Indian Minerals Yearbook 2016

(Part- I)

55th Edition

STATE REVIEWS (Chhattigarh)

(ADVANCE RELEASE)

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MINISTRY OF MINES
INDIAN BUREAU OF MINES

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CHHATTISGARH

Mineral Resources

Chhattisgarh is the sole producer of tin concentrates and moulding sand. It is one of the leading producers of coal, dolomite, bauxite and iron ore. The State accounts for about 36% tin ore, 22% iron ore (hematite), 11% dolomite and 4% each Diamond & marble resources of the country. Important mineral occurrences in the State are **bauxite** in Bastar, Bilaspur, Dantewada, Jashpur, Kanker, Kawardha (Kabirdham), Korba, Raigarh & Sarguja districts; **china clay** in Durg & Rajnandgaon districts; **coal** in Koria, Korba, Raigarh & Sarguja districts; **dolomite** in Bastar, Bilaspur, Durg, Janjgir-Champa, Raigarh & Raipur districts; and **iron ore (hematite)** in Bastar district, Bailadila deposit in Dantewada district, Chhote Dongar deposit in Kanker district, Rowghat, Chargaon, Metabodeli & Hahaladdi deposits in Rajnandgaon district, Boria Tibbu deposits in Dalli-Rajhara area, Durg district. Bailadila-Rowghat hill ranges in the State are considered to be one of the biggest iron ore fields in India. **Limestone** occurs in Bastar, Bilaspur, Durg, Janjgir-Champa, Kawardha (Kabirdham), Raigarh, Raipur & Rajnandgaon districts; **quartzite** in Durg, Raipur, Rajnandgaon & Raigarh districts; and **talc/soapstone/steatite** in Durg & Kanker districts.

Other minerals found in the State are **corundum** in Dantewada district; **diamond** and other gemstones in Raipur, Mahasamund & Dhamtari districts; **fire clay** in Bilaspur, Raigarh & Rajnandgaon districts; **fluorite** in Rajnandgaon district; **garnet** & **marble** in Bastar district; **emerald** & **gold** in Raipur district; **granite** in Bastar, Kanker & Raipur districts; **quartz/silica sand** in Durg, Jashpur, Raigarh, Raipur & Rajnandgaon districts; and **tin** in Bastar & Dantewada districts (Table - 1). The reserves/ resources of coal are furnished in Table - 2.

Exploration & Development

The details of exploration activities conducted by GSI, NMDC and State DGM during 2015-16 are furnished in Table - 3.

Production

The total estimated value of mineral production (excludes atomic mineral) in Chhattisgarh at ₹ 21,149 crore in 2015-16, decreased by about 11% as compared to that in the previous year. The State is ranked fourth in the country and accounted for about 7% of the total value of mineral production. The important minerals produced in the State in 2015-16 were coal, iron ore, limestone, bauxite, and tin (concentrate) which together accounted for about 97% of the total value of mineral production in the State.

Chhattisgarh was the sole producer of tin concentrate and moulding sand and second leading producer of coal contributing 20% in the total production of the country. It was also third largest producer of iron ore with contribution of 16% to the total production. During the year under review, production of moulding sand increased by more than three times, that of bauxite increased by 28%, and limestone by 17%, whereas it declined in case of coal by 3%, iron ore 16% and tin concentrates by 45% as compared to that of the previous year (Table-4).

The value of production of minor minerals was estimated at ₹ 736 crore for the year 2015-16.

The number of reporting mines in Chhattisgarh was 157 in reporting year 2015-16 as compared to 216 mines during previous year.

Table – 1: Reserves/Resources of Minerals as on 1.4.2015: Chhattisgarh

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						
Bauxite	'000 tonnes	12537	218	2313	15068	15341	4570	46389	37264	12892	23483	18747	158687	173755
China Clay#	'000 tonnes	107	-	22	130	1272	765	1412	-	-	11422	-	14871	15001
Corundum#	tonne	-	-	-	-	100	310	188	-	-	288	-	885	885
Diamond	carat	-	-	-	-	-	-	-	-	-	1304000	-	1304000	1304000
Dolomite#	'000 tonnes	34465	48130	11623	94218	29294	80865	24512	150795	24412	511610	1950	823439	917657
Fireclay#	'000 tonnes	315	23	94	433	68	27	17	7180	3400	10435	-	21126	21558
Fluorite	tonne	-	-	-	-	65889	153132	9288	185485	5573	126088	-	545455	545455
Garnet	tonne	-	-	-	-	-	-	-	-	-	28800	-	28800	28800
Gold														
Ore (primary)	tonne	-	-	-	-	-	-	-	-	600000	4241033	-	4841033	4841033
Metal (primary)	tonne	-	-	-	-	-	-	-	-	1.8	3.71	-	5.51	5.51
Graphite	tonne	6111	-	-	6111	1230	-	-	-	-	-	-	1230	7341
Granite## (Dim. stone)	'000 cu m	-	-	-	-	-	-	-	-	-	50057	-	50057	50057
Iron ore (Hematite)	'000 tonnes	1067636	78071	241730	1387437	255074	61735	47394	921139	613433	801086	770827	3470687	4858124
Iron ore (Magnetite)	'000 tonnes	8087	-	3096	11183	-	-	42	-	-	-	-	42	11225
Limestone	'000 tonnes	1025180	7128	145576	1177885	1071824	751825	427410	1332250	485933	5558135	-	9627377	10805262
Marble##	'000 tonnes	-	-	-	-	-	-	-	-	-	83000	-	83000	83000
Ochre	tonne	-	-	-	-	-	142	-	-	-	-	-	142	142
Quartzite#	'000 tonnes	605	1524	1567	3696	575	7035	1856	-	-	15404	-	24870	28566
Quartz-silica sand#	'000 tonnes	501	479	800	1780	389	282	789	56	26	642	7672	9856	11636
Talc/soapstone steatite#	'000 tonnes	22	-	8	30	-	-	-	-	70	8	-	78	108
Tin														
Ore	tonne	2067	897	1455	4419	1508	2017	72	168457	559914	29063288	-	29795255	29799674
Metal	tonne	44.56	94.02	15.62	154.20	917.02	342.02	16.85	813.29	209.43	13172.34	-	15470.95	15625.15

Figures rounded off.
 # Declared as minor mineral vide Gazette notification dated 10.02.2015.
Minor mineral before Gazette Notification dated 10.02.2015.

Table – 2: Reserves/Resources of Coal as on 1.4.2016 : Chhattisgarh

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	**19135.75**	**34613.70**	**2286.93**	**56036.38**
Sohagpur	94.30	10.08	-	104.38
Sonhat	263.15	2401.15	1.89	2665.19
Jhilimili	228.20	38.90	-	267.10
Chirimiri	320.33	10.83	31.00	362.16
Bisrampur	1141.94	506.91	1.82	1650.67
Bisrampur (East)	-	164.82	-	164.82
Lakhanpur	455.88	3.35	-	459.23
Panchbahini	-	11.00	-	11.00
Hasdeo-Arand	2032.28	3273.42	223.12	5528.82
Sendurgarh	152.89	126.32	-	279.21
Korba	5877.26	5783.70	168.02	11828.98
Mand-Raigarh	8519.09	19456.94	1651.40	29627.43
Tatapani-Ramkola	50.43	2826.28	209.68	3086.39

Source: *Coal Directory of India, 2015-16.*

Table – 3: Details of Exploration Activities in Chhattisgarh, 2015-16

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Coal							
Raigarh (Mahanadi Valley Coalfield)	Purunga block, Mand- Raigarh Coalfield	-	-	12	6018.45	-	Regional exploration of coal in Purunga Block was commenced in May 2014. During the period from 1st April 2015 to 31st March 2016, all the boreholes were drilled essentially through Barakar sediments to intersect coal seams both along strike and along dip directions. The lithounis intersected are greyish white, fine- to very coarse-grained feldspathic sandstone, siltstoneshale heterolithic sequence and thick coal seams representing Barakar Formation. Altogether twelve regional Barakar coal seams/zones (Seam I to X, XII and XIII in ascending order) have been intersected between the depths of 48.10 m and 756.36 m. Thickness of individual coal seam/zone varies from 0.51 m to 12.85 m Seam IV is the thickest one with cumulative thickness ranging from 8.15 m (in 4 split sections) to 12.85m (in 5 split sections). It has been intersected between depth range of 229.94 m (MRPR-11) and 525.36 m (MRPR-12). An area of 8 sq km was geologically mapped on 1: 10000 scale during this period. It revealed that the (Contd.)

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Coal							
Raigarh	Purunga block,	-	-	12	6018.45	-	block area is covered by lithounits of Barakar Formation. The general strike of the sedimentary strata is WNW-ESE with an average dip of 3° towards SSW. A total of five faults have been interpreted in this block out of which three major faults trending E-W to ENE-WSW traverse in the central and southern parts of the explored area. They are successively downthrown towards south with throw ranging from 20 m to 65 m. The other two faults trending NW-SE and E-W with throw of 20 m and 50 m respectively are interpreted in the northern part of the block. So far, 3.5 km strike extension and about 4.8 km dip extension have been established for the regional Barakar coal seams within the explored area. A total of 3638.52 m geophysical logging has been carried out. The geophysical study corroborates geological observations made in the boreholes.
Surguja (Son Valley Coalfield)	Pipraul block Tatapani-Ramkola Coalfield	-	-	5	2795.40	-	Regional exploration of coal in Pipraul Block under promotional programme was commenced in November 2013. Major portion of the block area is covered with rocks of Barakar Formation, whereas rocks of Panchet Formation are exposed over a small area in north-western part. During this period, eight regional Barakar coal seams (Seam - I to VI & Seam - XII & XIII in ascending order) and a few local seams with thickness ranging from less than a metre (0.50 m, Seam - XII) to 20.88 m (Seam - III) have been intersected between the depth of 179.89 m (Seam - XIII) and 894.15 m (Seam - III). Seam - III, which occurs in two splits, is most important regional Barakar coal seam in terms of thickness (cumulative thickness 20.88 m) and regional persistency. Large-scale mapping (1: 10,000 scale) of 4 sq km has been carried out. CBM study for baseline data generation has been completed in borehole TRP-10. Exploration in this block leads to establish a major E-W- trending fault in north-central part of the block Lithological variation has been noted from borehole cores as well as from outcrops in the block area from north

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							to south on either side of this fault. In the northern part, dominant lithology is greyish white to light grey, medium- to coarse-grained, moderately sorted, cross-bedded, micaceous/feldspathic sandstone with correlatable coal seams. Coal outcrops have also been observed along nala sections. The lithounits in southern part are characterised mainly by greyish white to light grey, very coarse-grained to pebbly sandstone and matrix-supported conglomerate rich in carbonaceous matter. At places, poorly-sorted, micaceous, feldspathic sandstone, thin carbonaceous shale bed and impersistently developed coal bands are also noted. The subsurface data reveal that the lower part of Barakar Formation (Lower Barakar) is characterised by presence of greyish white to light grey, very coarse-grained to granular, moderately sorted, cross-bedded, feldspathic sandstone and regionally correlatable coal seams throughout the exploration block. Exploration in Pipraul Block was concluded.
	Sendur block Tatapani-Ramkola Coalfield	1:1000	2	2	981.25	-	Three regional Barakar coal seams (Seam-I to III in ascending order) with thickness ranging from 1.65 m (Seam-II) to 19.27 m (Seam-III) have been intersected between the depths of 657.83 m (Seam-III) and 745.98m (Seam-I). Rocks of Panchet, Barakar and Talchir formations have been intersected in these boreholes. The Barakar Formation is characterised by greyish white to light grey, very coarsegrained to granular sandstone with sandy matrix or muddy matrix-supported conglomerate rich in carbonaceous matter. Bands of mudstone and medium-to-coarse grained sandstone are also present at places. Large-scale mapping (1: 10000 scale) of 2 sq km has been completed during this period. Major part of the area is covered by Barakar Formation. Panchet Formation is restricted in the southwestern part lying unconformably over Barakar Formation. The general strike of the sedimentary sequence is NNW-SSE to N-S with 10° to 15° dip towards west.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Bauxite							
Kabirdham (Kawardha)	Bamhantara block	-	-	80	882.40	194	A G2/G1 sponsored project of CMDC, general and detailed exploration of bauxite was taken up in Bamhantara block. The study area exposes rocks of Deccan lava flows of Upper Cretaceous to Paleocene age and Laterites of Cenozoic age. The plateau of Bamhantara block forms the central part of the Maikhal range of hills containing laterite capping over the Deccan lava flows and the general elevation of the area is about 915 m. The Bamhantara bauxite-bearing laterite capping is found on top of the basaltic plateau. The bauxite zone occurs in the form of thin and flat lenticular bodies varying from 1 m to 3 m in thickness with average thickness of overburden around 3-5 m. The bauxite is massive, hard, compact and pisolitic in nature and shows shades of light grey and pink colour. The investigation has been carried out in two phases. In Bamhantara block, the maximum thickness of the laterite capping is 13 m above the Deccan Basaltic Province belonging to Amarkantak Supergroup. Bauxitisation has been identified as two aluminous horizons within this laterite capping. The upper one generally occurs within the depth range 1-3.5 m and the deeper one extends from 6.5 m to 8.5 m. The deeper one can be considered as better grade from their lighter shades and has low sp. gravity. Al_2O_3 content varies from 28.05% to 58.60% and the mean value is 49.08%. SiO_2 content varies from 0.76% to 28.18% and the mean value is 5.20% (all the above values were determined with 95% confidence level). However, a reasonable number of analyses are pending with the CMDC. The investigation is completed.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Balrampur	Dhamchuan	1:125002		35	-	7	A one year G-2 stage of investigation on assessment of bauxite ore up in an area in view of the encouraging results of investigation during 1992-93 and hence, a G4 stage of investigation was carried out during 2014-15. The objective of the project is to decipher the extension of concealed bauxite occurrence by detailed mapping (DM) in Chandadarhi Block and by drilling in Damchuan Block. The area exposes rocks of Deccan volcanics of Upper Cretaceous to Paleocene age and laterites along with pockets of massive and oolitic bauxite of Cenozoic age. The laterite is characteristically red, yellow, and brown in colour. It is pisolitic to massive type, porous and sparsely oolitic. Aluminous laterite occurs as irregular pockets and lenses throughout the mapped area. These lithounits are observed around Damchuan and Chandadarhi villages. Massive and pisolitic bauxite is found at an elevation of 940-960 m and 980-1080 m on surface as pockets. In the east of Village Damchuan in a scarp section massive bauxite of 200 m length and 3.5 m thickness is observed. For resource estimation of bauxite grid pattern of evaluation was adopted. Laying down grid of 100 m×100 m was initiated from the northern portion of the proposed block. Tentative geological cross sections of 35 boreholes were prepared along with other geological inputs. Six bedrock samples and one PCS sample were collected and were submitted for analyses. However, further field work as well as drilling activity could not be carried out due to vehement agitation by the local villagers for carrying out any type of survey work in the proposed blocks even after persuasion by the SDM, Kusmi, Tehsildar, Kusmi, local Sarpanch and local administrative personnel. The project is discontinued.
Gypsum							
Bemetara	Akola-Patora-Bhusandi-Karesara area	1:12500 1:5000	100.0 1.0	-	309.5	-	G3 stage investigation for gypsum was carried out by large scale mapping & detailed mapping. Ferruginous shale is the only lithounit observed in the mapped area. Repeated occurrence of ferruginous shale and calcareous shale is considered as primary depositional plane/ surface. Strike of ferruginous shale is

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Gypsum							
Bemetara	Akola-Patora-Bhusandi-Karesara area	1:12500 1:5000	100.0 1.0	-	309.5	-	NNW-SSE with low dip of 2°-8° towards SW. A total of 309.5 m has been drilled (BH CBA-4 & CBA-5) at Khursbod and Bemetara villages. BH CBA-4 & CBA-5 have been drilled to 250 m & 160 m respectively. Both massive type and bedded type gypsum are found in all the boreholes. A total of 30 BRS, 15 PCS and 45 core samples have been submitted for chemical analysis and 5 XRD samples have been submitted for mineral phase identification of gypsum. As per the chemical analysis, 68.32% to 79.31% gypsum has been intersected in 10 zones between 121.3 m and 201.2 m depth in BH 1 at Khati village. Gypsum horizon of 72% to 77.82% has been intersected in 2 zones between 135.25 m and 169.4 m depth in BH No. 2 at Village Ghiwri. Gypsum horizon of 73.41% to 82.76% has been intersected in 5 zones between 219.1 m and 242.15 m depth in BH 4 near Khursbod. Gypsum horizon of 81.86% to 83.61% is intersected in 2 zones between 82.8 m and 96 m depth in BH 5 near Bemetara. The project is completed.
Limestone							
Raigarh	Kharri-Parsadih block	1: 4000	8.5	50	309.5	-	G2 stage of exploration was taken up for assessment of limestone. Based on the initial work in FS 1987-88 and FS 1972-75 (43.29 to 51.14% CaO content from bedrock samples of limestone) and preliminary investigation of limestone in and around Kharri-Parsadih areas, Sarangarh. The present investigation was launched in Kharri-Parsadih Block. In the soil-covered area few exposures of limestone and shale of Charmuria Formation of Chhattisgarh Supergroup are observed in nala sections, north of Jharapdih, south of Gadhabhata, south and east of Kharri, west of Mahuadhora and west of Village Parsadih. The limestone is grey to dark grey in colour, finegrained in nature, and compact, bedded and at places massive. The area is mostly covered by soil. Few exposures of limestone of Charmuria Formation and shale of Gunderdehi Formation of Chhattisgarh Supergroup are observed. A total of 50 boreholes have been

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							drilled in grid pattern at an interval of 400 m, each with 30 m average depth. Out of 50 boreholes, 29 boreholes are positive, 06 boreholes are economically significant in which limestone has been intersected from 2.0 to 12 m bgl and continued up to 30 m below ground level. The thickness of limestone varies from 18 m to 28 m. CaO content of bedrock samples of limestone varies from 39% to 46.31%, SiO2 content varies from 13.31% to 19.28% and MgO varies from 1.15% to 1.57%. The project is completed.
REE							
Balodabazar	Balodabazar 1: Latwa & Rasera	12500	100.0	-	-	104	- G4 stage ground evaluation of geochemical anomalies of REE in this areas. This investigation scheduled for 2 years has been taken up for REE and associated mineralisation. An area of 100 sq km has been covered by large-scale mapping orientation survey of bedrocks, soil sampling and heavy mineral studies, etc. In the Term Review Meeting, it was decided to complete the whole target of two years in one year and that was achieved as per the recommendations. Large-scale mapping revealed rocks of Gunderdehi and Chandi formations of Raipur Group of Chhattisgarh Supergroup (Meso-Neoproterozoic age) and laterites of Cenozoic age. Gunderdehi shale is fissile and calcareous. Chandi limestone occupies major part of the mapped area. The limestones are both stromatolitic and non-stromatolitic. Stromatolites are mainly 'SH-C type'. Laterite/ lateritic soil appear to have formed due to weathering and leaching of limestone. Calcrete /calcareous concretions are seen over Gunderdehi shale. A total of 104 unit cell samples pertaining to the composite samples showing anomalous REE values were analysed. The REE data of 104 unit cell samples match with the corresponding composite sample data. The REE pattern is concave with negative Europium anomaly and high Y/Nb ratio indicating a crustal source for the sediments. Analytical data of 10 BRS have been received. Total REE of stromatolitic limestone varies from 41.46 ppm to 80.19 ppm and that in shale varies from 125.87 ppm to 231.47 ppm. Total REE of laterite is 549.04 ppm. All these point towards crustal signature of the source material. The item is completed.

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Table - 3 (Concld.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
DGM							
Limestone							
Raipur	Kesla-II	1:50000 1:4000	80.0	38	178.10	1260	Objective of exploration was to identify blocks suitable for cement grade limstone. Main lithounits in this area are limstone, shale & laterite. Limestone is mostly horizontaly bedded. Depth of limestone is confined up to 34 m. Limestone of this area is grey to pink, hard, compact, massive with stromatolitics. On the basis of analysis results received, about 75.28 million tonnes of limestone reserves/ resources were estimated. Out of which 5.37 million tonnes of cement grade limestone and 69.91 million tonnes of limestone resoures were under 332,333 category, respectively.
Rajnandgaon	Tekapar-Kalkasa area	1:50000 1:4000	100.0 1.0	41	1272.95	1340	Objective of exploration was to identify blocks suitable for cement grade limstone. The explored area is mostly occuped by residual soil, with sporadic outcrops of purple, grey stromatolic limestone. Purple & grey shale bands were also encountered in boreholes. Total about 51.18 million tonnes reserves/ resources were estimtaed on the basis of analytical results. Out of which 7.09 million tonnes of cement grade limestone under 332 category & 44.03 million tonnes of limestone under 333 category were estimated. Chemical analysis results are still awaited.
Janjgir Champa 1121	Dhabadih-II	1:50000 1:4000	400.0 3.0	41	1276.60		Objective of exploration was to identify blocks suitable for cement grade limstone. Area is occupied by limestone, dolomite & shale. Limestone is grey to pinkish brown with stromatelites. About 74 mllion tonnes of limestone reserves/ resources were estimated under 333 category. Chemical analysis results are still awaited.
Bastar	Chitapur area	1:50000 1:4000	215.0 1.20	39	772.55	459	Objective of exploration was to identify blocks suitable for cement grade limstone. Area is occupied by limestone of Jagdalpur formation of Indravati group of Chhattisgarh. Limestone is grey to pinkish grey & horizonally bedded. About 10 mllion tonnes of limestone reserves/resources were estimated under 333 category. Chemical analysis result are still awaited.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Kabirdham	Salgi	1:50000 1:4000	215.0 1.03	104	1055.80	739	Objective of exploration was prospecting for bauxite. Bauxite occurs as weathered product of deccan traps basalt which overlie quartzite of Chilpi Group. Bauxite also occurs as irregular & discontinues lenses & pockets. It is generally pisolitic, brown, hard & compact. Thickness of bauxite was found to be 1.5 m - 2 m. About 3,71,985 tonnes of bauxite reserves/resources were estimated under 333 category. Chemical analysis of results are still awaited.
Kabirdham	Daldali	-	-	31	280.20	562	Objective of exploration was prospecting for bauxie. Thickness of Bauxite was found out to be 1.5 m - 2 m. About 19,978 tonnes bauxite reserves/resources were estimated under 332 category on the basis of analysis received so far and 78,015 tonnes under 333 category. Chemcal analysis results are still awaited.
Bauxite							
Surguja	Dandkesra	1:50000 1:4000	100.0 2.54	153 -	1530.60 -	1324 -	Objective of exploration was prospecting for bauxie. Bauxite occured in this area is associated with laterite which is formed over Deccan Trap (basalt). Bauxite deposit occurs as pockets & irregular lenses of about 100-200 m in length and a few cm to 3 m in thickness. About 1 million tonnes of bauxite reserves/resources were estimaed under 333 category. Chemical analysis results are still awaited.
Dolomite							
Bastar	Kurundi-Jiragaon-Markel	-	-	15	170.75	159	Objectve of exploration was to search for new location of dolomite. Deposits of dolomite were demarketed around Village Bamhani. Total 10 lakh tonnes of dolomite reserves/resources were estimated out of which about 2 lakh tonnes of beneficiable dolomite (MgO>15%, SiO_2<6%) were estimated under 333 category. Chemical analysis results are still awaited.

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Table - 3 (Concld.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
NMDC							
Iron ore							
Dantewada	Bailadila Iron ore deposit, South Bastar	-	-	27	2340.3	-	NMDC carried out exploration for iron ore in Bailadila Iron Ore deposit (Deposit nos. 14 & 11 C). Bailadila (Deposit-14) is the last deposit at the southern end of the eastern ridge of Bailadila range. Iron ore is formed due to enrichment of iron by leaching of silica from BHQ by supergene enrichment occuring as the main ore type"hematite' in soft (as blue dust) and homogeneous, massive hard and compact steel gray and hard to medium hard blue hematite form., Deposit 11-B extends over a strike length of 2800 m with average width of 600 m .The average depth depth of ore body is 75 m as per exploratory bore holes. Depost 11-C extends over a strike length of 2400 m. Width is varying from 180 m to 880 m. Exploretory drilling is under progress along with reserves/resources.

Table – 4: Mineral Production in Chhattisgarh, 2013-14 to 2015-16 (Excluding Atomic Minerals)

(Value in ₹ '000)

Mineral	Unit	2013-14			2014-15			2015-16 (P)		
		No. of mines	Quantity	Value	No. of mines	Quantity	Value	No. of mines	Quantity	Value
All Minerals		**215**		**190922002**	**216**		**238719078**	**157**		**211485715**
Coal	'000t	61	127095	89275000	61	134764	139855400	57	130605	147436800
Bauxite	t	12	1314129	859657	13	1560784	1164426	10	1991454	1141984
Iron Ore	'000t	11	29250	89293192	14	29388	85391078	15	24592	48868377
Tin Concentrate	kg	6	34862	22791	6	24685	18528	6	13541	8214
Dolomite#	t	42	2637734	903121	43	2437702	825904	-	-	-
Graphite (r.o.m.)	t	1	1403	631	1	-	-	1	-	-
Limestone	'000t	67	21217	4249587	63	23588	5095514	65	27553	6662045
Quartz#	t	6	14784	5845	5	4705	2113	-	-	-
Quartzite#	t	6	31119	33732	7	19696	20813	-	-	-
Moulding Sand	t	3	29323	4675	3	6383	1671	3	25852	6068
Minor Minerals@		-	-	6273771	-	-	6343631	-	-	7362227

Note: *The number of mines excludes minor minerals.*

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

 # Declared as minor mineral vide Gazette notification dated 10.02.2015.

Mineral-based Industry

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

Table – 5: Principal Mineral-based Industries in Chhattisgarh

Industry/plant	Capacity ('000 tpy)
Aluminium	
Bharat Aluminium Co. Ltd (Unit I & II), Korba.	200# (Alumina) 570* (Aluminium)
(*excludes 100 thousand tonnes of Unit I as non operational; 325 thousand tonnes of Unit II is under trial run; # Plants remained non-operational during the year.)	
Cement	
ACC Ltd, Jamul, Distt. Durg.	1580
Ambuja Cements Ltd, Bhatapara, Distt. Raipur.	2900
Bhilai Jaypee Cement Ltd, Bhilai, Distt. Durg (G).	2200
CCI Ltd, Akaltara, Distt. Janjgir-Champa.	400
CCI Ltd, Mandhar, Distt. Raipur.	380
Century Cement, Baikunth, Distt. Raipur.	2100
J. K. Laxmi, Durg.	1700
Lafarge India Pvt. Ltd, Arasmeta, Distt. Janjgir-Champa.	1600
Lafarge India Pvt. Ltd, Sonadih, Distt. Raipur.	550
Shree Cement, Baloda Bazar, Distt. Raipur	2600
UltraTech Cement Ltd, Hirmi, Distt. Raipur.	1900
UltraTech Cement Ltd, Rawan, Distt. Raipur.	2500
Fertilizer	
BEC Fertilizers, Sirgitti, Distt. Bilaspur.	135 (SSP)
Dharamsi Morarji Chemical Co. Ltd, Kumhari, Distt. Durg.	183 (SSP & H_2SO_4)
Khaitan Chemicals & Fertilizers Ltd., Distt. Rajnandgaon.	66 (SSP) 49.5 (H_2SO_4)
Iron & Steel	
Bhilai Steel Plant, Bhilai.	8350 (Sinters) 4700 (Pig iron) 3925 (crude/liquid steel) 30 (Refractory bricks)

(Contd.)

Table - 5 (Contd.)

Industry/plant	Capacity ('000 tpy)
Jindal Steel & Power Ltd, Raigarh.	2300 (Sinters) 1370 (Sponge iron) 4000 (Crude/liquid steel)
Jayaswal NECO Industries Ltd, Siltara, Distt. Raipur.	750 (Pig iron) 250 (Sponge iron) 1200 (Sinter) 400 (Steel) 792 (Pellets)
Sarda Energy & Minerals Ltd, (formerly Raipur Alloys & Steel Ltd), IGC, Siltara, Distt. Raipur.	600 (Pellets) 210 (Sponge iron) 240 (Finished steel)
Shri Bajrang Power & Ispat Ltd, Borjhara, Distt. Raipur.	210 (Sponge iron) 130 (Steel) 1200 (pellets)
Sponge Iron	
A.P.I. Ispat & Power Tech. Pvt. Ltd, Siltara Billets, Raipur	105
Alliance Integrated Metallics Ltd, Bemta, Distt. Raipur.	500
Anjani Steel Ltd, Ujalpur, Distt. Raigarh.	102
Arti Sponge & Power Ltd, Siltara, Distt. Raipur.	45
Ambika Ispat (I) Pvt Ltd, Tarainal, Distt. Raigarh.	30
Baldev Alloys Pvt. Ltd, Siltara, Raipur.	30
Bhagavati Power & Steel Pvt Ltd, Siltara, Distt. Raipur.	60
B.S. Sponge Pvt Ltd, Taraimal, Raigarh.	30
Crest Steel & Power Pvt. Ltd, IGC Borai, Distt. Durg.	115
Devi Iron & Power Pvt Ltd, Tandira, Distt. Raipur.	30
Drolia Electro Steel Pvt Ltd, Siltara, Raipur.	66
Euro Pratik Ispat Pvt Ltd, Charoda, Distt. Raipur.	30
Gravity Treksim Pvt Ltd, Siltara, Distt. Raipur.	30
Godavari Power & Ispat Ltd, Siltara, Distt. Raipur.	495 2100 (pellets)
Gopal Sponge & Power Pvt Ltd, Siltara, Distt. Raipur.	30
Gitanjali Ispat & Power Pvt Ltd, Sirgititi, Distt. Bilaspur.	30

(Contd.)

Table - 5 (Contd.)

Industry/plant	Capacity ('000 tpy)
GR Sponge & Power Ltd, Siltara, Distt. Raipur.	37
Shree Hare Krishna Sponge Iron Ltd, Siltara, Distt. Raipur.	210
Jai Shree Balaji Steel Pvt Ltd (HEG Ltd), Borai, Distt. Durg.	120 (Sponge iron)
Hi-Tech Power & Steel Ltd, Parsada, Distt. Raipur.	30
Ind Synergy Ltd, Kotmar, Distt. Raigarh.	300
Indian Ispat & Power, Siltara, Distt. Raipur.	30
Kalindi Ispat Pvt. Ltd, Belpan, Distt. Bilaspur.	60
Khetan Sponge & Infrastructure Pvt. Ltd, Sarora, Distt. Raipur.	30
Maa Kali Alloys (Ind.) Pvt Ltd, Pali, Distt. Raigarh.	30
Mangal Sponge & Steel Pvt Ltd, Bilha, Bilaspur.	30
Mangala Ispat Pvt Ltd, Natvarpur, Distt. Raigarh.	30
Millennium High-Tech Industries Ltd, Parsada, Distt. Raipur.	30
MSP Steel & Power Ltd, Raigarh.	192 900 (pellets)
Monnet Ispat & Energy Ltd, Hasaud, Raipur.	300
Monnet Ispat & Energy Ltd, Naharpalli, Raigarh.	500
NR Sponge Pvt. Ltd, Raipur.	60
Nalwa Steel & Power Ltd, Taraimal, Raigarh.	198
Nakoda Ispat Ltd, Siltara, Raipur.	66
Navdurga Fuse Pvt Ltd, Raigarh.	60
Nova Iron & Steel Ltd, Dagori, Bilaspur.	150
Nutan Ispat & Power Ltd, Jaroda, Raipur.	30
PD Industries Pvt Ltd, Siltara, Raipur.	30
Prakash Industries Ltd, Hathenewra, Janjgir-Champa.	450
Raigarh Ispat & Power Ltd, Delari, Distt. Raigarh.	30

(Contd.)

Table - 5 (Concld.)

Industry/plant	Capacity ('000 tpy)
Rameswaram Steel & Power Ltd, Gharghoda, Distt. Raigarh.	30
Salasar Sponge & Power Pvt Ltd, Gerwani, . Distt. Raigarh	30
Shakambri Steel & Power Pvt Ltd, Raigarh.	30
Shakun Sponge Iron Pvt Ltd, Shirgitti, Distt. Bilaspur.	30
Shivalaya Ispat & Power Pvt Ltd, Guma, Distt. Raipur.	30
Shivshakti Steel Pvt. Ltd, Chakradharpur, Distt. Raigarh.	100
Shri Sita Ispat & Power Pvt. Ltd, Borjhara, Distt. Raipur.	30
Shree Radhe Industries Ltd, Silpahari, Bilaspur.	60
Shree Shyam Sponge & Power Ltd, Bachera, Distt. Raipur.	30
Sidhi Vinayak Sponge Iron Pvt Ltd, Raigarh.	30
S.K. Sarawagi & Co. Pvt Ltd, Siltara, Distt. Raipur.	60
SKS Ispat & Power Ltd, Siltara, Distt. Raipur.	270
Singhal Enterprises Pvt Ltd, Taraimal, Distt. Raigarh	156
Sree Nakoda Ispat Ltd, Siltara, Distt. Raipur.	66
Sunil Ispat & Power Ltd, IGC Siltara, Distt. Raipur.	115
Sunil Sponge Iron Ltd, Chiraipani, Distt. Raigarh.	105
Topworth Steel Pvt Ltd, Rasmada, Distt. Durg.	60
Trimula Sponge Iron Pvt Ltd, Siltara, Raipur.	30
Vandana Global Ltd, Siltara, Distt.Raipur.	231
Vasvani Industries Ltd, Siltara, Distt. Raipur.	30
Vidhyan Minerals India Pvt. Ltd, Bilaspur.	30
Ferro Alloys	
Alok Ferro Alloys Ltd, Urla, Raipur.	18
Deepak Ferro Alloys Ltd, Urla, Distt. Raipur.	5
Indsil Energy & Electro Chemical Ltd, Urla, Distt. Raipur.	19.2

(Contd.)

Table - 5 (Contd.)

Industry/plant	Capacity ('000 tpy)
Hira Ferro alloys Ltd, Urla, Distt. Raipur.	61.5
Jindal Steel & Power Ltd, Kharsia, Distt. Raigarh.	36
Sarda Energy & Minerals Ltd, (merged Chhatisgarh Electricity Co. Ltd) Siltara, Distt. Raipur.	45 MVA
Monnet Ispat Ltd, Hasaud, Raipur.	80
Nav-chrome Ltd, Urla, Distt. Raipur.	50
Standard Chrome Ltd, Barmuda, Distt. Raigarh.	15
Tirumala Balaji Alloys Pvt Ltd, Raigarh.	21

Table - 5 (Concld.)

Industry/plant	Capacity ('000 tpy)
Refractory	
SAIL Refractory Unit (formerly Bharat Refractories Ltd), Bhilai, Distt. Durg.	60
Vishva Vishal Engineering Ltd, Bhilai, Distt. Durg.	8.2
Silicon Carbide Crucible	
M.P. Carbon (Pvt) Ltd, Raipur.	NA

***(G)**; Grinding Unit*

***Note:** Data, not readily available for fertilizer and cement industries on respective websites, is taken from Indian Fertilizer Scenario, 2016/FAI Statistics, 2015-16 and Survey of Cement Industry & Directory, 2016 respectively.*