

STATE REVIEWS



Indian Minerals Yearbook 2021

(Part- I)

60th Edition

**STATE REVIEWS
(Uttar Pradesh)**

(ADVANCE RELEASE)

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

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UTTAR PRADESH

Mineral Resources

The State is the principal holder of country's andalusite & diaspore resources and possesses 78% andalusite, 37% diaspore, 17% sillimanite and 10% pyrophyllite. Important minerals occurring in the State are: **coal** in Singrauli coalfields, Sonbhadra district; and **diaspore & pyrophyllite** in Hamirpur, Jhansi, Lalitpur and Mahoba districts. Naini area of Allahabad district has good resources of high quality **silica sand**, an important source of glass sand, that contains 98% SiO₂ and a very low Fe₂O₃. It is found at Shankargarh and Lohargarh in Allahabad district and also Bargarh in Banda district. Silica sand is also found in Aligarh and Chitrakoot districts.

Other minerals that occur in the State are **andalusite & calcite** in Mirzapur district; **bauxite** in Banda, Varanasi & Lalitpur districts; **china clay & dolomite** in Banda and Sonbhadra districts; **felspar** in Jhansi district; **fireclay, limestone, potash & sillimanite** in Sonbhadra district; **ochre** in Banda district; **granite** in Banda, Hamirpur, Lalitpur & Mahoba districts; **iron ore (haematite)** and **rock**

phosphate in Lalitpur district (Table -1). The reserves/resources of coal along with details of coalfield are provided in Table-2.

Exploration & Development

During 2020-21, GSI carried out exploration for bauxite, base metal, gold and gluconite in Chadauli, Sonbhadra, Lalitpur and Chitrakoot districts. The details of exploration carried out by GSI in the State are furnished in Table-3.

Production

Coal, Limestone and Sulphur were the mineral items produced in Uttar Pradesh during 2020-21.

The value of minor minerals' production was estimated at ₹5,614 crore for the year 2020-21.

The number of reporting mines in Uttar Pradesh was 2 in 2020-21 in case of MCDR minerals (Table-4).

Mineral-based Industry

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

Table -2 : Reserves/Resources of Coal as on 1.4.2021 : Uttar Pradesh

(In million tonnes)				
Coalfield	Proved	Indicated	Inferred	Total
Total/Singrauli	884	178	-	1062

Source: Coal Directory of India, 2020-21.

Table – 1 : Reserves/Resources of Minerals as on 1.4.2020: Uttar Pradesh

Mineral	Unit	Reserves			Remaining Resources					Total resources (A+B)	
		Proved STD 111	Probable STD121 STD122	Total (A)	Feasibility STD211	Pre-feasibility STD221 STD222	Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334
Andalusite	'000 tonnes	-	-	-	-	-	58040	56210	-	114250	114250
Bauxite	'000 tonnes	-	-	-	-	-	10390	8018	-	18908	18908
Gold											
Ore											
(Primary)	Tonne	-	-	-	-	-	-	-13000000	13000000	13000000	13000000
Metal											
(Primary)	'000 cu. m	-	-	-	-	-	-	-	2.08	2.08	2.08
Iron ore											
(Haematite)	'000 tonnes	-	-	-	-	20000	-	66330	-	86330	86330
Limestone	'000 tonnes	3720	-	3720	-	111910	142763	43540	-	439723	443443
Potash	million tonnes	-	-	-	-	-	-	198	685	893	893
Platinum Group											
of metals	tonne	-	-	-	-	-	3.35	-	-	3.35	3.35
Rare Earth-											
Elements ^{6/}	'000 tonnes	-	-	-	-	-	-	-	2948	2948	2948
Rock											
Phosphate	tonne	-	-	-	-	432898	-	740000	21481960	-	25773444
Sillimanite	tonne	-	-	-	-	-	2100000	9350000	-	11450000	11450000

Figures rounded off.

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Table –3 : Details of Exploration Activities in Uttar Pradesh, 2020-21

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Bauxite							
Chandauli	Naugarh- Pandri areas	1:12500	100	2	-	4	Reconnaissance survey (G4) for bauxite and associated mineralisation in Naugarh - Pandri areas of Chandauli District. An area of 100 sq. km was mapped on 1:12500 scale. The analytical results of the geochemical samples, suggests that the Al ₂ O ₃ ranges between 16.62%-52.01% with an average of 40% and having silica ranging between 2.13%-10.93%. The analytical results of core samples received for borehole no. UPCNB-1 & UPCNB-2 range from 18.20% to 44.36% Al ₂ O ₃ and 24.84% to 38.85% Al ₂ O ₃ respectively in laterite profile, but silica is dominant, especially in lithomarge. Values of vanadium in trench samples (3 trenches) ranges between 943 ppm – 4551 ppm and Ga values between 23 ppm – 77 ppm. In core samples of UPCNB-1, V and Ga maximum values are 3553 ppm and 190 ppm respectively. TiO ₂ in core samples have a wide range between 2% – 13.61% with an average of 7.4%. ÓREE values in boreholes UPCNB-2, UPCNB-3 (part), trench TRB-5 and Pit-2 ranging between 57.93 ppm – 1018.87 ppm with the average of 464.02 ppm. Highest ÓREE value of 1018.87 ppm is noted in massive pisolitic bauxite of UPCNB-2. In lithomarge part maximum ÓREE value is 898.74ppm. The ÓREE values in BRS samples are ranging between 40.61 ppm – 893.21 ppm. Lithium content in the samples is insignificant.
Basemetal							
Lalitpur	Neemkhera & Dhaurisagar area	1:12500	100	-	-	22	Reconnaissance survey (G4) for basemetal and associated mineralisation in Neemkhera and Dhaurisagar area, Lalitpur district. An area of 100 sq. km on 1:12,500 scale was mapped in and around Neemkhera and Dhaurisagar area of Lalitpur District, Uttar Pradesh. The study area represents rocks of the Bundelkhand Gneissic Complex, Bijawar Group and Vindhyan Supergroup. The Cu, Pb & Zn values

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Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Gold Sonbhadra	Garda-Bhitri area	1:1000	1.5	3	612.7	-	<p>range from <5 ppm to 279 ppm. The Mn values are analysed up to 2384 ppm. Gold values of selected BRS and channel samples shows <0.05 ppm concentration. The REE & traces of 09 BRS, 11 trench and 02 channel samples also reflects no significant concentration of metals.</p> <p>Preliminary exploration (G3) for gold around Garda-Bhitri area, Sonbhadra District. Detailed Mapping was carried on 1:1000 scale in two blocks covered 1.5 sq. km area around Jharkharwa and Harsadand near Jogail, from where gold values ranging from 300 ppb to 400 ppb were recorded. Three scout boreholes, two in Jharkharwa block and one in Harsadand block were done, with a cumulative drilling of 612.70m. Geophysical survey (IP, SP and Magnetic) for 20.25 lkm was done in the Detailed Mapped area, to decipher the sub-surface geology and sulphide mineralisation. The area exposes rocks of Agori Formation of Mahakoshal Group, Jungel Group and post - Mahakoshal intrusives. In borehole no. UPSGB-01 (Jharkharwa), drilling was done up to 321.20 m and the major lithologies intersected are serpentinite, chloritized serpentinite and carbonated olivine basalt. Sulphide disseminations in the form of pyrite (>90%), chalcopyrite, pyrrhotite and arsenian pyrite (~10%) were observed in 07 discrete zones through the length of the borehole. The olivine rich basalt in Harsadand, which yielded 400ppb Au value, was targeted by borehole UPSGB-02. Drilling was done up to depth of 194.70 m and predominantly olivine rich basalt and carbonated basalt with varying degrees of brecciation, possibly magmatic breccia was intersected and 04 discrete sulphide rich zones were demarcated through the length of the borehole. Sulphide dissemination was primarily pyrite (>90%) and chalcopyrite + pyrrhotite (10%). Based on</p>

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Table – 3 (contd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							geophysical anomaly (chargeability high) 200m east and 20 m north of UPSGB- 01, recorded from 66m to 99m depth, a third vertical borehole UPSGB-03 was drilled to directly intersect the anticipated anomalous zone. The borehole was drilled up to 96.80m depth and 4 sulphide mineralised zones were demarcated. The sulphide mineralisation recorded in this borehole was more in comparison to the earlier two boreholes at an average of ~1 to 2.5% by visual estimation. Disseminations of sulphides, dominantly pyrite, chalcopyrite and pyrrhotite were observed at various depths in carbonated olivine basalt, in the drill cores of boreholes. The analytical values indicate presence of <50 ppb Au.
Glauconite							
Chitrakoot	Itwa Dudan- Doda Mafi blocks	1:4000	1.10	-	-	-	Reconnaissance survey (G4) for glauconite in the Chitrakoot District of Uttar Pradesh. An area 1.10 sq. km was mapped by detailed mapping in 1:4000 scale in the Itwa Dudan -Doda Mafi blocks of the Chitrakoot District, Uttar Pradesh. The rock sequence indicates ENE-WSW strike and an average southerly dip of 7°. The glauconitic sandstone consists of quartz, glauconite, muscovite with minor presence of microcline, plagioclase and opaques. The subangular to subrounded quartz is a major mineral in sandstone generally enclosed in a matrix of iron-rich glauconite. The glauconite occurs as pellets as well as matrix. The majority of glauconite grains are under the process of formation of pellets i.e., not fully matured. K ₂ O values in ten bedrock samples of glauconitic sandstone varies from 4.19% to 5.75%. K ₂ O in thirteen bulk channel samples from glauconitic sandstone varies from 4.95% to 6.26%. One pit sample from an iron-rich glauconitic sandstone layer yielded 3.8% K ₂ O. The weighted average K ₂ O of five trenches varies from 2.31% to 5.64%.

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**Table – 4: Mineral Production in Uttar Pradesh, 2018-19 to 2020-21
(Excluding Atomic Minerals)**

(Value in '000)										
Mineral	Unit	2018-19			2019-20			2020-21 (P)		
		No. of mines	Qty	Value ^{\$}	No. of mines	Qty	Value	No. of mines	Qty	Value ^{\$}
All Minerals		2		56988986	2		57073325	2		5686587
Coal	'000t	-	20275	-	-	18030	-	-	17016	-
Limestone	'000t	2	2622	848425	2	2804	932764	2	2574	725226
Sulphur [#]	t	-	51738	-	-	47955	-	-	54234	-
Minor Minerals [@]		-	-	56140561	-	-	56140561	-	-	56140561

Note: The number of mines excludes Fuel and Minor minerals.

\$ Excluding 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.

Table-5 : Principal Mineral-based Industries

Industry/plant	Capacity ('000 tpy)
Abrasives	
John Oakey and Mohan Ltd, Ghaziabad	NA
Micro Lapping Abrasive, Near Munni Devi Temple, Seohra, Dhampur	0.08 (Abrasive powder)
Aluminium	
Hindalco Industries Ltd, Renukoot	700 (alumina) 345 (aluminium)
Asbestos Product	
Asbestos Cement Ltd, Raibareli	NA
Uttar Pradesh Asbestos Product Ltd, Mohanlalganj, Lucknow	NA
Cement	
ACC Ltd, Tikaria, Distt Sultanpur (G)	3000
Ambuja Cement, Dadri, Gautam Budh Nagar (G)	1800
Raebareli Cement Works, Birla Corporation (G)	1300
Heidelberg Cement (Diamond Cement), Madora Jhansi (G)	2700
Jaypee Cement, Sadvakhurd (Blending Unit)	600
Kanodia Cement, Bulandsahar	330
Shree Cement, Sikandarabad (G), Bulandsahar	2000
The KCP Ltd., Dalla Cement Factory, Dalla Distt Sonebhadra	500
Jaypee Cement, Chunar Cement Factory, Chunar, Distt Mirzapur (G)	2500

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Jaypee Cement, Tanda, Ayodhya, Distt Faizabad (G)	1000
Jaypee Cement, Churk Mirzapur (G)	1500
Birla Corp. Ltd.(Erstwhile Reliance Cement), Kundanganj, Distt Raebareli	2000
UltraTech Cement, Dadri (G)	1300
UltraTech Cement, Aligarh (G)	1300
UltraTech Cement Ltd. Ayodhya, Ambekar Nagar	1000
UltraTech Cement Ltd. Bara , Allahabad	4000
UltraTech Cement Ltd. Dallakolta, Robertsonganj	500
Mangalam Cement, Aligarh (G)	750
Electrode	
Ankit Sangal, Sujroo, Muzaffernagar	0.85(electrode no 10) 0.15(electrode no 8)
Fertilizer	
Asian Fertilizers Ltd, Deokahia, Gorakhpur	66 (SSP)
Coromandel International Ltd (Formerly Liberty Phosphate Ltd), Raebareli	132 (SSP)
Jubilant Agri and Consumer Products Ltd (Formerly Vam Organic Chemicsls Ltd), Bhartiagram, Gajraula	165 (SSP)
IFFCO, Phulpur (Unit I & II), Distt Allahabad	1697.8 (Urea)
IFFCO, Aonla (Unit I & II)	1999.8 (Urea)
Indo Gulf Fertilizer Ltd (a unit of Aditya Birla Nuva Ltd), Jagdishpur	1105.5 (Urea)
Kanpur Fertilizer & Cement, (formerly Duncan India Ltd), Kanpur	722 (Urea)

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Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Khaitan Chemicals & Fertilizers Ltd, Goramachhia, Jhansi.	132 (SSP) 52.8 (H ₂ SO ₄)
Khaitan Chemicals & Fertilizers Ltd, Malwan, Fatehpur.	115 (SSP) 52.8 (H ₂ SO ₄)
KRIBHCO Shyam Fertilizer, Piprola Shahajahanpur.	864.6 (Urea)
Madan Madhav Fertilizers & Chems Pvt. Ltd, Fetehtarh.	24 (SSP)
Natraj Organics Ltd, Muzaffarnagar.	60 (SSP)
Tata Chemicals Ltd, Babrala, Distt Badaun.	1155 (Urea)
V. K. Phosphates Ltd, Bartara , Shahjahanpur	33 (SSP)
Natraj Organics Ltd, Muzaffarnagar.	60 (SSP)
Tata Chemicals Ltd, Babrala, Distt Badaun.	1155 (Urea)
V. K. Phosphates Ltd, Bartara , Shahjahanpur	33 (SSP)

(Contd)

Table - 5 (concl'd)

Industry/plant	Capacity ('000 tpy)
Ferroalloys	
Hindustan Ferro Alloys, Hamirpur.	3.2
The India Thermit Corpn. Ltd, Kanpur.	0.3
Iron & Steel	
Malvika Steel Ltd, Jagdishpur.	511 (pig iron) 600 (saleable steel)
Sponge Iron	
RLJ Concast Pvt.Ltd, Baragaon Chunar	60
S. A.Iron & Alloy Pvt.Ltd.Jeewanthpur, Mughalsarai	90
Petroleum Refinery	
IOCL, Mathura.	8000

(G); Grinding Unit

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, respectively.