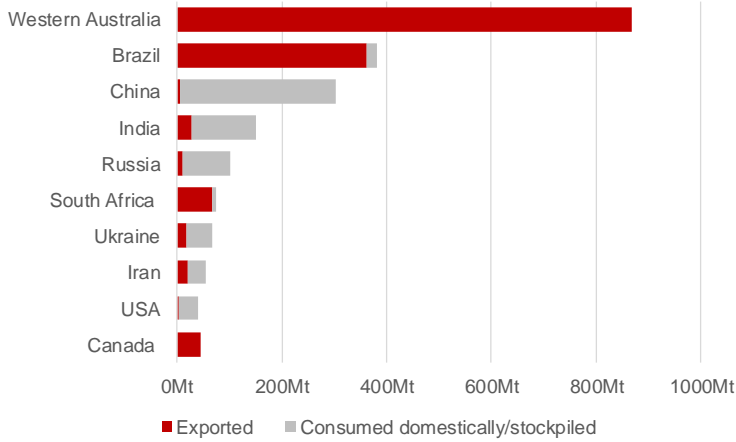




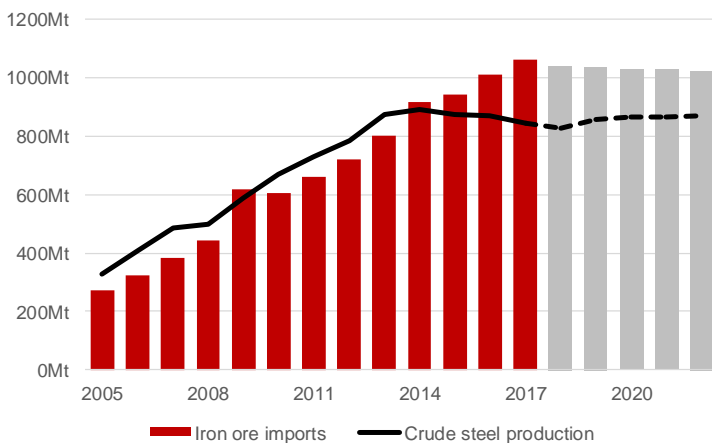
THE WORLD IRON ORE MARKET

Major global iron ore producers: 2017



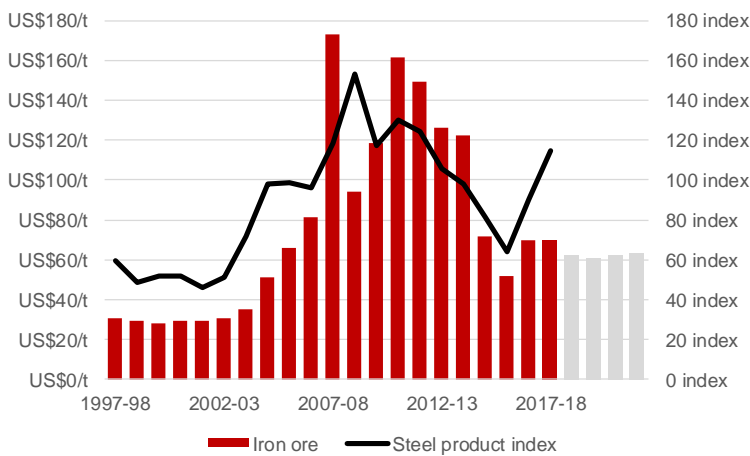
Source: CRU, Iron Ore Market Outlook Statistical Review.

China's iron ore demand



Source: CRU, Iron Ore Market Outlook Statistical Review.

Iron ore<sup>1</sup> and steel product<sup>2</sup> prices



<sup>1</sup> Annual average China spot price in nominal US dollars, cost and freight (CFR). <sup>2</sup> Annual average China steel product price index. Source: World Bank, Commodity Markets; CEIC, China Premium Database; and <sup>3</sup> WA Government 2018-19 Budget, May 2018.

- Western Australia is the largest iron ore producer and exporter in the world, accounting for 38% of global production and 56% of global seaborne exports in 2017.
- Brazil is the second largest iron ore producer and exporter in the world, accounting for 17% of global production and 23% of global seaborne exports in 2017.
- China (14%), India (7%) and Russia (5%) are major global iron ore producers, but retain most of their production for domestic steel production.
- China's iron ore production rose 1% to 302 million tonnes in 2017, following three successive years of decline since peaking at 506 million tonnes in 2013.

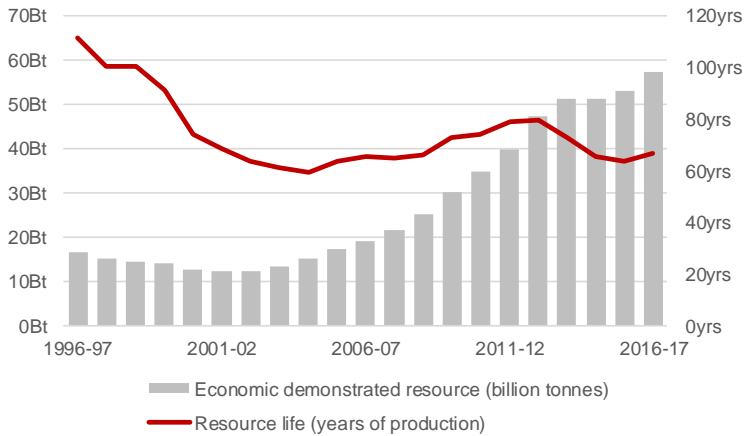
- China accounted for 72% of global iron ore seaborne imports and 50% of global crude steel production in 2017.
- China's iron ore imports rose 5% to 1,061 million tonnes in 2017.
- China's crude steel production fell 3% to 846 million tonnes in 2017. Around 1.4 tonnes of iron ore is used to make one tonne of crude steel.
- CRU forecasts China's iron ore imports to fall gradually over the next few years to 1,022 million tonnes in 2022.
- Japan and South Korea were the next largest global iron ore importers in 2017, although demand is relatively stable in these markets.

- The rapid growth in China's iron ore demand led a rise in the iron ore price from US\$28 a tonne in 1999-00 to US\$173 a tonne in 2007-08, and averaged US\$129 a tonne from 2008-09 to 2013-14.
- The subsequent supply response, mainly from Western Australia, and a slowdown in China's demand, saw the iron ore price fall 42% in 2014-15 and 28% in 2015-16.
- The iron ore price rose 35% to US\$70 a tonne in 2016-17 as China's demand for higher-grade ore rose, but fell 0.2% to US\$70 a tonne in 2017-18. Steel product prices in China rose 27% in 2017-18.
- The iron ore price is forecast<sup>3</sup> to be US\$62 a tonne in 2018-19 and US\$61 a tonne in 2019-20.
- In October 2018, the iron ore price rose 7% to US\$73 a tonne and steel product prices fell 0.4%.



WESTERN AUSTRALIA'S COMPETITIVENESS

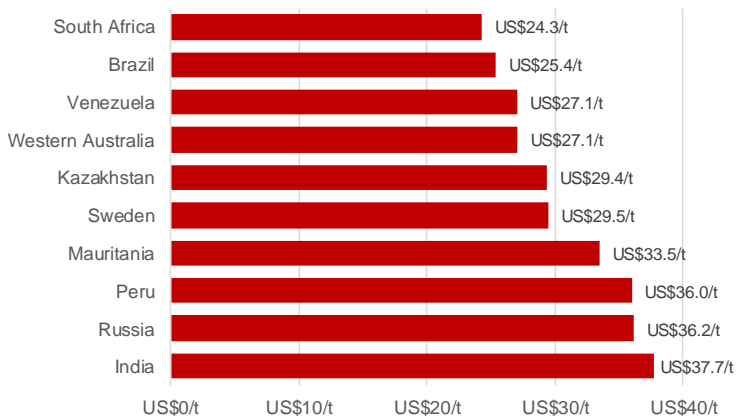
Estimated<sup>1</sup> iron ore resources



<sup>1</sup> Based on Western Australia's share of Australian iron ore production.  
<sup>2</sup> US Geological Survey  
Source: ABS 5204.0 Australian System of National Accounts.

- Western Australia has large iron ore reserves, accounting for 29% of the world's crude iron ore reserves in 2017.<sup>2</sup>
- Western Australia had an estimated 57 billion tonnes of economic demonstrated iron ore resource in 2016-17, which could sustain current production for 67 years.
- Western Australia's reserves had an average iron content of 48% in 2017, below the world average of 49% and Brazil's 52%.<sup>2</sup>
- Western Australia's iron ore production had an average iron content of 62% in 2017, below the world average of 63% and Brazil's 64%.<sup>2</sup>
- Western Australia's iron ore exploration expenditure fell 3% to \$274 million in 2017-18, compared with an annual average decline of 4% over the past ten years.

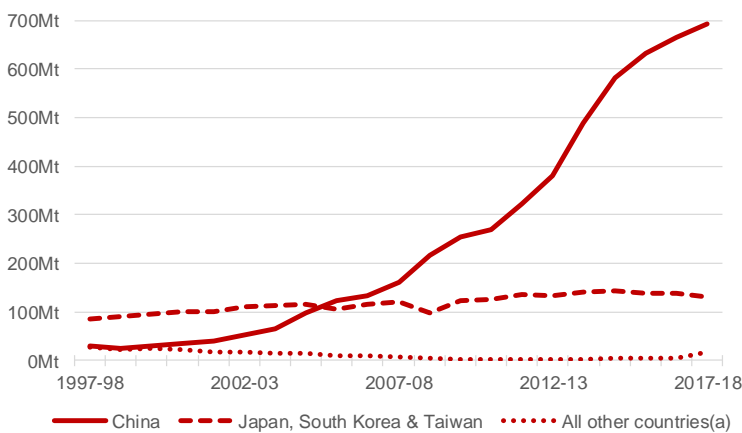
Total cash cost<sup>1</sup> of seaborne iron ore exports: 2017



<sup>1</sup> Price normalised total cash cost in US dollars, cost and freight (CFR), whereby production costs for different iron ore products are adjusted to a benchmark product (62% Fe fines) based on price differentials.  
Source: S&P Global Market Intelligence, Mine Economics Model.

- Western Australia's iron ore miners are among the world's lowest cost seaborne iron ore exporters.
- The average total cash cost<sup>1</sup> of Western Australia's iron ore exports was US\$27.1 a tonne in 2017, below the world average of US\$28.9 a tonne, although behind South Africa, Brazil and Venezuela.
- Western Australia's major iron ore ports are close to the largest iron ore markets in Asia, reducing shipping costs relative to some of its competitors.
- Western Australia's average iron ore spot freight rate to China and Japan rose 31% to US\$6.2 a tonne in 2016-17, well below Brazil's rate of US\$12.2 a tonne.

Major iron ore export markets



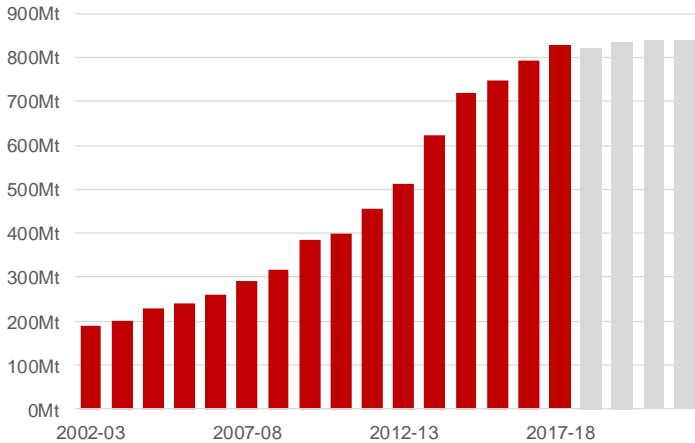
(a) Includes mainly India, Vietnam, Indonesia, Singapore and Hong Kong (SAR of China).  
Source: ABS 5368.0 International Trade in Goods and Services.

- Western Australia's iron ore industry has established long-term trade relationships with major Asian steel makers and trading companies.
- Almost 83% of Western Australia's iron ore exports went to China in 2017-18, with exports up 4% to 693 million tonnes.
- Western Australia's iron ore exports to Japan, South Korea and Taiwan fell by a combined 7 million tonnes in 2017-18, offset by an 11 million tonne rise to all other countries (mainly India and Vietnam).
- In 2017, Western Australia accounted for over half of the iron ore imported by China (64%), Japan (53%), South Korea (68%) and Taiwan (70%).



WESTERN AUSTRALIA'S SUPPLY

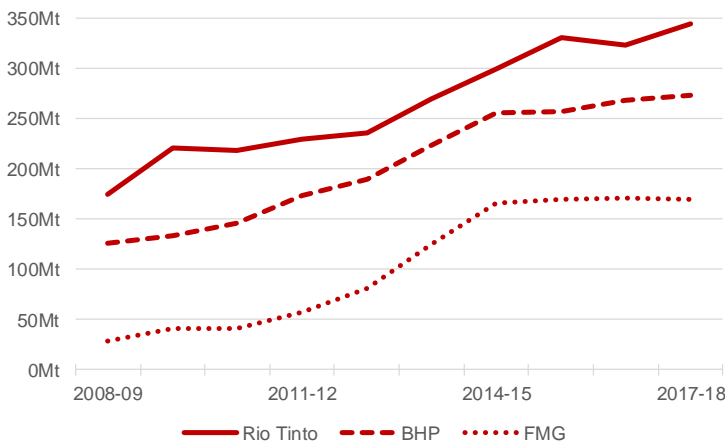
Iron ore sales volumes



Note – The forecast for iron ore sales in 2018-19 is likely to be revised upwards when the WA Government Mid-year Financial Projections Statement is released in December 2018 because actual growth in 2017-18 was greater than forecast in May 2018 and iron ore sales are expected to grow in each year to 2021-22.  
Source: WA Department of Mines, Industry Regulation and Safety, Resource Data Files; and <sup>1</sup> WA Government 2018-19 Budget, May 2018.

- After years of strong growth, the growth in Western Australia's iron ore sales is slowing as recently completed projects ramp-up to full production.
- In 2017-18, Western Australia's iron ore sales rose 4% to 826 million tonnes, below annual average growth of 11% over the past ten years. Iron ore sales were 291 million tonnes in 2007-08.
- Western Australia's annual iron ore sales are forecast<sup>1</sup> to rise to 839 million tonnes by 2021-22.
- Western Australia produced mainly iron ore fines (73%) in 2017, followed by lump (24%) and concentrate (2%).

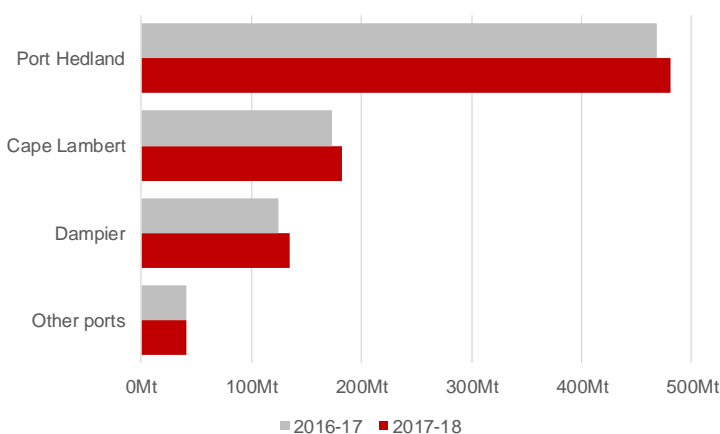
Major iron ore miners' sales<sup>123</sup>



<sup>1</sup> Western Australian operations. <sup>2</sup> Wet tonnes. <sup>3</sup> Inclusive of third party tonnes.  
Source: Company production reports.

- Western Australia's major iron ore miners Rio Tinto, BHP and Fortescue Metals Group (FMG) are the largest global iron ore producers behind Vale from Brazil.
- Rio Tinto (360Mtpa) and BHP (290Mtpa) are currently increasing mine production to utilise additional rail and port capacity developed over recent years, and need to develop new mines by 2021 to sustain production or reach production targets.
- Rio Tinto's iron ore sales<sup>1</sup> rose 7% to 345Mt in 2017-18 and its sales guidance for 2018 is 330-340Mt.
- BHP's iron ore sales<sup>1</sup> rose 2% to 273Mt in 2017-18 and its production guidance for 2018-19 is 273-283Mt.
- FMG's iron ore sales<sup>1</sup> fell 0.4% to 170Mt in 2017-18 and its sales guidance for 2018-19 is 165-173Mt.

Major iron ore export ports



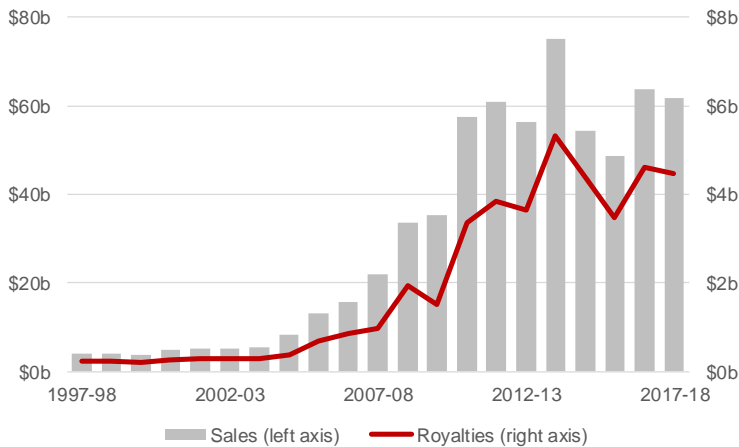
Source: ABS 5368.0 International Trade in Goods and Services.

- Port Hedland is the world's largest bulk export port, while Cape Lambert and Dampier are also major bulk export ports.
- Port Hedland (57%) exported most of Western Australia's iron ore in 2017-18, followed by Cape Lambert (22%), Dampier (16%) and other ports (5%).
- Port Hedland's iron ore exports rose 3% to 481Mt in 2017-18. Cape Lambert's iron ore exports rose 5% to 182Mt in 2017-18. Dampier's iron ore exports rose 8% to 134Mt in 2017-18.
- Rio Tinto expanded Cape Lambert and Dampier in 2015, raising annual capacity to 210Mt and 150Mt respectively. Annual shipping capacity in Port Hedland is planned to increase from 495Mt to 577Mt.



CONTRIBUTION TO WESTERN AUSTRALIA'S ECONOMY

Value of iron ore sales and royalties



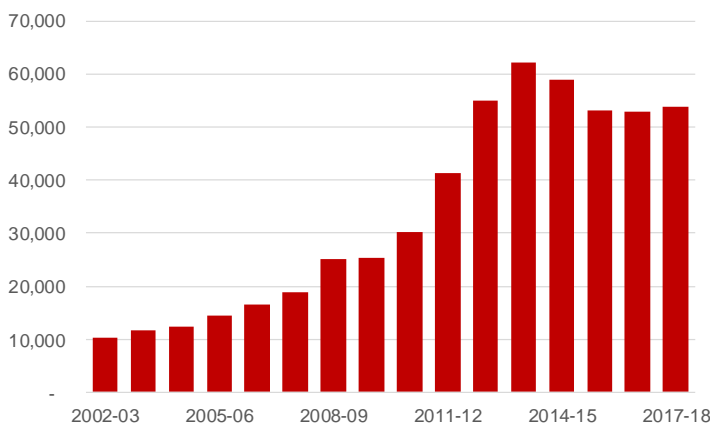
<sup>1</sup> Includes North West Shelf Grants.  
Source: Western Australian Department of Mines, Industry Regulation and Safety, Resource Data Files.

Major iron ore investment projects<sup>1</sup>

Operator	Mine/deposit	Capex (\$m)	Mtpa	Fe (%) <sup>2</sup>	Start-up
<b>Recently completed:</b>					
CITIC Pacific	Sino Iron*	12,000	24	66	2013
BHP	Jimblebar	3,800	35 (55)	63	2013
Rio Tinto	Nammuldi	2,200	10	62	2014
Hancock Prospecting	Roy Hill	13,700	55 (60)	61	2015
Rio Tinto	Silvergrass	338	10 (20)	62	2017
<b>Under construction or committed:</b>					
Rio Tinto	Billiard South	118	-	59	2019
Mt Gibson	Koolan Island (Restart)	97	5	63	2019
BHP	Port Hedland Tug Haven	280	-	-	2019
FMG	Eliwana	1,678	30	60	2020
Rio Tinto	Dampier Port Upgrades	70	-	-	2020
BHP	South Flank	4,700	80	62	2021
Rio Tinto	Robe Valley Mesa B,C & H	1,300	-	62	2021
Rio Tinto	West Angelas Deposits C & D	800	-	62	2021
<b>Under consideration<sup>3</sup>:</b>					
Brockman	Marillana	2,110	25 (37)	61	2019
BBI Group	Balla Balla Port & Rail	5,600	50	-	2020
Todd Corp.	Balla Balla Mine*	2,000	6	58	2020
Atlas	Corunna Downs	50	4	57	2020
FMG	Iron Bridge (Stage 2)*	1,770	15	67	2021
Rio Tinto	Koodaideri	3,000	40 (70)	60	2021
FMG	Nyidinghu	n.a.	30 (45)	58	2021
BC Iron	Buckland	942	8 (15)	58	2021
Rio Tinto	Western Turner Syncline 2	300	7	62	2022

\* Magnetite. <sup>1</sup> Includes mines, and rail and port infrastructure. Excludes existing mines operating at full capacity <sup>2</sup> Product grade if available, otherwise reserve grade for direct shipping ores. <sup>3</sup> Selected major projects yet to reach a final investment decision with target start-up dates. Source: Company announcements, reports and presentations; and S&P Global Market Intelligence.

Direct iron ore industry employment



Source: Western Australian Department of Mines, Industry Regulation and Safety, Resource Data Files.

- The iron ore industry is a large part of the Western Australian economy, accounting for 17% of gross state product and 59% of mining industry value added in 2016-17.
- In 2017-18, the value of iron ore accounted for 47% of Western Australia's merchandise exports and 54% of Western Australia's minerals and petroleum sales.
- The value of Western Australia's iron ore sales fell 3% to \$61.7 billion in 2017-18, below annual average growth of 11% over the past ten years.
- Iron ore accounted for 77% of Western Australia's royalties<sup>1</sup> in 2017-18 and 18% of Western Australia's government revenue in 2016-17.
- Iron ore royalties fell 3% to \$4.5 billion in 2017-18.

- In October 2018, Western Australia had \$9.0 billion of major iron ore projects under construction or committed and \$46.5 billion under consideration.
- Rio Tinto is ramping up the Nammuldi and Silvergrass mines, and plans to develop the Koodaideri deposit by 2021 to reach production of 360 million tonnes a year.
- BHP is ramping up the Jimblebar mine and is developing the South Flank deposit to replace Yandi mine production by 2021.
- FMG is developing the Eliwana deposit to replace Firetail mine production by 2020.

- Iron ore accounted for 48% of direct employment in Western Australia's minerals mining industry in 2017-18 (excluding exploration). Iron ore's share has risen from 29% of total minerals mining employment in 2007-08.
- Direct employment in Western Australia's iron ore industry rose 1.5% to 53,716 in 2017-18, the first annual increase since 2013-14.
- Iron ore industry direct employment reached 62,244 in 2013-14.
- Iron ore industry direct employment rose by an annual average of 11% over the ten years to 2017-18.