INDIAN MINING

a synopsis

January, 2020

FEDERATION OF INDIAN MINERAL INDUSTRIES

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PREFACE

Minerals are vital inputs in our daily life as well as necessary for India's growth and improving the lives of 130 crores Indians. Mining is the bedrock of raw material security and infrastructure growth, necessary to boost demand in the Indian economy. The Arthashastra has aptly recognized that –

"Mines are the source of wealth;
from wealth comes the power of the State"

Five out of eight core sectors of the Indian economy, viz., coal, steel, cement, electricity and fertilizers are dependent on mining. 76% of our electricity comes from coal mining, which powers Indian homes, cellphones, hospitals and is vital for industrial production. Mining sector with employment elasticity of 0.52 creates around 13 times more employment than agriculture and 6 times more employment than manufacturing. Indian mining sector has potential to create 5 crore jobs by 2025 with appropriate Government support.

And, yet there is very little awareness among the public and stakeholders at large about the integral role and contribution of mining sector for the country. This has prompted FIMI to bring out "**Indian Mining: a synopsis**" to share holistic information about mineral resources, its significance for socio-economic development, employment potential, current policy and trade status vis-à-vis global scenario.

We hope it will be useful to readers from all walks of life.

(R K SHARMA)
SECRETARY GENERAL

New Delhi
7th January, 2020

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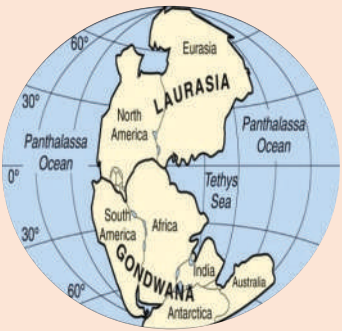
GENESIS

About 180 million years ago, India, South Africa and Australia were part of Gondwana land (named after the Gond tribe from Satpura area in Madhya Pradesh) when it started gradually drifting apart. By 90-100 million years ago, India was moving northwards and about 40-50 million years ago, Indian plate rammed into Asia resulting in formation of the Himalayas.

Owing to their common origin and rock formation, **India, South Africa and Australia share similar geological and mineral potential even today.**

Gondwana Land



Gold Prospecting Regions in 3 Countries

MINING IN OUR LIVES

Socio-economic benefit

Mining is essential to provide raw materials for wide spectrum of industries. This lead to the growth of manufacturing sectors, provide jobs and all round socio- economic benefits.

Climate Change

For solar panels and wind turbines, **we need:** Silicon, Copper, Aluminum, Cadmium, Titanium dioxide, Indium, Selenium, Phosphate, Tellurium.

MINING BRINGS ALL ROUND PROSPERITY

Health Care

In pharma, **we need:** Calcite, Magnesite, Sodium, Sulphur, Zinc, Copper, Silver, Gypsum, Rutile.

Infrastructure

For housing, roads, bridges, schools, hospitals, ports and airports **we need:** Cement, Steel, Glass, Paints, Gravel and Aggregates, Brick Clay and Chalk, Granite and Marble, Gypsum, Bauxite, Feldspar, Copper, Lead and Zinc.

Affordable and clean Energy

Coal is the dominant fuel used for **power generation** in India. India gets more than half of its power from coal, with a share far higher than any other region.

Food Supply

For modern agricultural equipment, **we need:** Steel, Copper, Zinc, Aluminium, Nickel, Tin, Lead, Magnesite, Cadmium

Foreign Trade

Mining can contribute significantly to export and minimize imports.

Government Revenue

A big amount of **government revenue** comes from the mining sector in India. If the mining sector is encouraged, the government revenue will also increase. As a result, the whole economy will be benefitted

Source: FIMI publication “Mining Matters for India”, 2019

EVOLUTION OF MINERAL POLICY

Year	Policy/ Legislation
1952	The Mines Act
1955	The Mines Rules
1957	Coal Bearing Areas (Acquisition and Development) Act
1957	Mines and Minerals (Development and Regulation) Act
1960	Mineral Concession Rules (MCR)
1973	Coal Mines (Nationalization) Act
1974	Coal Mines (Conservation and Development) Act
1988	Mineral Conservation and Development Rules (MCDR)
1993	Coal Mines (Nationalization) Amendment Act
1993	National Mineral Policy (NMP)
1999	Granite Conservation and Development Rules
2002	Marble Development and Conservation Rules
2002	Offshore Areas Mineral (Development and Regulation) Act
2004	The Colliery Control Rules
2006	Offshore Area Mineral Concession Rules
2008	National Mineral Policy
2012	Auction by Competitive Bidding of Coal Mines Rules
2014	The Coal Mines (Special Provisions) Rules, 2014 (as amended on 08.03.2015)
2015	Mines and Mineral (Amendment) Act, 2015
2015	The Mineral (Auction) Rules, 2015 (as amended on 30.11.2017)
2015	The Mines and Minerals (contribution to District Mineral Foundation) Rules, 2015 (as amended on 31.08.2016)
2015	National Mineral Exploration Trust (NMET) Rules
2015	The Minerals (Evidence of Mineral Contents) Rules
2015	The Mineral (Non-Exclusive Reconnaissance Permits) Rules
2015	The Mineral (Mining by Government Company) Rules
2015	The Coal Mines (Special Provisions) Act, 2015 (as amended on. 06.10.2015)
2016	The Minerals (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules (as amended on 08.12.2016)
2016	National Mineral Exploration Policy (NMEP)
2016	The Minerals (Transfer of Mining Lease Granted Otherwise than through Auction for Captive Purpose) Rules
2016	The Atomic Minerals Concession Rules
2017	The Coal Mines Regulations
2017	The Mineral Conservation and Development Rules
2017	Coal Block Allocation Rules
2019	National Mineral Policy

CLASSIFICATION OF MINERALS IN INDIA

❖ As per Section 3(e) of MMDR Act, 1957,

*"**minor minerals**" means building stones, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes, and any other mineral which the Central government may, by notification in the Official Gazette, declare to be a minor mineral"*

By implication, any mineral which is not notified by Central Government as a minor mineral is a major mineral.

❖ Major minerals are administered by Central Government Rules, whereas minor minerals are administered by State-specific Mineral Concession Rules.

Major Minerals	Minor Minerals
Coal and Lignite	1. Agate
Bauxite Iron-ore Limestone Manganese ore — **Notified Minerals**	2. Ball clay 3. Barytes 4. Bentonite 5. Boulder 6. Brick earth 7. Building Stones (Granite & other building stone) 8. Calcareous sand 9. Calcite 10. Chalcedony 11. Chalk 12. China clay / Kaolin 13. Clay (others) 14. Corundum 15. Diaspore 16. Dolomite 17. Dunite 18. Felsite 19. Felspar 20. Fireclay 21. Fuchsite quartzite 22. Fuller's earth 23. Gravel 24. Gypsum
1. Apatite 2. Asbestos 3. Cadmium 4. Chrome ore 5. Columbite – Tantalite 6. Copper ore 7. Diamond 8. Flint stone 9. Fluorspar or Fluorite 10. Garnet 11. Gold 12. Graphite 13. Iolite 14. Kyanite 15. Lead 16. Limeshell 17. Magnesite 18. Marl 19. Moulding sand 20. Nickel	

Major Minerals	Minor Minerals
21. Perlite 22. Rock phosphate or phosphorite 23. Pyrites 24. Rock salt 25. Ruby 26. Selenite 27. Sillimanite 28. Silver 29. Sulphur 30. Tin 31. Tungsten 32. Vanadium 33. Vermiculite 34. Wollastonite 35. Zinc	25. Jasper 26. Laterite 27. Lime kankar 28. Lime kankar when used in kilns for manufacture of lime used as building material 29. Limeshell when used in kilns for manufacture of lime used as building material 30. Limestone when used in kilns for manufacture of lime used as building material 31. Marble 32. Mica 33. Murrum 34. Ochre 35. Ordinary clay 36. Ordinary earth when used for levelling or filling purposes in constructions of embankments, roads, railways, buildings, etc. 37. Ordinary sand 38. Pyrophyllite 39. Pyroxenite 40. Quartz 41. Quartzite 42. Quartzite when used for building purposes or for making road metals and house-hold utensils 43. Reh-matti 44. Road metal 45. Saltpetre 46. Sand (others) 47. Sand stone 48. Shale 49. Shale when used for building material 50. Shingle 51. Silica Sand 52. Slate 53. Slate when used for building material 54. Steatite or Talc or Soapstone 55. Stones used for making house-hold utensils
Atomic Minerals 1. Beryl and other beryllium-bearing minerals 2. Lithium-bearing minerals 3. Minerals of the ‚rare earths' group containing Uranium and Thorium 4. Niobium-bearing minerals 5. Phosphorites and other phosphatic ores containing Uranium 6. Pitchblende and other Uranium ores 7. Titanium bearing minerals and ores (Ilmenite, rutile and leucoxene) 8. Tantalum-bearing minerals 9. Uraniferous allanite, monazite and other thorium minerals 10. Uranium bearing tailings left over from ores after extraction of copper and gold, Ilmenite and other titanium ores 11. Zirconium bearing minerals and ores including zircon 12. Beach sand minerals, that is, economic heavy minerals found in the teri or beach sands, which include ilmenite, rutile, leucoxeme, garnet, monazite, zircon and sillimanite.	
Note: This book deals only with Major Minerals.	

Source: Ministry of Mines, E-Book on Mineral Sector, 2016

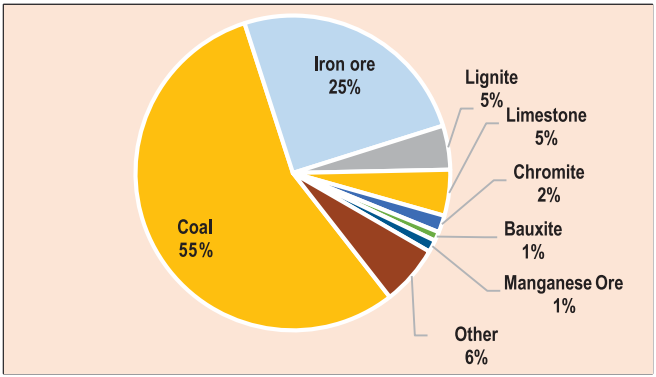
MINERAL RESERVES: a comparison

Minerals	Unit	India (2015)		Australia (2018)		South Africa (2018)	
		Quantity	Rank	Quantity	Rank	Quantity	Rank
Barites	MT	51.3	2nd	**NA**	**NA**	**NA**	**NA**
Chromite	MT	102.2	3rd	**NA**	**NA**	200	2nd
Coal*	BT	97.7	5th	144.8	3rd	9.8	12th
Graphite	MT	7.96	6th	**NA**	**NA**	**NA**	**NA**
Zinc (metal content)	MT	10	7th	64	1st	**NA**	**NA**
Iron Ore	MT	5,400	7th	50,000	1st	1,200	12th
Manganese (metal content)	MT	33	7th	99	4th	230	1st
Lead (metal content)	MT	2.48	8th	24	1st	0.3**	10**
Magnesite (MgO content)	MT	82.27	9th	320	5th	**NA**	**NA**
Bauxite	MT	656.42	8th	6000	2nd	**NA**	**NA**
Copper (metal content)	MT	2.73	**NA (not in top 10)**	88	2nd	11**	11th**
Rock phosphate	MT	45.8	20th	1,100	9th	1,500	6th
Gold (metal content)	tonnes	70.09	**NA (not in top 10)**	9,800	1st	6,000	3rd
Diamond#	Million carats	0.96	NA	120	3rd	70	5th

Source: FIMI analysis based on USGS and Indian Bureau of Mines data;
Note: *Coal - Indian Bureau of Mines data; # Diamond: For South Africa and Australia (Industrial);
**Lead & Copper data for South Africa is for 2017-18
MT= million tonnes
BT= billion tonnes

DOMESTIC PRODUCTION

2018–2019 (by value)
(excluding minor minerals)

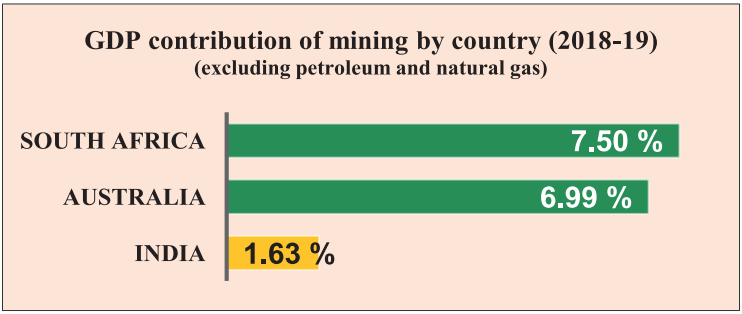


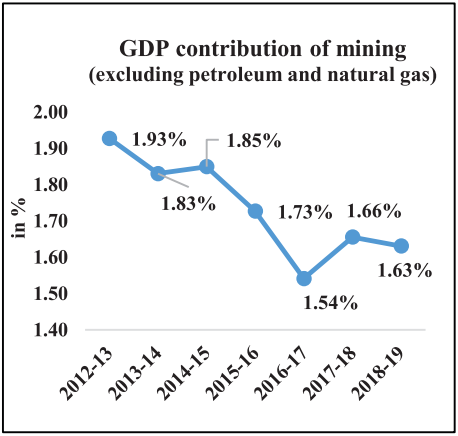
Minerals	Production (values in Rs. crores)	% of production
*Coal	97572.47	55%
Iron ore	44090.16	25%
*Lignite	7941.67	5%
Limestone	8280.41	5%
Chromite	3073.51	2%
Bauxite	1658.29	1%
Manganese Ore	2174.32	1%
Other	10748.48	6%
Total	**175539.31**	**100**

Source: Ministry of Mines Annual Report 2018-19. *Coal and lignite: Coal Directory 2017-18

Domestic production dominated by surfacial minerals

CONTRIBUTION TO GDP



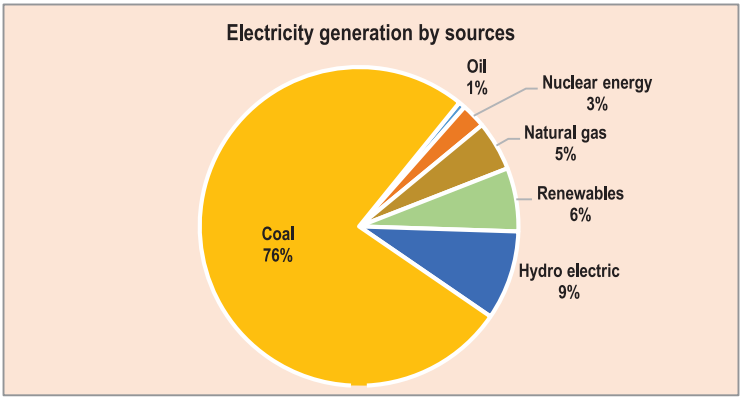


Mining's contribution to GDP

Year	in %age	in Rs. Crore
2012-13	1.93%	1,77,547
2013-14	1.83%	1,79,385
2014-15	1.85%	1,94,665
2015-16	1.73%	1,96,305
2016-17	1.54%	1,89,520
2017-18	1.66%	2,18,146
2018-19	1.63%	2,29,534

Source: FIMI analysis based on Ministry of Mines Annual Report (2018-19); Coal & lignite: Coal Directory 2017-18; Country's GDP from Central Statistics Office (CSO).
For South Africa: Mineral Council South Africa; For Australia: Australian Bureau of Statistics.
Note: For Australia and South Africa: data is for the year 2017.

MINING PROVIDES RAW MATERIAL FOR CORE SECTORS



Source: BP Statistical Review of World Energy, 2018

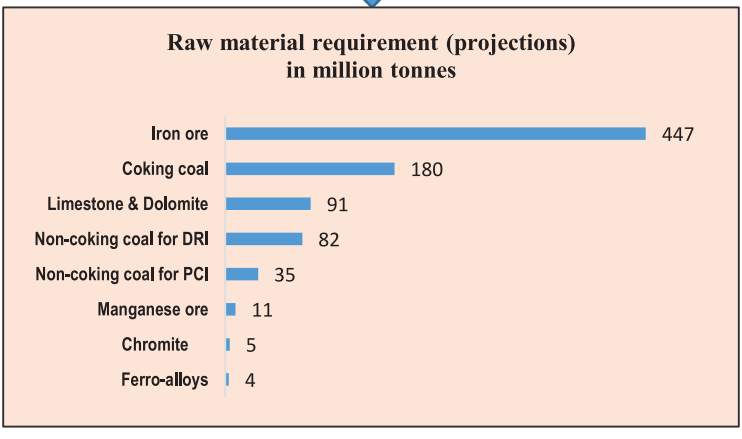
Sr. No.	Core sectors	Source
1	Coal	Mining
2	Fertilizers	Mining (rock phosphate, potassium etc.)
3	Electricity	Mining (76% is coal based power)
4	Steel	Mining (iron ore, coking coal, limestone, dolomite, manganese and chrome ore)
5	Cement	Mining (limestone, clay, thermal coal)
6	Refinery products	Petroleum
7	Crude oil	Petroleum
8	Natural Gas	Petroleum

Source: FIMI analysis based on Ministry of Commerce & Industry

Five out of eight core sectors of the Indian economy, viz., coal, fertilizers, electricity, steel and cement, are dependent on mining

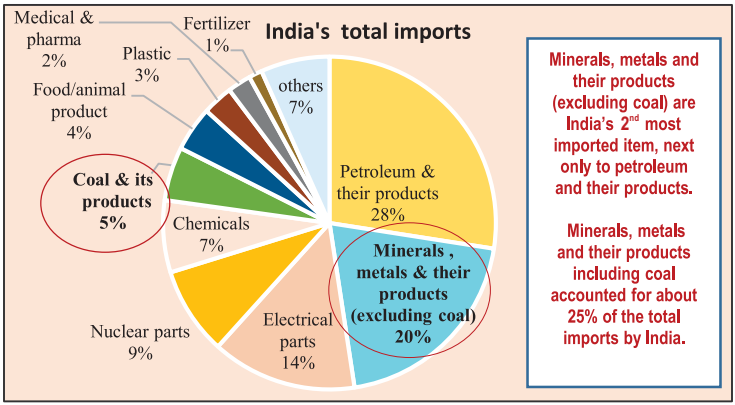
FUTURE RAW MATERIAL REQUIREMENTS FOR STEEL

Requirement of raw materials for a projected production of crude steel capacity of 300 million tonnes by the year 2030-31



Source: National Steel Policy (NSP) 2017

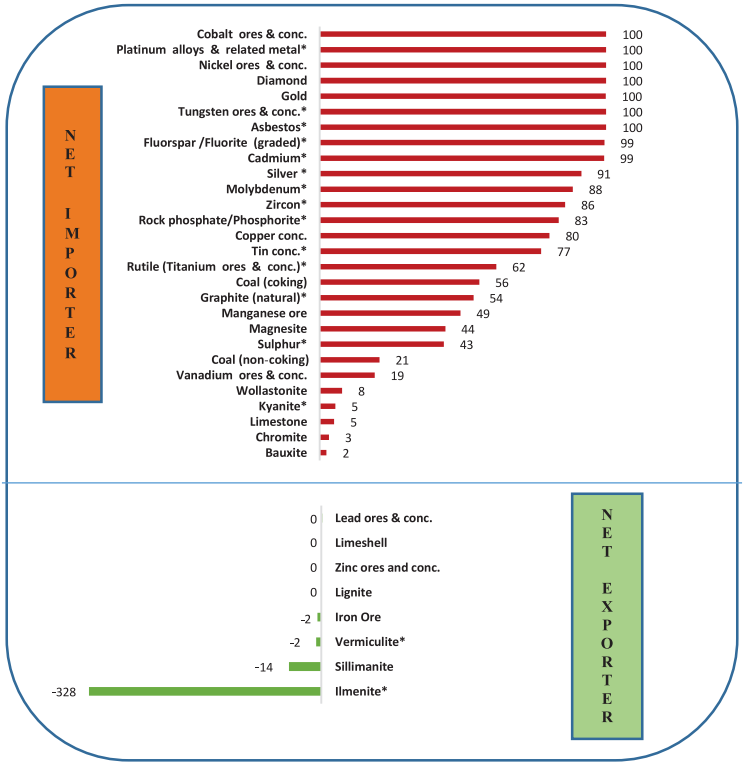
FOREIGN TRADE: IMPORTS (2018-19)



India's imports - 2018-19			
Sectors	Value of imports (Rs. crores)	% of total imports	Rank
Petroleum fuel & their products (excluding coal)	9,87,277.29	27.46	1st
Minerals, metals & their products (excluding petroleum and coal)	7,23,401.52	20.12	2nd
Electrical parts (Railway, Machinery, Vehicles, Aircraft, Ships)	5,06,887.09	14.1	3rd
Nuclear parts thereof.	3,06,368.41	8.52	4th
Chemicals	2,51,536.50	7.00	5th
Coal, lignite and coal products thereof.	1,87,437.56	5.21	6th
Food/animal product	1,56,199.73	4.35	7th
Plastic and articles thereof.	1,06,591.46	2.97	8th
Medical, technical equipment and pharma	81,932.77	2.28	9th
Fertilizer	46,456.75	1.29	10th
Others	2,40,585.52	6.69	-
India's Total Imports	35,94,674.61	100	-

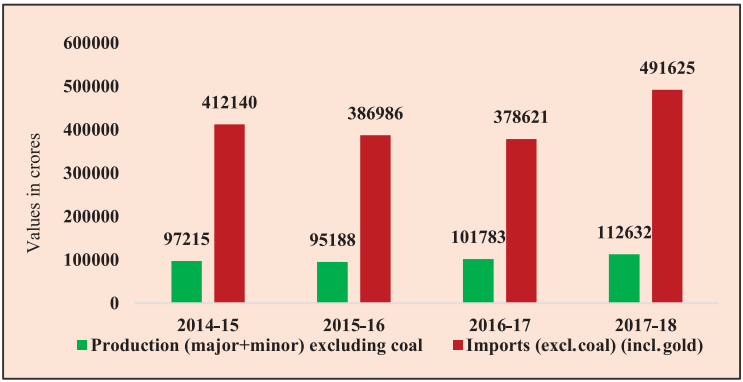
Source: FIMI analysis based on Ministry of Commerce and Industry

INDIA'S NET IMPORT RELIANCE (2018-19)
(excluding petroleum, natural gas, atomic and minor minerals)



Source: FIMI analysis based on Indian Bureau of Mines, Ministry of Commerce and Industry.
Note:1. Negative values with green colour indicate that the country is in surplus and a net exporter of minerals and positive value with red colour implies country is in deficit and a net importer of minerals;
Note:2: * Implies data from 2017–18.

India: Imports *vs.* Production



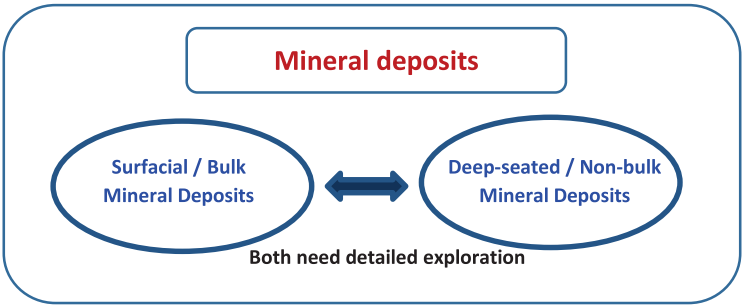
Source: FIMI analysis based on Ministry of Mines, Indian Bureau of Mines, Ministry of Commerce and Industry data
Note: Gold: Import data (monetary + non-monetary)

Value of mineral imports (excluding coal)

4.3x higher than the value of domestic production

WORLD EXPLORATION

Exploration is the lifeline of mining

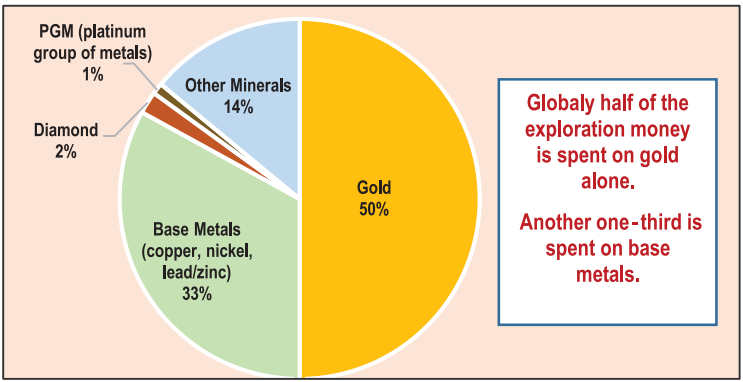


World exploration expenditure and number of junior companies involved			
Year	Companies involved (in no.)	Amount spent (US$ billion)	% increase / decrease over last year
2012	3500	20.53	-
2013	3500	14.43	(-) 29.71
2014	2700	10.74	(-) 25.57
2015	3500	9.20	(-)14.34
2016	1580	6.97	(-) 24.24
2017	1535	7.95	14.06
2018	1651	9.62	21.01

Source: S&P Global Market Intelligence (For 2012-18)

Juniors work at high-risk segment of the mining value-chain and are very sensitive to jurisdictional incentives

Commodity-wise share of global exploration -2018



Source: FIMI analysis based on S&P Global Market Intelligence data

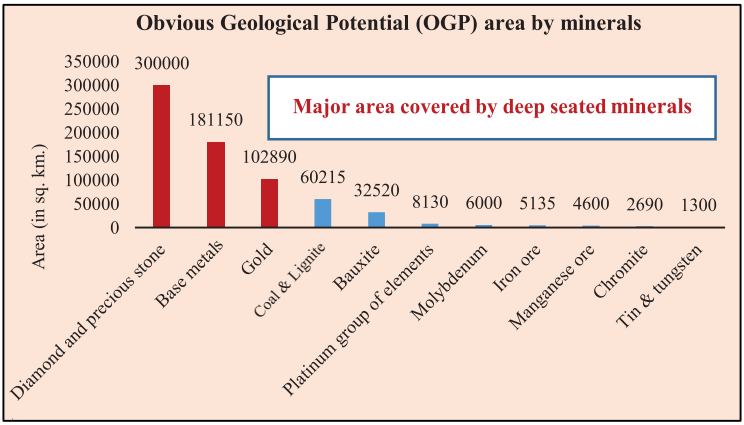
Commodity-wise expenditure on exploration (in billion USD)

Year	Gold	Base Metals (copper, nickel, lead/zinc)	Diamond	PGM (platinum group of metals)	Other Minerals	Total
2012	9.65 (47%)	6.57 (32%)	0.62 (3%)	0.31 (1.5%)	3.39 (16.5%)	**20.53 (100%)**
2013	6.64 (46%)	4.76 (33%)	0.58 (4%)	0.14 (1%)	2.31 (16%)	**14.43 (100%)**
2014	4.62 (43%)	3.76 (35%)	0.54 (5%)	0.21 (2%)	1.61 (15%)	**10.74 (100%)**
2015	4.14 (45%)	3.13 (34%)	0.46 (5%)	0.14 (1.5%)	1.33 (14.5%)	**9.20 (100%)**
2016	3.48 (50%)	2.16 (31%)	0.28 (4%)	0.070 (1%)	0.98 (14%)	**6.97 (100%)**
2017	4.05 (51%)	2.38 (30%)	0.25 (3%)	0.08 (1%)	1.19 (15%)	**7.95 (100%)**
2018	4.81 (50%)	3.17 (33%)	0.19 (2%)	0.10 (1%)	1.35 (14%)	**9.62 (100%)**

Source: S&P Global Market Intelligence (For 2012-18)
Note: Figures in parenthesis indicate the percentage expenditure for a mineral in a particular year.

EXPLORATION IN INDIA

India: highly under-explored



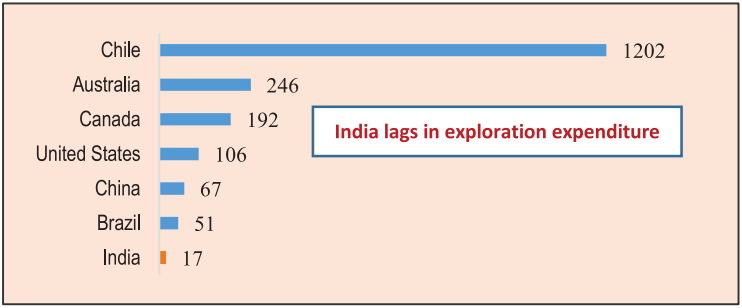
Source: National Mineral Exploration Policy : Base Paper 2016

Obvious Geological Potential (OGP) Area	
India's total land area	3.287 million sq. km.
OGP area	0.571 million sq. km. (17.4 % of India's landmass)
Area explored	10% of OGP area, i.e., (1.74% of total landmass)
Mining	**1.5% of OGP area**

Source: NITI Aayog report "Strategy for New India@75" 2018

Major OGP area covered by deep seated minerals but domestic production is dominated by surfacial minerals. Out of total OGP area, only 10% area is explored and only 1.5% area is being mined

Country wise exploration expenditure (in USD/sq.km.)

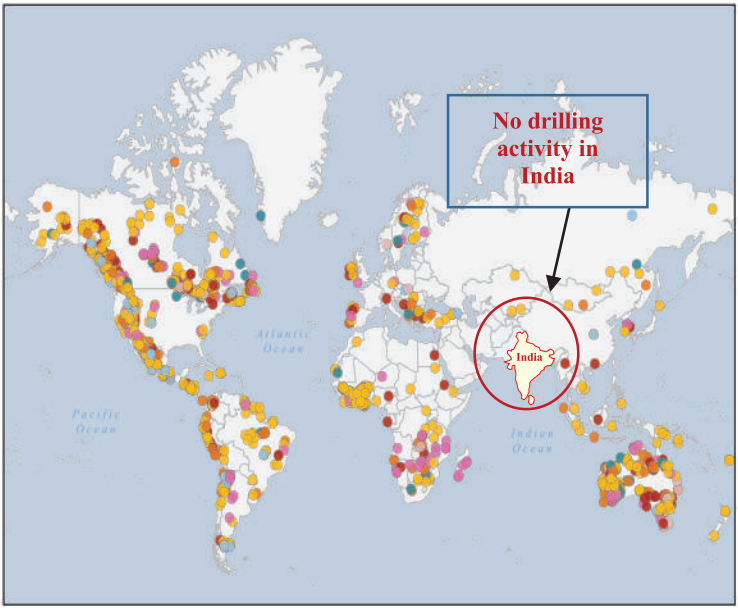


Source: McKinsey report *"Putting India on the growth path: Unlocking the mining potential"*, 2014

Country-wise exploration expenditure (in billion USD)							
Country	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Canada	3.29	1.88	1.51	1.28	0.97	1.11	NA
Australia	2.46	1.88	1.3	1.09	0.9	1.08	
US	1.64	1.01	0.75	0.74	0.49	0.64	
Russia	0.62	0.72	0.54	0.46	0.35	0.32	
Mexico	1.23	0.87	0.75	0.54	0.42	0.48	
Peru	1.03	0.72	0.54	0.54	0.42	0.56	
Chile	1.03	0.87	0.75	0.69	0.42	0.64	
S. Africa	0	0.43	0.3	0.35	0.28	0.16	
China	0.81	0.57	0.7	0.54	0.42	0.40	
Brazil	0.62	0.04	0.3	0.27	0.28	0.24	
Argentina	0.62	-	-	-	-	0.16	
DRC	-	-	0.3	0.13	0.14	-	
Other countries	7.18	5.44	3	2.57	1.88	2.16	
Total	**20.53**	**14.43**	**10.74**	**9.2**	**6.97**	**7.95**	**9.62**

Source: (1) S&P Global Market Intelligence, 2018 (2) **For India:** Ministry of Mines
Note: India's exploration expenditure for the financial years 2016, 2017 and 2018 was USD 0.13, 0.15 and 0.17 billion respectively. This comprises of expenditures incurred by GSI, MECL and NMET only. In addition, CMPDIL, Department of Atomic Energy and State DMGs also incur significant expenditure on exploration.

World : Drilling Activity for Precious and Base Metals in 2018

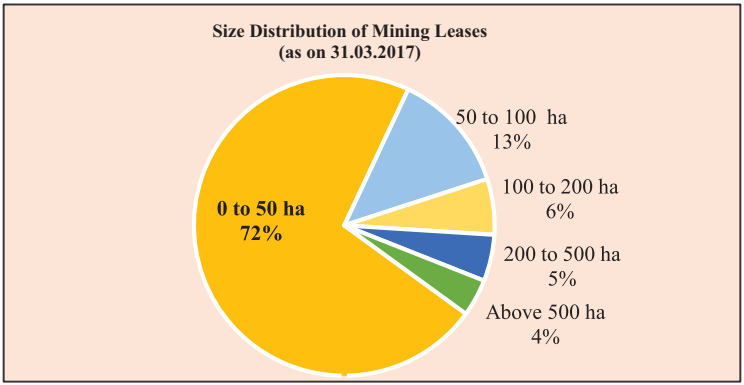


Source: World Exploration Trends 2018, S&P Global Market Intelligence

Primary commodity

Copper Gold Lead-zinc Minor base metals Nickel Platinum group metals Silver Specialty metals

MINING LEASES IN INDIA



Area Wise Distribution of Mining Lease (as on 31/03/2017) (excluding atomic, fuel and minor minerals)				
Frequency Group (Area in Hects.)	**Number of Mining Leases**	**Percentage of Total Lease**	**Area in Hects.**	**Percentage of Total Area**
All Group	**4,128**	**100**	**3,54,908.75**	**100**
0 to 10	1,942	47	7,852.95	2
10 to 20	469	11	6,882.63	2
20 to 50	585	14	19,401.02	5
50 to 100	513	13	38,854.06	11
100 to 200	235	6	33,242.80	9
200 to 500	204	5	65,878.66	19
Above 500	180	4	1,82,796.63	52

Source: FIMI analysis based on Ministry of Mines Annual Report (2017-18)

72% of the mining leases (ML) of major minerals are <= 50 hectares in size, covering only 9% of the total mining area. These are neither sustainable nor can be scientifically mined

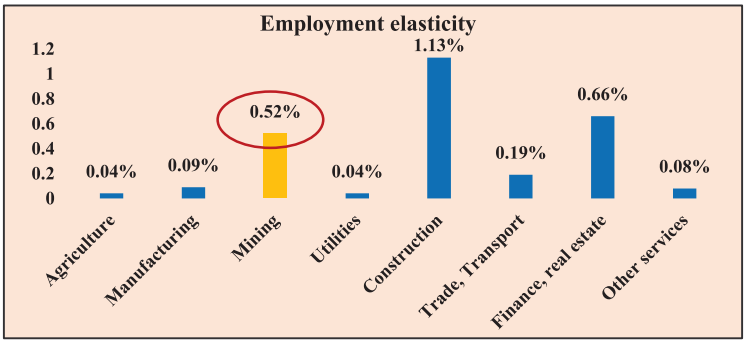
INDIA: EMPLOYMENT POTENTIAL IN MINING

For 1% increase in sector GDP

Mining creates

13x more jobs than Agriculture

6x more jobs than Manufacturing



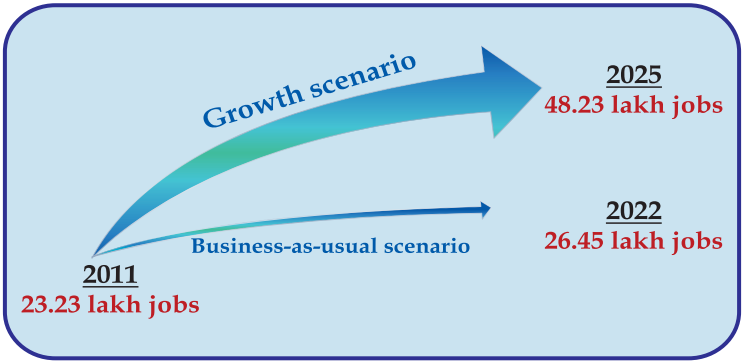
Source: FIMI publication "Employment in Mining: A case of missed opportunities – prospects for future", 2019

Employment Multiplier in Mining Sector is 1: 10

One Direct Mining Job creates 10 additional Indirect Jobs in the Economy

Source: National Mineral Policy, Report of the High Level Committee, 2006

Future Employment by Mining



Source: FIMI publication "Employment in Mining: A case of missed opportunities – prospects for future", 2019

Despite having huge employment potential, massive job losses have occurred in mining sector

Number of job losses in different States

State	Year	No. of mines closed	Districts	Total job loss (direct+indirect)
Karnataka	2011	166 mines. Out of which, 46 were in Category-A, 69 in Category-B and 51 in Category-C.	(Bellary+ Chitradurga + Tumkur)	8,80,000
Goa	2012 2018	All mining activities closed in Goa. Renewal orders of 88 mining leases were set aside.	Entire Goa	4,00,000
Odisha	2017	Numerous mines unviable to operate due to huge penalty.	Entire Odisha	Huge loss in employment – both direct and indirect

Source: FIMI publication "Employment in Mining: A case of missed opportunities – prospects for future", 2019

MINERAL REGIME IN INDIA

Overview

❖ **December 1999**: *MMDR Act, 1957 amended subsequent to B B Tandon Committee report in January 1998.*

	Area limit	Validity period
– RP	10,000 km^2	3 years
– PL	25 km^2	3+2 years
– ML	10 km^2	30+20 years

❖ **February 2000**: *100% FDI allowed in mining.*

– Numerous RPs and PLs followed, but majority could not move unto next stage owing to severe delays.

❖ **September 2005**: *Hoda Committee formed to encourage mineral investment in India akin to resource-rich countries. Report submitted in July, 2006.*

❖ **March 2008**: *National Mineral Policy 2008 announced.*

– *Private sector would in future be the main source of investment in reconnaissance and exploration.* *(5.2)*

– *RP, PL and ML shall be transparent and seamless and security of tenure shall be guaranteed.* *(3.3)*

– *First-in-time principle in the case of sole applicants.* *(3.3)*

– *Prospecting and mining shall be recognized as independent activities with transferability of concessions playing a key role in mineral sector development.* *(3.3)*

Present Mining Regime

❖ **January 2015**: *MMDR Act, 1957 amended, which introduced*

- Mining leases to be granted through Auction.
- New leases for 50 years, without renewal.
- Validity of existing leases
  upto 31.03.2020 for non-captive;
  upto 31.03.2030 for captive, with right of first refusal;
  extendable upto 20 years at a time for Govt. companies.
- District Mineral Foundation (DMF) for development of mining-affected areas; contribution by existing mines @ 30% of royalty and by new mines @ 10% of royalty.
- National Mineral Exploration Trust (NMET) for regional and detailed exploration; contribution by industry @ 2% of royalty.

Present Exploration Regime

❖ **MMDR Act, 1957:**

"The holder of such non-exclusive reconnaissance permit shall not be entitled to make any claim for the grant of any prospecting licence-cum-mining lease or a mining lease" *Section 10C*

❖ **NERP Rules, 2015**:

"*The grant of a non-exclusive reconnaissance permit over any area shall not prohibit the State Government from notifying all or any part of such area for grant of a mining lease or a prospecting licence-cum-mining lease and upon such notification the validity of all non-exclusive reconnaissance permits over such notified area will stand automatically terminated*." *Rule 3(11)*

"*The holder of a non-exclusive reconnaissance permit may choose to submit its findings to the State Government and may request the State Government to conduct auction for grant of a prospecting licence-cum-mining lease or a mining lease based on such findings*." *Rule 4(1)*

❖ **National Mineral Policy (NMP, 2019)**

- *Mineral bearing area/zone shall be earmarked as Mining Land in the land record by the states. (3.1)*
- *Special attention for exploration of strategic and deep-seated minerals which are otherwise difficult to access and for which the country is mainly dependent on imports. (4.3)*
- *Introduces Right of First Refusal for RP/PL holders (4.4)*
- *Auctioning in virgin areas for composite RP-cum-PL-cum-ML on revenue share basis (4.4)*
- *Proposes to grant status of industry to mining activity to facilitate financing (6.7)*
- *Efforts to create Exclusive Mining Zone (EMZ) with prior in-principle statutory clearances and declaration of 'No-go areas' for mining in fragile environments (6.10)*
- *Efforts to benchmark and harmonize royalty and other levies with other mining jurisdictions to make India an attractive destination for exploration and mining.(8)*
- *Expected Outcomes: To increase production of MCDR minerals (in value terms) by 200% in 7 years; and to reduce trade deficit in minerals sector by 50% in 7 years. (12)*

MINERAL REGIME AROUND THE WORLD

S. No.	Country	Method of Grant	Initial mining lease tenure	Renewal Provision
First-Come-First-Serve (FCFS)				
1	Argentina	FCFS	Till Mineral Exhaustion	—
2	Bolivia	FCFS	30 years	30 years
3	Botswana	FCFS	25 years	25 years
4	Canada – Alberta	FCFS	15 years 20 years	15 years
5	Canada – British Columbia	FCFS	30 years	30 years, multiple times
6	Canada – Ontario	FCFS	21 years	21 years, multiple times
7	Canada - Quebec	FCFS	20 years	10 years, 3 times
8	Chile	FCFS	Till Mineral Exhaustion	—
9	Colombia	FCFS	30 years	30 years
10	Ghana	FCFS	30 years	30 years
11	Mauritania	FCFS	30 years	10 years, multiple times
12	Morocco	FCFS	10 years	10 years, multiple times
13	Namibia	FCFS	25 years	15 years, multiple times
14	South Africa	FCFS	30 years	30 years, multiple times
15	South Australia	FCFS	21 years	21 years
16	West Australia	FCFS	21 years	21 years

S. No.	Country	Method of Grant	Initial mining lease tenure	Renewal Provision
FCFS mainly and Auction in a limited manner				
1	Brazil	FCFS mainly. Auction, only in case of cancelled blocks	Till Mineral Exhaustion	—
2	Mexico	FCFS mainly. Auction, only in case of areas explored by Govt. and reserved areas	50 years	50 years
3	Mongolia	FCFS mainly Auction, only for cancelled/expired exploration licences	30 years	20 years, 2 times
4	Peru	FCFS mainly. Auction, only in case applications are filed simultaneously on overlapping areas	Till Mineral Exhaustion	---
5	USA	**Minerals in Govt. land**: a) FCFS (for metallic and non-metallic minerals b) Auction for coal, phosphate, potassium, sulphur (leasable minerals) **Minerals in Private land**: Solely based on arrangement between land-owner and miner	Varies from State to State Coal, Sulphur - 20 years; Phosphate and Potassium – No defined term, readjusted every 20 years Infinite term on private land	—

S. No.	Country	Method of Grant	Initial mining lease tenure	Renewal Provision
FCFS and Auction (hybrid system)				
1	Australia - Queensland	FCFS and Auction	Not available	Not available
2	China	FCFS for unexplored areas Auction for explored areas	– 30 years for large mines – 20 years for medium mines – 10 years for small mines	Extension on Request
3	Indonesia	Auction for metallic minerals and coal FCFS for non-metallic minerals and rock	– 20 years for metallic minerals and coal – 10 years for non-metallic minerals and rock	Renewal tenure varies for different minerals, usually for 2 times
4	Mozambique	FCFS for unexplored areas Auction for explored / previously mined areas	25 years	25 years
Auction				
1	Russia	Auction, in general Discretion method for strategic deposits	25 years	Extension on request
2	**India**	**Auction**	**50 years**	**No Renewal**

RECENT DEVELOPMENTS IN MINING

2015

AUCTION

Auction for non-coal minerals was introduced vide amendment of MMDR Act, 1957 on 12th January, 2015

2020

NON-CAPTIVE MINES

In accordance with Section 8A(6) of the MMDR Amendment Act, 2015 the tenure of the 329 non-captive mining leases will be expiring on 31st March, 2020

Auction Score Card
Licences granted before and after auction regime

	Before auction regime		After auction regime (2015 - 2019) (as on 24th December, 2019)
	(2006 - 2010)	(2010 - 2014)	
RP granted	74	49	Nil
PL granted	192	496	1 (PL-cum ML)
Execution of ML	2754 (Mostly Greenfield)	494 (Mostly Greenfield)	5 (All Brownfield)

Source: FIMI analysis based on Indian Bureau of Mines data

Status of Auctioned Non-Coal Mineral Blocks (as on 24th December, 2019)

Total concessions (including ML and PL-cum-ML) offered for auction	**126**	
Actually auctioned	74	9 — Prospecting Licence-cum-Mining Lease (PL-cum-ML) 65 — Mining Lease . 45 Greenfield . 14 'C' category iron ore mines in Karnataka . 6 leases expiring in 2020 (4 in Karnataka and 2 in Odisha)
— PL-cum-ML (composite license) granted	1 license	Out of 9 PL-cum-ML
— Execution of MLs (Greenfield blocks)	NIL	No ML has been executed out of 45 Greenfield auctioned mineral blocks.
— Execution of ML for 'C' category iron ore mines of Karnataka	5	These are from 14 'C' category mines auctioned in Karnataka which were already operational earlier and where the Hon'ble Supreme Court had ruled that FC and EC granted to earlier operational lessees will automatically be transferred to successful bidder.

Source: FIMI analysis based on Ministry of Mines

Status of Auctioned / Allotted Coal Mines (as on 25th November, 2019)

Cancelled by Hon'ble Supreme Court	**204**	
Net auctioned and allotted	90	37 auctioned (but allotment of 9 auctioned coal mines was cancelled). Net effective mine auctioned to private sector are 28 only. Balance 62 allotted to Public Sector Undertakings
Coal mines under development	8	-
Coal producing mines	17 (11 private)	13 mines are from 42 Schedule II mines which were already operational / under development prior to cancellation of coal blocks and where EC / FC are transferable as per judgment of the Hon'ble Supreme Court. Balance 4 mines are from the Schedule III mines where some advancement was made for development prior to their cancellation.

Source: FIMI analysis based on Ministry of Coal and
Rajya Sabha Starred Question No. 80 answered on 25th November, 2019.

Expiry of non-captive mining leases on 31st March, 2020: Repercussions

Total 329 non-captives leases:

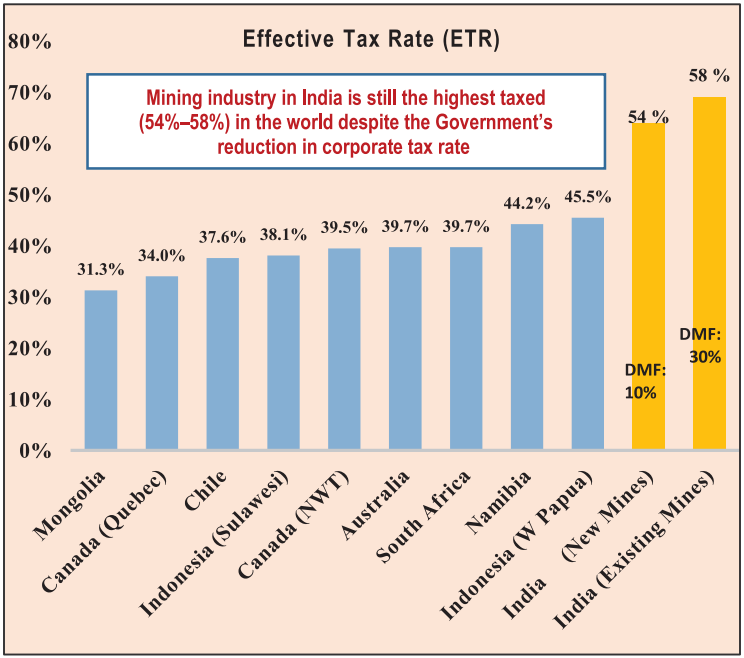
- 48 working
- 281 non-working

Expiry of the 48 working mines on 31st March, 2020 is estimated to result in:

- loss of supplies of 60 - 70 million tonnes of iron ore, manganese ore and chrome ore, and
- loss of 2,64,000 jobs (24,000 direct + 2,40,000 indirect)

Source: FIMI publication "Employment in Mining: A case of missed opportunities – prospects for future", 2019

EFFECTIVE TAX RATE : WORLD vis-à-vis INDIA



Source: FIMI analysis and Ministry of Steel; Rajya Sabha Unstarred Question No. 3649, answered on 24th July, 2019

The above chart of ETR refers to the typical case of iron ore and includes the following components of taxes which are specific to mining as per MMDR Amendment Act, 2015, besides common components like corporate tax, CSR etc.

- Royalty on minerals – Section 9 and Schedule II (royalty on iron ore @ 15%).

- Contribution to District Mineral Foundation (DMF) – Section 9B and Mines and Minerals (Contribution to District Mineral Foundation) Rules, 2015

  — @ 10% of the royalty in respect of mining leases / PL-cum-ML granted on or after 12-01-2015– Rule 2(a).

  — @ 30% of the royalty in respect of mining leases granted before 12-01-2015 – Rule 2(b).

- Payment to National Mineral Exploration Trust (NMET) @ 2% of the royalty – Section 9C

Note:

ETR does not include a number of other payments such as:

- Auction price (base price + premium)
- Purchase of land for mining
- GST @18% of royalty made effective w.e.f. 01.07.2017.
- 10% tax levied by Supreme Court in Goa and Karnataka and FDT levied by Karnataka as well as highest rate of royalty on iron ore in Odisha.
- Net Present Value (NPV) in case of survey in forestland :

  - Coal, lignite, ferrous and non-ferrous minerals using core drilling technology having density of 10%-40% = 2% of total Prospecting Lease (PL) area

  - Coal, lignite, ferrous and non-ferrous minerals using core drilling technology having density of 40%-70% = 5% of total Prospecting Lease (PL) area

  - Any amount of NPV deposited in the stipulated Government account is non-refundable. However, the NPV deposited for prospecting in the area, will be adjusted against the estimated NPV to be levied, in case the approval is obtained for diversion of the same forest land for mineral extraction, under Section 2 of FCA 1980.

- Net Present Value (NPV) for diversion = Rs 4.38 lakhs to Rs 10.43 lakhs per hectare depending on the density of forests prior to grant of lease.
- Compensatory afforestation charges which differs from State to State.
- Upfront payment at the time of grant of mining lease = @0.50% of value of estimated resources.
- Performance security = @0.50% of the value of estimated resources

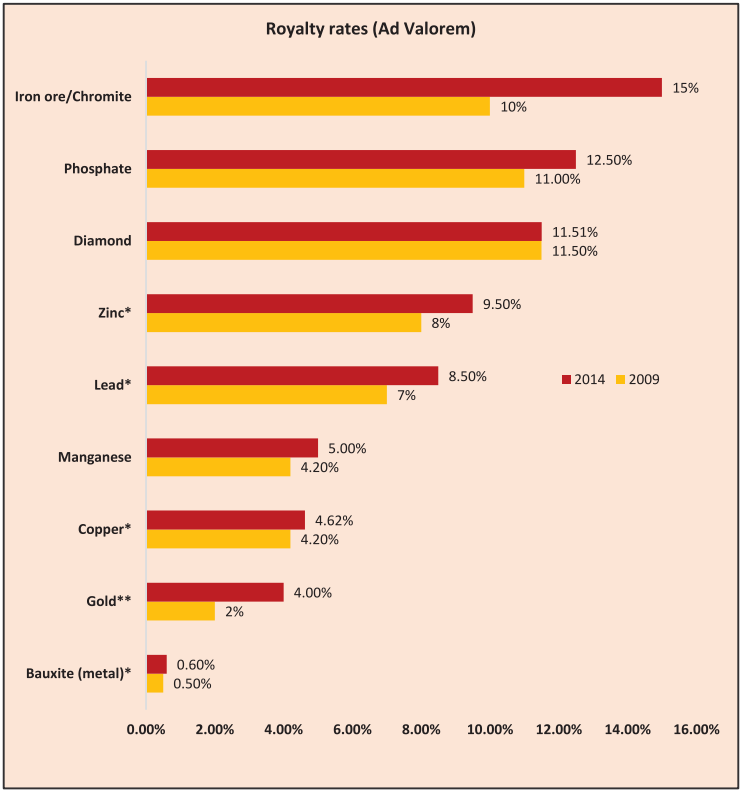
Source: FIMI analysis

ROYALTY REGIME ACROSS THE WORLD

Country	Corporate income tax	Mining taxes and royalties			
		Method	Coal	Gold	Iron ore
Australia	30%	R	2.75%-15%	2.5%-5%	2.5%-5%
Brazil	25%	R	2%	1%	2%
Canada	25%-31%	P	2%-16%	2%-16%	2%-16%
Chile	20%	P	0-14%	0-14%	0-20%
China	25%	R	0.5%-4%	0.5%-4%	0.5%-4%
Ghana	25%	R	5.00%	5.00%	5.00%
Indonesia	25%	R	3-7%	3.75%	4.00%
Mexico	30%	P	7.50%	8.00%	7.50%
Mongolia	10% -25%	R	2.5-7.5%	5%-7.5%	5%-30%
Peru	30%	P	1%-12%	6%-21.5%	6%-21.5%
South Africa	28%	R	0.5%-7.0%	0.5%-7.0%	0.5%-7.0%
USA	40%	P/R	8%-12.5%	4%-10%	4%-10%
India	**22 %**	**R**	**14%**	**4% ***	**15%**

Key R: Revenue basis P: profit or net basis * Linked to London Bullion Market Association
Source: Mining Tax Data book, KSG, August 2014; **For India:** Ministry of Mines and Ministry of Coal

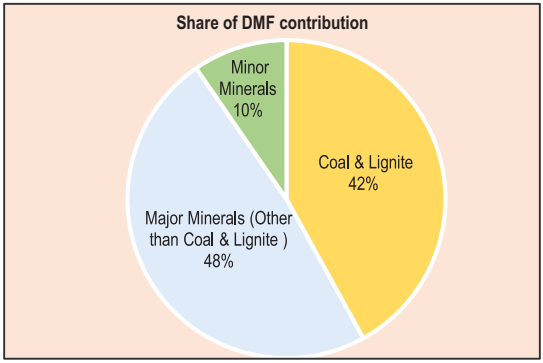
India: Royalty Regime

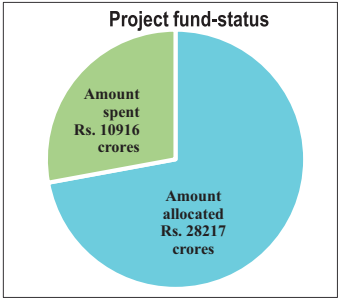


Source: Ministry of Mines; **Note:** * Linked to London Metal Exchange (LME) price;
** London Bullion Market Association (LBMA)

INDIA: CONTRIBUTION TO DISTRICT MINERAL FOUNDATION

Fund Status (as on November, 2019)		
Total no. of Districts	Total no. of districts in which DMF has been setup	Total amount collected under DMF
583	557	Rs. 34,099 cr.

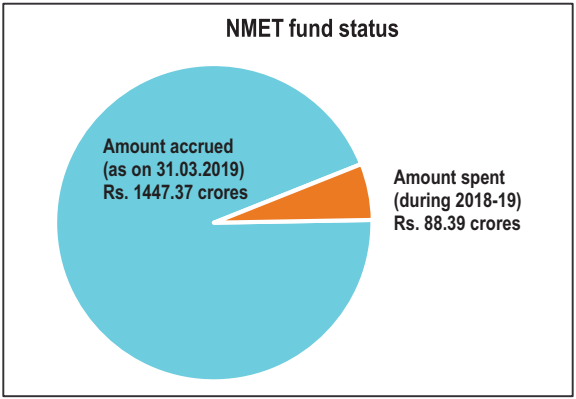




Source: Ministry of Mines

Project Status (as on November, 2019)	
No. of Projects Sanctioned	1,43,308
No. of Projects yet to start	26,406
No. of Projects Completed	61,441
No. of Ongoing Projects	47,812
No. of Projects Scrapped/ Cancelled	7,649

INDIA: CONTRIBUTION TO NATIONAL MINERAL EXPLORATION TRUST (NMET)



Source: Ministry of Mines Annual Report 2018-19

Project Status
(as on January, 2020)

188
Numbers of Projects Approved

Rs. 890. 91 crores
Total Estimated Cost of the Projects

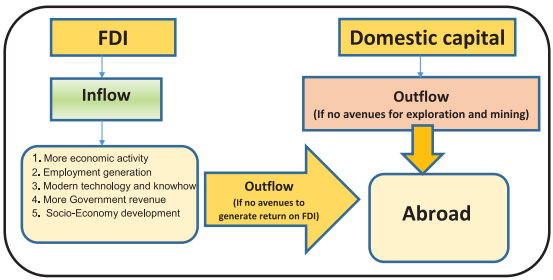
63
Total Number of Completed Projects

Source: Project Status: https://nmet.gov.in/content/

FLIGHT OF DOMESTIC CAPITAL TO FOREIGN COUNTRIES FOR MINING

FDI helps to boost economic activity, R&D and generate employment, with an utlimate objective of generating a return on the investment.

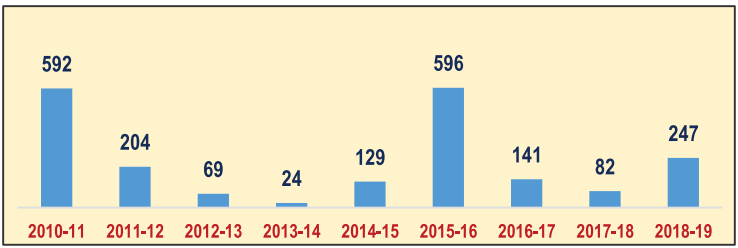
FDI Inflow vs. Outflow



Source: FIMI publication "Employment in Mining: A case of missed opportunities – prospects for future", 2019

100% FDI is permitted in mining sector since February 2000. FDI inflow in mining has been intermittent in recent years.

Inflow: FDI in Mining (in USD million)



Source: Reserve Bank of India, Annual Reports (2010-19)

Flight of domestic capital to foreign countries for mining far exceeds the FDI inflow. Indian capital is moving out of the country to generate socio-economic development and create jobs abroad.

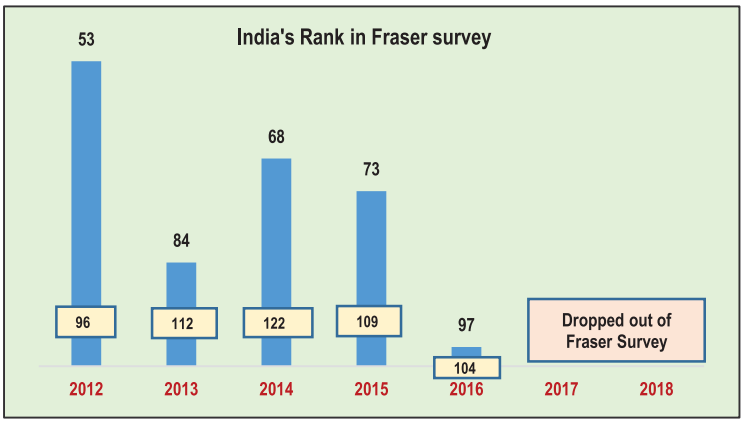
FDI Inflow vs. Domestic Capital Outflow in Mining

Period	FDI Inflow	Domestic Capital Outflow	
2010–14	**$ 889 million**	**$ 3,200 million** **+ undeclared amount**	22 deals in Australia, Indonesia and Africa 23 deals in Australia, Indonesia and Africa
2015	**$ 129 million**	**$ 721 million**	25 deals globally
2016	**$ 596 million**	**$ 2,166 million**	26 deals globally

Source: FIMI analysis based on RBI (for FDI inflow) and Blake, Cassels & Graydon LLP (for outflow during 2010-14) and Ernst & Young (for outflow during 2015 & 2016)

FRASER SURVEY: INDIA'S INVESTMENT ATTRACTIVENESS

Implementation of Acts, Rules in the mining sector coupled with frequent production bans/restrictions have not only forced foreign mining companies to leave India, but also pushed India out of the league of mining destinations in the world. It is being reflected in India's investment attractiveness rank in Fraser Institute's Annual Survey of Mining Companies, based on policy perception and mineral potential.



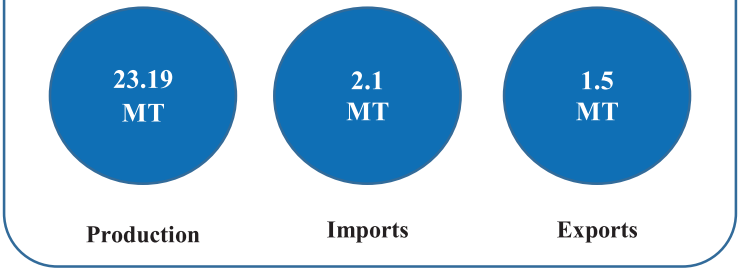
Source: Fraser Institute's Annual Survey of Mining Companies

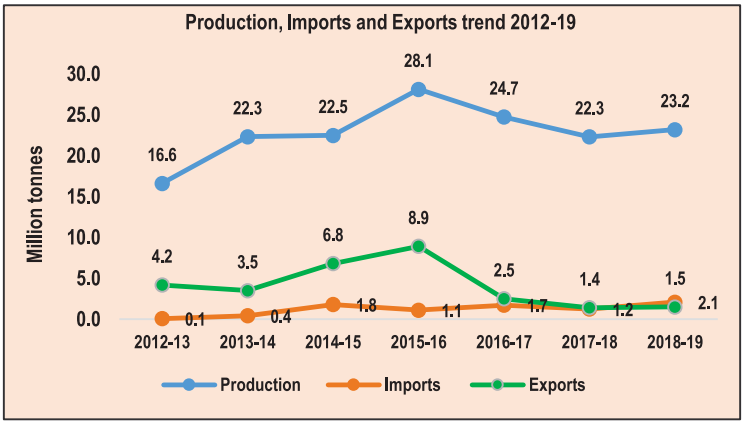
Note: Number of countries included in the survey.

VITAL MINERALS – STATUS REPORT

BAUXITE

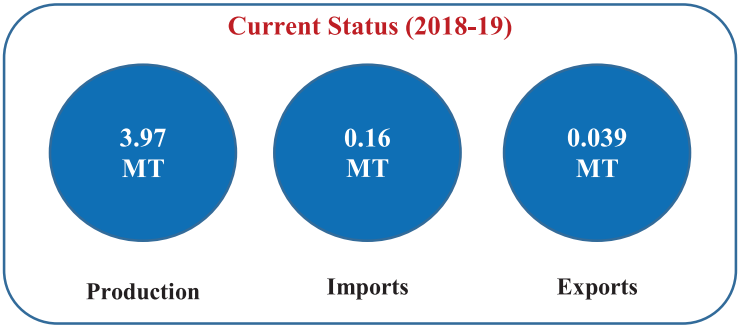
Current Status (2018-19)

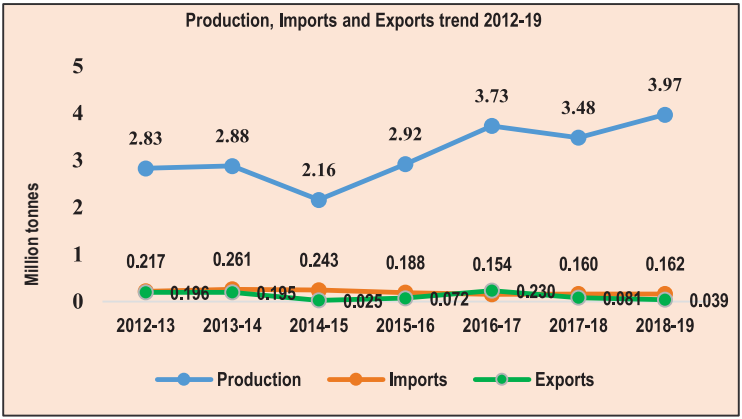




Source: Ministry of Mines Annual Report-2018-19; Indian Bureau of Mines

CHROMITE

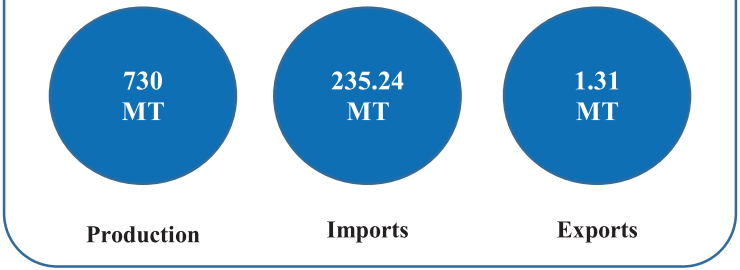


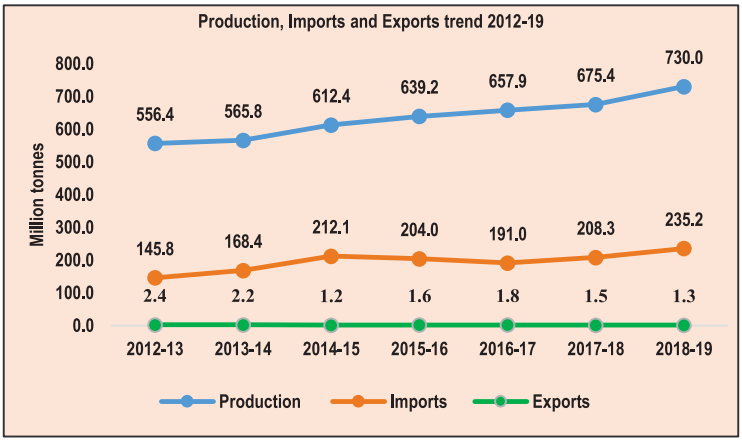


Source: Ministry of Mines Annual Report-2018-19; Ministry of Commerce and Industry

COAL

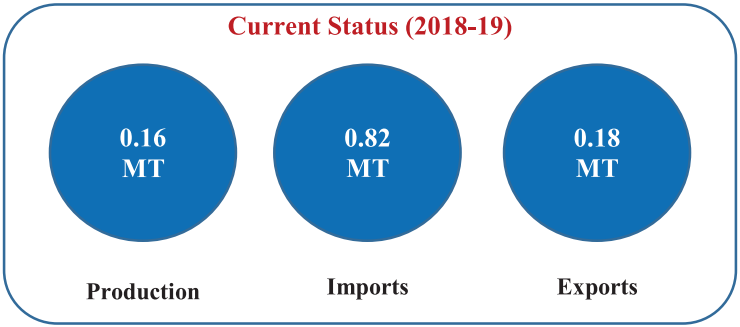
Current Status (2018-19)

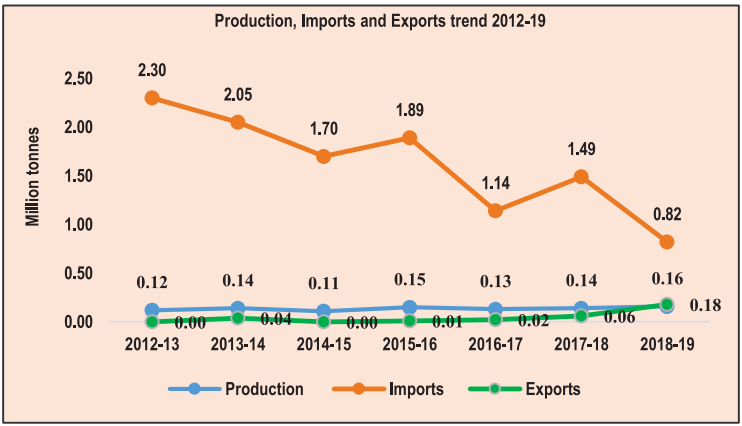




Source: Ministry of Coal, Coal Controller's Organization

COPPER ORE AND CONCENTRATE



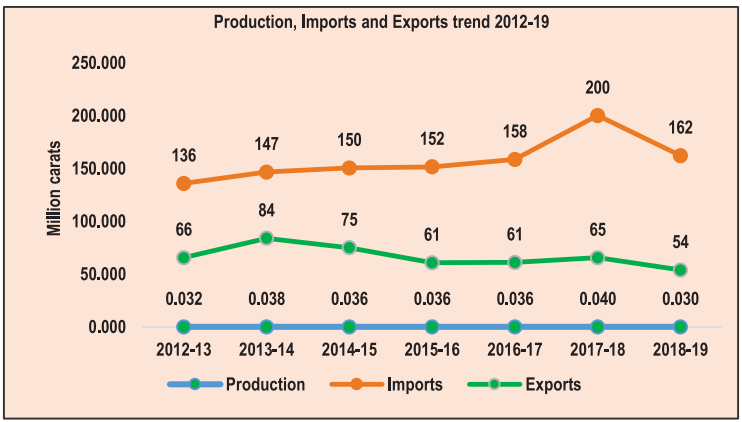


Source: Ministry of Mines Annual Report-2018-19; Ministry of Commerce and Industry
Note: Production: concentrate; **Imports & Exports:** Ore and Concentrate

DIAMOND

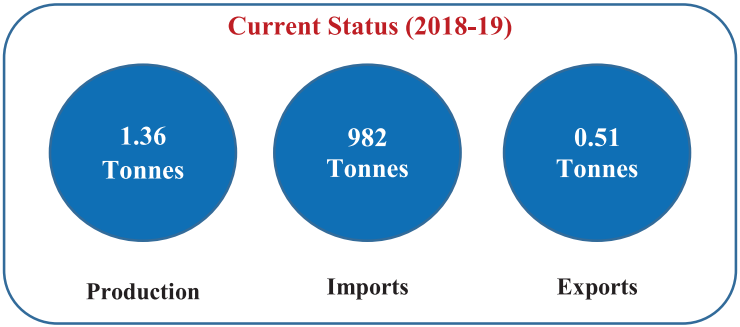
Current Status (2018-19)

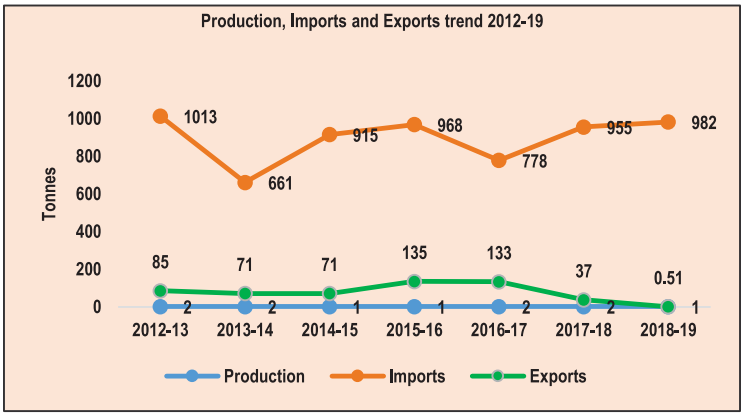
0.030 Million carat	162 Million carat	54 Million carat
Production	Imports	Exports



Source: Ministry of Mines Annual Report-2018-19; Indian Bureau of Mines; Ministry of Commerce and Industry [Export and imports (HS code: 710210, 710231, 710239)]

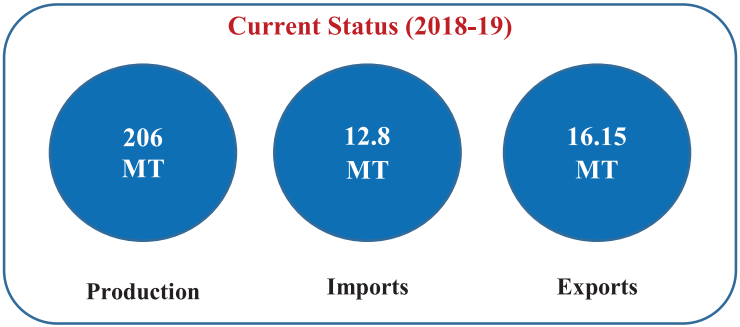
GOLD

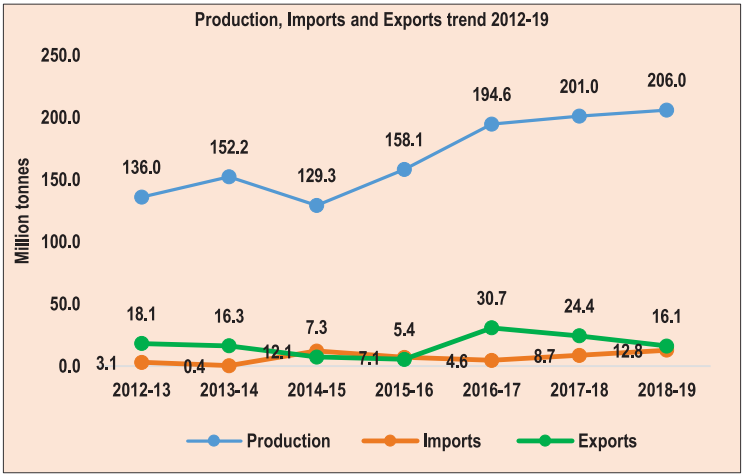




Source: Ministry of Mines Annual Report-2018-19; Indian Bureau of Mines

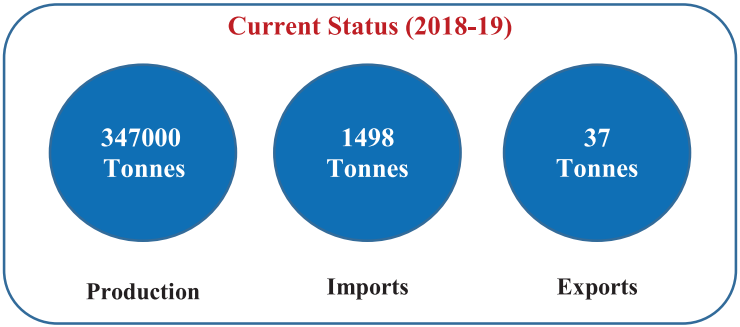
IRON ORE

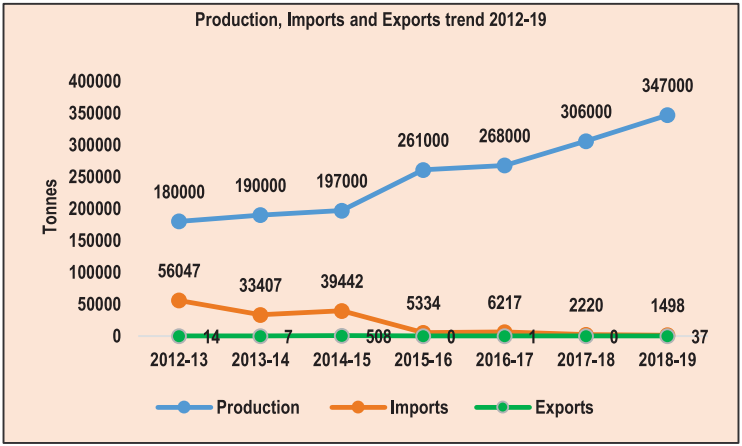




Source: Ministry of Mines Annual Report-2018-19; Indian Bureau of Mines

LEAD ORE AND CONCENTRATE

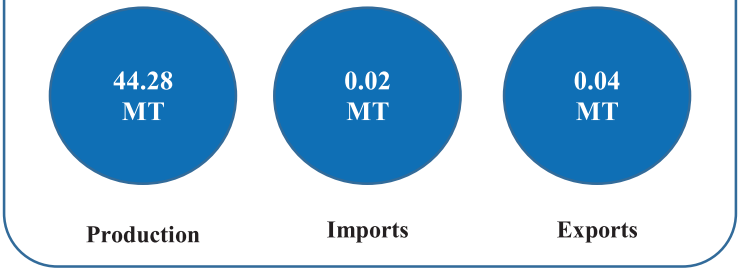


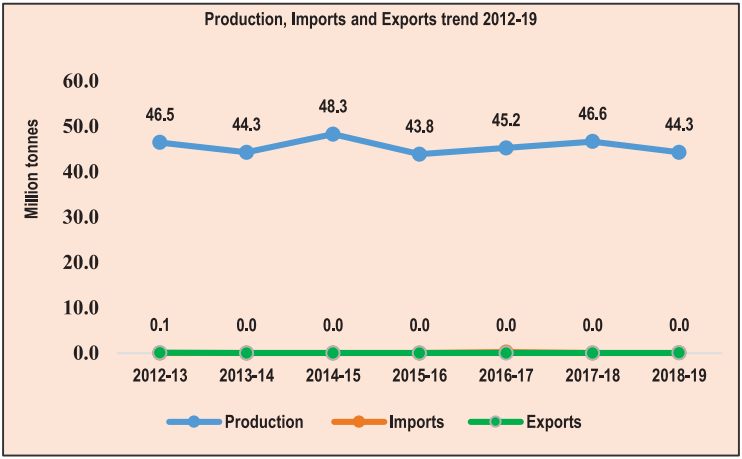


Source: Ministry of Mines Annual Report-2018-19; Ministry of Commerce and Industry
Note: Production: concentrate; **Imports & Exports:** Ore and Concentrate

LIGNITE

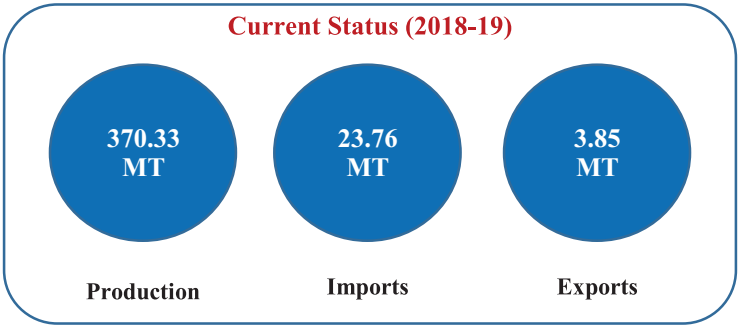
Current Status (2018-19)

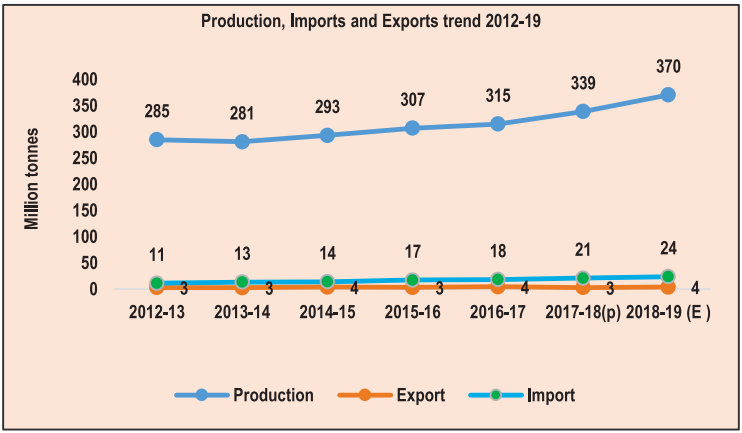




Source: Ministry of Coal, Coal Controller's Organization

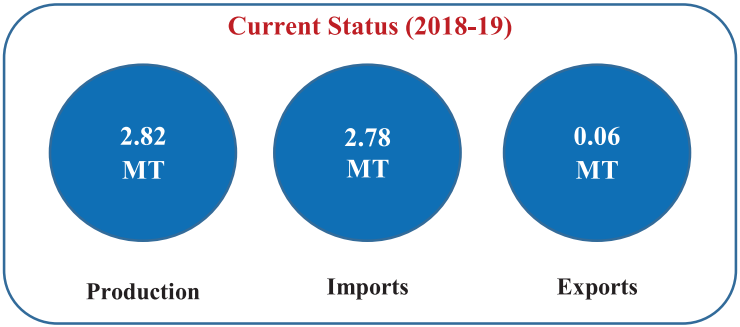
LIMESTONE

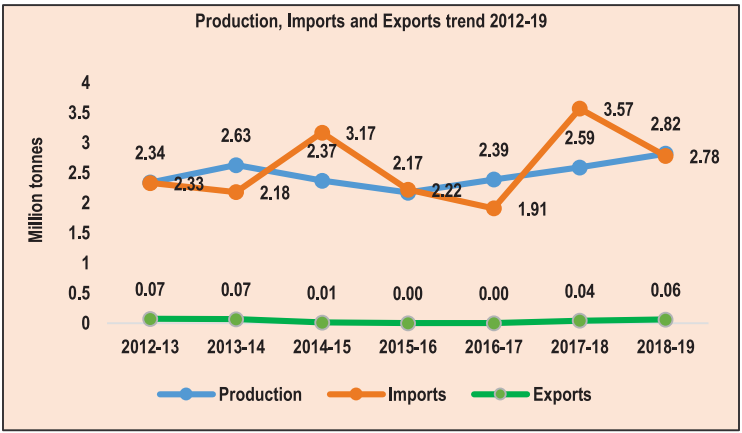




Source: Ministry of Mines Annual Report-2018-19; Indian Bureau of Mines, Ministry of Commerce and Industry.

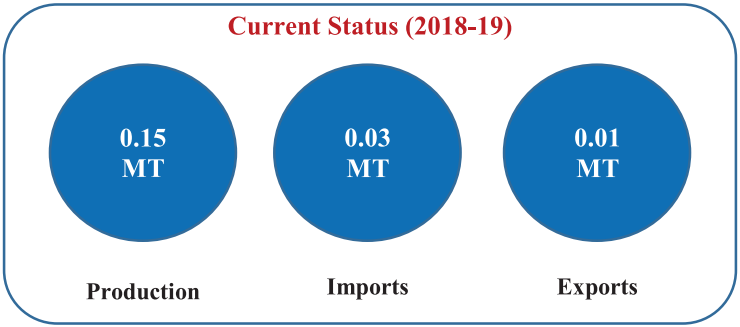
MANGANESE ORE

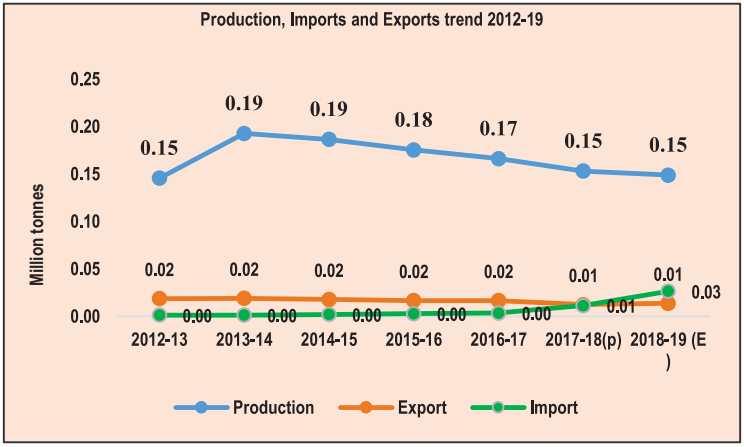




Source: Ministry of Mines Annual Report-2018-19; Ministry of Commerce and Industry

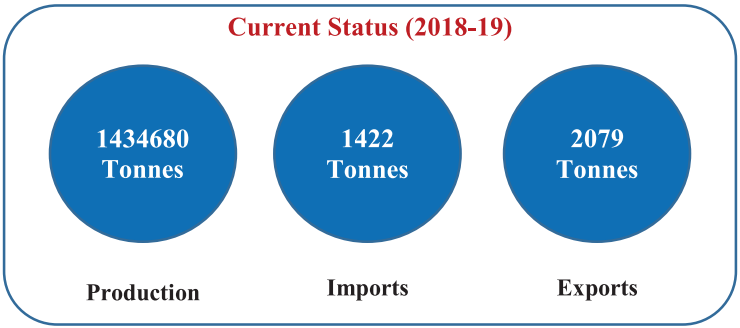
WOLLASTONITE

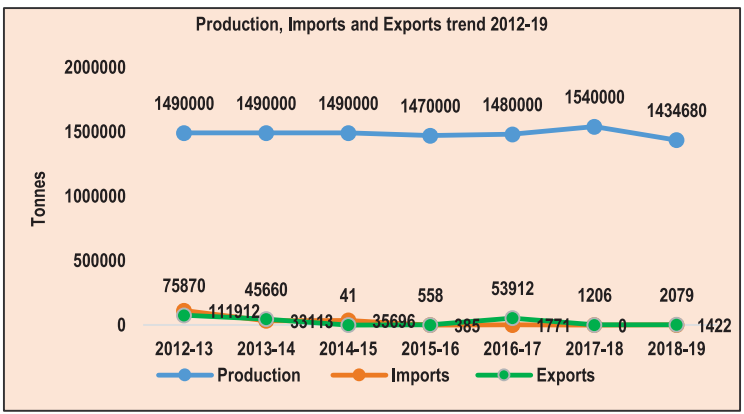




Source: Ministry of Mines Annual Report-2018-19; Indian Bureau of Mines, Ministry of Commerce and Industry.

ZINC ORE AND CONCENTRATE





Source: Ministry of Mines Annual Report-2018-19; Ministry of Commerce and Industry
Note: Production: concentrate; **Imports & Exports:** Ore and Concentrate

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