Indian Minerals Yearbook 2022

(Part- I)

61st 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 2021-22 and are provided in Table-4.

Table – 2 : Reserves/Resources of Coal as on 1.4.2023: West Bengal

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	**17459**	**12699**	**3775**	**33933**
Raniganj	17041	6519	2859	26419
Barjora	201	–	–	201
Birbhum	218	6179	901	7298
Darjeeling	–	–	15	15

Source: *Coal Directory of India, 2022-23.*

Table –3 : Reserves/Resources of Lignite as on 1.4.2023: 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, 2022-23*

Table – 1 : Reserves/Resources of Minerals as on 1.4.2020: West Bengal

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						
Apatite	tonne	-	-	-	-	499149	-	-	120000	8845250	521175	666646	10652220	10652220
Copper														
Ore	'000 tonnes	-	-	-	-	-	-	-	-	113	-	-	113	113
Metal	'000 tonnes	-	-	-	-	-	-	-	-	2.09	-	-	2.09	2.09
Gold														
Ore														
(Primary)	tonne	-	-	-	-	-	-	-	-	-	-	12833333	12833333	12833333
Metal														
(Primary)	tonne	-	-	-	-	-	-	-	-	-	-	0.65	0.65	0.65
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
Sillimanite	tonne	-	-	-	-	-	-	-	-	-	1653000	-	1653000	1653000
Titanium	tonne	-	-	-	-	-	-	-	-	-	2279000	-	2279000	2279000
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.

Production

During the year 2021-22 production of Coal, Natural Gas (ut.) and Sulphur was reported from West Bengal.

The value of minor minerals' production was estimated at Rs. 5776 crore for the year 2021-22. Table -5

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.

Mineral-based Industry

Table – 4 : Details of Exploration Activities in West Bengal, 2021-22

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Gold							
Purulia	Berasi-Hurrupat--hardih area	-	-	-	-	101	The study area is occupied by different varieties of acid volcanic rocks (namely acid tuff, tuffaceous phyllite etc.) along with different other lithologies like granite gneiss, mica schist, amphibolite, ferruginous cherty quartzite, cherty quartz reef, black shale, younger sheared granitic intrusive, gabbro/ultrmafic rock, and quartz veins. The southern part of the study area is dominantly occupied by acid tuff/tuffaceous phyllite with lenses of mica schist. Topographically high ridges of the area are mainly quartzite and cherty quartzite occurring in the northern and eastern part of the area. Quartzite is highly altered and intruded by quartz veins at places. North-western part of the study area is occupied by mica schist and further to the north by granite gneiss. Granite gneiss is intruded by numerous pegmatite and quartz-tourmaline veins. Occurrence of mica schist and granite gneiss in the northern part indicates higher grade of metamorphism towards north. Different dimension of map scale quartz veins and veinlets were observed intruding into country rocks. Goethitization, limonitization along with vug fillings, dissemination and specks of sulphides in quartz vein are the typical surface evidence of mineralization in the study area.

(contd)

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		
							Based on these observations a band of intensely brecciated ferruginized banded quartzite trending WNW-ESE observed near Matkangara and cherty quartz reef with multiple phases of silicification near Suraidih are considered to be potential. In terms of Au mineralization, visible gold grains have been observed in pan concentrate of stream sediment samples near Jugilang, Muru and in the slopes of cherty quartz reef. Out of 101 BRS, six samples show positive anomalous values ranging 60 ppb to 300 ppb. Two samples show anomalous value of 180ppb and 300ppb in cherty quartz reef extending from Suraidih to Sindurpur. 03nos. of native gold grains are observed in the cherty variant in EPMA studies. Au value in the order of 250-300 ppb was also obtained in trace elementanalyses of pyrites from the cherty quartz reef.Around 230ppb gold has also been noted withingalena structure during EPMA studies inMatkangara area. Gold thus occurs in twodifferent forms, as native gold (nuggets) and asnano size refractory gold (invisible gold). Instream sediment sample, gold values upto 310ppb is noted. In ferruginized cherty quartzite nearMatkangara Cu upto 730 ppm, Pb upto 5.45%, Znupto 2552 ppm is recorded. Based on analyticalresults as well as field mineralization evidences,two potential mineralized blocks have been identified.
REE and RM							
Purulia	Chhotanagpur Gneissic Complex (CGC) and Nawadih-Uparbarga-Brajapur area	-	-	-	-	-	The study area forms the part of the Chhotanagpur Granite Gneissic Complex, exposing migmatitic gneisses, biotite granite gneiss, hornblende biotite granite gneiss, porphyry biotite granite gneiss/Augen gneiss with

(contd)

Table –4 (concld)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							undigested enclaves of metapelites such as quartz mica (muscovite) schist, garnetiferous quartz muscovite schist (graphitic) and, garnetiferous sericite quartz muscovite schist and metapsammites of quartzite and calc-silicate/crystalline limestone, dissected by later mafic-felsic intrusives such as amphibolite, pegmatite, quartzo-feldspathic veins, and gabbro. Several linear outcrops of pegmatites (a few meters to several km in length and a few cms to ~ 150 m in width) are identified. The surface manifestation of mineralization in pegmatite is indicated by different features like the presence of radioactive halos, localization of fine-grained dark minerals, presence of RM or REE mineral phases, and sometimes rare ferruginization. Although the rock is mostly constituted of muscovite, in many portions, it contains well-developed brownish-black (zinnwaldite?) and greenish-colored mica books along with prominent rounded to sub-rounded, deep red to brownish red mineral phases. Occasionally, it contains brownish-black colored, non-magnetic mineral phases which are suspected as columbite-tantalite. The XRD study of one pegmatite sample with reddish-brown mineral phases reported the occurrence of ferro-columbite in a trace amount. Hence, the presence of these mineral phases possibly points to the fertile nature of the pegmatites. Out of various pegmatite bodies demarcated, the pegmatite bodies north of Sondimra-Ulladaka-Sargadih-west of Ambadih and north of Digardih area is found to be the prominent one reaching several km (~5 km) in length and ~ 150 m in width and it very closely falls in the strike extension of pegmatites of Belamu Pahar, West Bengal.

(contd)

Table –4 (concld)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Darjeeling	Senada & Panchang area	1:12500	50	-	-	177	An area of 50 sq. km. on 1:12,500 scale has been mapped and 102 nos. BRS, 50 nos. PTS, 10 nos. PCS and 15 nos of PS samples have been collected. The study area is covered pre-dominantly by Darjeeling Gneiss which comprises of banded migmatite gneiss and garnet biotite gneiss. Regional trend observed in Darjeeling gneiss is NE-SW with two major joint sets (NE-SW and E-W). Chungthang Formation comprising of garnet mica schist (± staurolite) and muscovite biotite schist and Daling Group represented by Chl-sericite schist with quartzite bands are exposed in the eastern part. Evidences for three phases of deformation observed during the course of field work. Gneissic foliation (S1) marks D1 and tight folds of gneissic foliation and migmatite bands represents D2. While the presence of open folds and broad warping of gneissic foliation represents D3. REE bearing mineral phases like allanite, zircon, apatite, sphene, tourmaline and monazite with pleochroic halos are identified from Darjeeling gneiss and garnet mica schist during thin section studies. Sulphides i.e. pyrite and chalcopyrite observed in thin section slides of Darjeeling Gneiss. Chemical analysis results received till date show that 17 BRS samples over garnetiferous biotite gneiss of Darjeeling Gneiss have average TREE concentration with range from 329.14ppm - 827.01ppm with an average of TREE-578.39ppm; HREE-33.88ppm and LREE- 544.51ppm. Four PCS samples (received till date) show TREE concentration ranging from 473.25ppm - 652.39ppm. The samples show LREE enrichment in comparison to HREE.

Table – 5 : Mineral Production in West Bengal, 2019-20 to 2021-22 (Excluding Atomic Minerals)

(Value in ₹'000)

Mineral	Unit	2019-20			2020-21			2021-22 (p)		
		No. of mines	Qty	Value$	No. of mines	Qty	Value$	No. of mines	Qty	Value$
All Minerals		**-**		**21391866**	**-**		**18310969**	**-**		**57763181**
Coal	'000t	-	33614	-	-	34596	-	-	29069	-
Natural Gas (ut.) +	m c m	-	306	-	-	307	-	-	389	-
Sulphur #	t	-	35566	-	-	56118	-	-	66170	-
Minor Minerals		-	-	21391866	-	-	18310969	-	-	57763181

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_2SO_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, Raspunja	2.5

(contd)

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_2SO_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) 13.0NH4So4
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, Durgappur	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

(contd)

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 (concld)

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
TiO_2 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.*