Indian Minerals Yearbook 2022

(Part- I)

61st Edition

STATE REVIEWS
(Assam)

(ADVANCE RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
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ASSAM

Mineral Resources

Coal, petroleum & natural gas, limestone, fuller's earth, sillimanite and minor minerals are the chief mineral resources of the State. **Coal** occurs in Mikirs Hills, Dilli-Jeypore, Makum and Singrimari coalfields. Coal extracted from the State is friable and contains high sulphur. **Petroleum & natural gas** occurs in Digboi oilfields, Lakhimpur district and at Moran Rudrasagar oilfields in Sivasagar district located in Assam Arakan Fold Belt (AAFB), Upper Assam and Assam basins. **Limestone** occurs in Karbi Anglong, North Cachar Hills and Nowgaon districts. Besides, **china clay** occurs in Karbi Anglong and North Lakhimpur districts; **fireclay** in Dibrugarh, Karbi Anglong, North Cachar Hills & North Lakhimpur districts; **fuller's earth** in Nalbari district; **granite** in Goalpara, Kamrup & Karbi Anglong districts, **iron ore (haematite)** in Kokrajhar district; **iron ore (magnetite)** in Dhubri, Goalpara & Kokrajhar districts; **quartz/silica sand** in Nowgaon district; and **sillimanite** in Karbi Anglong & Nowgaon districts. The reserves / resources of coal and minerals are furnished in (Tables - 1 and 2).

Exploration & Development

GSI carried out exploration for REE and Molybdenum in Assam during 2021-22. Details of the activities are furnished in Table-3.

Table – 1: Reserves/Resources of Coal as on 1.4.2023 : Assam

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	**465**	**57**	**3**	**525**
Singrimari	-	14	-	14
Makum	432	21	-	453
Dilli-Jeypore	32	22	-	54
Mikir Hills	1	-	3	4

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

Table – 2 : Reserves/Resources of Minerals as on 1.4.2020 : Assam

Mineral	Unit	Reserves				Remaining resources								
		Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	Total Resources (A+B)
			STD121	STD122			STD221	STD222						
Iron Ore (Haematite)	'000 tonnes	-	-	-	-	-	-	-	-	8600	22290	-	30890	30890
Iron Ore (Magnetite)	'000 tonnes	-	-	-	-	-	-	-	-	-	15380	-	15380	15380
Limestone	'000 tonnes	23442	-	164687	188130	170039	27593	100319	67000	39859	1278730	-	1683540	1871670
Sillimanite	tonne	-	-	-	-	-	-	-	-	850000	6700	3748000	4604700	4604700

Figures rounded off

Table – 3 : Details of Exploration Activities in Assam, 2021-22

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq. km)	No. of boreholes	Meterage		
GSI							
REE Mineralisation							
Karbi Anglong	In and around Lakhojan area	1:12,500	75	52	302.25	150	A G-4 stage investigation involving large-scale mapping of 75sq. km on 1:12,500 scale was carried out along with auger drilling (300 m), pitting and trenching in the regolith, and collection of PTS, PCS, EPMA, and XRD samples. Geologically, the area is occupied by the migmatite gneisses of AMGC, Shillong group phyllites, quartzites, schists, and late Proterozoic granitoids. A total of 302.25 m auger drilling (52 nos.) were carried out at 800m spacing in a gridded pattern over soil developed over granitoids and migmatite gneisses. From auger drilling, it has been established that the thickness of the soil profile ranged from 1 to 10 meters and often large granite boulders were encountered. Within the soil profile, A-horizon with thickness varying from 0.50 to 1.0 meter, B-horizon ranging from 1 to 4 meters and the mixed B+C-horizon constituting significant portion of regolith having thickness of 2 to 9 meters were encountered. The chemical analysis of the 150 auger samples from B horizon whose thickness ranged up to 2.0 m showed SREE values ranging from 156.68–2,067.53 ppm (average 577.71 ppm). The thickness of B+C horizon is often thick up to 9.0 meters and show SREE varing from 154.67–1467.39 ppm (average 481.60 ppm) and the C horizon with thickness ranging from 1 to 6.0 m showed SREE ranging from 180.29–1294.83ppm (average 523.92 ppm). Resources of each mineralised zones in the boreholes were calculated by considering bulk density as 1.21 g/ cm^3. The total REE resource in the block was estimated at 45.18 million tonnes with an average grade of 727 ppm. As per the UNFC classification, the present investigation of the mineral resources was codified as 334 and the average grade of 727 ppm for SREE is not encouraging enough for further exploration.
Molybdenum and associated mineralisation							
Kamrup Metropolitan	Helagog-Khaloibari area	-	-	-	-	-	A G3 stage investigation for molybdenum and associated mineralisation was carried out in Helagog-Khaloibari, area. The study area lies at the NNE corner of the Shillong Plateau. The area exposes sillimanite, garnet, quartz, mica schist of older metamorphic, migmatite of Assam Meghalaya Gneissic Complex,

(contd)

(concld)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq. km)	No. of boreholes	Meterage		
							meta gabbro of Khasi metamafics and pegmatites. Migmatite was characterised by migmatitic textures like stromatic, dictyonitic, schollen/raft, ptygmatic, dilation and schlieren structures. At least five varieties of pegmatites were observed which included pyrite chalcopyrite-bearing pegmatite veins, molybdenite-bearing pegmatite veins, magnetite-bearing pegmatite veins, miarolitic pegmatites veins and beryl-bearing pegmatite veins. In Helagog quarry, at least four molybdenite bearing pegmatite veins were noticed which occurred either as dikes (veins) or as segregations or as pods. The length of the veins ranged from 3m to 21 m with ranging width from 0.15 m to 12m in anastomosing pattern with varied trend from N-S to E-W with sub-horizontal to vertical dip in southerly direction. In Khaloibari quarry, the length of the pegmatite veins ranged from 5m to 15m with thickness ranging from 0.2m to 0.7m and a few veins occurred as segregations with random orientations. Molybdenite flakes were present at the interstices between the cleavage planes of biotite and cleavage planes of orthoclase and at places as disseminations in smoky quartz. Dominantly molybdenite showed close association with either book of biotite or with layers/patches of biotite segregations within the pegmatite veins. Analytical results of bedrock samples showed that the molybdenum values ranged from 0.25 to 276.75 ppm. The higher values of Mo i.e., 276.76 and 178.02 ppm were reported from the molybdenite-bearing pegmatite vein in Helagog quarry where the population density of the molybdenite flakes was high. In Khaloibari quarry although molybdenite flakes were visible in naked eye only a few grab samples from the molybdenite-bearing pegmatite veins showed elevated values i.e., 56.21 and 30.85 ppm. The remaining samples did not show significant value of Mo which maybe due to occurrences of molybdenite flake which were highly disseminated in nature. Both grab and channel samples showed TREE value ranging from17.85 to 1,348.93 ppm. Most of the anomalousTREE value i.e. 503.78 to 1,348.93 ppm were confined to the molybdenite-bearing pegmatite veins from both Helagog and Khaloibari quarries.Tungsten value in the study area ranged from 0.43 to 185.36 ppm. Most of the elevated values of tungsten i.e., 100.73 to 185.36 ppm were confined to the pyrite-chalcopyrite-bearing pegmatite veins.

Production

Petroleum (crude), Natural gas (ut.), Coal and Limestone were the principal minerals produced in Assam State in 2021-22. The value of minor minerals' production was estimated at ₹ 31 crore for the year 2021-22. There were 2 reporting mines in 2021-22 in Assam in case of MCDR minerals (Table - 4).

Table – 4: Mineral Production in Assam, 2019-20 to 2021-22 (Excluding Atomic Minerals)

(Value in ₹ '000)

Mineral	Unit	2019-20			2020-21			2021-22 (P)		
		No. of mines	Quantity	Value$	No. of mines	Quantity	Value$	No. of mines	Quantity	Value$$
All Minerals		**3**		**814755**	**2**		**783615**	**2**		**851501**
Coal	'000 t	-	517	-	-	36	-	-	28	-
Natural Gas (ut.)	m cu m	-	3141	-	-	2995	-	-	3371	-
Petroleum(crude)	'000 t	-	4093	-	-	3902	-	-	3988	-
Limestone	'000 t	3	1552	500950	2	1552	469810	2	1681	537696
Sulphur #	t	-	5955	-	-	6447	-	-	6545	-
Minor Minerals @		-	-	313805	-	-	313805	-	-	313805

Note : *The number of mines excludes Fuel and Minor minerals.*
$ Excludes the value of Fuel minerals.
 # Recovered as by-product from oil refinery.
@ Figures for earlier years have been repeated as estimates because of non-receipt of data.

Mineral-based Industry

The present status of each mineral-based industry is not readily available. However, as per the available information, the principal mineral-based industries in the Organised Sector in the State are furnished in Table - 5.

Table – 5 : Principal Mineral-based Industries

Industry/plant	Capacity ('000 tpy)
Asbestos Products	
Assam Roofing Ltd, Bonda, Distt. Kamrup.	58
Cement	
Barak Valley Cements Ltd, Jhoom Basti, Badarpurghat, Distt. Karimganj.	330
Calcom Cement (Dalmia Subsidiary), Distt. Nagaon.	1720
CCI Ltd, Bokajan, Distt. Karbi Anglong.	200
Cement Manufacturing Co. Ltd, Chamata Pathar, P. O. Sonapur, Distt. Kamrup (G).	2000
Purbanchal Cement, Vill. Sarutari, Distt. Kamrup	360
Topcem Cement Gauripur Kamrup	660
Fertilizer	
Assam State Fertilizer & Chemicals Ltd,	33 (SSP)
Chandrapur, Distt. Kamrup (H_2SO_4)	16.5
Brahmaputra Valley Fertilizers Corpn. Ltd, (Urea)	510
Namrup (Namrup II & III), Distt. Dibrugarh. Progressive Fertichem Pvt. Ltd, Topatoli, Kamrup.	45 (SSP)
Iron & Steel	
Shri Ganapati Ispat Pvt Ltd, Tinsukia.	NA
Petroleum Refinery	
Indian Oil Corporation, Bongaigaon.	2350
Indian Oil Corporation, Moonmati, Guwahati.	1000
Indian Oil Corporation, Digboi.	650
NRL, Numaligarh, Golaghat.	3000

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