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Income and Employment Generation by Mining Industries in the state of Karnataka and Ballari district

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Abstract

Mining is an essential industry that will provide key materials needed for the country's infrastructure development. Mining is one of the core sectors and growth driver of Indian economy. Minerals and ores provide basic raw materials to many important industries like power generation (thermal), iron and steel, cement, petroleum and natural gas, petrochemicals, fertilizers, precious and semi-precious metals/stones, electrical and electronics equipment, glass and ceramics.

Karnataka has the distinction of being the principal gold producing State in the country. The State is the sole producer of feldspar and one of the leading producer of iron ore, chromite, dolomite, dunite, kyanite and shale. Karnataka hosts the country's 79% vanadium ore, 72% iron ore (magnetite), 65% corundum, 42% tungsten ore, 36% asbestos, 27% limestone, 21% gold ore (primary), 20% granite (dimension stone), 20% manganese ore, 17% dunite, 13% kyanite and 10% PGM (metal) resources.

In the State, the Department of Mines and Geology, is responsible for the effective and efficient administration of these mineral resources, which are raw materials for various industries. The present study focuses on Manganese and Iron ore production and dispatch for a period of 10 years in Karnataka and in Ballari district also focus on average daily employment and revenue generated by mining sector.

Keywords: Manganese and Iron ore production, Employment, and revenue generated by the mining sector.

Introduction

Karnataka State is abundant in mineral resources which covers an area of 1.92 lakh sq.km. The state is having valuable mineral deposits such as iron ore and manganese in Ballari, Chitradurga, Tumkur, Uttara Kannada and Chikmagalur districts. Besides these ores, chromium (Chromite) deposits in Hassan and Mysore districts, Aluminium (Bauxite) reserves in Belgaum, copper (malachite) reserves in Hassan, Chitradurga and Raichur are also found. State is rich in industrial minerals such as kyanite, soapstone, corundum and a wide variety of ornamental stones such as granite, gneisses, pink porphyries and feldspars deposits. Karnataka

has more than 40,000 sq. kms of green stone belt which are a treasure trove of several mineral deposits and also indicates the occurrence of polymetallic deposits, diamond and gold.

Karnataka is rich in its mineral wealth which is distributed fairly evenly across the state. Karnataka's Geological Survey department started in 1880 is one of the oldest in the country. Rich deposits of asbestos, bauxite, chromite, dolomite, gold, iron ore, kaolin, limestone, magnesite, Manganese, ochre, quartz and silica sand are found in the state. Karnataka is also a major producer of felsite, moulding sand (63%) and fuchsite quartzite (57%) in the country.

Mineral Resources of Karnataka

The state of Karnataka is endowed with rich deposits of mineral wealth. The mineral resources are distributed quite uniformly across the state's territory. Karnataka boasts of having one of the oldest Geological Survey Departments in the country that started functioning way back in 1880.

Mineral Belts in Karnataka

Karnataka falls under two well-defined mineral belts of India: The Southern Belt: The Southern Belt mostly covers the Karnataka plateau and extends over the state of Tamil Nadu. This belt is rich in ferrous metals such as iron ore and manganese. Bauxite and limestone are also found. The Southern belt lacks in mica and copper deposits.

The South-Western Belt: The South-Western Belt stretches over Southern Karnataka and Goa. It has rich deposits of iron ore, garnet and clay.

c. Mineral resource diversity in Karnataka

Karnataka has more than with 40,000 sq. km of green stone belts abundant with a variety of mineral resources like gold, silver, copper, iron, kaolin, manganese, limestone, ochre, quartz, dolomite, chromite, silica sand, granite, and other useful rock formations.

The state is the sole producer of felsite and leading producer of gold, moulding sand, and fuchsite quartzite. Karnataka has two major centres for gold mining at Kolar and Raichur and together they produce about 3000 kg of gold every year. With 84 percent of India's annual gold production coming from Karnataka, the state boasts of being the highest gold producer of the county. It has rich deposits of iron and manganese ores that measure to the tune of 1,000 million tonnes. Its granite rock deposits extend over 4200 sq. km and provide ornamental granites of splendid hues.

Table - 1
Mineral Resources of Karnataka

SL. No.	Name of Mineral / Ore	Recoverable Resources(Units:.000tones)
1	Asbestos(t)	8282457
2	Barytes(t)	15175
3	Bauxite	44981
4	Calcite(t)	415779
5	Chinaclay	255302
6	Chromite	1870
7	Copper-Ore	34404
8	Copper-Metal	226.56
9	Corundum(t)	15890
10	Dolomite	535239
11	Dumite	28324
12	Fireclay	16962
13	Fullers Earth(t)	2081116
14	Gold-Ore(t)	24232577
15	Gold-Metal(t)	102.37
16	Granite(0.0 Cum)	9571693
17	Graphite(t)	267634
18	Gypsum	3784
19	Iron Ore Hematite	1148324
20	Iron Ore Magnesite	7883847
21	Kyanite	12969655
22	Limestone	51210478
23	Magnesite	3754
24	Manganese Ore	86568
25	Molybdenum Ore(t)	1320900
26	Ochre(t)	1766484
27	Pyrite	3000
28	Quartz/Silica Sand	50724
29	Silimanite(t)	982725
30	Silver-Ore(t)	5409039
31	Silver-Metal(t)	4.56
32	Talc/Steatite/Soap Stone	2133
33	Titaniferrous Magnetite(t)	13862094
34	vanadium-ore(t)	19384430
35	Vanadium-Metal(t)	49497.55
36	Vermiculite(t)	95900

Source: Department of Mines and Geology, Government of Karnataka 2018

Facts about minerals in Karnataka

- Only state that produces felsite in India
- Leads national gold production (99 %) and Dunite production (43 %)
- More than 75 % of the state's mined area is occupied by just four minerals – iron ore, limestone, gold and manganese.
- The chief mining districts of Karnataka include Bellary (18 %), North Kanara and Kolar (11 %), Chitradurga (10 %) and Chikkamagaluru (9 %)
- Kollegal forests are known for dense forests, sandalwood and abundant black granite reserve, Western Ghats is famous for iron ore, Gulbarga for limestone and sand mining is popular in Tungabhadra.

Mineral Production in Karnataka

Gold ore, iron ore, manganese ore limestone and magnesite are the important minerals produced in Karnataka State. There were 137 reporting mines in 2018-19 in case of MCDR minerals.

Table – 2
Mineral Production in Karnataka, from 2008-09 to 2017-18
(Excluding Atomic Minerals)
(Quantity in tonnes; Value in `'000)

Year	No. of Mines (All Minerals)	Quantity	Value
2008-09	239	2736309	57689135
2009-10	233	2768107	60708085
2010-11	251	2558948	92997859
2011-12	185	245463	44674235
2012-13	219	2339490	60873185
2013-14	192	2345439	78827441
2014-15	197	2416452	77157908
2015-16	160	781196	55849293
2016-17	155	909619	63249191
2017-18	137	912845	95961664

Source: Indian Minerals Year book various issues

Note: The number of mines excludes Minor Minerals.

Table 2 reveals that the number of mines in the year 2008-09 was 239 and in the year 2017-18 they were 137. From the year 2008-09 to 2017-18, there were fluctuations in the number

of mines. As in the case of the quantity of ore is also fluctuating state during the same period. It was 2736309 in the year 2017-18 and the steep decline in the year 2008-09.

Mining lease: In order to extract any kind of ore, a mining lease is compulsory. The mine operator should obtain the same from the ministry of mines in India. It is valid for a certain period. While extracting the ore the owner of the lease should not violate the rules governed by the department. The details of mining leases in Manganese and Iron ore in the state of Karnataka and important districts are mentioned in table 3 and 4.

Table – 3
Manganese Ore mining leases in the state of Karnataka and district wise

Year	Karnataka	Name of the Districts in Karnataka			
		Ballari	Chitradurga	Davanagere	Tumakuru
2008-09	20	10	5	3	2
2009-10	19	10	5	2	2
2010-11	20	9	6	3	2
2011-12	19	9	5	3	2
2012-13	13	6	3	2	2
2013-14	11	4	3	2	2
2014-15	14	6	4	2	2
2015-16	11	2	4	2	3
2016-17	09	1	3	2	3
2017-18	10	2	3	4	1

Source: Indian Minerals Yearbook various issues

Table – 4
Iron Ore mining leases in the state of Karnataka and district wise

Year	Karnataka	Bagalkot	Ballari	Chitradurga	Tumakuru
2008-09	91	1	76	9	5
2009-10	93	1	71	10	11
2010-11	98	1	76	10	11
2011-12	67	1	49	9	8
2012-13	68	1	49	10	8
2013-14	66	2	50	7	7
2014-15	67	3	49	7	8
2015-16	69	3	53	9	4
2016-17	63	3	50	7	3
2017-18	57	3	47	6	1

Source: Indian Minerals Yearbook various issues

Production of Manganese Ore in Karnataka: Madhya Pradesh being the leading manganese ore producing State accounted for 27% of the total production in 2016-17. Next in the order of production were Maharashtra and Odisha (25% each). The remaining production was reported from Andhra Pradesh, Gujarat, Jharkhand, Karnataka, Rajasthan and Telangana.

Table – 5
Production of Manganese Ore in Karnataka
 (Quantity in tonnes; Value in `000)

Year	Quantity	% of change in quantity	Value
2008-09	332686	--	638173
2009-10	301163	9.48	611165
2010-11	413287	37.23	929734
2011-12	199034	-51.84	496174
2012-13	39540	-80.13	221931
2013-14	144528	265.52	673035
2014-15	206700	43.02	933894
2015-16	145623	-29.55	410733
2016-17	261372	79.49	1159755
2017-18	294261	12.58	1541069

Source: Indian Minerals Yearbook various issues

Table 5 indicates that the quantity of manganese ore production from the year 2008-09 to 2017-18 was in fluctuating state. It was 3,32,686 tonnes in the year 2008-09 and in the year 2017-18, it was 2,94,261 tonnes. The production of manganese ore was highest in the year 2010-11 and it was the lowest in the year 2012-13 due to supreme court ban on ore extraction.. The study concludes that the overall manganese ore production trend was fluctuating.

Employment in Manganese Ore in Karnataka: Karnataka manganese and iron ore sectors are the important sectors in contributing to the employment segment. The details of the same are presented in the table 6.

Table – 6
Average Daily Employment in Manganese & Iron Ore in Karnataka

Year	Manganese Ore Sector	Iron Ore Sector
2008-09	2046	7907
2009-10	2096	8165
2010-11	2266	7398
2011-12	2292	7626
2012-13	2321	6459
2013-14	2128	7211
2014-15	2004	7328
2015-16	1992	7238
2016-17	2013	7229
2017-18	2019	7234

Source: Economic Survey Report of India various issues

Production of Iron Ore in Karnataka: Karnataka is one of the leading producers of Iron ore. The yearly production and sales of iron ore is at 33.27 MT during the financial year, 2020-21. Karnataka has over 9,000 million tonnes of iron ore resources, of which the bulk is in the magnetite form. The districts of Bellary and Hospet are the main districts, where as Chitradurga, Bagalkot and Tumkur districts are also produce significant amounts of iron ore. The chunk of the iron ore is exported to be used in steel manufacture and pig iron and sponge iron plants.

Table – 7**Production of Iron Ore in Karnataka** (Quantity in '000 tonnes; Value in '000)

Year	Quantity	% of change in quantity	Value
2008-09	46971	--	57305574
2009-10	43163	-8.11	48811665
2010-11	38983	-9.68	79098120
2011-12	13233	-66.05	31985290
2012-13	11225	-15.17	35811649
2013-14	18684	66.45	50484086
2014-15	20205	8.14	55165630
2015-16	25036	23.91	34659850
2016-17	26483	5.78	44516153
2017-18	28691	8.34	74742826

Source: Indian Minerals Yearbook various issues

Table 7 discloses that the quantity of Iron ore production from the year 2008-09 to 2017-18 was in fluctuating state. It was 46971 thousand tonnes in the year 2008-09 and in the year 2017-18, it was 28691 thousand tonnes. The production of manganese ore was highest in the year 2008-09 and it was the lowest in the year 2012-13 due to the supreme court ban on ore extraction. The study concludes that the overall Iron ore production trend was fluctuating.

Table – 8**Number of Reporting Mines (Mining Leases) Iron Ore District wise from 2008-09 to 2017-18**

Year	Bagalkot	Ballari	Chitradurga	Tumakuru
2008-09	1	76	9	5
2009-10	1	71	10	11
2010-11	1	76	10	11
2011-12	1	49	9	8
2012-13	1	49	10	8
2013-14	2	50	7	7
2014-15	3	49	7	8
2015-16	3	53	9	4
2016-17	3	50	7	3
2017-18	3	47	6	1

Source: Department of mines and geology, Bengaluru.

Table – 9
Manganese Ore production in Ballari District in the state of Karnataka

Year	Quantity	Value
2010-11	307097	584397
2011-12	138814	287674
2012-13	18778	140093
2013-14	100631	526712
2014-15	172368	850823
2015-16	139559	401219
2016-17	232515	1037053
2017-18	265506	1434947

Source: Department of mines and geology, Ballari.

Table 9 shows that the quantity of manganese ore production in Ballari district from the year 2008-09 to 2017-18 was in fluctuating state. It was 3,07,097 tonnes in the year 2008-09 and in the year 2017-18, it was 2,65,506 tonnes. The production of manganese ore was highest in the year 2010-11 and it was the lowest in the year 2012-13 due to the Supreme Court ban on ore extraction. The fluctuating trend of manganese ore production was found during the study period.

Table – 10
Iron Ore production in Ballari District in the state of Karnataka
(Quantity & Value in '000 tonnes)

Year	Quantity	Value
2010-11	30761	50840956
2011-12	10827	28146355
2012-13	10775	34473853
2013-14	16531	45548153
2014-15	19201	52714397
2015-16	21543	31785154
2016-17	22890	40400193
2017-18	24569	68370950

Source: Department of mines and geology, Ballari.

Table 10 divulges that the quantity of Iron ore production in Ballari district from the year 2008-09 to 2017-18 was in fluctuating state. It was 30,761 thousand tonnes in the year 2008-09 and in the year 2017-18, it was 24,569 thousand tonnes. The production of Iron ore was the highest in the year 2010-11 and it was the lowest in the year 2012-13 due to the Supreme Court ban on ore extraction. The irregular trend of manganese ore production was found during the study period.

Table – 11
Average Daily Employment in Ballari District in the state of Karnataka

Year	Manganese Ore Sector	Iron Ore Sector
2008-09	1786	6258
2009-10	1847	6228
2010-11	1982	6169
2011-12	2035	6088
2012-13	2040	4861
2013-14	1847	5487
2014-15	1726	5626
2015-16	1721	5395
2016-17	1719	5389
2017-18	1713	5398

Source: Department of mines and geology, Ballari.

Revenues Realized from Mining and Mineral Industries

The Department of Mines and Geology has realized revenues of Rs.1496.56 crores as against the target of Rs.1920.00 crores upto November 2018 and as against the annual target of Rs.3000.00 crores for the year 2018- 19. Details of royalty collections from 2011-12 to 2018-19 (upto November 2018) are provided in Table 12.

Table- 12
Details of Royalty Collections (Rs. in crore)

Year	Target	Achievement	Major Mineral	Minor Mineral
2011-12	1250	1326.59	867.45	459.14
2012-13	1500	1485.48	794.16	691.32
2013-14	1911	658.84	309.71	349.13
2014 - 15	1750.00	1648.92	821.08	827.84
2015-16	1807.18	2003.61	807.71	1099.91
2016-17	2410.71	2185.02	1042.37	1142.65
2017-18	2550.00	2746.26	1294.89	1451.37
2018-19 (up to Nov-2018)	3000.00 Annual Target (1920.00 upto Nov-2018)	1496.56	925.50	571.07

Source: Demand, Collection, Balance (DCB) Section, Department of Mines & Geology.

Conclusion:

Karnataka is a mineral state of the Indian subcontinent with vast mineral reserves and a huge production hub for various common and rare metals. Mining in Karnataka has always been

the revenue-generating system in the industrial sector next to agriculture. Ballari is also the leading district in the production of Iron ore in terms of quantity and quality and contributes significantly to the state GDP. Authorities should take stringent measures against those miners who violate the mining norms. Moreover, mine owners should realize that they are not the real owners of the mines and should not extract the ore by violating the mining rules.

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