



METALS AND MINING

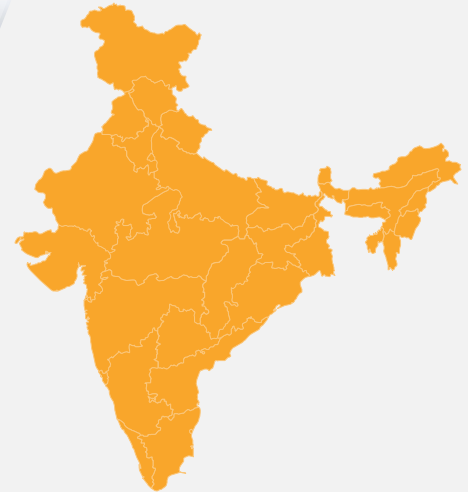
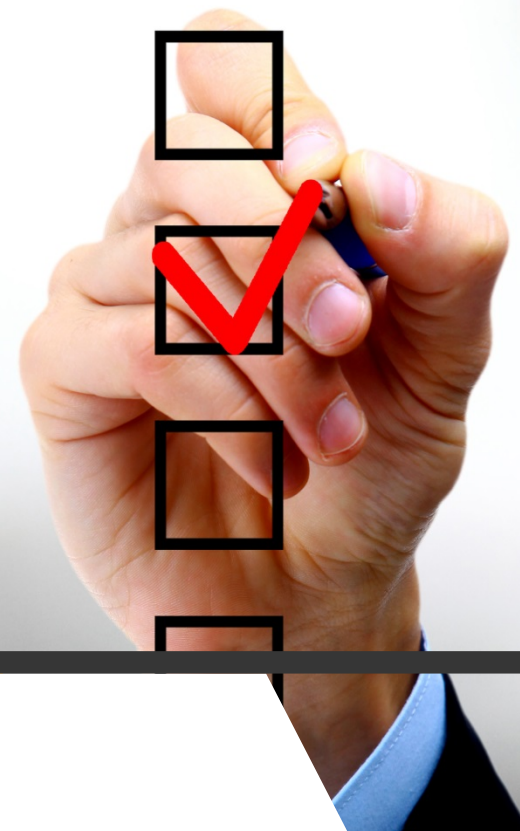


Table of Content

▶ Executive Summary.....	3
▶ Advantage India.....	4
▶ Market Overview and Trends.....	6
▶ Notable Trends.....	20
▶ Growth Drivers.....	23
▶ Opportunities.....	33
▶ Industry Associations.....	36
▶ Useful Information.....	38



EXECUTIVE SUMMARY

Third Largest coal producer

- India is the 3rd largest producer of coal[^]. Coal production in the country stood at 688.8 million tonnes in FY18. It stood at 739.36 million tonnes in FY19.
- India is expected to overtake Australia and the United States in early 2020s to take the position of the world's second-largest coal producer.

Fourth-Largest iron ore producer

- India ranks 4th globally in terms of iron ore production^{**}. In FY18, production of iron ore reached 210 million tonnes.

Second largest steel producer

- India became the world's second largest crude steel producer in 2018 with output of 106.5 million tonnes.

Aluminium Production

- Combined Aluminium production in India stood at 1.53 MT in FY19 (up to September 18).

Long duration mining lease

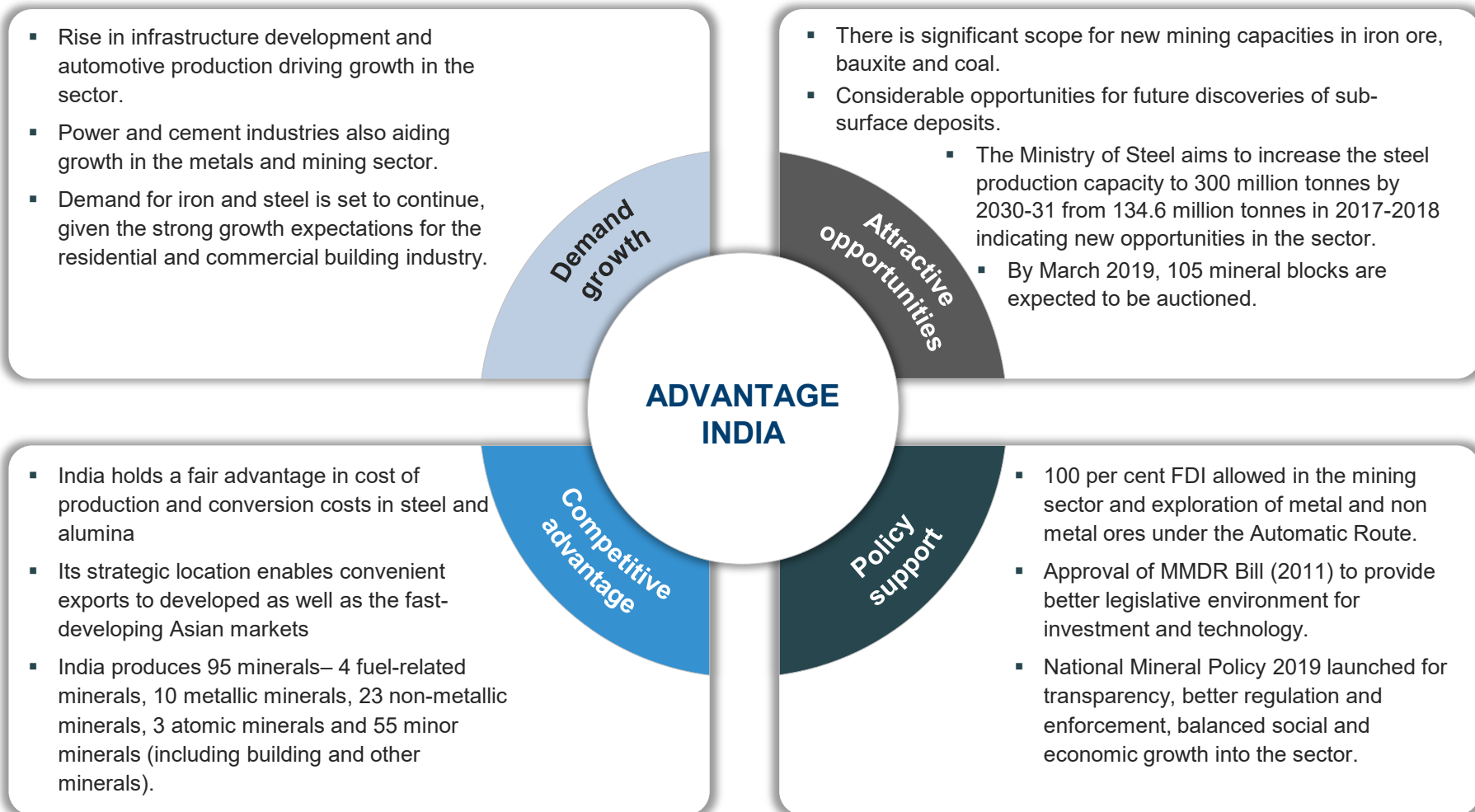
- India has vast mineral potential with mining leases granted for longer durations of 20 to 30 years

Note: CAGR - Compound Annual Growth Rate, [^]BP Statistical Review of World Energy 2018, ^{**}USGS Mineral Commodity Summaries 2018,.

Source: Ministry of Coal, Worldsteel.org, BP, Ernst and Young

ADVANTAGE INDIA





Notes: FDI - Foreign Direct Investment, MMDR Bill - Mines and Mineral (Development and Regulation) Bill

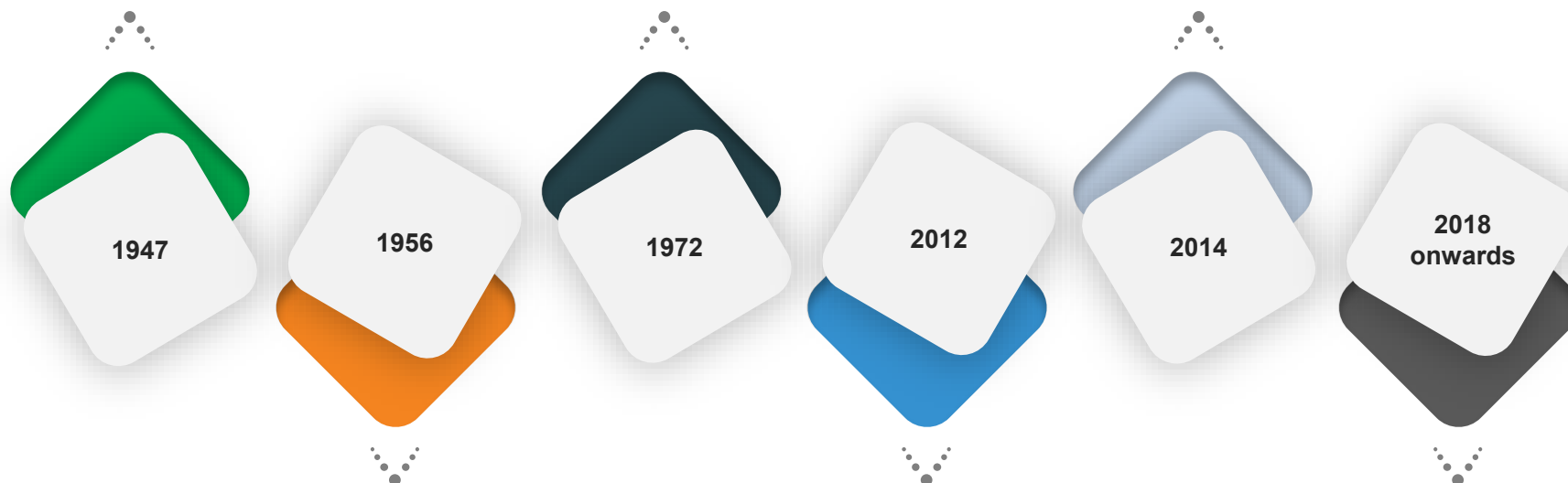
Source: Data Monitor, RBI, Ey, Ministry of Mines

MARKET OVERVIEW



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 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.



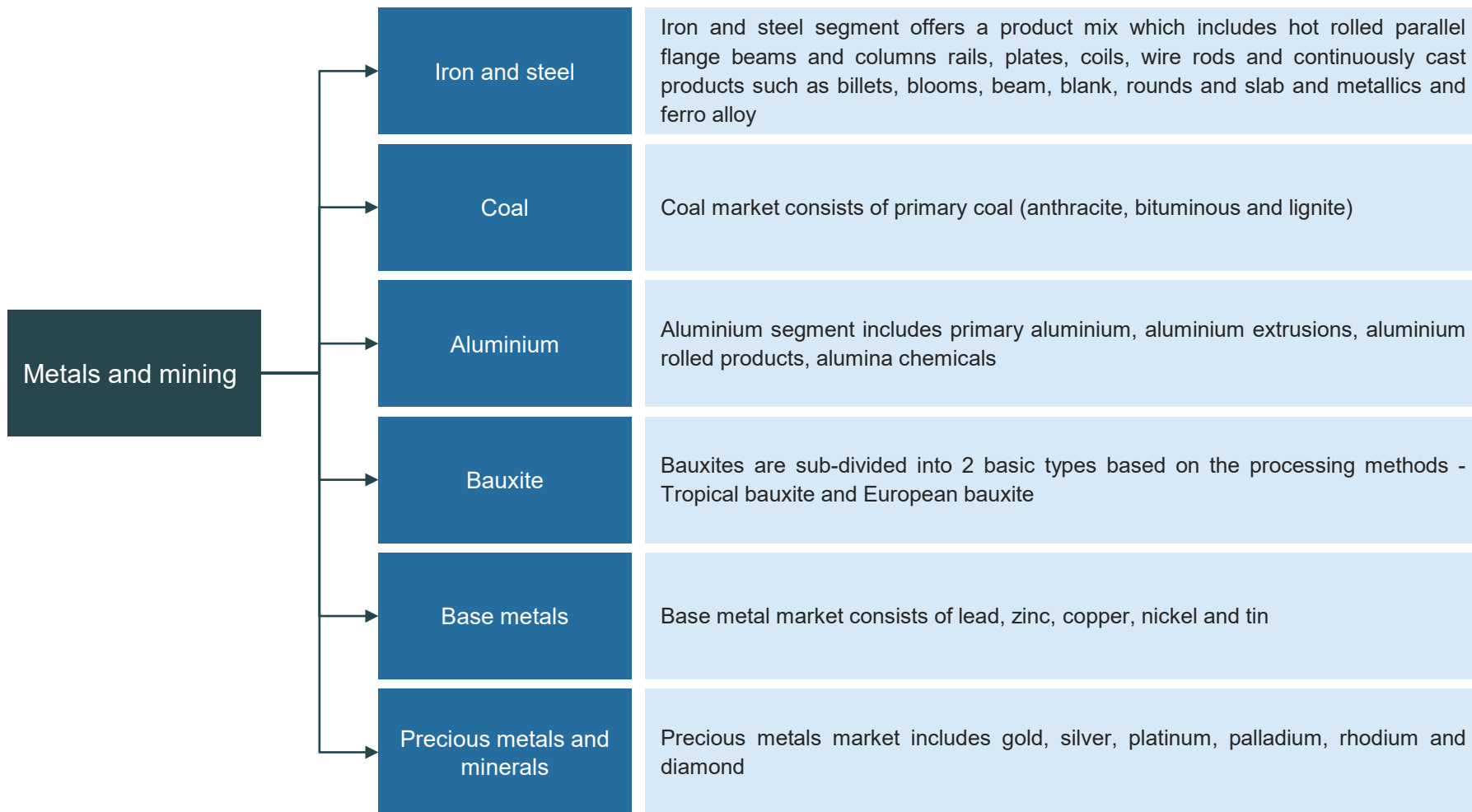
- Central Government promulgated Industrial Policy Resolution
- The exploration of minerals was intensified, and the Geological Survey of India was strengthened
- Indian Bureau of Mines was established to look after the scientific development of mineral resources

- 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 106.5 million tonnes in 2018 making the country the 2nd 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.

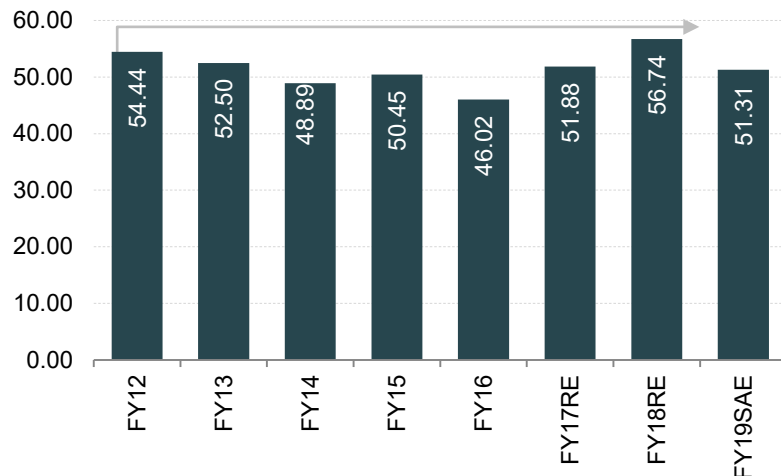
Source: World Steel Association (WSA), DIPP, DataMonitor

SEGMENTS OF METALS AND MINING INDUSTRY

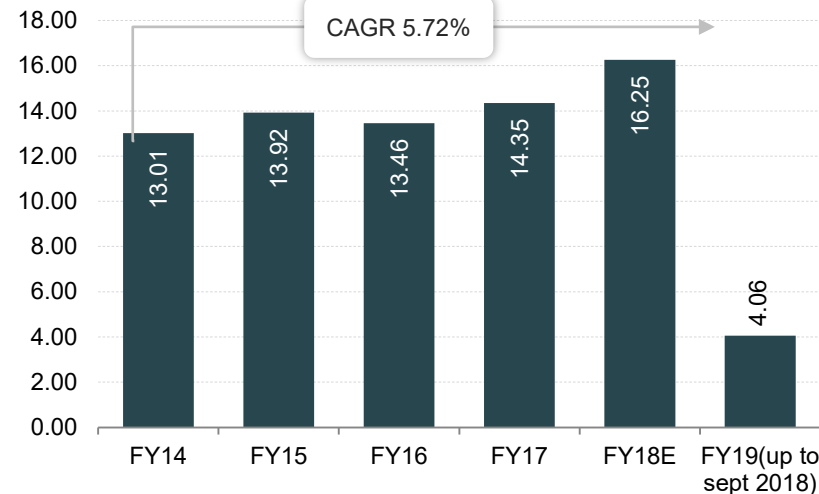


STRONG GROWTH IN INDIA'S METALS AND MINING SECTOR OVER THE YEARS

GVA from Mining and Quarrying (US\$ billion)*



Mineral Production in India (US\$ billion)*^



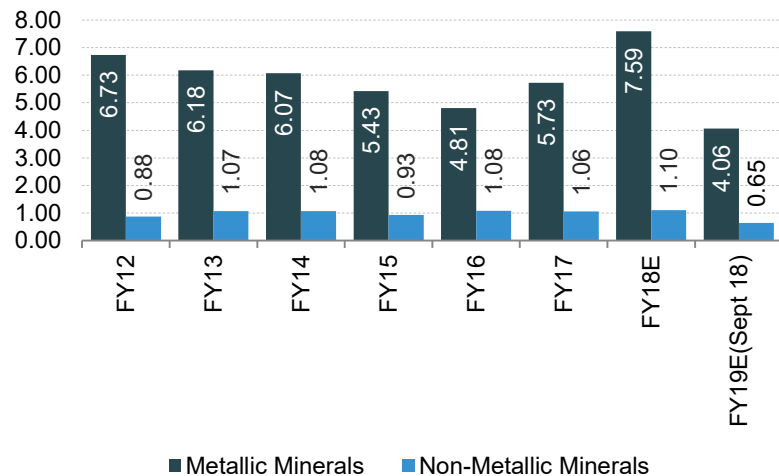
- India metals and mining sector has witnessed strong growth over the past few years. GVA from Mining and Quarrying reached US\$ 51.31 billion in FY19 SAE.
- Mineral production in India has also surged, achieving a CAGR of 5.72 per cent between 2013-14 and 2017-18E to reach US\$ 17.62 billion in 2017-18.
- 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.
- As of May 2019, 64 mineral blocks have been auctioned.

Notes: CAGR - Compound Annual Growth Rate, RE – Revised estimates, SAE: Second Advance Estimate, ^Excluding atomic and fuel minerals, GVA - Gross Value Added, @ - between April – September 2018, Mineral production data expected to be update by March 2019 from Ministry of Mines Annual Report FY19

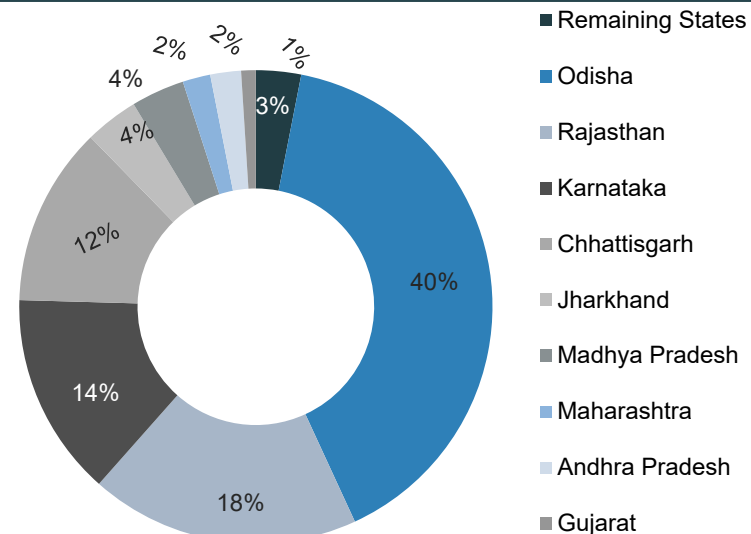
Source: Ministry of Statistics and Programme Implementation, Ministry of Mines

COMPOSITION OF INDIA'S METALS AND MINING SECTOR

Production of Metallic and Non-Metallic Minerals (US\$ billion)#



Share of states in mineral[^] production FY19 (Up to Sep 18) (in US\$ billion)



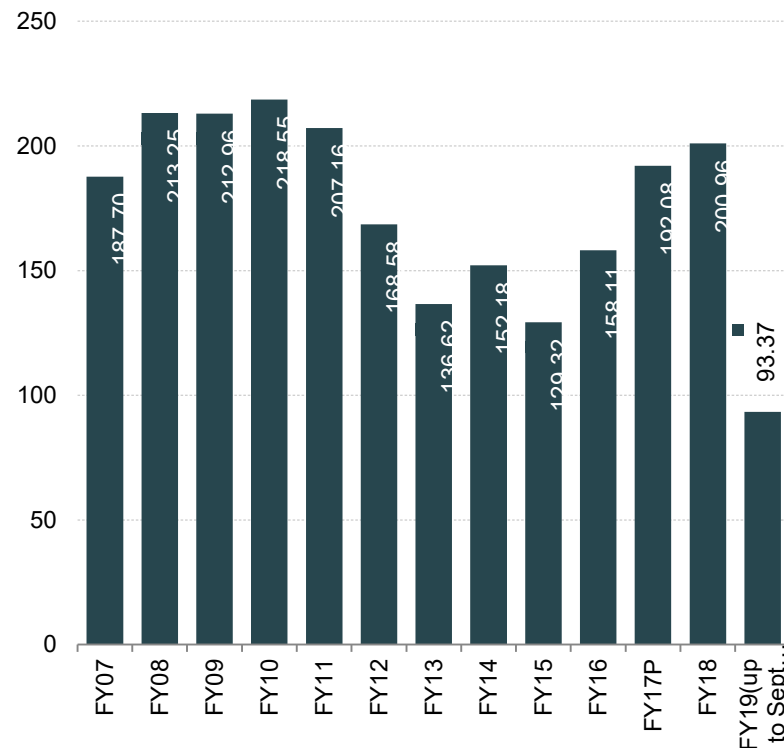
- Production of as many as 95 minerals is undertaken in India, including 4 fuel minerals, 10 metallic minerals, 23 non-metallic minerals, 3 atomic minerals and 55 minor minerals (including building and other materials).
- Odisha was the leading producer of minerals with production worth in FY19[^], followed by Rajasthan, Karnataka, Chhattisgarh and Jharkhand with production of minerals worth US\$ 1.89 billion, US\$ 0.87 billion, US\$ 0.66 billion, US\$ 0.58 billion and US\$ 0.17 billion, respectively.
- 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.
- Production of metallic minerals and non-metallic minerals in India FY 19* respectively US\$ 4.06 billion and US\$ 0.65 billion

Notes: MMT- Million Metric Tonnes, E-Estimate, #Constant exchange rate of US\$ 1 = Rs 69.85, [^] - excluding fuel, atomic and minor minerals, * up to September 2018
Source: Ministry of Mines

IRON ORE PRODUCTION

- 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 200.96 million tonnes in FY18. It is forecasted to grow at the rate of 5 per cent in FY19.
- Production of iron ore in FY 19(up to September) is 93.37 million tonnes.

Iron ore production (million tonnes)

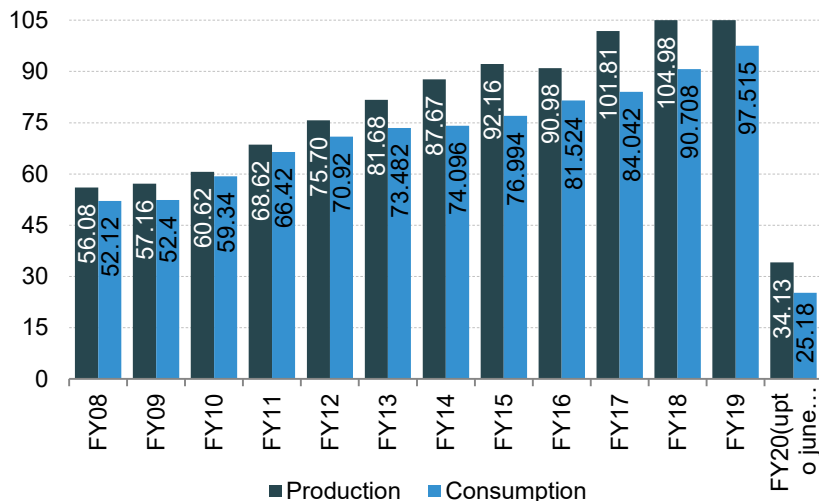


Notes: CAGR- Compounded Annual Growth Rate, P – Provisional, E – Estimate, * up to July 2018

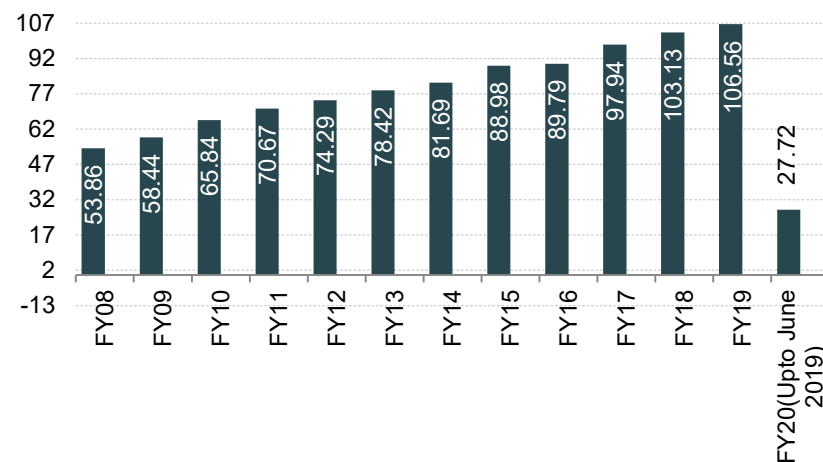
Source: Business Standard, Ministry of Mines (Annual Report)

RISING STEEL DEMAND DRIVING GROWTH

Finished steel production and consumption (million metric tonnes)



Crude Steel production (million metric tonnes)



- With the Indian economy expected to grow more than 7 per cent in the years to come, sectors such as infrastructure and automobiles will receive a renewed thrust, which would in turn generate demand for steel in the country.
- India's crude steel production crossed 100 MMT for the first time in FY18. Crude steel production in the country increased 3.33 per cent year-on-year to 106.56 MMT in 2018-19.
- Finished steel production in India stood at 34.131 MMT between April-June 2019. Consumption of finished steel in the country stood at 25.18 MMT between April-June 2019 .
- According to World Steel Association, India's 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.

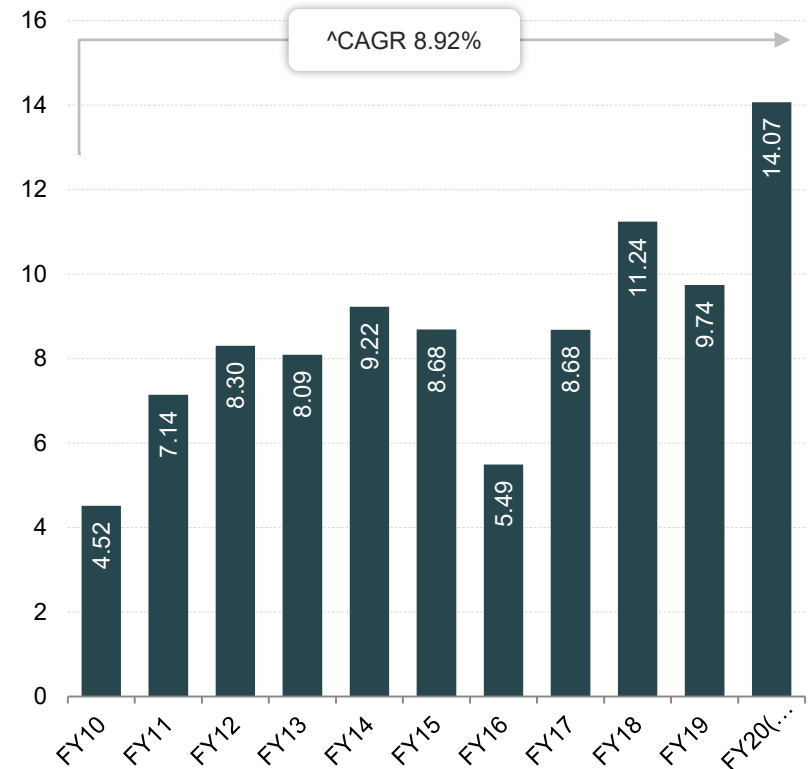
Notes: CAGR - Compound Annual Growth Rate, MMT – Million Metric Tonnes,.

Source: World Steel Association

RISING DOMESTIC DEMAND PUTS PRESSURE ON SUPPLY OF IRON AND STEEL ... (1/2)

- In 2018-19, India's iron and steel exports were valued at US\$ 9.74 billion. During FY10-18, India's exports of iron and steel stood at a CAGR of 8.92 per cent. India's iron and steel export during between April - July 2019 stood at US\$ 14.07 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)



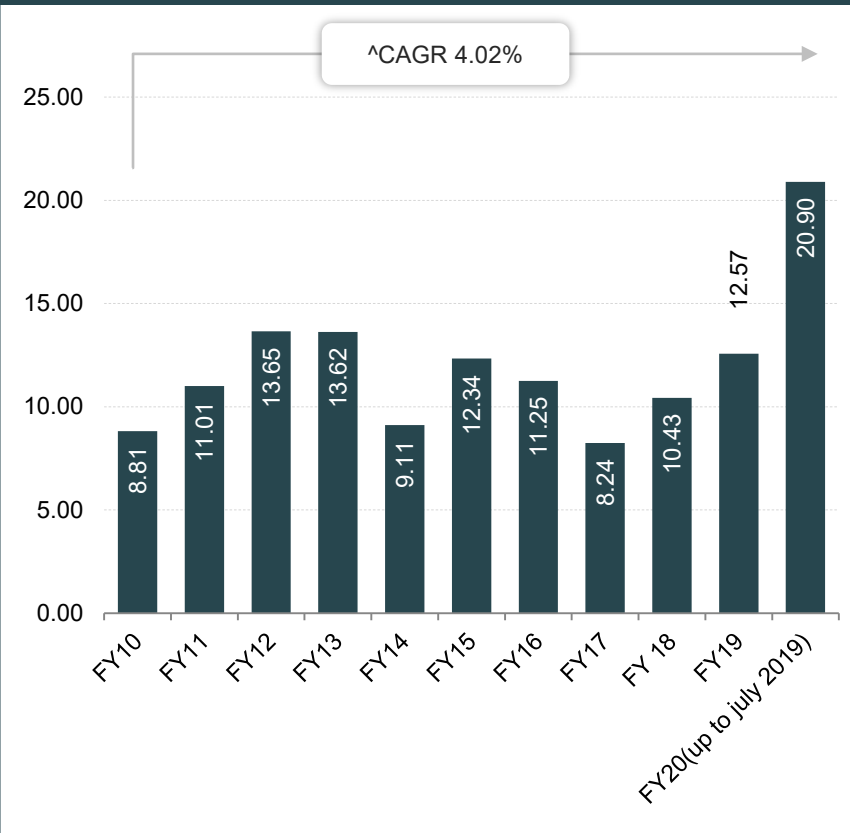
Notes: CAGR - Compound Annual Growth Rate, ^CAGR is up to 2018-19.

Source: Ministry of Commerce, DGCIS – Directorate General of Commercial Intelligence and Statistics

RISING DOMESTIC DEMAND PUTS PRESSURE ON SUPPLY OF IRON AND STEEL ... (2/2)

- 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 4.02 per cent to reach US\$ 12.57 billion in FY19. India's iron and steel export during between April- July 2019 stood at US\$ 20.90 billion.

India's imports of iron and steel (US\$ billion)

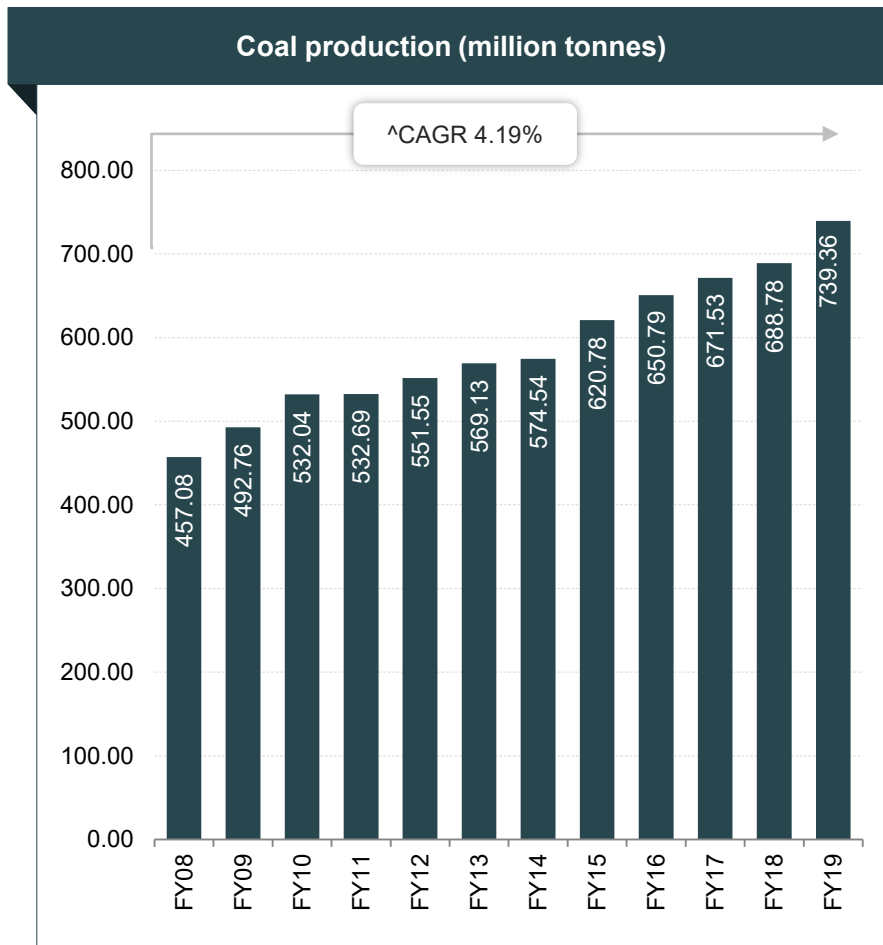


Notes: CAGR - Compound Annual Growth Rate, ^CAGR is up to 2018-19.

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 4.47 per cent between FY08 and FY19 to reach 739.36 million tonnes.



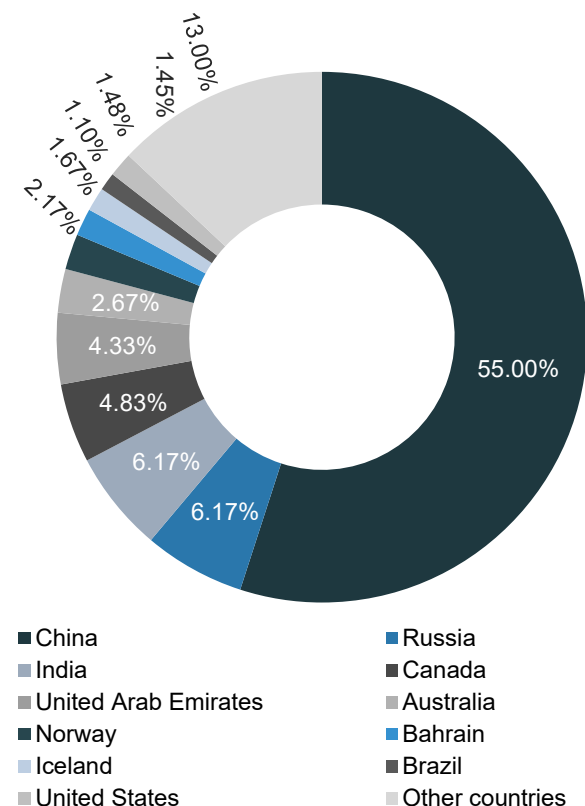
Notes: CAGR - Compound Annual Growth Rate, ^CAGR is up to 2018-19.

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*.
- Aluminum production increased to 0.65 million tonnes from 0.58 million tonnes at a growth rate of 12.5 per cent between April-July 2018.
- 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 (2018E)



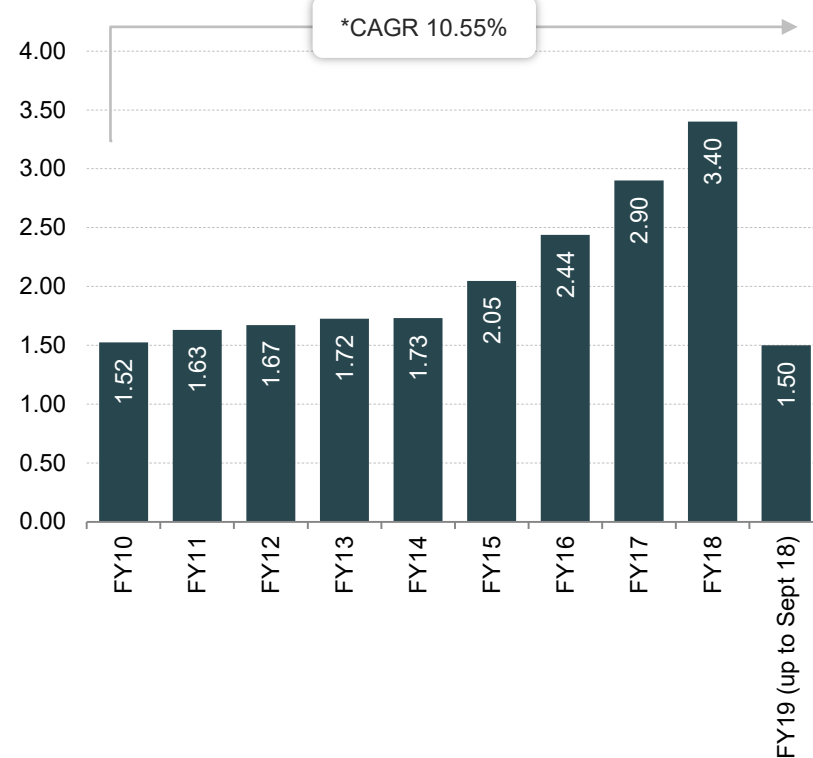
Note: ICRA - Information Credit Rating Agency Ltd.

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 3.40 million tonnes during 2017-18 and Aluminium production FY 2019(up to September 18) is 1.5 million tones.
- 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 about US\$ 3.72 billion investments for increasing its alumina, aluminium and power production capacities.

Aluminium production (million tonnes)



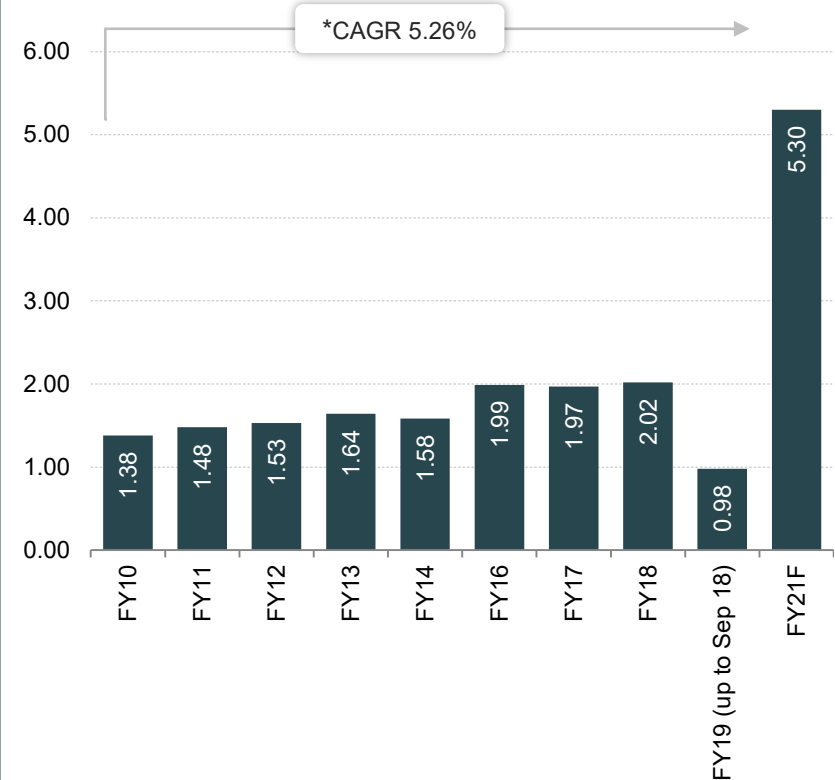
Note: CAGR - Compound Annual Growth Rate, F- Forecast, *CAGR is till FY18.

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.
- Aluminum consumption reached 0.98 million tonnes in FY19[^].

Aluminium consumption (million tonnes)



Note: CAGR - Compound Annual Growth Rate, F – Forecast, *CAGR is till FY18, ^ - till Sep 2018

Source: Care Ratings, Indian Bureau of Mines

MAJOR METALS AND MINING PLAYERS IN THE COUNTRY

Segment	Major player	Market share	Other players
Iron and Steel		NA	Sesa Goa, SAIL, Orissa Minerals
Coal	 कोल इण्डिया लिमिटेड Coal India Limited भारत सरकार का उपक्रम A Government of India Undertaking एक महारत्न कंपनी A Maharatna Company	80 per cent	Singareni Collieries Company, Reliance Natural Resources
Aluminium		60 per cent	National Aluminium Company (NALCO), Bharat Aluminium Company (BALCO)

NOTABLE TRENDS



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

Longer duration leases

- 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

Focus on domestic market

- The demand for metal and metal products is rising in the domestic market with India being a net importer in the metals segment

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: TechSci 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
- In July 2018, Union Minister of Coal, Railways, Finance & Corporate Affairs launched a mobile application 'Khan Prahari' and Coal Mine Surveillance & Management System (CMSMS) developed by Central Mine Planning and Design Institute (CMPDI).
- 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

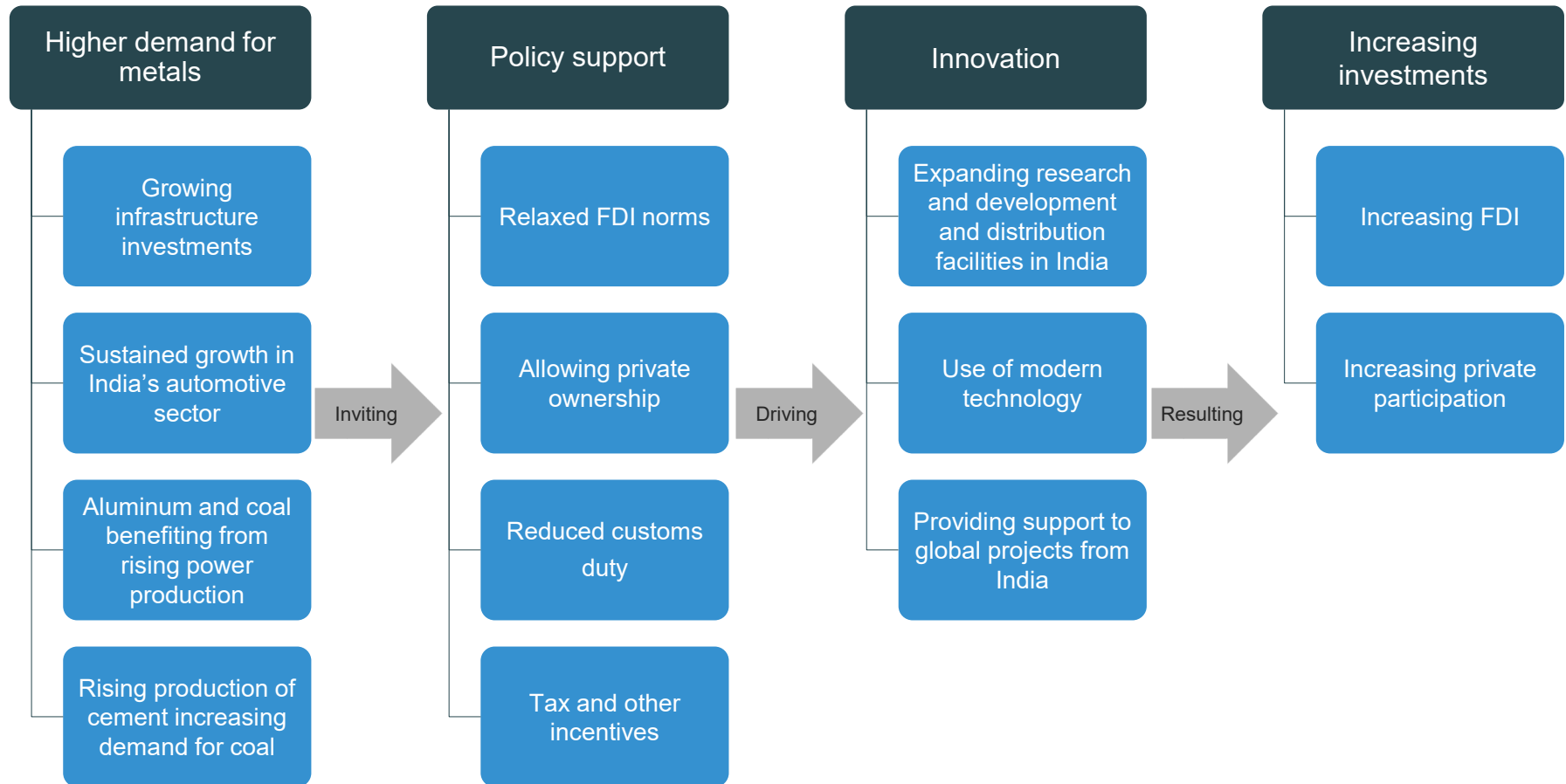
Notes: MoU – Memorandum of Understanding, GPS – Global Positioning System, GPRS - General Packet Radio Service

Source: SAIL Company website, Business Standard, TechSci Research

GROWTH DRIVERS



STRONG FUNDAMENTALS AND POLICY SUPPORT AIDING GROWTH



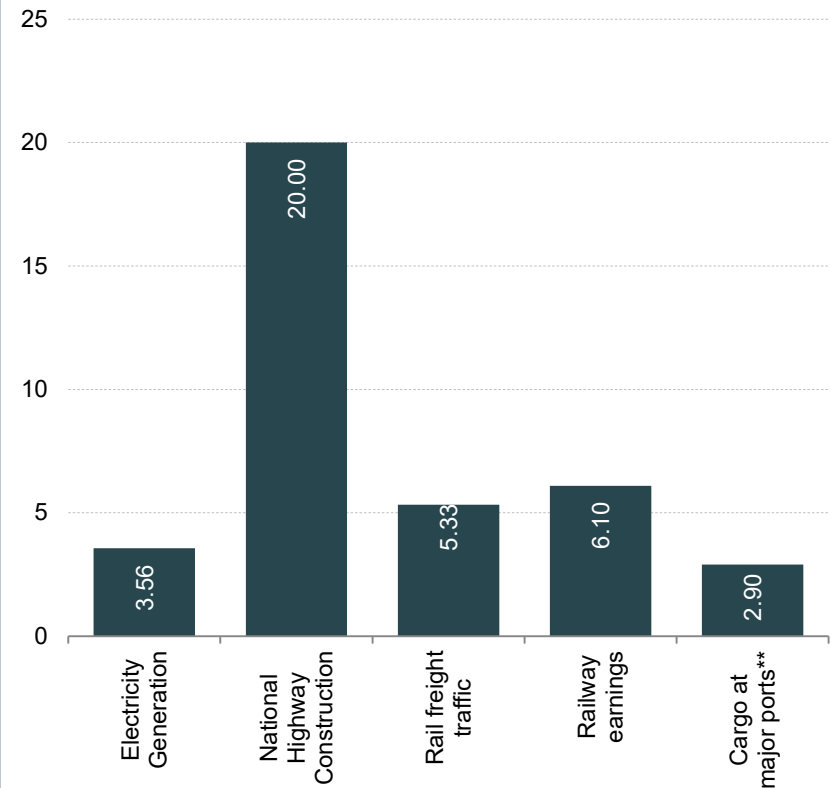
Notes: MandA - Mergers and Acquisitions, FDI - Foreign Direct Investment

Source: : TechSci 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.
- Freight traffic handled by Indian Railways increased 5.33 per cent year-on-year during April 2018 -March 2019 to 1221.39 million tonnes while its gross earnings increased by 6.10 per cent year-on-year during the same time.
- Cargo handled by major Indian ports increased by 2.90 per cent during April 2018-March 2019. Electricity generation in the country increased by 3.56 per cent during April 2018-March 2019.
- 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.

Growth in infrastructure related activities during 2018-19



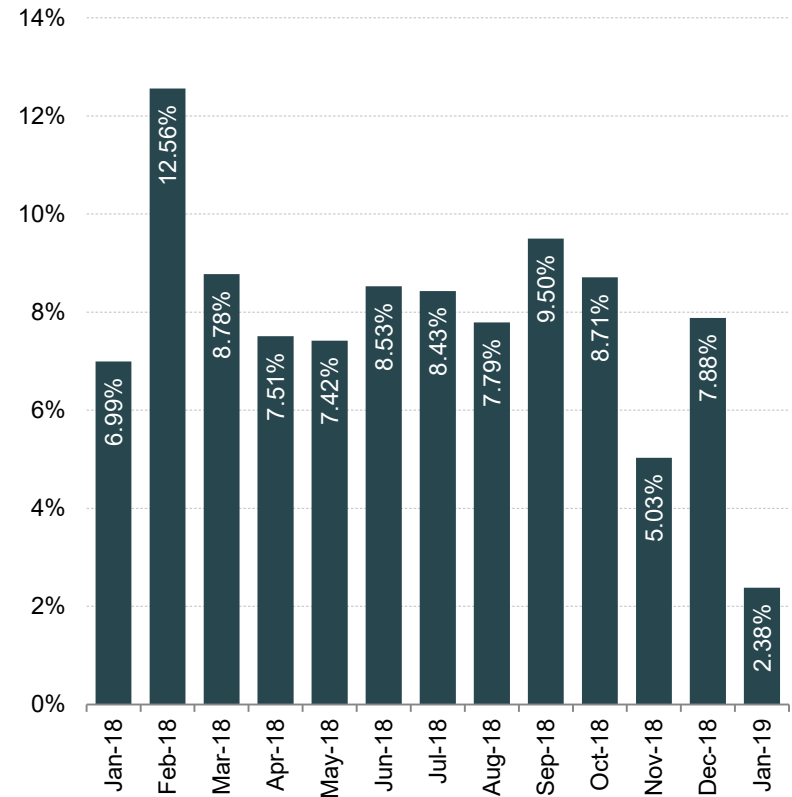
Note: F - Forecasts (by BMI), CAGR – Compounded Annual Growth Rate.

Source: Business Monitor International's (BMI) Report on infrastructure industry in India TechSci Research Estimates

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

Growth of construction goods classification under Index of Industrial Production

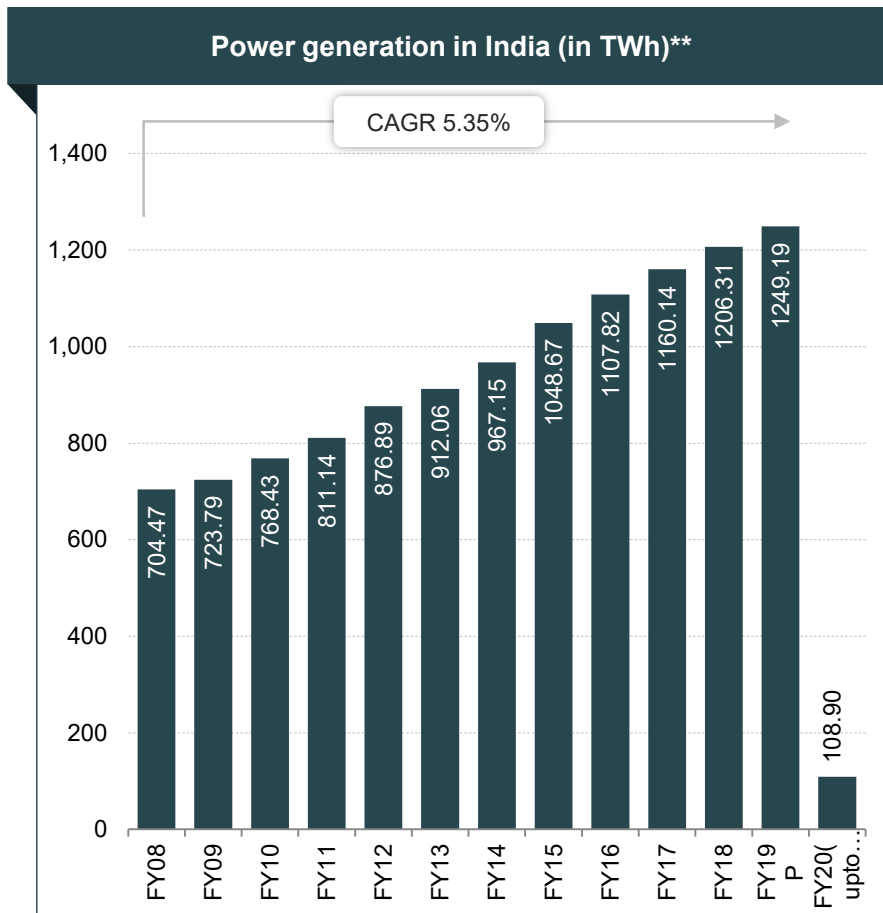


Note: E - Estimated F - Forecasts (by BMI) CAGR – Compounded Annual Growth Rate, YoY – Year on Year, *Provisional Estimate, ^As per BMI Research

Source: Business Monitor International's (BMI) Report on infrastructure industry in India, TechSci Research

POWER AND AUTOMOTIVE PRODUCTION FUELLING DEMAND

- The power sector accounts for a large share of the consumption of coal in the country
- In FY18, power generation in India was 1249.19 TWh. Power generation** in India expanded at a CAGR of 5.35 per cent during FY08–19.
- Coal based power generation is forecasted to grow at a CAGR of 6.5 per cent during FY18-FY23. This increase is expected to boost non-coking coal consumption at a CAGR of 5.4 per cent to 1,076 million tonnes in FY23 from 826 million tonnes in FY18.
- 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.
- With a generation of 1,561 TWh, India is the third largest producer and the third largest consumer of electricity in the world.



Note: TWh - Terawatt-hour, P - provisional, ** power generation from conventional sources

Source: Ministry of Power, Central Electricity Authority (CEA), TechSci Research

FAVOURABLE POLICIES ARE SUPPORTING THE SECTOR GROWTH

National Mineral Policy 2019	▪ Aims to bring in more transparency, better regulation and enforcement, balanced social and economic growth along with sustainable mining practices ▪ Proposes to grant 'industry' status to mining with the objective of boosting financing of private sector ▪ Supports merger and acquisition of mining players
The Mines and Minerals (Development and Regulation) Amendment Act, 2015	▪ 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)
Relaxed FDI norms	▪ 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 ▪ FDI caps in the mining and exploration of metal and non-metal ores have been increased to 100 per cent under the automatic route. ▪ In March 2018, the government allowed 100 per cent FDI in coal mining.
Allowing private ownership	▪ Government of India is encouraging private ownership for steel operations and other high priority industry
Investment incentives	▪ Profits of companies producing specified metals are given tax concession under the Income Tax Act ▪ Low custom duty on the capital equipment used for minerals ▪ 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
Reduced custom duty	▪ Government of India significantly reduced the duty payable on finished steel products and has streamlined the associated approval process
Skill Development Plan for the Mining Sector (2016-22)	▪ Focuses on upgradation of the skill sets to foster adaptation of new state of art technology ▪ Aims to increase the capacity and quality of training infrastructure and trainers to address human resource needs

Notes: FDI - Foreign Direct Investment

Source: TechSci Research

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

Notes: FDI - Foreign Direct Investment

Source: TechSci Research

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

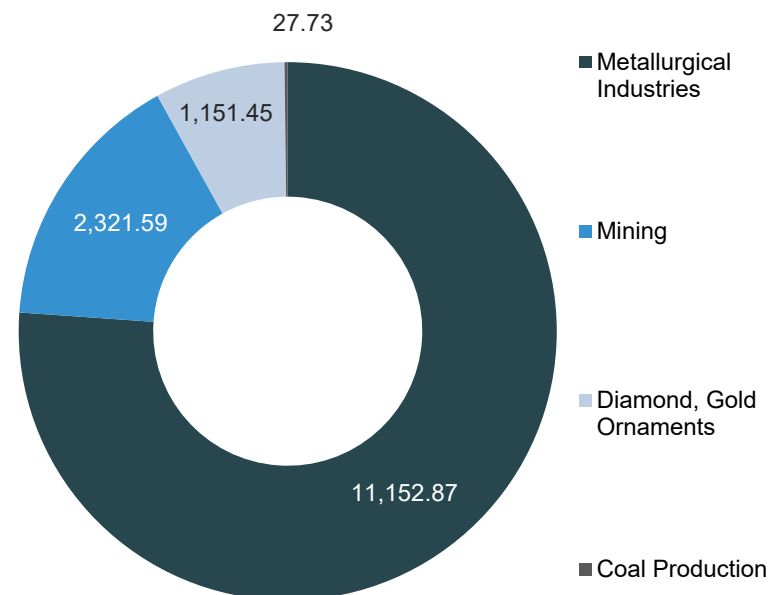
- For annual average production up to
 - Rs 2 crore (US\$ 311,090)– net worth required: Rs 50 lakh (US\$ 77,773)
 - Rs 20 crore (US\$ 3.11 million)– net worth required: Rs 10 crore (US\$ 1.56 million)
- Small bidders can include value of unencumbered immovable property in net worth

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 metallurgy and exploration of metal and non-metal ores under the automatic route for all non-fuel and non-atomic minerals including diamonds and precious stones
- During April 2000–December 2018, FDI inflows into metallurgical industries stood at US\$ 11,152.87 million. During the same period, FDI inflows in the mining, diamond and gold ornaments and coal production sectors stood at US\$ 2,321.59 million, US\$ 1,151.45 million and US\$ 27.73 million, respectively.

FDI equity inflows in the sector during April 2000–December 2018 (US\$ million)



Source: Department of Industrial Policy and Promotion, TechSci Research

MERGER AND ACQUISITIONS

M&A activities (till October 2018)

Acquirer	Target	Acquisition price (US\$ billion)
ArcelorMittal	Essar Steel	7.13
Tata Steel	Bhushan Steel	7.04
Balasore Alloys	Zimbabwe Alloys	US\$ 90 million
Mr Anil Agarwal	Anglo American (Partial stake purchased)	2.0
JSW Energy Ltd	Jindal Steel and Power Ltd	US\$ 976 million
SAIL	Reiterated its interest to acquire majority stake in Neelachal Ispat Nigam Ltd (NINL) in Jajpur, Odisha	-
Joint Venture between Vedanta Resources and Sesa Goa	Merger of Sterlite Industries (Indian subsidiary of Vedanta Resources) and Sesa Goa	3.90
GVK Power and Infrastructure Ltd	Hancock Coal-Queensland Coal	1.26
Sesa Goa Ltd	Cairn India Ltd	1.18
JFE Steel Corp	JSW Steel Ltd	1.03
Lanco Resources Australia	Griffin Coal Mining Co Pty Ltd	US\$ 722.7 million
Vedanta	Cairn India	1.56
Oil and Natural Gas Corporation (ONGC)	Gujarat State Petroleum – KG Basin	1.20
Tata Steel Ltd	Brahmani River Pellets Ltd	US\$ 132.35 million

Source: Thomson Banker, Deal Tracker, TechSci Research

OPPORTUNITIES



Untapped market with strong growth potential

- India's per capita steel consumption was 65.2 kg in 2017 compared with the global average of 214.5 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, standing at 319.02 billion tonnes in FY18

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, TechSci 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 59.30 MTPA*
 - Sintering capacity is about 70.05 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
 - As of October 2018, Rs 1.81 trillion (US\$ 27.00 billion) were earned from e-auction of 50 mineral blocks.

Notes: MT - Metric Tonnes, MTPA - Metric Tonnes Per Annum, *: As per Indian Minerals Yearbook 2017

Source: PwC, TechSci Research, Ministry of Mines

INDUSTRY ASSOCIATIONS



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USEFUL INFORMATION



■ 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 r, mining sector, per cent of GDP
- Country structure: It takes into consideration labour market infrastructure, physical infrastructure r, 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

- 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)

Year	INR Equivalent of one US\$
2004–05	44.95
2005–06	44.28
2006–07	45.29
2007–08	40.24
2008–09	45.91
2009–10	47.42
2010–11	45.58
2011–12	47.95
2012–13	54.45
2013–14	60.50
2014-15	61.15
2015-16	65.46
2016-17	67.09
2017-18	64.45
2018-19	69.89

Exchange Rates (Calendar Year)

Year	INR Equivalent of one US\$
2005	44.11
2006	45.33
2007	41.29
2008	43.42
2009	48.35
2010	45.74
2011	46.67
2012	53.49
2013	58.63
2014	61.03
2015	64.15
2016	67.21
2017	65.12
2018	68.36

Source: Reserve Bank of India, Average for the year

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