Indian Minerals Yearbook 2019

(Part-I)

58th Edition

STATE REVIEWS (Jammu & Kashmir)

(ADVANCE RELEASE)

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JAMMU & KASHMIR

Mineral Resources

Jammu & Kashmir is the sole holder of country's borax, sapphire, and sulphur (native) resources and possesses 33% graphite, 23% marble and 14% of gypsum. Coal, gypsum and limestone are the important minerals produced in the State. **Coal** occurs in Kupwara district; **gypsum** in Baramulla & Doda districts; **limestone** in Anantnag, Baramulla, Kathua, Leh, Poonch, Pulwama, Rajauri, Srinagar & Udhampur districts; and **magnesite** in Leh & Udhampur districts.

Other minerals that occur in the State are **bauxite** & **china clay** in Udhampur district; **bentonite** in Jammu district; **borax** & **sulphur** in Leh district; **diaspore** in Rajouri & Udhampur districts; **graphite** in Baramulla district; **lignite** & **marble** in Kupwara district; **quartz** & **silica sand** in Anantnag, Doda & Udhampur districts; **quartzite** in Anantnag district; and **sapphire** in Doda district (Tables - 1 and 2).

Exploration & Development

The details of exploration carried out by GSI in the State during 2018-19 are furnished in Table - 3.

Production

Coal and limestone were the principle mineral items reporting production in the state. The value of minor mineral's production is estimated as ₹ 174 crore for the year 2018-19. There were 22 reporting mines in 2018-19 in case of MCDR of minerals (Table-4).

Mineral-based Industry

Jammu & Kashmir Cements Ltd, a State Government Undertaking, operates a cement plant of 4.00 lakh tpy capacity at Khrew in Pulwama district and 1.00 lakh tpy capacity at Samba Jammu. The Company also owns a small cement plant of 20,000 tpy capacity located at Wuyan in Srinagar district, besides two other tiny cement plants that have a total capacity of 5,20,000 tpy. Khyber Indus. (P) Ltd operates a cement plant of 3,30,000 tpy in the State. The State also has a 1,800 tpy capacity Unit that manufactures ceramic and refractory products in District Kathua. A 3,000 tpy capacity calcium carbide plant is situated at District Pulwama. J. K. Minerals Ltd has a plant of 30,000 tpy of DBM and 75,000 tpy of sized magnesite at Chipprian deposit near village Panthal in Udhampur district in the state. (Table-5)

Table – 2 : Reserve/Resource of Lignite as on 1.4.2019: Jammu & Kashmir

(In million tonnes)

District	Proved	Indicated	Inferred	Total
Total/Kupwara	**–**	**20.25**	**7.30**	**27.55**

Source: *Coal Directory of India, 2018-19.*

Table – 1 : Reserves/Resources of Minerals as on 1.4.2015 : Jammu & Kashmir

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						
Bauxite	'000 tonnes	-	-	-	-	-	-	-	1323	182	1220	-	2725	2725
Bentonite##	tonne	-	-	-	-	-	-	-	-	-	147400	-	147400	147400
Borax	tonne	-	-	-	-	-	-	-	-	-	-	74204	74204	74204
China clay#	'000 tonnes	-	-	-	-	-	-	-	-	2	28122	-	28124	28124
Diaspore#	tonne	-	-	-	-	-	-	-	-	566	711	-	1277	1277
Fire clay#	'000 tonnes	-	-	-	-	-	-	-	-	-	-	4914	4914	4914
Granite (Dimension Stone)##	'000 cu. m	-	-	-	-	-	-	-	-	-	44570	40000	84570	84570
Graphite	tonne	-	-	-	-	-	-	-	-	-	1059520	61681035	62740555	62740555
Gypsum#	'000 tonnes	11383	153	442	11977	4602	9844	6570	7680	2673	146914	2328	180610	192588
Limestone	'000 tonnes	443339	31917	79147	554404	54863	9008	20510	43611	370	1752569	207283	2088214	2642618
Magnesite	'000 tonnes	-	-	-	-	3210	740	-	-	-	150	45	4145	4145
Marble##	'000 tonnes	-	-	-	-	-	-	-	-	-	412381	2200	414581	414581
Quartzite#	'000 tonnes	1500	58	-	1558	-	-	-	-	120	9100	7380	16600	18158
Quartz-Silica sand#	'000 tonnes	-	-	-	-	-	-	-	-	-	3110	-	3110	3110
Sapphire	kg	-	-	-	-	-	-	-	-	-	450	-	450	450
Sulphur (Native)	'000 tonnes	-	-	-	-	-	-	-	-	-	210	-	210	210

Figures rounded off

 # Declared as Minor Mineral vide Gazette notification dated 10.02.2015

Minor minerals before Gazette Notification dated 10.02.2015

Table –3 : Details of Exploration Activities in Jammu & Kashmir, 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							
Base Metals							
Ganderbal	Sumbal-Kulan - Mamer areas	1:12500	58	-	-	172	Reconnaissance survey (G4) for copper and associated was carried out which included mapping of 58 sq. km area on 1:12,500 scale. Five important zones have been identified with abundance of sulphides. These included surface mineralisation zones near Bazan Nar & Purnibal and three new zones at Saedbasti, Gund and Sur Phraonala. The pyrite is the most abundant sulphide mineral in the area followed by chalcopyrite, pyrrhotite, bornite and covelite. A total of 172 samples were collected for base metal, Au & for associated elemental analysis for 86 samples have been received. A few BRS and PTS showed higher values for Cu (> 1900-4095 ppm, n=4), Co (543 ppm, n=1) and Pb (1,918 ppm, n=1 from trench sample).
Baramulla	Darakanjan & Bela Salamabad Uri area	-	-	-	-	-	Reconnaissance survey (G4) was carried out in the area with an objective to delineate mineral prospective zones for base metal. The mineralisation in the area is mainly confined along the eastern slopes of Hapathkhai Valley spread over a stretch of about 6 km from Batangi-Barnet to Darakunjan. The mineralisation comprised galena, sphalerite, chalcopyrite and pyrite. The occurrence of galena mineralisation was observed as specks, stringers and veins. Limonitised/ ferrugenised zone containing sulphide mineralisation have also been observed. Two sets of quartz veins were found to carry sulphide mineralisation in the form of detached and discontinuous veins; The length of individual quartz veins showed variations from 0.2 cm to 15 cm. Besides, old workings have also been observed at Banali, Darakujan, Narkasi and Dudhran.

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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		
Chromite							
	Indus ophiolite belt in Hanle Rhonro area (Mankhang plain)	1:12500	100	-	-	25	Reconnaissance survey (G4) was carried out with the objective to assess chromium, nickel, cobalt, copper and vanadium in ultramafic rock of Indus ophiolite belt. An area of 100 sq. km was mapped by Large Scale Mapping on 1:12,500 scale. Twenty Five samples from ultramafic contacts have been submitted for PGE and gold analysis. A major part of the area was inaccessible on account of elevation ranging from 4,200 m to 5,465 m. Small discontinuous chromite bodies were observed in an area of about 1 sq. km; as such 11 chromite bodies have been observed at the north of Mankhang plain in peridotite. The dimension of the largest chromite body was observed as 11 m x 9 m and smallest chromite body as 1 m x 1 m. Only surface extension of chromite bodies was noticed. The chemical analysis results of vanadium showed promising values in 5 samples collected from north of Mankhang plain area. The maximum value of vanadium reported was 1,112 mg/kg.
Leh and Kargil	Photaksar, Machu, Shilshi La area	1:12500	55	-	-	20	Reconnaissance survey for nickel, chromium, gold and PGE mineralisation in Shilakong ophiolite/ Spongtang ophiolite in Photaksar, Machu, Shilshi La area of Leh and Kargil districts was taken up in parts with an objective to delineate the potential zone of chromium, nickel, Au, PGE mineralisation. An area of 55 sq. km was mapped on 1:12,500 scale. The Stream Sediment Samples were collected from the 1st /2nd order tributary stream of Photang and Spang Nadi. The PCS samples were collected from the different rock units exposed in the study area. The analysis of 20 samples showed the MgO values ranging from 34.25 % to 40.18 The analysis of 20 BRS samples showed nickel value ranging from 900 to 2,000 ppm.

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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		
REE							
Doda	In and around Paddar area	1:12500	54	-	-	-	During reconnaissance survey for strategic and precious minerals, an area of 54 sq. km was mapped on 1:12,500 scale and colluvial samples were collected to evaluate the Rare earth and Rare Metal potential in and around Paddar area, Doda district. EPMA study of 10 sections was also carried out. Sapphire- bearing pegmatite veins within actinolite-tremolite schist were found confined in and around Neelam Khan area which is located at an altitude of 4,700 m (approx.). The rock exposed at Neelam khan ranges from low to high-grade metamorphic rocks. The pegmatite veins in the rocks were concordant and impersistent as well as discordant. The width of pegmatite vein was found varying from 10 cm to 1 ft and the length was about 1 km. The corundum/ sapphire shreds (06 nos.) of dimension few mm to 1 cm in size, light blue to dark blue in colour were recovered from the Kudi valley during investigation. The maximum value of tREE is 1,086 ppm. The analysis of data showed the concentration of total LREE is more than HREE.
Gold							
Leh	Nornis, Kesar and Kidmong areas	1:12500	50	-	-	78	Reconnaissance survey in the area was carried out with primary objective to assess the potentiality of gold and PGE elements within the Kyun Tso mafic-ultramafic body and its surrounding rocks. An area of 50 sq.km was mapped on 1:12,500 scale. Sampling for PGE was done in dunite, peridotite, pyroxinite, gabbro and basalt. Seventy eight samples were sent for chemical analysis of Ni-Cr-Cu and SiO_2, LOI and Cr_2O_3.
Phosphorite							
Doda & Kathua	South of Benhencha	-	-	-	-	88	A G4 stage reconnaissance survey for phosphorite was taken up with the main objective to evaluate the potentiality of phosphorite in the

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Table –3 (Concld)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq. km)	No. of boreholes	Meterage		
							rocks of Gamgul Formation (Salooni Formation). The Gamgul Formation comprised carbonaceous shales, silty shale and calcareous sandstone. The phosphorite nodules have been observed in carbonaceous shale/ shaly slate of the Gamgul Formation. The nodules were found to range in size from 4 cm x 4 cm to 21 cm x 12 cm. On an average 5 to 10 nodules in 2 m x 2 m were observed at Biddi, Bhal Padri areas and 2 to 3 in Chimlo Di Gali and Gamgul area. Besides, phosphatic nodules have also been observed and sampled are Biddi, Chimlo Di Gali, Golu Di Mandi, Thoran, Gamgul and BhalPadri. Out of the 88 samples, chemical results of, 8 samples yielded P_2O_5 values ranging from 1.34% to 6.56 %. These samples were also observed to contain substantial amount of barium and vanadium. The project will continue in field season 2019-20.
Limestone							
Rajouri	Darhal-Lah area	1:12500 1:4000	50.0 1.2	-	-	-	A G4 stage reconnaissance survey for limestone was taken up in Darhal–Lah area with an objective to delineate the occurrence and establish the disposition of limestone bands and to assess the potentiality of limestone for industrial use. The Baila limestone of Parautochthonous zone is targeted for limestone. The average width of limestone band is about 40 m. The Baila limestone is found to extend for a strike length of about 9 km in the study area and in basal part, the limestone comprises less shale parting as compared to the top part.

Table – 4 : Mineral Production in Jammu & Kashmir, 2016-17 to 2018-19 (Excluding Atomic Minerals)

(Value in ₹'000)

Mineral	Unit	2016-17			2017-18			2018-19 (P)		
		No. of mines	Quantity	Value$	No. of mines	Quantity	Value$	No. of mines	Quantity	Value$
All Minerals		**10**		**1707806**	**13**		**1791480**	**22**		**2040213**
Coal	'000t	-	10	-	-	14	-	-	13	-
Limestone	'000t	10	1032	200602	13	1225	282232	22	1228	297231
Minor Minerals		-	-	1507204	-	-	1509248	-	-	1742982

Note : *The number of mines excludes fuels and minor minerals.*
$ Excludes the value of Fuel minerals.

Table – 5: Principal Mineral-based Industries

Industry/plant	Capacity ('000 tpy)
Jammu & Kashmir Cement ltd., Khrew, Pulwama	400
Jammu & Kashmir Cement ltd., Samba Jammu.	100
Jammu & Kashmir Cement ltd., Wuyan Srinagar.	200
Khyber Indus (P) Ltd	330

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Table-5 (concld)

Industry/plant	Capacity ('000 tpy)
Ceramic & Refractory Product, Kathua.	1.8
Calcium Carbide Plant, Pulwama	3
J. K. Mineral Ltd, Chipprian, Panthal, Udhampur	30 (DBM) 75 (Magnesite)
Nayyar Electrode Pvt. Ltd, Barri Brahmana	4.45