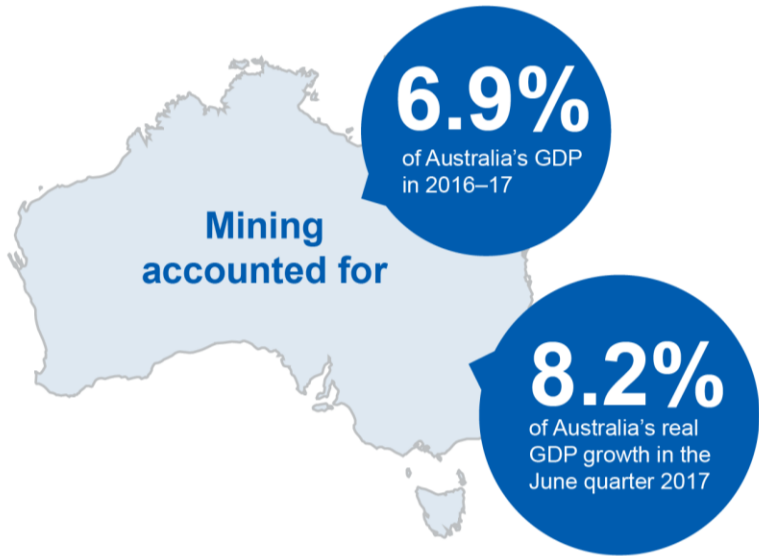
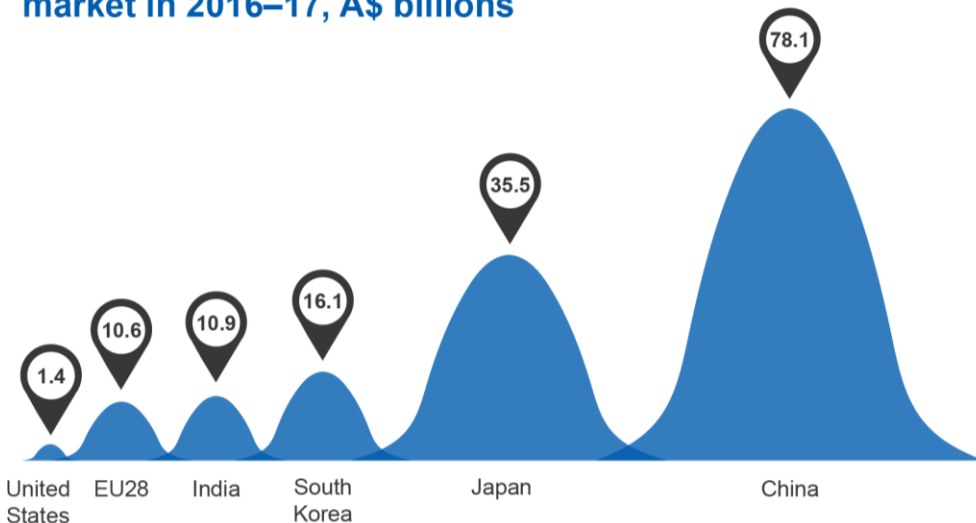


Overview

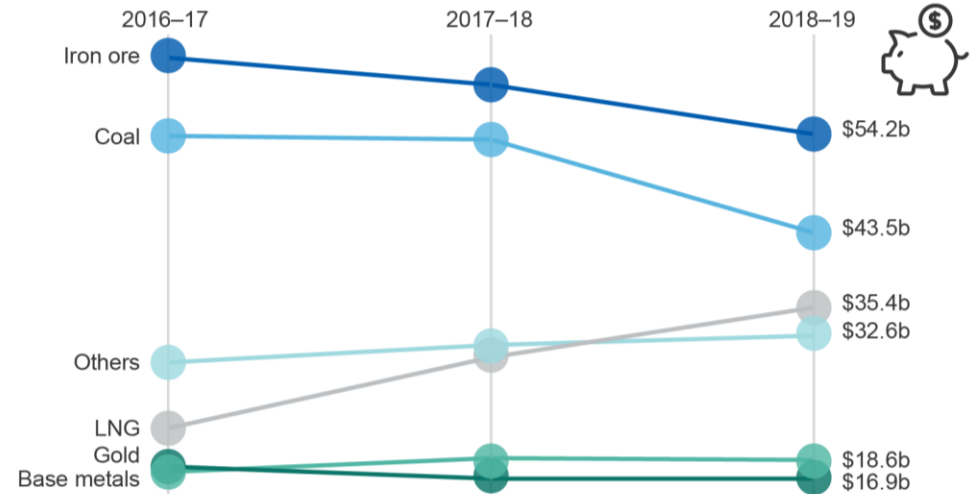
Resources and Energy Quarterly September 2017



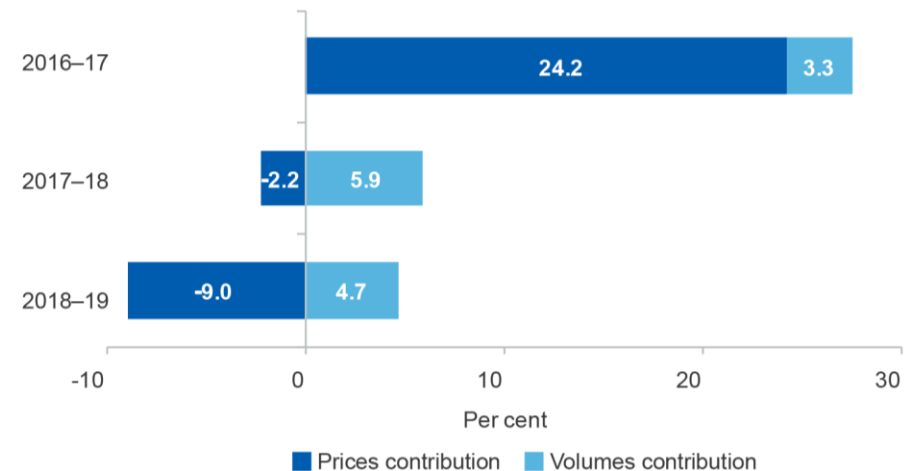
Australia's resources and energy exports by major market in 2016–17, A\$ billions



Australia's resources and energy commodity exports, A\$ billions



Australia's resources and energy exports growth, contributions from price and volumes



Revisions to the outlook

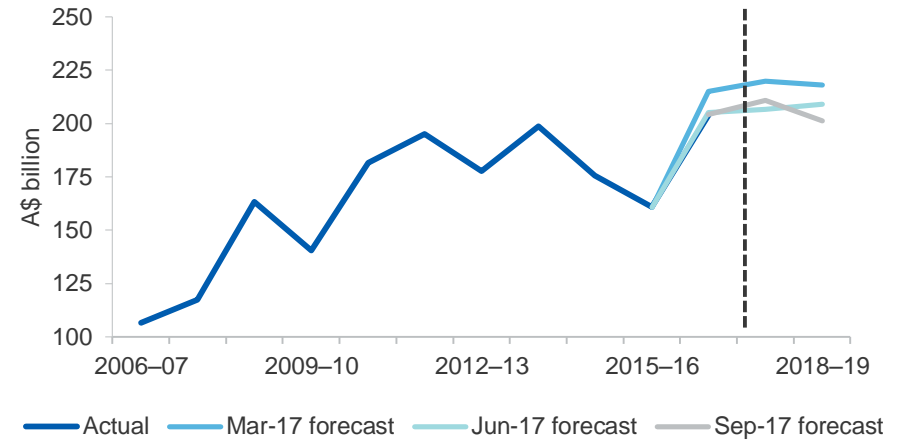
In broad terms, there have been relatively modest changes to the forecast value of Australia's resources and energy export earnings over both this financial year and the forthcoming one. 2017–18 is looking slightly stronger, but 2018–19 weaker than previously expected. In both years, export earnings will be well above levels seen in the two years prior to 2016–17.

The forecast for Australia's resources and energy export earnings in 2017–18 has been revised up by \$4.1 billion (2 per cent) to \$211 billion. The upward revision primarily reflects higher than expected prices for metallurgical coal, alumina and gold than forecast in the June 2017 *Resources and Energy Quarterly*. Stronger than expected demand, and supply problems, have pushed metallurgical coal and alumina prices higher, while gold has benefited from increased safe haven demand from heightened tensions on the Korean Peninsula.

These upward revisions have been partially offset by a downward revision to LNG totalling \$1.8 billion in 2017–18. The outlook for LNG prices has deteriorated in line with expectations for oil prices, to which LNG prices are linked. The OPEC 2017 Production Agreement has not been as successful as many expected in driving oil prices higher. In addition, US oil production has been stronger than expected, and forecasts of future production continue to be revised higher.

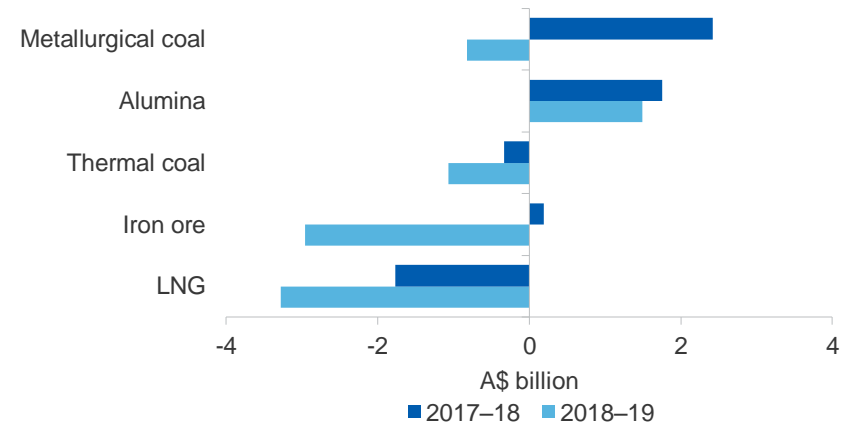
In 2018–19, export earnings are now forecast to be \$201 billion, compared to \$209 billion in the June 2017 *Resources and Energy Quarterly*. The deterioration in the outlook for LNG prices is a significant driver of the downward revision. In addition, lower than expected growth in iron ore production is expected to result in lower iron ore export volumes in 2018–19. The revision to iron ore production reflects both lower guidance targets from major producers and slower-than-expected production growth at several operations.

Figure 1.1: Revisions to export earnings



Source: ABS (2017) *International Trade in Goods and Services, 5368.0*; Department of Industry, Innovation and Science (2017)

Figure 1.2: Selected revisions to export earnings, June 2017 to September 2017



Source: ABS (2017) *International Trade in Goods and Services, 5368.0*; Department of Industry, Innovation and Science (2017)

Market summary: Commodity prices and world demand

Commodity prices rebounded in the September quarter 2017

Preliminary estimates suggest that the September quarter 2017 saw the Australian Resource and Energy Commodity Price Index — the weighted-average price Australian resource and energy exporters receive for their commodities — reverse two thirds of the June quarter's sharp (8.9 per cent) losses. However, an appreciation in the Australia-United States exchange rate almost totally offset the impact of the rise in USD commodity prices: Australia's resources and energy export prices are estimated to have risen by just 2.2 per cent.

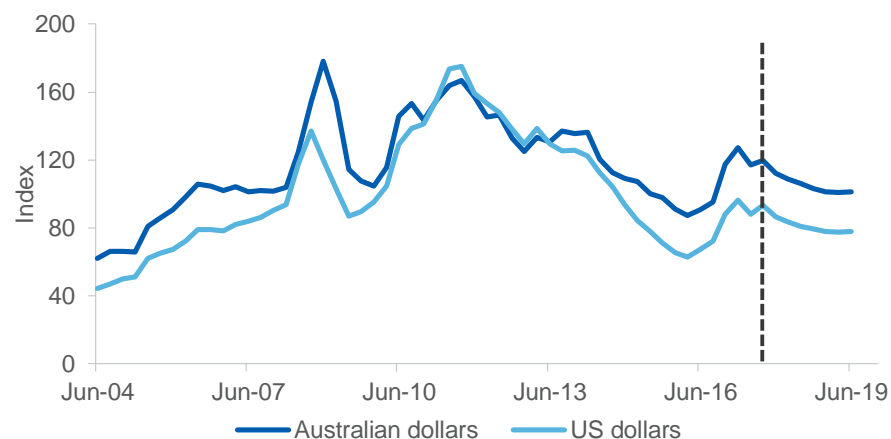
The rise in resource and energy commodity prices (in USD terms) was largely driven by a rebound in the prices of iron ore and thermal coal, with contributions from gains in aluminium, alumina and copper prices. The iron ore price rose as Chinese steel mills competed intensively for ore, in order to take advantage of high local steel prices. Thermal and metallurgical coal prices benefited from disruptions to global supply against a firm demand back-drop.

Increased seasonality in some resource and energy commodity markets

It appears that some resource commodity markets are and will be — in the next year at least — experiencing more intense seasonality: Chinese steel and aluminium makers stepped up their purchases of raw materials in the June–August period, as they prepared for the curtailment of some of domestic production in the approaching winter. The current trend is for Beijing and some provincial Chinese governments to force the closure of a large portion of Chinese metal production capacity during the winter months, in order to reduce the level of air pollution in some of the larger Chinese cities.

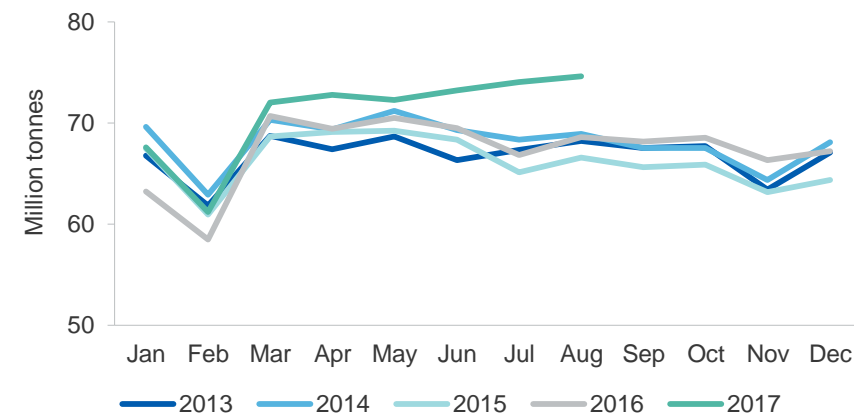
Outside the winter period, Chinese production of steel and aluminium has surged, as mills/smelters seek to make up for lost production in the winter. While the 'winter curtailment' policy is maintained, maintenance of mills and smelters will likely be delayed until the winter months, allowing for production to run at full strength outside of winter. Strong import demand from China in the February–September period of each year may give market participants an overinflated view of the strength of their respective markets.

Figure 1.3: Resource and energy export prices



Notes: The price index is a Fisher Price Index based on Australia's export volumes and values. US dollar commodity prices are converted at the market exchange rate
Source: ABS (2017) *International Trade in Goods and Services*, 5368.0; Department of Industry, Innovation and Science (2017)

Figure 1.4: China's monthly crude steel production



Source: Bloomberg (2017) *World Steel Association*, Bloomberg (2017) *National Bureau of Statistics of China*

With small, less efficient mills/smelters being squeezed out of the industry in China — in order to raise the efficiency of energy usage in Chinese industry — the remaining large/efficient producers face reduced competition in the short/medium term. The resultant increased margins for those surviving producers has tended, and will tend, to encourage increased production, eventually restoring Chinese production to pre-rationalisation levels. In the long run, Chinese production of steel and aluminium will tend to shift away from heavily populated cities where pollution is a major problem. If coastal production moves inland, this could pose problems for seaborne exporters supplying China; the cost of transporting coal and ore inland would diminish their competitiveness.

Australian bulk commodity exporters set to receive lower prices

Australia's resources and energy export prices are forecast to decline by 4.3 per cent in 2017–18 and by a further 11.1 per cent in 2018–19. This primarily reflects forecast declines in US dollar-denominated bulk commodity prices — as China's steel sector loses some of its recent buoyancy at the same time that the supply of bulk commodities picks up.

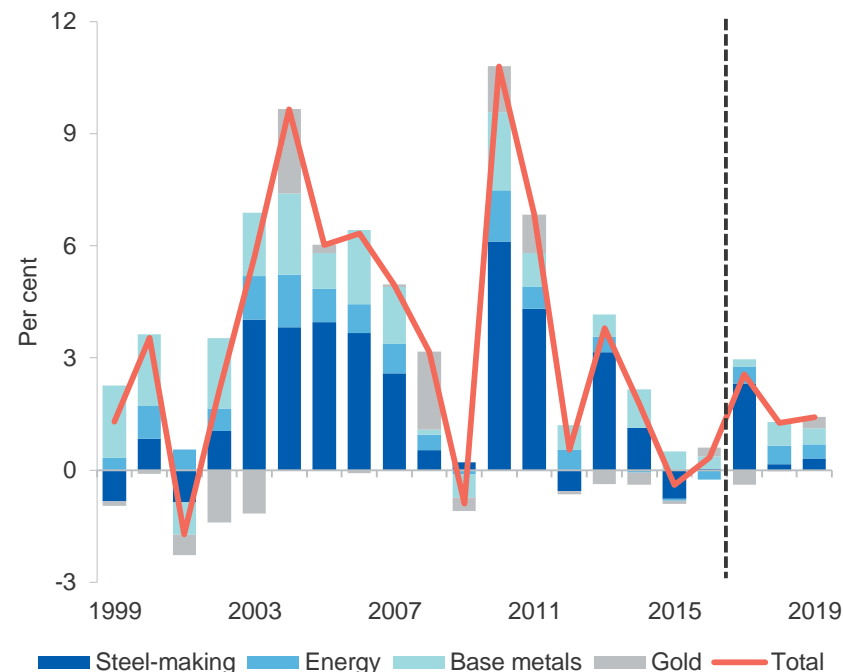
Demand for Australia's resource and energy commodities is forecast to rise modestly in the next two years

After what appears likely to be a relatively strong year in 2017 (in comparison to 2015 and 2016), global demand for the types of resource and energy commodities that Australia produces is forecast to grow more moderately in 2018 and 2019. In particular, growth in consumption of steel-making commodities (iron ore and metallurgical coal) — which together currently represent almost half of Australia's resources and energy exports — is forecast to show slower growth after a strong 2017.

Stronger Chinese growth in base metal demand in 2018 — particularly for copper — is expected to drive improved world base metal demand, with decent contributions from other major consuming countries/regions.

Global demand for energy commodities (excluding metallurgical coal) is also forecast to pick up modestly in 2018. Firm world economic growth and a modest recovery in Chinese energy consumption will contribute to the rise. For Australia, the most important source of growth in energy commodity demand will be from LNG, which is forecast to grow at an average annual rate of 9.3 per cent between 2016 and 2019.

Figure 1.5: Annual global consumption growth of resource and energy commodities



Notes: Steel-making include iron ore and metallurgical coal. Energy excludes metallurgical coal. Consumption volumes for each commodity are weighted by their share in Australia's resources and energy export values for that year.

Source: Bloomberg (2017) World Steel Association; IEA (2017) Coal Information 2016; Nexant World Gas Model (2017); International Energy Agency Monthly Oil Data Service (2017); World Nuclear Association (2017); Thompson Reuters (2017); World Bureau of Metal Statistics (2017); International Nickel Study Group (2017); International Lead Zinc Study Group (2017); Department of Industry, Innovation and Science (2017)

Australia overview

Australia's resource and energy export values have grown rapidly so far in 2017, driven by a surge in prices attained

Australia's resources and energy export values grew by more than 25 per cent year-on-year in the September quarter 2017. The major driver of the rise related to developments in China — on both the supply and demand side — through 2016–17, which lifted prices noticeably.

China acted to restrict domestic coal output from the June quarter of 2016, to reduce loss making in the domestic coal industry. Beijing's efforts were arguably too successful, and created shortages of coal — particularly the metallurgical variety — for the next several quarters. Chinese iron ore production was also weak in 2016, just as Chinese steel input demand staged a significant recovery in the latter half of 2016 and then into 2017.

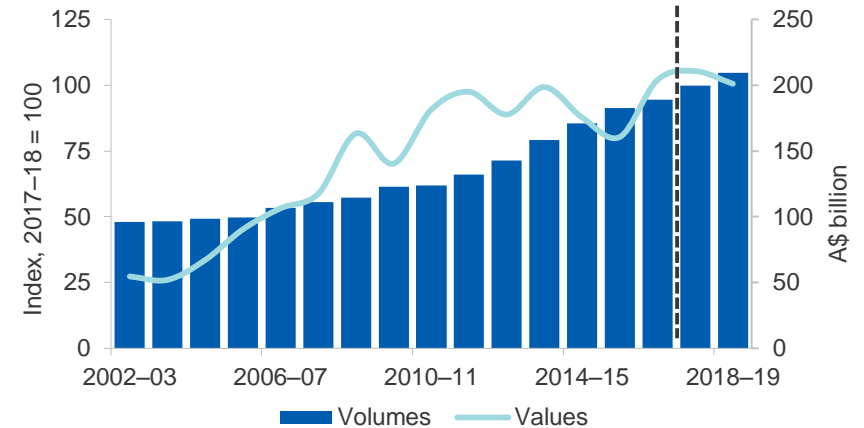
Australia was a major beneficiary of the ongoing shortages created in China by government-enforced cutbacks to domestic production, on both the volume and price sides. However, weather-related disruptions constrained growth in the volume of Australia's bulk exports in 2016–17, and producers are only just catching up now. Given Australia's large presence in seaborne export markets, these weather disruptions contributed significantly to higher prices, offsetting much of the impact of the volume loss.

Prices for iron ore and metallurgical and thermal coal are forecast to decline in the next two years, while LNG prices — which are linked to oil prices by formula under contractual arrangement — are forecast to edge up. A rise in Australian LNG export volumes will partly offset the impact of weaker bulk commodity revenues.

The fall in prices will be more than offset by the impact of rising volumes during 2017–18, but will overwhelm the volume effect in 2018–19. Recent trends in exploration and capital expenditure in the Australian mining sector do not point to an extension of the resource production boom, currently forecast to peak in late in 2019.

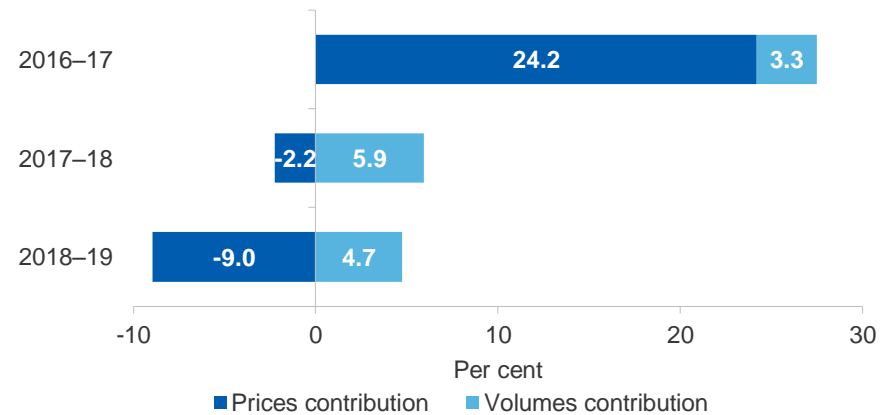
Any untoward Australian dollar strength could exacerbate the impact of the expected decline in US dollar-denominated resource and energy prices over the forecast period.

Figure 1.6: Australia's resources and energy export values and volumes



Source: ABS (2017) *International Trade in Goods and Services*, 5368.0; Department of Industry, Innovation and Science (2017)

Figure 1.7: Annual growth in Australia's resources and energy export values, contributions from prices and volumes



Source: ABS (2017) *International Trade in Goods and Services*, 5368.0; Department of Industry, Innovation and Science (2017)

The mining industry continued to support overall Australian economic growth in the June quarter 2017

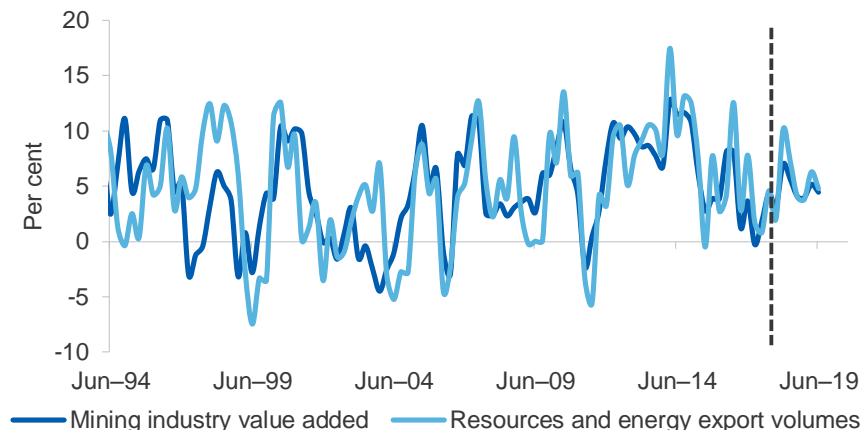
Australia's real Gross Domestic Product (GDP) grew by 0.8 per cent in the June quarter 2017, with mining industry value-added growing by 0.6 per cent. The mining industry directly accounted for 5 per cent of the growth in Australia's GDP in the quarter. Growth in mining industry value-added was driven entirely by oil and gas extraction, which grew by 8 per cent. Coal mining industry value-added fell by 5 per cent in the quarter, while iron ore mining value-add fell by 1 per cent, and value-add for all other mining fell by 5 per cent.

Oil and gas extraction has been the largest contributor to growth in mining industry value-added in the last two years, propelled by rapid growth in export volumes, and despite declining capital expenditure (from a high base, see Figure 1.12). Industry value-added for Australia's largest resource commodity exports — iron ore and coal — has been dampened by falling capital expenditure and slowing export volumes growth.

However, after years of declines, it now appears likely that the fall in mining capital expenditure may be coming to an end. The pace of decline in capex has eased markedly in recent quarters, and investment is starting to pick up for several commodities, including zinc, lithium and gold. This flattening out reflects the stabilisation of commodity prices, and some feed-through from recent surges in prices for some metal commodities.

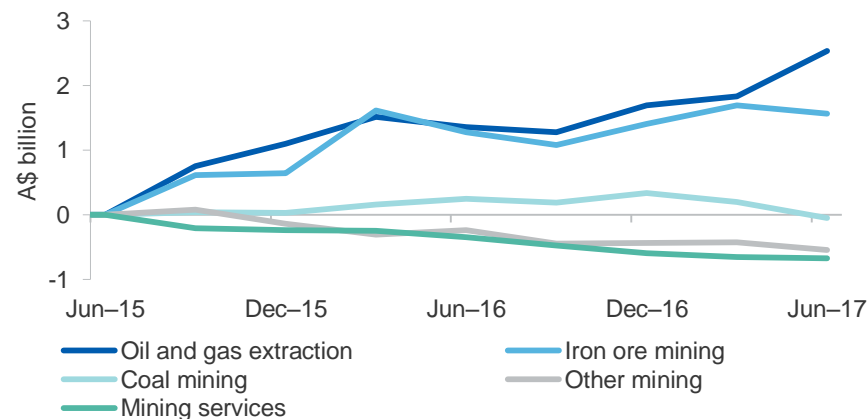
Resources and energy exports have a significant impact on mining industry value-added. Over the next two years, accelerated growth in resources and energy export volumes (primarily from LNG) is expected to underpin more rapid growth in mining industry value-added. However, mining's contribution to growth in the Australian economy is projected to slow considerably after 2018–19, as the last of the LNG plants currently under construction come online, and as the LNG industry approaches full capacity.

Figure 1.8: Mining industry value-added and resources and energy export volumes, year-on-year percentage growth



Notes: Mining industry value-added is in seasonally adjusted chain volume measures
 Source: ABS (2017) National Accounts, 5204.0; ABS (2017) International Trade in Goods and Services, 5368.0; Department of Industry, Innovation and Science (2017)

Figure 1.9: Cumulative growth in mining industry value-added since June quarter 2015



Notes: Chart data is in seasonally adjusted chain volume measures
 Source: ABS (2017) National Accounts, 5204.0; ABS (2017) International Trade in Goods and Services, 5368.0

Mining industry capital spending remains on a trend of long-term decline

Real investment in Australia's mining industry edged down by 2.3 per cent in the June quarter 2017, as a result of a drop in investment in buildings and structures. Plant and machinery investment rose marginally, but remains a relatively small share (15 per cent) of total investment.

As can be seen in Figure 1.12, investment in oil and gas peaked in December quarter 2013 — considerably higher, and over a year later, than the investment peaks for metal ore and coal mining. Equally apparent is the dramatic decline in oil and gas investment since its peak. Weighing on investment in the oil and gas sector in the coming two years will be the \$US54 Gorgon LNG project, which was completed in March 2017. While large LNG projects remain — most significantly the \$US37 billion Ichthys and the \$US34 billion Wheatstone projects — the list of major projects yet to be completed is forecast to rapidly diminish over the next two years.

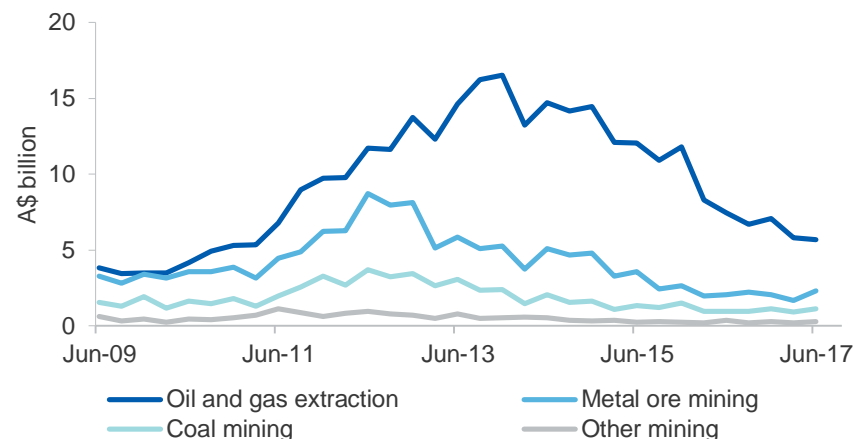
Exploration expenditure is growing, driven by gold

Exploration expenditure grew by 7.5 per cent (seasonally adjusted) in the June quarter 2017, to be 22.9 per cent higher year-on-year. Of note, minerals exploration expenditure grew for the fourth consecutive quarter, and was 15 per cent higher year-on-year.

The increase in minerals exploration in the past year has been largely driven by nickel, cobalt, and gold, all of which have been subject to recent favourable movements in commodity prices. Zinc, in particular, looks to hold strong prospects for producers over coming years, while the outlook for gold is solid and stable.

Exploration for coal fell by 14 per cent over the year. This likely reflects significant uncertainties around future movements in coal prices in light of some unfavourable price movements over the 2017 year-to-date.

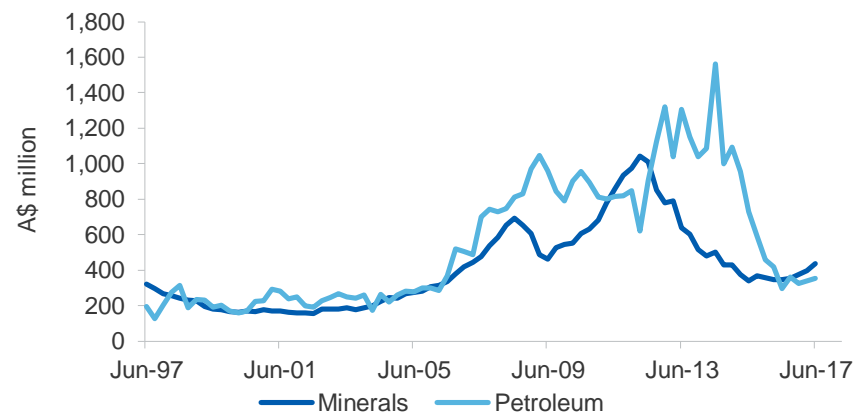
Figure 1.10: Mining industry capital expenditure, fiscal year



Notes: Chart data is in nominal terms

Source: ABS (2017) Private New Capital Expenditure and Expected Expenditure, 5625.0

Figure 1.11: Australia's exploration expenditure, quarterly



Notes: Other mining includes non-metallic mineral mining and quarrying and exploration and other mining support services; chart data is in nominal terms

Source: ABS (2016) Private New Capital Expenditure and Expected Expenditure, 5625.0

Mining employment edged down in the September quarter 2017, as a result of lower exploration and mine construction

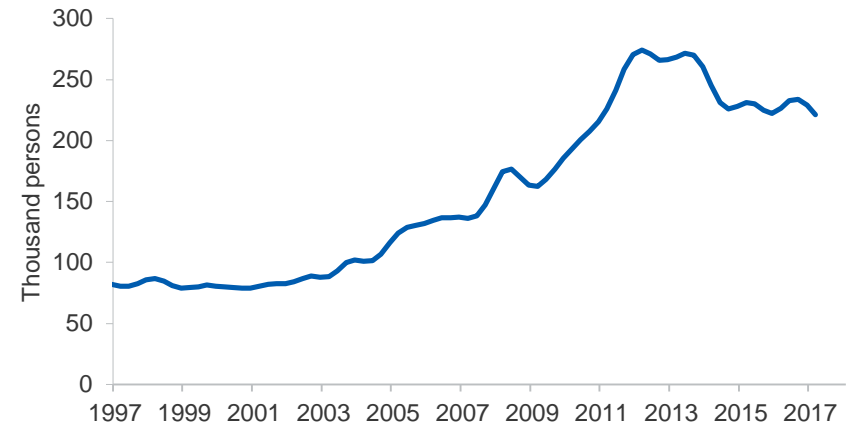
The mining sector employed 221,100 persons in the September quarter 2017, down by 3.6 per cent quarter-on-quarter and 2.4 per cent year-on-year. Mining industry employment managed slow growth in late 2016 and early 2017, but appears to have lost some momentum over the last six months.

Two sub-industries stand out in the employment statistics: employment rose by 4,000 persons in the oil and gas extraction sector during the quarter.

Offsetting this, employment in exploration and support services to mining fell by more than 15,000 persons in the September quarter. The mining industry has reduced exploration activity in recent years, as prices for most commodities have declined, and as global supply has ramped up. Construction jobs have also been reduced in the sector in recent years, as mine construction concludes across a range of sites.

Some smaller commodities, such as zinc, are experiencing renewed price strength, which may support increased exploration and additional mine construction in the future. However, with larger commodities generally progressing further into the production phase of the commodity boom, it is likely that growth in overall mining employment will remain constrained for the foreseeable future.

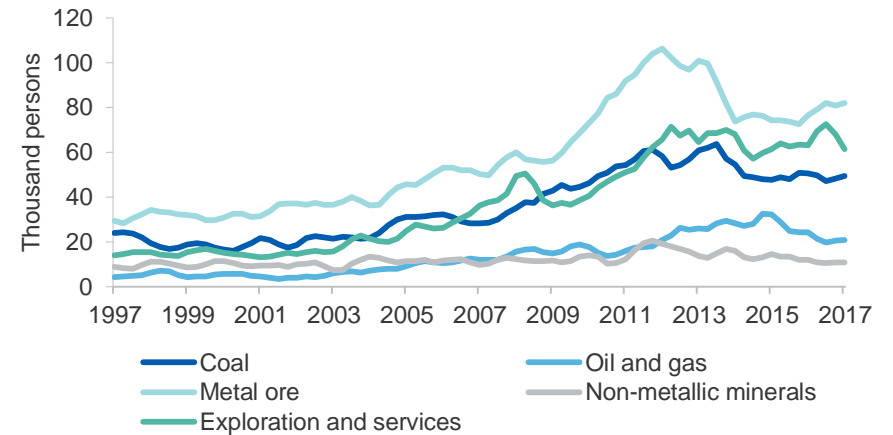
Figure 1.12: Australia's mining industry employment



Notes: Trend data

Source: ABS (2017) Labour Force Australia, 6291.0.55.003

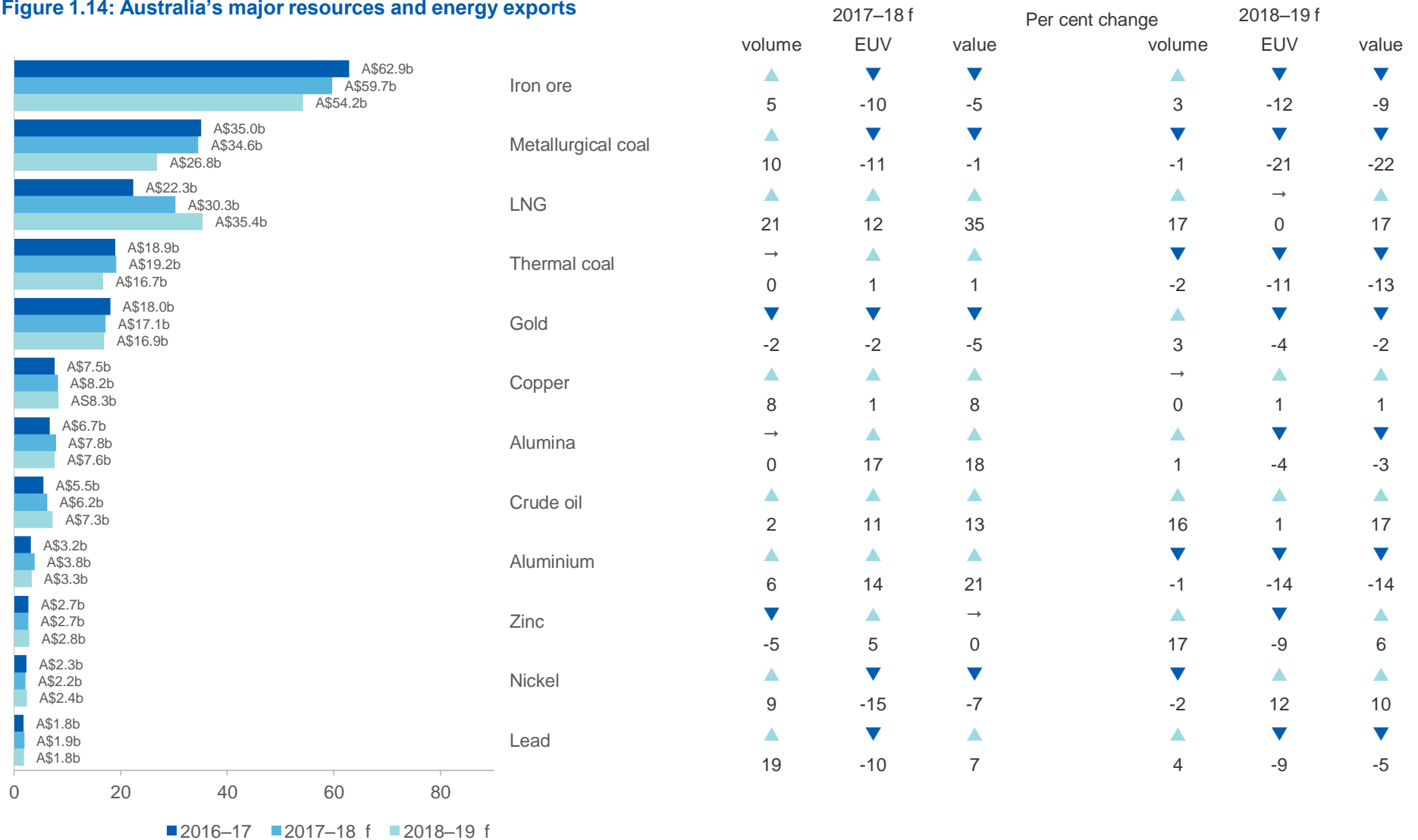
Figure 1.13: Australia's mining employment, by sub-industry



Notes: Data is a three quarter centred moving average of original data; non-metallic minerals includes quarrying; services is 'other mining support services'

Source: ABS (2017) Labour Force Australia, 6291.0.55.003

Figure 1.14: Australia's major resources and energy exports



Source: ABS (2017) International Trade in Goods and Services, 5368.0; Department of Industry, Innovation and Science (2017)

Notes: f Forecast; one year growth; EUV is export unit value

Table 1.1: Outlook for Australia's resources and energy exports

	Unit	2015–16	2016–17	2017–18 f	2018–19 f	Annual percentage change		
						2016–17	2017–18 f	2018–19 f
Resources and energy	A\$m	160,741	204,148	210,832	201,167	27.0	3.3	-4.6
– real b	A\$m	167,043	208,588	210,832	196,476	24.9	1.1	-6.8
Energy	A\$m	59,813	85,407	94,035	90,366	42.8	10.1	-3.9
– real b	A\$m	62,158	87,264	94,035	88,259	40.4	7.8	-6.1
Resources	A\$m	100,928	118,741	116,797	110,801	17.6	-1.6	-5.1
– real b	A\$m	104,885	121,324	116,797	108,217	15.7	-3.7	-7.3

Notes: **b** In 2017–18 Australian dollars; **s** Estimate; **f** Forecast

Source: ABS (2017) *International Trade in Goods and Services*, 5368.0; Department of Industry, Innovation and Science (2017)

Table 1.2: Australia's resources and energy commodity exports, by selected commodities

	Unit	Volume			CAGR	Unit	Value		
		2016–17	2018–19 f				2016–17	2018–19 f	CAGR
Alumina	kt	18,230	18,413	0.5	A\$m	6,655	7,595	6.8	
Aluminium	kt	1,328	1,397	2.6	A\$m	3,158	3,276	1.8	
Copper	kt	922	1,006	4.5	A\$m	7,544	8,288	4.8	
Gold	t	334	335	0.2	A\$m	18,013	16,879	-3.2	
Iron ore	Mt	819	887	4.1	A\$m	62,861	54,185	-7.2	
Nickel	kt	172	183	3.2	A\$m	2,334	2,389	1.2	
Zinc	kt	1,009	1,118	5.3	A\$m	2,667	2,826	2.9	
LNG	Mt	52	74	18.9	A\$m	22,332	35,397	25.9	
Metallurgical coal	Mt	177	193	4.4	A\$m	35,044	26,831	-12.5	
Thermal coal	Mt	202	198	-1.0	A\$m	18,937	16,691	-6.1	
Oil	kbd	220	260	8.5	A\$m	5,489	7,257	15.0	
Uranium	t	7,724	8,450	4.6	A\$m	894	1,004	5.9	

Notes: **s** Estimate; **f** Forecast; CAGR is compound annual growth rate in percentage terms from 2016–17 to 2018–19

Source: ABS (2017) *International Trade in Goods and Services*, 5368.0; Department of Industry, Innovation and Science (2017)