

STATE REVIEWS



# Indian Minerals Yearbook 2017

(Part- I)

56<sup>th</sup> Edition

**STATE REVIEWS  
(Bihar)**

**(FINAL RELEASE)**

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

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## BIHAR

### Mineral Resources

Bihar is the principal holder of country's pyrite resources and possesses 94% of resources. The important mineral occurrences in Bihar are **coal** in Rajmahal coalfield; **limestone** in Kaimur (Bhabhua), Monghyr and Rohtas districts; **mica** in Nawada district; **quartz/silica sand** in Bhagalpur, Jamui, Monghyr and Nalanda districts; **quartzite** in Lakhisarai, Monghyr and Nalanda districts; **talc/soapstone/steatite** in Monghyr district. Besides, occurrences of **bauxite** in Monghyr and Rohtas districts; **china clay** in Bhagalpur and Monghyr districts; **felspar** in Gaya, Jamui and Monghyr districts; **fireclay** in Bhagalpur and Purnea districts; **gold** in Jamui district; **granite** in Bhagalpur, Gaya, Jahanabad and Jamui districts; **iron ore (hematite)** in Bhagalpur district; **iron ore (magnetite)** in Gaya

and Jamui districts; **lead-zinc** in Banka and Rohtas districts and **pyrites** in Rohtas district are reported Tables - 1 & 2.

### Exploration & Development

GSI carried out exploration for Coal & chromite Rajmahal, Aurangabad and Gaya districts. Details of exploration activities conducted by GSI during 2016-17 are furnished in Table-3.

### Production

Limestone is the major mineral produced in the state of Bihar.

The value of minor minerals' production was estimated at ` 4,272 crore for the year 2016-17.

There was a single reporting mine and that of limestone in Bihar in 2016-17. Details are furnished in Table-4.

**Table – 1 : Reserves/Resources of Coal as on 1.4.2017 : Bihar**

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total/Rajmahal	-	-	1353.50	1353.50

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

**Table – 2 : Reserves/Resources of Mineral as on 1.4.2015 : Bihar**

Mineral	Unit	Reserves				Remaining resources						Total resources (A+B)		
		Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222						
Bauxite	'000 tonnes	-	-	-	-	-	-	-	-	4114	-	4114	4114	
China clay#	'000 tonnes	-	-	-	-	-	-	104	39	1296	-	1438	1438	
Felspar#	tonne	-	-	-	-	35147	-	-	4195	4871499	-	4910841	4910841	
Fireclay#	' 000 tonnes	-	-	-	-	-	-	-	-	44	-	44	44	
Gold	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ore	-	-	-	-	-	-	-	-	-	-	-	-	-	
(primary)	tonne	-	-	-	-	-	-	-	-	128884860	94000000	222884860	222884860	
Metal	-	-	-	-	-	-	-	-	-	-	-	-	-	
(primary)	tonne	-	-	-	-	-	-	-	-	21.6	16	37.6	37.6	
Granite##	-	-	-	-	-	-	-	-	-	-	-	-	-	
(Dim. stone)	'000 cu m	-	-	-	-	-	-	179000	-	698612	-	877612	877612	
Iron ore	-	-	-	-	-	-	-	-	-	-	-	-	-	
(Hematite)	'000 tonnes	-	-	-	-	-	-	-	-	55	-	55	55	
Iron ore	'000 tonnes	-	-	-	-	-	-	-	-	-	-	-	-	
(Magnetite)	'000 tonnes	-	-	-	-	-	-	-	-	2659	-	2659	2659	
Lead-zinc	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ore	'000 tonnes	-	-	-	-	-	-	-	435	11000	-	11435	11435	
Lead metal	'000 tonnes	-	-	-	-	-	-	-	-	24	-	24	24	
Zinc metal	'000 tonnes	-	-	-	-	-	-	-	14.75	24	-	38.75	38.75	
Limestone	'000 tonnes	12410	306	12715	3096	2558	1405	67926	38210	724118	10558	847872	860388	
Mica#	kg	-	-	-	-	-	-	-	-	13066667	7700	13074367	13074367	
Pyrite	'000 tonnes	-	-	-	13462	-	9680	-	51419	1500000	-	1574561	1574561	
Quartzite#	'000 tonnes	282	12260	12542	390	959	8090	5490	22822	227531	-	265282	277824	
Quartz-	-	-	-	-	-	-	-	-	-	-	-	-	-	
silica sand#	'000 tonnes	-	-	-	-	-	-	-	-	25755	-	25755	25755	
Talc-steatite-	-	-	-	-	-	-	-	-	-	-	-	-	-	
soapstone#	'000 tonnes	-	-	-	-	-	-	-	-	149	-	149	149	

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 Bihar, 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>							
Rajmahal groups of Coalfields, Bhagalpur	Gokulmathura Block	1:10000	19	14	5373.30 m	-	G2 Stage general exploration was carried out for Gondwana coal under the cover of younger formations in Gokulmathura Block. Four coal seam zones viz. seam zone-A, B, C, and D have been established. The thickness of individual seam zone varies from 1.65 to 110.40 m within the depth range of 75.10 to 425.85 m. The total cumulative coal thickness encountered in 14 boreholes in 563.80 m with maximum 29 coal seam section with thickest seam section 15.90 m at a roof depth of 523.00 m.
	Shrinagar Block north-eastern side of Hura extension block		10.0	7	4844.0 m	-	G2 Stage general exploration was carried out for Gondwana coal under the cover of younger formations in Shrinagar Block north-eastern side of Hura north extension block, Rajmahal groups of Coalfields, Shrinagar Block is being explored under G-2 Stage for establishing the continuity of coal bearing Barakar Formation. Four coal seam zones viz. seam zone-A, B, C and D have been established.
<b>Chromite, Nickel and PGE</b>							
Aurangabad and Gaya	Masuribad- Pipargarhi- Ahirtola- Genjana sector	1:12500	-	-	-	-	G4 stage reconnaissance survey for Cr, Ni & PGE Group of Elements was carried out in this area. Trench samples of metapyroxenite have yielded "PGE values of 766 ppb, 347 ppb, 272 ppb, 51 ppb and 6 ppb with an average value of 288 ppb having anomalous enrichments of Pt+Pd and also Cr content of 1619 to 3119 ppm and Ni content of 629 to 1518 ppm. PGE mineralisation has been established over a strike length of 1 km.

(Contd.)

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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		
<b>Iron Ore</b>							
<b>(Magnetite)</b>							
Gaya and Jehanabad	Gaya-Bela area	-	-	-	-	-	G4 stage reconnaissance survey was taken up in search of magnetite-ilmenite mineralisation. Five major magnetite bodies have been delineated, viz. (i) NE of Sudama Kund (800 m x 200 m) (ii) NW of Patal Ganga (500 m x 100 m), (iii)NW of Nagarjuni hills (500 m x 100 m) (iv) 750 m SW of Patal Ganga near Ramnath Bigha, and (v) East of Phalgu river (200 m x 40 m). Total Fe contents of these different ore bodies varies from 41.30 to 60.58% and that of TiO <sub>2</sub> from 2.55 to 26.77% and concentration of SiO <sub>2</sub> and P <sub>2</sub> O <sub>5</sub> varies from 0.5 to 8.74% and 0.01 to 0.05% respectively. The magnetite ore body found to the east of Phalgu river shows the highest value (60.58%) of total Fe and the magnetite ore body to the NE of Sudama Kund shows the highest value (26.77%) of TiO <sub>2</sub> .  In Jamui district, a G3 stage preliminary exploration was carried out in search of magnetite around Majos. Detailed mapping of 2.1 sq km area around Majos village has been carried out on 1:2000 scale. Out of total 152 bedrock samples, 41 show > 45% Fe content with a maximum of 56.08%. Fifteen core samples and eighteen trench samples show > 40% Fe content.
<b>REE</b>							
Jamui & Banka		1:12500	100.0	-	-	-	G4 reconnaissance survey was carried out for REE and Rare Metals in Bihar mica belt within Chhotanagpur Gneissic complex in and around Simaltala and Katoriya area along with bed rock sampling, pitting/trenching and stream sediment sampling, with an objective of assessment of the potentiality of REE/RM mineralisation and to delineate the mineralised block if any for prospecting. REE bearing mineral phase is identified in EPMA and petrographic study. The analytical results of REE concentration revealed REE values of 1 to 919 ppm with an average of 194.83 ppm for bed rock samples and 9 to 1589 ppm with an average of 238 ppm for stream sediment samples. A total of 72 bedrock samples show tREE concentrations higher than the average upper continental crustal value (146 ppm) and varies from 146.15 to 919 ppm. In 14 numbers of bed rock samples, tREE concentration is greater than 500 ppm.

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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		
<b>Gluconite</b>							
Kaimur	Adhaura	-	-	-	-	-	G4 stage investigation for glauconite in this area has been carried out. A total of four glauconite mineralised zones have been delineated in Chutia-Tiura, Paruka-Majuraha, Jadunathpur and Belduria-jaradag areas with strike lengths of 3 to 3.5 km, 2 km, 1.3 km and 4.75 km having widths of 50-60 m, 30-50 m, 80 to 100 m and 80 to 100 m respectively. Encouraging analytical results of K <sub>2</sub> O% have been obtained, ranging up to 6.97% in bedrock samples of glauconitic sandstone. Three glauconitic siltstone samples from dug wells in Tiura area yielded K <sub>2</sub> O values of 13.79%, 13.71% and 13.44%.
<b>Gold</b>							
West Champan	Foothills of Siwalik Himalayas	-	-	-	-	-	G4 level reconnaissance survey for placer gold in the foothills of Siwalik Himalayas has been carried out along with sampling. Among the samples collected from different sampling media (BRS, PTS, SSS etc.), the panned concentrates or heavies of stream sediments and pit samples showed encouraging outcome in the form of a good number (20 to 30 of minute gold grains/flakes and some dusts from 15 kg of bulk samples. Analytical results of 126 samples (out of 189 samples) revealed that panned concentrates of stream sediment samples yielded a maximum of 5.2 ppm of Au with a mean value of 0.75 ppm and those of pit / trench samples yielded a maximum of 2.97 ppm with a mean value of 0.33 ppm. SEM and petrological studies of gold grains/flakes and heavy minerals separated from major river basins show size variation from 20 to 200 µm.

(Contd.)

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

(Value in `000)

Mineral	Unit	2014-15			2015-16			2016-17 (P)		
		No. of mines	Quantity	Value	No. of mines	Quantity	Value	No. of mines	Quantity	Value
<b>All Minerals</b>		<b>3</b>		<b>42842256</b>	<b>1</b>		<b>42892072</b>	<b>1</b>		<b>42781798</b>
Limestone	'000t	1	473	119709	1	459	172141	1	190	61867
Mica (crude)#	t	1	-	-	-	-	-	-	-	-
Mica (waste & Scrap)*#	t	-	1378	-	-	-	-	-	-	-
Quartz#	t	1	-	-	-	-	-	-	-	-
Quartzite#	t	-	5706	2616	-	-	-	-	-	-
Sulphur**	t	-	8629	-	-	5561	-	-	8159	-
Minor Minerals@		-	-	42719931	-	-	42719931	-	-	42719931

*Note : The number of mines excludes minor minerals*

*\* Includes mine waste obtained while dressing of crude mica*

*\*\* Recovered as by-product from oil refinery*

*@ 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 with their total installed capacities are furnished in Table - 5.

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

Industry/plant	Capacity ('000 tpy)
<b>Cement</b>	
Kalyanpur Cements Ltd, Banjari, Dist. Rohtas.	1000
Shree Cement Ltd, Aurangabad Grinding Unit, Aurangabad.	3600
<b>Fertilizer</b>	
Harabhara Fertilizer, Dhanukagra.	NA
Shrikrishna Fertilizers Ltd, Muzaffarpur.	30 (SSP)
<b>Petroleum Refinery</b>	
Indian Oil Corporation, Barauni.	6000

*Note: Data, for fertilizer industries, is taken from Indian Fertilizer Scenario, 2015/FAI Statistics, 2015-16.*