METALS AND MINING

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July 2018
## EXECUTIVE SUMMARY

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Third Largest coal producer</strong></td>
<td>- India is the 3rd largest producer of coal. Coal production in the country stood at 676.51* million tonnes in FY18.</td>
</tr>
<tr>
<td><strong>Fourth-Largest iron ore producer</strong></td>
<td>- India ranks 4th globally in terms of iron ore production. In FY18, production of iron ore reached 210 million tonnes.</td>
</tr>
<tr>
<td><strong>Third largest steel producer</strong></td>
<td>- India retained its spot as the third largest crude steel producer in 2017. Production of crude steel increased 4.5 per cent to 102.34 MT in FY18 from 97.39 MT in the preceding fiscal year.</td>
</tr>
<tr>
<td><strong>Aluminium Production</strong></td>
<td>- Combined Aluminium production of NALCO, BALCO, HINDALCO and Vedanta increased 5.65 per cent to 1.84 MT in FY18 from 1.74 MT in FY17.</td>
</tr>
<tr>
<td><strong>Long duration mining lease</strong></td>
<td>- India has vast mineral potential with mining leases granted for longer durations of 20 to 30 years.</td>
</tr>
</tbody>
</table>

**Note:** CAGR - Compound Annual Growth Rate, ^BP Statistical Review of World Energy 2018, *Provisional, **USGS Mineral Commodity Summaries 2018

**Source:** Ministry of Coal, Worldsteel.org, BP, Ernst and Young
ADVANTAGE INDIA
• Rise in infrastructure development and automotive production driving growth in the sector
• Power and cement industries also aiding growth in the metals and mining sector
• Demand for iron and steel is set to continue, given the strong growth expectations for the residential and commercial building industry

• There is significant scope for new mining capacities in iron ore, bauxite and coal
• Considerable opportunities for future discoveries of subsurface deposits
• The Ministry of Steel aims to increase the steel production capacity to 300 million tonnes by 2030-31 from 134.6 million tonnes in 2017-2018 indicating new opportunities in the sector
  - In February 2017, the country’s coal ministry allowed private companies to engage into mining activities for commercial purposes

• India holds a fair advantage in cost of production and conversion costs in steel and alumina
• It’s strategic location enables convenient exports to developed as well as the fast-developing Asian markets
• India produces 95 minerals—4 fuel-related minerals, 10 metallic minerals, 23 non-metallic minerals, 3 atomic minerals and 55 minor minerals (including building and other minerals).

• 100 per cent FDI allowed in the mining sector and exploration of metal and non-metal ores under the Automatic Route
• Approval of MMDR Bill (2011) to provide better legislative environment for investment and technology
• Under the Union Budget 2018-19, the Government added a surcharge of 10 per cent on aggregate duties of customs on imported goods to strengthen the domestic industry.

Notes: FDI - Foreign Direct Investment, MMDR Bill - Mines and Mineral (Development and Regulation) Bill
Source: Data Monitor, RBI, EY
EVOLUTION OF THE INDIAN MINING SECTOR

- Mining sector received a boost post independence under the impact of successive 5 Year Plans
- Mineral Exploration Corporation established to conduct exploration with focus on coal, iron ore, limestone, dolomite and manganese ore
- Indian mining sector was opened up to Foreign Direct Investment in 1993 after the announcement of the New Mineral Policy
- Ministry of Mines notified revised royalty rates and dead rent in September 2014 and the revised rates came into effect on September 1, 2014.

- Central Government promulgated Industrial Policy Resolution
- The exploration of minerals was intensified and the Geological Survey of India was strengthened
- Indian Bureau of Mines was established to look after the scientific development of mineral resources
- Mineral Exploration Corporation established to conduct exploration with focus on coal, iron ore, limestone, dolomite and manganese ore
- Indian mining sector was opened up to Foreign Direct Investment in 1993 after the announcement of the New Mineral Policy

- Total crude steel production in India reached 101.4 million tonnes in 2017 making the country the 3rd largest crude steel producer in the world.
- An airborne geophysical survey of the Obvious Geological Potential Area was inaugurated in April 2017 and will cover a 0.2 million sq km area. It is one of most efficient and cost effective methods of resource exploration worldwide.

Source: World Steel Association (WSA), DIPP, DataMonitor
SEGMENTS OF METALS AND MINING INDUSTRY

Iron and steel
- Iron and steel segment offers a product mix which includes hot rolled parallel flange beams and columns, rails, plates, coils, wire rods, and continuously cast products such as billets, blooms, beam, blank, rounds, and slab and metallics and ferro alloy.

Coal
- Coal market consists of primary coal (anthracite, bituminous and lignite).

Aluminium
- Aluminium segment includes primary aluminium, aluminium extrusions, aluminium rolled products, alumina chemicals.

Bauxite
- Bauxites are sub-divided into 2 basic types based on the processing methods - Tropical bauxite and European bauxite.

Base metals
- Base metal market consists of lead, zinc, copper, nickel and tin.

Precious metals and minerals
- Precious metals market includes gold, silver, platinum, palladium, rhodium and diamond.
India metals and mining sector has witnessed strong growth over the past few years. GVA of the mining and quarrying industry has grown at a CAGR of 6.21 per cent between 2011-12 and 2017-18 to reach US$ 58.14 billion in 2017-18.

Mineral production in India has also surged, achieving a CAGR of 5.72 per cent between 2013-14 and 2017-18E to reach US$ 17.62 billion in 2017-18.

The number of operative mines (excluding atomic minerals, petroleum (crude), natural gas (utilized) and minor minerals) in India have increased to an estimated 1,531 in 2017-18 from 1,508 in 2016-17.

Notes: CAGR - Compound Annual Growth Rate, PE – Provisional Estimates, *Constant exchange rate of US$ 1 = Rs 64.45, ^Excluding atomic and fuel minerals

Source: Ministry of Statistics and Programme Implementation, Ministry of Mines
COMPOSITION OF INDIA’S METALS AND MINING SECTOR

- Production of as many as 95 minerals is undertaken in India, including 4 fuel minerals, 10 metallic minerals, 23 non-metallic minerals, 3 atomic minerals and 55 minor minerals (including building and other materials).

- Rajasthan was the leading producer of metallic, non-metallic and minor minerals in 2017-18, followed by Odisha, Andhra Pradesh, Chhattisgarh and Karnataka. The leading states in terms of growth in mineral production were Karnataka (30.66 per cent growth), Chhattisgarh (29.98 per cent), Rajasthan (25.61 per cent), Goa (23.46 per cent) and Odisha (21.98 per cent).

- Production of metallic minerals in the country has increased from US$ 7.30 billion in 2011-12 to US$ 8.23 billion in 2017-18E. During the same period, production of non-metallic minerals increased from US$ 0.95 billion to US$ 1.20 billion.

**Notes:** MMT- Million Metric Tonnes, E-Estimate, #Constant exchange rate of US$ 1 = Rs 64.45, ^Excludes atomic and fuel minerals

**Source:** Ministry of Mines
- Iron ore is a key input for production of steel and primary iron.
- Majority (over 85 per cent) of iron ore reserves are of medium to high-grade and are directly used in blast furnace and Direct Reduced Iron (DRI) plants in the form of sized lumps or sinters or pellets.
- India was estimated as the fourth largest producer of iron ore in 2017.
- Iron ore production in the country increased from 129.32 million tonnes in FY15 to an estimated 210.47 million tonnes in FY18.

**Notes:** CAGR - Compounded Annual Growth Rate, P – Provisional, E - Estimate

**Source:** Business Standard, Ministry of Mines (Annual Report)
RISING STEEL DEMAND DRIVING GROWTH

- With the Indian economy expected to grow by approximately 7 per cent in the years to come, sectors such as infrastructure and automobiles will receive a renewed thrust, which would further generate demand for steel in the country.
- India is expected to overtake Japan to become the world’s second largest steel producer by 2019-20.
- India’s crude steel production crossed 100 MT for the first time in FY18. Crude steel production in the country increased 4.5 per cent year-on-year to 102.34 MT in 2017-18.
- According to World Steel Association, India’s steel demand is steel demand is expected to grow 5.5 per cent in 2018 to 92.0 million tonnes and 6.0 per cent in 2019 to reach 97.5 million tonnes.

Notes: CAGR - Compound Annual Growth Rate, *Provisional
Source: World Steel Association
RISING DOMESTIC DEMAND PUTS PRESSURE ON SUPPLY OF IRON AND STEEL … (1/2)

- In 2017-18, India’s iron and steel exports were valued at US$ 11.24 billion. During FY10-18, India’s exports of iron and steel increased at a CAGR of 12.07 per cent. During April-May 2018, exports of iron and steel stood at US$1.62 billion.

- Government of India imposes 30 per cent export duty on all iron ore forms (Except the low grade iron ore) and 5 per cent export duty is levied on iron ore pellets.

**India’s exports of iron and steel (US$ billion)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (US$ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY10</td>
<td>4.52</td>
</tr>
<tr>
<td>FY11</td>
<td>7.14</td>
</tr>
<tr>
<td>FY12</td>
<td>8.30</td>
</tr>
<tr>
<td>FY13</td>
<td>8.09</td>
</tr>
<tr>
<td>FY14</td>
<td>9.22</td>
</tr>
<tr>
<td>FY15</td>
<td>8.68</td>
</tr>
<tr>
<td>FY16</td>
<td>8.68</td>
</tr>
<tr>
<td>FY17</td>
<td>11.24</td>
</tr>
<tr>
<td>FY18</td>
<td>5.49</td>
</tr>
<tr>
<td>FY19*</td>
<td>1.62</td>
</tr>
</tbody>
</table>

**Notes:** CAGR - Compound Annual Growth Rate, ^CAGR is up to 2017-18, FY19* - up to May 2018
**Source:** Ministry of Commerce, DGCIS – Directorate General of Commercial Intelligence and Statistics
India has turned into a net importer of iron and steel due to strong growth in the manufacturing sector and rising infrastructure projects.

India’s transition into a net importer of steel despite the strong growth in domestic steel production shows the demand potential of the sector.

The impact of strong growth in domestic steel production has been most felt in the iron ore sector; with steel firms’ ever rising demand for the raw material, India’s imports of iron ore has been growing steadily. India imported iron ore worth US$ 350.99 million in FY18.

India’s iron and steel imports grew at a CAGR of 2.13 per cent to reach US$ 10.43 billion in FY18. Imports during April-May 2018 stood at US$ 1.99 billion.

Notes: CAGR - Compound Annual Growth Rate, ^CAGR is up to 2017-18, FY19* - up to May 2018

Source: Ministry of Commerce, DGCIS – Directorate General of Commercial Intelligence and Statistics
COAL PRODUCTION GROWING AT A STEADY PACE

- In the coming years, coal production in the country is likely to receive a boost as the government plans to replace the country’s captive mining policy in coal and iron ore with an open bidding one.
- During FY2017-18, 45.18 million tonnes of coal linkages have been auctioned for the non-regulated sector.
- India’s coal production grew at a CAGR of 4.19 per cent between FY08 and FY18 to reach 688.78 million tonnes. Coal production during Apr-May 2018 stood at 112.56 million tonnes.

Notes: CAGR - Compound Annual Growth Rate, ^CAGR is up to 2017-18, FY19* - up to May 2018
Source: Ministry of Mines
INDIA’S ROLE IN GLOBAL ALUMINIUM PRODUCTION

- India was the fourth largest producer of aluminium in the world with a share of around 5.33 per cent in global aluminium output.
- The principal user segment in India for aluminium continues to be electrical and electronics sector followed by the automotive and transportation, building, construction, packaging, consumer durables, industrial and other applications including defence.
- According to Ministry of Mines, India has the 7th largest bauxite reserves which was around 2,908.85 million tonnes in FY17*.
- Over the course of last four years, India’s aluminium production capacity has increased to 4.1 MMTPA, driven by investments worth Rs 1.2 lakh crore (US$ 18.54 billion).

India’s share in global aluminium production (2017)

China: 54.33%
Russia: 13.17%
India: 6.00%
United Arab Emirates: 5.35%
Australia: 5.33%
Bahrain: 4.33%
Iceland: 1.60%
Brazil: 1.27%
United States: 1.23%
Canada: 1.45%
Other countries: 2.46%

Note: ICRA - Information Credit Rating Agency Ltd., FY17* - as per latest data available
Source: World Bureau of Metal Statistics (WBMS), Aluminium Association of India, Economist Intelligence Unit (EIU), ICRA Management Consulting Services Ltd (IMaCS)
GROWING DOMESTIC DEMAND TO SUPPORT ALUMINIUM PRODUCTION

- Demand for aluminium is expected to pick up as the scenario improves for user industries, like power, infrastructure and transportation.

- Production of aluminium stood at 3.39 million tonnes during 2017-18 and it is estimated to increase marginally to 3.42 million tonnes in 2018-19.

- Aluminium exports from the country grew to 1.66 million tonnes in 2017-18 from 1.22 million tonnes in 2016-17. At the same time, import of aluminium reached 0.36 million tonnes.

- National Aluminium Company (NALCO), a central government-owned entity, is set to join the club of million-tonne producers in the metal segment by 2020. NALCO has readied an about US$ 3.72 billion investments for increasing its alumina, aluminium and power production capacities.

*Note: CAGR - Compound Annual Growth Rate, F- Forecast, *CAGR is till FY18

Source: CARE Ratings, Ministry of Mines, DGCIS, News Articles
STRONGER ECONOMIC GROWTH TO SUPPORT ALUMINIUM CONSUMPTION

- Aluminium demand in the country is expected to grow 7 per cent in 2018-19.
- Consumption of aluminium in India grew to 2.08 million tonnes in 2017-18, and is forecasted to reach to 5.30 million tonnes by 2020-21.

Note: CAGR - Compound Annual Growth Rate, F – Forecast, *CAGR is till FY18
Source: Care Ratings, Indian Bureau of Mines
## MAJOR METALS AND MINING PLAYERS IN THE COUNTRY

<table>
<thead>
<tr>
<th>Segment</th>
<th>Major player</th>
<th>Market share</th>
<th>Other players</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron and Steel</td>
<td>[Image]</td>
<td>NA</td>
<td>Sesa Goa, SAIL, Orissa Minerals</td>
</tr>
<tr>
<td>Coal</td>
<td>[Image] Coal India Limited</td>
<td>80 per cent</td>
<td>Singareni Collieries Company, Reliance Natural Resources</td>
</tr>
<tr>
<td>Aluminium</td>
<td>[Image] HINDALCO</td>
<td>60 per cent</td>
<td>National Aluminium Company (NALCO), Bharat Aluminium Company (BALCO)</td>
</tr>
</tbody>
</table>
### NOTABLE TRENDS IN THE METALS AND MINING SECTOR (1/2)

| Captive mining for coal | - In captive mining for coal, companies are permitted to set up coal washeries and for specified end uses, including the setting up of power plants, fertilizers and steel units  
- As per government, US$ 271.27 million of revenue was generated from e-auction of 33 coal mines till January 2017 |
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Longer duration leases</td>
<td>- In the last few years, India has seen a significant growth in minerals with the government granting leases for longer durations of 20 to 30 years</td>
</tr>
<tr>
<td>Focus on domestic market</td>
<td>- The demand for metal and metal products is rising in the domestic market with India being a net importer in the metals segment</td>
</tr>
</tbody>
</table>
| Overseas ventures | - In search of greater mineral opportunities, an increasing number of Indian mining companies are venturing overseas in a bid to secure stable, long-term supplies of minerals especially in the areas of coal and iron ore  
- GVK is developing two coal mines viz. Alpha coal mine and Kevin’s Corner coal mine jointly with Hancock Prospecting.  
- Adani Enterprises’ Carmichael coal plant aims to make its first shipment by March 2020. |
| Outlook of Metal and Mining | - In December 2017, the index of mineral production increased 7.5 per cent month-on-month to 115.5 and the total value of mineral production was estimated at US$ 3.54 billion.  
- Mining group under the Index of Industrial Production (IIP) grew 2.3 per cent in 2017-18. Growth of the mining classification increased from -0.4 per cent in February 2018 to 2.8 per cent in March 2018. |

*Source: Aranca Research, Mining Global Inc.*
NOTABLE TRENDS IN THE METALS AND MINING SECTOR (2/2)

Cost optimisation
- Players in the industry are trying to minimise cost to gain competitive advantage
- For example, SAIL is trying to reduce cost by
  - Entering into MoU for coal bed methane and propane gas to reduce cost of energy
  - Optimisation of the input resources, increasing operating efficiency for handling the assets available with the company, reducing overhead costs and stabilisation of newly formed operation units

Focus on technology
- Players in the industry are focusing on optimising technology to increase process efficiency
- Coal India Ltd is focusing on making best use of technology. It has ambitious plans of using GPS/GPRS based vehicle tracking system to enhance productivity. It also has services such as E-Auction, E-Procurement of goods and services
- The Ministry of Mines has put in motion the Mining Surveillance System (MSS), a pan-India surveillance network using latest satellite technology, to check illegal mining.
- Mining Industry of India has been dominated by surface mining. However, due to various challenges presented by surface mining, the move towards underground mining is considered inevitable. This presents an opportunity for players to enter the market with underground mining technology.

Build strategic alliances
- Alliance with global and domestic players help companies to improve their operational performance through technological improvement and cost optimisation

Notes: MoU – Memorandum of Understanding, GPS – Global Positioning System, GPRS - General Packet Radio Service
Source: SAIL Company website, Business Standard, Aranca Research
GROWTH DRIVERS
STRONG FUNDAMENTALS AND POLICY SUPPORT AIDING GROWTH

Higher demand for metals
- Growing infrastructure investments
- Sustained growth in India’s automotive sector
- Aluminum and coal benefiting from rising power production
- Rising production of cement increasing demand for coal

Policy support
- Relaxed FDI norms
- Allowing private ownership
- Reduced customs duty
- Tax and other incentives

Innovation
- Expanding research and development and distribution facilities in India
- Use of modern technology
- Providing support to global projects from India

Increasing investments
- Increasing FDI
- Increasing private participation

Notes: M&As - Mergers and Acquisitions, FDI - Foreign Direct Investment
Source: Aranca Research
A FAST-EXPANDING CONSTRUCTION SECTOR HAS AIDED GROWTH … (1/2)

- India is witnessing a sustained growth in infrastructure build up. The construction industry has been witness to a strong growth wave powered by large spends on housing, road, ports, water supply, rail transport and airport development.
- Infrastructure projects continue to provide lucrative business opportunities for steel, zinc and aluminium producers.
- It has been estimated that India is going to require US$ 4.5 trillion* of investment by 2040 for infrastructure development.
- In Union Budget 2018-19, Government of India has allocated US$ 92.22 billion for infrastructure sector.

**Note:** F - Forecasts (by BMI), CAGR – Compounded Annual Growth Rate, *Economic Survey 2017-18
**Source:** Business Monitor International’s (BMI) Report on infrastructure industry in India Aranca Research Estimates

**Growth in infrastructure related activities during 2017-18**

<table>
<thead>
<tr>
<th>Activity</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity Generation</td>
<td>4.0</td>
</tr>
<tr>
<td>National Highway Construction</td>
<td>20.0</td>
</tr>
<tr>
<td>Rail freight traffic</td>
<td>4.6</td>
</tr>
<tr>
<td>Railway earnings</td>
<td>10.0</td>
</tr>
<tr>
<td>Cargo at major ports</td>
<td>4.8</td>
</tr>
</tbody>
</table>
A FAST-EXPANDING CONSTRUCTION SECTOR HAS AIDED GROWTH ... (2/2)

- India’s construction industry is expected to grow 6.1 per cent on year-on-year (y-o-y) basis in 2018.\(^*\)

- Gross Value Added (GVA) of the construction sector grew nearly 8.80 per cent y-o-y to Rs 11.19 trillion (US$ 173.61 billion)* in 2017-18.

- Iron and steel being a core component of the real estate sector, demand for these metals is set to continue given strong growth expectations for the residential and commercial building industry.

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**Note:** E - Estimated  F - Forecasts (by BMI)  CAGR – Compounded Annual Growth Rate, YoY – Year on Year, \(^*\)Provisional Estimate, \(^\wedge\)As per BMI Research

**Source:** Business Monitor International’s (BMI) Report on infrastructure industry in India, Aranca Research
The power sector accounts for a large share of the consumption of coal in the country.

In FY18, power generation in India was 1,206.31 TWh. Power generation in India expanded at a CAGR of 5.53 per cent during FY08–18.

Around 85.97 per cent of total power generation was done through thermal power plants, while hydro and nuclear plants contributed 3.18 per cent and 10.46 per cent respectively in FY18.

In March 2018, utilisation capacity of coal and lignite based power plants in India rose to 65.33 per cent from 63.12 per cent in March 2017.

*Note:* TWh - Terawatt-hour, P - Provisional, CAGR – Compounded Annual Growth Rate

*Source:* Ministry of Power, Central Electricity Authority (CEA), Aranca Research
FAVOURABLE POLICIES ARE SUPPORTING THE SECTOR GROWTH

<table>
<thead>
<tr>
<th>The Mines and Minerals (Development and Regulation) Amendment Act, 2015</th>
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<tbody>
<tr>
<td>The MMDR Act of 1957, witnessed amendments in 2015 for the promotion and development of the mining industry in India, that includes making auctions the sole method for the allotment of mineral concessions and mandating the establishment of District Mineral Foundation (DMF)</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Relaxed FDI norms</th>
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<tbody>
<tr>
<td>FDI of up to 100 per cent is permitted under the Automatic Route to explore and exploit all non-fuel and non-atomic minerals and process all metals as well as for metallurgy</td>
</tr>
<tr>
<td>FDI caps for coal and lignite has been increased to 100 per cent under the automatic route</td>
</tr>
<tr>
<td>In March 2018, the government allowed 100 per cent FDI in coal mining.</td>
</tr>
<tr>
<td>In February 2018, Government of India approved the methodology for auction of coal mines. Auction held under this methodology will be ascending forward auctions with the bid parameter being Rupees paid to the state government per tonne of actual production. Also, there will be no restriction on sale or utilisation of coal.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Allowing private ownership</th>
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</thead>
<tbody>
<tr>
<td>Government of India is encouraging private ownership for steel operations and other high priority industry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investment incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profits of companies producing specified metals are given tax concession under the Income Tax Act</td>
</tr>
<tr>
<td>Low custom duty on the capital equipment used for minerals</td>
</tr>
<tr>
<td>Companies who do mining in backward districts are eligible for complete tax holiday for a period of 5 years from the commencement of production and 30 per cent tax holiday for 5 years thereafter</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Reduced custom duty</th>
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<tbody>
<tr>
<td>Government of India significantly reduced the duty payable on finished steel products and has streamlined the associated approval process</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Skill Development Plan for the Mining Sector (2016-22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focuses on upgradation of the skill sets to foster adaptation of new state of art technology</td>
</tr>
<tr>
<td>Aims to increase the capacity and quality of training infrastructure and trainers to address human resource needs</td>
</tr>
</tbody>
</table>

In August 2017, Ministry of Mines had constituted a committee to revisit National Mineral Policy 2008 and announce a fresh and more effective, meaningful and implementable policy. Comments were invited from the general public and other entities concerned in January 2018.

Notes: FDI - Foreign Direct Investment
Source: Aranca Research
## MMDR ACT

### General restrictions and concessions
- Reservation of areas for PSUs removed
- State governments to set up special courts to expedite prosecution in illegal mining
- Statutory Coordination cum Empowered Committee at central and state levels to decide upon stringent penalties for offences

### Process of revenue collection and usage
- Central government to establish National Mineral Fund; respective state governments to establish State Mineral Fund(s)
- District Mineral Foundation will be set up by the state government which will work for the interest and benefit of persons or families affected by mining related operation in the district and will be managed by a governing council
- The mining tax collected will be spent within the district

### Relaxation on duties
- The Basic Customs Duty (BCD) on
  - ships imported for breaking up is being reduced from 5 per cent to 2.5 per cent
  - coal-tar pitch is being reduced from 10 per cent to 5 per cent
  - battery waste and battery scrap is being reduced from 10 per cent to 5 per cent
  - steel grade limestone and steel grade dolomite is being reduced from 5 per cent to 2.5 per cent

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**Notes:** FDI - Foreign Direct Investment  
**Source:** Aranca Research
MINERAL AUCTION RULES, 2015

**Mining Leases**
- Mining auctions conducted under the ambit of state government.
- Types of lease granted:
  - Mining lease - where evidence of mineral contents is established
  - Composite lease - combination of a prospecting licence and a mining lease

**Net Worth Requirements**
- For annual average production up to
  - Rs 2 crore (US$ 311,090)– net worth required: Rs 50 lakh (US$ 77,773)
  - Rs 20 crore (US$ 3.11 million)- net worth required: Rs 10 crore (US$ 1.56 million)
- Small bidders can include value of unencumbered immovable property in net worth

**Auction Modalities**
- Auctions are conducted electronically and bidding is done over two rounds
- The first round requires bidders to furnish technical details and initial offer which has to be equal to or higher than the set ‘Reserve Price’.
- The highest bid in the first round acts as the ‘reserve price’ for the second round in which only technically qualified bidders participate.
FDI up to 100 per cent is allowed in exploration, mining, minerals processing and metallurgy under the automatic route for all non-fuel and non-atomic minerals including diamonds and precious stones.

During April 2000 – March 2018, FDI inflows into metallurgical instruments sector stood at US$ 10,702.29 million. During the same period, FDI inflows in the mining, diamond and gold ornaments and coal production sectors stood at US$ 2,308.26 million, US$ 1,128.99 million and US$ 27.73 million, respectively.

**Source:** Department of Industrial Policy and Promotion, Aranca Research
### MERGER AND ACQUISITIONS

#### M&A activities (till March 2018)

<table>
<thead>
<tr>
<th>Acquirer</th>
<th>Target</th>
<th>Acquisition price (US$ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tata Steel</td>
<td>Bhushan Steel</td>
<td>7,044.22</td>
</tr>
<tr>
<td>Balasore Alloys</td>
<td>Zimbabwe Alloys</td>
<td>90</td>
</tr>
<tr>
<td>Mr Anil Agarwal</td>
<td>Anglo American (Partial stake purchased)</td>
<td>2,000</td>
</tr>
<tr>
<td>JSW Energy Ltd</td>
<td>Jindal Steel and Power Ltd</td>
<td>976</td>
</tr>
<tr>
<td>SAIL</td>
<td>Reiterated its interest to acquire majority stake in Neelachal Ispat Nigam Ltd (NINL) in Jajpur, Odisha</td>
<td>-</td>
</tr>
<tr>
<td>Joint Venture between Vedanta Resources and Sesa Goa</td>
<td>Merger of Sterlite Industries (Indian subsidiary of Vedanta Resources) and Sesa Goa</td>
<td>3,900</td>
</tr>
<tr>
<td>GVK Power and Infrastructure Ltd</td>
<td>Hancock Coal-Queensland Coal</td>
<td>1,260.0</td>
</tr>
<tr>
<td>Sesa Goa Ltd</td>
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<td>Lanco Resources Australia</td>
<td>Griffin Coal Mining Co Pty Ltd</td>
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<td>Oil and Natural Gas Corporation (ONGC)</td>
<td>Gujarat State Petroleum – KG Basin</td>
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<tr>
<td>Tata Steel Ltd</td>
<td>Brahmani River Pellets Ltd</td>
<td>132.35</td>
</tr>
</tbody>
</table>

**Source:** Thomson Banker, Deal Tracker, Aranca Research
OPPORTUNITIES
Untapped market with strong growth potential

- India’s per capita steel consumption was 61 kg in 2016 compared with the global average of 208 kg
- Rural per capita steel consumption is likely to reach around 20 kg from 13 kg currently
- An amount equal to US$ 25 billion to US$ 33 billion is expected to be invested in steel sector over the next 6-7 years

Scope for new mining capacities in iron ore, bauxite and coal

- India has the world’s seventh largest reserve base of bauxite and fourth largest base of iron ore respectively, and accounts for about 7 per cent and 11 per cent respectively, of total world production
- Moreover, India has the world’s fifth largest coal reserves and accounts for 7.5 per cent of total global production

Rapid growth of user-industries to drive demand for metals and minerals

- Strong long-term demand from the steel industry is expected to further boost the iron ore industry
- Increasing power production is likely to catapult demand for coal
- Booming construction, automobiles and packaging industries are expected to lend substantial support to the metals and mining sector

Expansion of product line by existing players

- The iron and steel segment offers a product mix which includes hot rolled parallel flange beams and columns rails, plates, coils, wire rods, and continuously cast products such as billets, blooms, beams, blanks, rounds and slabs as well as metallics and ferro alloy. Looking at the expected growth in sector, existing manufacturers have a huge opportunity to expand their product line in new segments

Source: WSA, Ernst and Young, Aranca Research
OPPORTUNITIES IN THE IRON ORE SECTOR

Exploration in proposed exploration zones

- Odisha: Bonai (Keonjhar belt) and Tomka (Daitari and Umerkoke belts)
- Jharkhand: All major high-grade ore deposits contain low-grade lateritic ores
- Karnataka: Bagalkot, Tumkur, and Chitradurga districts
- Maharashtra: Sindhudurg, Gadchiroli and Gondia
- Chhattisgarh: All 14 deposits of Bailadila range, Dantewada district
- Andhra Pradesh: Kadapa, Kurnool, Karimnagar, Adilabad, and Guntur districts

Scope for new mining capacities in iron ore, bauxite and coal

- Pelletisation capacity is about 27.64 MTPA
  - Sintering capacity is about 39 MTPA
- Scope for domestic and foreign firms in upcoming PPP opportunities
  - Joint Venture or technical participation with midcap players with lease/license and seeking capital, expertise and technology
  - Through the auction route, players can get access to coal mines and iron ore reserves
  - Introduction of mines and minerals (Development and Regulation) Amendment Bill, 2015 to encourage investments and introducing viable mining practices
  - Government of India has asked states to provide the list of mineral blocks that will be auctioned in 2018-19 and the status of statutory clearances of those mines which have already been auctioned.

Notes: MT - Metric Tonnes, MTPA - Metric Tonnes Per Annum
Source: PwC, Aranca Research
INDUSTRY ASSOCIATIONS
<table>
<thead>
<tr>
<th>Agency</th>
<th>Contact Information</th>
</tr>
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<tbody>
<tr>
<td>SAIL – Steel Authority of India Ltd.</td>
<td>118, 1st Floor, Ramanashree Arcade</td>
</tr>
<tr>
<td></td>
<td>18, M. G. Road</td>
</tr>
<tr>
<td></td>
<td>Bengaluru, Karnataka-560 001</td>
</tr>
<tr>
<td></td>
<td>Phone: 91- 80-25582197, 25582757</td>
</tr>
<tr>
<td></td>
<td>Fax: 91-80-25594535</td>
</tr>
<tr>
<td></td>
<td>E-mail: <a href="mailto:aluminium@eth.net">aluminium@eth.net</a></td>
</tr>
<tr>
<td>Federation of Indian Mineral Industries</td>
<td>FIMI House, B-311, Okhla Industrial Area</td>
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<tr>
<td></td>
<td>Phase-I, New Delhi-110 020</td>
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<tr>
<td></td>
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<tr>
<td></td>
<td>E-mail: <a href="mailto:fimi@fedmin.com">fimi@fedmin.com</a></td>
</tr>
<tr>
<td>Indian Stainless Steel Development Association</td>
<td>L -22/4, DLF Phase–II</td>
</tr>
<tr>
<td></td>
<td>Gurgaon, Haryana-122 002</td>
</tr>
<tr>
<td></td>
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<td>Fax: 91-124 - 4375509</td>
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<tr>
<td></td>
<td>E-mail: <a href="mailto:nissda@gmail.com">nissda@gmail.com</a></td>
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</table>
USEFUL INFORMATION
APPENDIX

- BMI’s Mining Business Environment Ratings
  - Market structure: It takes into consideration mining output in US$ billion, sector value growth, per cent y-o-y, mining sector, per cent of GDP
  - Country structure: It takes into consideration labour market infrastructure, physical infrastructure, tax, and scope of state
  - Market risks: It considers metals prices, 5-year forecast average, metals price forecast, average 5-year growth, regulatory framework, legal framework
  - Country risk: It considers, long-term external risk, corruption, bureaucracy, long-term policy continuity
  - Mining ratings: It shows the overall scores of the above indicators
GLOSSARY

- CAGR: Compound Annual Growth Rate
- FDI: Foreign Direct Investment
- FY: Indian Financial Year (April to March)
  - So FY10 implies April 2009 to March 2010
- GOI: Government of India
- IBM: The Indian Bureau of Mines
- MoU: Memorandum of Understanding
- PPP: It could denote two things (mentioned in the presentation accordingly) –
  - Purchasing Power Parity (used in calculating per-capita GDP)
  - Public Private Partnership (a type of joint venture between the public and private sectors)
- PE: Private Equity
- US$: US Dollar
- Wherever applicable, numbers have been rounded off to the nearest whole number
## EXCHANGE RATES

### Exchange Rates (Fiscal Year)

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<th>Year</th>
<th>INR Equivalent of one US$</th>
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<td>2005–06</td>
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<td>Q1 2018-19</td>
<td>67.04</td>
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### Exchange Rates (Calendar Year)

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<th>INR Equivalent of one US$</th>
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*Source: Reserve Bank of India, Average for the year*
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