ideal would be to imitate successful Olympic Games such as Los Angeles 1984 or Atlanta 1996 which used existing infrastructure to minimise delivery costs and maximise net benefits.

[100] Riot, C. (2022) What does Brisbane 2032 mean for Queensland?; https://enlighten.griffith.edu.au/what-does-brisbane-2032-mean-for-queensland/

11

LONGER-TERM OUTLOOK: THE EMERGING SHAPE OF THE STATE

KEY THEMES

- Queensland has abundant natural resources, an enviable lifestyle and strong economic fundamentals. Postive forces but there are challenges.
- The state, as with many jurisdictions worldwide, is at a critical juncture with the path to net zero posing threats and opportunities. Beyond 2032 there is the question of the future of thermal coal mining if the world rapidly moves toward net zero.
- Queensland should maintain its position as a relatively low-taxing state with sound policy settings. The consistency of policy settings will remain important in attracting the large amount of private sector capital required to seize the opportunities.

11.1 QUEENSLAND'S STRONG FUNDAMENTALS ARE LONG-TERM

As has been discussed in this report, Queensland has strong economic fundamentals, including a growing population, skilled workforce, and abundant resources – all positively setting the state up for the long-term. Existing strengths in sectors such as resources and agriculture should be maintained and enhanced over coming decades. As Australia's population is expected to grow to nearly 36 million by 2050, Queensland's population is expected to grow to 8 million by 2050.[101] By then we will know how successful the transition to net zero will have been and whether we have a thriving hydrogen export industry.

In addition to the sectors focused on in this report, Queensland has the potential for further expansion in the services sector. Chapter 2 demonstrated Queensland is significantly underweight in professional, technical and scientific services, as well as financial services. This suggests there is potential for catch-up growth in these sectors in Queensland. Catch-up growth could be aided by opportunities for remote working – Queensland's regions have a major opportunity to benefit from that shift. Benefits could include reductions in regional disadvantage and alleviating congestion in SEQ, as discussed in chapter 3.

With an ageing population, health and social services activity, including in health services, aged and disability care, will continue to expand. While smaller employers overall, emerging industries with potential include the screen industry and ICT, with Queensland home to a range of fintech and AI firms, among others. Brisbane's Fortitude Valley contains a cluster of creative and knowledge economy businesses, centred around the Precinct, a start-up hub. The motion picture and video production screen industry has been a standout performer, the number of employing businesses in this sector almost doubled between June 2017 and June 2022 (Table 11.1). An example of a prominent Queensland screen industry business is Ludo Studios, the creator of *Bluey*.

101 Australian Treasury (2021) 2021 Intergenerational Report, p. 150 and QGSO projections made in 2018 available via qgso.qld.gov.au. It is expected that QGSO will release new Queensland population projections in early 2023.

Table 11.1 Business counts by industry class in Information Media and Telecommunications industry division, Queensland

	Employing businesses			Total businesses		
Industry	June 2017	June 2022	Change	June 2017	June 2022	Change
Newspaper Publishing	34	35	1	52	53	1
Magazine and Other Periodical Publishing	90	74	-16	174	124	-50
Book Publishing	54	57	3	176	166	-10
Directory and Mailing List Publishing	4	6	2	13	11	-2
Other Publishing (except Software, Music and Internet)	5	8	3	24	23	-1
Software Publishing	56	86	30	233	235	2
Motion Picture and Video Production	215	411	196	696	1,118	422
Motion Picture and Video Distribution	4	10	6	31	37	6
Motion Picture Exhibition	29	28	-1	58	51	-7
Post-production Services and Other Motion Picture and Video Activities	35	53	18	96	151	55
Music Publishing	9	9	0	22	25	3
Music and Other Sound Recording Activities	75	96	21	216	260	44
Radio Broadcasting	23	13	-10	38	25	-13
Free-to-Air Television Broadcasting	6	9	3	11	15	4
Cable and Other Subscription Broadcasting	2	4	2	7	9	2
Internet Publishing and Broadcasting	62	112	50	258	342	84
Wired Telecommunications Network Operation	82	120	38	164	212	48
Other Telecommunications Network Operation	34	55	21	80	106	26
Other Telecommunications Services	60	65	5	122	169	47
Internet Service Providers and Web Search Portals	110	83	-27	346	290	-56
Data Processing and Web Hosting Services	72	134	62	225	347	122
Electronic Information Storage Services	55	77	22	108	155	47
Libraries and Archives	5	7	2	15	13	-2
Other Information Services	4	11	7	21	25	4

Source: ABS Counts of Australian Businesses, including Entries and Exits.

Overall, there are multiple opportunities for the economy to grow over the coming decades, in sectors of traditional strength as well as creative and knowledge economy sectors.

11.2 CHALLENGES TO THE LONGER-TERM OUTLOOK

Several challenges to the longer-term outlook are apparent, including the availability of housing; the availability of skilled labour – particularly as multiple major construction projects associated with renewable energy and hosting the Olympic Games, among other developments, occur in the next decade – and the usual caution of capital around future policy settings.

One of the greatest challenges facing Queensland, as with other Australian states, is the availability of housing. Arguably this may become a more pressing challenge in Queensland than elsewhere because of faster population growth than the national average. The November 2022 *ANZ CoreLogic Housing Affordability Report* observed:

> *Limited levels of rental supply, record-low vacancy rates and higher demand for rentals through migration and higher levels of household formation have pushed rents higher since late 2020. A tight rental market is particularly concerning for lower income households.*[102]

To meet population growth, dwelling completions will likely need to be much higher. The level of dwelling construction currently lags population growth, as noted in section 3.3.

Another important challenge is overcoming possible skilled workforce shortages associated with concurrent major projects. This was an acute issue during the resources boom in the early part of the 2010s, leading to project costs substantially exceeding original expectations.

Finally, it is essential to maintain and further develop sound government policy settings to promote business confidence and ongoing investment in the economy.

11.3 HISTORY OF SOUND POLICY SETTINGS NEEDS TO BE MAINTAINED

Broadly speaking, in the postwar period, Queensland has had sound economic policy settings which have encouraged investment and migration into the state. Policy settings promoting economic development and continued investment are essential.

One of Queensland's long-standing advantages relative to other states is in having relatively lower taxes and charges. While no longer the lowest in Australia, state taxes and charges in Queensland remain significantly below the national average (Figure 11.1). From an economic development perspective, it is desirable that this national advantage be maintained, while continuing to provide reasonable levels of public services to a growing population.

[102] ANZ and CoreLogic (2022) ANZ CoreLogic Housing Affordability Report, November 2022, p. 2.

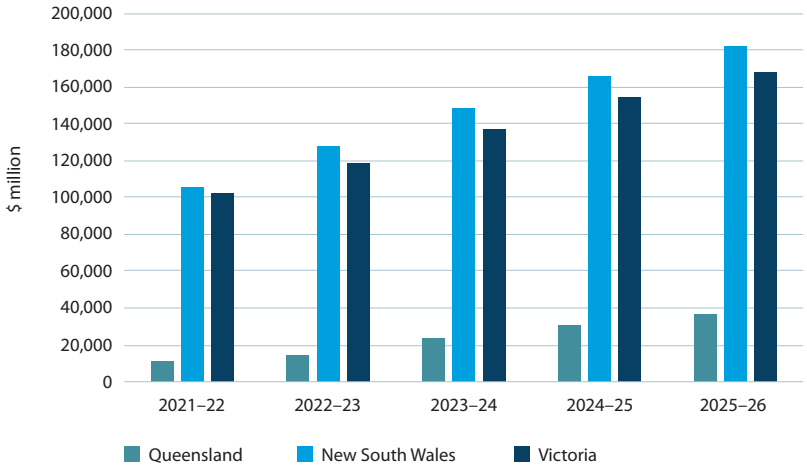
Figure 11.1 State taxes and charges per capita

Source: Queensland Treasury Budget Update 2022–23, p. 27.

The large level of CAPEX required for the Queensland Energy and Jobs Plan and for the 2032 Olympic Games will add to state government debt, which may constrain the level of expenditure on other priorities. While lower than that of NSW and Victoria, Queensland's gross state debt in 2022–23 of $64 billion for the general government and $110 billion including GOCs, is increasing.[103] Queensland's favourable performance on the government's preferred metric of net general government debt is partly related to the historical full funding of Queensland's defined benefit superannuation liability (Figure 11.2).

[103] Queensland Treasury (2022b) 2022–23 Budget Update, p. 40. Gross debt is calculated as the sum of borrowing with Queensland Treasury Corporation (QTC), leases and similar arrangements, and securities and derivatives.

Figure 11.2 Queensland general government net debt comparisons with other states



Source: Queensland Treasury Budget Update 2022–23, p. 22 based on state budget papers. * Queensland figures include mid-year budget update data, Victoria's include pre-November 2022 election forecasts, while NSW data are based on 2022–23 budget estimates.

11.3 CONCLUSIONS

It is fair to claim Queensland is the future state. Australians from other states are voting with their feet and coming to Queensland in large numbers. Capital investment from outside is also arriving, into agriculture, resources, manufacturing and a range of other sectors. Hosting the 2032 Olympic Games is one part of the future state but Queensland's continued prosperity is largely independent of it. The economy has very strong fundamentals and there are huge opportunities to seize in the next decade and beyond.

Extrapolating from today, Queensland's outlook is bright. However, it could be even brighter. We see the major opportunities to exceed BAU forecasts as being:

- the mining of critical minerals and potentially value-added processing;
- the development of a hydrogen export industry;
- an accelerated rate of investment in new energy generation and storage; and
- attracting further skilled labour and investment capital from interstate and overseas, while developing our regional economies.

Seizing these opportunities will require:

- addressing any barriers to housing supply in both SEQ and the regions so the growing population in Queensland can be accommodated;
- ongoing efforts to improve education and training so Queenslanders become highly-skilled in new technologies in advanced manufacturing, ICT, and other sectors;
- consideration of, and potential support for, innovative financing arrangements such as green bonds, sustainability-based loans and biodiversity credits which could be utilised to help with financing the transition to net zero.
- keeping Queensland's taxes and charges nationally competitive and ensuring the tax framework is favourable to employment, investment and economic growth

Seizing the economic opportunities discussed in this report will require a substantial level of new capital expenditure – both to expand capacity but also replace existing capital – particularly in decarbonising the economy. Capital investment is required in new housing, renewable energy and energy storage, including batteries and pumped hydroelectric dams, in new equipment to mine critical minerals, and across the economy more broadly as the economy continues to grow. Over the next ten years, Adept Economics estimates that base-line private sector CAPEX required will be around $1,110 billion in 2022–23 dollars in a 'business-as-usual scenario', but would be substantially higher at around $1,340 billion in our 'Seizing the Opportunity' scenario (Figure 1.2). That is, the additional private sector CAPEX above business-as-usual would be around $230 billion. Through increasing the size of the state's capital stock, and by making workers and businesses more productive, this investment would increase Queensland's 2032–33 GSP (in 2022–23 dollars) by an additional $68 billion to $643 billion, compared with GSP in the BAU scenario of $575 billion.

Seizing the opportunities the state is presented with will bring both economic and social benefits. Moreover, given the shift in global economies – and hence Queensland's exports – there are risks and opportunity costs in not seizing the opportunity, albeit difficult to model. Many of the opportunities relating to the net zero transition and in agriculture are based outside SEQ. There is the potential for regional differences in economic and social outcomes to be addressed through well-targeted investments and policy measures.

12

AFTERWORD: STEVE GREENWOOD

CEO OF QUEENSLAND FUTURES INSTITUTE

Queensland is an incredible place to live – its natural features, climate and lifestyle are second to none. It has a strong and diverse economy built upon traditional sectors of agriculture, resources, tourism and construction. Education and training, with life sciences, aerospace, defence, healthcare and social assistance now contribute significantly.

Now Brisbane's 2032 Olympics have rightly generated much interest and excitement for growth opportunities over the next decade. Host cities of the modern games have reaped tangible social, financial and cultural returns. It offers an immense opportunity to deliver a great stimulus to deliver our future.

The Olympics have raised the question of how we can make the most of the event to contribute to Queensland's long-term future. It has highlighted a need to clarify what future it is that we want the Olympics to help deliver. What does the state want to be? What does it want to be known for in the years after the Olympics? Be it 2040, 2050, or beyond.

To make the most of the Olympic stimulus, it is critical Queensland's vision for its future is defined in the next few years. Successful organisations have a clear focus on delivering maximum value to their shareholders. Significant time and resources are allocated to develop and maintain a concise outline of what the organisation is trying to achieve; what success looks like. They seek to succinctly communicate a future state, the organisation's vision.

A vision ensures the organisation has a clear understanding of where it is heading. It allows for the efficient allocation of resources, planning, measuring, and reporting on progress. It conveys externally to investors and the community what the organisation expects to achieve.

There are various examples of this approach by nations and states around the world. A notable example is Singapore. Now one of the wealthiest and most technologically advanced nations, much of its success has been attributed to its Strategic Futures Program which has helped the country foresee risks and opportunities for more than 30 years. Canada and the UK Government have similar approaches to outlining their respective visions for the future.

A vision for Queensland's Future would determine choices from various possible evidence-based future trajectories. It would provide an understanding of where we're going – for the benefit of all Queenslanders and investors in our future. A vision would outline a future state for key components of a prosperous future, including:

Business investment and talent attraction – Queensland's natural advantages and positive global image serve as a powerful influence on our ability to attract talent and grow existing and new industries. We can use our uniqueness to forge a powerful global investment brand. A vision for business investment and talent attraction would outline how Queensland is to retain and attract global investment and talent.

Water security – Increasingly unpredictable climate influences, strong population growth and growing industrial demands mean Queensland's water security is under greater scrutiny. A cost-effective and secure long-term water supply is a key factor in growing the state's prosperity. A cohesive vision would outline how long-term water security is to be achieved.

Workforce skills and capability – A prosperous future is highly dependent upon a workforce having the skills and capability to support a growing economy. With new sources of growth through industry and jobs creation, it is critical Queensland continues to support and innovate its skills, training and education agenda. A vision would define and promote how our workforce will meet the needs of a rapidly changing future.

Managing the energy transition – Queensland's economy confronts the dual challenge of ensuring a secure energy supply and managing the impact of reducing demand for coal and gas exports. Queensland can create a global template for a low-carbon economy. That will need to consider Australia's international commitments to reduce national emissions. A vision would define a successful energy transition, meeting the energy needs of a high functioning economy, while developing alternatives to the income from coal and gas exports.

Strengthening regional connectivity – physical and digital. Acknowledged as Australia's most decentralised state, most of its wealth and population lay outside the capital. Strengthening and building the regions is another core factor to building prosperity. High speed digital and air, road, rail and sea transport connections will accelerate growth across regional Queensland. A vision would define an inclusive future of a highly connected state.

This is just the start. Many other factors influence Queensland's prosperity – such as implementing a systemic approach to Environmental, Social and Governance reporting (ESG), managing social licence to operate challenges, and addressing various regional disadvantages, among other factors.

The vision would act as a dynamic resource for policy makers and shapers, providing ideas and options on key programs and policies, to deliver a prosperous future.

ADEPT ECONOMICS

Adept Economics is a Brisbane-based consultancy providing expert economic analysis and advice for private and public sector clients. Adept Economics services include economic impact analysis, regulatory and policy analysis, economic contribution and valuation analysis, social ROI and cost-benefit analysis, as well as data analysis and economic modelling.

FULLER STUDIO

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