#### THE WORLD IRON ORE MARKET

**Major global iron ore producers: 2016**

- **Western Australia**
- **Brazil**
- **India**
- **China**
- **Russian Federation**
- **Ukraine**
- **South Africa**
- **Canada**
- **USA**
- **Iran**

(a) China’s iron ore production is adjusted to reflect an iron content equal to the world average.


**China’s iron ore demand**

- Iron ore imports
- Crude steel production


**Iron ore**

- Western Australia
- Brazil
- India
- China(a)
- Russian Federation
- Ukraine
- South Africa
- Canada
- USA
- Iran

- Exported
- Consumed domestically/stockpiled

- **Iron ore**
- **Steel product index**

- **Western Australia** is the largest iron ore producer and exporter in the world, accounting for 39% of global production and 53% of global seaborne exports in 2016.
- **Brazil** is the second largest iron ore producer and exporter in the world, accounting for 20% of global production and 25% of global seaborne exports in 2016.
- **India** (9%), **China** (5%) and the **Russian Federation** (5%) are major global iron ore producers, but retain most of their production for domestic steel production.
- **China’s iron ore production** has fallen for three successive years, from 315 million tonnes in 2013 to 114 million tonnes in 2016. It fell 8% in 2016.
- **China** accounted for 68% of global iron ore seaborne imports and 50% of global crude steel production in 2016.
- **Japan** and **South Korea** were the next largest global iron ore importers and steel producers in 2016, although iron ore demand in these markets has been relatively stable over the past five years.
- **China’s iron ore imports** rose 8% to 1,024 million tonnes in 2016.
- **China’s crude steel production** rose 0.4% to 807 million tonnes in 2016. Around 1.4 tonnes of iron ore makes a tonne of crude steel.
- **China’s iron ore imports** are forecast to peak at 1.076 million tonnes and crude steel production at 832 million tonnes in 2018.
- 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. Steel product prices in China rose 41% in 2016-17.
- The iron ore price is forecast to be US$68 a tonne in 2017-18. In the first ten months of 2017-18, the iron ore price averaged US$70 a tonne.
- In April 2018, the iron ore price fell 7% to US$66 a tonne and steel product prices fell 2%.

---

*WA Iron Ore Profile – May 2018*
Western Australia has large iron ore reserves, accounting for 29% of the world's crude iron ore reserves in 2017. 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%. 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%. However, Western Australia's iron ore has relatively low impurities.

Western Australia's iron ore exploration expenditure rose 1% to $280 million in 2017, compared with an annual average decline of 2% over the past ten years.

Western Australia's iron ore miners are among the world's lowest cost seaborne iron ore exporters. The average total cash cost 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.

Western Australia's iron ore industry has established long-term trade relationships with major Asian steel makers and trading companies. Most of Western Australia's iron ore exports went to China (83%) in 2017, followed by Japan (8%), South Korea (6%) and Taiwan (2%).

In 2017, Western Australia's iron ore exports rose to China (up 4% to 679Mt), but fell to Japan (down 9% to 66Mt), South Korea (down 4% to 49Mt) and Taiwan (down 7% to 16Mt).

In 2017, Western Australia accounted for over half of the iron ore imported by China (63%), Japan (52%) and South Korea (68%).
After years of strong growth, Western Australia’s iron ore sales are slowing as recently completed projects ramp-up to full production.

In 2016-17, Western Australia’s iron ore sales rose 6% to 790 million tonnes, below annual average growth of 12% over the past ten years. Iron ore sales were 259 million tonnes in 2006-07.

Western Australia’s annual iron ore sales are forecast to rise to 839 million tonnes by 2021-22.

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’s iron ore sales rose 1% to 330Mt in 2017 and its sales guidance for 2017-18 is 330-340Mt.

BHP’s iron ore sales rose 3% to 268Mt in 2017 and its production guidance for 2017-18 is 272-274Mt.

FMG’s iron ore sales fell 2% to 169Mt in 2017 and its sales guidance for 2017-18 is 170Mt.

Port Hedland is the world’s largest bulk export port, while Cape Lambert and Dampier are also major bulk export ports.

Port Hedland (58%) exported most of Western Australia’s iron ore in 2017, followed by Cape Lambert (22%), Dampier (18%) and other ports (5%).

Port Hedland’s iron ore exports rose 4% to 472Mt in 2017. Cape Lambert’s iron ore exports rose 3% to 177Mt in 2017. Dampier’s iron ore exports fell 2% to 127Mt in 2017.

Rio Tinto completed expansions at 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**

![Graph showing the value of iron ore sales and royalties from 1997 to 2017.](Image)

**Major iron ore investment projects**

<table>
<thead>
<tr>
<th>Operator</th>
<th>Mine/deposit</th>
<th>Capex ($m)</th>
<th>Capacity (Mtpa)</th>
<th>Grade* (%Fe)</th>
<th>Start-up</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recently completed:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CITIC Pacific</td>
<td>Sino Iron*</td>
<td>12,000</td>
<td>24</td>
<td>66</td>
<td>2013</td>
</tr>
<tr>
<td>BHP</td>
<td>Jimblebar</td>
<td>3,800</td>
<td>35 (55)</td>
<td>63</td>
<td>2013</td>
</tr>
<tr>
<td>Rio Tinto</td>
<td>Nammuldi</td>
<td>2,200</td>
<td>10</td>
<td>62</td>
<td>2014</td>
</tr>
<tr>
<td>Hancock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prospecting</td>
<td>Roy Hill</td>
<td>13,700</td>
<td>55 (60)</td>
<td>61</td>
<td>2015</td>
</tr>
<tr>
<td>Rio Tinto</td>
<td>Silvergrass</td>
<td>338</td>
<td>10 (20)</td>
<td>62</td>
<td>2017</td>
</tr>
<tr>
<td><strong>Under construction or committed:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rio Tinto</td>
<td>Western Turner Syncline 2</td>
<td>200</td>
<td>7</td>
<td>62</td>
<td>2018</td>
</tr>
<tr>
<td>Rio Tinto</td>
<td>West Angelas Deposit F</td>
<td>120</td>
<td>5</td>
<td>62</td>
<td>2018</td>
</tr>
<tr>
<td>Mt Gibson</td>
<td>Koolan Island (Restart)</td>
<td>97</td>
<td>4</td>
<td>63</td>
<td>2019</td>
</tr>
<tr>
<td>FMG</td>
<td>Eliwana</td>
<td>1,678</td>
<td>30</td>
<td>60</td>
<td>2020</td>
</tr>
<tr>
<td>Rio Tinto</td>
<td>Damper port upgrades</td>
<td>70</td>
<td>-</td>
<td>-</td>
<td>2020</td>
</tr>
<tr>
<td><strong>Under consideration:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FMG</td>
<td>Iron Bridge (Stage 2)*</td>
<td>1,770</td>
<td>10</td>
<td>67</td>
<td>2019+</td>
</tr>
<tr>
<td>Atlas</td>
<td>Corunna Downs</td>
<td>50</td>
<td>4</td>
<td>57</td>
<td>2020+</td>
</tr>
<tr>
<td>BBI Group</td>
<td>Balla Balla Port &amp; Rail</td>
<td>5,600</td>
<td>50</td>
<td></td>
<td>2020+</td>
</tr>
<tr>
<td>BHP</td>
<td>South Flank</td>
<td>4,700</td>
<td>80</td>
<td>62</td>
<td>2021</td>
</tr>
<tr>
<td>Rio Tinto</td>
<td>Koodaideri</td>
<td>3,000</td>
<td>40 (70)</td>
<td>60</td>
<td>2021</td>
</tr>
<tr>
<td>FMG</td>
<td>Nyidinghu</td>
<td>n.a.</td>
<td>30 (45)</td>
<td>57</td>
<td>2021+</td>
</tr>
<tr>
<td>BC Iron</td>
<td>Buckland</td>
<td>942</td>
<td>8</td>
<td>57</td>
<td>2021+</td>
</tr>
</tbody>
</table>

* Includes mine developments and rail and port infrastructure. Excludes existing mines operating at full capacity. **Product grade if available, otherwise reserve grade for hematite ores. 1 Selected projects yet to reach a final investment decision – mainly major projects by existing iron ore producers. Source: Company announcements, reports and presentations; and S&P Global Market Intelligence.

**Direct iron ore industry employment**

![Graph showing direct iron ore industry employment from 2002 to 2017.](Image)

- **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, the value of iron ore accounted for 51% of Western Australia’s merchandise exports and 58% of Western Australia’s minerals and petroleum sales.**
- **The value of Western Australia’s iron ore sales rose 14% to $62.9 billion in 2017, below annual average growth of 15% over the past ten years.**
- **Iron ore accounted for 80% of Western Australia’s royalties in 2017 and 18% of Western Australia’s government revenue in 2016-17.**
- **Iron ore royalties rose 33% to $4.8 billion in 2017.**
- **In May 2018, Western Australia had $2.2 billion of major iron ore projects under construction or committed and $45.0 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 proposing to develop the South Flank deposit to replace Yandi mine production by 2021.**
- **FMG is developing the Eliwana deposit to replace Firetail mine production by 2020.**
- **Outside the majors, CITIC Pacific’s Sino Iron and Hancock Prospecting’s Roy Hill mines are ramping up production.**
- **Iron ore accounted for 49% of direct employment in Western Australia’s minerals mining industry in 2017 (excluding exploration). Iron ore’s share has risen from 28% of total minerals mining employment in 2007.**
- **Direct employment in Western Australia’s iron ore industry rose 2% to 53,221 in 2017, the first annual increase since 2014.**
- **Iron ore industry direct employment reached 61,948 in 2014.**
- **Iron ore industry direct employment rose by an annual average of 12% over the ten years to 2017.**