

STATE REVIEWS



# Indian Minerals Yearbook 2021

(Part- I)

60<sup>th</sup> Edition

STATE REVIEWS  
(Rajasthan)

(ADVANCE RELEASE)

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## RAJASTHAN

### Mineral Resources

Rajasthan is the richest state in terms of availability and variety of minerals in the country and produces about 50 different minerals along with minor minerals during 2020-21. Rajasthan is the sole producer of lead & zinc ores, selenite and wollastonite. Rajasthan was the sole producer of garnet (gem) till 2004-05. Almost entire production of silver in the country comes from Rajasthan. The State is a major producer of copper ore/conc., limestone, ochre, phosphorite/rock phosphate and talc/soapstone/steatite. The State is also an important producer of marble of various shades. Makrana area is the world famous centre for marble mining.

The State possesses substantial share of the total resources of potash (94%), lead & zinc ore (89%), wollastonite (88%), silver ore (88%), gypsum (82%), ochre (81%), bentonite (75%), fuller's earth (74%), diatomite (72%), feldspar (66%), marble (63%), asbestos (61%), copper ore (54%), calcite (50%), talc/steatite/soapstone (49%), ball clay (38%), rock phosphate (31%), fluorite (29%), and tungsten (27%).

Important minerals that are found to occur in the State are: **asbestos (amphibole)** in Ajmer, Bhilwara, Dungarpur, Pali, Rajsamand & Udaipur districts; **ball clay** in Bikaner, Nagaur & Pali districts; **barytes** in Alwar, Bharatpur, Bhilwara, Bundi, Chittorgarh, Jalore, Pali, Rajsamand, Sikar & Udaipur districts; **calcite** in Ajmer, Alwar, Bhilwara, Jaipur, Jhunjhunu, Pali, Sikar, Sirohi & Udaipur districts; **china clay** in Ajmer, Barmer, Bharatpur, Bhilwara, Bikaner, Bundi, Chittorgarh, Dausa, Jaipur, Jaisalmer, Jhunjhunu, Kota, Nagaur, Pali, Sawai Madhopur & Udaipur districts; and **copper** in Khetri belt in Jhunjhunu district & Dariba in Alwar district. Deposits of copper are also reported at Ajmer, Bharatpur, Bhilwara, Bundi, Chittorgarh, Dausa, Dungarpur, Jaipur, Jhunjhunu, Pali, Rajsamand, Sikar, Sirohi and Udaipur districts. Occurrence of other minerals, namely, **Dolomite** in Ajmer, Alwar, Bhilwara, Chittorgarh, Dausa, Jaipur, Jaisalmer, Jhunjhunu, Jodhpur,

Sikar & Udaipur districts; **feldspar** in Ajmer, Alwar, Bhilwara, Jaipur, Pali, Rajsamand, Sikar, Tonk & Udaipur districts; **fireclay** in Alwar, Barmer, Bharatpur, Bhilwara, Bikaner, Dausa, Jaisalmer, Jhunjhunu & Sawai Madhopur districts; **fluorspar** in Ajmer, Dungarpur, Jalore, Jhunjhunu, Sikar, Sirohi & Udaipur districts; **garnet** in Ajmer, Bhilwara, Jhunjhunu, Sikar & Tonk districts; **gypsum** in Barmer, Bikaner, Churu, Sri Ganganagar, Hanumangarh, Jaisalmer, Jalore, Nagaur & Pali districts; **iron ore (haematite)** in Alwar, Dausa, Jaipur, Jhunjhunu, Sikar & Udaipur districts; **iron ore (magnetite)** in Bhilwara, Jhunjhunu & Sikar districts; and **lead-zinc** in Zawar in Udaipur district, Bamnia Kalan, Rajpura-Dariba in Rajsamand & Rampura/Agucha in Bhilwara district. Lead-zinc occurrences have also been reported from Ajmer, Chittorgarh, Pali and Sirohi districts. **Lignite** deposits are found to occur in Barmer, Bikaner, Jaisalmer, Jalore, Nagaur and Pali districts. Flux grade **limestone** occurs in Jodhpur and Nagaur districts and Chemical-grade limestone in Jodhpur, Nagaur and Alwar districts. Cement grade deposits of limestone are widespread in Ajmer, Alwar, Banswara, Bhilwara, Bikaner, Bundi, Chittorgarh, Churu, Dungarpur, Jaipur, Jaisalmer, Jodhpur, Jhunjhunu, Kota, Nagaur, Pali, Sawai Madhopur, Sikar, Sirohi and Udaipur districts. **Magnesite** in Ajmer, Dungarpur, Pali & Udaipur districts; **marble** in Ajmer, Alwar, Banswara, Bhilwara, Bundi, Chittorgarh, Dungarpur, Jaipur, Nagaur, Sikar, Sirohi & Udaipur districts; **mica** in Ajmer & Bhilwara districts; **ochre** in Baran, Bharatpur, Bhilwara, Bikaner, Chittorgarh, Jaipur, Sawai Madhopur & Udaipur districts; **pyrite** in Sikar district; **pyrophyllite** in Alwar, Bhilwara, Jhunjhunu, Rajsamand & Udaipur districts; **quartz/silica sand** in Ajmer, Alwar, Bharatpur, Bhilwara, Bikaner, Bundi, Chittorgarh, Dausa, Jaipur, Jaisalmer, Jhunjhunu, Jodhpur, Kota, Pali, Rajsamand, Sawai Madhopur, Sikar, Sirohi, Tonk & Udaipur districts; **quartzite** in Ajmer, Alwar, Jhunjhunu & Sawai Madhopur districts; **rock phosphate** in Alwar, Banswara, Jaipur, Jaisalmer & Udaipur districts; **talc/steatite/soapstone** in Ajmer, Alwar, Banswara, Bharatpur, Bhilwara, Chittorgarh, Dausa, Dungarpur, Jaipur, Jhunjhunu,

**Table – 1 : Reserves/Resources of Minerals as on 1.4.2020: Rajasthan**

Mineral	Unit	Reserves				Remaining Resources					Total resources (A+B)			
		Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332		Inferred STD333	Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222						
Apatite	tonne	-	-	-	-	-	-	51521	1016000	-	-	1067521	1067521	
Asbestos	tonne	-	-	-	1803183	3070449	4027514	87802	42101	4526861	57800	13615710	13615710	
Bauxite	'000 tonnes	-	-	-	-	-	-	-	-	528	-	528	528	
Copper														
Ore	'000 tonnes	14344	20045	34388	13314	1148	24304	18603	197078	573814	5200	833461	867849	
Metal	'000 tonnes	169.44	313.64	483.08	33.87	12.2	136.32	338.66	1385.88	2214.46	31.13	4152.52	4635.6	
Diatomite <sup>o</sup>	'000 tonnes	-	-	-	634	-	-	-	-	1440	-	2074	2074	
Fluorite	tonne	6111	-	11988	644667	618802	759285	1542460	510656	1350059	161575	5587504	5605603	
Garnet	tonne	156938	50946	207888	310712	191094	33115	2013	17606	215120	73263	842923	1050811	
Gold														
Ore (Primary)	tonne	-	-	-	-	-	-	4600000	51743000	69507720	63000	125913720	125913720	
Metal														
(Primary)	tonne	-	-	-	-	-	-	6.67	104.97	122.85	0.07	234.56	234.56	
Graphite	tonne	-	-	-	47600	-	165920	-	250000	1450034	-	1913554	1913554	
Iron ore														
(Haematite)	'000 tonnes	4555	2280	7314	3775	3962	1132	-	11510	7776	13	28166	35480	
Iron ore														
(Haematite)	'000 tonnes	37631	136	83294	1131	1023	85	-	3566	588463	79598	673866	794926	
Kyanite	tonne	-	-	-	13097	-	10606	-	-	-	-	23703	23703	
Lead-Zinc														
Ore	'000 tonnes	28791	63331	111153	103275	2485	19779	43337	172985	328784	1380	581381	684656	
Lead metal	'000 tonnes	503.7	1188.47	208.02	1900.19	58.48	405041	917.5	1972.47	5832.19	-	9431.73	11331.92	
Zinc metal	'000 tonnes	2356.56	4592.03	489.46	7438.05	331.22	992.09	3112.59	5052.47	1377.72	0.53	23827.97	31266.02	
Lead-Zinc metal	'000 tonnes	-	-	-	-	-	-	-	-	-	-	-	-	
Limestone	'000 tonnes	3299838	220062	1284254	454148	1838217	4541298	441902	2261727	12946106	1673697	24157095	28961249	
Magnesite	'000 tonnes	-	-	-	1030	1574	2045	-	149	49293	-	54091	54091	
Manganese ore	'000 tonnes	568	-	-	568	-	100	-	-	1690	-	1790	2359	

(Contd.)

Table - 1 (Concl.d.)

Mineral	Unit	Reserves				Remaining Resources					Total resources (A+B)
		Proved STD111	Probable		Total (A)	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
			STD121	STD122							
Potash	million tonnes	-	-	-	-	16936	3509	127	20572	20572	
Pyrite	'000 tonnes	-	-	-	-	26310	18392	-	90876	90876	
Rock											
Phosphate	tonne	21845000	-	21845000	4144961	69750	28942783	9257650	72003769	93848769	
Sillimanite	tonne	-	-	-	300	-	-	-	819	819	
Silver											
Ore	onne	4412419263331000	40870828	148326020	2330000	1704920036712218	39420000	64730000	182142579	342383997	
Metal	tonne	2150.87	4980.73	570.04	7701.64	172.2	781.85	531.62	3720.28	4384.86	
Tungsten											
Ore	tonne	-	-	-	-	963666	17000628	5964000	23928294	23928294	
Contained											
WO <sub>3</sub>	tonne	-	-	-	-	1421.44	90171.5	2115	93707.94	93707.94	
Vermiculite	tonne	-	-	-	41354	19960	16555	8716	104125	104125	
Wollastonite	tonne	2388641	190739	101598	2680978	4563016	1245009	8559760	20433955	23114933	

Figures rounded off

Note: The proved and indicated balance recoverable reserves of crude oil and natural gas as on 1.4.2016 are 31.72 million tonnes and 35.66 billion cu.m. respectively.

## STATE REVIEWS

Karauli, Pali, Rajsamand, Sawai Madhopur, Sirohi, Tonk & Udaipur districts; **vermiculite** in Ajmer & Barmer districts; and **wollastonite** in Ajmer, Dungarpur, Pali, Sirohi & Udaipur districts.

Other important minerals that occur in the State are: **apatite** in Udaipur & Sikar districts; **bauxite** in Kota district; **bentonite** in Barmer, Jaisalmer & Jhalawar districts; **corundum** in Tonk district; **diatomite** in Barmer & Jaisalmer districts; **emerald** in Ajmer & Rajsamand districts; **fuller's earth** in Barmer, Bikaner & Jodhpur districts; **gold** in Banswara, Bhilwara, Dausa, Sirohi & Udaipur districts; **granite** in Ajmer, Alwar, Banswara, Barmer, Bhilwara, Chittorgarh, Jaipur, Jaisalmer, Jalore, Jhunjhunu, Jodhpur, Pali, Rajsamand, Sawai Madhopur, Sikar, Sirohi, Tonk & Udaipur districts; **graphite** in Ajmer, Alwar & Banswara districts; **kyanite & sillimanite** in Udaipur district; **manganese ore** in Banswara, Jaipur & Pali districts; **potash** in Jaisalmer & Nagaur districts; **silver** in Ajmer, Bhilwara, Jhunjhunu, Rajsamand, Sikar & Udaipur districts; and **tungsten** in Nagaur & Sirohi districts (Table -1). District-wise reserves/resources of lignite in the

State are provided in Table-2.

Deposits of **petroleum** are located in the Bikaner-Nagaur and Barmer-Sanchore basin and those of **natural gas** in Jodhpur and Jaisalmer basins in the State.

### Exploration & Development

National Oil Companies (NOC) continued their seismic survey for petroleum and natural gas during 2020-21.

The details of exploration activities conducted by various agencies GSI and State DMG for Iron ore, Manganese ore, base metals (Cu,Pb & Zn), Rare Earth Elements, Tungsten, Potash and other minerals including minor minerals during the year 2020-21 are furnished in Table - 3.

### Production

Production of different type of minerals have been reported from the state of Rajasthan. The value of minor minerals' production was estimated at ₹ 15095 crore for the year 2020-21. The number of reporting mines in Rajasthan was 82 in the year 2020-21 in case of MCDR minerals.(Table-4)

**Table – 2 : Reserves/resources of Lignite as on 1.4.2021 : Rajasthan**

(In million tonnes)

District	Proved	Indicated	Inferred	Total
<b>Total</b>	<b>1168.53</b>	<b>3029.77</b>	<b>2150.77</b>	<b>6349.07</b>
Bikaner	560.30	230.33	309.19	1099.82
Barmer	495.23	2509.46	1496.77	4501.46
Jaisalmer & Bikaner	–	–	11.47	11.47
Jaisalmer	–	–	70.44	70.44
Jaisalmer & Barmer	–	–	13.80	13.80
Jalore	–	–	76.08	76.08
Nagaur	113.00	289.49	154.33	556.82
Nagaur & Pali	–	0.50	18.69	19.19

*Source: Coal Directory of India, 2020-21*

## STATE REVIEWS

**Table –3 : Details of Exploration Activities in Rajasthan, 2020-21**

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
<b>GSI</b>							
<b>Iron ore</b>							
Jaipur	Moriya block	1:2000	1.5	-	-	-	Preliminary exploration (G3) for iron was carried out in Moriya block, Jaipur district, Rajasthan in part of survey of India toposheet No. 45M/16. A total of 1.5 sq. km of detailed geological mapping on 1:2000 scale in the block was completed in F.S. 2019-20. Drilling component of F.S. 2020-21 had been dropped as mining lease of the area had been renewed and mining for hematite had already started in the area. During the detailed mapping, a total of 121 nos. of channel samples, 25 nos. of bedrock samples, 10 nos. of petrochemical samples and 15 nos. of samples from trenches and pits had been collected for analysis. Classical wet chemical analysis of Fe in channel samples gave encouraging values. Channel no. 26384/MCH/07 near hinge gave 6m wide zone with 66.08% Fe (weighted average) while channel no. 26384/MCH/09 exposed 6m wide zone with 58.24% Fe value (weighted average). Samples from channel no. 26384/MCH/06 were collected above an abandoned mine in band-I, which gave 17m mineralised zone having 59% Fe value (weighted average). The detailed mapping revealed prominent occurrence of iron ore mineralisation in the block. As channel samples had yield encouraging values of iron (>55%), it was likely to be present in sub surface.
<b>Manganese</b>							
Rajsamand	Karoli Ki Dhani	1:2000	2.0	2	-	50	Preliminary exploration was taken up to carry out preliminary exploration in Karoli Ki Dhani block. Detailed mapping of 2.0 sq. km area on 1:2000 scale along with bedrock, channel sampling and pitting trenching was completed during FS 2019-20. The rock exposed in Karoli Ki Dhani block formed a part of Debari Group of Aravalli Supergroup. The litho units in the study area were manganiferous metachert, ferruginised metachert, quartzite/ metachert, dolomite and phyllite. All the litho units were disposed in N25°E to N30° E (contd)

## STATE REVIEWS

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		
Rajsamand	Negariya Block	1:2000	-	-	-	-	direction dipping 60° to 80° towards west 50 trench samples were collected from 5 trenches and submitted for chemical analysis. Trench 1 had indicated MnO value ranging from 01 to 23.23% with average grade of 13.05% MnO over 4 m width and trench-3 had indicated one sample with MnO value 25.32% over 1m width. Trench 2 had not analysed any significant Mn value.
							Preliminary Exploration (G3) for Manganese in Negariya Block, Rajsamand district, Rajasthan. Detailed Mapping on 1:2000 scale had been carried out during FSP 2020-21, to evaluate the potential of Manganese and associated mineralisation in Negariya Block. The study area comprised the rocks of Delwara Group of Aravalli Supergroup Palaeoproterozoic age (2.5 to 1.6 Ga) and Granite Gneiss of Bhilwara Supergroup of Archean. Lithologies exposed were manganiferous quartzite, ferruginised quartzite, calcareous quartzite, grey quartzite, intercalated phyllite within impure dolomite, sheared granite gneiss exposed as basement rock of Archean age. General strike of the study area varied from N20°E to N35°E with very steep 70° to 80° dipping towards NW and at place to quaquaversal dip. Manganese mineralisation is prominently associated with manganiferous brecciated quartzite. Evidences of mineralisation had been found in the form of pyrolusite, psilomelane, old working was found in manganiferous quartzite north of Negariya village. Manganiferous quartzite is black colour, metallic lustre, black streak, soils to hand. Thickness of Manganiferous bands varied from 25 to 50m and length 100 to 600m mainly occurred peak of ridges in discontinued manner. Trench-A chemical analysis of MnO ranging from 0.63 to 16.97 %.
Banswara	Kalinjara- Kasoomba area	1:2000	-	-	-	-	Reconnaissance survey for manganese in Kalinjara-Kasoomba (contd)

## STATE REVIEWS

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		
							area by large scale mapping on a scale of 1:12500 in parts of Toposheet nos. 46I/07 in Banswara District was carried out. The different types of samples were collected (100 nos. of bed rock samples, 50 nos. of pitting/ trenching samples, 10 nos. of petrological sample & ore microscopy sample (each) and 05 nos. of electron probe micro-analyser samples for analysis. Bed rock samples (100 nos.) were collected from the manganese bearing rocks and channel sampling were carried out for pitting/ trenching sample across the strike of mineralisation. Geologically, the area forms the part of Aravali Supergroup of rocks that include Udaipur and Lunavada Group of rock which belonging to Palaeo Proterozoic age and the Deccan traps of Cretaceous to Palaeocene age. The Dominant lithologies exposed in the area were paragneisses, feldspathised schist and para-amphibolite with interbands of dolomite and quartzite belong to Banswara Formation, Udaipur Group; phyllite, meta-subgraywacke and feldspathised mica schist with bands of quartzite, meta-conglomerate, dolomite and manganiferousphyllite of Kalinjara Formation and meta- subgraywacke, mica schist of Wagidora Formation, Lunavada Groups, Aravalli Supergroup age. Analytical results of 44 BRS samples had been received. The MnO value ranges from 65.83 % to 12.19% in 40 BRS samples. Maximum value of MnO was 65.83% found in sample no. KKL1 collected from Kalakhunta mines. MnO value ranges from 51-58% found in 4 samples. Maximum 58.48% MnO value found in KKL8 collected from NW of Ghatia village and MnO value 51.36% and 51.42% found in sample no. KKB28 and KKL3 respectively which were collected from south of Timba Mahuri village and NW of Kalakhunta village.

(contd)



## STATE REVIEWS

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		
Banswara	Kanjapara- Kushalgarh area	1:12000	100	-	-	75	Reconnaissance survey (G4) for manganese in Kanajpara–Kushalgarh area, Banswara district, Rajasthan Large scale mapping (1:12500 scales) had been carried out and covered 100 sq km area around Magarda, Badwas, Kushalgarh, Pali Choti, Rupkhera, Wagaicha, Nisnawatect area of Kushalgarh tehsil of Banswara district in parts of T.S. No 46I/08. LSM work was carried out with an objective to delineate potential zone of manganese ore. Geologically, study area was having rocks of Aravalli supergroup of palaeoproterozoic age and Deccan trap complex of upper cretaceous to palaeocene age. Aravalli supergroup of rocks are represented by Banswara Formation of Udaipur group and Kalinjara Formation of Lunawada Group. In the mapped area the oldest rock exposed was para-gneiss of Banswara Formation. Para-gneiss is grey-white in colour, foliated, and consists of alternate bands of felsic and mafic minerals. Para gneiss is unconformably overlain by rocks of Kalinjara Formation of Lunawada Group. Kalinjara Formation mainly comprised of mica schist, meta-subgreywacke, phyllite, chlorite schist, quartzite, and dolomite and manganeseiferous phyllite. During the course of mapping 50 cu m trenching work had been carried out through 5 numbers of trenches across the manganeseiferous phyllite. During field work 50 Nos. of BRS, 10 Nos. of ore microscopy 10 No. of petrological and 5 number of EPMA sample also had been collected.
<b>Basemetal</b> Banswara	Ravji Ki Dhani Area	1:12000	100	-	-	75	Preliminary Exploration (G3) for Basemetal Mineralisation in Ravji Ki Dhani Area, Nim Ka Thana, Sikar District, Rajasthan. The Ravji Ki Dhani area is located about 16 km southeast of Nim Ka Thana, Sikar district, Rajasthan. The area is part of Nim Ka Thana copper belt. The Alwar and Ajabgarh Group of rocks

(contd)

## STATE REVIEWS

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		
							belonging to the Delhi Supergroup of Palaeo to Meso-Proterozoic age represent the mineral belt. The quartzite and schist of the Pratapgarh Formation represent the Alwar Group. The Ajabgarh Group is a combination of calcareous, argillaceous and minor arenaceous rocks of which the host rock for mineralisation is banded impure marble of the Kushalgarh Formation of the Ajabgarh Group of the Delhi Supergroup. Subsurface exploration by core drilling had been carried out with an aim to assess the strike and the depth continuity of copper and associated precious metals in the study area. Eight boreholes were drilled including a total drilling of 1015m. Out of these eight boreholes, four had been planned in the south western part to target mineralised zone (MZ- III), 3 boreholes in northern part to target mineralised zone (MZ-I) and 1 borehole in the central part to target mineralised zone (MZ-II). The mineralised zones had been intersected at a vertical depth of ~50-60m.
Banswara	Kalamara Block Bhudoli-Basari area Nim Ka Thana	-	-	6	1021.7	-	Preliminary exploration (G3) for basemetal mineralisation in Kalamara Block, Bhudoli-Basari area, Nim Ka Thana, Sikar dist., Rajasthan. The host rock for mineralisation is banded impure marble of the Ajabgarh Group of the Delhi Supergroup, similar to Nim Ka Thana copper belt. The dominant lithologies exposed in the area were metasediments belonging to the Kushalgarh of the Ajabgarh Group and Pratapgarh Formation of the Alwar Group. Besides these, acidic and basic intrusives of post-Delhi age were also exposed. Subsurface investigation by drilling had been carried out over a strike length of 1000m in Kalamara block to establish the basemetal potentiality of the area. Total 1021.73m drilling had been carried out with six first level boreholes and a second level borehole had been drilled which

(contd)

## STATE REVIEWS

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		
							<del>intersected impure marble. The</del> boreholes drilled in the Kalamara block intersected sporadic and scanty copper mineralisation in the form of fine disseminations and few specks of chalcocite, bornite, chalcopyrite and covellite which had been observed visually during core logging. Disseminations of pyrite and specularite also had been observed in the drilled boreholes. The analytical results of core samples received so far from first level borehole showed mineralised zone of 2m X 0.33% Cu.
Alwar	Bhigota block Rajgarh	-	-	7	1115	-	Preliminary exploration (G3) investigation by drilling for copper and gold was carried out in Bhigota block, Rajgarhteshil, Alwar district, Rajasthan to test the continuity of mineralised zone, delineated on surface during detailed geological mapping carried out in FS: 2019-20. The study area is located 20 km Northwest of Bandikui. Drilling was carried out to test the depth persistence and potential of copper mineralisation in the area along 800 m strike length of white siliceous dolomitic marble. On the basis of field observations and integration of geological, geochemical and geophysical data, one mineralised zones (MZ-1) had been delineated. All the boreholes had been planned along channels and trench maintaining a strike interval of 200 m towards west and east respectively. A total of 1115 m of drilling had been carried out in seven boreholes, The boreholes RJBHG-1, 2, 3, 4, 5, 6 and RJBHG-7 (Second level) had intersected sulphides mostly pyrite and chalcopyrite, Bornite and Chalcocite in form of fine to coarse disseminations along the foliation plane, specks and stringers in white silicified dolomitic marble but unfortunately copper sulphides in these boreholes were not significant enough for delineation of zones on the basis of visual estimates.
Alwar and Dausa	Kaled area	1:12000	1.5	6	1125	378	Preliminary exploration (G3) for basemetal and associated precious (contd)

## STATE REVIEWS

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		
							metal mineralisation in Kaled area, Alwar and Dausa districts, Rajasthan. A total of 1.5 sq. km area had been covered on during the detailed geological mapping on 1:2000 scale along with the surface geophysical survey of 20 L km during FS 2019-20. Systematic bed rock sampling had been carried out in order to demarcate the zones of possible mineralisation. The surface indication of mineralisation was in the form of malachite staining, small specks of pyrite and chalcopyrite, specular haematite, ferroginitisation and limonitisation were observed. Apart from this channel sampling had been carried out where surfacial indication was observed. During detailed geological mapping a total of 323 nos. of bed rocks samples, 10 nos. of petrochemical samples, 20 nos. of petrological samples, 15 nos. of ore microscopic samples, 05 nos. fluid inclusion study samples and 05 nos. XRD samples had been collected. A total of 1125 m drilling had been completed against the assigned target of 1000 m along the six boreholes. The boreholes RJKLD-01, 02, 03, 04, 05 and RJKLD-06 had intersected sulphides mostly pyrite, chalcopyrite, pyrrhotite, arsenopyrite and Chalcocite in form of fine to coarse disseminations along the foliation plane, specks and stringers in impure marble. And total 148 core samples had been submitted to Chemical lab GSI, Jaipur for analysis.
Alwar	Suratgarh block Thanagazi teshil	1:2000	1.5	-	-	368	Preliminary exploration (G3) for copper and associated precious metals by detailed mapping on 1:2000 scale was carried out covering 1.5 sq km area in Suratgarh block, Thanagazi tehsil, Alwar district, Rajasthan to delineate zones of Cu and associated precious metal mineralisation. Apart from this, 71.50 cubic m pitting/ trenching were carried out and a total of 50 nos. of PTS samples, 286 BRS/ channel samples, 10

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## STATE REVIEWS

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		
							petrochemical samples, 10 nos. of petrological samples and 12 nos. of ore mineral samples had been collected. Ground geophysical survey was also carried out in Suratgarh block to locate the potential zones of mineralisation. The surface indications of mineralisation were in the form of presence of old workings, malachite stains, scapolites and fresh sulphides i.e. bornite, covellite, chalcopyrite, pyrrhotite, quartz and carbonate veins. Chalcopyrite, bornite and pyrrhotite were present in the form of dissemination, minor specks, filled within veins as well as along the fracture and foliation planes within the dolomitic marble. On the basis of field observation, interpretation of surface indication of mineralisation and channel sample results, two zones of sulphide mineralisation over a strike length of 700m and 250m had been delineated in the central and southern part of the block. The chemical analytical results of channel samples showed Cu values ranging from 20 ppm to 0.30% (RJAS/CH-1), 20 ppm to 0.15% (RJAS/CH-2), 15 ppm to 0.49% (RJAS/CH-3), 10ppm to 0.12% (RJAS/CH-4) and 20 ppm to 0.40% (RJAS/CH- 5) respectively.
Sikar	Dariba block	-	-	23	-	-	General exploration (G2) for basemetal mineralisation in Dariba block, Sikar district, Rajasthan. Geologically, the area comprised, the rocks of Ajabgarh Group and arenaceous rocks of Pratapgarh Formation of the Alwar Group belonging to Delhi Supergroup. In order to test the mineralised lodes intersected in the previously drilled boreholes (DBB-1 & DBB-4), the boreholes were planned to trace depth and strike continuity of these mineralised zone. A total of 23 boreholes had been drilled so far, which included 11 first, 7 second and 5 third level boreholes. Two second level boreholes were under progress. The analytical results of

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## STATE REVIEWS

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		
							21 nos. of boreholes were received so far. Out of 21 boreholes, 13 boreholes had indicated significant copper lodes. The analytical results of the borehole RJSD-1 had indicated three significant copper lodes of 2.05m, 4.10m & 2.05m thickness with an average grade of 0.43%, 0.21% and 1.38% Cu, respectively. The analytical results of the borehole RJSD-2 had indicated a copper lode of 2.15m thickness with an average grade of 0.25% Cu. The analytical results of the borehole RJSD-4 have indicated two copper lodes of 4.80m & 3.00m thickness with an average grade of 0.52% & 0.23% Cu, respectively. The analytical results of the borehole RJSD-5 had indicated three significant copper lodes of 7.00m, 4.00m & 6.00m thickness with an average grade of 0.46%, 0.35% & 0.40% Cu, respectively. The analytical results of the borehole RJSD-7 had indicated a copper lode of 4.00m thickness with an average grade of 0.57% Cu. The analytical results of the borehole RJSD-8 had indicated a copper lode of 4.60m thickness with an average grade of 0.37% Cu. The analytical results of the borehole RJSD-12 had indicated two copper lodes of 4.60m & 2.10m thickness with an average grade of 0.37% & 0.20% Cu, respectively. The analytical results of the borehole RJSD- 14 had indicated two copper lodes of 3.00m & 13.10m thickness with an average grade of 0.21% & 0.27% Cu, respectively. The analytical results of the borehole RJSD-15 had shown two significant copper lodes of 3.00m & 4.00m thickness with an average grade of 0.26% & 0.25% Cu, respectively. The analytical results of the borehole RJSD-16 had indicated three significant copper lodes of 6.10m, 4.15m & 2.00m thickness with an average grade of 0.25%, 0.33% & 0.26% Cu, respectively. The analytical results of the borehole RJSD-19 had indicated four significant copper lodes of 2.60m, 2m, 4m and 4m with

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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		
							an average grade of 1.11%, 0.24%, 0.22% and 0.21% Cu, respectively. The analytical results of the borehole RJSD-20 had indicated two significant copper lodes of 2.10m and 6.60m with an average grade of 0.21% and 0.25% Cu, respectively. The analytical results of the borehole RJSD-21 had indicated one copper lodes of 2.20m with 0.26% Cu. The resource estimation will be attempted after the receipt of all analytical results.
Sikar	Adharshila-Dariba	-	-	11	1605	-	Preliminary Exploration for basemetal in Adharshila-Dariba, Neem ka Thana, Sikar district, Rajasthan. Geologically, the area comprised the rocks of Ajabgarh Group of Delhi Supergroup. The Ajabgarh Group was represented by amphibole quartzite, amphibole bearing impure marble with inter bands of quartzite and schist interlayered with the amphibolite of Kushalgarh Formation. The general trend of the lithounits was NNE-SSW to N-S with westerly dip. The length of MZ-I was more than 1600m and width varied from 5m to 21m with grade varied from 0.2% Cu to 0.55 % Cu. The length of MZ-II was 600m and width varied from 11m to 66m with grade varied from 0.22% Cu to 0.56 % Cu. The subsurface exploration by 11 nos. of first level boreholes, involving drilling of 1605m, with 200m spacing had been carried out. Eight boreholes (RJSA-1 to RJSA-6, RJSA- 10 and RJSA-11) and three boreholes (RJSA-7 to 9) were planned in MZ-I and MZ-II, respectively. The analytical results of nine boreholes had been received and all the boreholes had intersected significant copper lodes at 0.2% cut-off.
Sikar	Daudham-Kalakota block	-	-	6	1200	231	Preliminary exploration (G3) for copper and associated precious metals in Daudham-Kalakota block, Nim Ka Thana, Sikar, Rajasthan. Geologically, the area comprised the rocks of Alwar and Ajabgarh Groups. The Alwar Group was mainly

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## STATE REVIEWS

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		
Sikar & Jaipur	Beri Bharaj areas	1:12500	102	-	-	242	<p>represented by massive quartzite of Pratapgarh Formation; schist and phyllite of Kankarwahi Formation. The Ajabgarh Group was represented by calc gneiss, amphibole bearing impure marble with interbands of quartzite and schist of Kushalgarh Formation. Amphibolites and pegmatites are also present as intrusive in the area. The general trend of the litho-units is NNE-SSW with steep westerly dip. Three mineralised zones (MZ-I, MZ-II and MZ-III) of 550m, 600m and 430m strike length, respectively were delineated. The average grade of mineralised zones varies from 0.10% Cu to 0.20% Cu. Although the mineralised zones have a restricted width up to 03m only but were having evidences of fresh sulphides in the form of chalcopyrite and bornite along with intense malachite stains. During FS: 2020-21, the mineralised zone MZ-II and MZ- III being explored sub-surface, involving 1200m drilling. The MZ-I could not be tested by drilling as it fell in deep forested area. All the six boreholes drilled so far had intersected sulphide mineralisation in the form of vein filled, fracture filled, foliation parallel specks and disseminations of chalcopyrite, pyrrhotite and pyrite with occasional presence of chalcocite, bornite and few specks of covellite hosted by amphibole bearing quartz biotite schist and quartz veins. Apart from this, 206 nos. of core samples, 08 nos. of polished/thin-polished sections for OM, 04 nos. of petrochemical samples, 04 nos. of XRD samples, 04 nos. of EPMA and 05 nos. of geotechnical samples had been collected from the drilled boreholes. The analytical results were awaited.</p> <p>Reconnaissance Survey for Basemetals in Beri Bharaj areas, Sikar and Jaipur Districts, Rajasthan (G4): An area of 102 sq. km had been mapped on 1:12, 500 scale, to bring out a large-scale geological map. 81 BRS, 75 Channel samples</p>

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## STATE REVIEWS

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		
							and 50 PTS (samples collected from trenches at 1 m intervals) collected from different potential lithounits for basemetal analysis, 10 OM for ore microscopy and 15 PS for petrographic studies, 10 PCS for major oxides, trace elements and REE analyses and 01 XRD samples for mineral had been collected. The bed rock sample results received till date (n=44), the Cu value ranged between 10 ppm to 0.4%; while the Zn value showed a range of 5-515 ppm and channel results (n=52) showed Cu value ranged between 10ppm to 0.13%. The channel samples derived from the tremolite marble horizon of Thanagazi formation.
Sikar	Chiplata Neem-ka-Thana	1:12500	-	-	-	151	Reconnaissance Survey (G4) for Copper and associated precious metals in Chiplata area, Neem-ka-Thana, Sikar, Rajasthan. The exploration work in the item included large scale mapping of 100 sq.km. area on 1:12500 scale, geochemical sampling in the form of 136 bedrock samples and 15 petrochemical samples to check the basemetal potential and extent of the ore zone, with 50 cubic metres of pitting/trenching. Based on the surface indications of mineralisation, favourable litho-structural set up, four zones within the block had been demarcated as promising zone for copper mineralisation 4 zones demarcated based on the field observations and surface evidence of mineralisation only the MZ 1 seemed promising after consultation of chemical analytical data of the BRS and trench samples. BRS value of 0.44%, 0.25%, 0.14% and 0.13% for Cu had been reported from a 2.5 square km area between Chiplata and Lambi-Ki-Dhani village. Several other anomalous values of Cu had been reported from the area. BRS from the mineralised zone 4 (MZ 4) to the south of Goli-Ki-Dhani village, did not show anomalous values of Cu as expected, though two samples from two different channel and a random BRS showed 1900, 1500 and 890 ppm of

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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		
							Cu respectively. Trench samples collected from this zone showed concentration of total REE up to 3093.8 ppm. The chemical data of the BRS collected from the area showed erratic and feeble nature of Cu mineralisation in the area, with the mean Cu value was 134.40 ppm with standard deviation of 470.72. As per the chemical data only the Kushalgarh metasediments seemed to be mineralised and the basement rocks were devoid of any mineralisation, despite having strong surface evidences and hydrothermal alteration packages suitable for Cu mineralisation.
Jhunjhunu	Fatehpura block	1:2000	0.75	-	-	-	Preliminary exploration (G3) for copper and associated mineralisation in Fatehpura block, Jhunjhunu district, Rajasthan. An area of 0.75 sq. km was covered by Detailed Mapping (DM) on 1:2000 scale. The Lithounits present in the study area belonged to Alwar and Ajabgarh groups of the Delhi Supergroup of rocks. The litho units present in the area were represented by grey quartzite, micaceous quartzite, amphibole quartzite, amphibolites, quartz-biotite- schist and minor albitite emplaced along weak zones.
Udaipur	Phalet	1:12500	100	-	-	240	Reconnaissance survey (G4) for copper mineralization in parts of Phalet area, Udaipur district, Rajasthan. During the present study, large scale mapping covering an area of 100 sq. km had been done on 1:12500scale. A total of 200 bedrock samples for basemetal analysis, 10 petrochemical, 20 petrological and 10 samples for ore microscopy were collected. The mineralisation is structurally controlled along the contact between the ferruginous quartzite of the Gurali Formation of the Debari Group and the migmatite gneiss of the Sawadri Group. Surface manifestations of mineralisation are represented by profuse malachite stains, silicification, boxwork structure, old workings located along the Aravalli-Mangalwar contact, slag heaps and fresh specks of

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## STATE REVIEWS

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		
							chalcopyrite, galena and pyrite in disseminated form and also along fractures. Three mineralised zones had been delineated based on the chemical analysis of channel samples viz. i) 450 m long and 9m thick Cu mineralised zone lying 1.75 km NW of Gurli with an average Cu value of 0.91% and 5 m thick Cu zone with an average Cu value of 0.76%, ii) 100 m long and 6 m thick Cu, Pb and Zn mineralised zone with an average Cu value of 713 ppm, avg. Pb value of 0.57% and avg. Zn value of 0.44% [750 m north of Bhainsra Khurd] and iii) 35m long 7m thick Cu mineralised zone with an average Cu value of 0.73% lying 575 m south of Nauva.
Bhilwara	Lakhola block	1:2000	1.52	-	-	533	Preliminary exploration (G3) Detailed geological mapping (1:2000 scale) had been carried out in the Lakhola block covering an area of 1.52 sq. km. A total of 533 samples (grid/channel/trench) were collected and submitted for chemical analysis. Two mineralised zones (MZ-I and MZ-II) were demarcated on the basis of surface manifestations. MZ-I had a strike length of about 450 m with approximately 65m width. MZ-II had a strike length of about 350 m with approximately 55 m width. Analytical results of only 118 samples had been received so far and four significant Cu values reported are 0.10 % (two samples) and 0.13% and 0.17 %.
Udaipur	Khori Mahuri	-	-	4	1080	338	Preliminary exploration (G3) for copper and gold mineralisation in Khori Mahuri area, Udaipur district, Rajasthan. A total of 1080 m of drilling had been carried out in four boreholes, varying in length from 241 m to 295 m and 200 core samples, 100 channel samples, 30 petrographic, 5 samples for EPMA, Fluid Inclusion study, Stable Isotope study and XRD each had been collected. The first borehole had been drilled along channel no. 3 and geophysical anomalous zone-I. The

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## STATE REVIEWS

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		
							second and third borehole had been drilled to test the strike continuity of sulphide mineralisation in RJKM-1, maintaining a strike interval of 200 m towards west and east respectively. The fourth borehole had been drilled to test the depth continuity of copper mineralisation of old workings in the eastern part of the mapped area. The boreholes RJKM-1 and RJKM-2 had intersected significant concentration of sulphides mostly fracture filled pyrrhotite, pyrite and chalcopyrite along with magnetite in the form of specks, stringers and veins in dolomitic marble. The boreholes RJKM-3 and RJKM-4 had intersected sulphides mostly fracture filled pyrrhotite, pyrite and chalcopyrite in the form of disseminations, specks and stringers in dolomitic marble but unfortunately copper sulphides in these boreholes were not significant enough for delineation of zones on the basis of visual estimates. However, the analytical results of the core samples were yet to be received.
Udaipur	Ladana North Block	1:2000	-	4	608.6	-	Preliminary exploration (G3) for copper and associated mineralisation in Ladana North Block, Udaipur district, Rajasthan. Detailed mapping on 1:2000 scale had revealed exposures of Untala Granite, quartz veins and the rocks of the Mangalwar Complex such as amphibolite and brecciated chert bands. A few bed rock samples collected on grid pattern and channel samples during the F.S. 2019-20 had analysed anomalous copper values. Ground geophysical survey had brought out a few anomalies trending NS. The drilling investigation under G-3 stage had been carried out during the F.S. 2020-21. For planning of boreholes, geophysical SP, IP and Magnetic anomalies, bed rocks samples collected during the F.S. 2017-18 and channel samples collected during the F.S. 2019-20 had been taken into consideration.

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## STATE REVIEWS

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Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							A total of four boreholes namely RJLN-1 to RJLN-4 had been drilled (608.6m of drilling) out of the total envisaged target of 1000m. All the surface copper anomalies delineated through grid bed rock samples as well as ground geophysical survey had been tested but copper mineralisation observed in all these four boreholes were insignificant. Chalcopyrite along with pyrite and pyrrhotite in the form of fine dissemination and thin stringers had been observed within altered amphibolite and granite. The copper zones intersected within altered amphibolite showed less than 0.20% Cu average grade based on visual estimation.
Bhilwara	Kesarpura	-	-	8	1560	-	Preliminary exploration (G3) for basemetal in Kesarpura, Bhilwara District, Rajasthan. Based on the encouraging results of bedrock samples and anomalous axes of SP and IP delineated through systematic ground geophysical survey, a total of 1560.0m of drilling had been carried out in eight boreholes. The spacing of boreholes was kept 200 m along the strike which was as per the prevailing norms of UNFC for G-3 stage exploration. The block was located in the central part of the Pur-Banera Belt. The contact of Pur-Banera Group and the underlying Potla Formation of Bhilwara Supergroup lay in the Kesarpura block. The metasedimentaries lithounits of both the groups are exposed and intersected in the boreholes in the block.
Bhilwara & Chittorgarh	Chainpuriya- Lasariyakhera	1:12500	100	-	-	-	Reconnaissance survey (G4) for basemetal mineralisation in Chainpuriya-Lasariyakhera area, Bhilwara and Chittorgarh districts, Rajasthan. Geological mapping was carried out covering an area of 100 sq. km on 1:12500 scale. Surface manifestation of mineralisation in the area was quite prominent. Presence of malachite stains had been observed in almost all lithologies of the area. The specks and veins of primary sulphides like (contd)

## STATE REVIEWS

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		
							chalcopyrite, bornite, azuite and pyrite had been observed in the calc gneiss, calc schist and calc-silicates of Rewara Formation. The shear zone is major structural control of mineralisation in the area. Based on the surface indications of mineralization, favourable lithological and structural set up coupled with the analytical result of the bed rock samples two potential zones of basemetal mineralisation had been demarcated. The two potential zones are Rampuriya mineralised zone and Gujar khera mineralised zone associated with profuse malachite staining. The mineralisation was controlled by shear zone.
<b>REE(Rare Earth Elements)</b>							
Bhilwara	Basni-Motipura- Itunda area	1:12500	100	-	-	-	Reconnaissance survey for a rare metals around Basni-Motipura-Itunda area in pegmatites of Bhilwara district, Rajasthan: Large Scale Mapping covering an area of 100 sq. km was carried out on scale of 1:12500. Geologically, the study area was occupied by the rocks of Bhilwara Supergroup represented by Mangalwar complex and Hindoli Group and Jawal formation of Jahazpur group of rocks. Mangalwar Complex in the north eastern part of the study area was represented by garnet bearing mica schist of Potla Formation and migmatite gneiss of Kekri Formation. The rocks of Mangalwar Group were mostly soil covered in the western part of the study area. Mapping in northern, eastern and southern eastern part was carried out based on the exposures and isolated hillocks. The Hindoli Group of rocks was exposed in south eastern part; they were represented by metagraywacke and phyllites of Sujanpura Formation. The rocks of Bhilwara Supergroup were intruded by pegmatites. The Jahazpur Group of rocks was represented by conglomerate, gritty quartzite, grey phyllites and dolomite of Jawal Formation. The pegmatites present in the study area formed the eastern fringe of Ajmer Bhilwara pegmatite belt.

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## STATE REVIEWS

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		
Jalore	Sewara block	1:12500	150	2	695	186	Reconnaissance Survey (G4) exploration was taken up in Sewara block during FS: 2020-21. Large scale Geological mapping on 1:12500 scale covering an area of 150 km <sup>2</sup> was carried out in Sewara block. A total of 117 litho-geochemical samples were collected along with 52 pedo-geochemical and 10 groundwater samples. Pitting of 67m <sup>3</sup> had been carried out to ascertain depth as well as strike continuity of mineralized zone. Ground magnetic and gravity surveys were carried out in select areas totaling to 15km <sup>2</sup> . High Zr concentration of >1000 ppm had been recorded in 16 litho-geochemical samples, with highest concentration of 1896 ppm. Out of total 1000m drilling target, 695m has been achieved. Borehole no. RJJS-1 (260m) and RJJS-2 (250m) had been completed and logging and sampling were ongoing. In BH no. RJJS-1 rocks observed range from biotite rich granite to granodiorite and gabbro. The lithotypes observed in RJJS- 2 were pyroclastic andesite and basalt.
Jalore	Karwara block	1:12500	100	4	-	189	Reconnaissance Survey (G4) of Possible Multi-Metal Mineralisation in Karwara area, Jalore District. As an outcome of NAGMP, a potential mineralised block (Block-32, for W, Fe, Cu, Pb, Zn, Au, REE) was delineated in Dantwara area. Geological mapping of 100 km <sup>2</sup> area on 1:12,500 scale was carried out to locate possible multi-metal mineralisation in the area. A total of 154 surface litho-geochemical samples, 25 pit and trench samples along with 10 ground water samples were collected. The litho-units mapped in the area include granite, porphyritic basalt, trachy-basalt, trachyte, andesite, trachy-andesite, rhyolite, and chert beds. Most of the area was covered by the Quaternary blown sands of Thar Desert Formation. Extensive ground sampling had been carried out in the Karwara area. Four vertical to sub-vertical scout boreholes, with depth

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## STATE REVIEWS

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		
Jalore	Dantwara block	1:12500	100.0	-	-	176	<p>varying from 250m to 300m, were planned to test the geophysical anomalies. The surface indication of sulphide mineralisation in the area was manifested by the presence of fresh chalcopyrite grains at the contact of rhyolitic and basaltic rocks, fluorite and barite occurring along the fractures. Ferrugenisation and limonitisation within fractures and joint surfaces of rhyolite and porphyritic andesite was common. Secondary veins of iron-carbonate were recorded at several places.</p> <p>Reconnaissance Survey (G4) of Possible Multi-Metal Mineralisation in Dantwara area, Jalore District, Rajasthan. The work carried out included large scale mapping of 100 km<sup>2</sup> on 1: 12,500 scale, lithogeochemical sampling, petrological samples, water samples, pitting and trenching. A sampling strategy emphasising the contact zones of lithounits, brecciation, quarry wall, veins/fractures surfaces and ferrugenisation was employed to collect 166 lithogeochemical samples along with 10 water samples. Numerous abandoned linear quarries for fluorite and barytes were located in and around Dantwara-Taveedar-Lakhawas. The felsic volcanic breccia held the fluorite and baryte mineralisation mainly along the fractures as fracture filling and veins. Maximum Ba concentration recorded is 48%.</p>
Jalore	Karara	1:12500	100	5	-	140	<p>Reconnaissance Survey (G4) of Possible Multi-Metal Mineralisation in Karara area, Jalore District, Rajasthan. As an outcome of NAGMP, a potential mineralised block (for W, Fe, Cu, Pb, Zn, Au and REE) was delineated in Karara area. The area falls in parts of toposheet 45 D/01 of Jalore district in Rajasthan. Large scale geological mapping was carried out for an area of 150 km<sup>2</sup> on 1:12,500 scale. To assess the mineral potential of the study area, 130 lithogeochemical samples and 10 ground water samples had been collected along with 50 m<sup>3</sup> of pitting</p>

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## STATE REVIEWS

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		
							and trenching. Fluorite was present as vein type mineralisation with NE-SW trend in the hills south of Chatwara within felsic pyroclastics. Analytical results received so far indicated that alkaline felsic volcanics contained significant amount of rare earth elements with highest 1878 ppm concentration of ÖREE+Y. Highest Zr concentration recorded was 3356 ppm, which was also from alkaline felsic volcanics. 300m of drilling was complete, intersecting mostly trachyte and basalt, with minor volcanic breccia.
Jalore	Selri- Bhadrajun	1:12500	100		-	135	Reconnaissance Survey (G4) for REE & RM in Selri-Bhadrajun areas, Jalore District, Rajasthan. A G4 stage exploration was carried out by large scale mapping over an area of 100 sq km on 1:12500 scale around Selri and Bhadrajun in Rajsamand district. To identify REE bearing phases, the quantum of sampling done includes chemical analysis of 100 nos. of BRS, 10 nos. of PCS and petrological studies of 10 nos. of PS and 15 nos. of OM.
Rajsamand	Panri and Kundwa	-	100	-	-	243	Reconnaissance Survey (G4) for REE and associated mineralisation in Panri and Kundwa area, Rajsamand District. A G4 stage exploration was carried out over an area of 100 sq km around Panri and Kundwa in Rajsamand district. The quantum of work included chemical analysis of 150 nos. of BRS, 18 nos. of PCS and 50 nos. of 'C-horizon' soil sample to know the distribution of major and trace elements in different lithounits. Petrological study (15 nos. of PS and 10 nos. of OM) had been done to identify the various mineral phases and their textural relationship. The only REE mineral identified in the field was allanite (silicate phase), which was present in migmatite gneiss intermixed with porphyritic augen gneiss near west of Kawas ka Gurha and Bhurwara and in quartzo-feldspathic veins intrusive into porphyritic augen gneiss near Ran and Amet granite near Banjarya. The allanite grains present mainly in

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## STATE REVIEWS

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		
<b>Tungsten</b> Nagaur	Rewat Hill Degana	1:2000	0.4	3	411.3	709	<p>quartzo-feldspathic vein showed pleochroic halos whereas in other rocks they occurred as cluster of prismatic, brown to black grains. Monazite (phosphate phase of REE) was identified by petrographic study. EPMA study of 05 selected samples was yet to be carried out. Analytical results of various litho-units received till date indicated total REE concentration ranges from 5.06 ppm in pegmatite to 963 ppm in Amet granite. Maximum REE value received from pegmatite was 135 pmm which clearly indicates that REE potential in pegmatite was less compared to various granite and migmatite rock present in the study area.</p> <p>General Exploration (G2) detailed mapping was carried out at 1:2000 scale covering 0.4 km<sup>2</sup> area in and around Rewat Hill, Degana along with collection of 10 nos. BRS, 10 PS, 6 nos. OM, 4 nos. PCS, 3 nos. XRD and 1 no. EPMA samples. The area of investigation was represented mainly by three hills which stand prominently over the sandy plain and were composed of granite and phyllite. The main hill (Rewat Hill, Å470) was entirely made up of granite and the adjoining south-western hill (Tikli Hill) was of granite and phyllite in which the granite was intrusive. The third hill (Phyllite Hill) was composed entirely of phyllite having stockworks of quartz. Rest of the area was covered by barren lands, Quaternary sediments and alluvium (low lying areas) and settlements. These three hills were traversed by a number of NW-SE, NNW-SSE, N-S trending quartz veins, pegmatite veins which are wolfram bearing. Semi consolidated bed of alluvium comprising detrital materials (gravel beds) lies near foot hill of Rewat, Tikli and Phyllite hills contains erratically distributed wolfram. A total of 4111.35 m of drilling was carried out in 19 nos. of inclined, deeper level boreholes (RJND-1, 2, 3, 5, 7, 8, 9, 11, 12, 13, 14, 15, 16, 22, 28, 32, 33, 34 and 35) and 16 nos. of shallow</p>

(contd)

## STATE REVIEWS

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		
							level vertical boreholes and 675 nos. of CS samples were generated from W-mineralized zones. All the inclined, deeper level boreholes had intersected significant W- mineralisation with visible wolframite grains which size ranges from 1 mm to 9 cm. However, vertical boreholes did not intersect any significant W-mineralisation in gravel beds.
<b>Potash</b> Sri Ganganagar	-	1:2000	-	-	-	-	Reconnaissance survey for reappraisal of potash in Fazilka and Sri Muksar Sahib districts of Punjab and Sri Ganganagar district of Rajasthan (G4) Exploration for potash was carried out in parts of Fazilka district of Punjab. Geologically, the study area falls in the Satluj basin which is a part of Indo-Gangetic Alluvial Plain. The entire area extending in Punjab was covered with thick blanket of Quaternary sediments.
Nagaur - Ganganagar	Jandawali north block	1:4000	-	-	-	-	Preliminary exploration (G3) detailed mapping of 0.75 sq km. on 1:4000 scale and contouring works carried out at Jandawali North block, falls under survey of India toposheet 44K/02, using DGPS survey equipment. Out of total 9 borehole drilled in the Jandawali North block total three (03nos) were of full-coring (corner boreholes) viz. RJNGJN-01, 05 and 09, rest six (06 nos) were non-coring up to depth of 330.0m. The depth of non-coring varied from 321m at borehole RJNGJN-02 to 330m at rest of the boreholes, depending upon the depositional variability. During detailed lithological borehole logging it was noticed that the contact between Nagaur and HEG varied from 380.60m at borehole RJNGJN-02 to 405.12m at RJNGJN-04. The cumulative thickness of HEG varied from 359.88m at RJNGJN-04 (from 405.12m to 765.0m) to 398.63m at borehole RJNGJN-02 (from 380.60m to 779.23m). Halite from RJNGJN-01; Cluster of sylvite+polyhalite and impurities of clay from RJNGJN-01; Fracture/breccia filled with anhydrite from RJNGJN-04; halite minerals from RJNGJN-07. Geophysical borehole logging was carried out after completion of each boreholes. As per

(contd)

## STATE REVIEWS

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		
Nagaur - Ganganagar	Khunja (NW) block	-	-	-	6181	-	received 175 nos of analytical data from RJNGJN-01, 2.40m zone was established from 675.60m to 678.0m and the K varied from 2.03% to 7.12%. In XRD analysis sylvite, langbeinite [Mg <sub>2</sub> K <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> ] and polyhalite were identified.
Nagaur - Ganganagar	Jorkian south block	1:4000	-	-	-	-	Preliminary exploration (G3) for potash in Jorkian south block in Satipura sub-basin of Nagaur - Ganganagar Evaporite basin, Hanumangarh district, Rajasthan. The area was a part of Satipurasub-basin in Nagaur Ganganagar Evaporite basin (NGEB). Mineralised zone was associated with the Hanseran Evaporite Group. The Hanseran Evaporite Group comprised a cyclic sequence of halite containing potash minerals in the form of Polyhalite (K <sub>2</sub> MgCa <sub>2</sub> (SO <sub>4</sub> ) <sub>4</sub> .2H <sub>2</sub> O), Sylvinite (KCl.NaCl) and Sylvite (KCl). The intervening zone between the halite cycles comprised of anhydrite, clay, dolomite and magnesite. Total 10.30 sq.m. Detailed Mapping had been done on 1:4000 scale and total 14 nos. of boreholes had been fixed with the interval of 800m. Total nine boreholes have been completed i.e. RJNGJK-1 to 9. Around 934 no. of core samples have been submitted to the Chemical Laboratory, Western Region, Jaipur for potash and associated elements analysis.

(contd)

## STATE REVIEWS

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		
Nagaur - Ganganagar	Jandawali south block in Satipura sub-basin	1:4000	-	-	-	-	Preliminary exploration (G3) for potash in Jandawali south block in Satipura sub-basin of Nagaur - Ganganagar evaporite basin, Hanumangarh district, Rajasthan. The study area was flat/ plain and consisted of Quaternary sediments. The potash mineralisation was not related to surface exposures, as Hanseran Evaporite Group (HEG) was concealed under Quaternary sediments and Nagaur Group of rocks. The geological map prepared on 1:4,000 scale and boreholes fixed towards at the interval of 800 m towards south of earlier drilled borehole P-29 (Jandawali), RJNGS-1 to 4. Total thirteen boreholes were drilled. Total 2237 no. of core samples were submitted to the Chemical Laboratory, Western Region, Jaipur for potash and associated elements analysis. Anion analysis of boreholes RJNGJS- 6 was received. Maximum potash value 14.81% was from borehole RJNGJS-10 at 649.42 to 649.7 m depth. In XRD analysis sylvite and polyhalite were observed.
<b>Directorate Mines &amp; Geology, Rajasthan</b>							
<b>RARE EARTH ELEMENT (REE)</b>							
Barmer	village Dandali and Goyna Bhakar area in Sindhari tehsil	12:	-	-	-	-	Regional and geological mapping for strategic minerals (REE) near village Dandali and Goyna Bhakar area in Sindhari tehsil, Barmer district was taken up with an objective to locate Rare-earth Elements minerals. An area of 15.0 sq.km on 1:10,000 scale and 1.0 sq.km on 1:4,000 scale was covered. Calcio carbonatite vein had been marked east of the nepheline syenite hilss near Rebariyo ki dhani school.It was intrusive in syenite rock. Exposures of syenite were noticed over 1.25 km x 0.45 km and 550 m x 250 m area towards east of Gangli.
<b>Limestone</b>							
Ajmer	Village Kanakheda Beawar	-	-	-	224	-	During 2020-21, 224 m drilling has been carried out near kanakheda village of Beawar Tehsil, District Ajmer. Light gray to white Limestone deposit was identified.
Kota	Village Nimana-Dunia Ramganjmandi	-	-	-	320	-	During 2020-21, 320 m drilling had been carried out near Nimana-Dunia

(contd)

## STATE REVIEWS

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		
							village of Ramganjmandi Tehsil, Kota District. 158.44 million tonnes cement grade limestone was estimated.
Udaipur	Village Hariyav Vallabh Nagar	-	-	-	303	-	During 2020-21, 303 m drilling had been carried out near Hariyav village of Vallabh Nagar Tehsil, District Udaipur. Cement grade Limestone deposit was identified.
Jaisalmer	Dadavala village Sam Tehsil	-	-	-	371	-	During 2020-21, 371 m drilling has been carried out near Dadavala village of Sam Tehsil, District Jaisalmer. Limestone deposit was identified.
Nagaur	Tadas & Khorva village- Khivsar Tehsil	-	-	-	496	-	During 2020-21, 496 m drilling had been carried out near Tadas and Khorva village of Khivsar Tehsil, District Nagaur. Cement grade Limestone deposit was identified.
Nagaur	Aavad and Kheda village- Jayal Tehsil	-	-	-	596	-	During 2020-21, 596 m drilling had been carried out near Aavad and Kheda village of Jayal Tehsil, District Nagaur. Cement grade Limestone deposit was identified.
Banswara	Parthipura village Gadhi Tehsil	-	-	-	174.5	-	During 2020-21, 174.5 m drilling had been carried out near Parthipura village of Gadhi Tehsil, District Banswara. Light white coloured crystalline Limestone deposit was identified.
Pali	Khariyaniv village Sojat Tehsil	-	-	-	-	-	During 2020-21, near Khariyaniv village of Sojat Tehsil, District Pali Limestone deposit of about 130-280 m length X 100-180 m breadth was marked.
Dholpur	Baasae village Badi Tehsil	-	6	-	-	-	During 2020-21, near Baasae village of Badi Tehsil, District Dholpur, mapping of various outcrops of chocolate and yellow coloured Limestone were carried out in six sq. km.
<b>Granite</b> Jalore	Chharpatiya village Ranivada Tehsil	-	-	-	-	-	During 2020-21, near Chharpatiya-Sillasan village of Ranivada Tehsil, District Jalore, medium grained yellow coloured Granite deposit of about 350-400 m length X 300-400 m breadth was marked.
Bhilwara	Kaatar village Aasind Tehsil	-	0.1	-	-	-	During 2020-21, near Kaatar village

(contd)

## STATE REVIEWS

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		
							of Aasind Tehsil, District Bhilwara, mapping of Granite plots were carried out in 0.1 sq. km.
<b>Quartzite</b>							
Sirohi	Mohabbatnagar village	-	0.7	-	-	-	During 2020-21, near Mohabbatnagar village of Sirohi Tehsil, District Sirohi, minerlas Schist, Filite and Quartzite of about 20-150 m length X 40-100 m breadth was marked. The deposit could be utilised in masanory stone.

Table – 4 : Mineral Production in Rajasthan, 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
<b>All Minerals</b>		<b>84</b>		<b>229732298</b>	<b>85</b>		<b>257025185</b>	<b>82</b>		<b>311919094</b>
Lignite	'000t	-	8676	-	-	8223	-	-	9056	-
Natural Gas (ut.)	m c m	-	1483	-	-	1883	-	-	2040	-
Petroleum(crude)	'000t	-	7667	-	-	6653	-	-	5891	-
Copper Ore	t	-	1349566	-	-	1119523	-	-	991991	-
Copper Conc.	t	2	66075	4316241	2	51832	3094145	2	42590	3371952
Iron Ore	'000t	7	1108	3893253	10	1012	3677013	9	1088	3982372
Lead & Zinc Ore	t	-	13752295	-	-	14479032	-	-	15455343	-
Lead Conc.	t	10	358369	16316914	10	351746	18260832	10	376924	20416324
Zinc Conc.	t	*	1456804	56083827	*	1446824	60438504	*	1513996	66668989
Manganese Ore	t	1	9410	28230	1	9937	29811	1	6940	20820
Silver **	kg	-	679172	25816971	-	609153	25608038	-	705676	42657180
Phosphorite	t	2	1322486	3795028	1	1300229	4637009	1	1357747	5349981
Garnet (abrasive)	t	4	5166	23662	5	568	1775	4	9307	33585
Limestone	'000t	36	76567	19496173	38	72390	19094468	38	74450	18357853
Selenite	t	3	2906	5812	2	2154	4206	3	202	402
Siliceous Earth	y	16	80237	50205	12	19367	11710	11	18429	12184
Wollastonite	t	3	184063	172013	4	124757	139695	3	103902	96552
Minor Minerals		-	-	99733969	-	-	122027979	-	-	150950900

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

*\* Number of mines covered under lead concentrates.*

*\*\* Recovered at Chanderiya Lead-Zinc Smelter of HZL (as by product) from lead concentrates produced in Rajasthan.*

## STATE REVIEWS

**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 given in Table - 5.

**Table – 5 : Principal Mineral-based Industries**

Industry/plant	Capacity ('000 tpy)
<b>Cement</b>	
ACC Ltd, Lakheri, Distt Bundi	1500
Ambuja Cements Ltd, Rabriyawas, Distt Pali	3600
Binani Cement, Binanipuram, Distt Sirohi	4850
Binani Cement, Neem Ka Thana, Sikar (G)	1400
Birla Corporation Ltd, (Birla Cement Works & Chanderia Cement Works), Chittorgarh	4000
India Cements Ltd, Jhalo ka garha Garhi	1800
J.K. Cement, Nimbahera, Distt Chittorgarh	3250
J.K. Cement, Mangrol, Distt Chittorgarh	2500
J.K. Cement, Gotan, Distt Nagaur	500
J.K. White Cement Works, Gotan, Merta, Distt Nagaur	610 (white Cement) 500 (white Putty)
J.K. Laxmi Cement, Banas, Distt Sirohi	8700
NUVOCO Vistas(Lafarge) India Ltd, Nimbahera, Distt Chittorgarh	2600
Mangalam Cement (Mangalam Cement & Neer Shree Cement), Morak, Distt Kota	3250
Nirma Limited, Nimbol, Jaitaran	2280
Shree Cement Ltd, Beawar, Distt Ajmer	3000
Shree Cement Ltd, Andherideori, Masuda, Ajmer	3600
Shree Cement Ltd, Ras, Distt Pali	3000
Shree Cement Ltd, Ras, Jaitaran, Distt Pali	4000
Shree Cement Ltd, Kushkhera, Distt Alwar (G)	3500
Shree Cement Ltd, Suratgarh, Distt Sri Ganganagar (G)	1800
Shree Cement Ltd, Suratgarh, Rohi, Udaipur-Udasar Distt Sri Ganganagar (G)	3600
Shree Cement Ltd, Jobner, Distt Jaipur (G)	1500
Shriram Cement Works, Kota	400
Trinetra Cement (Subsidiary of India Cement), Nokhala, Distt Banswara	1800
Udaipur Cement Works (Subsidiary of JKCL), Udyog Ltd.), Udaipur	1240
Ultra Tech Cement (Birla White Cement Division), Kharia Khangar, Bhopalgarh	680 (white cement) 400 (putty)
Ultra Tech Cement Nathdwara	4850 (cement)
Binnani Cement Ltd, Amla, Pindwara	

(contd)

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
UltraTech Cement (Aditya I & II), Shambhupura, Distt Chittorgarh	8000
UltraTech Cement, Kotputali, Distt Jaipur	4000
Wonder Cement, Nimbahera, Distt Chittorgarh	8000

**Chemical**

DCM Shriram Industries Ltd, Kota	9 (rayon/yarn) 7.7 (sodium sulphate)
Modi Alkalies & Chemicals Ltd, Alwar	84.2 (caustic soda) 50.3 (Cl), 39.6 (HCl)

**Ceramics/Chemicals**

Bikaner Ceramics Pvt. Ltd, Bikaner	9 (insulators)
Kajaria Ceramics Ltd, Gailpur	6.5 (mill. sq m)
Kajaria Ceramics Ltd, Malootana	24.5 (mill. sq m)
Bhalla Chemical Works Pvt Ltd	10 (zirconium oxychloride & special zirconia)
Roca Bathroom Product Pvt Ltd, Alwar	12.9
Roca Bathroom Product Pvt Ltd, Alwar	2 mill. pc.

**Fertilizer**

Adheeshaa Phosphate, Umarada, Udaipur	132 (SSP)
Arawali Phosphate Ltd, Umra, Udaipur	40 (SSP)
Arihant Phosphate & Fertilizers Ltd, Nimbaheda, Chittorgarh	66 (SSP)
Bohra Industries Ltd, Umra, Udaipur	200 (SSP)
Chambal Fertilizers & Chemicals Ltd, Gadepan, Kota	180 (SSP)
Coromandel International Ltd, (Formerly) Liberty Phosphate Ltd), Jagpura, Kota	132 (SSP)
Devyani Phosphate Pvt. Ltd, Udaipur	60 (SSP)
Dharamsi Morarji Chemical Co. Ltd, Khemli, Udaipur	66 (SSP)
Gayatri Spinners Ltd, Hamirgarh, Bhilwara	30 (SSP)
Indian Phosphate Ltd, Umrada, Udaipur	130 (SSP)
Jagdamba Phosphate, Kota	132 (SSP)
Jubilant Agri and Consumer Products Ltd, Singhpur, Kapasan, Chittorgarh	264 (SSP)
Khaitan Chemical & Fertilizers Ltd, Dhinwa, Distt Chittorgarh	198 (SSP)
Mangalam Phosphates Ltd, Hamirgarh, Bhilwara	72 (SSP)
Ostwal Phoschem (India) Ltd, Hamirgarh, Bhilwara	132 (SSP)
Patel Phoschem (P) Ltd, Umarda, Udaipur	100 (SSP)
Prem Sakhi Fertx. Ltd, Lakadwas, Udaipur	66 (SSP)

(contd)



## STATE REVIEWS

Table - 5 (contd)

Industry/plant	Capacity ('000 tpy)
Rama Phosphates Ltd, Umra, Udaipur	181 (SSP)
Sadhana Phosphates & Chems Ltd, Gudli, Udaipur	120 (SSP)
Shriram Fertilizers & Chemicals Ltd, Shriramnagar, Distt Kota	379.5 (Urea) 113.8 (caustic soda) 13.2 (bleaching powder) 61.2 (HCl) 61.2 (Cl)
Shri Ganapati Fertilizers Ltd, Kapasan, Chittorgarh	99 (SSP)
Shurvi Colour Chem Ltd, Madri, Udaipur	12 (SSP)
<b>Plaster of Paris</b>	
Abhishek Plaster Industries, Baramsar, Distt Hanumangarh	6.1
Agrawal Industries, Nohar, Distt Hanumangarh	6.3
Balaji Plaster Industries, Taranagar, Distt Churu	6
Balaji Industries, Taranagar, Distt Churu	6.5
Ganesh Plaster Industries, Taranagar, Distt Churu	6
Gil Brothers, Taranagar, Distt Churu	7.1
Hind Plaster Industries, Taranagar, Distt Churu	6
Jaishri Plaster Industries, Taranagar, Distt Churu	6.3
Jagdamba Plaster Industries, Rawatsav, Distt Hanumangarh	7
Coromandel International Ltd, (Formerly Liberty Phosphate Ltd), Jagpura, Kota	132 (SSP)
Devyani Phosphate Pvt. Ltd, Udaipur	60 (SSP)
Dharamsi Morarji Chemical Co. Ltd, Khemli, Udaipur	66 (SSP)
Jai Bhavani Plaster Industries, Baramsar, Distt Hanumangarh	6
Jai Sriram Plaster Industries, Taranagar, Distt Churu	7.1
M.G. Plaster Pvt Ltd, Taranagar, Distt Churu	6.2
Mahabir Plaster Industries, Taranagar, Distt Churu	6
Multani Industries, Nohar, Distt Hanumangarh	8.4

(contd)

Table - 5 (concl'd)

Industry/plant	Capacity ('000 tpy)
R.D. Plaster Industries, Nohar, Distt Hanumangarh.	8.4
R.N. Industries, Bikaner, Distt Bikaner	18
Shalimar Plaster & Chemical Industries, Sardarshahar, Distt Churu	14
Shri Lakshmi Gypsum, Chak, Distt Hanumangarh	6
Shriram Plaster, Taranagar, Distt Churu	6.3
SS Plaster Industries, Taranagar, Distt Churu	6
Shiv Bhakti Industries, Nohar, Distt. Hanumangarh	8.4
Tiger Plaster, Sardarshahar, Distt Churu	11
The Sardarshahar Plaster & Minerals, Sardarshahar, Distt Churu	19.4
Updesh Industries Ltd, Chak, Distt Hanumangarh	9
<b>Pellet</b>	
Jindal Saw Limited, Pur, Bilwara	1500
<b>Power generation</b>	
JSW Energy Barmer Ltd, Bhadresh.	1080 MW
<b>Copper Smelters</b>	
HCL, KCC, Jhunjhunu.	31 (Cu cathode)
Rajpura Dariba Lead & Zinc Mine	76.827( Zinc Conc.)
Dariba, Rajsamand	17.506(lead Conc. )
<b>Lead &amp; Zinc Smelters</b>	
HZL Zinc Smelter, Debari, Distt Udaipur.	88 (Zn)
HZL Lead-zinc Smelter, Chanderiya, Distt Chittorgarh.	85 (Pb) 525 (Zn)
	0.833 (Cd)*
	168 tonnes (Ag)
HZL, Dariba Smelting Complex, Dariba Distt Rajsamand.	100 (Pb) 210 (Zn)

\* Total for all smelters of HZL (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 respectively.