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COMMODITY Insights Bulletin

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Fe
IRON ORE

IRON ORE (Q4, 2014 and Q1, 2015)

Insight: Expectation that low cost supply will continue higher than demand

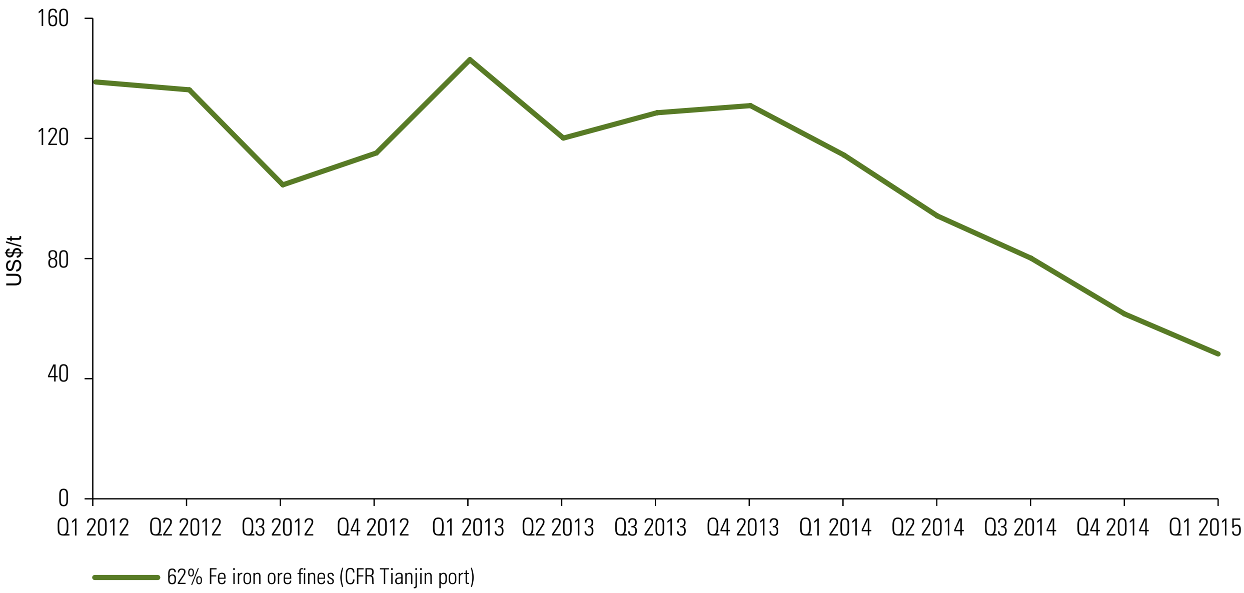
In the short term, the ongoing surge in low-cost supply – driven by both brownfield mine expansions and productivity improvements – will continue to put pressure on the price of iron ore as it outstrips the increase in demand. Consequently, many higher cost producers, particularly in Australia and China, are likely to shut down operations, which will flatten the cost curve and will drive some, but not a significant reduction in the supply of iron ore.

Medium and long term, the expectation is that low-cost supply will continue higher than demand as a number of low cost iron ore expansion projects, principally in Australia and Brazil, will be finalized and production ramped up. Although there should be less volatility in iron ore prices, there is no real expectation of a significant price increase.

> "Although there should be less volatility in iron ore prices, there is no real expectation of a significant price increase."
>
> **Pieter van Dijk**
> KPMG in Brazil

Looking further ahead, from 2030 the expectation is that demand for iron ore will decline as a result of the high level of steel scrap, particularly in the Chinese market.

Figure 1: Spot prices of China's iron ore imports (Q1, 2012–15)



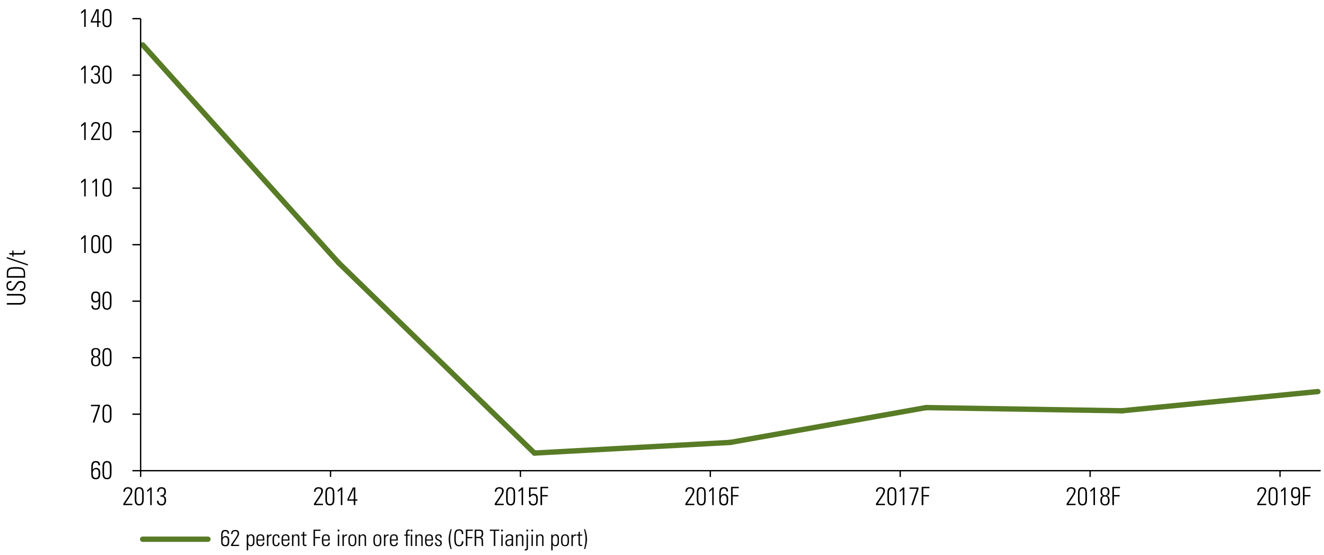
Source: IMF Primary Commodity Prices, International Monetary Fund, http://www.imf.org/external/np/res/commod/index.aspx, accessed April 2015

Iron ore prices are expected to reach an average of US$63/ton in 2015, witnessing a decline of about 35 percent as compared to the 2014 value of US$97/ton. According to the Australian government, steel consumption growth in China is expected to remain flat over 2015 – further impacting iron ore prices – while a surplus production of 111 million tons (Mt) of iron ore is estimated to enter the seaborne market over the same period.[1]

[1] RBC Capital Markets – RBC Metals and Mining – Favoring base metals amidst cuts in commodity price deck, 08 March 2015; Morgan Stanley, Metals & Mining – 2Q15 - Quarterly Global Price Deck Changes, 24 March 201; JP Morgan, The Lodestone – Chinese steel production continues to fall; Steel and Iron ore price trends diverge after many months; via Thomson Research/ Investext, accessed April 2015; "Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015

In response to the declining prices, mining companies are focusing reducing production costs and increasing productivity. Under the present competitive environment, the downward pressure on prices is expected to increase. Continued oversupply is expected to further trigger the decline over 2016. High production from Australia and Brazil will force most of the high-cost producers to exit the market eventually. This is expected to reduce market supply and improve the price environment.

Figure 2: Prices of Iron ore (2013–19F)

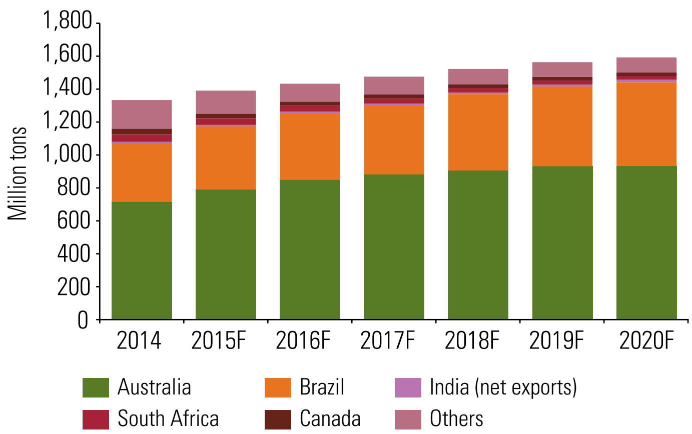


Source: BMO Capital Markets, Materials – Metals and Mining, Iron Ore Price Cut Hits Cash Flow & Balance Sheets, 08 April 2015; Morgan Stanley, Metals & Mining – 2Q15 - Quarterly Global Price Deck Changes, 24 March 2015; RBC Capital Markets – RBC Metals and Mining – Favoring base metals amidst cuts in commodity price deck, 08 March 2015; UBS Research – European Mining Sector – Are Rio & BHP still Buys at spot prices? 15 January 2015; JP Morgan, The Lodestone – Chinese steel production continues to fall; Steel and Iron ore price trends diverge after many months; via Thomson Research/ Investext, accessed April 2015

Supply and demand[2]

Supply

Figure 3: Global exports of iron ore (2014–20F)



Source: "Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015

- Global exports of iron ore witnessed growth of about 9 percent in 2014. With the new mine capacity additions in Australia – which reached full production rates in 2014 – the exports from the region witnessed continued growth. Export volumes from the country increased by 24 percent to reach 717 Mt in 2014. The increase is primarily driven by the recent brownfield mine expansions in the Pilbara region, new productions at the Kings mine and several other infrastructural developments, specifically for the rail and ports.[3]
- Australia is expected to increase its exports by about 10 percent, reaching 792 Mt in 2015. This increase will be attributed to the new mine production at Roy Hill, which will produce an additional capacity of 55 Mt of high-grade iron ore per annum. Over 2015–20, the export volumes from the country are projected to grow at a CAGR of 3 percent, to reach 935 Mt. Productivity improvements and capacity expansions are expected to drive increased production. Advanced technologies such as driverless trucks/trains and extensive use of information technology reduces the operating costs and improves productivity of mines. However, the current low-price environment may lead to the shutdown of some Australian mines in the near term, driven by the increasing pressure on marginal producers.[4]
- Brazilian exports have increased about 10 percent in 2014 to reach 363 Mt, driven by the additional production at the Minas Rio mine and the increased use of Valemax bulk freight vessels – which has a carrying capacity of 400,000 tons. These vessels have been recently approved

[2] "Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015
[3] "Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015
[4] Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015

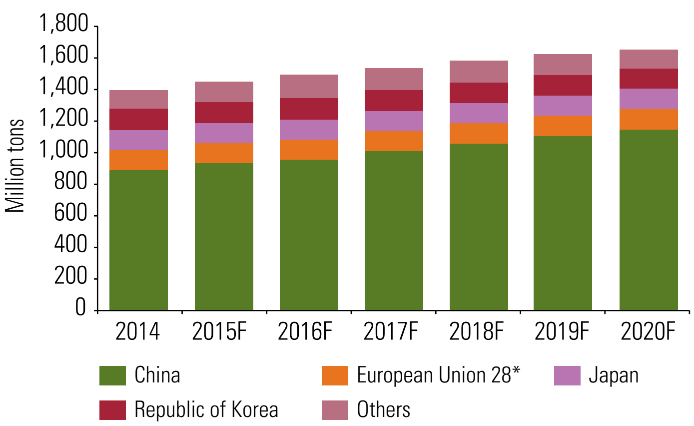
at the Chinese docks. An additional advantage of lower petroleum and shipping costs is that the use of these bulk vessels will improve the competitive position of Vale in the Asia-Pacific region.

- Looking further ahead, exports from Brazil are likely to increase at a CAGR of about 6 percent from 388 Mt in 2015 to 509 Mt in 2020. The increasing trend in production will be driven by capacity expansions in the existing mines as well as the completion of the Carajás Serra Sul (S11D) mine. This mine will include an additional capacity of 90 Mt and is expected to be one of the lowest-cost iron ore mines, globally.[5]
- Indian exports of iron ore declined 78 percent, reaching just 2 Mt in 2014. This was attributed to the Supreme Court restrictions on iron ore production, as a measure to reduce illegal mining in several states across India, such as Karnataka, Goa and Odisha. Although the ban ended in April 2014, there was sluggish growth in operations and it is estimated that about three quarters of iron ore mines in India still remain unused. In addition to this, Indian Government increased the freight charges, royalty payments and export duties, to conserve the iron ore for the Indian steel industry. Collectively, these factors, in a low-price environment, forced the Indian steel producers to import iron ore, in 2014.[6]

  Exports from India are forecasted to recover and increase in 2015, with the restart of operations in Goa – which is considered as the iron ore production and exporting hub. The country's exports are likely to increase at a CAGR of 25 percent over 2015–20, reaching 15 Mt in 2020.[7]
- Iron ore exports from other producer countries such as Ukraine, Iran and South Africa are expected to decrease over the near term due to the downward pressure on prices and the higher production costs that these miners have in comparison to producers from Australia and Brazil.
- Brazil accounts for about 25 percent of the total share of iron ore's trade volume. In March 2015, it exported about 30.8 Mt of iron ore, which reached the three-month high export volume figures for the country, primarily due to increased volumes by Vale – the major exporter from Brazil. Australia's Pilbara Port Authority (PPA) recorded 36.6 Mt of iron ore exports in March 2015, which is a 6 percent increase from the total exports in March 2014. This suggests that despite the weak market conditions, China's demand of iron ore is not expected to decline.[8]

Demand

Figure 4: Global imports of Iron ore (2014–20F)



Source: "Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015

*Iron ore imports by the European Union (EU) starting 2013 includes imports from Croatia as well which was included as the 28th country in the EU on 1 July 2013

- In 2014, Chinese imports witnessed a 9 percent increase, from 820 Mt in 2013 to 889 Mt in 2014. Australia accounted for 60 percent of the imports in China, with a contribution increase of 10 percent as compared with the 50 percent share in 2013. This was mainly because the share of imports from smaller and high-cost producers of South Africa, Iran and Ukraine dropped by 19 percent as compared to 30 percent at the start of 2014. Imports from Brazil to China remained steady at 20 percent in 2014.[9]
- In 2014, China's iron ore producers faced tough conditions and suffered losses for several mines. The losses incurred by mines increased from 15 percent in early 2014 to 22 percent by December 2014. This can be attributed to the major price gap between domestic concentrate and seaborne iron ores, backed by the higher demand for seaborne iron ore.
- China's iron ore imports are expected to increase by about 5 percent, reaching 935 Mt in 2015. The steel manufacturers in the country are expected to face operating challenges, primarily attributed to the low-price environment of steel and oversupply in the market. This will lead to continued demand for cheaper sea borne iron ore as compared to high-cost domestic iron concentrate, particularly from the high producing regions – Australia and Brazil. Further, this shift will likely shut down the high-cost low-grade iron ore mines in China and other supply regions globally. Over 2015–20, China's imports are expected to increase at a CAGR of 4.2 percent, reaching 1,148 Mt in 2020.
- With the reduced steel production in Japan, its iron ore imports decreased marginally by about 1 percent, reaching 135 Mt in 2015. Eventually, the decrease in steel production is likely to impact the iron ore imports in Japan – reducing at a CAGR of 1 percent over 2015–20, reaching 129 Mt in 2020.

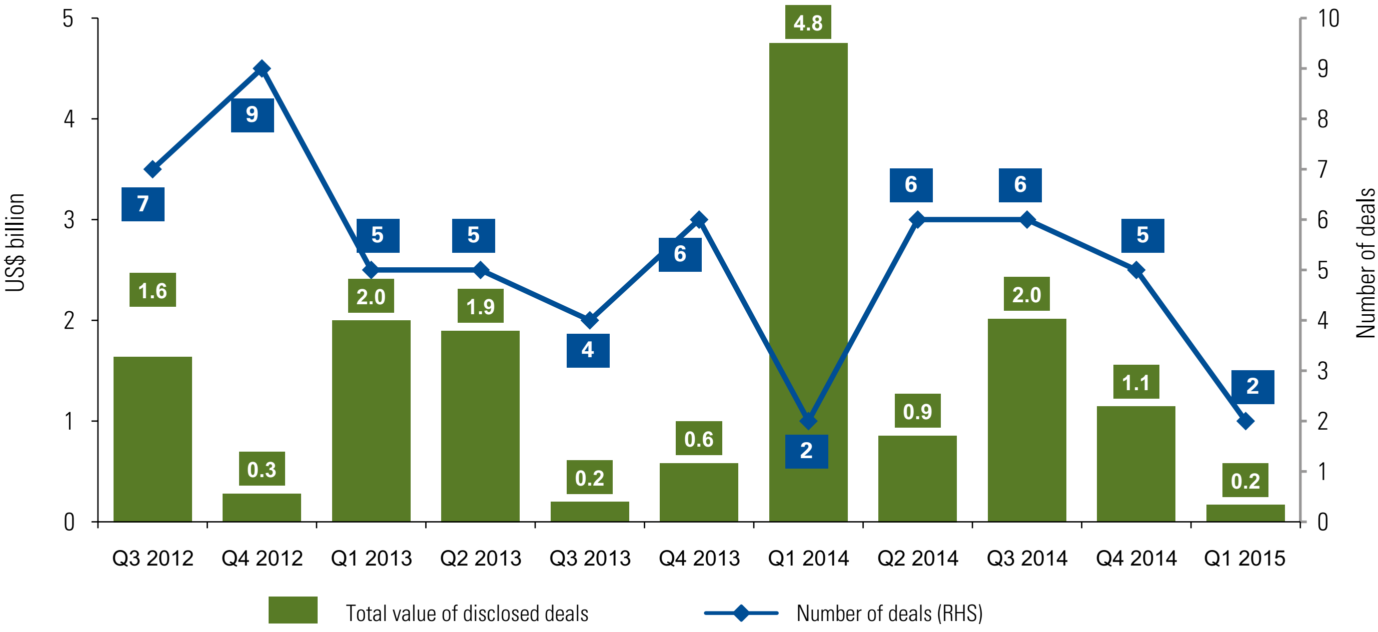
5 "Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015
6 Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015
7 Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015
8 "PPA Marks 6 percent Increase in Monthly Iron Ore Exports", World Maritime News, 7 April 2015, accessed April 2015
9 Resources and Energy Quarterly", Bureau of Resources & Energy Economics (BREE), Australian Government, March quarter 2015, accessed April 2015

- In Q1, 2015, China's iron ore imports from Australia increased further with a rise of about 22 percent reaching 144 Mt, as result of increased production and shipments. Further, from Brazil – which is the second-largest supplier after Australia – there was a marginal increase in imports, of about 0.6 percent to China during Q1, 2015, to reach 41.8 Mt.[10]

Key developments

Ownership changes[11]

The total value of major deals announced in the iron ore industry decreased 43 percent q-o-q to US$1.1 billion during Q4, 2014 and further by 85 percent q-o-q to US$0.2 billion in Q1, 2015. The iron ore industry witnessed a total of seven deals over Q4, 2014 – Q1, 2015, with two deals in Q4, 2014 and five in Q1, 2015.



Source: Deals: Search, Mergermarket accessed April 2015; KPMG analysis

Table 1: Top iron ore deals in Q4, 2014 and Q1, 2015

Date announced	Target	Nation of target	Acquirer	Nation of acquirer	Status	Value of transaction (US$ million)	Stake (%)
20-Apr-15	Tonkolili Iron Ore Project (African Minerals Limited)	South Africa	Shandong Iron and Steel Group Co., Ltd.	China	Closed	170	75*
12-Dec-14	Mount Webber Iron Ore DSO Project (Altura Mining Limited)	Australia	Atlas Iron Limited	Australia	Announced	18	30
13-Dec-14	Henan Anyang Steel Group Wuyan Mining Co Ltd. (Anyang Iron & Steel Group)	China	Anyang Iron & Steel Co Ltd.	China	Announced	366	73
12-Dec-14	Nacional Minerios S.A.**	Brazil	Congonhas Minerios S.A	Brazil	Announced	N/A	40
22-Oct-14	Marampa Iron Ore Project (London Mining Plc)	Sierra Leone	Timis Corporation	UK	Announced	N/A	N/A

Source: Deals: Search, Mergermarket accessed April 2015; KPMG analysis

*Shandong Iron acquired the remaining 75 percent stake, with the previous 25 percent acquired in August 2011; thus, gaining 100 percent ownership of the iron ore mine.

**This is a consortium of Itochu Corporation, JFE Steel Corporation, Kobe Steel, Ltd, Nippon Steel & Sumitomo Metal Corporation, Nisshin Steel Co., Ltd, POSCO, Sumitomo Metal Industries Ltd. – collectively also termed as Asian consortium.

10 "China's Q1 iron ore imports from Australia up 22.2 pct on year", Iron Ore Team, 22 April 2015, accessed April 2015

11 Deals: Search, Mergermarket accessed April 2015

Table 2: Recent regulations in the iron ore industry

Country/ Region	Regulation/Topic	Description
China	China will release its iron ore subsidy policy.[12]	• China has announced to release its iron ore resource tax reform plan in 2015. Two versions of the reform are possible: one is that the subsidies will be provided as per the iron ore grade and the other was subsidy will be about US$1[13] per ton.
Guinea	The government plans to develop ore corridors.[14]	• The government is in discussions with its stakeholders to jointly develop ore corridors in the country – which will be supported by the World Bank – particularly for bauxite and iron ore.
China	Yanshan county in Southern China to shut down all non-coal mines until 30 March.[15]	• The government had plans to conduct safety inspections for the January water leak accident at the Wugongtou lead/zinc mine, and therefore, has shut all non-coal mines till 30 March 2015. • According to the State Council Data, this includes 8 million Mt of iron ore reserves of 45 percent Fe average.

Project updates

Table 3: Cross-section of global Iron ore projects

Project	Country	Owner/ Operator	Capex (US$ million)	Potential start year	Full capacity (Mtpa)	Type	Progress and updates
Carajás Serra Sul (mine S11D)	Brazil	Vale (100 percent)	6,878	H2 2016	90	Green	The earthworks at the mine have been initiated. All mobile crushing rigs (truck-less system) have been received on site. Transportation of the modules for the plant area have been initiated. Electro-mechanical assembly of modules achieved 83 percent completion. Total physical progress of 54 percent was achieved.
Cauê Itabiritos	Brazil	Vale (100 percent)	1,504	H2 2015	28	Brown	Civil works of the gridding substation concluded. Mechanical assembly of the strainer 50 percent concluded. Total physical progress of 71 percent.
Chichester Project	Australia	Fortescue Metals Group (100 percent)	N/A	December 2013	40	Green	The Chichester projects including Christmas Creek 2, Christmas Creek jigs plant and the Cloudbreak wet processing plant. Christmas Creek operation fully ramped up during 2013. Chichester Hub is now operating at full capacity. The Chichester up-dip (Cloudbreak and Christmas Creek) brownfield drilling programs were completed with a resource estimation planned for release in the Q4, 2013.

12 "China Said to Release Iron Ore Subsidy Policy", 8 April 2015, via Factiva, accessed April 2015

13 Currency exchange rate used at 1 CNY = 0.16337 USD as of 23 April 2015

14 "Guinea in talks to develop ore corridors", 25 February 2015, via Factiva, accessed April 2015

15 "China's Yangshan county shuts metal mines until Mar 30", 4 February 2015, via Factiva, accessed April 2015

Project	Country	Owner/ Operator	Capex (US$ million)	Potential start year	Full capacity (Mtpa)	Type	Progress and updates
CLN S11D	Brazil	Vale (100 percent)	9,484	H1 2014 to H2 2018	230	Brown	Ongoing civil foundation works on the port expansion. Total physical progress of 25 percent. Pile driving in the off shore north berth 31 percent completed. Pile driving for the bridges over Sossego and Parauapebas rivers initiated.
Conceição Itabiritos II	Brazil	Vale (100 percent)	1,189	H1 2015	19	Brown	Mechanical assembly of the secondary and tertiary crushing buildings of the hematite concluded. Total physical progress of 91 percent.
Development of Hope Downs 4 mine	Australia	Rio Tinto (50 percent)	2,100	H1 2013	15	Green	Approved in August 2010, first production occurred in H1, 2013. The new mine is anticipated to have a capacity of 15 Mtpa. Rio Tinto aims to reach 333 Mtpa by 2015.[16]
Expansion of the Pilbara port and rail capacity	Australia	Rio Tinto (100 percent)	5,900	Phase II by H1 2015	360	Brown	The infrastructure for the expansion is 80 percent complete, with all rail, marine and wharf works in place. Rio Tinto announced in 2014 that the mine has reached a run rate of 290 Mt per annum – two months ahead of schedule. As a result, production from Pilbara in 2015 is expected to reach 330 Mt in 2015 (100 percent basis)
Guinea Iron ore	Guinea	BHP Billiton (41.3 percent)	N/A	N/A	N/A	N/A	Arcelor Mittal is in serious discussions with BHP Billiton to acquire the 41.3 percent stake in Mount Nimba, a major Guinean iron ore deposit.
Investment to extend the life of the Yandicoogina mine	Australia	Rio Tinto (100 percent)	1,700	N/A	56	Brown	Approved in June 2012, the investment includes a wet processing plant to maintain product specification levels and provide a platform for future potential expansion. It will extend the life of the mine to 2021 and expand its nameplate capacity to 56 Mtpa.
Iron Bridge Project	Australia	Fortescue Metals Group (88 percent)	N/A	Q1 2015	1.5 (Stage I), 9.5 (Stage II)	N/A	Concrete works are complete; structural, mechanical and piping works are well advanced; electrical and instrumentation works have commenced, and the commissioning team has started planning and documenting the start-up of the plant. First production from the 1.5 Mtpa plant is expected in Q1, 2015. Testing and commissioning of the plant has been planned for Q2, 2015.
Liberia Iron ore	Liberia	BHP Billiton (100 percent)	N/A	N/A	N/A	N/A	Cavalla resources Ltd has acquired BHP's Liberia Iron ore assets in August 2014.
Phase two of the Marandoo mine expansion	Australia	Rio Tinto (100 percent)	1,100	N/A	15	Brown	Approved in February 2011, the expansion is expected to sustain production at 15 Mtpa for 16 further years till 2030. Rio Tinto is expected to spend US$933 million to extend the mine life.

[16] The list is not exhaustive and contains only a limited number of projects.

Project	Country	Owner/ Operator	Capex (US$ million)	Potential start year	Full capacity (Mtpa)	Type	Progress and updates
Samarco Fourth pellet Plant	Brazil	BHP Billiton (50 percent) Vale (50 percent)	3,500	H1 2014	22	Brown	Production for the nine months increased 37 percent q-o-q to record 22 Mt (100 percent basis) that the end of Q1, 2015, with the fourth pellet plant reaching its full capacity over the period.
Solomon Hub	Australia	Fortescue Metals Group (100 percent)	3,500	2012	60	Green	Fortescue opened the expansion to 155 Mtpa with the official opening of the Kings Valley project at the Solomon Hub on 28 March 2014. Work continues on identifying and defining new targets for bedded mineralization in and around the Solomon Hub with a drill program completed at Frederick.
Tubarão VIII	Brazil	Vale**	1,321	H1 2014	7.5	NA	Production volumes at the Tubarão pellet plants was 7.1 Mt in Q1 2015, which was 22.6 percent higher than in Q1, 2014, mostly due to the ramp up of the Tubarão VIII pellet plant that reached 1.6 Mt over the same period.
Two phased expansion of Iron ore Company of Canada (IOC)	Canada	Rio Tinto (58.7 percent), Mitsubishi Corporation (26.2 percent), and the Labrador Iron ore Royalty Income Corporation (15.1 percent)	N/A	Phase I completed	23.3	Brown	Pellet production was two percent higher in 2014 as compared with 2013, primarily driven by the improvements in operational efficiency achieved at the production plants. During Q1, 2015, concentrate and pellet production was 28 percent and 15 percent higher, respectively, as compared to Q1, 2014, driven by improved performance.
WAIO Jimblebar Mine Expansion	Australia	BHP Billiton (85 percent)	3,640*	Q3 2013	188	Brown	WAIO production for the FY 2015 is now expected to be 250 Mt (100 percent basis). Further, WAIO production is expected to grow 65 Mtpa at a low capital intensity of US$30 per annual ton, to reach 290 Mt by the end of FY 2017.
WAIO Port Blending and Rail Yard Facilities	Australia	BHP Billiton (85 percent)	1,000*	2015	N/A	Brown	It handled first ore during H2 2013. The project intends to optimize resources and enhance efficiency across the WAIO supply chain.
Zanaga Project	Republic of Congo	Glencore plc (50 percent plus one share)	N/A	N/A	14	Green	The project has now advanced to the next phase of development, in which financing initiatives is being advanced and the commencement of Front End Engineering Design is being prepared, ahead of a potential investment and construction decision.

*Excludes announced pre-commitment funding

**Equity share of Vale in the project is not available

#Total Chichester Hub produces 90 mpta of Iron ore plus an additional six Mtpa from a joint venture with BC Iron

Source: Company presentations, company websites, company quarterly reviews, latest news and articles

The above analysis includes projects of BHP Billiton, Rio Tinto, Vale, Fortescue Metals Group and Glencore plc.

Pieter van Dijk
Partner, Accounting Advisory Services
KPMG in Brazil

Pieter is responsible for Accounting Advisory Services and is also the head of mining with KPMG in Brazil. He assists the Finance Function in large global and Brazilian organizations. He has expertise in complex technical accounting issues (Brazilian GAAP & IFRS), IPO advisory, cost management and financial close and reporting, particularly in the Energy & Natural Resources Sector.

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