

STATE REVIEWS



# Indian Minerals Yearbook 2013 (Part- I)

**52<sup>nd</sup> Edition**

**STATE REVIEWS  
(Jharkhand)**

**(FINAL RELEASE)**

**GOVERNMENT OF INDIA  
MINISTRY OF MINES  
INDIAN BUREAU OF MINES**

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## JHARKHAND

### Mineral Resources

Jharkhand is one of the leading mineral producing States. It is one of the leading producers of coal, kyanite, gold, silver, bauxite and felspar. Uranium ore is mined and processed by Uranium Corporation of India Ltd (UCIL) for use as fuel in the country's nuclear power reactors through four underground mines, one opencast mine, two processing plants and a by-product recovery plant, all in East Singhbhum district of the State. Jharkhand accounts for about 36% rock phosphate, 28% coal, 26% iron ore (hematite), 30% apatite, 22% andalusite, 18% copper ore and 5% silver ore resources of the country.

Important minerals that occur in the State are **bauxite** in Dumka, Gumla, Latehar, Lohardaga and Palamu districts; **china clay** in Dumka, Hazaribagh, Lohardaga, East & West Singhbhum, Sahebganj and Ranchi districts; **coal** in Bokaro, Deoghar, Dhanbad, Giridih, Godda, Hazaribagh, Palamu, Pakur and Ranchi districts; **copper** in Hazaribagh and East Singhbhum districts; **dolomite** in Garhwa and Palamu districts; **felspar** in Deoghar, Dhanbad, Dumka, Giridih, Hazaribagh, Jamtara, Koderma, Latehar, Palamu and Ranchi districts; **fireclay** in Dhanbad, Dumka, Giridih, Godda, Hazaribagh, Latehar, Palamu, Ranchi and West Singhbhum districts; **gold** in East Singhbhum district; **graphite** in Palamu district; **iron ore** (hematite) in West Singhbhum district; **iron ore** (magnetite) in Gumla, Hazaribagh, Latehar, Palamu

and East Singhbhum districts; **kyanite** in Saraikela-Kharsawan and 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 and 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** and **silver** in East Singhbhum district; **asbestos** in East & West Singhbhum districts; **barytes** in Palamu and East Singhbhum districts; **bentonite** in Pakur and Sahebganj districts; **garnet** in Hazaribagh district; **granite** in Deogarh, Dhanbad, Dumka, Giridih, Godda, Gumla, Hazaribagh, Koderma, Lohardaga, Palamu, Ranchi and East Singhbhum districts; **sillimanite** in Hazaribagh district; **talc/steatite/soapstone** in Giridih, Koderma, Palamu, East & West Singhbhum districts; **titanium minerals** in Ranchi and East Singhbhum districts; and **vermiculite** in Giridih and Hazaribagh districts (Table - 1). The reserve/resources of coal and the various coalfields located in Jharkhand are given in Table - 2.

**Table – 1 : Reserves/Resources of Minerals as on 1.4.2010 : Jharkhand**

Mineral	Unit	Reserves				Remaining resources				Total resources (A+B)		
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Inferred STD333		Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222				
Andalusite	'000 tonnes	-	-	-	-	-	-	4000	-	4000	4000	
Apatite	tonne	-	-	-	-	-	-	3540000	-	7270000	7270000	
Asbestos	tonne	-	-	-	-	3871	18309	124059	-	154893	154893	
Barytes	tonne	-	-	-	-	-	-	35900	-	35900	35900	
Bauxite	'000 tonnes	16023	7290	12863	36176	5135	11341	54447	536	110147	146323	
Bentonite	tonne	-	-	609406	609406	-	3067	367527	-	370594	980000	
China clay	'000 tonnes	8554	324	8731	17610	209	2031	149957	18019	181081		
Chromite	'000 tonnes	-	-	-	-	-	-	623	-	736	736	
Cobalt	million tonnes	-	-	-	-	-	-	-	7	9	9	
Copper Ore	'000 tonnes	16540	49127	21151	86818	11720	17990	32252	-	201307	288126	
Metal	'000 tonnes	163.03	448.83	196.91	808.78	202.76	194.30	412.65	-	2285.49	3094.27	
Dolomite	'000 tonnes	22700	-	-	22700	-	350	18330	-	18734	41434	
Dunite	'000 tonnes	373	-	570	943	130	-	6121	8637	16415	17358	
Felspar	tonne	5675	-	274971	280646	-	40766	881045	-	1354142	1634788	
Fireclay	'000 tonnes	828	-	775	1602	12	479	64151	-	65017	66619	
Garnet	tonne	-	58	234	292	-	-	21768	-	110071	110071	
Gold												
Ore (primary)	tonne	38059	-	-	38059	-	-	2949012	-	8113289	8151348	
Metal (primary)	tonne	0.13	-	-	0.13	-	-	8.87	-	12.60	12.73	
Granite												
(Dim. stone)	'000 cu m	-	-	-	-	-	-	8197110	26930	8875340	8875340	
Graphite	tonne	382036	72670	645823	1100529	47073	236783	6798641	24350	11810340	12910869	
Iron ore												
(hematite)	'000 tonnes	1840594	391052	72496	2304142	89372	14339	594716	1000000	2292478	4596620	
Iron ore (magnetite)	'000 tonnes	-	361	551	912	-	5	2472	32	6879	10269	
Kyanite	tonne	267222	524485	402325	1194032	-	-	3048500	-	4803400	5708533	
Limestone	'000 tonnes	244259	4105	54713	203077	894	1630	382745	1503	400961	745779	

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Table - 1 (Concl.)

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						
Manganese ore	'000 tonnes	1250	620	1586	3456	396	211	3053	-	-	6594	-	10254	13709
Mica	kg	-	-	-	-	-	-	-	-	-	1494430	170700	1665130	1665130
Nickel ore	million tonnes	-	-	-	-	-	-	-	2	7	-	-	9	9
Ochre	tonne	63695	-	4361	68056	-	-	-	-	-	-	-	147039	215095
Phosphorite/ Rock phosphate	tonne	-	-	-	-	-	-	-	-	-	107370000	-	107370000	107370000
Quartz-silica sand.	'000 tonnes	563	40	8671	9238	2	989	3299	518	758	135745	6	140352	154766
Quartzite	'000 tonnes	1079	-	174	1253	-	-	-	197	275	38934	-	39405	40230
Sillimanite	tonne	-	-	-	-	-	-	-	-	-	83000	-	83000	83000
Silver														
Ore	tonne	-	-	-	-	-	-	-	-	-	23840000	-	23840000	23840000
Metal	tonne	-	-	-	-	-	-	-	-	-	5.22	-	5.22	5.22
Talc-steatite- soapstone	'000 tonnes	-	-	-	-	-	-	73	2	4	243	16	338	338
Titanium minerals	tonne	-	-	-	-	-	-	-	-	3630000	-	-	3630000	3630000
Vermiculite	tonne	-	-	-	-	-	-	-	-	-	30048	-	30048	30048

Figures rounded off.  
\* Resources of ilmenite, rutile, leucoxene and zircon, as per Department of Atomic Energy, are provided in the respective Mineral Reviews.

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**Table – 2 : Reserves/Resources of Coal as on 1.4.2013 : Jharkhand**

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
<b>Total</b>	<b>41155.36</b>	<b>33986.36</b>	<b>6559.47</b>	<b>80701.19</b>
Raniganj	1538.19	466.56	31.55	2036.30
Jharia	15127.97	4302.09	-	19430.06
East Bokaro	3351.87	3929.57	863.32	8144.76
West Bokaro	3720.89	1308.71	33.66	5063.26
Ramgarh	710.59	495.30	58.05	1263.94
North Karanpura	9499.42	6914.61	1864.96	18278.99
South Karanpura	3042.31	2048.56	1480.22	6571.09
Aurangabad	352.05	2141.65	503.41	2997.11
Hutar	190.79	26.55	32.48	249.82
Daltongunj	83.86	60.10	-	143.96
Deogarh	326.24	73.60	-	399.84
Rajmahal	3211.18	11219.06	1691.82	16122.06

Source: Coal Directory of India, 2012-13.

### Exploration & Development

The details of exploration activities conducted by GSI during 2012-13 are furnished in Table - 3.

### Production

The value of mineral production in Jharkhand during 2012-13 at ₹19,951 crore increased by 22% over the previous year mainly due to the increase in the production of coal, bauxite, dolomite and fireclay. The state claimed the fifth position and accounted for 7% of the total value of mineral production in the country during 2012-13. Coal, the principal mineral produced in the state contributed 88% while the share of iron ore was about 11% of the total value of mineral production in the state. Jharkhand was the sole producer of pyroxenite, leading producer of kyanite; second largest producer of graphite (r.o.m), coal and gold; third largest producer of fireclay, iron ore, bauxite and copper ore & concentrates. The other principal minerals produced in the state

were manganese ore, felspar, kaolin, quartz, quartzite and silica sand. Among the important minerals, production of dolomite increased by 45%, fireclay 30%, bauxite and coal about 2% each. However, during 2012-13 the output of iron ore decreased 6%, copper conc.7%, pyroxenite 14%, limestone 25%, silica sand 28%, graphite (r.o.m.) 30%, quartzite 31%, kaolin 46%, gold ore 47%, felspar 54%, gold 55%, steatite and quartz 65% each, kyanite 75% and manganese ore 78% as compared with the previous year. (Table-4).

The production value of minor minerals was estimated at ₹40 crore for the year 2012-13.

The number of reporting mines in Jharkhand during 2012-13 was 287 as against 297 in the previous year.

The index of mineral production in Jharkhand (base 2004-05=100) was 140.7 in 2012-13 as compared to 139.2 in the previous year.

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Table – 3 : Details of Exploration Activities in Jharkhand, 2012-13

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Metreage		
<b>GSI Gold Kharswan</b>	Largadih - Balidih block	-	-	5	820.35	748	<p>Prospecting stage investigation (G-3) was carried out for gold to assess the gold potentiality. This was initiated during FS 2012-13 as a follow up of request received from DMG, Jharkhand and will be continued in FS 2013-14. The Rudiya-Largadih-Balidih block comprises part of Dalma volcanics and metasedimentaries of Singhbhum Group. Geochemical samples, P&amp;T samples were collected. Drilling has been accomplished in five boreholes. The details of mineralised zones intersected are as follows:</p> <p>BH-1:- i) siliceous tuff (77.40 m – 79.25 m), ii) brecciated quartzite (103.40 m - 109.40 m), quartz chlorite schist ( 146.35 m - 148 m), brecciated quartzite(70.20 m - 82 m), quartz chlorite schist (95.85 m -100.45 m) &amp; (118.20 m - 121.30 m), brecciated quartzite (144.10 m - 160.55 m), siliceous tuff (57.75 m - 59.50 m).</p> <p>BH-2:- i)Siliceous tuff (57.75 m – 59.50 m), brecciated quartzite (81.50 m – 98.00 m), quartz chlorite schist (100.30 m – 108.00 m), (131.90 m – 132.85 m) &amp; (165.00 m – 168.30 m)</p> <p>BH-3:- i) Brecciated quartzite (62.30 m to 63.50 m), (64.65 m to 69.40 m) &amp; (73.95 m to 77.40 m), quartz chlorite schist(132.50 m - 136.10 m) The investigation will be continued in FS 2013-14.</p>
-do-	Sinduauri- Ghanashyampur	-	-	5	820.35	748	<p>Prospecting stage investigation (G-3) was carried out within Dalma volcanics and Singhbhum Group meta sedimentaries to assess their gold potentiality. The Sinduauri-Ghanashyampur is the eastern continuity of Lungtu-Hepsel-Parasi block where gold resources have been established. The exposed rock belongs to Singhbhum Group bounded by Chhotanagpur Gneissic Complex in the north and Singhbhum Granite in the south. geochemical samples, PTS samples, petrological samples and core samples were collected. The investigation has been completed.</p>

(Contd.)

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Table - 3 (Concl.d.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>GSI</b>							
<b>RM/REE</b>							
Ranchi	Dublabetoli- Sundils	1:500	0.50	-	-	95	Reconnaissance stage investigation was carried out in potential pegmatites hosted within the Chhotanagpur Gneissic complex to assess rare earth and REE potentiality. The study area is a part of Chhotanagpur Gneissic complex and forms the Western extension of North Purulia shear zone. Detailed mapping was carried out to delineate the individual pegmatite bodies. Pegmatite body of length of 1.5 km and width of 20 m was demarcated east of Village Dublabetoli . The pegmatites are of mixed type in which finer fraction is surrounded by coarser fraction. The pegmatites are associated with following three associations: The enclaves are represented by calc-silicate, hornblende schist, mica schist, amphibolites and quartzites 2) The gneiss suite which includes porphyritic granite gneiss and biotite granite gneiss and 3) Intrusives represented by aplitic granite, pegmatite and quartz veins. The pegmatites mostly intrude calc-silicates and amphibolites. The presence of allanite, columbite, pollucite, spodumene, fluorite, and barite are reported in the granite and pegmatites of the area. The investigation will be continued in FS 2013-14.
-do-	Kasidih area	1:500	0.5	-	-	39	A preliminary stage investigation (G4) was carried out to assess the potentiality of RM & REE in Chhotanagpur Gneissic Complex. Detailed mapping along with pitting & trenching of 8 cu m was accomplished. The litho units present in the area are granite gneiss, calc-silicate and pegmatite. A pegmatite body is identified in the Mahuajana and Eastern part of Kasidih villages with a dimension of approximately 1000 m x 200 m with E-W trend. The pegmatite contains quartz, feldspar, muscovite, tourmaline along with tiny crystals of garnet. BRS, PTS, & petrological samples were collected for heavy mineral studies by XRD and chemical analysis. The investigation will be continued in F S 2013-14.

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**Table -4 : Mineral Production in Jharkhand, 2010-11 to 2012-13  
(Excluding Atomic Minerals)**

(Value in ₹'000)

Mineral	Unit	2010-11			2011-12			2012-13 (P)		
		No. of mines	Qty	Value	No. of mines	Qty	Value	No. of mines	Qty	Value
<b>All Minerals</b>		<b>297</b>		<b>205198846</b>	<b>297</b>		<b>163484986</b>	<b>287</b>		<b>199509838</b>
Coal	'000 t	174	108949	185716200	172	109566	139887600	176	111274	175665400
Bauxite	t	36	1855993	627327	31	1969439	748448	31	2008367	848769
Copper Ore	t	-	396841	-	-	395745	-	-	398537	-
Copper Conc.	t	1	12904	445678	1	13767	457835	2	12770	428477
Gold Ore	t	-	4618	-	-	7123	-	-	3770	-
Gold	kg	1	14	28137	1	11	28532	1	5	14322
Iron Ore	'000 t	20	22288	16907241	19	19258	20968621	14	18010	21186995
Manganese Ore	t	2	44898	62094	3	19642	37362	4	4266	25444
Silver	kg	-	-	-	-	-	-	-	-	-
Dolomite	t	1	429866	386879	1	206938	185204	1	299723	269751
Felspar	t	3	13315	2297	3	15265	3163	4	7088	1820
Fireclay	t	7	24305	3156	9	85819	14895	7	111871	17752
Graphite (run of mine)	t	10	45146	14995	12	76175	31565	10	53276	24129
Kaolin	t	11	93001	84327	9	122412	61210	6	66235	31369
Kyanite	t	1	3547	4207	1	4011	4757	1	1015	1204
Laterite	t	-	1220	183	-	1550	310	-	-	-
Limestone	'000 t	15	1996	453107	18	2480	557622	12	1857	539794
Mica (crude)	t	-	-	-	-	1	3870	-	-	-
Mica (waste & Scrap)	t	-	-	-	-	-	-	-	1312	-
Ochre	t	1	1200	205	-	-	-	-	-	-
Pyroxenite	t	3	54986	14978	3	62747	19375	3	54257	16817
Quartz	t	9	61665	10196	10	109127	25461	11	37671	7528
Quartzite	t	1	24810	5458	2	44726	9840	2	30771	7316
Silica Sand	t	1	97560	30733	1	113265	36724	1	81088	20971
Talc/soapstone/ steatite	t	-	-	-	1	4041	1144	1	1400	532
Minor Minerals@		-	-	401448	-	-	401448	-	-	401448

*Note: The number of mines excludes minor minerals.**@ Figures for earlier years have been repeated as estimates because of non-receipt of data.*

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**Mineral-based Industry**

The principal large and medium-scale mineral-based industries in the Organised Sector in the State are given in Table - 5.

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

Industry/plant	Capacity ('000 tpy)
<b>Alumina</b>	
Hindalco Industries Ltd, Muri.	450
<b>Asbestos Products</b>	
Hyderabad Industries Ltd, Jasidih, Dist. Deogarh.	60
<b>Cement</b>	
ACC Ltd, Chaibasa, Dist. Singhbhum.	870
ACC Ltd, Sindri, Dist. Dhanbad.	600
Lafarge, Jojobera, Dist. Singhbhum.	3000
Lemos Cement, Khalari, Dist. Ranchi.	109
Sri Durga Cement Ltd, Hosla, Dist. Ramgarh.	33
Sone Valley, Japla.	254
<b>Ceramic</b>	
Bihar Industrial Corp. Ltd, Madhupur, Dist. Deoghar.	0.48
Maithan Ceramics Pvt. Ltd, Dhanbad.	NA
<b>Chemicals</b>	
Bihar Caustic & Chemicals Ltd, Garhwa Road, Dist. Palamu.	92.75 (caustic soda lye)
<b>Copper Smelter</b>	
HCL, ICC, Ghatsila, Dist. Singhbhum (East).	20.5 (copper cathode) 84 (fabricated wire bar) 54 (H <sub>2</sub> SO <sub>4</sub> ) 390 t (NiSO <sub>4</sub> ) 480 kg (CuSO <sub>4</sub> ) 14.6 kg (selenium) 9868 kg (Ag) 698 kg (Au)
<b>Foundry</b>	
Hindustan Malleables & Forgings Ltd, Jalan Nagar, Dhanbad.	NA
<b>Iron &amp; Steel</b>	
Bokaro Steel Plant, Bokaro .	6200 (sinter) 4585 (pig iron) 3780 (saleable steel) 4360 (Crude/liquid steel) 35.5 (H <sub>2</sub> SO <sub>4</sub> ) 27.2 (ammonium sulphate)

(Contd.)

Table - 5 (Concl'd.)

Industry/plant	Capacity ('000 tpy)
Tata Steel Ltd, Jamshedpur.	2500 (pellets) 4808 (saleable steel) 6800 (Crude/liquid steel)
<b>Sinters &amp; Pellets</b>	
Tata Steel Ltd, Noamundi.	800
<b>Pig Iron</b>	
Usha Martin Industries, Jamshedpur.	110
<b>Sponge Iron</b>	
Bihar Sponge Iron Ltd, Chandil, Dist. Saraikela-Kharswan.	186
Jai Durga Iron Pvt. Ltd, Jhumari Tellaiya, Dist. Koderma.	36
Zoom Vallabh Steels Ltd, Dugdha, Dist. Saraikela-Kharswan.	120
<b>Ferro Alloys</b>	
Anjani Ferro Alloys Ltd, Mihijam.	NA
Gautam Ferro Alloys Ltd.	5.5
<b>Tin Plates</b>	
The Tin Plate Co. of India Ltd, Jamshedpur.	379 (electrolytic tin plate)
<b>Glass</b>	
IAG Co. Ltd, Bhandainagar.	66.8
<b>Refractory</b>	
Allied Refractories (P) Ltd, Amaghata.	7.2
Bharat Refractories Ltd, Marar, Dist. Hazaribagh (Ranchi Road Refractories Ltd).	7.2
Bharat Refractories Ltd, Marar, Dist. Hazaribagh (IFICO Refractories Ltd).	42
Bharat Refractories Ltd, Bhandaridah, (Bhandaridah Refractory Plant) Dist. Bokaro.	26
Jharia Firebricks Pottery Works (P) Ltd, Dhansar, Dist. Dhanbad.	20
Mineral & Chemical Products, Kendposi, Dist. West Singhbhum.	1.5 (calcined china clay)
Raj Refractory (P) Ltd, Hardag, Dist. Ranchi.	6

