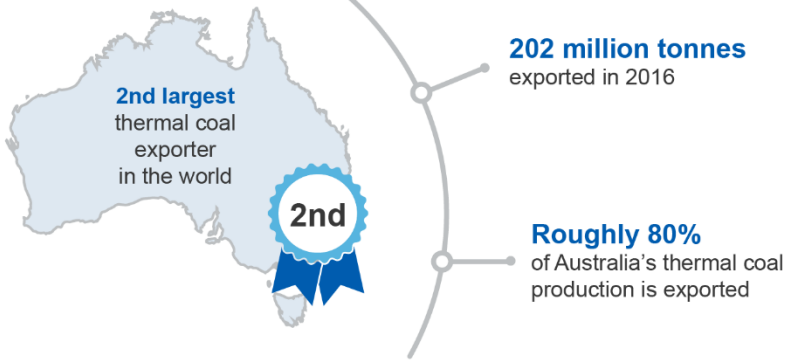
Thermal coal

Resources and Energy Quarterly June 2017

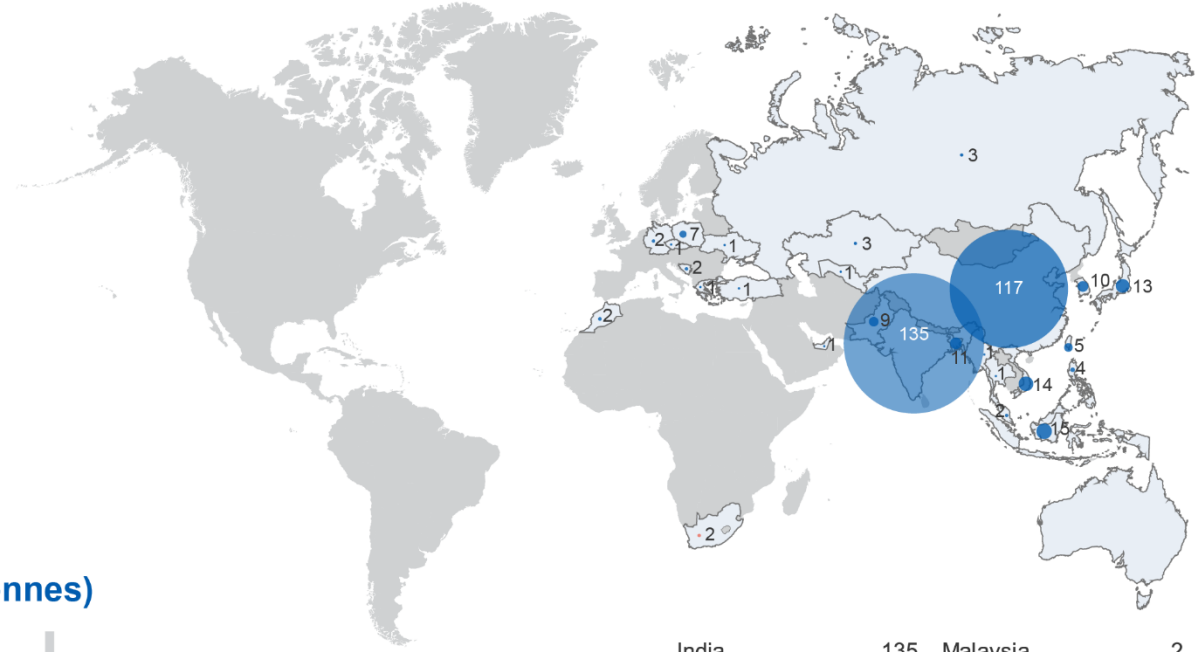


4.5% of global thermal coal production is in Australia

202 million tonnes
exported in 2016

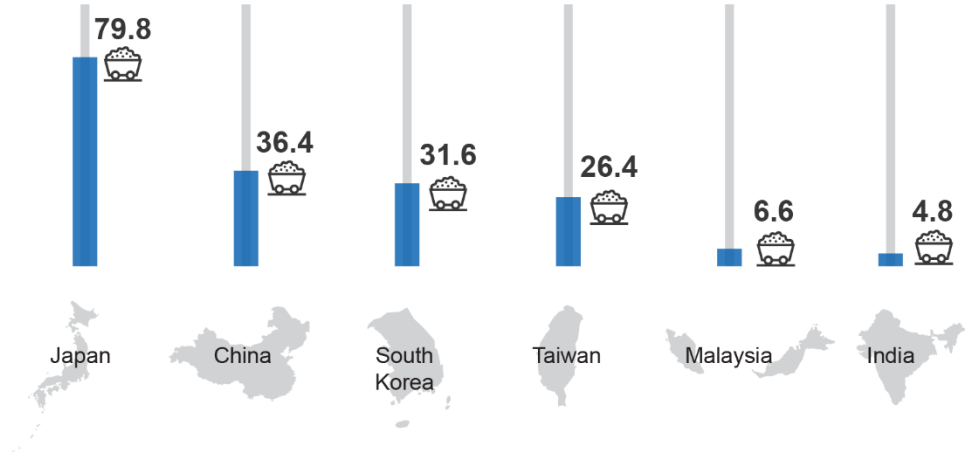
Roughly 80%
of Australia's thermal coal production is exported

Number of advanced technology coal fired power stations planned or under construction



India	135	Malaysia	2
China	117	Morocco	2
Indonesia	15	Myanmar	2
Vietnam	14	Germany	2
Japan	13	Bosnia-Herzegovina	2
Bangladesh	11	Greece	1
Korea	10	Thailand	1
Pakistan	9	Czech Republic	1
Poland	7	UAE	1
Taiwan	5	Turkey	1
Phillippines	4	Ukraine	1
Kazakhstan	3	Uzbekistan	1
Russia	3	**Total**	**365**
South Africa	2	As of May 2017	

Key importers of Australian thermal coal (million tonnes)



Market Summary

Thermal coal exports are estimated to have added a substantial $19.2 billion to export revenue in 2016–17, and are forecast to be similar in 2017–18, at $19.1 billion. After a price spike from late 2016 to early 2017, thermal coal prices are forecast to gradually decline over the outlook period. The decline in prices will eventually affect Australia's thermal coal export earnings, especially in 2018–19. Export volumes for 2017–18 and 2018–19 have been revised down from the March 2017 *Resources and Energy Quarterly,* due to forecast lower thermal coal import demand from South Korea,following a change in energy policy by the new government.

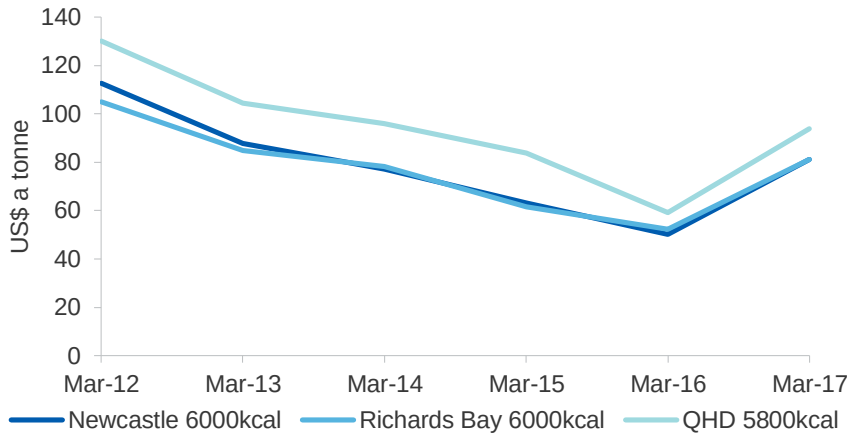
Prices

Early 2017 prices, lower than late 2016 but still much higher than before the price surge

After reaching near five-year highs in late 2016, benchmark thermal coal prices started to decline over the March quarter — with Australia's benchmark Newcastle free on board (FOB) spot price averaging US$81 a tonne. Australia's Newcastle FOB June quarter spot price is estimated to have dropped by 5.0 per cent from the March quarter, to average around US$77 a tonne. While prices have declined, the fall has not been as pronounced as expected, due to continued import demand from China — albeit at a lower growth rate than seen in late 2016. China's imports of thermal coal grew by 17 per cent year-on-year in the March quarter. The growth in imports over the first few months of the year can be attributed to imported thermal coal being more competitively priced than domestic coal.

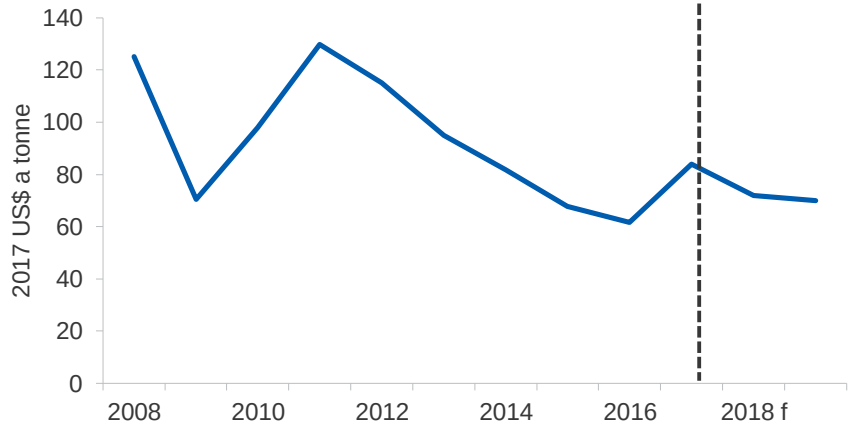
The JFY 2017 (April 2017 to March 2018) benchmark price was settled in April 2017 at US$84 a tonne, a 33 per cent increase from JFY 2016. The increase reflects the price recovery relative to the first half of the previous year, driven by the impact of China's supply side policies. Newcastle FOB spot prices are forecast to average US$77 a tonne over 2017, an increase of 15 per cent from 2016. The year-on-year increase is largely reflective of the lower prices seen in the first half of 2016, which dragged down the annual 2016 average price.

Figure 6.1: Spot prices remained strong in early 2017



Source: IHS (2017)

Figure 6.2: Japanese Fiscal Year contract prices



Source: Department of Industry, Innovation and Science (2017)

The JFY contract price is projected to decline over the outlook period, by 16 per cent to US$70 a tonne in JFY 2018, and by 5.0 per cent to US$67 a tonne in 2019. The falls in price are expected to be caused by declining import demand from China — as it moves to a more diversified energy mix — and by constrained import growth in India. Global benchmark spot prices are expected to follow the same declining trend as contract prices. In 2018, Australia's Newcastle FOB spot price is forecast to decline by 10 per cent to US$69 a tonne, and decline by 4.3 per cent to US$66 a tonne in 2019.

World trade

World thermal coal trade in 2017 is forecast to decline by 2.4 per cent to 1 billion tonnes. Trade is forecast to fall by 2.1 per cent to 990 million tonnes in 2018, and then to decline by a further 0.4 per cent in 2019 to 986 million tonnes. Falls in trade volumes are expected to be driven by lower import demand from China, India and South Korea; import demand in India is only expected to pick up outside the outlook period (post 2019). Total demand from large consumers such as China and India is expected to be mostly met by domestic supply over the outlook period.

A range of nations — including China — are investing in ways to achieve higher energy efficiency by using advanced technology coal-fired power plants. Some countries are also conducting research and development in areas such as carbon capture and storage, to reduce carbon emissions.

World imports

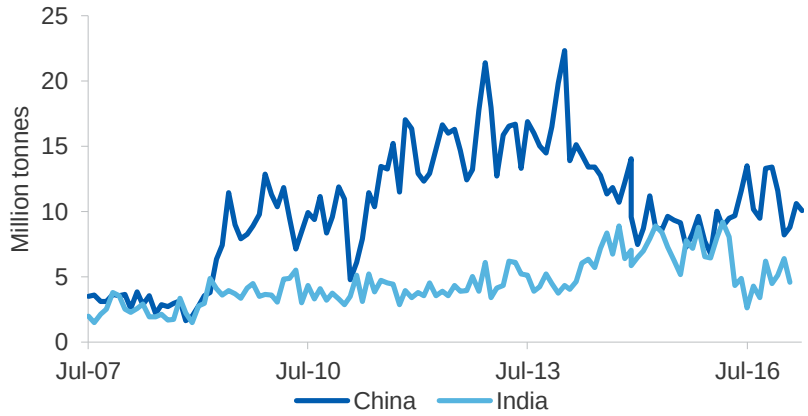
Increased import demand from China sustained in early 2017, but forecast to decline over the outlook period

China is currently the largest consumer and importer of thermal coal in the world, and was the second largest importer of Australian thermal coal in 2016. China's thermal coal imports increased by 15 per cent, year-on-year in the first five months of the year. The increase in imports was driven by relatively high domestic prices. High domestic prices were due to continued lower domestic supply availability, as not all thermal coal mines immediately reached full production capacity after the Chinese Government eased its restrictions on production.

Over the course of 2017, Chinese domestic thermal coal prices are forecast to stabilise in a price range of US$74–84 a tonne. This price range is expected to enable domestic producers — as well as coal-fired power plants — to operate profitably.

Despite the spike in imports early in the year, China's 2017 thermal coal imports are forecast to decline by 4.2 per cent year-on-year to 172 million tonnes, as domestic prices ease back. This declining trend is expected to continue into 2018 and 2019. In 2018, thermal coal imports are forecast to decline by 8.0 per cent to 158 million tonnes, and to decline by 0.8 per cent to 157 million tonnes in 2019. The declines are expected to be driven by China's focus on reducing air pollution, through the adoption of alternatives to coal-fired power generation.

Figure 6.3: Monthly import volumes of China and India



Source: IHS (2017)

India lowers output targets but imports forecast to continue to decline

India is the second largest consumer of thermal coal in the world, and the second largest importer. It is the sixth largest consumer of Australian thermal coal. India's thermal coal imports in the first quarter of the year fell by 22 per cent year-on-year. Imports are forecast to continue to decline throughout 2017, despite a downgrade in the government-set domestic production target in 2017–18.

Coal India — the State-owned company that produces the majority of India's coal — has had its production target downgraded by 10 per cent for 2017–18, to 600 million tonnes. The downgrade has been attributed to an alignment of production with expected demand — indicating slower-than-expected growth in national coal-fired power generation.

In 2017, India's thermal coal imports are forecast to decline by 3 per cent to 161 million tonnes. Further declines are expected in 2018 and 2019 — partly attributable to the Indian Government's expected continued stance on reducing the country's reliance on imported thermal coal, as well as to slow progress in power sector reform.

The Indian Government recently announced that while India was aiming to be completely self-sufficient in thermal coal, it acknowledges that there will likely always be some need for imported thermal coal: around 38 per cent of coal-fired generation capacity is built to imported thermal coal specifications (higher-energy content coal). Issues within the power sector are affecting distribution utilities and causing bottlenecks at coal-fired power plants. In 2018, India's thermal coal imports are forecast to decline by 1.5 per cent to 158 million tonnes, and then to decline by 1.0 per cent to 157 million tonnes in 2019.

Japan's thermal coal imports, forecast to remain steady

Japan is the third largest importer of thermal coal in the world and the largest consumer of Australian thermal coal. Japan's thermal coal imports increased by 1.5 per cent year-on-year in the four months of 2017. Thermal coal imports in 2017 are forecast to increase by 1.3 per cent to 140 million tonnes, supported by increasing utilisation of coal-fired power plants and a 0.5 per cent increase in installed coal-fired power generation capacity. Imports are forecast to increase slightly in 2018 and 2019, to 141 million tonnes and 142 million tonnes, respectively. Stable import demand in 2018 and 2019 is expected to be supported by steady coal-fired power generation.

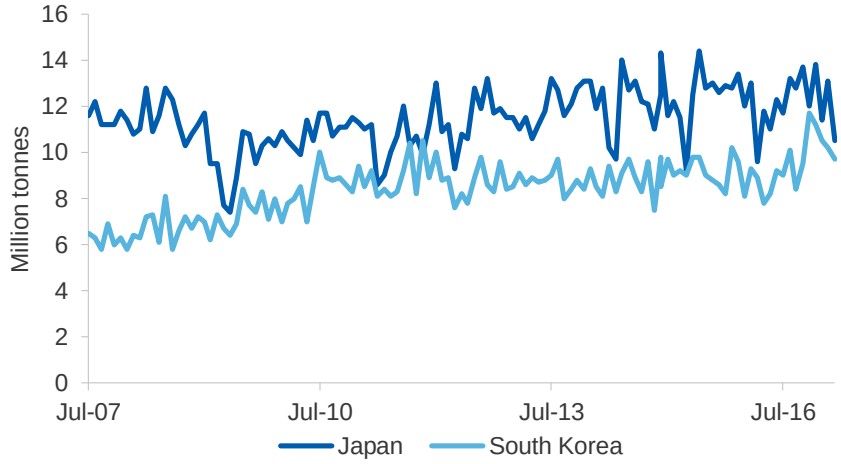
South Korea's thermal coal imports forecast to decline due to new government policy

South Korea is the third largest importer of thermal coal and third largest consumer of Australia's thermal coal. A downward revision from the March 2017 *Resources and Energy Quarterly* has been made to South Korea's coal import forecast over 2017 to 2019. The revision is due to action taken by President Moon Jae-in since his election in May 2017.

President Moon Jae-in has made clear his plans to curb coal-fired power generation to combat air pollution. He has done this by announcing the following: a temporary and eventual permanent shutdown of ten aging coal-fired power plants with a combined capacity of 3.35 GW by June 2017; an increase in the government's consumption tax on coal; and an election pledge to stop construction of any new coal-fired power plants, including 5GW of coal capacity already being built. How these policy announcements and commitments play out — in terms of the magnitude of imports to be affected — remains to be seen.

In the four months to April, South Korea's thermal coal imports grew by 16 per cent year-on-year. Imports for the remainder of the year are forecast to be subdued in light of the President's plans, with imports declining by 1.8 per cent to 96 million tonnes in 2017. Given South Korea's industrialised economy and anticipated increasing energy needs, it is expected that coal will continue to contribute to the base load energy supply in some way. That being said, the outlook for South Korea's imports in 2018 and 2019 is expected to remain subdued, with imports forecast to decline by 4.2 per cent to 92 million tonnes and by a further 1.1 per cent to 91 million tonnes, respectively.

Figure 6.4: Monthly imports of Japan and South Korea



Source: IHS (2017); Department of Industry, Innovation and Science (2017)

World exports

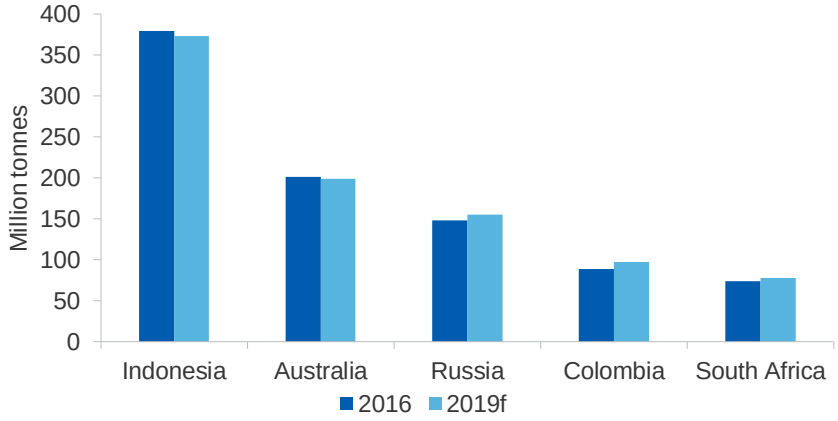
Indonesia's exports lift on the back of higher thermal coal prices

Indonesia's thermal coal exports increased by 11 per cent year-on-year in the first quarter of 2017. Exports were buoyed by sustained increased thermal coal import demand in China, and by the ramp up in Indonesian production towards the end of 2016 — incentivised by the higher prices.

Over 2017, Indonesia's thermal coal exports are forecast to be steady at 380 million tonnes — as thermal coal prices steadily decline, but trade at more profitable levels compared to price lows seen in early 2016. There is, however, potential for some small-sized producers to ramp up production, after incurring production losses due to a prolonged wet season earlier in the year. A ramp-up in production could see average 4700kCal prices drop, due to oversupply. Industry officials in Indonesia are cautioning producers to show restraint when considering boosting production.

Indonesia's thermal coal exports are forecast to decline by 1.3 per cent to 375 million tonnes in 2018, and fall to 373 million tonnes in 2019. The decline in exports is likely to be supported by falling thermal coal prices (more pronounced for lower calorific value coal, the mainstay of Indonesian production) — discouraging high cost producers.

Figure 6.5: Major thermal coal exporters



Source: IEA (2017); Department of Industry, Innovation and Science

Over the outlook period, there is a possibility that the Indonesian Government's mandated domestic coal obligation policy may play a part in influencing the amount of production available for export. The policy enforces a requirement that domestic coal mines fulfil most of the country's coal-fired power generation needs before exports can be initiated. At this stage, the time it will take to fully implement the policy is unknown, with progress to date slower than anticipated.

Early strength in Colombian thermal coal exports

Colombian thermal coal exports increased by 5.7 per cent year-on-year in the first five months of 2017, on the back of higher domestic production. However, in May, production at the country's largest thermal coal mines were hard hit by heavy rainstorms, which also affected rail and port operations. Rainstorms persisted over most of May, but by early June, operations were believed to have returned to normal.

In 2017, Colombia's thermal coal exports are forecast to increase by 3.9 per cent from 2016, to 92 million tonnes. In 2018, Colombia's thermal coal exports are forecast to increase by 2.2 per cent to 94 million tonnes, and to increase by a further 2.7 per cent to 97 million tonnes in 2019. Growth in exports is expected to be supported by stronger thermal coal prices (compared to lows seen in early 2016).

This will encourage not only low-cost producers — such as Glencore, Anglo American and BHP Billiton's Cerrejon mine, which average US$35.40 a tonne cost of production — but also mid-level cost producers such as Drummond and Itocho Corporation's La Loma and El Descano mines (average US$47 a tonne cost of production).

Australia's exploration, production and trade

Coal exploration up marginally, year-on-year

Australia's exploration expenditure increased by $500,000 year–on–year in March quarter 2017, to $23.9 million. However, exploration expenditure declined by 28 per cent from the previous quarter.

Australia's production projected to increase

In 2016–17, production is estimated to be similar to 2015–16, at 250 million tonnes. Stable production was supported by higher average thermal coal contract and spot prices.

In 2017–18, production is forecast to increase marginally, to 251 million tonnes, driven by relatively firm thermal coal prices, but constrained by forecast lower import demand from traditional consumers such as South Korea.

Ramp-ups in production are expected at some large mines, including at the Hunter Valley Operations, Narrabri and Moolarben. In 2018–19, production is forecast to be stable at 251 million tonnes. Output is expected to be supported by ramp-ups in production at Mangoola (up to 8.3 million tonnes a year capacity) and Ravensworth (up to 9.3 million tonnes a year capacity), but is likely to be constrained again by lower import demand from South Korea.

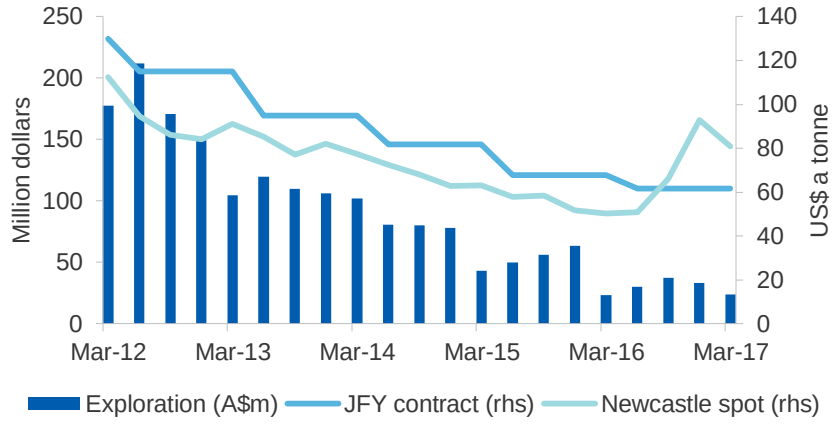
Australia's export earnings estimated to rise in 2016 –17 and 2017–18

Export volumes in 2016–17 are estimated to have risen by 0.5 per cent year-on-year to 202.4 million tonnes. The increase in export volumes was powered by strong import demand from China, notably in the first half of the financial year. Export earnings are estimated to have risen by 28 per cent year-on-year to $19.2 billion, driven by higher spot prices.

In 2017–18, export volumes are forecast to decline by 0.7 per cent to 201 million tonnes. Lower import demand from South Korea is the reason for the slight downward revision in exports from the March 2017 *Resources and Energy Quarterly*. In 2017–18, export values are forecast to stay similar to 2016–17 levels, as thermal coal contract prices and average annual spot prices increase from 2016–17 levels, but volumes decline. A large volume of Australia's thermal coal exports are sold on a contractual basis, therefore the higher negotiated price in JFY 2017 (36 per cent higher than JFY 2016) is likely to bode well for exporters in 2017–18. However, some of these gains are expected to be outweighed by the impact of lower export volumes and spot prices.

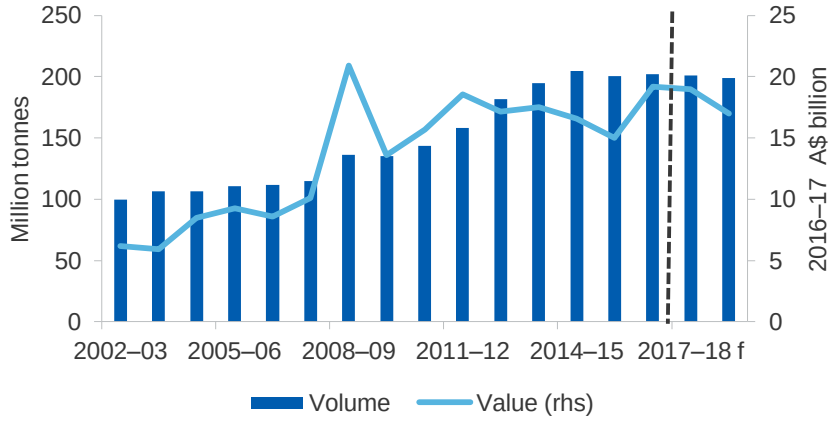
In 2018–19, export volumes are forecast to decline by 1.0 per cent to 199 million tonnes, as Chinese, Indian and South Korean thermal coal import demand remains relatively subdued. Export values for 2018–19 are also forecast to decline by 11 per cent to $17 billion, in line with lower volumes and lower spot and contract prices.

Figure 6.6: Australia's coal exploration expenditure



Source: Department of Industry, Innovation and Science (2017)

Figure 6.7: Australia's thermal coal export volumes and values



Source: Department of Industry, Innovation and Science (2017)

Table 6.1: Thermal coal outlook

World	Unit	2016	2017 f	2018 f	2019 f	Annual percentage change 2017 f	2018 f	2019 f
Contract prices b								
– nominal	US$/t	62	84	72	70	36.4	-14.3	-2.8
– real c	US$/t	63	84	70	67	33.4	-16.3	-5.0
Spot prices d								
– nominal	US$/t	65	77	70	69	17.4	-8.2	-2.1
– real e	US$/t	67	77	69	66	14.8	-10.3	-4.3
Coal trade	Mt	1,036	1,012	990	986	-2.4	-2.1	-0.4
Imports								
– Asia	Mt	727	718	717	729	-1.3	0.0	1.6
– China	Mt	180	172	158	157	-4.2	-8.0	-0.8
– Chinese Taipei	Mt	56	57	59	60	2.5	2.5	2.5
– India	Mt	166	161	158	157	-3.0	-1.5	-1.0
– Japan	Mt	138	140	141	142	1.3	1.0	0.5
– South Korea	Mt	98	96	92	91	-1.8	-4.2	-1.1
– Europe	Mt	213	198	184	172	-7.0	-7.0	-7.0
– European Union 27	Mt	167	156	145	135	-7.0	-7.0	-7.0
– other Europe	Mt	46	43	40	37	-7.0	-7.0	-7.0
Exports								
– Australia	Mt	202	199	200	201	-1.6	0.6	0.6
– Colombia	Mt	89	92	94	97	3.9	2.2	2.7
– Indonesia	Mt	379	380	375	373	0.2	-1.3	-0.5
– Russia	Mt	148	151	153	155	2.0	1.3	1.3
– South Africa	Mt	74	76	77	78	2.9	1.3	1.3
– United States	Mt	17	20	18	16	14.4	-10.0	-11.1
Australia	**Unit**	**2015–2016**	**2016–2017 s**	**2017–2018 f**	**2018–2019 f**	**2016–2017 f**	**2017–2018 f**	**2018–2019 f**
Production	Mt	250.8	250.0	251.3	251.4	-0.3	0.5	0.0
Export volume	Mt	201.3	202.4	201.0	199.0	0.5	-0.7	-1.0
– nominal value	A$m	14,751	19,150	19,514	17,760	29.8	1.9	-9.0
– real value h	A$m	15,009	19,150	19,103	17,011	27.6	-0.2	-10.9

Notes: ***b*** *Japanese Fiscal Year (JFY), starting April 1, fob Australia basis. Australia–Japan average contract price assessment for steaming coal with a calorific value of 6700 kcal/kg gross air dried;* ***c*** *In current JFY US dollars;* ***d*** *fob Newcastle 6000Kcal;* ***e*** *In 2017 calendar year US dollars;* ***s*** *Estimate;* ***f*** *Forecast*

Source: ABS (2017) International Trade, cat.no 5465.0; IHS Inc (2017); IEA (2017) Coal Information 2017; Coal Services Pty Ltd; Queensland Department of Natural Resources and Mines (2017); Department of Industry, Innovation and Science (2017); Company Reports