

STATE REVIEWS



Indian Minerals Yearbook 2019

(Part- I)

58th Edition

STATE REVIEWS
(West Bengal)

(ADVANCE RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

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WEST BENGAL

Mineral Resources

West Bengal is the principal holder of country's apatite resources. It is said to possess 57% apatite and 14% china clay resources of the country. Important minerals that occur in the State are: **apatite** in Purulia district; **coal** in Bardhaman, Bankura, Birbhum, Darjeeling, Jalpaiguri & Purulia districts; **china clay** in 24-Parganas, Bankura, Birbhum, Bardhaman, Hoogly, Midnapur & Purulia districts; and **fireclay** in Bankura, Birbhum, Bardhaman & Purulia districts.

Other minerals that occur in the State are **barytes, copper, gold, kyanite, pyrite &**

titanium minerals in Purulia district; **dolomite** in Jalpaiguri district; **felspar** in Bankura & Purulia districts; **granite** in Bankura, Birbhum & Purulia districts; **lead-zinc** in Darjeeling district; **limestone** in Bankura & Purulia districts; **manganese ore & sillimanite** in Midnapur district; **quartz/silica sand** in Bankura, Hoogly & Purulia districts; and **tungsten & vermiculite** in Bankura district (Table-1). Reserves/resources of coal and lignite along with details of coalfields/districts are provided in Table-2 & Table -3.

Exploration & Development

Exploration activities were reported by GSI during the year 2018-19 and are provided in Table-4.

Table – 2 : Reserves/Resources of Coal as on 1.4.2019: West Bengal

(In million tonnes)				
Coalfield	Proved	Indicated	Inferred	Total
Total	14219.25	12846.87	4624.03	31690.15
Raniganj	14018.46	7103.37	3707.69	24829.52
Barjora	200.79	–	–	200.79
Birbhum	–	5743.50	901.34	6644.84
Darjeeling	–	–	15.00	15.00

Source: Coal Directory of India, 2018-19.

Table –3 : Reserves/Resources of Lignite as on 1.4.2019: West Bengal

(In million tonnes)				
District	Proved	Indicated	Inferred	Total
Total	–	1.13	2.80	3.93
Bardhaman Rakshitpur, Gaurangapur-Bankati	–	0.29	1.82	2.11
Birbhum Mahalla, Dhobbanpur & Djara	–	0.84	0.98	1.82

Source: Coal Directory of India, 2018-19.

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

Mineral	Unit	Reserves				Remaining Resources				Total resources (A+B)			
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Indicated STD332		Inferred STD333	Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222					
Apatite	tonne	-	-	-	1385734	491818	1225345	120000	8845250	852605	666646	13587398	13587398
Barytes [#]	tonne	-	-	-	-	-	-	-	433000	-	-	433000	433000
China clay [#]	'000 tonnes	1476	727	2957	3617	248	857	38	332236	79923	5793	422712	425669
Copper													
Ore	'000 tonnes	-	-	-	-	-	-	-	113	-	-	113	113
Metal	'000 tonnes	-	-	-	-	-	-	-	2.09	-	-	2.09	2.09
Dolomite [#]	'000 tonnes	-	-	-	12528	-	48000	-	73226	104275	-	238029	238029
Feldspar [#]	tonne	70906	54375	0 125281	135639	200000	-	900000	3400000	201250	-	4836889	4962170
Fire clay [#]	'000 tonnes	981	-	377 1359	201	580	1349	-	419	11114	958	14622	15981
Gold													
Ore	tonne	-	-	-	-	-	-	-	-	-	-	12833333	12833333
(Primary)													
Metal	tonne	-	-	-	-	-	-	-	-	-	0.65	0.65	0.65
(Primary)													
Granite [#]	'000 tonnes	3658	-	3658	-	-	-	19827	1140	8802	-	29769	33427
(Dim. Stone)													
Kyanite	tonne	-	-	-	-	-	-	-	-	26520	-	26520	26520
Lead-Zinc													
Ore	'000 tonnes	-	-	-	-	-	-	-	3371	335	-	3706	3706
Lead metal	'000 tonnes	-	-	-	-	-	-	-	130.07	10	-	140.07	140.07
Zinc metal	'000 tonnes	-	-	-	-	-	-	-	130.42	13	-	143.42	143.42
Limestone	'000 tonnes	-	-	-	-	-	-	7104	15482	22120	-	44706	44706
Manganese ore	'000 tonnes	-	-	-	-	-	-	-	-	200	-	200	200
Pyrite	'000 tonnes	-	-	-	-	-	-	-	-	2500	-	2500	2500
Quartzite [#]	'000 tonnes	-	-	-	24	-	21	-	-	21	-	66	66
Quartz-													
Silica sand [#]	'000 tonnes	2853	400	939 4193	310	151	229	-	-	4896	-	5586	9779
Sillimanite	tonne	-	-	-	-	-	-	-	-	1653000	-	1653000	1653000
Tungsten													
Ore	tonne	-	-	-	-	-	173063	-	190739	400000	-	763802	763802
Contained													
WO ₃	tonne	-	-	-	-	-	450	-	80.84	1000	-	1530.84	1530.84
Vermiculite	tonne	-	-	-	-	-	-	-	490	5076	-	5566	5566

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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Production

During the year 2018-19 production of coal, natural gas (ut.) and sulphur was reported from West Bengal.

The value of minor minerals' production was estimated at ₹ 146 crore for the year 2018-19.

Mineral-based Industry

The present status of each mineral-based industry is not readily available. However, important mineral-based industries located in the State with their total installed capacities are furnished in Table - 6.

Table – 4 : Details of Exploration Activities in West Bengal, 2018-19

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Coal							
Bardhaman	Palasdihaa area Raniganj Coalfield	-	-	01	692.70	-	G4 stage reconnaissance survey for assessment of coking coal and coal-bed methane within Barakar Formation and shale gas potentiality was taken up in Barren Measures in Palasdihaa area, Raniganj Coalfield, Bardhaman district. A total of 692.70 m of drilling were completed in a borehole. The entire litho-column drilled belong to Raniganj Formation only. Rocks of Raniganj Formation that host several regional coal seams / seam zones ranging in thickness from 0.50 m to 2.95 m in the depth range of 50.20 m to 594.60 m with a cumulative thickness of 20.63 m were intersected in the drilled borehole. Several brown lamprophyre sills with thickness ranging from 0.04 m to 1.58 m have been encountered at different depths. The project will continue in field season 2019-20.
REE							
Purulia	Kalapathar- Lakshmanpur area	1:12500 1:2000	101.0 2.01	-	-	215	During reconnaissance survey, large-scale mapping of 101 sq.km on 1:12,500 scale and detailed mapping of 2.01 sq.km on 1:2,000 scale were carried out in and around Kalapathar-Lakshmanpur area, Purulia district. Besides, 105 BRS, 50 PTS, 50 and 10 PCS samples were collected from the study area for chemical analysis. In Kalapathar area, numerous pegmatite and quartz veins were seen intruded within porphyroclastic granite gneiss with length ranging from 3 cm to 20 cm and high specific gravity.

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Table -4 (Contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Purulia	Baishyakuli Sindurpur area	1:12500	100.0	-	-	-	<p>Presence of barite mineralisation has been established by field study as well as microscopic study. A few of these veins have high total REE concentration, i.e., 8.35%, 2.37% and 1.08% (La, Nd and Ce content are very high, LREE>HREE). Petrographic study of these veins showed the presence of REE-bearing mineral. Abundance of xenotime, monazite, apatite, allanite and sphene were noted. During detailed mapping, these veins were mapped in details and were found to be intrusive within PGG around Raghudih area. Presence of significantly high Ni (463 ppm) and Cr (761 ppm) content has been recorded from olivine-bearing gabbro around Kalapathar area.</p> <p>Reconnaissance survey for REE and RM in Baishyakuli Sindurpur area, Purulia district involved mapping of 100 sq.km area on scale 1:12,500 and 2 sq. km area on scale 1:2,000. So far analytical sample of amphibole-bearing Tilabani granite gneiss was found to contain 1,379.64 ppm REE including 329 ppm of La, 562.5 ppm Ce and 248.5 ppm Nd. Another sample near Bara Panjania showed 906.4 ppm REE including 190.3 ppm of La, 396.4 ppm Ce and 157 ppm Nd. Encouraging values have also been found in soil samples. A soil sample from west of Asanbani showed 2,292.7 ppm ©REE including 537.3 ppm of La, 1,079.7 ppm Ce and 384.4 ppm Nd. Another soil sample from the area was observed to contain 998.2 ppm REE including 246.6 ppm of La, 441.5 ppm Ce and 175.8 ppm Nd. Petrological study showed the main REE-bearing minerals to be allanite, apatite, monazite and zircon. Surface manifestations of sulphide mineralisation were found to be present in the form of fresh sulphide like pyrite within amphibolite, chalcopyrite within granite. Slags have also been noticed around Tilabani hill which were found to contain haematite and magnetite.</p>

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Table -4 (Concl'd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Apatite Purulia	Sonkari- Gurda- Hijla sector	1:12,500	100.0	-	-	200	G4 stage reconnaissance survey was taken up to assess the potentiality of apatite and rare-earths mineralisation along the shear zone in the gap area between Medinitanr and Dandudih-Gamardih. Large- scale mapping along with systematic collection of bedrock samples and petrochemical samples (150 BRS + 20 PCS) from the major litho-units in the area was carried out. Pitting / Trenching of 126 cu.m was carried out to delineate extension of the already identified apatite body at Dandudih/Kutni area. No new discovery of apatite body was established in the field. The extension of the apatite body at Kutni has been demarcated to be approximately 300 m west of the existing outcrop. Petrographical studies (30 nos.) have been carried out. Numerous sulphide veins have been noticed in tuffaceous rocks present in the southern part of the study area.
Tungsten Bankura	Chhedapathar area	1:12500	100.0	-	-	-	Reconnaissance survey was taken up to trace the extension of tungsten mineralisation around Chhedapathar area, Bankura district. A total of 100 sq. km were mapped on 1:12,500 scale and 100 cu.m pitting and trenching work was also carried out. Tungsten mineralisation of the area was found confined within the quartz veins that traverse the metapelitic rocks. Second generation veins were observed to be of three different varieties viz. i) vitreous, fractured and devoid of any mineralisation, (ii) grey to white massive, slightly cherty and at places containing haematite, specularite, goethite and at places wolframite and (iii) smoky grey, cherty, fractured and brecciated and containing wolframite, hematite, specularite and chalcopyrite. Tungsten mineralisation was seen mainly confined within large second generation veins of last two varieties.

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**Table – 5 : Mineral Production in West Bengal, 2016-17 to 2018-19
(Excluding Atomic Minerals)**

(Value in ₹'000)

Mineral	Unit	2016-17			2017-18			2018-19 (P)		
		No. of mines	Qty	Value ^s	No. of mines	Qty	Value ^s	No. of mines	Qty	Value ^s
All Minerals		1		1455113	1		1455113	-		1455113
Coal	'000t	-	27667	-	-	29240	-	-	33136	-
Natural Gas (ut.) +	m c m	-	555	-	-	531	-	-	310	-
Apatite	t	1	-	-	1	-	-	-	-	-
Sulphur [#]	t	-	38580	-	-	40653	-	-	43627	-
Minor Minerals [@]		-	-	1455113	-	-	1455113	-	-	1455113

*Note: The number of mines excludes fuel and minor minerals.**\$ Excluding the value of Fuel minerals. + Coal Bed Methane**# Recovered as by-product from oil refinery.**@ Figures for earlier years have been repeated as estimates because of non-receipt of data.***Table – 6 : Principal Mineral-based Industries**

Industry/plant	Capacity (^{'000} tpy)
Asbestos Products	
Everest Building Products Ltd, Kolkata	NA
Ramco Industries Ltd, Haratara, Distt Paschim Medinipur	NA
UAL Industries Ltd, Tungadhowa, Distt Paschim Medinipur	150
Abrasives	
Carborandum Universal Ltd, Gopalpur	NA
K.L.Thirani & Co. Ltd, Kolkata	NA
Satya Narayan Roller Floor Mill Pvt. Ltd, Chandur Tarkeshwar	MOG-303 0.35 MOG-302 0.40 MOG-M2 0.40 MOG-220 0.20 Fine-0.15
Cement	
ACC Ltd (Damodar Cement), Purulia (G)	750
Ambuja Cement Ltd, Sankrail, Distt Howrah (G)	2400
Ambuja Cement Ltd, Farakka, Distt Murshidabad (G)	1250
Birla Corporation Ltd (Durgapur Cement Works & Durga Hitech Cement), Durgapur (G)	2300
Burnpur Cement, Asansol, Distt Burdwan (G)	300
Century Textiles, Sonar Bangala Grinding Unit, Distt Murshidabad	1500
Emami Cement Ltd, Panagarh Burdwan	2000
Emami Cement Ltd, Kotagram, Ausgram-II	2000
JSW Cement, Salboni, P Medinipur	2400

(Contd)

Table - 6 (Contd)

Industry/plant	Capacity (^{'000} tpy)
Lafarge Cement Pvt. Ltd, Mejia (G)	1650
Maa Chandi Cement Bamunara Burdwan,	330
NUVOCO Vistas Corp. Ltd, Amdang, Bakura	1650
OCL India Ltd, , Bengal Work Mednapore	1350
Ramco Cement (formerly Madras Cement), Kolaghat, Distt Purba Medinipur (G)	950
Shristi Cement Mangalpur	360
Swasata Cement Ltd, Purulia	1500
Ultra-Tech Cement Works, Dhankuri Hoogly, West Bengal	1600
Ultra-Tech Cement Ltd, WBCW (G) Burdwan	1400
Ceramics	
WBCDC Ltd, Kolkata	0.18
Chemical	
Hindustan Heavy Chemicals Ltd, Khardah, Distt 24-Parganas	14.8 (caustic soda) 6 (Cl), 9.8 (HCl) 4.5 (ferric alum) 18.7 (H ₂ SO ₄)
Alchrome Chemical	1.2(sodium bicarbonate)
Industries Kalyani, Kalyani Industrial Estate	0.6(sodium sulphate)
Electrodes	
GEE Ltd, Kandua	18
Graphite India Ltd, Kolkata	NA
Radix Arc Pvt. Ltd, Dangadighila	4
Shield Arc Equipment Pvt. Ltd, Raspujja	2.5

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Table - 6 (Contd)

Industry/plant	Capacity ('000 tpy)
Fertilizer	
Tata Chemicals Ltd, Haldia	675 (DAP)
Tata Chemicals Ltd (Phosphatic Division), Haldia, Medinipur	160 (SSP)
Teesta Agro Industries Ltd, Rajganj, Jalpaiguri	165 (SSP)
Jay Shree Chemicals & Fertilizers, Khardah, 24 Parganas	132 (SSP) 62.70 (H ₂ SO ₄)
The Phosphate Company Ltd, Rishra, Hoogly	112.8 (SSP)
Sai Fertilizers Pvt. Ltd, Dewanmara, W. Medinipur	132 (SSP)
Flux	
Priyanka Tradelink Pvt. Ltd	0.60
Glass	
Hindustan National Glass & Industries Ltd, Rishra	680 TPD
Iron & Steel	
Durgapur Steel Plant, SAIL, Durgapur	3009 (sinter) 2400 (pig iron) 2200 (crude/liquid steel) 13.0NH ₄ So ₄
IISCO Steel Plant, SAIL, Burnpur, Distt Bardhaman	2695(pig iron) 2500 (crude/liquid steel) 3800 (sinter)
Alloy Steel Plant, SAIL, Durgapur	234 (crude/liquid steel)
Rohit Ferrotech Ltd, Bishnupur	100 (stainless steel) 71.4 (ferroalloys)
Rashmi Metaliks Ltd, Gokulpur, West Midnipore	1800 (pellets) 580 (sinter)
Pig Iron	
Electrosteel Castings Ltd, Khardah	250 365 (sinter)
Jai Balaji Industries Ltd, Banskopa Distt Bardhaman	428.7 608 (sinter)
Kajaria Iron Castings Ltd, Durgapur.	110 326 (sinter)
KIC Metallics Ltd, Raturia Angadpur, Durgapur	336 (sinter) 165(pig iron)
Orissa Metallic Pvt. Ltd, Mathurakismat, Gokulpur	1370 (pellets) 300 (pig iron)
Shyamraipur Pachmi medinipur Unit -I & Dhekia & Chaksonadhar Pachmi Medinipur Unit II	329.72 (sponge Iron)
Rashmi Metallics Ltd, Shyamraipur, Gokulpur, Medinipur	600 (sinter) 900 (pellets) 180 (pig iron)
Tata Metaliks Ltd, Kharagpur.	345 528 (sinter)

(Contd)

Table - 6 (Contd)

Industry/plant	Capacity ('000 tpy)
Tata Metaliks Ltd, Gokulpur, Maheshpur	600
Neo Metalliks Ltd, Gopalpur, Durgapur	300 (Sinter) 187.9
Sponge Iron	
Adhunik Corporation Ltd, Angadpur, Durgapur.	72
Ankit Metal & Power Limited Jorehira Chhatna	210 600 (pellet)
Aryavrata Steel Pvt. Ltd, Lohamelya Distt West Medinipur.	36
C. P. Sponge Iron Pvt. Ltd, Raturia Angadpur, Industrial Area Durgapur	60
C. P. Ispat Pvt. Ltd, G.T. Road Bhirigee	60
Divya Jyoti Sponge Pvt. Ltd, Nandanpur	60
Electrosteel Castings Limited, Haldia	60
Howrah Gasses Ltd, Raniganj, Distt Bardhaman.	60
Jai Balaji Sponge Ltd, Raniganj, Mangalpur Distt Bardhaman. I	105
Jai Balaji Sponge Ltd, Banskopa Distt Bardhaman. IV	120
Kunj Bihari Steel Pvt. Ltd, Jamuria Nandi	30
M. B. Sponge & Power Limited, Hijalgola Jamuria	60
Maithan Steel & Power Ltd, Bora, Bonra	60
Rashmi Ispat (Pvt.) Ltd, Jhargram Distt W. Medinipur	150
Rashmi Cement Ltd, Jetusole Jhargram Distt W. Medinipur	492.7 33 (Ferroalloys)
Ravindra Enterprise Pvt. Ltd, Digha, Purulia	30
Rishabh Sponge Ltd, Barjora, Bankura	90
SRS Sponge Pvt. Ltd, Dantia Balrampur	15
Satyam Iron & Steel co. Pvt. Ltd, Asansol	60
Sen Ferro-alloys Pvt. Ltd, Dejudi	15
Shyam Sel Ltd, Dewabdighi, Burdwan	100
Shyam Steel Industries Ltd, Anandpur, Durgapur	79
Sunil Sponge Iron Ltd, Kolkata	115
Ferroalloys	
Kartik Alloys Ltd, Durgapur	10.7
Bhaskar Shrachi Alloys Ltd, Durgapur	40
Corporate Ispat Alloys Ltd (Abhijit Group), Durgapur	74
Dimension Steel and Alloys Pvt. Ltd, Bakura	38
Gagan Ferro Tech. Ltd, Jamuria	138.6
Jai Balaji Industries Ltd, Durgapur (JBIL Group)	106
Jai Balaji Industries Ltd, Unit IV, Banskopa	76.5
Jai Balaji Industries Ltd, Mangalpur	30.1
Maithan Alloys Ltd, Kulti Bardhaman	94.6

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Table - 6 (Contd)

Industry/plant	Capacity ('000 tpy)
Modern India Con-Cast Ltd, Bishnupur, Distt Bankura	75
Modern India Cone-Cost Ltd, Haldia	100
Nilkanth Ferro Ltd, Radhamadhavpur	39.9 (silico - manganese)
Rohit Ferro-Tech Ltd, Haldia	100.6
Shyam Ferro Alloys Ltd, Burdwan	100 (50 MVA)
Shyam Ferro Alloys Ltd, Durgapur	100 (50 MVA)
Shri Vasavi Industries Ltd, Bishnupur, Distt Bankura	45
Srinivasa Ferro Alloys Ltd, Durgapur, Distt Bardhaman	84.2
Shri Goyatri Minerals Pvt. Ltd, Bishnupur, Distt Bankura	24
Refractory	
Alcoa-ACC Industrial Chemicals Ltd, Kalatalahat	10
Barakar Refractories (P) Ltd, Barakar, Distt Bardhaman	3.6

(Contd)

Table - 6 (Concl'd)

Industry/plant	Capacity ('000 tpy)
Kero Rajendra Monolithics Ltd, Banjora	NA
National Refractories Prop. Snowtex Udyog Ltd, Salanpur	43.2
Saswat International Ltd, Kulti, Distt Bardhaman	NA
Vesuvius India Ltd, Kolkata	96.5
Coke Oven Batteries	
IISCO Burnpur Works, Burnpur, Distt Bardhaman	1084
Petroleum Refinery	
IOCL, Haldia	7500
TiO₂ Pigment	
Kolmak Chemicals Ltd, Kalyani, Distt Nadia	4.8

(G): Grinding units.

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