

STATE REVIEWS



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(Part- I)

58th Edition

STATE REVIEWS
(Rajasthan)

(ADVANCE RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

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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 16 different minerals along with minor minerals. 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, Karauli, Pali, Rajsamand, Sawai Madhopur,

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Table – 1 : Reserves/Resources of Minerals as on 1.4.2015: Rajasthan

Mineral	Unit	Reserves				Remaining Resources				Total resources (A+B)	
		Proved STD111	Probable		Feasibility STD211	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)
			STD121	STD122							
Apatite	tonne	-	-	-	-	51521	1016000	-	-	1067521	1067521
Asbestos	tonne	-	-	-	-	87802	42101	4526861	57800	13615710	13615710
Ball clay [#]	tonne	26804980	10979851	3735497	41520329	221176	218550	25262892	-	35389353	76909682
Barytes [#]	tonne	134416	-	72751	207167	37808	311500	2304688	-	2784481	2991648
Bauxite	'000 tonnes	-	-	-	-	-	-	528	-	528	528
Bentonite [#]	tonne	4705000	50000	-	4755000	-	222017000	92523096	25730000	423517033	428272033
Calcite [#]	tonne	911597	790072	1597877	3299546	539746	1041668	3371912	-	8919099	12218645
China clay [#]	'000 tonnes	73434	29510	22493	125437	1584	3221	294386	11428	424874	550311
Copper											
Ore	'000 tonnes	15333	-	29718	45051	18603	102088	580541	4480	768276	813327
Metal	'000 tonnes	175.12	-	433.55	608.67	338.66	699.24	2291.94	28.61	3867.14	4475.81
Corundum	tonne	-	-	-	-	-	-	11925	-	11925	11925
Diatomite [#]	'000 tonnes	-	-	-	-	-	-	1440	-	2074	2074
Dolomite [#]	'000 tonnes	57910	4579	13994	76483	16132	25480	327838	784	522607	599089
Felspar [#]	tonne	161965311	102283772	41417085	305666168	12410200	8488066	132329070	2866777	266466928	572133096
Fire clay [#]	'000 tonnes	6561	-	3932	10493	2256	2580	35363	-	44163	54656
Fluorite	tonne	-	-	-	-	1528348	489488	1294529	145183	5243458	5243458
Fullers											
Earth [#]	tonne	3941000	-	-	3941000	-	350000	190409080	-	190759080	194700080
Garnet	tonne	33566	35926	5556	75048	5207	21432	123587	333	209952	285000
Gold											
Ore (Primary)	tonne	-	-	-	-	4600000	50193000	69747720	63000	124603720	124603720
Metal											
(Primary)	tonne	-	-	-	-	6.67	103.34	123.03	0.07	233.11	233.11
Granite [#]											
(Dimension)											
Stone)	'000 cum	5581	100380	4500	110461	-	-	9021742	20000	9080204	9190665
Graphite	tonne	-	-	-	-	165920	250000	1450034	-	1913554	1913554
Gypsum [#]	'000 tonnes	23617	153	658	24428	750	710604	236847	-	1055878	1080306
Iron ore											
(Haematite)	'000 tonnes	2103	2175	380	4658	471	11510	6897	-	33745	38404
Iron ore											
(Magnetite)	'000 tonnes	17148	2185	16090	35423	10113	-	554904	15422	581493	616916
Kyanite	tonne	-	-	-	-	10606	-	-	-	23703	23703
Laterite [#]	'000 tonnes	-	-	-	-	-	-	60490	62860	123350	123350

(Contd.)

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Table - 1 (Concl.d.)

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						
Lead-Zinc														
Ore	'000 tonnes	31662	68687	5767	106116	2965	12888	29734	28779	170547	317929	1380	564222	670338
Lead metal	'000 tonnes	624.56	1666.02	191.76	2482.34	45.21	390.22	733.23	490.82	1860.47	5462.09	-	8982.04	11464.38
Zinc metal	'000 tonnes	2871.75	6728.14	399.63	9999.52	235.38	772.17	1289.91	1514.15	7145.53	13435.31	0.53	24392.98	34392.5
Lead-Zinc metal	'000 tonnes	-	-	-	-	-	-	-	-	-	119.86	22.37	142.23	142.23
Limestone	'000 tonnes	2471143	933889	863351	4268382	367799	1538090	4529048	596071	761855	11365794	939808	20098465	24366847
Magnesite	'000 tonnes	-	-	-	-	912	1589	2121	-	149	49033	-	53804	53804
Manganese ore	'000 tonnes	1051	-	647	1697	-	-0	-	-	-	4030	-	4030	5727
Marble#	'000 tonnes	-	-	-	-	104236	173875	25703	-	90000	837615	-	1231429	1231429
Mica#	kg	20245098	1742047	12209547	34196692	19292500	10605400	5732418	49522483	16922016	36385724	3415315	141875856	176072548
Ochre#	tonne	15009099	4253584	8474360	27737043	42838694	11819905	23478699	1824210	942087	21728459	841236	103473290	131210333
Potash million tonnes	-	-	-	-	-	-	-	-	-	16936	3462	22	20419	20419
Pyrite '000 tonnes	-	-	-	-	-	13667	-	22917	9590	26310	18392	-	90876	90876
Pyrophyllite# tonne	368774	214870	179514	763158	156136	38989	210982	219612	119469	551225	-	-	1296413	2059571
Quartzite# '000 tonnes	140	-	86	226	-	18	18	-	-	706	-	-	742	968
Quartz-Silica sand# '000 tonnes	239131	58049	51719	348900	160380	34587	50216	5464	8001	131816	1098	-	391561	740462
Rock														
Phosphate tonne	37833537	-	477000	38310537	1154961	20857437	4453355	152633	79750	28043783	2627650	-	57369569	95680106
Sillimanite tonne	-	-	-	-	300	-	519	-	-	-	-	-	819	819
Silver														
Ore	onne	58657075	6683000	72753828	138093903	-	8820029524218	27732000	60240000	191542579	-	-	309126997	447220900
Metal tonne	4307.07	220.53	2641.39	7168.99	-	0.26	127.57	1876.39	3045.91	17140.37	-	-	22190.5	29359.49
Tale-Steatite-														
Soapstone# '000 tonnes	52812	2989	22189	77990	11249	6167	17498	1640	858	63411	151	-	100975	178965
Tungsten Ore	tonne	-	-	-	-	-	-	-	-	963666	17000628	5964000	23928294	23928294
Contained WO ₃ tonne	-	-	-	-	-	-	-	-	-	1421.44	90171.5	2115	93707.94	93707.94
Vermiculite tonne	-	-	-	-	20623	2759	4428	-	13000	2883	-	-	43693	43693
Wollastonite tonne	1953384	48075	240003	2241462	3750118	12000	3748191	76088	3325042	1322852	-	-	12234291	14475753

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

Declared as Minor Mineral vide Gazette Notification dated 10.02.2015

Minor Mineral before Gazette Notification dated 10.02.2015

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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 2018-19.

The details of exploration activities conducted by various agencies GSI, MECL, HZL, State DMG, RSMML etc. for limestone, gold, base metals (Cu,Pb & Zn), lignite and other minerals including minor minerals during the year 2018-19 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 ₹10,275 crore for the year 2018-19.

The number of reporting mines in Rajasthan was 82 in the year 2018-19 in case of MCDR minerals (Table-4).

Table – 2 : Reserves/resources of Lignite as on 1.4.2019 : Rajasthan

District	Proved	Indicated	Inferred	Total
Total	1168.53	3029.78	2150.77	6349.08
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, 2018-19

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Table –3 : Details of Exploration Activities in Rajasthan, 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 Metal							
Banswara	Jharka block, southeast of Mahuwal	1:1000	1.7	-	130	75	Preliminary exploration (G3) for base-metal and associated gold mineralisation was carried out to assess the nature and potentiality of gold and base-metal mineralisation. Detailed geological mapping covering 1.7 sqkm area on 1: 1,000 scale in Jharka block was been carried out. The exploration work comprised a total of 75 cu. m trenching along with collection of 75 samples from 9 trenches. Surface indications of mineralisation in Jharka block were seen manifested in the form of malachite stains and presence of fresh sulphides like chalcopyrite and pyrrhotite within the quartzite and dolomite, oxidisation/ferruginisation and old working/ pits. On the basis of surface indication of mineralisation, a promising mineralised zone was delineated on the surface. A total of 130 m of drilling were carried out and sulphide mineralisation was intersected in quartzite in the form of pyrite and chalcopyrite from 22.5 m to 22.7 m depth. The drilling was suspended due to presence of lean mineralisation.
	Tartai block, NW of Mahuwal	1:1000	1.5	2	252	137	Preliminary exploration (G3) was carried out with the objective to assess potentiality of base-metal and gold mineralisation in Tartai block. Exploration work comprised detailed mapping of 1.5 sqkm on 1:1,000 scale along with collection of trench samples for gold-copper assay. A thorough geological study in the block inferred that there are no significant surface evidences of mineralisation except one quartz vein with feeble malachite stains. Drilling was suspended after completion of 252 m in two boreholes. One borehole was drilled up to 142 m. Rare specks of chalcopyrite were observed at the depth of 87 m. Similarly, no

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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		
Jhunjhunu	Bokri north and its north-eastern continuity	-	-	23	5000.0	-	<p>evidence of mineralisation was recorded in the other borehole as well. A total of 58 numbers of bedrock samples were analysed and the results of quartz vein samples indicated copper values ranging from 5 ppm to 20 ppm, cobalt values from <15 to 20 ppm, nickel from <15 to 40 ppm, lead close to 25 ppm, zinc from <5 to 10 ppm and gold & silver values were <0.05 ppm and 5 ppm respectively, whereas in schist samples, copper values were found ranging from 5 ppm to 470 ppm, cobalt values from <15 to 120 ppm, nickel from <15 to 60 ppm, lead from <15 to 45 ppm and zinc from <10 to 85 ppm. Gold & silver values were <0.05 ppm and 5 ppm respectively. A total 79 trench samples after analysis revealed that in quartz vein samples, copper values were found ranging from 5 ppm to 3,900 ppm, cobalt values from <15 to 85 ppm, nickel from <15 to 80 ppm, lead <25 ppm, zinc from 5 to 105 ppm and gold from <0.05 to 0.65 ppm. The high values of copper up to 3,900 ppm and Au ranging from <0.05 to 0.65 ppm were observed in samples from Trench no.3. The high values could probably be due to presence of slag.</p> <p>During general exploration (G2) for copper and associated mineralisation in Bokri north and its north-eastern continuity, Eastern Khetri Metallotect, a total of 3,446.95 m drilling were carried out in 19 boreholes. The objective of the study is to prove subsurface continuity of copper and associated mineralisation by undertaking 5,000 m drilling in 23 boreholes and carrying out estimation of resource. Intersected mineralisation is manifested in the form of dissemination, streaks and as veins & fracture filling of chalcopyrite, pyrite, and rarely pyrrhotite and magnetite. About 15 boreholes intersected copper mineralisation of varying thick-</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		
							ness and grade. The intersected thickness along boreholes was found to range from 2.0 m to 43.75 m with a VE of 0.2 to 0.25 % Cu. The study will continue in field season 2019-20.
Jhunjhunu	North-east continuity of Malwali block	-	-	06	1096.0	-	A total of 1,096 m drilling was carried out by 6 boreholes to intersect mineralisation at 60 m vertical depth in the north-eastern continuity of Malwali block. In the boreholes RJMN-1, 2 and 3, three mineralised zones of 5 m to 40 m thickness were intersected. In boreholes RJMN-4 and 5, mineralisation splits into five zones of 5 m to 18 m thickness. In Borehole RJMN-6, two mineralised zones of 5 m to 13 m thickness were intersected. The area lies in the south-eastern parts of North Khetri Belt. Copper mineralisation is evidenced by presence of malachite staining, old workings and old prospecting. The copper ore reserve/resource will be estimated after receipt of analytical results of core samples.
Sikar	Khora extension block, Neem ka Thana	-	-	20	-	-	The surface evidences of mineralisation were found & noted as widespread, intense with pervasive malachite stains. Occurrences of chalcocite and bornite as dissemination and vein filling were also recorded. In subsurface, the mineralisation occurred in the form of fine specks of chalcocite, bornite and covellite as dissemination which is mostly concentrated in calcite/quartz-rich zones. About 20 boreholes were drilled which intersected copper mineralisation mainly in the form of chalcocite, bornite and chalcopyrite. The study will continue in field season 2019-20.
	Bhudoli block, Neem ka Thana	1:2000	1	-	-	-	Preliminary exploration (G3) included detailed mapping of 1.0 sqkm area (1:2,000 scale). Surface evidence of mineralisation was manifested in the form of sporadic malachite staining in calc-silicate. Fresh sulphides of rare occurrence were observed.

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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		
Pali	Phulad-Saran- Kantaliya area	1:12500	100.0	-	-	-	During reconnaissance survey (G4) for base-metals and gold mineralisation, a total of 100 sqkm area was mapped on 1:12,500 scale. Pyrite, pyrrhotite chalcopyrite within the calc-silicate and amphibolite were observed at places.
Alwar	Mundiyawas block Mundiyawas- Khera area	-	-	15	2798.0	-	During G2 level general exploration for copper and associated precious metals in Mundiyawas block, Mundiyawas-Khera area, 15 boreholes were drilled to a cumulative depth of 2,798.40 m. All the boreholes intersected significant copper mineralisation. The dominant ore minerals were chalcopyrite, pyrrhotite and arsenopyrite. The mineralisation occurred in the form of disseminations, streaks, stringers, vein and fracture fillings and occasionally massive type. Part analytical results showed that the Borehole No-21 intersected copper lode of 6.2 m thickness with 0.40% Cu and Borehole No-26 intersected two copper lodes of 4.05 m cumulative thickness with 0.20% Cu at 0.2% Cu cut off. Borehole No-27 intersected two copper lodes of cumulative thickness of 18.4 m with 0.54% Cu at 0.2% Cu cut off and one gold lode of 2.6 m thickness with 0.79 g/t Au at 0.5 g/t Au cut off. The exploration work is in progress.
	Khera North block, Mundiyawas- Khera area	-	-	-	1007.80	380 core samples	During G3 level preliminary exploration for base-metals and associated precious metals in Khera north block, Mundiyawas-Khera area, a total of 1007.80 m of drilling, 998.42 m of geophysical borehole logging and 3.52 L km Mise-a-la-Masse were carried out and 380 core samples were collected and analysed to delineate the zones of copper and associated precious metals mineralisation. A sulphide zone of 150 to 200 m strike length was delineated in this block. Major mineralisation was intersected in the form of specks, stringers,

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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		
							fracture filling and massive chalcopyrite associated with pyrrhotite and minor arsenopyrite and pyrite.
	Jhiri block, Pratapgarh, Thanagazi tehsil	1:2000	1.5	06	802.0	-	G3 level of preliminary exploration for base-metals and associated precious metals in Jhiri block, Pratapgarh, Thanagazi tehsil comprised detailed mapping of an area of 1.5 sqkm on 1:2,000 scale, 15 Lkm of geophysical survey and 100 cu.m. of pitting & trenching. A total of 6 boreholes were drilled to a cumulative depth of 802 m with 200 m spacing and the major sulphide phases noticed in the study area were pyrite and pyrrhotite. The exploration work is in progress.
	Bisoni block, Thanagazi tehsil	-	-	5	853.85	225	G3 level of preliminary exploration for copper and associated precious metals in Bisoni block, Thanagazi tehsil involved 853.85 m drilling in 5 boreholes, pitting/trenching of 62 cu. m and collection of 175 core samples & 50 pit/trench samples. The boreholes intersected sulphide mineralisation in the form of specks, stringers of bornite and covellite. Pyrite and pyrrhotite were noticed in abundance and arsenopyrite, galena and hessite (Te and Au) were also seen. The exploration work is in progress.
	Angari block, Thanagazi tehsil	-	-	08	1226.0	300	During preliminary exploration (G3) for copper and associated precious metals in Angari block, Thanagazi tehsil, a total of 1,226 m drilling in 8 boreholes with depth ranging from 120 m to 240 m were carried out in the central and western parts of the Angari block. Three boreholes intersected sulphide mineralisation in the form of specks, stringers, vein filling and occasional massive bornite, chalcocite and chalcopyrite within tremolite-bearing dolomitic marble and quartz vein. A total of 300 core samples have been collected for chemical analysis.

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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		
	Pai ka Guwara block, Tehla-Bighota area, Rajgarh Tehsil	-	-	08	1265.95	720	During G3 stage preliminary exploration for base-metals and associated precious metals in Pai ka Guwara block, Tehla-Bighota area, Rajgarh Tehsil, a total of 1,265.95 m of drilling was carried out in 8 first and one 2 nd level borehole. A total of 125 bedrocks samples and 595 channel/trench samples were analysed to establish the mineralised zones. On the basis of analytical results and surface indication of copper mineralisation, two mineralised zones were established. The first Mineralised Zone-I is delineated in white siliceous dolomitic marble. The Mineralised Zone-II was delineated in carbonaceous phyllite and was found to extend a strike length of 200 m with width of 15 m. A total of 595 core samples were collected for analysis. The mineralised zone was observed to be lensoid shape. Copper mineralisation occurred mainly in the form of chalcopyrite, chalcocite and bornite.
	Ramsinghpura block, Tehla-Bighota area, Rajgarh Tehsil	1:2000	1.0	5	767	135	Preliminary exploration (G3) for base-metals and associated precious metals involved a total of 767 m of drilling in Ramsinghpura Block, Tehla-Bighota area, Rajgarh Tehsil along with detailed mapping of 1.0 sqkm area on 1:2,000 scale. On the basis of presence of malachite staining and fresh sulphides, a mineralised zone of 400 m strike length with a width of about 25-50 m was delineated on the surface. A total of 135 channel samples have been analysed for base-metal analysis. During field session 2018-19, 5 first-level boreholes were drilled to establish the depth persistence and strike continuity of mineralised zone in the area. Sulphide mineralisation was intersected in these boreholes mainly in the form of fine disseminations and rare specks of pyrite, chalcopyrite and malachite stains. Only pyrite-bearing

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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		
							carbonaceous rocks of Thanagazi Formation were intersected. The exploration work is in progress.
	Jodhawas-Kishori block,	1:12500	100.0	-	-	50	During G4 stage reconnaissance survey for base-metals in Jodhawas-Kishori block, an area of 100 sqkm was mapped on 1:12,500 scale. During Large-Scale Mapping, 5 trenches were laid in NE of Village Ganeshpura to check the continuity of mineralisation. A total of 48 cu. m trenching and 2 cu. m of pitting were carried out along with collection of a total of 50 samples. The area showed evidences of mineralisation and mining activity in the form of old working, ferruginisation, brecciation and occasional occurrences of malachite staining. Old workings points towards the ancient smelting activities for winning copper in the area. NW of Raipura area near Village Kishori, a 50 m wide zone of silicification was noticed exclusively marked by quartz veins of 10 to 15 cm width. Fresh sulphides like chalcocite and bornite were suspected in these quartz veins. Both limonitic stains and malachite stains were also noted in the quartz veins. On the basis of these evidences, different mineralised zones were delineated in the area. The exploration will continue in field season 2019-20.
	Deota area	-	-	02	302.80	29	A preliminary exploration (G3) for base-metal and associated precious metal was carried out in the Deota area. A total of 302.80 m of drilling in two boreholes were carried out and 29 core samples, 10 petrography samples and 10 ore petrography samples were collected to study the nature of mineralisation. The boreholes did not intersect any mineralisation as the surface mineralised zone exhibited no strike and depth continuity.

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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	Northern part of Toda- Ramliyas block	-	-	16	3714.50	-	During general exploration (G2) for base-metal mineralisation in northern part of Toda-Ramliyas block, a total of 3,714.50 m drilling in 16 boreholes were carried out. On the basis of visual estimation, the Cu mineralised zone was observed to extend up to a strike length of over 800 m with 250 m vertical depth. On the basis of sub-surface data, it can be inferred that the copper mineralisation becomes shallower towards the northern part of the block. The study will continue in field season 2019-20.
	Nathuwala block	-	-	09	1205.30	-	During preliminary exploration (G3) for base-metal and associated precious metals mineralisation in Nathuwala block, a total of 1,205.30 m drilling were carried out in 9 first-level boreholes along with 50 cu m of trenching. Mineralisation was found to be present as veins and fracture filling. The main sulphide minerals observed in the mineralised zone were pyrite, chalcopyrite, pyrrhotite, chalcocite, bornite and covellite associated with quartz and carbonate veins. The mineralised zone was found to extend up to a strike length of over 1.8 km. Petrographic studies of the core samples confirmed the presence of chalcocite and bornite as the main ore minerals of copper along with chalcopyrite, pyrrhotite, sphalerite, galena and pyrite. One borehole which intersected a zone of more than 45 m thick sulphide mineralisation was found to comprise 21.0 m of Cu lode with Cu ranging from 0.20% to 0.34%. Another borehole that intersected a zone of more than 54 m thick sulphide mineralisation comprised a copper lode of 9.0 m thickness with Cu ranging from 0.35% to 0.51%.
	South Ghatiwala block	-	-	06	996.15	-	During preliminary exploration (G3) for copper in South Ghatiwala block, a total of 996.15 m drilling were carried out in 6 boreholes.

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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		
							The boreholes intersected feeble and sporadic copper sulphide mineralisation in the form of fine disseminations, vein filled specks and fracture filled smears of bornite, chalcocite and few specks of chalcopyrite and covellite. Vein filled specks of specularite and fracture filled and disseminated pyrite also were observed in the boreholes. Boreholes No-2 & 03 intersected copper mineralisation with a thickness of 03 m x 0.14% Cu and 01 m x 0.2% Cu and 01 m x 0.1% Cu, respectively while Borehole No-01 did not intersect any significant copper mineralisation. The study will continue in field season 2019-20.
	Narda- Kalakota block	1:12500	60	-	-	-	Reconnaissance survey (G4) for base-metal and associated precious metal was taken up with mapping of 60 sqkm area on 1:12,500 scale along with collection of random / grid bed rock, PCS, channel and trench samples. Surface indications of copper mineralisation were observed in three major areas, such as, Daudham, west of Narda and NW of Sanja Ki Dhani. The surface evidences of copper mineralisation included malachite stains and presence of fresh sulphides, such as, bornite and chalcopyrite. The ore petrographic study confirmed the presence of copper mineralisation in the form of vein filled and disseminated grains of chalcopyrite. Covellite and pyrite association and bornite, covellite and chalcopyrite association were observed in NW of Sanja Ki Dhani.
	Lanpiya- Indrapura area,	1:12500	100.0	-	-	30	During reconnaissance survey (G4) for copper and associated mineralisation in Lanpiya-Indrapura area (between already explored Banera and Sanganer block), Large-Scale Mapping of 100 sqkm area on 1:12,500 scale was carried out along 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		
							106 cu. m of pitting/trenching. Besides, 30 ground water samples were collected from closed ground water system to trace the presence of subsurface mineralisation in the soil/alluvium covered area. Surface manifestations of base-metal mineralisation were quite prominent in the area. Malachite staining was observed in almost all the litho-units of the area. Specks and veins of primary sulphides like chalcopyrite, bornite, pyrrhotite and pyrite were observed in the BMQ. Several oxidised and gossanised zones were noticed in the area of Arjiya, Devpura, and Zeepiya and Ranikpura. Old working, slag heaps, mine dumps with malachite stains and recent mine shafts were observed in Ranikpura, Devpura, and Pola Ji Ki Dungar areas.
Chittaugarh	Rewara Prospect, Pur-Banera belt	-	-	-	-	-	The preliminary exploration (G3) for base-metal mineralisation was taken up with an objective to reassess the subsurface Pb-Cu-Zn mineralisation in already explored Rewara Prospect. The exploration work comprised a total of 1,570 m drilling in 8 boreholes, detailed geological mapping of 1.00 sqkm area on 1:2,000 scale and collection of 570 core samples. Surface manifestations of mineralisation were observed in the form of old workings, vertical shafts and slag dumps. The mineralisation was observed as lithologically and structurally controlled. The mineralisation intersected in boreholes was in the form of stringers, thin veins, specks and disseminations of chalcopyrite, galena, sphalerite and pyrite. The thickness of the zones intersected in the boreholes was found to vary from 2.0 to 5.50 m with visual estimates of Cu (0.1 – 0.5%), Pb (0.5 – 2.5%) and Zn (0.3 – 0.7%) approximately. The study will continue in fields season 2019-20.

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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		
Udaipur	Lalpura, Bemla & Ramaj area	1:12500	100.0	-	-	60	During reconnaissance survey (G4) for copper and associated mineralisation in Lalpura, Bemla and Ramaj areas, Large Scale Mapping of 100 sqkm area on 1: 12,500 scale was carried out. Surface manifestations of copper mineralisation were observed in the SW and NE parts of the study area in the form of profuse malachite staining, extensive ferruginisation, limonitisation and gossan zones. Specks and stringers of chalcopyrite, covellite and pyrite were noticed within the ferruginous and micaceous quartzites near Bajani Rori-Bemla-Rupatalai-Budal-Lalpura areas. The mineralisation was observed as lithologically as well as structurally controlled. The chemical data of 60 bedrock samples show anomalous Cu values ranging from 0.11% to 2.07% with an average Cu value of 0.55%. The study will continue in field season 2019-20.
Bhilwara	Kamalpura NE block	-	-	20	6550.0	2200	G2 exploration (general exploration) for copper in Kamalpura NE block and reassessment of earlier explored Kamalpura block in Southern Part was executed in Kamalpura block with the objective to assess copper ore resource. The G2 stage drilling of 6,550 m was carried out in 20 boreholes and a total of 2,200 core samples were collected. Boreholes at a general strike spacing of 100 m have been drilled to assess the strike as well as down dip continuity of the copper mineralised zones. Since, 2013-14, a total of 10,235 m drilling were carried out in Kamalpura Block in 38 boreholes. During 2018-19, a total of 20 boreholes were drilled. Chalcopyrite is the main copper ore mineral along with covellite and vein filled bornite. The Borehole-5 intersected significant mineralisation at depths from 84.0 m to 96.0 m and 108.0 m to 117.0 m, 133.0 m to 136.0 m, 156.0 m to 159.0 m with more

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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		
							than 0.2% Cu (visual estimate) and 170.0 m to 173.0 m with 0.2% Cu (V.E). In Borehole-7, significant mineralisation was intersected from 93.0 m to 99.0 m, 120.0 m to 132.0 m, 155.0 m to 168.0 m and 177.0 m to 204.0 m with less than 0.2% Cu (visual estimate). The study will continue in field season 2019-20.
	Sopura-Sethuria area	1:12500	100.0	-	-	-	During reconnaissance survey (G4) for Base-metal in Sopura-Sethuria area, an area of 100 sqkm was mapped on 1:12,500 scale. Intense malachite staining was noticed in quartzite hill, north of Village Sethuria for a strike length of 1.8 km and width of 300 m. Fresh sulphide minerals like chalcopyrite, covellite, bornite and pyrite with profuse malachite stains were reported in calc-silicate rock in well dump near Village Hirakhedi. An area of 1 km x 0.5 km was recommended for further investigation. Geochemical samples have been submitted for analysis.
	South west of Agucha	1:12500 1:2000	50.0 0.75	03	590.0	-	Reconnaissance survey (G4) for Pb and Zn mineralisation that comprised 350 sqkm ASTER image processing, 50 sqkm area of Large-Scale Mapping (1:12,500), 0.75 sqkm area of detailed mapping (1:2,000), 590 m of scout drilling in 3 boreholes, 16 L km ground geophysical survey (SP, IP, Magnetic) and 590 m of Mise-a-la-masse survey were carried out. Malachite stains were noticed in dump materials of dug well near Parsarampura (west of Agucha).
	Urja Ka Khera area	1:2000	2.0	-	-	-	Preliminary exploration (G3) was taken up with the objective to evaluate potentiality of Pb, Zn and associated mineralisation in Urja Ka Khera area, south of Agucha deposit. Detailed mapping covering 2.00 sqkm area on 1:2,000 scale was carried out in Urja Ka Khera and Barantia

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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		
							villages. As most of the area was observed to be soil covered, the surface indications for mineralisation were noticeably seen in the Urja Ka Khera block. Only persistent gossan, ferruginisation and limonitisation were found to be present with malachite staining along the weak planes on calc-silicate rock. Yellow to orange coloured ferruginised material were seen in the dump of dug wells found near Village Urja Ka Khera. The study will continue in the next field season 2019-20.
REE							
Rajsamand	In and around Borana area	1:12500	100.0	-	-	401	During reconnaissance survey for REE mineralisation in and around Borana area, Rajsamand district, an area of 100 sqkm was mapped on 1:12,500 scale. The malachite stains have been seen in quartz veins, etc. A pegmatite body of 700-800 m length and 100-150 m width was noticed in south-western part of Village Kemuniya. The sparsely dispersed allanite grains were observed within migmatite gneiss and syenite near Chatrawanmata temple at Borana. A total of 401 bedrock samples were collected for chemical analysis. The analytical results of a few bedrock samples (BRS) in migmatite gneiss showed the Σ REE values varying from 1,300 ppm to 3,300 ppm whereas in 2 samples in syenite/alkali feldspar syenite it was found to range from 1,700 to 1,850 ppm. These migmatite gneisses with encouraging Σ REE values were mapped in and around Kemuniya and Palra villages. The REE potential of the area will be evaluated after receipt of analytical results of all the samples.
Bhilwara	In and around Para-Ugain-Kalera-Devra-Paroli-Johna Silli areas	1:12500	100.0	-	-	108	Reconnaissance survey for REE and Rare Metals in and around Para-Ugain-Kalera-Devra-Paroli-Johna Silli areas of Bhilwara

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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		
							district involved mapping of 100 sqkm area on 1:12,500 scale. The presence of columbite, tantalite, beryl and tourmaline were reported in some of the pegmatites in the study area which clearly denotes REE potential of the host rock. Surface indication of base metal mineralisation was also noticed. Small crystals of apatite and zircon were observed in pegmatite samples. Analytical results of 108 bedrock samples indicated that tREE value of eight samples was of higher value ranging from 1,000 ppm to 1,500 ppm. Three samples analysed showed anomalous value ranging from 2,000 ppm to 2,500 ppm.
	East of Gyangarh, Sandmata Complex	1:12500	100.0	-	-	-	In Bhilwara district, reconnaissance survey for niobium, tantalum and REE was taken up towards east of Gyangarh, Sandmata Complex which involved Large-Scale Mapping of 100 sqkm area on 1:12,500 scale. Analytical results indicated REE concentration in granite and granite gneiss to range from 500 ppm to 1,300 ppm. Ce values were found to range from 215 ppm to 496 ppm, La values from 19 ppm to 396 ppm, Nd values from 15 ppm to 182 ppm, Y values from 55 ppm to 103 ppm and Nb values from 13 ppm to 66 ppm.
Barmer	Siwana area	1:12500	100.0	-	-	114	Reconnaissance survey was taken up in and around Chappan Ka Pahar, Siwana Ring Complex (SRC), Siwana area, Barmer district. Large-Scale Mapping at 1:12,500 scale covering 100 sqkm area in southern part of SRC was completed. Chemical analysis indicated encouraging values of total REE. As per analytical results of 114 BRS samples, "REE values in different rocks were (i) Plagioclase-rich granite: "REE 0.027%-0.48%; (ii) K-feldspar-rich granite: "REE= 0.017%-0.51%; (iii) Younger Intrusives "REE= 0.28%-2.03% and (iv) Felsic volcanic "REE = 0.013%-0.041%.

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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		
	Sarnu- Dandali area	1:12055	60	-	-	34	During reconnaissance survey for REE and rare metal mineralisation in Sarnu-Dandali area, Barmer district, an area of 60 sqkm was mapped on 1:12,500 scale. A total of 20 line km of gravity, magnetic and radiometric survey covering 2 sqkm were carried out to understand the behaviour of alkaline rocks and to delineate carbonatite bodies in sand covered area. Carbonatite dyke in Kamthai area showed panther-skin texture. Another carbonatite dyke identified around Chibar Nadi area, was fine-grained, yellow coloured rock. Chemical analysis of 32 BRS samples showed "REE values ranging from 0.019% to 16.5% with LREE more than HREE. Two bedrock sample of carbonatite from Kamthai area yielded 8.98% and 16.5% "REE and carbonatite from south of Sarnu showed very low values (0.06%). Foidite showed 0.13% "REE value. In Kamthai area, EPMA study of carbonatite indicated bastnasite, ancylite and parasite as major REE phases while in carbonatite from Chibar Nadi area the dominant REE phase was monazite. In alkali feldspar, syenite dominant REE phases were monazite and ferrugosanite (Niobium-bearing phase).
Nickel							
Udaipur and Dungarpur	Rohanwara- Matugamra- Amarapura area	Large- scale	100.0 700.0	-	-	40	Reconnaissance survey for Ni and associated PGE mineralisation in Rikhabdev ultramafic rocks of Rohanwara-Matugamra-Amarapura area, Udaipur and Dungarpur districts involved Large-Scale Mapping of 100 sqkm and 700 sqkm ASTER image processing. The main host rock for Ni, Cr and PGE in this area was serpentinite. A major NW-SE trending serpentinite unit was observed around Khemaru area with a strike length of about 5 km and width varying from 500 m to 1.5 km besides around 10 small, isolated

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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		
							serpentinite units were observed around Gora Moraya, North of Pandiawara, Rohanwara, west of Depur, north of Redla, north of Kherwada and around Methali area. Towards south of Khemaru, oxidised zone was recorded within serpentinite along the contact of phyllite. The thickness of the zone was found to vary from 1 to 2 m with strike length extending to about 15 to 20 m. Towards west of Depur area, malachite stains were observed in talc-chlorite-schist and the thickness of that zone showed variations from 2 to 3 m with strike length extending to about 30 to 35 m. Chemical analysis result of 40 bedrock samples indicated Ni, Cr and Co value to range from 170 ppm to 0.64%, 370 ppm to 1.16 % and 15 ppm to 250 ppm in serpentines, respectively.
Churu	Around Dunkar-Rupeli area	1:2000	2.0	5	1000	460	Preliminary exploration for Ni and precious metals mineralisation was carried out around Dunkar-Rupeli area, in parts of Bidasar Ophiolite Suite, Churu district. A total of 5 boreholes were drilled to a cumulative depth of 1,000 m with depth ranging from 150 m to 240 m. To delineate different serpentinite bodies and demarcate source rock for Ni anomaly, an area of 2 sqkm was mapped in 1:2,000 scale. A total of 460 core samples were collected for chemical analysis. Analytical values of a total of 184 core samples up to the depth of 144.0 m of serpentinite in one borehole were analysed for Ni and the values were found to vary from 170 ppm to 0.23% within serpentinite. The rest of the chemical results are awaited.
Pratapgarh	Ambav area	1:2000	1.0	-	768.0	-	Preliminary exploration for nickel and associated mineralisation in Ambav area was carried out. During the course of the investigation, detailed mapping of 1.0 sqkm area on

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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		
							1: 2,000 scale along with 768 m drilling was carried out. An old working of 120 m strike length with maximum width of 20 m was exposed in the study area. The samples for EPMA analysis were collected from the brecciated and limonitised mineralised zones and these showed that the mineralisation is in alloy form, i.e., Cu-Ni-Sn-Au and Ni-Zn-Pb-S. In the Cu-Ni-Sn-Au alloy, Ni showed 71.82% element content whereas in Ni-Zn-Pb-S alloy, Zn showed 71.32% element content.
Glaucanite							
Karauli	Vindhyan super group	1:12500	50.0	-	-	120	G4 stage reconnaissance survey for glauconite sandstone/shale of the Vindhyan Supergroup exposed in parts of Karauli district was taken up. During the Large-Scale Mapping, glauconitic sandstone/shale was delineated in the rocks of Jhiri Formation within Rewa group of lower Vindhyan. The glauconitic sandstone from Asthal showed a visual estimate of 60-80% glauconite mineral. Chemical analysis of bedrock samples indicated that olive green to khaki shale from Jhiri Formation contain maximum K ₂ O of up to 6.23% with an average value of 4.74%.
Limestone							
Jaisalmer	Bharmal ki Tekri block	-	-	23	910.0	242	During G2 stage general exploration for SMS/Cement-grade limestone in the Bharmal Ki Tekri block, boreholes were drilled to a depth range of 40+10 m at 400 m grid interval and 6 XRD samples, 6 thin section samples, 211 core samples and 19 geotechnical samples were collected. Three types of limestone were intersected in the boreholes, i.e., hard and compact limestone of Khuiala Formation, chalky limestone and impure clayey limestone. The lithology intersected in the boreholes were a few meters of soil cover/loose sand/limestone stone fragments followed by a good thickness 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		
							limestone within depth of 0 m to 16 m with width ranging from 3 m to 9 m, impure clayey limestone of 4 m to 16 m within depth range of 6 m to 34 m followed by variegated clay unit ranging from 35 m to 40 m. The study will continue in field season in 2019-20.
	Kamiyon ki Beri block	-	-	32	1320.0	817	G2 stage general exploration for SMS/cement-grade limestone was carried out in the Kamiyon Ki Beri block. During the investigation, vertical boreholes were drilled with a depth range of 40+10 m at 400 m grid interval. Mainly three types of limestone, i.e., hard and compact limestone of Khuiala Formation, chalky limestone and impure clayey limestone were intersected in the boreholes. The hard and compact limestone of Khuiala Formation intersected was of a maximum thickness of 11 m, while the thickness of chalky limestone in individual borehole ranged (cumulative) from 1 m to 12 m within depth range of 5 m to 27 m. The impure clayey limestone in individual borehole showed thickness that ranged (cumulative) from 3 m to 22 m within depth range of 6 m to 49 m while the thickness of variegated clay in individual borehole ranged from 2 m to 16 m within depth range of 18 m to 40 m. The study will continue in next field season.
	Sakar ki Dhani block	-	-	29	1250.0	883	G3 stage preliminary exploration for low silica SMS/ cement-grade limestone comprised drilling of 29 boreholes to a depth range of 40+10 m at 400 m grid interval. Three types of limestone, i.e., hard and compact limestone, chalky limestone and impure clayey limestone of significant thickness were intersected in the boreholes. The study of cores log indicated different varieties of limestone which included hard and compact limestone with thickness ranging from 7 to 23 m within depth range of 0 to 30 m, chalky

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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		
							limestone with thickness ranging from 3 to 14 m within depth range of 10 to 35 m and impure clayey limestone with thickness ranging from 3 to 18 m within depth range of 9 to 35 m. The exploration will continue in field season 2019-20.
DGM							
Lignite							
Bikaner	N/v Diyatra, Tehsil Kolayat	-	-	61	11153.0	-	During 2018-19, exploration for lignite was continued n/v Diyatra, Tehsil Kolayat, Bikaner district. So far, 61 boreholes were drilled to a cumulative depth of 11,153.50 m. The progressive average of lignite/overburden ratio is 1:24.18. At the end of 2018-19, the total progressive lignite reserves was estimated at 28.33 million tonnes and that of carb clay was at 20.87 million tonnes. In Bikaner district, regional mineral survey near the villages of Gol Pratap ki Dhani in Nal Badi was continued with an objective to explore new lignite deposits in border region.
Iron Ore							
Jaipur	N/v Bagawas, Tehsil Viratnagar	1:10000	5.0	-	-	-	Exploration to prove iron ore reserves was taken up near Village Bagawas, Tehsil Viratnagar. During exploration work, iron ore was observed in tubewells and moderate geophysical values were also observed in the area. About 63.41 L km area was covered by geophysical mapping. Besides, an area of 5.00 sqkm was mapped on 1:10,000.
Alwar	Rajgarh and Raini Tehsils	1:4000	3.0	-	-	-	Exploration for iron and other associated minerals was taken up near Village Bahali, Simbu ka Bas, Moti ka Bas, Fetehpura, Kharkari Chavand singh, Andhwari, etc. in Rajgarh and Raini tehsils. An area of 3.0 sqkm was mapped on 1:4,000 scale and 8 samples were collected.
REE							
Barmer	Sindhari Tehsils						During 2018-19, regional mineral survey in Sodha ki Dhani, Bambdi Nadi and Sevron Ki Dhani, Sindhari tehsil, Barmer district,

(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		
							Rajasthan was taken up with an objective to search for Rare-earth Elements. An area of 20 sqkm on 1:10,000 scale, 2.0 sqkm on 1:4,000 was covered and 17 samples were collected during the survey. Two carbonatite dykes were observed in and around Bambdi Nadi, Sevron ki Dhani. One carbonatite dyke was exposed up to 30 m in length and 1.0 to 2.0 m in width. The other carbonatite dyke exposed was 42.0 m in length and 2.70 m in width. Earlier three carbonatite samples indicated REE values near Bambodi nadi and Sodha Ki Dhani in Baytu tehsil. The REE value was found to range from 168 ppm to 470 ppm and in this HREE was found to ranging from 0.02% to 0.05%. Yttrium was seen ranging from 27.69 ppm to 51.10 ppm. The area seems to be an anomalous zone having with high values of REE.
Limestone							
Kota	N/v Nimana-Dunia,Shohan Khera, Tehsil Ramganjmandi.	1:10000 1:4000	16.00 3.50	4	128.00	52	The exploration was taken up to assess cement-grade limestone in the area. The progressive inferred geological resources were estimated at 17.21 million tonnes of marginal cement-grade limestone and 29.59 million tonnes of kota stone. Exploration will continue.
Baran	N/v Aughar, Tanda, Majhola Bhagwanpura and Thana Kasba, Tehsil Shahabad.	1:10000 1:4000	10.00 3.30	-	-	10	-
Karauli	N/v Hansapur, Gota, Chichiri, Tehsil Mandrayal	1:10000 1:4000	30.00 5.00	-	-	-	The limestone was observed intermittently in 10 km x 40 to 1500 m x 5-30 m area.
Naugar	Tadas	1:10000	5.00	-	-	-	-
	N/v Deh Tehsil Jayal	1:10000	20.00	7	297	121	Cement-grade limestone reserves/resources of Indicaed category were estimated at about 175.84 million tonnes. Exploration will continue.

(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		
	N/v Awad & Khera Tehsil Jayal	1:10000	15.00	2	61.5	4	Cement-grade limestone reserves/ resources of Indicated category estimated at about 19.20 million tonnes. Exploration will continue.
	N/v Tadas & Khorwa, Tehsil Khinswar	1:10000	5.00	-	-	3	Exploration will continue.
Sirohi	Pindwara Tehsil	1:4000	1.00	4	184.00	172	Jharoli-Laj-Phulera-Nitaura limestone band was intermittently found to extend for a strike length of more than 25 km with exposed width up to 300 m. The project was taken up in 2016-17.
Banswara	N/v Parthipura, Nayatalab, etc.	1:4000	5.00	-	-	150	About 3.5 km long medium to coarse-grained, crystalline pink to white coloured limestone with width varying from 100 m to one kilometer was established.
Dholpur	N/v Gulawali, Sumerpur, etc. Tehsil Bari & N/v Kamre ka pura, Maroli-Rajai, Sagarpada,etc	1:10000	22.00	-	-	-	Limestone was exposed close to River Chamble. The project is in progress.
Dungarpur	Munger, Barwasa, Sabla,etc, N/v Kopra, Bhimdari, Tehsil Sagwara.	1:4000	1.00	-	-	-	The light coloured fine to medium- grained limestone, at places hard and compact crystalline marble band was mapped n/v Kopra for about 1,200 m strike length with an average width of 32 m to 120 m.
Ajmer	N/v Shyamgarh Pakriyawas, Kanakheda, Kesarpura, Shivpurghata, etc. Tehsil Beawar	1:4000	3.00	-	-	07	Four limestone bands of dimension varying from 920 - 1550 m x 80 - 550 m have been mapped.
Jaipur & Alwar	N/v Bithloda, Mandha, Bhankri, Karoi, Nayabas, etc., Tehsil Beawar	1:4000	2.00	-	-	03	-
Sikar	Maonda, Tehsil Neem ka Thana	1:10000 1:4000	10.00 3.20	-	-	24	-

(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		
Jodhpur	N/v Bhagasani & Rampurya, Tehsil Bilara	1:10000 1:4000	20.00 5.00	-	-	50	-
Bikaner & Nagaur	N/v Bhundel & Mandeliya Tehsil Khinwsar & Nokha	1:4000	5.00	-	-	21	Exploration will continue.
Pali	N/v Veerampura ki Bhagal, Thandiberi & Reliya Tehsil Bali	1:4000	3.00	-	-	20	-
Jaisalmer	N/v Sam	1:10000 1:4000	15.00 2.00	17	721.00	208	Resources of Chalky limestone (cement-grade) were estimated at about 181.0 million tonnes and that of hard compact bouldery (SMS- grade) limestone was estimated at about 74 million tonnes.
	N/v Jajiya/ Padhardi ki dhani	1:10000 1:4000	20.00 5.00	17	721.00	-	-
Limestone & Dolomite							
Pratapgarh	Devlapal, Bhungabhat, Tehsil Dhariyawad	1:10000 1:4000	20.00 3.00	-	-	27	Limestone was exposed intermittently for about 4 km. The entire area is almost exposed with sil. dolomite and minor soapstone.
Cement grade Limestone							
Bhilwara	N/v Chitauriya, Amartiya, Ratiya khera. Dhakarkhedi, Biharipura	1:10000 1:4000	10.00 3.50	9	450.00	327	The limestone bands were intermittently mapped for a strike length of 12.5 km with width varying from 2 to 2.5 km. The Pink/purplish limestone constituted the lower bed while gray limestone formed the upper part.
Sandstone							
Baran	Aama and Khan ki Jhonpariya, Tehsil Anta	1:4000	1.20	-	-	-	The exploration was taken up to identify sandstone suitable for masonry purpose.
Dholpur	N/v Naksoda Sanora, Tehsil Bari and N/v Tajpur, Nandanpur, Tilua, Tehsil Basedi	1:10000 1:4000	10.0 2.0	-	-	-	-

(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		
Sandstone & Masonry stone							
Karauli	Aama and Khan ki Jhonpariya, Tehsil Anta	1:10000 1:4000	10.00 2.70	-	-	-	-
Chittorgarh	Samriya Kalan, Nalhuramji Ka Khera, Meghniwas and Mandna Begun-Taluka	1:10000 1:4000	10.00 3.00	-	303.00	263	The limestone mapped in the area was for a strike length of 8.5 km with width of more than 2 km. The exploration will continue. Reserves/resources were not estimated.
	Sindwari, Ramakhera, Satkhanda Tehsil Begun	1:10000 1:4000	10.00 3.00	-	107.00	34	Limestone with thin shale parting were encountered from 18.0 m to 50.0 m in one borehole. G2 level exploration will continue.
Red ochre, China clay, Silica sand, Marble, Quartz, Feldspar, etc.							
Chittorgarh	Purohiton ka Sanwata, Ramakheda, Rajoda, Tehsil Chittorgarh Borda	1: 4000	3.05	-	-	49	During exploration, five areas, i.e., Purohoton ka Sanwata north block (area 5.0 sqkm) with china clay, gravel, etc.; Purohoton ka Sanwata south block (area 1.6 sqkm), Ramakhewda block (area 1.6 sqkm) & Rajoda block (area 0.2 sqkm) with masonry stone; and Borda block (area 0.25 sqkm) with china clay & masonry stone were identified.
Quartz, Feldspar, Mica, Dolomite and other economic minerals							
Bhilwara	N/v Kosital, Raipur Khas, Siyar, Nathriyas	1:4000	2.05	-	-	2	-
Blockable granite, Quartz-Feldsapr							
Rajsamand	N/v Anjana, Racheti, Hirakhera, Veena ka khera, Bacheriya	1:10000 1:4000	30.0 4.0	-	-	-	Reserves/ resources were not estimated.
Granite & Masonry stone							
Jalore	N/v Bagra, Maylawas, Nabi, Tehsil Akoli	1:10000 1:4000	10.00 3.00	-	-	09	-
Decorative stone							
Dungarpur	Rohanwara, Manpur, Sarkan, Mandwa, Dewal, Karoli, Hathod, Nalwa	1:10000 1:4000	20.00 2.00	-	-	-	-

(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		
Marble							
Sirohi	Reodar	1:10000	25.00	-	-	04	-
	Tehsil	1:4000	2.00				
Wollastonite							
Sirohi	N/v Positara,	1:10000	25.00	-	-	07	One isolated low lying exposure patch of length up to 40 m and exposed width up to 20 m was mapped. It comprised quartz, calcite, garnet, calcitic marble, wollastonite, etc.
	Aburoad Tehsil	1:4000	2.00				
MECL							
Gold							
Udaipur & Rajsamand	Karoli- Nathdwara block	1:12500	147.0	-	-	271	G4 level exploration for copper, gold and molybdenum was taken up in this area. Exploration comprised mapping of 147.00 sqkm area on 1:12,500 scale and collection of 271 samples for different types of analysis/study.
Iron Ore							
Jhunjhunu & Sikar	Kanawat- Chala- Karath- Bagholi area	1:12500	129.00	10	718.50	155	The total geological resources of both haematite & magnetite ore estimated in Sector-A on western limb and Sector-E on eastern limb was about 3.75 million tonnes with 48.60% Fe, 21.93% SiO ₂ , 2.23% Al ₂ O ₃ , 0.53% P and 0.80% LOI (UNFC 333).
Limestone							
Jhunjhunu	Gothra-, Parasrampur east block, Nawalgarh tehsil	1:5000	4.78	19	1568.50	616	The net in-situ resources estimated was at about 160.76 million tonnes with an average grade of 48.46% CaO, 2.05% MgO, 6.89% SiO ₂ , 2.26% Al ₂ O ₃ , 1.17% Fe ₂ O ₃ & 38.04% LOI under UNFC code 332.
	Gothra- Parasrampur west block, Nawalgarh tehsil	1:5000	2.88	14	1229.00	567	The net in-situ cement-grade limestone reserves/resources estimated was at about 158.72 million tonnes with an average chemical composition of 49.56% CaO, 1.38% MgO, 6.08% SiO ₂ , 2.04% Al ₂ O ₃ , 1.08% Fe ₂ O ₃ & 38.85% LOI under UNFC code 333.

(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		
Potash							
Bikaner	Jaitpur block	1:5000	29.115	7	5279.50	7238	The gross resources at 3% K cut-off was estimated at 10.698 million tonnes while the net resources was of 8.55 million tonnes with average 4.42% K. Similarly 29.458 million tonnes of gross resources and 23.56 million tonnes of net resources with average grade of 2.983% K at 2% K cut-off and 92.756 million tonnes of gross resources and 74.20 million tonnes of net resources with average grade of 1.842% K at 1% K cut-off were estimated separately. Potash resources were identified in about 12.594 sqkm out of 19.41 sqkm explored area of Jaitpur block having 29.115 sqkm area. A total of 17,905.47 million tonnes of halite resources were estimated with 35.30% Na over an area of 19.41sqkm area.
Hindustan Copper Ltd.(HCL)							
Base Metal							
Jhunjhunu	Kolihan mine Khetri mine	-	-	52	5279.85	5270	Exploration work in Jhunjhunu district, Rajasthan, was carried out by HCL in (i) Kolihan mine, where drilling of 23 boreholes to a total depth of 2,166.10 m and collection of 5,270 samples were carried out; (ii) Khetri mine, where 5,279.85 meterage drilling in 52 boreholes and collection of 5,270 samples were carried out. Resources of copper were estimated at about 14.03 million tonnes at 1.34% Cu in Kolihan mine and 48.66 million tonnes at 1.43% Cu in Khetri mine.
Neyveli Lignite Company India Ltd							
Lignite							
	Kheduli, Kuchera-Lunsara, east of Gangardi & Ucgardi and Bansi block	1:5000	29.115	7	5279.50	7238	In Rajasthan, promotional exploration funded by ministry of coal was taken up in Kheduli (140.0 sqkm) , Kuchera-Lunsara (110.0 sqkm), east of Gangardi & Ucgardi (440.0 sqkm) and Bansi (181.0 sqkm). In Kheduli block, 32 boreholes were drilled to a cumulative depth of 7687.80 m and collected 61 samples for chemical analysis. The estimation of resources is under progress. In Kuchera-Lunsara block, 51 boreholes were drilled to a cumulative depth of 8726.00 m

(contd)

STATE REVIEWS

Table – 3 (concl'd)

Agency/ Mineral/ District	Location Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							and collected 110 samples for chemical analysis. The geological report in under finalisation. In east of Gangardi & Ucgardi block, 5 boreholes were drilled to a cumulative depth of 1215.00 m and in Bansi block, 8 boreholes were drilled to a cumulative depth of 2189.20 m and collected 23 samples for chemical analysis. Lignite seams in all the four blocks have been intersected at moderate depths.

**Table – 4: Mineral Production in Rajasthan, 2016-17 to 2018-19
(Excluding Atomic Minerals)**

(Value in ₹ '000)

Mineral	Unit	2016-17			2017-18			2018-19 (P)		
		No. of mines	Qty	Value [§]	No. of mines	Qty	Value [§]	No. of mines	Qty	Value [§]
All Minerals		87	197522033		84	214528795		82	231070503	
Lignite	'000t	-	8480	-	-	9294	-	-	8677	-
Natural Gas (ut.)	m c m	-	1277	-	-	1442	-	-	1378	-
Petroleum(crude)	'000t	-	8164	-	-	7887	-	-	7667	-
Copper Ore	t	-	1117241	-	-	1160267	-	-	1349566	-
Copper Conc.	t	2	56798	3045512	2	61312	4047407	2	65895	4316241
Iron Ore	'000t	14	1228	3107923	11	1320	4066062	8	1108	3608871
Lead & Zinc Ore	t	-	11881238	-	-	12613866	-	-	13752297	-
Lead Conc.	t	8	268047	9669267	8	306397	11429414	8	358370	16316814
Zinc Conc.	t	*	1484244	43385599	*	1539657	49798274	*	1457171	56083774
Manganese Ore	t	1	2545	7635	1	7502	22506	1	9410	28230
Silver **	kg	-	460642	18314119	-	557518	21172433	-	679172	25816971
Phosphorite	t	2	974740	2867678	2	1401698	3559484	2	1185980	3468288
Garnet (abrasive)	t	2	1482	2567	2	5781	18717	3	5166	34718
Limestone	'000t	35	66906	15908982	35	74138	17482060	36	76467	18412605
Selenite	t	3	4328	8656	4	469	939	3	2906	5812
Siliceous Earth	t	16	77270	55340	15	86662	53164	16	77739	51897
Vermiculite	t	#	127	127	-	-	-	-	-	-
Wollastonite	t	4	166186	158823	4	153049	126025	3	184063	173972
Minor Minerals @		-	-	100989805	-	-	102752310	-	-	102752310

Note : The number of mines excludes natural gas (utilised) petroleum (crude) and minor minerals.

§ Excludes the value of Fuel minerals.

** Number of mines covered under lead concentrates.*

*** Recovered at Chanderiya Lead-Zinc Smelter of HZL from lead concentrates produced in Rajasthan.*

Associate with Felspar.

@ Figures for earlier year have been repeated as estimates, wherever necessary, because of non-receipt of data for 2018-19.

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)
Cement	
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,	379.5 (Urea)
Shriramnagar, Distt Kota	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)
Plaster of Paris	
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
Pellet	
Jindal Saw Limited, Pur, Bilwara	1500
Power generation	
JSW Energy Barmer Ltd, Bhadresh.	1080 MW
Copper Smelters	
HCL, KCC, Jhunjhunu.	31 (Cu cathode)
Rajpura Dariba Lead & Zinc Mine	76.827(Zinc Conc.)
Dariba, Rajsamand	17.506(lead Conc.)
Lead & Zinc Smelters	
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.