Indian Minerals Yearbook 2021

(Part- I)

60th Edition

STATE REVIEWS (Jharkhand)

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GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

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JHARKHAND

Mineral Resources

Jharkhand is one of the major mineral producing States. It is the sole producer of flint stone in the country and is one of the leading producers of coal, gold, graphite, bauxite, iron ore & limestone. Uranium ore is mined and processed by Uranium Corporation of India Ltd (UCIL) for supply as fuel to the country's nuclear power reactors through six underground mines, one opencast mine, and two processing plants. Jharkhand has the sole resources of emerald mineral. It accounts for about 31% rock phosphate, 23% iron ore (haematite), 30% apatite, 14% andalusite, 20% cobalt ore, 20% copper ore, 9% each granite (dimension stone) & graphite and 5% silver ore resources of the country.

Important minerals that occur in the State are **bauxite** in Dumka, Gumla, Latehar, Lohardaga & Palamu districts; **china clay** in Dumka, Hazaribagh, Lohardaga, East & West Singhbhum, Sahebganj & Ranchi districts; **coal** in Bokaro, Deoghar, Dhanbad, Giridih, Godda, Hazaribagh, Palamau, Pakur & Ranchi districts; **copper** in Hazaribagh & East Singhbhum districts; **dolomite** in Garhwa & Palamu districts; **felspar** in Deoghar, Dhanbad, Dumka, Giridih, Hazaribagh, Jamtara, Koderma, Latehar, Palamu & Ranchi districts; **fireclay** in Dhanbad, Dumka, Giridih, Godda, Hazaribagh, Latehar, Palamu, Ranchi & West Singhbhum districts; **gold** in East Singhbhum district; **graphite** in Palamu district; **iron ore** (haematite) in West Singhbhum district; **iron ore** (magnetite) in Gumla, Hazaribagh, Latehar, Palamu & East Singhbhum districts; **kyanite** in Saraikela-Kharsawan & West Singhbhum districts; **limestone** in Bokaro, Dhanbad, Garhwa, Giridih, Hazaribagh, Palamu, Ranchi, East & West Singhbhum districts; **manganese ore** in East & West Singhbhum districts; **mica** in Giridih and Koderma districts; **ochre** in West Singhbhum district; **dunite/pyroxenite** in East Singhbhum district; **quartz/silica sand** in Deoghar, Dhanbad, Dumka, Giridih, Godda, Hazaribagh, Jamtara, Koderma, Latehar, Palamu, Ranchi, Sahebganj, Saraikela-Kharsawan & West Singhbhum districts; and **quartzite** in East & West Singhbhum districts.

Other minerals that occur in the State are **andalusite** and **rock phosphate** in Palamu district; **apatite, chromite, cobalt, nickel, gold** & **silver** in East Singhbhum district; **asbestos** in East & West Singhbhum districts; **barytes** in Palamu & East Singhbhum districts; **bentonite** in Pakur & Sahebganj districts; **garnet** in Hazaribagh district; **granite** in Deogarh, Dhanbad, Dumka, Giridih, Godda, Gumla, Hazaribagh, Koderma, Lohardaga, Palamu, Ranchi & East Singhbhum districts; **sillimanite** in Hazaribagh district; **talc/steatite/ soapstone** in Giridih, Koderma, Palamu, East & West Singhbhum districts; **pyrophyllite** in Saraikela-Kharaswan district; **titanium minerals** in Ranchi and East Singhbhum districts; and **vermiculite** in Giridih & Hazaribagh districts (Table - 1). The reserve/resources of coal and the various coalfields located in Jharkhand are furnished in Table - 2.

Exploration & Development

The details of exploration activities conducted by GSI for manganese, base metals, iron ore, gold, bauxite, nickel, tungsten, rare earths elements, rare metals, lithium and other agencies (MECL) for bauxite etc. during the year 2020-21 are furnished in Table - 3.

Production

Coal was the principle mineral item reporting production in the state. The other important minerals produced are Bauxite, Copper Ore and Concentrate, Iron Ore, Limestone, etc. The value of minor mineral's production is estimated as ₹ 40 crores for the year 2020-21. There were 46 reporting mines in 2020-21 in case of MCDR of minerals (Table – 4).

Mineral-based Industry

The present status of each mineral-based industry is not readily available. However, the principal large and medium-scale mineral-based industries in the organised sector in the State are given in Table - 5.

Table – 1 : Reserves/Resources of Minerals as on 1.4.2020: Jharkhand

Mineral	Unit	Reserves				Remaining Resources								Total resources (A+B)
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
			STD121	STD122			STD221	STD222						
Andalusite	'000 tonnes	-	-	-	-	-	-	-	-	-	-	11800	11800	11800
Apatite	tonne	-	-	-	-	-	-	-	2110000	1620000	3540000	-	7270000	7270000
Asbestos	Tonne	-	-	-	-	-	3871	18309	2885	5769	124059	-	154893	154893
Bauxite	000 Tonnes	29524	731	9717	39972	25895	7647	14969	25962	63224	70527	41050	249272	289244
Chromite	000 Tonnes	-	-	-	-	-	-	-	15	98	623	-	736	736
Cobalt	Million Tonnes	-	-	-	-	-	-	-	-	2	-	7	9	9
Copper														
Ore	000 Tonnes	6150	-	3000	9150	10445	2804	3988	87330	99890	37855	-	242313	251463
Metal	000 Tonnes	72.08	-	35.37	107.45	115.59	29.98	45.9	1002.92	1023.12	454.7	-	2672.21	2779.66
Emerald	Kilogram	-	-	-	-	-	-	-	-	-	-	55869	55869	55869
Garnet	Tonne	-	-	-	-	-	-	88303	-	-	21768	-	110071	110071
Gold														
Ore (Primary)	Tonne	-	-	-	-	-	-	9206	-	4710966	4579355	767000	10076527	10076527
Metal (Primary)	Tonne	-	-	-	-	-	-	0.08	-	2.24	12.49	0.62	15.43	15.43
Graphite	Tonne	2091442	-	512637	2604079	1341224	491883	3020107	60607	5167431	6639828	681208	17402288	20006367
Iron Ore (Heamatite)	000 Tonnes	388078	16760	129839	534677	324634	902980	814308	101700	122673	617586	1291588	4175469	4710146
Iron Ore (Magnetite)	000 Tonnes	-	-	-	-	-	518	1986	411	3948	3722	82	10667	10667
Kyanite	Tonne	-	331193	-	331193	1017105	920088	523589	-	1754900	3727685	-	7943367	8274560
Limestone	000 Tonnes	6780	3512	395	10687	74071	50565	11535	91922	13220	356962	11803	610078	620765
Manganese Ore	000 Tonnes	132	433	493	1059	1394	1046	5198	-	1395	4658	-	13691	14749
Nickel	Million Tonnes	-	-	-	-	-	-	-	-	2	7	-	9	9
Potash	Million Tonnes	-	-	-	-	-	-	-	-	-	152	-	152	152

(contd)

Table - 1 (concld)

Mineral	Unit	Reserves				Remaining Resources								Total resources (A+B)
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
			STD121	STD122			STD221	STD222						
Rare Earth Elements	Tonne	-	-	-	-	-	-	-	-	-	4	-	4	4
Rock Phosphate	Tonne	-	-	-	-	-	-	-	-	-	107370000	-	107370000	107370000
Sillimanite	Tonne	-	-	-	-	-	-	-	-	-	83000	-	83000	83000
Silver														
Ore	Tonne	-	-	-	-	-	-	-	-	-	23840000	-	23840000	23840000
Metal	Tonne	-	-	-	-	-	-	-	-	-	5.22	-	5.22	5.22
Titanium	Tonne	-	-	-	-	-	-	-	-	3630000	20635000	2338767	26603767	26603767
Vermiculite	Tonne	-	-	-	-	-	-	-	-	-	30048	-	30048	30048

Figures rounded off.

Table – 2 : Reserves/Resources of Coal as on 1.4.2021: Jharkhand

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	**52046**	**28882**	**5288**	**86217**
Raniganj	1538	467	32	2036
Jharia	16282	3248	-	19531
East Bokaro	3497	3923	863	8284
West Bokaro	3923	1279	17	5218
Ramgarh	937	912	58	1906
North Karanpura	10929	6173	1865	18967
South Karanpura	5176	1312	1143	7632
Aurangabad	352	2142	503	2997
Hutar	191	27	32	250
Daltonganj	84	60	-	144
Deogarh	326	74	-	400
Rajmahal	8811	9267	774	18852

Source: *Coal Directory of India, 2020-21.*

Table –3 : Details of Exploration Activities in Jharkhand, 2020-21

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq. km)	No. of boreholes	Meterage		
GSI							
Manganese							
Singhbhum	Basedera-Babaida	-	100	-	-	50	Reconnaissance survey (G4) was carried out for manganese mineralisation around this Area. A total 100 sq. km area was covered by LSM involving 60 cu. m. of pitting/trenching and collection of 50 nos. of bed rock samples from potential lithounits. The study area forms a part of North Singhbhum Mobile Belt (NSMB) where NW-SE trending Dalma Volcanic/ Group is bounded in northern and southern part by mica schist and hornblende schist of Singhbhum Group. The southern part of the study area is dominantly occupied by meta-argillaceous rocks with Phyllite, Staurolite schist, Hornblende schist and Quartz Mica Schist being the dominant lithology while the northwestern part is essentially mafic meta-volcanic of Dalma Volcanic Group depicting a typical volcano-sedimentary assemblage. In the study area, manganese mineralisation is deposited at the

(contd)

Table –3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							contact of quartzite and phyllite. The chief ore minerals are psilomelane, Pyrolusite and subordinate amount of braunite.The value of Mn in the BRS ranges from 0.01 to 1.49% and Feranges from 0.45 to 29.49%. Chemical analyses result received for PCS sample depicts 2549 ppm Cr and 1260 ppm Ni in staurolite mica schist near Basadera.
Gold							
Singhbhum	Chirubera-Gamhariya Block	-	100	-	-	227	Reconnaissance survey (G4) was carried out for gold and associated minerals in this area. Large Scale Mapping was carried out over 100 sq. km area alongwith collection of 50 nos. of pitting- trenching samples, 102 nos. of BRS, 25 nos. of PS, 25 nos. of PCS and 25 nos. of stream sediment samples. Different rock types observed are phyllite, tuffaceous phyllite, slaty phyllite, brecciated chert, quartzite, cherty quartzite, brecciated / ferruginized quartzite, quartz chlorite schist, schistose and massive metabasalt, felsic tuff, gneissose granite, dolerite and quartz veins (milky white and smoky) cross cutting the phyllites and quartzites.
Saraikela-Kharsawan	Heben-Raghunathpur Area	-	100	-	-	227	Reconnaissance survey (G4) for gold and associated minerals in was carried out in this area. The area belongs to domain V of North Singhbhum Mobile Belt (NSMB) constituting rocks of Singhbhum Group. Large scale mapping was carried out over 100 sq.km area. The area is occupied by varieties of acid volcanic rocks and muscovite-biotite schist, hornblende schist, quartzite, calc-silicate rock, younger gabbroic intrusive and quartz veins. The southern part of the area is dominantly occupied by tuffaceous phyllite. In terms of Au mineralisation anomalous values in the order 140 ppb and 120 ppb is observed in intensely altered quartzite near Kushputul. Gold

(contd)

Table –3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							values up to 120 ppb observed in trench near Lawa. Cu values are ranging from <1 to 90 ppm while values of Pb are ranging from <1 to 36 ppm and values of Zn are ranging from <1 to 77 ppm.
Saraikela-Kharsawan	Bachkakocha-Tankocha-Pata-Humid areas	-	100	-	-	-	Reconnaissance survey (G4) for gold and associated minerals, was carried out in this area. An area of 100 sq. km area was mapped involving the collection of bed rock, trench, petrological, ore microscopy, stream sediment and petrochemical samples. The area forms a part of Palaeo- proterozoic Singhbhum volcano–sedimentary supracrustal rocks constituting the North Singhbhum Mobile Belt preserving metamorphosed pelitic–psammtic–tuffaceous sequence of Dhalbhum, Lower Dalma and Chandil formations capped by rock units of mafic Dalma volcanics(Upper Dalma Formation); constituting chlorite phyllite (with thin layers of carbonaceous phyllite), carbonaceous phyllite, carbonaceous chert, quartzite/cherty quartzite, ferruginised–oxidized quartzite (brecciated), carbonaceous algal chert (stromatolitic), metabasalt, agglomerate, pillowed metabasalt, talc chlorite schist, quartz veins, cherty dolomite, acid volcanic and mafic intrusives along with multiple tuff bands. Two mineralised zones represented by ferruginised, limonitised, oxidised brecciated quartzite with carbonate and/or smoky quartz veins were demarcated north of Chainpur–Pata–Humid–Katjor–Kadamjhor and south of Bachkakocha–Tankocha–Benadih sections.
Simdega	Sagjor-Tangratoli-Bagdega area	-	-	-	-	-	Reconnaissance survey (G4) for gold and associated minerals was carried out around this area. The mapped area comprises rocks of Chhotanagpur Granite Gneissic Complex (CGGC) and Gangpur

(contd)

Table –3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							Group (GG). The CGGC of the area contain various components including older metamorphic and supracrustal enclave suite within the gneissic country rock which had been intruded by the different phase of felsic and mafic magmatic rocks. The supracrustal units mostly consist of hornblende schist as enclaves (not mappable) within the granodioritic rock. The younger quartz veins, pegmatite veins, syenite vein and lamprophyre dykes etc. intruded into CGGC and GG were documented, which have been formed during different tectono-magmatic events experiences by the CGGC during its evolution. The porphyritic gneiss and sheared granite gneiss occur in small patches within the granite gneiss. The granitoids of granitic composition occur as intrusive into the granite gneiss rock in the central part of the study area. Gold grains (up to 7-8 grains of gold in panned concentrate of 35 kg of sediments) were observed in naked eye in the panned sediments collected from 1st and 2nd order streams flowing through the quartz and quartz-tourmaline veins that have intruded into the sheared granite gneiss. Gold grains were also visible in naked eye in the panned concentrate of sediments collected from the slope wash developed over the quartz veins. The BRS samples as well as the trench samples collected across these quartz veins contains significant concentration of base metals in the form of bornite and chalcopyrite stains and iron oxide stains. Good concentration of gold grains were observed in the panned sediments collected from the streams flowing through the quartz veinsin and around of Bandhanatoli, Gamhartoli and Barbeda village.
Bauxite							
Latehar	Dumardih - Tukudih area	1:4000	1.30	-	-	35	Reconnaissance Survey (G4) was carried out for bauxite and associated minerals (Ti, V, Ga etc.) in and around this area. Detailed mapping of 1.30 sq. km area on 1:4000 scale has been carried out (contd)

Table –3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling	Remarks
		Scale	Area (sq km)	No. of boreholes	Meterage	(No.)	Reserves/Resources estimated
							along with the collection of 10 nos. of XRD samples for laboratory studies. The laterite exposures in and around Tukudih area are mostly covered by yellow to reddish lateritic soil. The analytical results of 25 nos. of BRS received indicate Al_2O_3= 30% and SiO_2 = 7% in 10 nos. of samples ranging from 32.26% to 44.44% Al_2O_3 and the corresponding SiO_2 ranging from 2.19% to 7% of SiO_2 also shows high value of Vanadium in 20 nos. of samples which ranges from 1705 ppm to 3995 ppm and 10 nos. of samples indicates percentage of TiO_2 from 5.12 %to 12.32%. A large part of the study area is covered by aluminous laterite and the chemical analysis support and indicate that 14 nos. of BRS samples have Al_2O_3= 20%. The XRD analysis of 20 nos. of samples of the study area indicate major amount (>50%) as gibbsite while small amount (>5-20%) contains of boehmite, anatase, hematite beside goethite, rutile and kaolinite occurring as traces. As per IBM present threshold cut off values of bauxite (Al_2O_3 = 30% and SiO_2 = 7% total), a total of 7.96 MT of bauxite resource has been prognosticated over an area of 2.025 sq. km. with an average grade of 41.25% Al_2O_3 and 3.988% SiO_2 which is categorized as 334 as per UNFC classification.
Base Metal							
East Singhbhum	Jamshol-Kokpara Block	1:12500	100	-	-	-	Reconnaissance survey (G4) was carried out in this area for copper, gold and associated minerals. An area of 100 sq. km was mapped on 1:12500 scale beside collection of bedrock samples, pitting and trenching samples, stream sediment and soil samples for chemical analysis. The study area comprises rocks of upper Dhanjori Formation at the base and Singhbhum Group (Chaibasa Formation). The upper Dhanjori Formation consists of metabasic rocks and Chaibasa Formation of Singhbhum Group contains psammopellitic sequence. The indicators of mineralisation are

(contd)

Table –3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							ferruginous alteration, limonite-goethite alteration in weathered metabasic rock in Rangamatiya village, tiny grains of chalcopyrite dispersed along with pits, vugs and boxworks within quartz-muscovite-biotite schist near Gohala village. Small specks of dispersed chalcopyrite and bornite stains in quartz-muscovite-biotite schist observed in Gohala and Garghutu village. Reddish brown, buff brown coloured soil with sparse tiny grains of chalcopyrite, bornite etc. in weathered muscovite-biotite schist and quartz rubbles is observed at the trench section of Gohala. Pyrite grains are observed in the form of cubical pits in quartz-muscovite-biotite schist and chalcopyrite grains are visible in dissipated manner. Some encouraging values of Cu content in five nos. of bedrock samples (1009 ppm to 6377ppm) and pit-trench samples (Trench-2) (2176ppm to 4602ppm) have been yielded in quartz-muscovite-biotite schist from Gohala village and surrounding area.
Tungsten							
Palamau	Salatua-Kachan area	1:12500	100	-	-	-	Reconnaissance Survey (G4) by Large scale mapping on 1:12500 scale was carried out in 100 sq. km area in and around Salatua- Kachan-Semra areas alongwith collection of bed rock samples (75 nos.), petrochemical samples (10 nos.), stream sediment samples (25 nos.), petrological samples (20 nos.), SEM-EDX (05 nos.) and pitting/ trenching samples (50 nos). The samples collected were sent for chemical analysis. The surface indications of mineralisation are well developed in skarn zone along with crystalline limestone and amphibolite in the form of azurite, malachite, bornite, pyrite, magnetite, galena and occasionally chalcopyrite. Geochemical analytical results of bed rock samples show encouraging value of tungsten ranging from 109.17 ppm to 2106.45 ppm. Scattered values of Ag ranges from <02 ppm to 52 ppm (contd)

Table –3 (concld)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling	Remarks
		Scale	Area (sq km)	No. of boreholes	Meterage	(No.)	Reserves/Resources estimated
							and Au ranges from <.05 to 0.17 ppm. Isolated value of lead up to 1608 ppm has also been observed in tremolite actinolite schist around Nawadih village whereas the values of Zn ranges up to 971 ppm. The analytical result of Au in bed rock samples ranges from >0.5 ppm to 0.17 ppm. The values of U up to 12.48 ppm and Th up to 84.84 ppm has been observed from syenite present in the area.
Garhwa	Nagar Untari area	1:12500	105	-	-	-	Reconnaissance survey (G4) by Large Scale Mapping (LSM), on 1: 12500 scale has been carried out in and around Nagar Untari area over 105 sq. km area with collection of 100 nos. BRS, 100 nos. PTS, 25 nos. PS, and 20 nos. soil samples. In central part of study area near Korya village contacts between phyllite and biotite granite are found. Due to contact metamorphism, randomly oriented andalusite minerals have been developed within phyllites. These contact zones are associated with numerous pegmatitic and quartz veins. The general trend of phyllite/ andalusite phyllite varies from E-W to ENE-WSW. Quartz veins are 1.00 to 10.00 cm thick and less than 1.00 m in length. The depth continuation of these quartz veins are not observed while trenching. Quartz veins and andalusite phyllites were reported to have tungsten mineralisation by previous workers in adjacent Sonbhadra area. The analytical results of 20 nos. of BRS samples shows that Tungsten in phyllite ranges from 3.85 to 6.69 ppm and in quartz vein it ranges from 0.39 to 0.74 ppm.
REE and Rare metals							
Godda	Hupnatola Block Kusahna area	1:4000	10	-	-	530	Preliminary exploration (G3) was carried out for REE and Rare metals in this area. An area of 10 sq. km. was mapped on 1:4000 scale to access the potentiality of the rare earth elements (REE) and rare metals. The area can broadly be classified into unclassified metamorphics as the oldest rocks,

(contd)

Table –3 (concld)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							gneissic rocks of CGC and intrusive. The older metamorphic consists of quartz-mica- schist, metagabbro, pyroxene granulite and amphibolite/ hornblende schist and occur as enclaves and form small mounds. The major part of study area is covered by porphyritic granite gneiss and granite gneiss of Chhotanagpur Gneissic Complex. These granite gneisses are intruded by variants of younger granites, pegmatite, and quartz veins. Pegmatites bodies ranging between 20-200 m in length and 5-25 m in width were mapped. +A zoned pegmatite trending E-W is observed north of Khariani. The pegmatite bodies trend in three directions i.e. NE-SW, NW-SE and E-W. The pegmatite bodies trending NE-SW and E-W are mostly tourmaline bearing. Magnetite is observed in pegmatite vein (40x10 m) east of Khariani village. An Auger drilling of 240 m was completed in 120 nos. of boreholes which were drilled for 1-3 m depth at regular interval of 300m x300 m in grid pattern. A total of 50 nos. of BRS, 330 nos. of soil samples by auger drilling, 100 nos. of heavy mineral samples, 20 nos. of PCS, 10 nos. of SEM and 20 nos. of XRD samples were collected.
Lithium							
Koderma	Dhorakola-Kusahna area	-	-	-	-	-	Reconnaissance Survey (G4) was carried out for Lithium and Caesium in Bihar Mica Belt and Chhotanagpur Granite Gneiss Complex in and around Dhorakola-Kusahna area. LSM was carried out and major lithounits observed in the area are granite gneiss, hornblende gneiss, granite, mica schist, garnetiferous quartz mica schist, pegmatite, quartz reef and amphibolite. A pegmatite body having 20-25 m width and 230 m length is found to be intruded along the foliation plane of garnetiferous quartz mica schist in Koderma R.F area. Another pegmatite body striking N40°E- S40°W and having 10-15 m width and 200 m length is found to be intruded in garnetiferous

(contd)

Table –3 (concld)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							quartz mica schist. Columbite-tantalite are observed within pegmatite intruded within granite gneiss near Dhubba village. Heavy mineral samples were collected from channel bars and meander bars. Analytical results are awaited.
MECL							
Bauxite							
Gumla	Mahuapattoli-Harduba block	1:2000	0.604	17	-	478	A G2 level exploration in Mahuapattoli-Harduba block, Serandag plateau, Gumla district was carried out with the objectives to i) prove the occurrences of bauxite zones, assess the bauxite resources both quantitatively and qualitatively etc. The exploration comprised mapping of 0.604 sq.km on 1:2000 scale, 206.50 m core drilling in 8 boreholes, 193.80 m vacuum suction drilling in 9 boreholes. A total of 478 samples were collected for various studies/analysis.The total resources estimated in the block was (i) 0.2354 million tonnes of 42.14% Al_2O_3 and 8.39% SiO_2, ii) 1.1223 million tonnes of 44.63% Al_2O_3 and 2.89% SiO_2,, iii) 2.5245 million tonnes of >39.95% Al_2O_3 and 4.34% SiO_2 under indicated category.
Lohadaga	Maduapat, Kisko block	1:2000	0.363	38	-	952	In Lohadaga district, a G2 level exploration in Madupat, village, Kisko block was carried out with the objectives to i) prove the occurrences of bauxite zones, assess the bauxite resources both quantitatively and qualitatively etc. The exploration comprised mapping of 0.363 sq.km on 1:2000 scale, 403.80 m core drilling in 21 boreholes, 299.20 m vacuum suction drilling in 17 boreholes. A total of 952 samples were collected for various studies/analysis. The total resources estimated +in the area was (i) 2.88 million tonnes of >37.26% Al_2O_3 and 3.34% SiO_2, ii) 0.82 million tonnes of >38% Al_2O_3 and <5% SiO_2,, iii) 0.44 million tonnes of 44.22% Al_2O_3 and 2.78% SiO_2, iv) 8.89 million tonnes of >31.72% Al_2O_3 and 21.11% SiO_2 for aluminous laterite under indicated category.

Table – 4 : Mineral Production in Jharkhand, 2018-19 to 2020-21 (Excluding Atomic Minerals)

(Value in ₹'000)

Mineral	Unit	2018-19			2019-20			2020-21 (P)		
		No. of mines	Quantity	Value$	No. of mines	Quantity	Value$	No. of mines	Quantity	Value$
All Minerals		**62**	**-**	**31593780**	**54**	**-**	**32278813**	**46**	**-**	**27922626**
Coal	'000t	-	134666	-	-	131763	-	-	119295	-
Natural Gas (ut.)+	m c m	-	4	-	-	5	-	-	2	-
Bauxite	t	13	2412486	2479551	20	1418793	1400830	19	1497473	1586192
Copper Ore	t	-	242977	-	-	288477	-	-	41772	-
Copper Conc.	t	2	6594	529620	2	7660	604135	2	1209	23707
Gold Ore	t	-	3772	-	-	4807	-	-	2859	-
Gold	kg	2	11	33888	1	18	64689	1	11	53790
Iron Ore	'000t	20	23433	27673520	21	25015	29411760	16	21434	25694610
Manganese Ore	t	4	4785	39839	2	4785	36126	-	-	-
Graphite (r.o.m.)	t	4	15831	17974	3	21202	20661	3	5674	5795
Limestone	'000t	7	1248	417940	5	785	339164	5	324	157084
Minor Minerals @		-	-	401448	-	-	401448	-	-	401448

Note: *The number of mines excludes Fuel and Minor minerals.*

$ Excludes the value of Fuel minerals.

+ Coal Bed Methane

@ Figures for earlier years have been repeated as estimates because of non-receipt of data.

Table – 5 : Principal Mineral-based Industries

Industry/plant	Capacity ('000 tpy)
Alumina	
Hindalco Industries Ltd, Muri.	450 KTPA
Asbestos Products	
Hyderabad Industries Ltd, Jasidih, Distt. Deogarh.	NA
Cement	
ACC Ltd, Chaibasa, Distt. Singhbhum.	900
ACC Ltd, Sindri, Distt. Dhanbad (G).	2350
Bokaro Cement Plant (formerly JV of Jaypee Cement & SAIL), Bokaro (G).	2100
Lafarge, Jojobera, Distt. Singhbhum.	4600
Burnpur Cement Patratu Ramgarh	300
Ceramic	
Maithan Ceramics Pvt. Ltd, Dhanbad.	80

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Chemicals	
Bihar Caustic & Chemicals Ltd, Garhwa Road, Distt. Palamu.	92.75 (caustic soda lye)
Copper Smelter	
HCL, ICC, Ghatsila, Distt. Singhbhum (East).	19 (refined copper) 20.5 (copper smelting) 18.5 (copper cathode) 84 (fabricated wire bar) 54(H_2SO_4), 390 t ($NiSO_4$) 480 kg ($CuSO_4$) 14.6 kg (selenium) 9868 kg (Ag), 698 kg (Au)
Foundry	
Grind chem, Adityapur	15 (Foundry fluxes)
Jharkhand Grid chem Pvt. Ltd, Adityapur, Gamharia	25 (Foundry fluxes)

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Iron & Steel	
Bokaro Steel Plant, Bokaro	6900 (sinter) 4585 (pig iron) 4500 (Crude/liquid steel) 35.5 (H_2SO_4) 27.2 (ammonium sulphate)
Tata Steel Ltd, Jamshedpur	6000 (pellets) 8000 (sinter) 10550 (Pig Iron) 13000 (Crude/liquid steel)
Usha Martin Ltd, Jamshedpur.	500 (Sponge iron) 1200 (pellets) 715 (sinter) 1000 (Liquid/ crude Steel)
Pellet	
Orissa Manganese & Minerals Ltd, Kandra, Sarai Kharsawan.	1600 (pellets)
Pig Iron	
Atibir Industries Pvt. Ltd, Bhorandiha, Giridih	600 120 (Sponge iron) 680 (sinter)
Elcctrosteel Steels Ltd, Siyal Jori, Chandan Kiyari	1500
Sponge Iron	
Anindita Steel Ltd, Senegarha Rabodh	120
Ashirwad Steel & Industries Ltd, Gamharia, Jamshedpur.	72
Bihar Sponge Iron Ltd, Chandil, Distt. Saraikela-Kharsawan.	210
Brahmaputra Metallics Limited, Kamta, Gola, Distt. Ramgarh.	105 148.5 (Semi-finished Steel)
Balmukund Sponge & Iron Pvt. Ltd, Majhaladih, Gadisrirampur	63 75 (Crude/liquid steel) 37 ((Pig Iron)
Chintpurni Steel Pvt. Ltd, Indra, Zarba	90 100 (Semi-finished steel)
Jai Durga Iron Pvt. Ltd, (I &II) Jhumari Tellaiya, Distt. Koderma	(36+66) =96

(contd)

Table - 5 (concld)

Industry/plant	Capacity ('000 tpy)
Jai Balaji Industrial Engg. Ltd, Barajamda	120
Rungta Mines Limit Chaliyama Rajnagar	620.4
Saluja Steels & Power Pvt. Ltd, Mahtodih.	60
Satpuria Alloys Pvt. Ltd, Manjhladih	60
Shivam Iron & Steel Co. Ltd, Bandhi, Chandwara	90
Zoom Vallabh Steels Ltd, Dugdha, Distt. Saraikela-Kharsawan.	120
Ferro Alloys	
Astha Ferrotech Pvt. Ltd, Adityapur, Tatanagar	201
Anjaney Ferro Alloys Ltd, Mahijam	12
Bihar Foundary & Ccasting Ltd, Marar	36
Dayal Ferroalloy Ramgarh cantt	10
Gautam Ferro Alloys Ltd,	5.5
Shivam Iron & Steel Co. Ltd, Jambad, Udnabad	37.4 (Si-Mn)
Tin Plates	
The Tin Plate Co. of India Ltd, Jamshedpur.	379
Glass	
IAG Co. Ltd, Bhandainagar.	360 TPD
Refractory	
SAIL Refractory Unit (formerly Bharat Refractories Ltd,), Ranchi Road, Ramgarh.	7.5
SAIL Refractory Unit (formerly Bharat Refractories Ltd,), IFICO, Ramgarh.	42
SAIL Refractory Unit (formerly Bharat Refractories Ltd,), Bhandaridah, Distt. Bokaro.	26
Jharia Firebricks Pottery Works (P) Ltd, Dhansar, Distt. Dhanbad.	20
Mineral Trade Corporation Khaparsai, Chaibasa	6.6
Raj Refractory (P) Ltd, Hardag, Distt. Ranchi.	6

G; Grinding Unit

Note: *Data, for Cement Industries on respective websites, is taken from Survey of Cement Industry & Directory.*