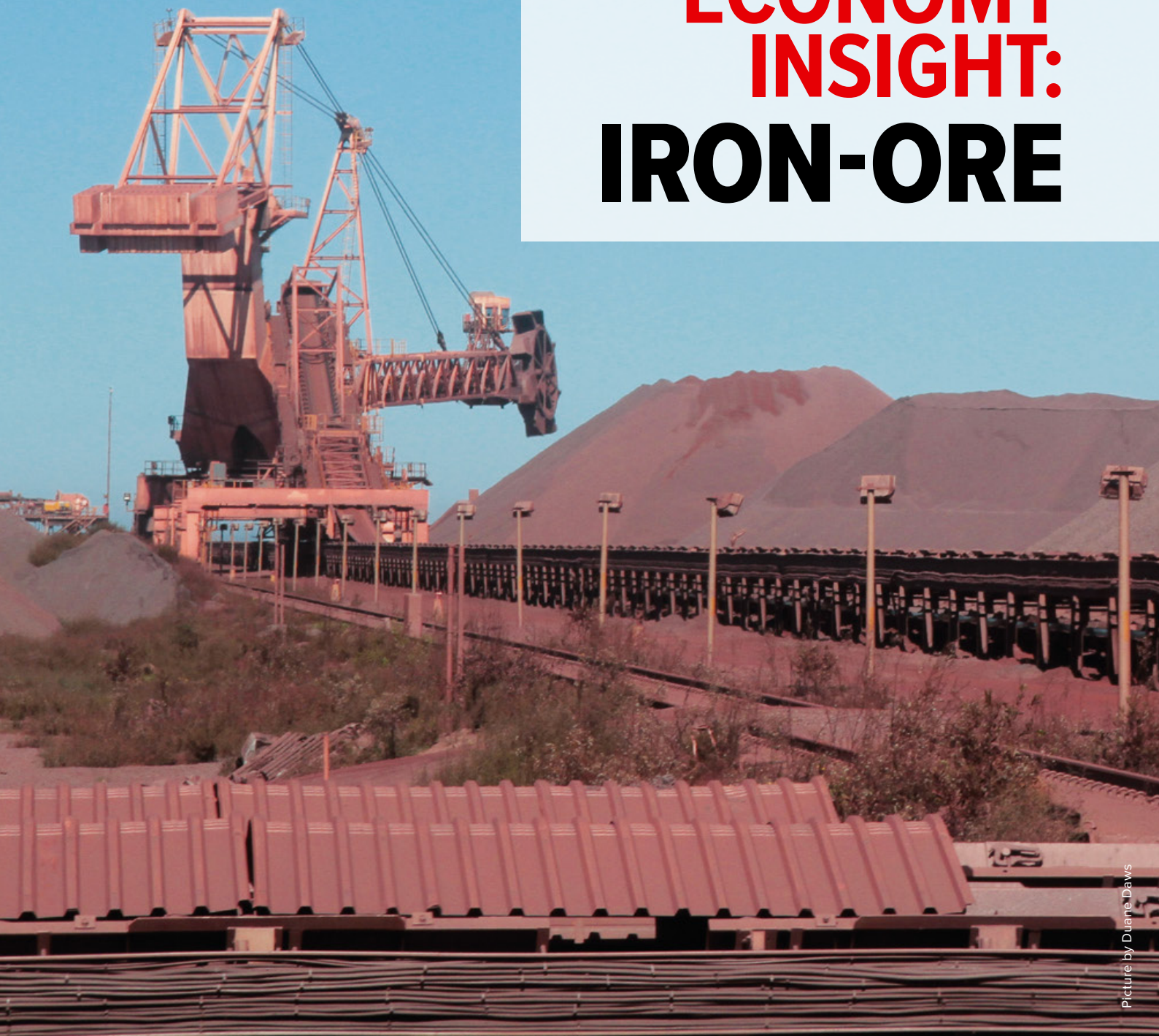


JUNE 2017

REAL ECONOMY INSIGHT: IRON-ORE



Contents

◉ Supply	3
◉ Demand	4
◉ South African iron-ore producers	5
◉ South African iron-ore projects	6
◉ Prospects	7

Real Economy Yearbook: Iron-Ore

MARTIN ZHUWAKINYU
CREAMER MEDIA
SENIOR DEPUTY EDITOR

The iron-ore market – valued at about \$225-billion, according to International Monetary Fund estimates – is the second-largest commodity market after oil and gas.

The world's iron-ore endowment is estimated at total reserves of about 800-billion tonnes of crude iron-ore, containing about 230-billion tonnes of iron. Mining of the material for domestic consumption and export is undertaken in about 50 countries, with the three largest producers being Australia, Brazil and China.

Although China, the world's largest iron-ore consuming nation, is richly endowed with the commodity, its reserves are not enough to meet its needs. Consequently, when the country embarked on a massive urbanisation drive more than a decade ago, it began to import large quantities of ore to manufacture steel to use in infrastructure projects and industrial applications. This prompted a worldwide scramble to meet China's growing demand, but a deceleration in the country's economic growth caused the commodity's price to tumble, falling below a quarter of its 2011 peak of \$200/t as 2015 drew to a close. However, despite analysts' predictions of a protracted period of price depression, 2016 witnessed a recovery to more than \$80/t at the end of the year. The rally continued into 2017, with the price topping \$95/t in February, before moderating to just above \$60/t in May.

Bearish sentiment continues though, with the more pessimistic iron-ore market observers predicting that the price will plunge to about \$50/t by the end of 2017 and to a yearly average of \$41/t in 2018.

The envisaged retraction, it is believed, will result from weakening demand from top consuming nation China and increased output from the so-called Big Three producers: Brazil-based Vale and the Anglo-Australian duo of Rio Tinto and BHP Billiton. All three are on course to increase production in 2017, following recent capacity expansions aimed at lowering unit production costs.

Supply

Australia, Brazil and China – which produced 825-million tonnes, 391-million tonnes and 353-million tonnes

respectively in 2016 – account for nearly 80% of global iron-ore supply. The other major iron-ore mining countries are India, whose output, according to the US Geological Survey, increased to 160-million tonnes in 2016, following the lifting of a mining ban on key iron-ore mining states, imposed in 2012, followed by Russia (100-million tonnes), South Africa (60-million tonnes), Ukraine (58-million tonnes), Canada (48-million tonnes), the US (41-million tonnes) and Iran (26-million tonnes).

Although the global iron-ore market is in a surplus position, supply is increasing as projects initiated by the large producers during the past few years come on stream. The capacity expansions have been criticised by junior producers, who contend that they have squeezed many of them out of the market.

Vale, which produced 348.80-million tonnes of the key steelmaking ingredient in 2016, has provided a 2017 production guidance of 360-million tonnes to 380-million tonnes, while number two producer Rio Tinto, which contributed 281.32-million tonnes to overall iron-ore mine supply in 2016, is aiming to produce 330-million tonnes to 340-million tonnes in 2017. Although Rio Tinto's forecast 2017 output is higher than what it produced in 2016, the figure is lower than initially anticipated. This is owing to delays in implementing the company's AutoHaul autonomous railway project, which will result in driverless trains from mine to port through the Pilbara region, Australia's iron-ore mining hub. BHP Billiton, whose iron-ore mining business, like Rio Tinto's, is largely centred on the Pilbara, produced 257-million in this region in the 12 months to the end of June 2016 and expects to produce 265-million tonnes to 270-million tonnes in the year to the end of June 2017.

Financial services firm Citigroup forecasts that about 200-million tonnes of iron-ore will be added to global supply each year by 2020, with Brazil and Australia contributing all this additional tonnage in equal measure.

The additional Brazilian iron-ore supply during 2017 will emanate from projects that include Vale's S11D, which is located in the Amazon jungle and shipped its first ore in January 2017. S11D was initially planned as a 90-tonne-a-year operation but, as Vale has chosen to prioritise profits over volume, the project has been scaled down to 75-million tonnes a year and ramp-up to full production will take four years instead of the initially planned two years. Further significant

capacity expansion in Brazil during 2017 will take place at diversified miner Anglo American's Minas Rio mine, where the group will undertake a key expansion that will result in the mine attaining its full yearly production of 26.50-million tonnes by 2019.

The iron-ore projects that will come on stream in Australia during 2017 include Rio Tinto's Silvergrass development, adjacent to its Nammuldi mine. The project, which comprises the third phase of Rio Tinto's investment in the Nammuldi area, is scheduled to start production in the fourth quarter of 2017, doubling the company's production in the area to 20-million tonnes a year.

Further, envisaged iron-ore projects in the Pilbara with a combined capacity of more than 135-million tonnes a year – representing more than \$7-billion in new investment – will either start construction or come under consideration in 2017. These include BHP Billiton's South Flank project, near its Mining Area C operation, which, if it goes ahead, will help replace almost a third of the group's production, which currently comes from the Yandi mine.

Fortescue Metals Group (FMG), which has grown to become the world's fourth-largest iron-ore miner since producing its first ore in 2008, is mulling over a threefold expansion of its Solomon mining hub, which comprises the Firetail and Kings mines. The

expansion has been approved by Western Australia's Environmental Protection Authority and will result in the Solomon mining hub operating for the next 30 years. FMG, a strident critic of capacity increases, given the iron-ore market's current surplus position, insists that the expansion and a greenfield development that will replace the Firetail mine – which will run out of ore by 2020 if mining proceeds at current rates – will not increase its yearly iron-ore production.

Demand

About 98% of mined iron-ore is used in steel manufacture and China is the largest consumer by a wide margin, accounting for about half of global demand. As the country's requirements for steel for use in infrastructure projects and in industrial applications doubled to 740-million tonnes in the decade to 2014, its demand for iron-ore increased dramatically. Decelerating economic growth in the country has, however, dampened demand.

Nevertheless, Chinese iron-ore imports totalled a record 1.02-billion tonnes in 2016, 7.5% increase on the previous year, mainly as a result of a recovery in the country's steelmaking industry and a faster rate of decline in its domestic iron-ore mining sector.

However, iron-ore demand in 2017 is unlikely to be as strong as in 2016, owing to, among other factors,



Picture by Bloomberg

the Chinese government tightening restrictions on the real estate market, which has clouded the outlook for construction steel. While new US President Donald Trump's intention to spend \$1-trillion on infrastructure raised hopes of increased iron-ore demand, many observers are doubting whether he will secure the US Congress's approval for the plan.

Some market observers, however, are optimistic that a Chinese government crackdown on high-polluting and inefficient steel mills that use scrap steel instead of iron-ore has the potential to maintain demand for high-quality imported ore. As part of the crackdown the Chinese authorities issued a decree in February 2017 requiring 50% of the steelmaking capacity to be closed during winter months in northern cities to curb air pollution.

In the longer term, consultancy firm Accenture expects global demand for iron-ore to grow until the middle of the next decade, at which point it will peak at a little more than 2.20-billion tonnes, compared with about two-billion tonnes in 2016. Number two iron-ore producer Rio Tinto is more optimistic, forecasting that the world will need about three-billion tonnes of iron-ore a year by 2030, which necessitates a 2% compound annual growth rate. This forecast is based on its belief that the replacement of capital stock will maintain current levels of Chinese steel consumption, while demand in the rest of the world will increase by 65% by 2030.

The other iron-ore producers – Vale and BHP Billiton – are also bullish about long-term Chinese steel consumption, and, therefore, iron-ore demand, with the latter forecasting the Asian country's steel production to reach between 935-million tonnes and 985-million tonnes by the middle of the next decade.

South African iron-ore producers

South Africa is a much smaller producer of iron-ore than heavyweights Australia, Brazil and China, with the country contributing only an estimated 60-million tonnes to global exports in 2016.

The country's iron-ore mining industry is dominated by diversified mining group Anglo American's majority-owned Kumba Iron Ore subsidiary. Assmang, a 50:50 joint venture between African Rainbow Minerals and Assore is the second-largest producer. The beleaguered Russian-owned Evraz Highveld Steel and Vanadium's Mapochs mine, in Limpopo, is currently under care and maintenance, and its future is uncertain, according to Evraz Highveld's business rescue practitioner. A new operator, Manngwe Mining, started production at its Assen mine, near Brits, in the North West, in April 2017.

Following the cessation of mining operations at the Thabazimbi mine, in Limpopo, in 2015, and the mine's transfer to steelmaker ArcelorMittal South Africa (AMSA) in February 2017, Kumba currently operates only the flagship Sishen mine and the Kolomela mine, both located in the Northern Cape.

Sishen, which, at 14 km long, is one of the world's longest openpit mines, started production in 1953 and exported its first ore in 1976. It produced 28.40-million tonnes in 2016, exceeding Kumba's 27-million-tonne guidance for the year. The higher production was attributed to a redesign of the openpit, which enables access to lower-strip-ratio ore but has shortened the life-of-mine to 15 years. The mine's output for the first quarter of 2017 totalled 7 679 t, 31% up year-on-year, owing to improved mining productivity.

Including production from the Kolomela mine, which totalled 12.70-million tonnes – greater than its nameplate capacity of 12-million tonnes – Kumba produced 41.48-million tonnes in 2016, an 8% increase on the previous year. Kolomela's output for the first quarter of 2017, at 2.80-million tonnes, was 3% higher, driven by higher plant throughput.

Kumba posted revenue of R40.80-billion in 2016, 13% higher than in 2015, as average iron-ore prices improved from \$53/t in 2015 to \$64/t in 2016 and the rand weakened against the dollar.

Kumba, the largest iron-ore producer in Africa, has scaled back its capital expenditure in the past few years, owing to challenges in the iron-ore market, and plans further cuts in 2017 and 2018. Its parent, Anglo American, has put its 69.7% shareholding in the company up for sale as part of a broader programme to divest from what it considers to be noncore assets.

Assmang, which owns and operates the Khumani and Beeshoek mines, both located in the Northern Cape, is much smaller than Kumba, with its output for the year to June 30, 2016, totalling 16.70-million tonnes, a 4% increase on the previous year.

Khumani contributed 13.62-million tonnes to this figure, compared with the previous year's 12.65-million. The mine produced 7.10-million tonnes in the six months to the end of December 2016 and aims to increase saleable production for the full financial year to June 30, 2017, to 14.50-million tonnes.

Beeshoek's production for the 2015/16 financial year, at 3.11-million tonnes, was lower than the preceding year's 3.43-million tonnes. The decline was in line with a revised saleable production profile necessitated

by the exit of smaller customers from the market, owing to a decline in steel prices in the South African market. The mine has since secured a three-million-tonne-a-year offtake agreement with AMSA. Its production for the half-year ended December 31, 2016, was 15% lower year-on-year, at 1.30-million tonnes.

Assmang's 2015/16 headline earnings from the iron-ore division declined by 3% year-on-year to R1.22-billion, owing to lower prices for the commodity, but surged by 114% to R2.05-billion in the interim period to December 31, 2016, reflecting the positive effects of higher prices and rand weakness.

The bulk of the ore mined at Kumba's and Assmang's Northern Cape operations is railed to a dedicated deep-water port at Saldanha Bay, in the Western Cape, about 860 km away, for shipment to global markets. The bulk handling terminal reached a major milestone in August 2016, when it shipped its one-billionth tonne of ore since its inception in 1976.

Manggwé Mining, South Africa's newest iron-ore miner, will initially target production of 60 000 t/m of ore for delivery exclusively to AMSA, but is targeting production of four-million tonnes to five-million tonnes a year over the next five years, all of which will be supplied to the domestic steelmaking market. Its proximity to AMSA's Vanderbijlpark works, in Gauteng, gives it a comparative advantage in the domestic steel market over Kumba's and Assmang's iron-mines located in the Northern Cape. Manggwé Mining aims to eventually extend its iron-ore mining activities into Limpopo.

South African iron-ore projects

South Africa boasts several iron-ore projects at varying stages of development, mostly in Limpopo. These include Aim-listed Ironveld's namesake R841-million high-purity iron (HPI), vanadium and titanium project under development on seven adjacent farms on the northern limb of the Bushveld Igneous Complex. At full production, the proposed project's output will comprise 42 000 t/y of HPI, 415 t/y of vanadium and 8 269 t/y of titanium. Ironveld has secured an offtake agreement with majority black-owned Oreport, which gives the latter right of first refusal to these three metal streams for five years from first production, expected early in 2018. The company also plans to produce atomised iron powder, used mainly in the automotive industry to make gear components and complex metal parts and for which there is growing demand from the three-dimensional printing sector.

Meanwhile, media reports in April 2017 stated that Ironveld had signed an agreement to buy a 7.5 MW

smelter, which it would upgrade to 15 MW using cash flow from the first stage of the project. In the longer term, the company plans to eventually build a 300 MW smelter, but this will depend on additional electricity being available from State-owned power utility Eskom.

Ironveld believes that the project will be immediately cash generative and cash flow positive within the first year of operation.

Elsewhere in Limpopo, Aquila Resources, a subsidiary of China's Baosteel, plans to develop the 1.50-million-tonne-a-year Thabazimbi iron-ore project, which will exploit the Maletse deposit. The project boasts an 80.80-million-tonne resource, three-quarters of which falls in the measured and indicated categories. The project suffered a major setback in March 2016, when the Limpopo provincial government declined to grant it environmental authorisation, partly because of its potential climate-change-related impact on the proposed mine site.

Also in the Thabazimbi area, triple-listed Ferrum Crescent has, for the past four years, been intent on developing the Moonlight iron-ore project on the Moonlight, Fontein and Juieta farms, but the project's future is uncertain, owing to Ferrum's having failed to secure a partner with which to co-develop the project. The company announced in April 2017 that it would undertake winding-up and handover processes of all operations and licences associated with the project unless an alternative development opportunity arose. The latest farm-in and joint venture agreement, with Business Venture Investments (BVI), was terminated in February 2017, as BVI had failed to complete the first phase of a bankable feasibility study by an agreed extended deadline.

Ferrum and the local community have stakes of 97% and 3% respectively in the project, which boasts a resource of 52.60-million tonnes grading 31.30% in the measured category, 83-million tonnes at 27.40% in the indicated category and 172.10-million tonnes at 25.3% in the inferred category.

Should it eventually go ahead, the Moonlight project's scope would entail mining and beneficiation activities, the construction of a slurry pump to an area near a railhead and the manufacture of six-million tonnes a year of direct reduction iron-grade pellets for the export and domestic markets.

Ferrum has secured an offtake agreement with Switzerland's Duferco for 4.50-million tonnes of pellets a year and right of first refusal to the balance of 1.50-million tonnes a year if it is not sold in the domestic market.

In the Northern Cape, aggregate miner Afrimat gave the distressed manganese and iron-ore assets of Diro Resources a new lease of life in October 2016, when it agreed to pay R276-million for a 60% interest in the assets. The transaction, which was approved by the Competition Commission in December 2016, gives Afrimat control of an opencast iron-ore mine near Kathu with proven reserves of 5.60-million tonnes and a 1.30-million-tonne stockpile of saleable iron-ore fines.

A great deal of restorative work will be required before mining operations can start and R50-million of the purchase price has been earmarked for this purpose. When it resumes production and reaches its full design capacity, the mine will produce one-million tonnes of iron-ore a year. It has a contract with State-owned logistics group Transnet for this tonnage to be transported on the Sishen–Saldanha iron-ore rail line, which has its northern terminus near Kathu.

Prospects

The iron-ore price, which had declined to a decade low of \$38/t at the end of 2015, more than doubled during 2016. While the rally continued into 2017, rising as high as \$94.86/t in February, there is consensus among iron-ore watchers that the price will have retracted considerably by year-end. They differ, however, on the extent of the envisaged moderation.

In the March 2017 edition of its 'Resources and Energy Quarterly', Australia's Department of Industry, Innovation

and Science forecasts an average 2017 iron-ore price of \$65/t, reflecting a gradual easing of market tightness.

Research firm Capital Economics has predicted that the iron-ore price could plunge to \$50/t by year-end, a forecast shared by banking group Barclays, which believes that this price level will be reached in the fourth quarter of 2017 as fundamentals deteriorate. Australia's Westpac Banking forecasts that the iron-ore price will average \$62/t in the third quarter of 2017 and \$59/t in the final three months of the year, before declining to a low of \$41/t in 2018.

The China Iron and Steel Association is also bearish on the iron-ore price, with its VP, Li Xinchuang telling delegates at a conference in Perth, Australia, in March 2017, that the association expected the commodity to trade at about \$55/t later in the year.

The reasons for a weaker iron-ore price outlook cited by the bears include the potential for increased supply from Chinese mines and those based overseas. According to official Chinese data, mines in that country boosted production by 16% during the first three months of 2017, while Brazil's Vale posted record output during the same period as it started exporting from its S11D project.

A Chinese government order to close some of the country's steelmaking capacity will result in significant excess capacity in 2017, thus impacting on iron-ore demand and, in turn, the commodity's price.



Picture by Reuters



Creamer Media, based in Johannesburg, South Africa, publishes occasional Research Briefs to supplement the information contained in the Research Reports available on the *Research Channel Africa*. The briefs are intended for use by subscribers to the *Research Channel Africa*, and are not to be reproduced or published for any other purpose. The information contained in this brief is believed to be reliable, but no warranty is made as to its accuracy.

This brief was compiled by Martin Zhuwakinyu – Creamer Media Senior Deputy Editor.

© Copyright Creamer Media (Pty) Ltd

Creamer Media (Pty) Ltd

tel +27 11 622 3744 | fax +27 11 622 9350 | email subscriptions@creamermedia.co.za

Creamer Media's
RESEARCH CHANNEL
A F R I C A

 CREAMER MEDIA'S
ENGINEERING NEWS

 CREAMER MEDIA'S
MINING WEEKLY