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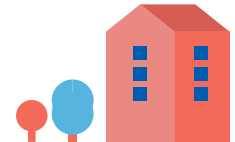
# The Australian economy in 2017

## Australian economy



**26 years**  
of continuous growth

**1.2% points**  
household consumption  
contributed the most  
to economic growth



## Industry

### Services

were the main  
driver of growth



**▲ 16.3%**

agriculture was the fastest  
growing industry

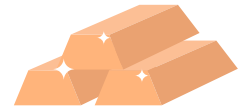


## Exports



Australia's export  
values rebounded  
**\$373 billion**

**↑ 33.8% to \$156 billion**  
mining exports increased on the  
back of higher prices



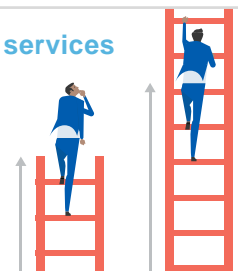
## Business conditions

**▲ \$37 billion**

mining recorded the highest increase  
in operating profits



**Small businesses and services**  
recorded higher rates  
of business entry



## Labour market



Full-time employment was  
strong increasing by  
**183,000 persons**  
but wages growth  
remained low

### Employment growth

was the fastest in  
non-market services



**This chapter explores economic developments and conditions in the Australian economy and industries in 2016–17.<sup>57</sup> Despite a record streak, economic performance was modest in 2016–17 with growth below the long-run trend. It starts with an overview of the key drivers of economic growth.**

Despite low wage growth, consumption made the strongest contribution to real Gross Domestic Product (GDP) growth. Public investment rose largely due to infrastructure spending by state governments, making its highest contribution to growth since the stimulus packages following the Global Financial Crisis (GFC). Export values of key commodities rose on the back of higher commodity prices. Conversely, business investment continued to detract from GDP growth as Mining investment fell from record highs.

This chapter also outlines developments in Australian industry which continued to shift to diverse sources of growth following the mining boom. Social services, especially health care, continued to expand in line with population ageing and changing consumer preferences. The high-skilled finance and professional services industries also made large contributions to economic growth. Mining grew strongly on the back of higher exports, despite weather-related disruptions constraining growth in export volumes. Agriculture activity recovered from modest results in the previous year with record crop production.

The chapter then examines business conditions across industry. Mining investment continued to decline from the highs during the mining investment boom. Business profits rose in the year, reaching double digits for the first time since the GFC. Mining accounted for over two-thirds of profit growth as the industry transitions from investment to production and commodity prices rose. Small businesses and Services recorded higher rates of business entries.

Next the chapter explores conditions in the labour market. Labour market conditions were mixed with a strong rise in employment, especially full-time employment, but slow wage growth. Underemployment peaked in February 2017, suggesting some spare capacity in the labour market was absorbed thereafter. Employment grew in most industries, but mainly in non-market services such as health care and education.

The chapter concludes with a summary of the economy in 2016–17 and an overview of the economic outlook for the year ahead.

## Twenty six years of economic growth

The economy grew modestly at 2.0 per cent, marking the 26<sup>th</sup> consecutive year of economic growth.

Economic growth occurred in the context of improving global economic conditions. Global economic growth rose to 3.2 per cent in 2016 and continued to strengthen in the first half of 2017.<sup>58</sup> Business investment growth has picked up, particularly in advanced economies and consumption growth has been resilient. Confidence is improving with consumer sentiment and business conditions both increasing from late 2016. Growth in global merchandise trade also improved, with a pick-up in both exports and imports.

This section examines the key contributions to Australia's GDP growth.

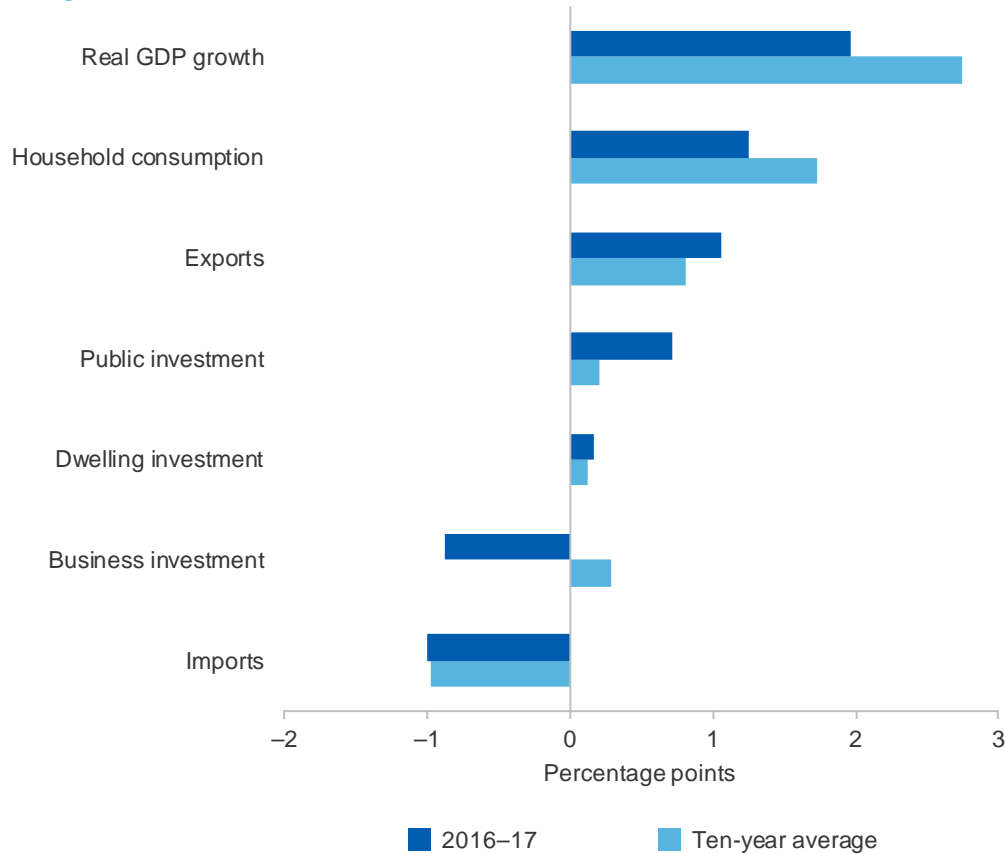
57 This chapter refers to 2016–17 financial year unless noted otherwise.

58 International Monetary Fund 2017, *World Economic Outlook: Seeking Sustainable Growth*, October 2017, p. 14

## Consumption, exports and public investment drive growth

Australia's GDP growth was driven primarily by household consumption, exports and public investment while business investment continued to detract from GDP growth (Figure 2.1).

Figure 2.1: Contributions to annual GDP growth by key components, 2016–17 and ten-year average



Notes: Original data, chain volume measures. Ten-year average is from 2006–07 to 2016–17. Components do not add up to total GDP growth as the figure excludes government consumption, other private investment, changes in inventories and statistical discrepancies.

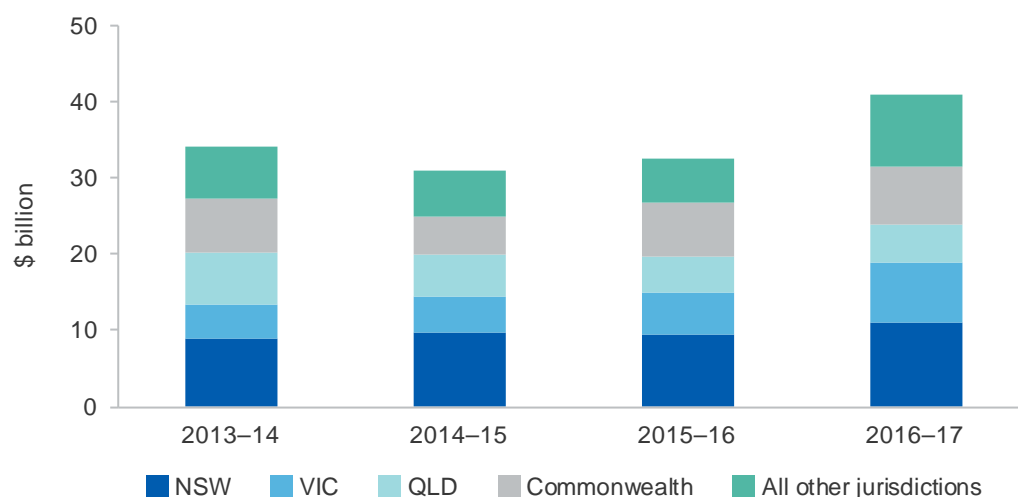
Source: ABS cat. no. 5204.0, table 2

- Consumption rose despite growing challenges for households, such as low wage growth, and made the strongest contribution to real GDP growth at 1.2 percentage points.<sup>59</sup> Most of the increased consumption was funded by population growth and declining household savings.<sup>60</sup>
- Public investment made a positive contribution to real GDP growth (0.7 percentage points) — the strongest contribution to growth since the GFC stimulus packages in 2009–10. All levels of government increased investment, but state and local government infrastructure spending accounted for the majority of the increase (Figure 2.2).

59 Contributions to annual GDP growth by key components in this section use original data, chain volume measures. ABS cat. no. 5204.0, table 2

60 Original data, chain volume measures, current prices. ABS cat. no. 5204.0, table 1, table 2, table 7; and Department of Industry, Innovation and Science calculations.

Figure 2.2: Public infrastructure spending by jurisdiction, 2013–14 to 2016–17



Notes: Figures are derived from government budgets and committed government infrastructure funding by jurisdiction at nominal prices. The data comprises historical actual figures, estimated investment levels for the current budget year and forecasts for the forward estimates.

Source: Infrastructure Partnerships Australia (2016), Government Infrastructure Funding.

- Net exports made a small contribution to growth (0.1 percentage points), with higher exports (1.1 percentage points) offset by higher imports (–1.0 percentage points). Exports of key commodities rose on the back of higher commodity prices and, to a lesser extent, growth in export volumes.
- Private investment fell due to a continuation of declining business investment, particularly in Mining, from the peak during the mining investment boom. The fall was offset by higher dwelling investment from the long-running residential construction upturn.<sup>61</sup> Overall, private investment detracted from real GDP growth by 0.7 percentage points.<sup>62</sup>

## Developments in Australian industry

Services continued to dominate production in the economy in 2016–17. Several industries accounted for most of the growth including Health Care & Social Assistance, and Professional, Scientific & Technical Services. Mining remains the dominant export industry, with three of the top five exports. This section looks at the composition of the economy by industry in terms of output, growth and exports.

### Services continue to dominate the economy

Services dominated output in the economy, largely a result of a long-running trend in consumer preferences (Table 2.1). Financial & Insurance Services was the largest industry in terms of value. Other Services — including Health Care & Social Assistance, and Professional, Scientific & Technical Services — were also in the top five largest industries.

<sup>61</sup> Dwelling investment refers to dwellings comprising new and used; and alterations and additions in the National Accounts.

<sup>62</sup> Investment refers to gross fixed capital formation in the National Accounts.

Table 2.1: Output and employment by industry, 2016–17

Industry	Output (\$ billion)	Output growth (per cent)	Share of GDP (per cent)	Employment (million)	Employment growth (per cent)	Share of employment (per cent)
Financial & Insurance Services	148.2	3.7	8.8	0.4	-0.7	3.5
Construction	124.6	-4.1	7.4	1.1	7.8	9.2
Health Care & Social Assistance	119.0	5.3	7.0	1.6	7.7	12.9
Professional, Scientific & Technical Services	115.2	6.2	6.8	1.0	-0.7	8.4
Manufacturing	98.9	-1.8	5.8	0.9	-1.2	7.5
Mining	98.8	1.1	5.8	0.2	-2.4	1.9
Public Administration & Safety	93.0	2.1	5.5	0.8	-3.1	6.6
Education & Training	81.7	1.0	4.8	1.0	5.2	8.0
Transport, Postal & Warehousing	81.5	1.8	4.8	0.6	3.6	5.1

Industry	Output (\$ billion)	Output growth (per cent)	Share of GDP (per cent)	Employment (million)	Employment growth (per cent)	Share of employment (per cent)
Retail Trade	75.6	1.4	4.5	1.2	1.7	10.2
Wholesale Trade	71.1	6.2	4.2	0.4	3.7	3.2
Administrative & Support Services	53.5	-0.2	3.2	0.4	-8.8	3.4
Rental, Hiring & Real Estate Services	51.7	2.1	3.1	0.2	-2.7	1.7
Agriculture, Forestry & Fishing	46.9	16.3	2.8	0.3	4.6	2.5
Information, Media & Telecommunications	45.2	2.5	2.7	0.2	5.9	1.7
Electricity, Gas, Water & Waste Services	41.3	0.4	2.4	0.1	-3.4	1.1
Accommodation & Food Services	40.8	1.9	2.4	0.9	5.5	7.2
Other Services	28.4	-2.6	1.7	0.5	3.7	4.0
Arts & Recreation Services	13.9	0.8	0.8	0.2	3.6	1.8
<b>All industries</b>	<b>1,429.4</b>	<b>2.2</b>	<b>84.5</b>	<b>12.1</b>	<b>2.6</b>	<b>100</b>

Notes: Output calculations use original data, chain volume measures. Employment calculations use trend data and growth is through-the-year growth to August 2017.

Source: ABS cat. no. 5204.0, table 5; ABS cat. no. 6291.0.55.003, table 4



Most industries recorded growth in 2016–17 and social and business services continued to grow as a proportion of the economy.<sup>63</sup> Agriculture, Forestry & Fishing recorded the strongest growth of any industry at 16.3 per cent, driven by record crop production.<sup>64</sup> Construction activity fell following a decline in private sector engineering construction from the continued slowdown in Mining investment (Table 2.1).

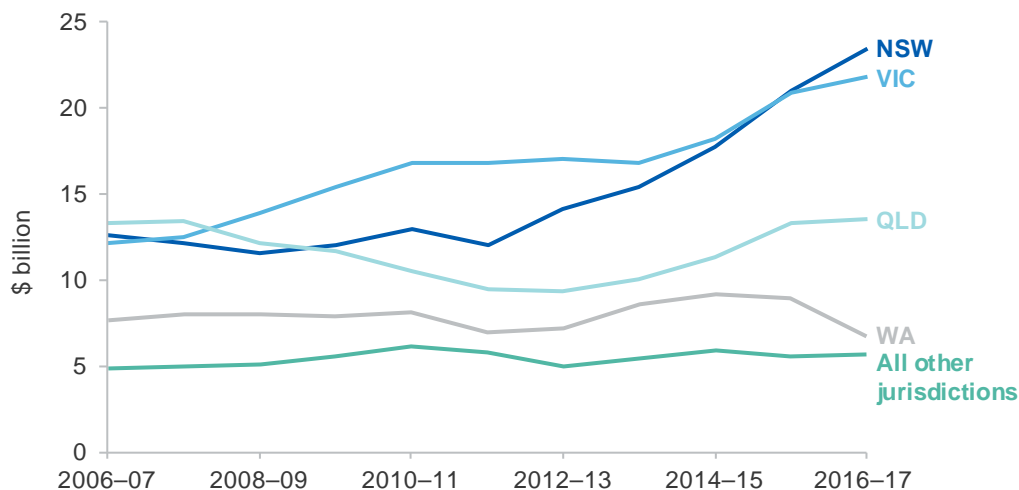
Industries with strong links to digital technologies grew above average. For example, Professional, Scientific & Technical Services recorded one of the strongest growth rates of any industry. Other industries with strong digital links that grew included Financial & Insurance Services, and Information, Media & Telecommunication Services.

Social services including Health Care & Social Assistance and Public Administration & Safety continued to expand, in line with the ageing population and changing consumer preferences.

Output in Services with low productivity levels fell, including Other Services and Administrative & Support Services. Yet the link between productivity and growth was modest — Services with higher productivity tended to grow faster, but some low-productivity Services also recorded strong growth.

While overall Construction activity fell, building and residential construction increased. Australia has been experiencing a long-running residential construction upturn, beginning around mid-2012 and continuing in 2016–17 (Figure 2.3). Residential construction has been particularly strong in New South Wales and Victoria. Construction activity in recent years has been supported by lower interest rates combined with strong population growth and rising house prices.

Figure 2.3: Residential construction work done by jurisdiction, 2006–07 to 2016–17



Notes: Original data, chain volume measures.

Source: ABS cat. no. 8755.0, table 4

63 Social services refers to: Public Administration & Safety; Education & Training; and Health Care & Social Assistance. Business services refers to: Financial & Insurance Services; Rental, Hiring & Real Estate Services; Professional, Scientific & Technical Services; and Administrative & Support Services.

64 ABARES estimate. Department of Agriculture and Water Resources 2017, *Agricultural Commodities*, September quarter 2017, ABARES, Canberra



## Export values rebounding

Exports rebounded by 16.9 per cent in 2016–17 to \$372.7 billion, following a modest fall of 1.5 per cent in 2015–16.<sup>65</sup> Mining continued to dominate exports, with three of the top five exports, and strong growth driven by import demand from China. Agriculture, Forestry & Fishing exports rebounded following record crop production. Services exports grew quickly, with a lower dollar attracting international students and tourists (Table 2.2).

Table 2.2: Exports by industry, 2016–17

Industry	Exports (\$ billion)	Export growth (per cent)	Share of exports (per cent)
Mining	156.4	33.8	42.0
Manufacturing	103.6	3.3	27.8
Services	81.5	8.0	21.9
Agriculture, Forestry & Fishing	20.0	20.5	5.4
Construction	0.4	142.6	0.1
<b>All industries</b>	<b>372.7</b>	<b>16.9</b>	<b>100.0</b>

Notes: Data current as at 2 November 2017 and subject to future revisions due to data being lagged by eight months. All industries includes items not readily classified or confidential. Industry calculations using merchandise exports made from original data, FOB value. Industry calculations using services credits made from original data, current prices.

Source: ABS cat. no. 5368.0, table 11a, 32a and Department of Industry, Innovation and Science calculations.

Mining dominated exports in 2016–17, with the largest share of total exports and accounting for most top exports by category. The value of the top two exports — iron ore and coal — increased by more than 30 per cent.<sup>66</sup> The rise in export values for iron ore and coal was driven by higher commodity prices due to increased demand from China. Weather-related disruptions constrained growth in the volume of iron ore and coal exports.<sup>67</sup>

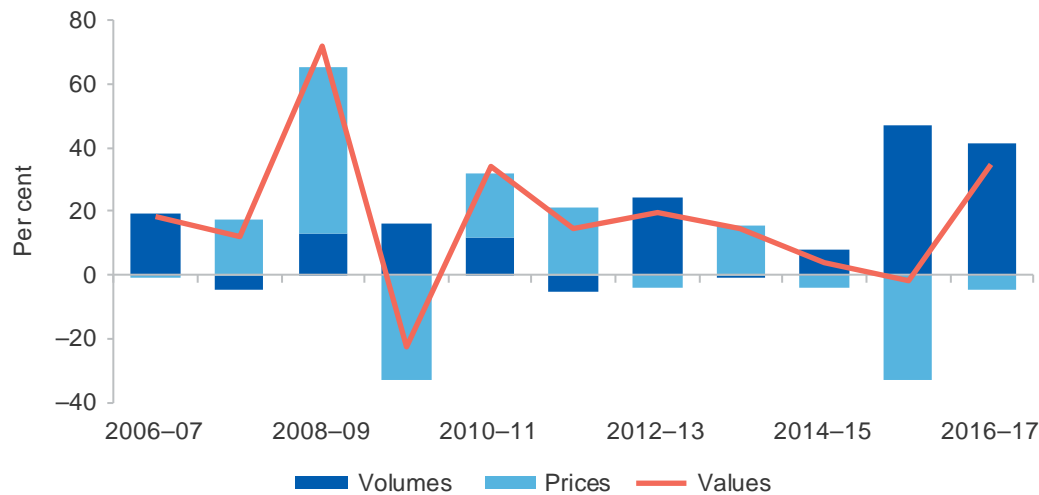
Liquefied Natural Gas (LNG) has become a significant part of the Mining industry. Australia continued to increase its gas liquefaction capacity with the completion of the Gorgon project in Western Australia, and the ramping up of production at three coal seam gas projects in the eastern states. The expansion in LNG production resulted in significant annual growth in both export value and volume (Figure 2.4).

<sup>65</sup> Exports (values and growth) and share of exports in this section use original data unless otherwise stated. Industry calculations using merchandise exports are FOB value. Industry calculations using services credits are current prices. ABS cat. no. 5368.0, table 11a, 32a and Department of Industry, Innovation and Science calculations.

<sup>66</sup> Coal includes both metallurgical and thermal coal. Department of Industry, Innovation and Science (2017), *Resources and Energy Quarterly*, September 2017

<sup>67</sup> For further information on Australia's resources and energy exports please refer to the Department of Industry, Innovation and Science's *Resources and Energy Quarterly*.

Figure 2.4: Annual growth in LNG export values, contributions from prices and export volumes, 2006–07 to 2016–17



Notes: Growth in values are expressed in nominal terms.

Source: Department of Industry, Innovation and Science (2017), *Resources and Energy Quarterly*, September 2017

Services exports grew strongly, with the third-largest export — International Education (education-related travel) — growing by 16.1 per cent to \$28.0 billion. The number of international students reached 565,000 in July 2017, about 15 per cent more than in July 2016.<sup>68</sup> The majority of international students were from Asia, with China being the biggest source, reflecting rapidly rising incomes in that region.

Personal Travel Services (excluding education-related travel) was the second largest Services export and fifth largest export overall. Australia welcomed 8.5 million international visitors in 2016–17 and was an attractive destination for international tourists, likely supported by the lower Australian dollar.<sup>69</sup> Personal Travel Services increased by 4.8 per cent, to be worth \$21.7 billion.

## Business conditions

Business conditions were mixed across industries in 2016–17. Business investment continued to decline from the highs during the mining investment boom. In contrast, company profits in most industries grew, with Mining and high-productivity Services faring particularly well. Small businesses and Services generally recorded higher rates of business entry, and micro businesses had high rates of net growth (entry minus exits). This section explores business conditions across industry by business investment, profits and the entry and exit of businesses.<sup>70</sup>

68 Department of Education and Training 2017, *International Student Data monthly summary*, July 2017, Canberra

69 Tourism Australia 2017, International Tourism Snapshot as at 30 June 2017, <http://www.tourism.australia.com/content/dam/assets/document/1/6/y/m/0/2004408.pdf> accessed September 27, 2017.

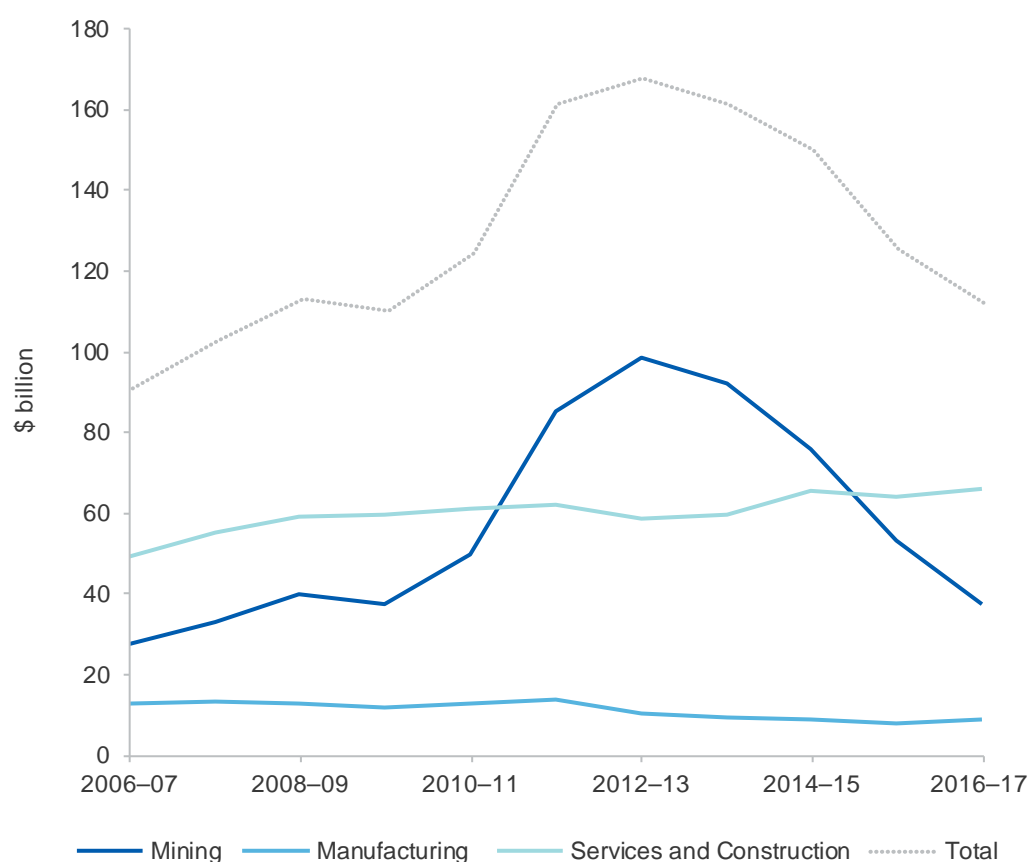
70 The latest available data for entry and exit of businesses in Australia is for 2015–16.

## Business investment fell, but some signs of improvement

Business investment fell in 2016–17 to \$112.3 billion, down 10.4 per cent over the year.<sup>71</sup> The fall in business investment is due to a continuation of declining Mining investment from the peak during the mining investment boom, with investment in other industries failing to offset the fall (Figure 2.5). Falling Mining investment has weighed heavily on recent economic performance, detracting a total of 4.8 percentage points from GDP growth since 2013–14.<sup>72</sup>

The completion of the three remaining LNG projects — Wheatstone, Ichthys, and Prelude — in 2018 will largely mark the end of the mining investment boom. Looking further ahead, Mining investment is expected to stabilise as firms invest to maintain existing capacity and large-scale projects drive investment from 2022.

Figure 2.5: Business investment by industry, 2006–07 to 2016–17



Notes: Actual expenditure, trend data, chain volume measures. Capital expenditure for Agriculture, Forestry & Fishing; Public Administration & Safety; Education & Training; Health Care & Social Assistance; and Superannuation Funds are not captured.

Source: ABS cat. no. 5625.0, table 3b

71 Business investment refers to private capital expenditure in this discussion and uses actual expenditure, trend data, chain volume measures and year ended quarterly estimates. ABS cat. no. 5625.0, table 3b

72 Original data, chain volume measures. ABS cat. no. 5206.0, table 2

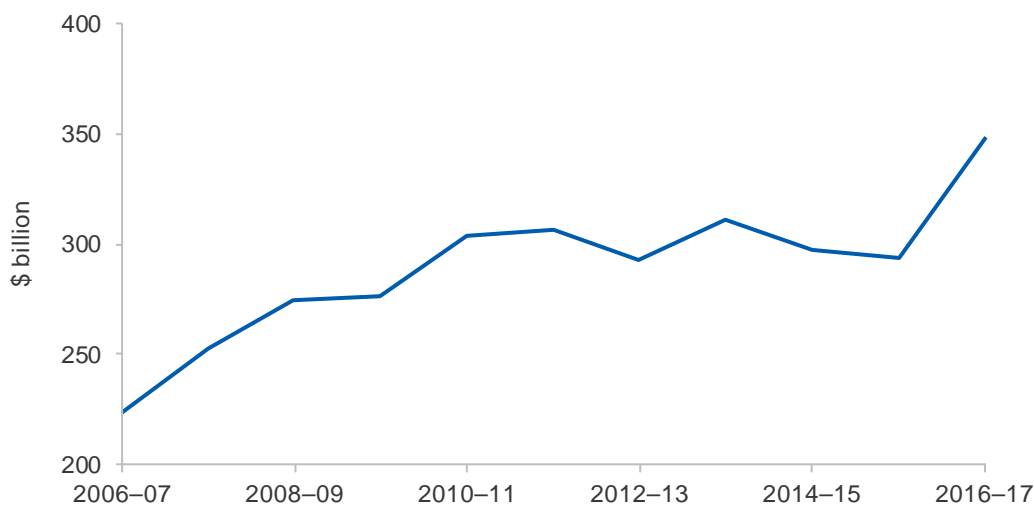
Investment in other industries has been weak in recent years. The RBA has suggested one driver of low investment growth is firms' low expectations of future demand and a reluctance to invest until there is a sustained pick-up in aggregate demand.<sup>73</sup> In addition, business confidence has been slow to respond to improving business conditions.

Despite a lack of pick up in investment, the outlook for business investment is generally positive for 2017–18. Business investment is being supported by low interest rates, improved economic conditions and improved global outlook. Business investment in other industries looks set to finally rise, with companies intending to increase capital expenditure in 2017–18.<sup>74</sup>

## Profits growing strongly

Profits rose by 18.4 per cent to \$348.4 billion on the back of a large increase in Mining profits due to strong commodity prices. Prior to 2016–17, profits experienced a five-year trend of flat growth, driven by falling Mining profits (Figure 2.6).

Figure 2.6: Annual industry profit, 2006–07 to 2016–17



Notes: Profit refers to total industry gross operating profit. Original data, quarterly data aggregated for financial years.

Source: ABS cat. no. 5676.0, table 15

Profitability improved in most industries, including some that have performed poorly over the past decade. Mining recorded the highest increase in operating profits in 2016–17 (\$37.4 billion), following a fall of \$8 billion in 2015–16. The strong increase in Mining profits accounted for over two-thirds of profit growth and was far higher than any other industry. Profits for Professional, Scientific & Technical Services returned to positive territory. Conversely, Accommodation & Food Services and Construction experienced a small fall in profit.

73 Debele G. 2017, *Business Investment in Australia*, Reserve Bank of Australia, <https://www.rba.gov.au/speeches/2017/sp-dg-2017-11-13.html> accessed February 5, 2018.

74 As at 7 November 2017 expected capital expenditure for Other Selected Industries (Services and Construction) for 2017–18 is 9.3 per cent higher on average than expected capital expenditure for 2016–17. Original data, current prices. ABS cat. no. 5625.0, table 12a

## Small businesses most dynamic

In 2015–16, the number of business entries and exits was highest for businesses without employees (i.e. sole traders with no employees) and lowest for large businesses (200+ employees) (Table 2.3). Micro businesses (1–4 employees) were particularly successful in 2015–16, with an entry rate 5.7 per cent greater than the exit rate, the largest difference for any business size.

Table 2.3: Business entries and exits by business size, 2015–16

Business size (employees)	Entries (number)	Exits (number)	Entry rate (per cent)	Exit rate (per cent)
Non-employing (0 employees)	212,964	193,402	16.6	15.1
Micro (1–4 employees)	87,057	53,667	14.9	9.2
Other small (5–19 employees)	9,131	10,923	4.6	5.5
Medium (20–199 employees)	1,161	1,980	2.3	3.9
Large (200+ employees)	122	154	3.3	4.1
<b>Total</b>	<b>310,435</b>	<b>260,126</b>	<b>14.6</b>	<b>12.3</b>

Source: ABS cat. no. 8165.0, table 13

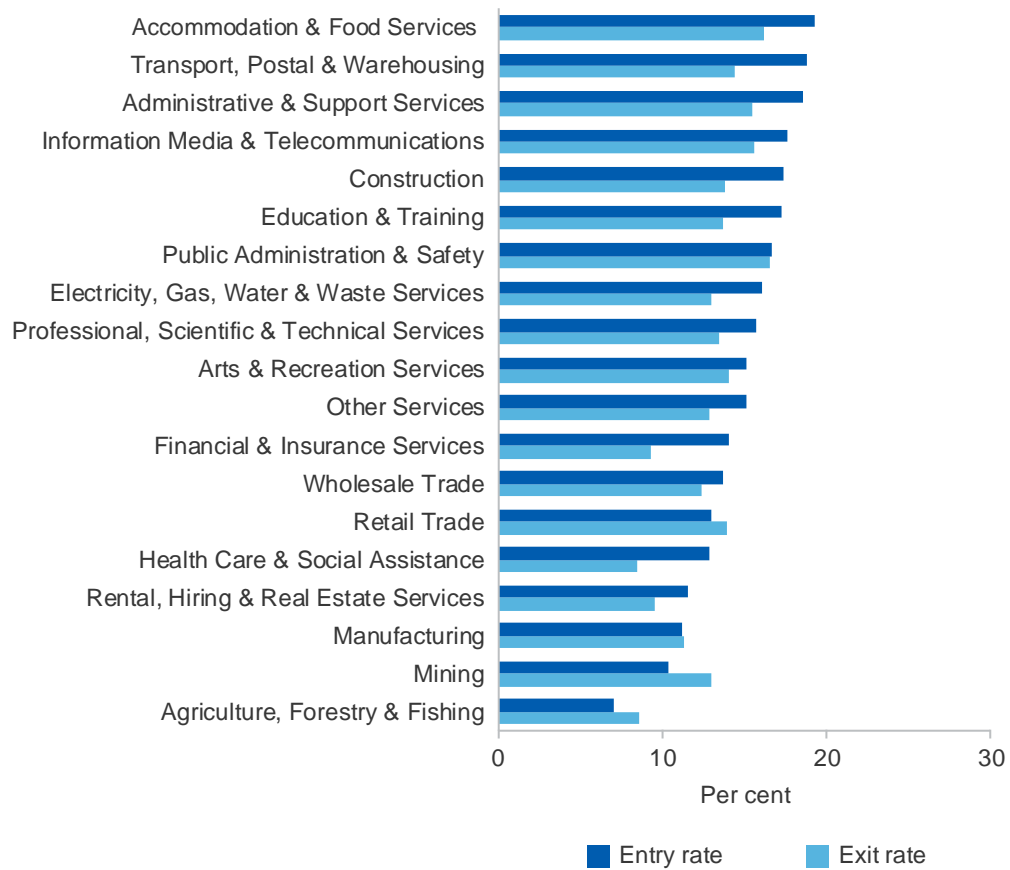
The economy has experienced a decline in the rates of business entry and exit in recent years. Entry rates have been falling since the early 2000s and all industries have experienced the downward trend.<sup>75</sup>

The entry rate was highest for Accommodation & Food Services, which is traditionally associated with high rates of businesses entering and exiting the market. Agriculture, Forestry & Fishing recorded the lowest entry rate. Public Administration & Safety had the highest exit rate, while Health Care & Social Assistance had the lowest exit rate, reflecting strong conditions in that industry (Figure 2.7). The net entry rate was highest for businesses in Financial & Insurance Services, while net entry rate was negative for Mining and Agriculture, Forestry & Fishing.<sup>76</sup>

75 Bakhtiari S. 2017, *Entrepreneurship Dynamics in Australia: Lesson from Micro-data*, Department of Industry, Innovation, and Science Research Paper 5/2017, November, p. 14

76 Net entry rate of businesses is the difference between the number of business entries and the number of business exits.

Figure 2.7: Growth in business entries and exits by industry, 2015–16



Source: ABS cat. no. 8165.0, table 1

## Labour market recovering strongly

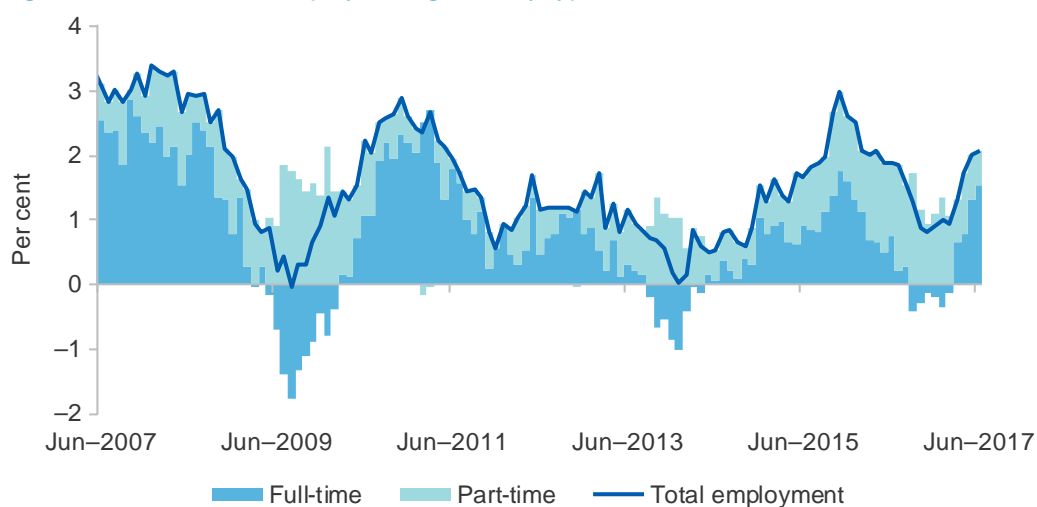
Employment growth was strong over the past 12 months, particularly in full-time employment, but wage growth remained low. Employment grew in most industries in the 12 months to August 2017, with expanding industries employing an additional 404,000 workers and contracting industries losing 99,000 workers.<sup>77</sup> Employment growth was the fastest in non-market Services, including Health Care & Social Assistance and Education & Training.

Compared with the year before, 2016–17 was a strong year for employment growth, which was largely in full-time jobs. The participation rate — the proportion of people employed or actively looking for work in the working age population — has also risen over the same period, while wages growth was at record lows.

In the 12 months to June 2017, the number of employed people grew by 248,000 persons (2.1 per cent) (Figure 2.8). Employment was driven by strong growth in full-time employees which accounted for over 70 per cent of the increase (183,000 persons). Participation rose by 0.2 percentage points over the same period to be 65.0 per cent in June 2017.<sup>78</sup>

Most of the increase in employees occurred in the first half of 2017. Between January and June 2017, the number of employed people grew by 177,000 persons.<sup>79</sup> Full-time employment was again behind the rise, increasing by around 237,000 persons, while part-time employment fell (–60,000).<sup>80</sup>

Figure 2.8: Annualised employment growth by type, June 2007 to June 2017



Notes: Seasonally adjusted data. Total employment growth is through-the-year growth. Full-time and part-time growth is represented as share of total employment growth.

Source: ABS cat. no. 6202.0, table 1

77 Change in the number of people from August quarter 2016 to August quarter 2017 using trend data. ABS cat. no. 6291.0.55.003, table 4

78 Through-the-year growth and change in the number of people from June 2016 to June 2017 using seasonally adjusted data. ABS cat. no. 6202.0, table 1

79 Seasonally adjusted data. ABS cat. no. 6202.0, table 1

80 Ibid.



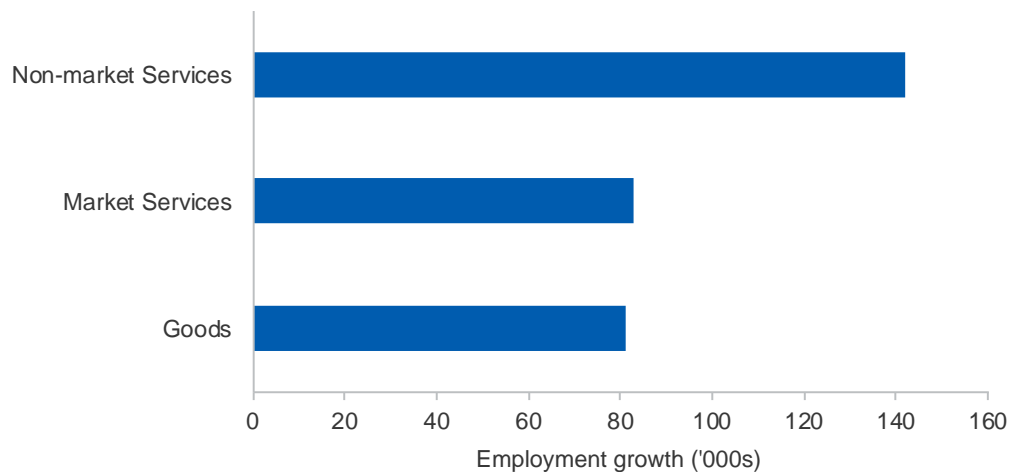
With full-time employment growing strongly, excess labour market capacity peaked around the middle of 2016–17. The underemployment rate reached record highs in February 2017 (9.4 per cent), but fell to 9.1 per cent in August 2017.<sup>81</sup>

Similar to other advanced countries, 2016–17 was dogged by persistently low wage growth. Nominal wages rose just 1.9 per cent and did not increase in real terms.<sup>82</sup> With no real wage growth, per capita incomes of Australian workers are subsequently not growing and their standard of living is not improving. While the reasons behind continued low wage growth are unclear, spare capacity in the labour market is likely to be part of the reason why the stronger employment growth hasn't yet translated into higher wages for workers.

Nearly 60 per cent of all industries employed more people. Employment growth was higher in non-market Services, including Health Care & Social Assistance and Education & Training (Figure 2.9). Construction also grew strongly on the back of robust residential construction activity.

Administrative & Support Services and Public Administration & Safety accounted for most of the reductions in employees (Table 2.1).<sup>83</sup>

Figure 2.9: Employment growth by industry type, August 2016 to August 2017



Notes: Through-the-year growth (August 2016 to August 2017) using trend data. The ABS defines non-market services as: Public Administration & Safety; Education & Training; and Health Care & Social Assistance.

Source: ABS cat. no. 6291.0.55.003, table 4

81 Seasonally adjusted data. ABS. cat. no. 6202.0, table 22

82 Original data. ABS cat. no. 6345.0, table 1

83 Ibid.

## Where to from here?

The Australian economy in 2016–17 continued its transition from the mining investment boom towards more-diverse sources of growth. GDP growth remained modest, driven primarily by household consumption, higher exports and a pick-up in public investment. Business investment continued to fall and detracted from GDP growth.

The labour market experienced mixed conditions, but performed well in the latter half of the year. Employment growth has picked up strongly since the beginning of 2017, mostly in full-time employment. Yet rising demand for labour has not yet materialised as any significant wage growth.

The large decline in Mining investment that has been detracting from growth in the last few years is now tapering off. Record levels of Mining investment in previous years boosted LNG production capacity, which is expected to contribute to growth in the period ahead. Business confidence is improving, and businesses have indicated they intend to increase investment in the coming year.

Mining investment is set for another year of decline in 2018 as three LNG projects collectively worth around \$100 billion reach completion. This will mark the end of the investment phase of the mining boom as investment in the industry returns to more typical levels.<sup>84</sup>

Public investment made the strongest contribution to growth since the GFC stimulus packages in 2009–10. The pipeline of government infrastructure projects in 2017–18 is also expected to boost government infrastructure spending growth.

Looking forward, conditions are in place for a pick-up in economic growth in 2017–18 and for Australia to achieve 27 years of continuous economic growth. The improved picture reflects a stronger global outlook, an improving labour market, and the public infrastructure investment pipeline. Consumption growth remains a key economic risk due to high household debt and low wage growth.

To continue the long run of economic growth and maintain growing incomes, Australia needs to increase its productivity and innovation. Healthy competition boosts productivity by driving the allocation of resources to their best use and spreading innovations and better business practices. A competitive economy is supported by well-functioning regulations and government initiatives that enable markets to work, while assisting industries to transition effectively.

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84 Department of Industry, Innovation and Science 2017, *Resources and Energy Quarterly*, December 2017





## Innovating for impact

*Charlie Day*

*Chief Executive Officer, Innovation and Science Australia*

Despite a long period of sustained economic growth over the last 26 years, Australia in 2017 shares in the widespread malaise of weak productivity growth that is already slowing improvements in living standards in many developed countries. Adding to this, Australia will confront a demographic challenge over the coming decades as its ageing population moves into retirement. Leaders in government and the broader community are rightly looking to Australia's innovation system to provide a new impetus that can help meet these twin challenges.

The good news is that the tools and technologies available to innovators are more powerful every year. To take just a few examples:

- Rapid advances in artificial intelligence (AI) and machine learning are transforming everything we do, from how we diagnose life-threatening illness to the way we take our holiday photos. Over time, we expect that very few sectors of the economy will be untouched by these developments, which have significant potential to lift productivity. Major investments are being made in this technology around the world, with China and the United States (US) in particular battling to secure the leading position.
- The era of data-driven and highly personalised medicine is rapidly arriving, offering the prospect of both healthier lives for citizens and greater efficiencies for governments that are the key providers of health care. Technology is offering the capability to assemble rich sources of information about individuals, including their entire genomic sequence, and combine that with continuous monitoring through cheap and ubiquitous sensor technology. As health care is expected to occupy an increasing share of the economy in years ahead, the opportunities for innovators are considerable.
- Our energy system is undergoing a rapid and complex transformation as it seeks to deliver affordable, reliable and clean energy. Significant changes in the cost and performance characteristics of renewable power sources, such as wind and solar, combined with rapidly improving storage technologies and the disruptive business models that are challenging incumbent providers, set the scene for a significant reshaping of how and where we source our energy. To date this transformation has not played out in Australia's

favour, despite our abundant sources of sunlight and wind energy. A key challenge for our innovators will be to drive down the cost of energy, which is a vital input to so many sectors of the economy.

Australia is fortunate that many of these tools and technologies are being advanced in our public sector research and development laboratories, which continue to be world class. Indeed, our universities have built a major export market for education largely on the back of their reputation for high quality research.

Countries around the world are recognising the potential of these technologies, and this is reflected in growing global investments in R&D that continue to outpace gross domestic product (GDP) growth. It looks like a sensible strategy: the Organisation for Economic Co-operation and Development (OECD) has highlighted that a disproportionate share of the economic dividends of innovation accrue to those who are closest to the innovation frontier.

But the history of Australia's innovation system suggests that we haven't always been prepared to use these tools and technologies as boldly as we will need to if we are to keep up. Reports from both Innovation & Science Australia (ISA)<sup>85</sup> and the Office of the Chief Economist<sup>86</sup> show that while Australian firms report high levels of innovative activity, it is primarily incremental in nature. Australian firms are generally outclassed by their international peers when it comes to new-to-market and new-to-world innovation. Furthermore, bucking the global trend for growth in business expenditure on R&D, Australian firms' investment in R&D has been falling since the Global Financial Crisis (GFC), as the mining investment boom has faded and other sources of R&D growth have failed to step in and fill the gap. Encouraging signs of collaboration between our research base and industry are starting to grow, but it is coming from a low base and much more needs to be done. And whilst rapid growth in venture capital is helping to support the burgeoning start-up communities in clusters around the country, the all-important test of delivering cash returns to investors will only be met for certain in the years that lie ahead.

In short, then, the ingredients for a vibrant and prosperous future for Australia are within our grasp. But we must renew our commitment to innovation, and in particular to ambitious innovation, if we are to bring it to fruition. This will challenge all parts of our innovation system, and creates a number of imperatives for our policymakers:

- Education — equip Australians with skills relevant to 2030, and provide an education system that can routinely refresh and update those skills.
- Industry — reinvigorate business expenditure on R&D, and support firms that are prepared to tackle the challenge of growth opportunities in export markets.
- Government — innovate the procurement of goods and services and how it regulates markets, whilst transforming its own operations to make the most of digital technology.
- R&D — continue to build linkages with industry, both in people and technology that can underpin a long-term commitment to growing investment and ambitious innovation.

At a national level, policymakers should be prepared to take on bold large-scale projects that ISA has characterised as 'National Missions', projects that bring together the best that our innovation system has to offer in tackling a challenge that brings significant benefit to Australians.

ISA has laid out its vision for the future of Australia's innovation system in its report *Australia 2030*. We look forward to working with all parts of the innovation community to create a future that grasps the abundant potential Australia continues to display.

85 Innovation and Science Australia 2016, *Performance Review of the Australian Innovation, Science and Research System*

86 Department of Industry, Innovation and Science 2017, *Australian Innovation System Report*