

STATE REVIEWS



Indian Minerals Yearbook 2018

(Part- I)

57th Edition

STATE REVIEWS
(Bihar)

(FINAL RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

PHONE/FAX NO. (0712) 2565471
PBX : (0712) 2562649, 2560544, 2560648
E-MAIL : cme@ibm.gov.in
Website: www.ibm.gov.in

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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 & Rohtas districts; **mica** in Nawada district; **quartz/silica sand** in Bhagalpur, Jamui, Monghyr & Nalanda districts; **quartzite** in Lakhisarai, Monghyr & Nalanda districts; and **talc/soapstone/steatite** in Monghyr district. Besides, occurrences of **bauxite** in Monghyr & Rohtas districts; **china clay** in Bhagalpur & Monghyr districts; **felspar** in Gaya, Jamui & Monghyr districts; **fireclay** in Bhagalpur & Purnea districts; **gold** in Jamui district; **granite** in Bhagalpur, Gaya, Jahanabad & Jamui districts; **iron ore (haematite)** in Bhagalpur district; **iron ore (magnetite)** in Gaya & Jamui districts; **lead-**

zinc in Banka & Rohtas districts and **pyrites** in Rohtas district are also reported (Tables - 1 & 2).

Exploration & Development

GSI carried out exploration for coal, iron ore (magnetite) in Jamui district, rare-earth element (REE), rare metals (RM) in Jamui & Banka districts. Details of exploration activities conducted by GSI during 2017-18 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 2017-18.

There was only one reporting mine which was that of limestone in Bihar in 2017-18. Details are furnished in Table-4.

Table – 1 : Reserves/Resources of Coal as on 1.4.2018 : Bihar

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total/Rajmahal	161.11	813.49	392.15	1366.75

Source: Coal Directory of India, 2017-18

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

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

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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, 2017-18

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Coal							
Rajmahal groups of Coalfields, Bhagalpur	Lakshmipur Block	1:10000	7	3	1331.90 m	-	During general exploration for Gondwana coal under the cover of younger formations in Lakshmipur block, Rajmahal Coalfields in Bhagalpur district, a total of 1331.90 m was drilled in 3 boreholes (RBLP-1 to 3) and an area of 7 sq.km was mapped on 1:10000 scale. Four regional Barakar coal seam zones (A, B C & D in ascending order) have been intersected in the drilled boreholes. The total cumulative coal thickness encountered in three boreholes was 165.40 m with thickest coal seam of 10.00 m (RBLP-2) encountered at a roof depth of 597.95 m. Coal seam zone B having the highest cumulative thickness of 115.45 m (RBLP-2) is the most important for its regional persistence and thickness.
Iron Ore (Magnetite)							
Jamui	Majos & Jalai.	1:2000	3.0	11	1000.60 m	-	Preliminary exploration for magnetite was carried out around Majos, Jamui district. A total of 3.0 sq. km detailed mapping on 1:2000 scale were carried out. During mapping discontinuous bands of BMQ were seen for a strike length of 350 m with width varying from 50 m to 100 m. Majority of the area is covered by alluvium. Magnetite also occurs in crystal form within quartzite indicating re-crystallisation. Small dumps of slag are present around Majos and Jalai. Analytical results of 48 BRS samples show >45% Fe content with maximum concentration of 56.08%. Analytical results of 28 PTS samples show more than 45% Fe with maximum content of 54.13%. A total of 1000.60 m were drilled in 11 nos. of boreholes. All the boreholes show Fe value >40% and maximum and minimum Fe content is 45.9% over 6.15 m in borehole MJ-01 and 35.28% over 8 m in borehole MJ-07.

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Table – 3 (Contd)

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Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Rare-Earth Elements (REE) & Rare Metals (RM)							
Jamui & Banka	Simaltala and Katoriya area	-	200.0	-	-	331	Reconnaissance survey for rare-earth elements (REE) and rare metals (RM) was carried out in and around this area. During survey an area of 200 sq.km was mapped on large scale in Block - I and Block-II with 100 cu. m of pitting/ trenching. Besides, 151 BRS samples, 100 each of PTS and stream sediment/ soil samples, 35 nos. of PS, 20 nos. of PCS, 10 nos. for EPMA and 15 samples each of SEM-EDX & XRD were collected. The analytical results of BRS from Block-I reveal that the tREE (La-Lu) concentration varied from 1 ppm to 919 ppm with average tREE of 194.83 ppm. Out of these samples 72 nos. of samples were having tREE concentration higher than 146 ppm and varied from 146.15 ppm to 919 ppm while 14 nos. of samples had tREE concentration of > 500 ppm.
Titanium(Ti), Vanadium(V) & Gallium (Ga)							
Kaimur district	Adhaura area	1:12500	124	-	-	44	Reconnaissance survey was taken up for strategic minerals, i.e., Titanium (Ti), Vanadium (V) & Gallium (Ga) in laterite exposed in and around Adhaura area in parts of toposheet no. 63P/9 & 10, Kaimur district. The study involved large-scale mapping of 124 sq.km on 1:12500 scale in Block-A and Block-B, along with pitting/ trenching and collection of BRS, PCS and SSS samples. Three major lateritic bodies were delineated in Block-A having maximum dimension of 2.5 km x 0.3 km, 1.5 km x 0.5 km and 3.5 km x 0.9 km, respectively. The laterite bodies reported were very closely associated with lineaments where ground evidences like silicification, slickensides & ferruginisation/ limonitisation have been observed in sandstone. In Block-B, isolated patches of laterite bodies were observed. Analytical results of 44 laterite samples show TiO ₂ varying from 1.05% to 12.71%, V varying from 109 ppm to 1365 ppm and Ga varying from 19 ppm to 112 ppm.

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Table – 3 (Concl'd)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Glauconite							
Rohtas	Chutia-Nauhatta - area	1:4000	4.0	10	1000.0	672	G3 satge preliminary exploration for fertilizer mineral (Glauconite) was carried out in the area including pitting/ trenching of 50 cu.m. The rock types in the area include fawn limestone, glauconitic sandstone, welded felsic tuff, etc. Glauconite occurs as squeezed grains pellets, coatings over sand grains and as inter-granular filling in glauconitic sandstone. Bed rock samples show 2.43% to 4.65% K ₂ O whereas fine-grained sandstone ranges from 4.34% to 4.36% in glauconitic sandstone and 4.55% to 5.67% in fine-grained sandstone intercalated with black shale. In the third borehole K ₂ O values range from 3.27% to 3.91% in fine-grained glauconitic sandstone, from 4.58% to 5.06% in fine-grained sandstone intercalated with green shale; and 4.30% to 5.66% in fine grained sandstone intercalated with black shale.
	Around Khari Ghata	1:12500	100.0	-	-	-	G4 stage reconnaissance survey was carried out for glauconitic sandstone and limestone around Khari Ghat area. The study area revealed presence of limestone and shale/clay intercalated sequences having well-developed horizontal laminations. The maximum exposed thickness of limestone is 35-45 m with wide lateral extent. Analytical results indicated an average CaO% of 44.15%. Al ₂ O ₃ , Fe ₂ O ₃ , P ₂ O ₅ and SiO ₂ were within desirable limits.
	Shahpur- Akbarpur area	1:12500	50.0	5	500.0	206	G4 stage reconnaissance survey for glauconite was taken up in Vindhyan Supergroup, Shahpur-Akbarpur area. Five scout boreholes were drilled to cumulative depth of 500.0 m. Glauconite mineralised zones were intersected at 14.5 m depth in one borehole and the depth persistence of the mineralised zone was observed up to 110 m in other borehole. Analytical results indicated K ₂ O values ranging from 4.71% to 5.99% in sandstone intercalated with glauconite. The glauconite intersected in different boreholes occurs mainly in two forms viz. pelletal forms (found in medium to coarse sandstone) and as layered form, found in most of the rocks having finer grain size (siltstone/ shale/ limestone).

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**Table – 4 : Mineral Production in Bihar, 2015-16 to 2017-18
(Excluding Atomic Minerals)**

(Value in `000)

Mineral	Unit	2015-16			2016-17			2017-18 (P)		
		No. of mines	Quantity	Value	No. of mines	Quantity	Value	No. of mines	Quantity	Value
All Minerals		1		42892072	1		42824426	1		42744830
Limestone	'000t	1	459	172141	1	190	104495	1	43	24899
Sulphur [#]	t	-	5561	-	-	8159	-	-	7330	-
Minor Minerals [@]		-	-	42719931	-	-	42719931	-	-	42719931

*Note : The number of mines excludes Minor Minerals**#Recovered as by-product from oil refinery**@ Figures for earlier years have been repeated as estimates, wherever necessary, because of non-receipt of data***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)
Cement	
Kalyanpur Cements Ltd, Banjari, Dist. Rohtas.	1000
Shree Cement Ltd, Aurangabad Grinding Unit, Aurangabad.	3600
Fertilizer	
Harabhara Fertilizer, Dhanukagra.	NA
Shrikrishna Fertilizers Ltd, Muzaffarpur.	30 (SSP)
Petroleum Refinery	
Indian Oil Corporation, Barauni.	6000

Note: Data, for fertilizer industries, is taken from Indian Fertilizer Scenario,/FAI Statistics