

STATE REVIEWS



# Indian Minerals Yearbook 2017

(Part- I)

56<sup>th</sup> Edition

STATE REVIEWS  
(Odisha)

(FINAL RELEASE)

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## ODISHA

### Mineral Resources

Odisha is the leading producer of chromite, garnet (abrasive), bauxite, manganese ore, iron ore, sillimanite, quartzite and dolomite. The State hosts the country's sole resources of ruby. It accounts for the country's 96% chromite, 93% nickel ore, 90% PGM metal, 69% cobalt ore, 51% bauxite, 44% manganese, 34% iron ore (haematite), 25% sillimanite, 24% fireclay, 23% pyrophyllite, 20% vanadium ore, 17% mica, and 10% dolomite resources. As per AMD of the Department of Atomic Energy, Odisha accounted for 150.62 million tonnes of rutile resources.

Important minerals that occur in the State are: **bauxite** in Balangir, Kalahandi, Kandhamal, Kendujhar, Koraput, Malkangiri, Rayagada & Sundergarh districts; **china clay** in Bargarh, Boudh, Balangir, Kendujhar, Koraput, Mayurbhanj, Sambalpur & Sundergarh districts; and **chromite** in Balasore, Cuttack, Dhenkanal, Jajpur & Kendujhar districts. Chromite deposits of Sukinda and Nuasahi ultramafic belt constitute 95% of the country's chromite resources. Besides, **coal** occurs in Ib river valley and Talcher coalfield, Dhenkanal district; **dolomite** in Bargarh, Kendujhar, Koraput, Sambalpur & Sundergarh districts; **dunite/pyroxenite** in Kendujhar and Sundergarh districts; **fireclay** in Angul, Cuttack, Dhenkanal, Jharsuguda, Khurda, Puri, Sambalpur & Sundergarh districts; **garnet** in Ganjam, Kalahandi & Sambalpur districts; **graphite** in Bargarh, Boudh, Balangir, Kalahandi, Koraput, Nuapada & Rayagada districts; **iron ore (hematite)** in Dhenkanal, Jajpur, Kendujhar, Koraput, Mayurbhanj, Sambalpur & Sundergarh districts; **iron ore (magnetite)** in Mayurbhanj district;

**limestone** in Bargarh, Koraput, Malkangiri, Nuapada, Sambalpur & Sundergarh districts; **manganese ore** in Balangir, Kendujhar, Koraput, Rayagada, Sambalpur & Sundergarh districts; **Pyrophyllite** in Kendujhar district; **quartz/silica sand** in Boudh, Balangir, Kalahandi, Sambalpur & Sundergarh districts; **quartzite** in Balangir, Dhenkanal, Jajpur, Jharsugada, Kendujhar, Mayurbhanj, Sambalpur & Sundergarh districts; **sillimanite** in Ganjam & Sambalpur districts; **talc/steatite/soapstone** in Mayurbhanj, Sundergarh & Sambalpur districts; **titanium minerals** in Dhenkanal, Ganjam, Jajpur & Mayurbhanj districts; and **zircon** in Ganjam district.

Other minerals that occur in the State are **asbestos** in Kendujhar district; **cobalt** in Cuttack & Jajpur districts; **copper** in Mayurbhanj and Sambalpur districts; **granite** in Angul, Boudh, Balangir, Cuttack, Deogarh, Dhenkanal, Ganjam, Kendujhar, Khurda, Koraput, Mayurbhanj, Nuapada, Rayagada & Sambalpur districts; **lead** in Sargipalli area, Sundergarh district; **mica** in Sonapur district and **nickel** in Cuttack, Kendujhar & Mayurbhanj districts. Occurrences of **ruby** and **emerald** are reported from Balangir and Kalahandi districts, respectively. **Platinum Group of Metals** occur in Kendujhar district; **silver** in Sundergarh district; **tin** in Koraput and Malkangiri districts; and **vanadiferous magnetite** occurs in Balasore and Mayurbhanj districts (Table - 1). The various coalfields along with their reserves/resources are given in Table - 2.

### Exploration & Development

The details of exploration activities conducted by GSI for Iron ore, manganese ore, coal & REE and other agencies during 2016-17 are furnished in Table - 3.

**Table – 2: Reserves/Resources of Coal as on 1.4.2017: Odisha**

(In million tonnes)				
Coalfield	Proved	Indicated	Inferred	Total
<b>Total</b>	<b>34809.86</b>	<b>34059.77</b>	<b>8415.21</b>	<b>77284.84</b>
Ib-River	11193.68	10615.79	4312.62	26122.09
Talcher	23616.18	23443.98	4102.59	51162.75

*Source: Coal Directory of India, 2016-17.*

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

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						
Asbestos	tonne	-	-	-	-	-	-	-	10000	37200	9500	-	56700	
Bauxite	'000 tonnes	176002	411	148856	325269	166547	66189	280396	365938	155253	590780	44202	1669305	
China clay#	'000 tonnes	-	-	-	-	3600	3503	5018	368	35770	236546	1354	286157	
Chromite	'000 tonnes	64150	12427	24835	101412	67311	15529	33354	26850	32372	33434	20452	229301	
Cobalt	million tonnes	-	-	-	-	-	-	-	30.63	-	0.28	-	30.91	
Copper														
Ore	'000 tonnes	-	-	-	-	-	-	-	1420	2536	2095	-	6051	
Metal	'000 tonnes	-	-	-	-	-	-	-	21.69	21.06	20.69	-	63.44	
Dolomite#	'000 tonnes	109551	6421	34839	150811	42521	33896	110904	48535	46683	330660	85884	699082	
Dunite#	'000 tonnes	308	-	-	308	172	1925	6215	686	307	2531	-	11837	
Fireclay#	'000 tonnes	133	-	40	173	3074	12376	4495	26219	42925	83662	-	172751	
Garnet	tonne	8459821	-	585130	9044951	5	-	-	-	-	348000	-	348005	
Granite#														
(Dimen Stone)	'000 cum	-	80000	-	80000	-	-	-	330328	-	1432492	5160	1767980	
Graphite	tonne	209795	-	249176	458971	9314306	3312065	1415295	696021	838559	2628394	304628	18509268	
Iron ore														
(Haematite)	'000 tonnes	1830569	252615	489034	2572217	1180055	704302	530440	271349	426493	1773077	100730	4986447	
Iron ore														
(Magnetite)	'000 tonnes	74	-	-	74	8	-	-	27	-	43	-	79	
Laterite #	'000 tonnes	-	-	-	-	-	-	-	-	-	-	1227	1227	
Lead-Zinc														
Ore	'000 tonnes	-	-	-	-	-	961	119	-	-	670	-	1750	
Lead metal	'000 tonnes	-	-	-	-	-	34.32	4.25	-	-	38.39	-	76.96	
Limestone	'000 tonnes	255555	77879	61007	394442	173797	548527	420634	139924	50397	361350	32635	1727264	
Manganese ore	'000 tonnes	16703	10528	3413	30643	32622	23942	37292	16130	15119	48764	11889	185760	
Mica#	kg.	-	-	-	-	-	-	51856000	-	26712000	26712000	-	105280000	
Nickel ore	Million tonnes	-	-	-	-	-	20.84	20.62	30.85	51.06	51.26	-	174.63	
Pt. Group of metals	tonne	-	-	-	-	-	-	-	-	7.7	6.5	-	14.2	
Pyrophyllite#	tonne	2781889	1094902	-	3876791	6978702	216661	766105	80	40	1782070	68401	9812058	
Quartzite#	'000 tonnes	20050	151	18381	38582	16861	6914	5128	364	274	71503	927	101971	
Quartz-														
Silica sand#	'000 tonnes	567	109	725	1401	344	2038	2918	93	63308	3944	179	72824	
Rare earth elements	tonne	-	-	-	-	-	-	-	-	6353	19140	-	25493	
Ruby	kg.	-	-	-	-	-	429	3296	-	-	1623	-	5349	
Sillimanite	tonne	-	5728868	427705	6156573	-	-	6557013	-	-	4943600	-	11500613	

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Table – 1 (Concl.)

Mineral	Unit	Reserves			Pre-feasibility			Remaining Resources				Total resources (A+B)	
		Proved STD 111	Probable STD121	Total (A) STD122	Feasibility STD211	Pre-feasibility STD221	STD222	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)
Silver													
Ore	tonne	-	-	-	-	960500	119000	-	-	670000	-	1749500	1749500
Metal	tonne	-	-	-	-	27.34	3.4	-	-	34.17	-	64.91	64.91
Talc/Steatite/													
Soapstone#	000 tonnes	-	-	8	10	89	193	151	-	278	-	817	827
Tin													
Ore	tonne	-	-	-	-	636	-	-	1166	1000	-	15494	15494
Metal	tonne	-	-	-	-	500.78	-	-	22.2	10	-	567.61	567.61
Vanadium													
Ore	tonne	-	-	-	-	1220000	-	-	232000	3412795	-	4864795	4864795
Metal	tonne	-	-	-	-	2135	-	-	487.2	10935.74	-	13557.94	13557.94

Figures rounded off.

# Declared as Minor Mineral vide Gazette Notification dated 10.02.2015

## Minor Mineral before Gazette Notification dated 10.02.2015

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**Table – 3: Details of Exploration Activities in Odisha, 2016-17**

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>GSI</b>							
<b>Coal</b>							
Angul	Kantaikoliya, North Block Talcher Coalfield	1:10000	2.0	02	1176.20	-	G2 stage general exploration for coal was carried out in this block. A total cumulative coal thickness of 54.44 m (depth range: 239.63 m to 518.85 m) and 44.62 m (depth range: 153.25m to 441.37m) has been intersected in the two boreholes completed so far, ten regional coal seam zones of Barakar Formation have been established for 1 km in strike direction and 1.5 km along dip direction. The investigation will continue.
Jharsuguda	Teteliabaha block	1:10000	3.0	04	2716.30	-	G2 stage general exploration for coal was carried out in this block. Drilling was carried out in four boreholes including two are in progress. 304.17 m of Coal core samples were collected. Besides, geophysical logging of 1605 m were carried out. Four coal seams of Raniganj formation have been intersected between 89.33 and 295.20 m depth. Four coal seams of Barakar formation (Belpahar, Parkhani, Lajkura and Rampura) have been intersected between 280.89 and 813.02 m depth. Lajkura seam zone having highest cumulative thickness of 65.73 m and has regional persistence and thickness. The investigation will continue.
Sundargarh	Ustali block	1:10000	3.0	05	2287.45	-	G2 stage regional exploration for coal in this block was continued to establish the continuity of the regional Barakar coal seams intersected in Kulda-Manoharpur and Hemagiri areas of Ib River Coalfield and to establish stratigraphic and structural set up of the area and to assess the coal resource potentiality of the area. Total 2954 m borehole geophysical logging was done and 599.28 m (cumulative) coal core samples were collected for proximate analysis. Four regional coal seam zones of Barakar Formation (Belpahar, Parkhani, Lajkura, Rampur from top to bottom) and one coal seam zone of Karharbari Formation have been intersected between

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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		
							8.39 and 587.88 m depth. Amongst the Barakar coal seam zones, Rampur and Lajkura seam zones are important for their cumulative coal thickness, which varies from 68.29 to 92.52 m and 39.31 to 44.17 m, respectively. The maximum cumulative coal thickness of other seam zones i.e. Belpahar and Parkhani is 6.98 m and 21.12 m, respectively. Coal petrographic studies of representative samples depict the rank of coal is sub-bituminous. Occurrence of 4 regional coal seam zones of Barakar and Karharbari formations upto a depth of 587.88 m from surface has been established. Amongst the Barakar, Rampur is the most important seam zone due to its cumulative coal thickness which varies from 68.29 to 82.09 m intersected between 370.70 and 587.88 m depth.
<b>Iron ore</b> Kendujhar	Rengalaberha North east blocks,	1:2000	0.30	22	2071.15	-	G2 stage general exploration for iron ore was carried out in this block. Drilling was completed in 22 boreholes drilled at 1000 m x 100 m grid interval. Within the freehold area, iron ore body is exposed in Rengalaberha block for a maximum strike length of 350 m. Across the strike the ore body is exposed on the surface for around 700 m and can be traced further towards north. The rock types exposed in the area are mainly hard laminated ore (HLO), fragmented laterised ore and lateritic ore and ferruginous laterite. All the boreholes except boreholes no. 4 have intersected considered thickness of ore zones. The cumulative thickness of ore zones intersected in boreholes varies from 25.60 to 125 m. On the basis of analytical results, a total resource of 23.87 million tonnes of high grade ore (cut-off 55% Fe) with average Fe content of 61.88% has been estimated. In addition to this, low grade (45% to 55%) resources of 5.0 million tonnes with average 50.04% Fe has been estimated.

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## STATE REVIEWS

Table – 3(Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Kendujhar	Gandhalpada South-East, Part-B	1:2000	0.83	12	-	-	G3 stage preliminary exploration for iron ore was carried out in this area along with detailed geological mapping. 12 boreholes were drilled at 200 m x 200 m grid interval. All the boreholes intersected ore zones including low grade with thickness varying from 12.00 to 122.80 m as per the visual estimation. The study will continue in field session 2017-18.
	Gandhalpada South-East, Part-A,	-	-	29	2689.30	-	G2 stage general exploration for iron ore was carried out in this part. Drilling has been carried out in 200 m x 100 m grid pattern. On the basis of analytical results, a total of 51.11 million tonnes high grade ore (cut-off 55% Fe) with average Fe content of 61.13% has been estimated. Besides, low grade (45-55% Fe) resources of 9.44 million tonnes with average 49.64% Fe have also been estimated.
Sundergarh	Jhumka Pathiriposhi West Block	1:4000	1.28	8	492.95	-	G3 stage preliminary exploration for iron ore was carried out in Jhumka Pathiriposhi west block. The litho units observed in the area are soft laminated iron ore, BHJ/BHQ and laterite. A total of 492.95m was drilled during 2016-17. Eight boreholes have been completed in 200 m x 200 m grid & two boreholes are under progress. All the boreholes are vertical with depth varying from 37.60 to 64.30 m. In boreholes, cumulative thickness of low grade and high grade ores vary from 6.7 to 54.65 m. Ferruginous laterite, brownish powdery iron ore, soft laminated iron ore & ferruginous shale are the main litho units encountered in boreholes. The exploration will continue in 2017-18.
<b>Manganese Ore</b>							
Bolangir	Gudighat Barbandha area	1:1000	2.0	-	-	-	G3 stage preliminary exploration was carried out for manganese in this area by detailed mapping along with pitting, trenching and bedrock sampling. The ore is exposed as isolated mounds around Babejuri village and can be traced discontinuously for about 750 m strike length, with an average width of 10 m. The southern eastern band being the most significant and

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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		
							promising has a strike length of 700 m with an exposed width varying from 5 to 40 m. The ore minerals are mostly pyrolusite, psilomilane & cryptomelane.
Bolangir	Balikhamar area	-	-	9	-	100	Another manganiferous band was delineated in Balikhamar area for 240 m strike length with an average width of 10 m. Chemical analysis of 50 trench samples and 50 bedrock samples indicates manganese values ranging from 3.05 to 24.40% in trench samples and from 4.22 to 26.61% in BRS. Out of 9 boreholes drilled, 8 boreholes intersected manganiferous ore zone. Analytical results of 60 core samples indicate Mn values ranging from 1.98% to 18.98%. Only 26 samples assayed >10% Mn.
Kalahandi	Boringpadar-Amath Block	1:12500	100	-	-	-	G4 stage reconnaissance study for Manganese ore was taken up in this block along with collection of BRS/SS, PTS, etc. Two bands of manganese ore have been observed at the contact of calc-silicate gnanulite and khondalite. First band is mapped towards southeast of Boringpadar. The manganese minerals are mostly pyrolusite and psilomelane showing botryoidal form. The ore body extends for a strike length of 200 m with a width of 50 m. A second band of manganese ore has been mapped towards northeast of Amath for a strike length of 250 m and width of 40 m. The ore body is mostly brecciated and fragmented. Five bands of manganiferous quartzite have been mapped. Four bands are identified to south-east of Boringpadar i.e. (i) 150 m x 10 m trending NNE-SSW (ii) 230 m x 10 m trending N40°E-S40°W (iii) 150 m x 5 m trending N40°E – S 45°W. (iv) 100 m x 5 m trending N-S to N45°E-S45°W. Fifth band has been mapped with dimension 100 m x 20 m trending N40°E-S40°W towards east of Bagada. It is hard, white to black in colour, highly jointed, fractured & brecciated. Analytical result of BR samples

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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		
							indicates Mn value ranging from <del>0.05%</del> to <b>23.78%</b> , SO <sub>2</sub> from 8.45% to 92.12%, Fe(T) from 1.87% to 56.31%, Al <sub>2</sub> O <sub>3</sub> from 1.01% to 20.80% and P <sub>2</sub> O <sub>5</sub> from 0.77% to 2.81%. The high values of Fe recorded from samples of Boringpadar area and maximum value of Mn comes from Amath area. Analytical results of trench samples indicate Mn values ranging from 0.05% to 27.77%. The area can be taken up for delineation of the ore bodies with drilling under G-3 stage of UNFC.
Koraput	Kutinga block	-	-	2	233.70	-	G3 stage general exploration for manganese ore in this block has been carried out along with drilling in two completed and one partly completed borehole and 80 core samples were collected for chemical analysis. The completed boreholes intersected 3 ore bands with cumulative thickness of 13.15 m at 60 m level and 8 ore bands with cumulative thickness of 13.15 m at 60 m level and 8 ore bands with cumulative thickness of 37.05 m. The width of individual bands varies from 0.30 to 12.60 m. The manganese ore is mostly friable and powdery associated with kaolinite, limonite & green clay pockets within manganiferous khondalite. kaolinised/felspathised khondalite. The investigation is under process.
Koraput	Anujurhi block	1:2000	1.5	-	-	151	G3 stage preliminary exploration was carried out for manganese ore in this block by detailed mapping. The lateral continuity was established through pitting and trenching for 75 cu.m. The cumulative strike length of the manganiferous ore body is 800 m with an average width of 10 m. The ore zone is fairly continuous with discontinuous/detached outcrops showing varying width ranging from 8 m to 24 m. A total of 151 samples has been collected from the ore zones. Analytical results of 16 bedrock & 10 trench samples indicate Mn (0.25% to 25.29%), Fe (2.27% to 33.97%), P (0.14%-1.65%) and

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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		
							SiO <sub>2</sub> (11.56-80.22%). The ore minerals are mainly pyrolusite and psilomelane. Drilling will continue in 2017-18 to delineate the ore body.
Rayagada	Rukunibori- Loharpadar block	1:2000	0.75	-	-	-	G3 stage preliminary exploration for manganese was carried out in this block. Detailed geological mapping was carried out both in Rukunibori block (0.75 sq km) and Loharpadar block (0.75 sq km). The manganese ore zone is discontinuous lensoid type, mainly restricted within manganiferous quartzite. The concentration of manganese in the ore zone is varying from south to north in Rukkunibori hill. Towards north, the ore is highly friable and alternately laminated with quartzite and having Mn 1.66%-9.45% whereas, in the south the ore is hard and lumpy and are of moderate to good quality having Mn 12.42% - 28.91%. The value of P <sub>2</sub> O <sub>3</sub> remains < 3.5% in the area. The manganese ore zone is about 200 m in length and width varying up to 1m. Bedrock samples (BRS) show Mn values >10% (12.42%-28.91%) with mean value of 18.18%. The ore minerals are mainly pyrolusite, psilomelane and cryptomelane. The loharpadar block ore zone is confined within the eastern flank of the quartzite ridge located 500 m NNW of Kutingpadar village. The manganese ore is hard, siliceous with intercalations of quartz and it seems to be low to medium grade on visual estimation. Analytical results are awaited. Drilling will be taken up in 2017-18 to delineate the ore bodies.
	Tala-Chhelianalarea (Eastern Ghats Granulite Belt)	1:2000	2.0	-	-	15	G3 stage preliminary exploration has been carried out in this area by detailed mapping, pitting & trenching. Besides mapping, BRS, Pitting-trenching etc. were also carried out. Three discontinuous Manganese ore bodies with an cumulative length of 415 m were delineated with the help of surface exposures and 160 cu. m of pitting/trenching. The area forms a part of the Eastern Ghats Supergroup of rocks comprising khondalite, quartzite, calc silicate granulite and granite gneiss. Concordant but

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Table - 3 (Concl.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							discontinuous manganese ore bodies occur within Khondalite Group of rocks in the form of hard and laminated ore trending in NE-SW. The Manganiferous zone / horizon is associated with quartzite and calc-silicate granulite lying in between the two. Most of the ores are hard, compact and fragmented in nature. Manganese minerals found in ore are mostly pyrolusite and psilomelane occurring as globular, botryoidal masses and tend to develop a concentric spherulitic texture. Three discontinuous manganese ore bands have been delineated on the basis of surface exposures and pitting/trenching. The ore body trends in NE-SW direction with moderate dip towards East. The width of ore bodies vary from 1 to 18 m with established strike continuity for 350 m, 50 m and 15 m respectively. Results of chemical analysis of 15 samples show Mn values ranging from 0.40 to 33.52 with phosphorous content varying from 0.11% to 2.14%. Drilling will be carried out in field season 2017-18 to delineate the ore body.
<b>REE</b> Deogarh	Eastern Ghats Mobile Belt and Singhbhum Craton around Kankarkhol	1:25000	100.0	-	-	362	G4 level preliminary investigation was taken up in this area by large-scale mapping. A total of 362 samples was collected for chemical analysis. Analytical results of 70 samples show REE values ranging from 7 to 387 ppm (in 21 samples of nepheline syenite), 47 to 552 ppm (in 7 samples of gneisses), 12 to 356 ppm (in 3 samples of associated pegmatites), 215 to 624 ppm (in 3 samples of laterite over gneisses) and 294 to 1936 ppm (in 5 samples of stream sediments). Abnormally high values of Zr (> 11000 ppm) are observed in two stream sediment samples. NE of Samsamara village. Petrography along with SEM-EDX study depicted presence of trace elements like LREE silicates (Ce, La, Nd dominantly) pyrochlores (Nb, Ta, Ti oxides +U & Th), titanite/sphene, zircon, apatite, magnetite, ilmenite in association with nepheline syenite and HREE phosphates & monazite in garnets of silimanite-garnet-magnetite-quartz schist.

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**Production**

The important minerals produced in the state were coal, bauxite, chromite, iron ore and manganese ore, limestone etc. during 2016-17.

The value of minor minerals' production was estimated at ` 86 crore for the year 2016-17.

The number of reporting mines in 2016-17 was 128 in case of MCDR minerals (Table-4).

**Table - 4 : Mineral Production in Odisha, 2014-15 to 2016-17  
(Excluding Atomic Minerals)**

(Value in `000)

Mineral	Unit	2014-15			2015-16			2016-17 (P)		
		No. of mines	Qty	Value	No. of mines	Qty	Value	No. of mines	Qty	Value <sup>5</sup>
<b>All Minerals</b>		<b>175</b>		<b>290811076</b>	<b>162</b>		<b>264757189</b>	<b>157</b>		<b>165086239</b>
Coal	'000t	27	123627	158984300	29	138461	121010100	29	139359	-
Bauxite	t	4	9091061	5124105	4	10839038	6278252	3	11990035	7216087
Chromite	t	21	2161463	18784156	21	2913686	21203174	21	3726994	36433928
Iron Ore	'000t	68	52022	103636933	66	79856	112112226	62	99614	115063744
Manganese Ore	t	37	326106	1765655	31	390233	1616875	31	587511	3667350
Dolomite <sup>#</sup>	t	3	413891	253198	-	-	-	-	-	-
Garnet (abrasive)*	t	*	11999	73218	-	14767	93564	-	22076	134365
Graphite (r.o.m.)	t	1	2082	1301	4	7783	4865	4	16373	10682
Iolite	kg	2	-	-	-	-	-	-	-	-
Sillimanite	t	1	18311	118875	1	13393	91755	1	15572	103457
Limestone	'000t	6	3409	1189212	6	4532	1489611	6	4751	1599859
Pyrophyllite <sup>#</sup>	t	2	3388	1743	-	-	-	-	-	-
Quartz <sup>#</sup>	t	1	-	-	-	-	-	-	-	-
Quartzite <sup>#</sup>	t	2	21863	21613	-	-	-	-	-	-
Sulphur <sup>#</sup>	t	-	-	-	-	-	-	-	86734	-
Minor Minerals <sup>@</sup>		-	-	856767	-	-	856767	-	-	856767

Note: The number of mines excludes minor minerals.

\* Associated with Sillimanite. \$ Excluding fuel 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.

## STATE REVIEWS

**Mineral-based Industry**

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

**Table – 5: Principal Mineral-based Industries in Odisha**

Industry/plant	Capacity ('000 tpy)
<b>Aluminium/Alumina</b>	
Hindalco Industries Ltd, Hirakud.	215 (aluminium)
Hindalco Industries Ltd, Aditya Aluminium, Lapanga, Distt. Sambalpur.	360 (aluminium)
NALCO, Damanjodi, Distt. Koraput.	2275 (alumina)
NALCO, Angul.	460 (aluminium)
Utkal Aluma, Rayagada.	1500 (alumina)
Vedanta Aluminium Ltd, Lanjigarh, Distt. Kalahandi.	1000 (alumina)
Vedanta Aluminium Ltd, Jharsuguda, Distt. Sambalpur.	1750 (aluminium)
<b>Asbestos Products</b>	
UAL Industries Ltd, Korian, Distt. Dhenkanal.	NA
Konark Cement & Asbestos Industries Ltd, Bhubaneswar.	NA
<b>Cement</b>	
Bargarh Cement Ltd, Bargarh.	2500
Ultra-Tech Cement Ltd, Jharsuguda (G).	2600
OCL India Ltd, Rajgangpur, Distt. Sundergarh.	4000
OCL India Ltd, Kapilas (G).	1350
Toshali Cements Pvt Ltd, Ampavalli, Distt. Koraput.	200
<b>Fertilizer</b>	
IFFCO, Paradeep.	NA
Paradeep Phosphates Ltd, Paradeep.	NA
SAIL Fertilizer Plant, Rourkela, Distt. Sundergarh.	NA
<b>Iron &amp; Steel</b>	
SAIL, Rourkela Steel Plant, Rourkela, Distt. Sundergarh.	5300 (sinter) 2120 (pig iron)

Table - 5 (Contd.)

Industry/plant	Capacity ('000 tpy)
	4400 (crude/liquid steel) 85 (tin plates)
Visa Steel Ltd, Kalinganagar, Distt. Jajpur.	225 (pig iron) 300 (sponge iron) 500 (special steel)
OCL India Ltd, Lamloi, Distt. Sundergarh.	120 (sponge iron) 85 (billets)
Orissa Sponge Iron Ltd, Palaspanga, Distt. Keonjhar.	250 (sponge iron) 100 (steel ingot)
Neelachal Ispat Nigam Ltd, Dubri, Distt. Jajpur.	1711 (sinter) 855 (pellets) 920 (crude/liquid steel) 13 (A/S)
Bhushan Power & Steel, Sambalpur.	1000 (sinter) 2300 (crude steel)
Bhushan Steel Ltd, Dhenkanal.	5585 (crude Steel)
Jindal Stainless Steel Ltd, Kalinganagar, Gadapur.	1000 (Stainless steel) 250 (ferro alloys)
Jindal Steel & Power Ltd, Barbil.	9000 (pellets)
Arya Iron & Steel Co. Pvt Ltd, Barbil.	1200 (pellets)
Essar Steel Ltd, Paradip.	6000 (pellets)
Rexon Strips Ltd, Kumakela, Distt. Sundergarh.	300 (pellets) 60 (sponge iron) 25 (M. S. ingots)
Tata Steel Ltd., Kalinga nagar works, Kalinganagar, Odisha	2800
<b>Pig Iron</b>	
IDCOL Kalinga Iron Works Ltd, Barbil, Distt. Keonjhar.	180
<b>Sponge Iron</b>	
Action Ispat & Power (P) Ltd, Pandripathar, Distt. Jharsuguda.	250
Adhunik Metaliks Ltd, Chandrihariharpur, Distt. Sundergarh.	270
Beekay Steel & Power Ltd, Uliburu, Distt. Barbil.	115.5
Bhusan Steels Ltd, Meramandali, Distt. Dhenkanal.	900
Crackers India (Alloy) Ltd, Gobardhanpur, Distt. Keonjhar.	60

(Contd.)

(Contd.)

## STATE REVIEWS

Table - 5 (Contd.)

Industry/plant	Capacity ('000 tpy)
Dinabandhu Steel & Power Ltd, Kalinganagar, Distt. Jajpur.	60
Jay Iron & Steel Ltd, Balanda, Rourkela, Distt. Sundergarh.	60
Jindal Steel & Power Ltd, Nisha, Dist. Angul	1800
MGM Minerals Ltd, Forest Park, Bhubaneswar	105
Ganesh Sponge Pvt Ltd, Krushnachandrapur, Distt. Angul.	900
Rungta Mines Ltd, Unit-I, Karakola, Barbil, Distt. Kendujhar Unit-II, Kamando, Distt. Sundergarh.	150
SMC Power Generation Ltd, Jharsuguda	200
Scaw Industries Pvt. Ltd, Gundichapara, Distt. Dhenkanal.	100
Sree Metallic Ltd, Loidapada, Distt. Kendujhar.	300
Suraj Products Ltd, Barpalli, Distt. Sundergarh.	36
Swastik Ispat pvt. Ltd	45
Tata Sponge Iron Ltd, Joda, Distt. Kendujhar	390
Vikram Pvt Ltd, Tumkela, Distt. Sundergarh.	60
<b>Ferro Alloys</b>	
Balasore Alloys Ltd, Balgopalpur, Distt. Balasore.	95 (57 MVA)
FACOR, Charge Chrome Plant, Randia, Distt. Bhadrak.	65
IDCOL Ferro Chrome & Alloys Ltd, Distt. Jajpur.	18
Indian Metal & Ferro alloys Ltd (Indian Charge Chrome Ltd, Choudwar & Indian Metals & Ferro Alloys Ltd, Therubali), Distt. Cuttack.	275 (Total)
Jindal Stainless Ltd, Kalinganagar, Jajpur.	250
	(Contd.)

Table - 5 (Concl.)

Industry/plant	Capacity ('000 tpy)
Nav Bharat Ventures Ltd, Ferro Alloys Plant, Khargprasad, Distt. Dhenkanal.	75
Rohit Ferro-Tech Ltd, Kalinganagar, Distt. Jajpur.	110
Jeypore Sugar Co. Ltd, Rayagada	22.5
Tata Steel Ltd (Ferro alloys and Minerals Div.), Joda, Distt. Kendujhar.	52
Tata Steel Ltd (Ferro alloys and Minerals Div.), Bannipal, Distt. Kendujhar.	60
Tata Steel Ltd (Ferro alloys and Minerals Div.), Distt. Cuttack	50
T.S.Alloys Ltd, Anantpur, (Rawmet Ferrous Industries Ltd), Cuttack.	52
Visa Steel, Kalinganagar.	180
<b>Refractory</b>	
IFGL Refractory Ltd, Kalunga, Distt. Sundergarh.	80000 pc (continuous casting refractories)
Orissa Industries Ltd, Lakhikata, Distt. Sundergarh.	125
Orissa Industries Ltd, Barang, Distt. Cuttack.	19 5 (DBM)
TRL Krosaki Refractories Ltd, Belpahar, Distt. Jharsuguda.	247.89 18 (Taphole clay)
<b>Silicon Carbide</b>	
Indian Metals & Carbide Ltd, Therubali.	NA
<b>Synthetic Rutile</b>	
IREL, Orissa Sands Complex, Ganjam	100
	(G): Grinding units.
	Note: Data, not readily available for fertilizer and cement industries on respective websites.