

STATE REVIEWS

Table – 59(A) : Reserves/Resources of Minerals as on 1.4.2005 : Maharashtra

Mineral	Unit	Reserves				Remaining resources				Total resources (A+B)			
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Inferred STD333		Reconnaissance STD334	Total (B)	
			STD121	STD122			STD221	STD222					
Barytes	tonne	-	-	-	-	-	17000	14800	89450	1610	-	122860	122860
Bauxite	'000 tonnes	21091	5568	12499	39158	335	2598	38831	8354	21852	-	72485	111643
China clay	'000 tonnes	418	-	354	772	-	502	11	184	5523	-	6476	7248
Chromite	'000 tonnes	5.4	-	-	5.4	-	-	42.3	67.27	418.03	-	528	533
Copper	'000 tonnes	-	-	2180	2180	-	-	-	1419	5982	-	7401	9581
Ore	'000 tonnes	-	-	17.44	17.44	-	-	-	21.30	62.51	-	83.81	101.25
Metal	'000 tonnes	-	-	6889	22440	-	265	1915	17800	335654	-	355634	378074
Dolomite	'000 tonnes	12907	2644	6889	22440	-	265	1915	17800	335654	-	355634	378074
Felspar	tonne	1392461	-	133521	1525982	-	-	160477	-	-	-	160477	1686459
Fireclay	'000 tonnes	272	-	392	664	-	-	-	-	6849	-	6849	7513
Fluorite	tonne	287975	-	64100	352075	-	-	-	-	100000	-	100000	452075
Gold													
Ore (primary) tonne		-	-	-	-	-	-	-	-	1517000	-	1517000	1517000
Metal(primary)tonne		-	-	-	-	-	-	-	-	3.55	-	3.55	3.55
Granite													
(Dim. stone) '000 cu m		-	-	108	621	-	6300	486925	-	665622	-	1158847	1158847
Graphite	tonne	-	-	-	-	-	-	-	-	1160000	-	1160000	1160000
Iron ore													
(hematite) '000 tonnes		9816	3520	661	13997	-	4852	79793	71806	62566	32343	251359	265356
Iron ore													
(magnetite) '000 tonnes		513	-	108	621	-	-	-	-	-	-	-	621
Kyanite	tonne	151360	-	76644	228004	-	4317	1744479	54000	1084034	-	2886830	3114834
Lead-zinc													
Ore	'000 tonnes	-	-	-	-	-	-	1967	6305	1000	-	9272	9272
Zinc metal	'000 tonnes	-	-	-	-	-	-	133.56	428.11	28.00	-	589.67	589.67
Limestone	'000 tonnes	142077	11199	124165	277441	290	378430	116650	150489	786271	-	1459880	1737321
Manganese ore	'000 tonnes	11544	64	5573	17181	341	300	58	8120	1794	29	13172	30353
Marble	'000 tonnes	-	324	-	324	-	-	-	-	57642	-	57723	58047
Mica	kg	-	-	65916000	65916000	-	-	-	-	-	-	-	65916000
Ochre	tonne	39940	38080	116980	195000	-	-	6010	6010	286000	-	298020	493020

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Table - 59(A)(Concl.d.)

Mineral	Unit	Reserves										Total resources (A+B)		
		Proved					Remaining resources							
		Proved STD 111	Probable STD121	Probable STD122	Total (A)	Feasibility STD211	Pre-feasibility STD221	Pre-feasibility STD222	Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
Pyrophyllite	tonne	235741	226873	41000	503614	-	-	190000	-	-	20000	-	210000	713614
Quartz-silica sand	'000 tonnes	32650	5037	27937	65624	-	524	29079	-	355	52624	-	82581	148205
Quartzite	'000 tonnes	4	28	43	75	-	-	-	-	-	17	-	17	92
Sillimanite	tonne	150815	-	15534	166349	-	-	15000	-	-	6066	-	21066	187415
Silver														
Ore	tonne	-	-	-	-	-	-	-	-	-	235000	-	235000	235000
Metal	tonne	-	-	-	-	-	-	-	-	-	0.23	-	0.23	0.23
Talc/steatite/soapstone	'000 tonnes	-	-	-	-	-	-	-	-	2565	14262	-	16827	16827
Titanium minerals														
*Ilmenite	tonne	-	-	-	-	-	151888	-	-	846000	510000	-	2528214	2528214
Titaniferous magnetite	tonne	423500	-	868500	1292000	-	-	-	-	-	668000	-	668000	1960000
Tungsten Ore	tonne	-	-	-	-	-	-	-	-	610000	5637250	1830000	8077250	8077250
Contained WO ₃	tonne	-	-	-	-	-	-	-	-	1903	10304	3828	16035	16035
Vanadium Ore	tonne	490663	-	108000	598663	-	-	-	-	-	-	-	-	598663
Metal	tonne	1913.58	-	421.20	2334.78	-	-	-	-	-	-	-	-	2334.78

Figures rounded off.

* Please refer Ilmenite & Rutile and Zircon Reviews for resources as per Department of Atomic Energy.

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Table – 59(B) : Reserves of Coal as on 1.4.2007 : Maharashtra

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	4652.39	2432.18	1992.17	9076.74
Wardha Valley	2944.42	1258.48	1466.73	5669.63
Kamptee	1276.14	1079.23	505.44	2860.81
Umrer	308.41	-	-	308.41
Nand-Bander	316.73	483.95	-	800.68
Bokhara	10.00	-	20.00	30.00

Source: Coal Directory of India, 2006-07.

Table – 60 : Details of Exploration Activities in Maharashtra, 2006-07 and 2007-08

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
2006-07							
GSI							
Base Metal							
Chandrapur	Thanewasna copper prospects	-	-	-	-	-	A number of copper mineralised zones were intersected. Maximum value of 3.66% Cu has been recorded in the samples obtained from the depths between 135.3 m and 137.4 m. A drill indicated availability of resource of 1.13 million tonnes of ore with grade of 1.1% Cu for a true width of 3.61 m and for over a strike length of 1.08 km. This resource is in addition to the already established resource in FS 1979-81.
-do-	Dubarpeth-Karanji block	-	-	-	-	-	One borehole intersected copper zone of 1.48 m width with value of 0.7% Cu. A drill indicated resource of 0.35 million tonnes of ore with a grade of 0.67% Cu for a true width of 3.63 m has been estimated over a strike length of 363 m. This resource is in addition to the already established resource in FS 1979-81.
Chandrapur and Gadchiroli	Southern Extn. of Thanewasna block	-	-	-	-	-	Analysis of soil samples indicated feeble values for Cu : 10 to 100 ppm; Pb : 20 to 125 ppm and Zn : 40 to 225 ppm.
Coal Kamptee Coalfield Nagpur	Pipla-Kewalram area	-	-	-	-	-	Barakar formation was intersected at 249.35 m depth and one coal horizon of 2.65 m thickness was intersected at 252.6 m depth.
Gold							
Bhandara	Around Umrajhari area	-	-	-	-	-	Large-scale mapping, pitting, trenching and sampling were conducted.
Platinum Group of Metals & Nickel							
Gondia	Khursipar-Manegaon- Dahegaon area	-	-	-	-	-	The titaniferous-vanadiferous magnetite bodies associated with meta-pyroxenite and amphibolite bands varying in length from 20 to 430 m and widths from 2 to 40 m were identified. Analytical results are awaited.
DGM							
Agate							
Jalna	Around Nandi village	1:50,000 1:5,000	35 5	-	-	-	Occurrence of agate was identified near Math Jalgaon, Bhiwandi Bodka villages.

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Table - 60 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Coal							
Chandrapur	Bhandak-Kesurli	1:5,000	5.5	-	1140.10	-	A total of 56.38 million tonnes resources have been proved so far.
-do-	Kondha East	1:25,000	5	-	1170.90	-	A total of 44.95 million tonnes resources have been proved so far.
-do-	Nandori and Nandori south	1:25,000	25	-	4796.50	-	Middle workable composite seam ranging in thickness from 7.25 to 18.0 m was encountered within depth range of 105.6 to 309.26 m. A total of 29.52 million tonnes resources has been proved.
-do-	Takli	1:5,000	-	-	1480.70	-	Two coal seams were encountered. A total of 4.57 million tonnes resources has been proved.
-do-	East of Ekarjuna area	-	45	-	2038.55	-	About 6.5 m to 10.5 m thick coal seam was encountered at a depth range of 172.65 to 365.5 m. A total of 56 million tonnes of resources has been estimated so far.
-do-	Pauna-Nandra-Kansa area	1:5,000	4.5	3	472.35	-	No coal horizons were intersected.
Nagpur	Shirpur Pipardol	1:5,000	0.32	-	181.1	-	Five coal seams have been proved at depth ranges of 160.99 to 330.63 m.
-do-	Dahegaon-Phukeshwar	1:5,000	0.16	-	326.25	-	Coal seams ranging in thickness from 0.65 to 2.53 m were located.
-do-	Makardhokada block-5	1:5,000	0.64	-	1083.55	-	Six coal seams ranging in thickness from 1.10 to 6.65 m were intersected at depth ranges of 30 to 420 m. A total of 10.80 million tonnes of reserves was estimated.
-do-	Nand-Panjepar	-	-	-	2493.20	-	Six coal seams ranging in thickness from 0.30 to 5.82 m were intersected at depth ranges of 50.25 to 435.60 m. A total of 5.77 million tonnes of resources was estimated.
Nagpur and Wardha	Girad-Sirsi, Bela-Ashta area	1:5,000	-	-	156.5	-	Three regional boreholes drilled so far did not intersecting coal seam. However, presence of Barakar formation in the area prompted continuation of drilling.
Wardha	Shekapur Wadner	1:25,000 1:5,000	1.1 1.44	-	1887.40	-	Two coal seams were intersected between 53 and 189 m depth. The workable thickness of top seam ranges from 1.20 to 2.50 m and bottom seam ranges from 1.20 to 2.20 m. A total of 1.56 million tonnes of resources was estimated.
Yavatmal	Dara-Parsoda	-	-	-	378.5	-	Two coal seams ranging in thickness from 1.05 to 4.45 m were intersected at depths of 15.55 to 117.35 m. A total of 2.50 million tonnes of resources was estimated.

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Table - 60 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Yavatmal	Jhari-Jamni Adkoli-Paunar	1:5,000	2.5	-	1531.15	-	One workable coal seam of thickness ranging from 1.8 to 9.29 m was intersected within a depth range from 30.5 to 244.39 m. The block extends over a strike length of 4.8 km and 4.84 million tonnes of resources was estimated.
Construction Minerals							
Aurangabad	Phulambri	1:50,000	32	-	-	-	Suitable sites for construction minerals were identified around Phulambri, Dongargaon, Sultanwadi and Chincholi villages.
Jalgaon	Nandgaon, Amalner and Deoli	1:50,000 1:5,000	122 2.2	-	-	-	Suitable sites for construction minerals were identified around Nandgaon, Amalner, Deoli and Chahardi villages.
Iron Ore							
Sindhudurg	Padve- Majgaon area	1:50,000 1:5,000	20.7 1.057	-	361	-	Mineralised zone 200 m wide extending over a length of 250 m and depth persistence upto 50 m was proved.
-do-	Around Nirukhe	1:50,000 1:5,000	10 0.04	-	-	-	Hematite quartzite body was observed in the area.
Pyrophyllite-sillimanite							
Chandrapur	Walni- Khatgaon	1:25,000	22	-	733	-	About 0.29 million tonnes resources of pyrophyllite-sillimanite were estimated in the area.
MECL Coal							
Katol-Kamptee Coalfield	Hardoli	-	-	-	6126.7	-	Promotional drilling on behalf of Ministry of Coal was conducted.
Zinc & Tungsten							
Nagpur	Kolari- Bhanori	1:1,000	2	14	2264	942	Three major bands of host rock were identified over a cumulative strike length of 940 m with 250 m depth from surface. Resources of 3.14 million tonnes of zinc ore with 7.93% Zn along with tungsten resources of 1.36 million tonnes with 0.18% W were estimated.
MOIL Manganese Ore							
Bhandara	Chikla Extn.	-	-	3	428.5	-	As on 1.4.2007, the total reserves of manganese ore is estimated at 4.63 million tonnes.
Balaghat	Dongri Buzurg	-	-	7	870.20	-	As on 1.9.2007, the total reserves was estimated at 8.32 million tonnes.
Nagpur	Kandri	-	-	-	1115.87	-	As on 1.4.2007, the total reserves of manganese ore is estimated 2.29 million tonnes.
2007-08 GSI Base Metal							
Chandrapur	Dubarpeth-Karanji block	-	-	-	-	-	None of the boreholes showed promising results.
-do-	Govindpur copper prospects	-	-	-	-	-	Copper mineralised zones are manifested by the presence of malachite encrustation and disseminations of copper sulphides. Analytical results of soil samples indicated copper values up to 75 ppm and Zn up to 100 ppm.

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Table - 60 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Platinum Group of Metals							
Chandrapur	Gondipipri area	-	-	-	-	-	Bed rock samples from Chekkipri indicated up to 600 ppm of nickel and 1300 ppm chromium.
DGM							
Bauxite & Laterite							
Kolhapur	Ghungur area	1:25,000	46	-	-	-	About 2.8 million tonnes of bauxite and 4 million tonnes of laterite resources were estimated.
Coal							
Chandrapur	Nandori and Nandori south	-	-	-	3982	-	Middle workable coal seam was intersected at a depth range of 105.6 to 309.26 m. About 29.11 million tonnes resources have been proved.
-do-	Takli & Wislon	-	-	-	1600.8	-	Two coal seams were encountered in the block. About 2.36 million tonnes resources have been proved.
-do-	East of Ekarjuna area	1:25,000	20	-	2079.2	-	Coal seam encountered at a depth range of 172.65 to 365.5 m. About 1.40 million tonnes of resources were estimated.
Nagpur	Makardhokada block-5	1:5,000	0.64	-	2748.15	-	Six coal seams were intersected at a depth range of 30 to 420 m. About 7.96 million tonnes of resources were estimated.
-do-	Nand-Panjepar	1:5,000	1	-	2753.05	-	Six coal seams were intersected at a depth range of 50.25 to 435.6 m. About 3.70 million tonnes of resources were estimated.
Yavatmal	Jhari-Jamni Adkoli-Paunar	1:25,000 1:5,000	15 2	-	3225.15	-	One workable coal seam was intersected at a depth range of 1.8 to 9.29 m. About 4.47 million tonnes of resources were estimated.
Iron Ore							
Sindhurg	Padve-Majgaon area	-	-	-	53	-	Mineralised zone 200 m wide was proved over a length of 250 m with 50 m depth persistence.
Limestone							
Chandrapur	Dhamangaon Vansadi	1:25,000	42	-	-	-	-
Pyrophyllite-sillimanite							
Chandrapur	Walni-Khatgaon	1:25,000	24	-	758.85	-	About 0.042 million tonnes resources were estimated.
MECL							
Coal							
Katol-Kamptee Coalfield	Hardoli Khapri Sukli	- - -	- - -	- - -	976.5 2576.2 2062.75	- - -	Promotional drilling on behalf of Ministry of Coal was conducted.
MOIL							
Manganese Ore							
Bhandara	Chikla Extn.	-	-	3	659.6	-	As on 1.4.2008, the total reserves of 4.14 million tonnes was estimated.
Nagpur	Gumgaon	-	-	4	1153.56	-	As on 1.4.2008, the total in situ reserves estimated was 5.18 million tonnes.
-do-	Beldongri	-	-	-	-	-	As on 1.4.2008 the total in situ reserves estimated was 0.49 million tonnes.
-do-	Kandri	-	-	2	529.85	-	As on 1.4.2007 the total in situ reserves estimated was 2.24 million tonnes.

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Production

The value of mineral production in Maharashtra during 2007-08 at Rs. 5,065 crore increased by about 16% as compared to that in the previous year. Maharashtra accounted for about 4.4% of the total value of mineral production in the country during the year under review and occupied seventh position among states in the total value of mineral production in the country. It was the largest producer of manganese ore with a share of 33% and corundum with a share of 93% in the country's output of minerals in 2007-08. Among other important minerals, the state reported higher production in terms of quantity during 2007-08 in case of laterite 238%, fluorite (graded) 75%, sillimanite (54%), manganese ore 35%, bauxite 31% and iron ore 12%. In 2007-08, dolomite production in the State declined sharply by 74% from that of the previous year. Fall in production was also reported in respect of sand

(others) 7%, limestone 13%, shale 14%, corundum 50% and pyrophyllite by 83%. The reasons for fall in production were mainly due to lack of demand and mining restriction from forest department whereas for dolomite it was due to labour engaged in development work and temporary closure of mines by Collector's order (Table-61).

The value of production of minor minerals was estimated at Rs. 317 crore for the year 2007-08. The number of reporting mines was 149 in 2007-08 as against 154 in the previous year. The index of mineral production in Maharashtra (base 1993-94 = 100) in 2007-08 was 185.26 as against 180.90 in the previous year.

Mineral-based Industry

The important large and medium-scale mineral-based industries in the organised sector in the State are given in Table-62.

**Table – 61 : Mineral Production in Maharashtra, 2005-06 to 2007-08
(Excluding Atomic Minerals)**

Mineral	Unit	2005-06			2006-07			2007-08 (p)		
		No. of mines	Quantity	Value	No. of mines	Quantity	Value	No. of mines	Quantity	Value
All Minerals		150	-	43282536	154	-	43625757	149	-	50652367
Coal	'000 tonnes	51	36119	36071043	52	36215	36281998	53*	36403	40013813
Bauxite	tonne	10	1255440	470542	7	1364539	441758	11	1785330	531830
Iron ore	'000 tonnes	8	520	187599	10	523	380627	10	588	396291
Manganese ore	tonne	14	511960	1753209	15	633501	2010717	16	854120	5313228
Corundum	kg	-	58000	116	-	156000	378	-	78700	220
Dolomite	tonne	7	133065	18858	8	201971	23908	6	53616	8188
Fireclay	tonne	2	8044	603	2	8700	767	2	7239	543
Fluorite (graded)	tonne	1	3906	10822	1	2005	8730	1	3502	15791
Kaolin	tonne	1	380	48	1	372	22	-	-	-
Kyanite	tonne	5	2054	1615	5	1165	1025	4	1180	1018
Sillimanite	tonne	2	9198	9723	2	9481	9487	2	14637	12534
Laterite	tonne	-	112659	22364	2	72453	15662	2	245237	58538
Limestone	'000 tonnes	23	10113	1021077	26	11087	1146174	22	9600	987938
Pyrophyllite	tonne	-	4161	1141	-	3099	785	-	1693	551
Quartz	tonne	6	8338	997	4	15076	3388	2	13442	1648
Quartzite	tonne	-	41	14	-	-	-	-	-	-
Silica sand	tonne	17	303513	51014	16	316955	64103	15	443259	96313
Sand (others)	tonne	2	401760	21615	2	564203	29674	2	522942	26513
Shale	tonne	1	597289	18320	1	620286	33459	1	533332	14315
Minor minerals@		-	-	3621816	-	-	3173095	-	-	3173095

Note : The number of mines excludes minor minerals.

** Relates to coal mines as on 31.03.2008.*

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

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Table – 62 : Principal Mineral-based Industries in Maharashtra

Industry/plant	Capacity ('000 tpy)
Abrasives	
Associated Abrasives Ltd, Nasik	NA
Flexoplast Abrasives (I) Ltd, Chikalthana Dist. Aurangabad	500000 (sq m)
Grindwell Norton Ltd, Mora, Uraon, Raigad	NA
Aluminium products	
Hindalco, Recycling plant, Taloja	NA
Hindalco, Mouda, dist. Nagpur	30 (Rolling mill) 14 (Conductor rod)
Asbestos Products	
Everest Building Products Ltd, Mulund	NA
Hyderabad Industries Ltd, Musarane	60.0
Newkem Products Corp, Mumbai	9.9
Swastik Roofing Ltd, Chinchwad	NA
Cement	
ACC Ltd., Chanda, Dist. Chandrapur	1000
Ambuja Cement Ltd, (Maratha Cement Works), Chandrapur	2400
Indo Rama Cement Ltd. Khar Kavari, Dist. Raigad (G)	1000
Manikgarh Cement, Gadchandur, Dist. Chandrapur	1500
Orient Cement, Jalgaon (G)	800
Rajashree Cement, Hotgi (G)	1400
Ultra Tech Cement Ltd, Awarpur, Dist. Chandrapur	3600
Ultra Tech Cement Ltd, (Narmada Cement), Ratnagiri Works (G) Dist. Ratnagiri	400
Ceramics	
Four Field, Pimpri, Dist. Pune	1.2
H&R Johnson (India) Ltd, Pen	154.8
NITCO Tiles Ltd, Alibag	64.8
NECO Ceramics, Nagpur	8.1
Chemicals	
Borax Morarji Ltd, Ambarnath	17 (Borax) 6 (Boric Acid)
Century Rayon, Shahad, Dist. Thane	25 (Rayon yarn) 20 (Caustic Soda)
Foseco India Ltd, Sanswadi	15 (Foundry Chemicals)
Gopalchand Rasayan, Tarapur, Dist. Thane	41.3 (H ₂ SO ₄)

(Contd.)

Table - 62 (Contd.)

Industry/plant	Capacity ('000 tpy)
MTZ Industries Ltd, Patalganga	1.2 (Sulphur)
National Peroxide Ltd, Kalyan Dist. Thane	25 (H ₂ O ₂) 1.2 (Sodium per borate)
Sudarshan Chemical Ind. Ltd, Roha Dist. Raigad	4.8(Pigments)
Tecil Chemical & Hydro Power Ltd, Mumbai	30 (Calcium Carbide)
Zirconium Chemicals Pvt. Ltd, Taloja, Dist. Raigad	0.3 (Zirconium Salt)
Copper Wire Rods	
HCL, Taloja	60
Electrode	
GEE Ltd., Thane	4.02 (Mill m)
Electrolytic Manganese Dioxide	
MOIL, Dist. Bhandara	1
Union Carbide, Thane	2.5
Fertilizers	
BEC Fertilizer, Gunjakheda, Wardha	66 (SSP) 33 (SAP) 45 (GSSP)
Dharamsi Morarji Chemicals Co. Ltd, Ambarnath	300 (SSP) 220 (H ₂ SO ₄) 46.20 (Al ₂ SO ₄)
DFPCL-Taloja	52.90 (N ₂) 52.90 (P ₂ O ₅)
MAIDCL, Nanded	45 (NPK)
MAIDCL, Rasayani, Dist. Raigad	45 (SSP)
MAIDCL, Pachora, Dist. Jalgaon	45 (NPK)
RCF-Trombay	300 (NPK) 361 (ANP)
RCF-Thal, Alibag, Dist. Raigad	1706.8 (Urea)
VCMSL, Butibori, Dist. Nagpur	42.00(NPK)
VCMSL, Badnera Road, Dist. Amravati	30.00(NPK)
Glass	
Ace Glass Containers Ltd, Pimpri. Dist. Nasik	NA
Apte Flasks & refills Pvt. Ltd, Raigaon	1500
Astral Glass Pvt. Ltd, Igatpuri	16.4
Empire Industries Ltd, (Vitrum Glass) Vikroli, Mumbai	43.0
Hindustan National Glass & Industries Ltd. Nasik	320 TPD
Paisa Fund Glass Works, Talegaon Dabhade	NA
The Mahalaxmi Glass Works Pvt. Ltd, Mumbai	48.0

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Table - 62 (Concl'd.)

Industry/plant	Capacity (^{'000 tpy})
Iron & Steel	
Ispat Industries Ltd, Dolvi, Raigad	2240 (Sinter) 1600 (DRI) 3000 (HRC) 3000 (CRC) 2000 (Pig iron)
Llyods Steel Ltd, Wardha	600 (HRC) 350 (CRC) 250 (GPC)
Indian Seamless Steel & Alloys Ltd, Pune	150
Pig Iron	
Ispat Metallics India Ltd, Dolvi, Raigad	2000
Tata Metalics Ltd, (Usha Ispat Ltd, Redi) Dist. Sindhudurg	500
Sponge Iron	
Ambe Iron Pvt. Ltd, Chincholi, Solapur	45
Dhanalakshmi Sponge Iron, Daregaon, Dist. Jalana	60
Lloyds Metals & Engineers, Ghugus, Chandrapur	270
Sunflag Iron & Steel Co. Ltd, Bhandara	150
Vikram Ispat, Salav, Dist. Raigad	900
Ferro-alloys	
Bharat Pulverising Mills Ltd, Mumbai	0.2
Maharashtra Electros melt Ltd, Chandrapur	100
Nagpur Power & Industries Ltd, Nagpur	NA
Sunbal Alloys Co. Ltd., Thane-Belapur	0.3
Universal Ferro & Allied Chem. Ltd, Tumsar Dist. Bhandara	45
Refractory	
ACE Refractories, Nagpur	60
Petroleum Refinery	
BPCL, Mumbai	12000
HPCL, Mumbai	5500

(G) : Grinding units.

MANIPUR**Mineral Resources**

Occurrences of **chromite**, **china clay** and **limestone** are reported in Chandel, Churehandapur and Ukhrul districts (Table - 63).

Production

No mineral production (except minor minerals) was reported from Manipur in 2007-08. The production value of minor minerals in Manipur was estimated at Rs. 29 lakh for the year 2007-08.

Mineral-based Industry

A cement plant set up by Manipur Cements Ltd. (a State Govt. undertaking) at Hundung in Ukhrul district is in operation since 1989. The plant has a capacity of 15,000 tpy.

MEGHALAYA**Mineral Resources**

Coal and limestone are the only major minerals mined in the State. **Coal** occurs in Mikir Hills, Khasi Hills, Jaintia Hills and Garo Hills districts. The production of upgraded coal comes from these areas excluding Mikir Hills district, from private non-captive unorganised sector. The mines are operated mostly by the local tribals in their private lands. Resources of **limestone** occur in West Garo Hills, East Khasi Hills, West Khasi Hills and Jaintia Hills districts. Other mineral occurrences are **apatite** in Jaintia Hills district; **china clay** in East Garo Hills & West Garo Hills, Jaintia Hills & East Khasi Hills districts; **copper**, **lead-zinc**, **silver** and **titanium minerals** in East Khasi Hills district; **felspar** and **rock phosphate** in East Garo Hills & Jaintia Hills districts; **fireclay** in East Khasi Hills & West Garo Hills districts; **granite** in West Khasi Hills district; **iron ore (magnetite)** in East Garo Hills district; **quartz** and **silica sand** in East Garo Hills, West Garo Hills & East Khasi Hills districts; and **sillimanite** in West Khasi Hills district (Tables - 64(A) and 64(B)).

Table – 63 : Reserves/Resources of Minerals as on 1.4.2005 : Manipur

Mineral	Unit	Total reserves (A)	Remaining resources			Total (B)	Total resources (A+B)
			Measured STD331	Indicated STD332	Inferred STD333		
China clay	'000 tonnes	-	2520	-	-	2520	2520
Chromite	'000 tonnes	-	-	529	6052	6581	6581
Limestone	'000 tonnes	-	19953	2138	23962	46053	46053

Figures rounded off.

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Table – 64(A) : Reserves/Resources of Minerals as on 1.4.2005 : Meghalaya

Mineral	Unit	Reserves				Remaining resources				Total resources (A+B)	
		Proved STD111	Probable		Total (A)	Pre-feasibility STD222	Measured STD331	Indicated STD332	Inferred STD333		Total (B)
			STD121	STD122							
Apatite	tonne	-	-	-	-	-	-	1300000	-	1300000	1300000
China clay	'000 tonnes	-	-	-	-	1890	5786	81199	-	88875	88875
Copper											
Ore	'000 tonnes	-	-	-	-	-	880	-	-	880	880
Metal	'000 tonnes	-	-	-	-	-	9	-	-	9	9
Felspar	tonne	-	-	-	-	-	-	37449	-	37449	37449
Fire clay	'000 tonnes	-	-	-	-	-	-	10999	-	10999	10999
Granite (Dim. stone)	'000 cu m	-	-	-	-	-	-	286467	-	286467	286467
Iron ore (Hematite)	'000 tonnes	-	-	-	-	-	-	225	-	225	225
Iron ore (Magnetite)	'000 tonnes	-	-	-	-	-	-	3380	-	3380	3380
Lead-zinc											
Ore	'000 tonnes	-	-	-	-	-	880	-	-	880	880
Lead metal	'000 tonnes	-	-	-	-	-	16.50	-	-	16.50	16.50
Zinc metal	'000 tonnes	-	-	-	-	-	14.00	-	-	14.00	14.00
Limestone	'000 tonnes	85470	59240	12579	157289	459600	2588804	12662369	-	15896773	16054062
Phosphorite/Rock phosphate	tonne	-	-	-	-	-	-	1311035	-	1311035	1311035
Quartz-silica sand	'000 tonnes	-	-	-	-	-	177	6906	-	7083	7083
Sillimanite	tonne	-	-	-	-	-	-	55807	-	55807	55807
Silver											
Ore	tonne	-	-	-	-	-	880000	-	-	880000	880000
Metal	tonne	-	-	-	-	-	19.80	-	-	19.80	19.80
Titanium minerals											
Anatase	tonne	-	-	-	-	3345000	-	-	-	3345000	3345000

Figures rounded off.

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Table – 64(B) : Reserves of Coal as on 1.4.2007 : Meghalaya

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	117.83	40.89	300.71	459.43
West Darangiri	93.31	33.69	-	127.00
Balphakram-Pendenguru	-	-	107.03	107.03
Siju	-	-	125.00	125.00
Langrin	11.34	7.20	31.46	50.00
Mawtong Shelia	2.17	-	3.83	6.00
Khasi Hills	-	-	7.09	7.09
Bapung	11.01	-	22.65	33.66
Jaintia Hills	-	-	3.65	3.65

Source : Coal Directory of India, 2006-07.

Exploration & Development

Details of exploration activities conducted by various agencies during 2006-07 and 2007-08 are furnished in Table - 65.

Production

The value of mineral production in Meghalaya was at Rs. 571 crore in 2007-08 as compared to Rs. 811 crore in the previous year. About 93% of the value of mineral production was contributed by coal during the year under review whereas limestone and minor minerals contributed 6% and 1%, respectively (Table-66).

The production value of minor minerals was estimated at Rs. 721 lakh for the year 2007-08. There were 10 reporting mines as against 8 in previous year. The index of mineral production in Meghalaya (base 1993-94=100) was 266.89 in 2007-08 as against 240.10 in the previous year.

Mineral-based Industry

The important large and medium-scale mineral-based industries in the organised sector in the State are given in Table - 67.

Table – 65 : Details of Exploration Activities in Meghalaya, 2006-07 and 2007-08

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
2006-07							
GSI							
Platinum Group of Metals							
East Khasi Hills	Mawpyut area	-	-	-	-	-	Pyroxenite, serpentinite, gabbro-anorthosite, carbonatite and lamprophyric dykes were recorded.
Limestone							
Jaintia Hills	Lum Syrman block	-	-	-	-	-	A total about 280.8 million tonnes of limestone resources were estimated.
2007-08							
GSI							
Base Metal							
Ri-Bhoi	South-West Umpyrtha	-	-	-	-	-	Exploration taken up to test the strike continuity of polymetallic mineralisation intersected earlier in a couple of boreholes.
Platinum Group of Metals & Nickel							
East Khasi Hills	Mawpyut area	-	-	-	-	-	The different components of ultrabasic and basic suits were delineated during large-scale mapping.

STATE REVIEWS

**Table - 66 : Mineral Production in Meghalaya, 2005-06 to 2007-08
(Excluding Atomic Minerals)**

(Value in Rs. '000)

Mineral	Unit	2005-06			2006-07			2007-08 (p)		
		No. of mines	Qty	Value	No. of mines	Qty	Value	No. of mines	Qty	Value
All Minerals		5	-	7561660	8	-	8109712	10	-	5707095
Coal	'000 tonnes	-	5566	7347120	-	5787	7638840	-	6541	5292390
Limestone	'000 tonnes	5	887	142465	7	2031	392432	9	1761	341342
Shale	tonne	-	-	-	1	148012	6365	1	29964	1288
Minor minerals@		-	-	72075	-	-	72075	-	-	72075

Note: The number of mines excludes minor minerals.

@ Figures for earlier years have been repeated as estimates because of non-receipt of data.

Table – 67 : Principal Mineral-based Industries in Meghalaya

Industry/plant	Capacity (‘000 tpy)
Cement	
Mawmluh Cherra Cements Ltd, Cherapunji Dist. East Khasi Hills	200
Meghalaya Cements Ltd, Thagsrai, Dist. Jaintia Hills	495
Cement Manufacture Co. Ltd, Lumshnong Khleehriat	900 tpd
CMJ Cement, East Garo Hills	1000 tpd
Ferro-alloys	
Jaintia Ferro Alloys Pvt. Ltd, Byrnihat	6.0

MIZORAM**Mineral Resources**

Occurrences of lignite, sandstone and pyrites are reported from the State. Major deposits of economic importance have not been reported so far in the State.

Exploration & Development

In 2006-07, MECL conducted mapping for exploration of limestone and covered 0.12 sq km area on 1:1,000 scale near Saipum block, Kolasib district. About 0.21 million tonnes of limestone reserves were estimated in the area.

ONGC continued its geo-physical survey and drilling for petroleum & natural gas and 108.70 (2D-GLK/LK) data acquired in 2007-08.

Production

No mineral production (except minor minerals) was reported from Mizoram during 2007-08. The value of production of minor minerals in Mizoram was estimated at Rs. 8 lakh for the year 2007-08.

NAGALAND**Mineral Resources**

Important mineral occurrences in the State are **coal** in Borjan, Jhanzi-Disai, Tiesang and Tiru Valley Coalfields; **iron ore (magnetite)**, **cobalt** and **nickeliferous chromite** in Tuensang district; and **limestone** in Phek and Tuensang districts (Tables - 68(A) and 68(B)).

Exploration & Development

In 2007-08, DGM, Nagaland conducted exploration for base metal, coal, granite and laterite. Details of exploration activities are furnished in Table - 69. In 2007-08, ONGC conducted geo-physical survey for petroleum & natural gas and acquired 8.93 (2D-GLK/LK) data.

Production

No mineral production (except minor minerals) was reported from Nagaland during 2007-08. The production value of minor minerals in Nagaland was estimated at Rs. 18 lakh for the year 2007-08.

Mineral-based Industry

A mini-cement plant with a 600 tpy capacity was being set up at Waziho in Tuensang district. Another mini-cement plant was in operation in Phek district.

Table – 68(A) : Reserves/Resources of Minerals as on 1.4.2005 : Nagaland

Mineral	Unit	Reserves		Remaining resources			Total resources (A+B)	
		Proved STD111	Total (A)	Indicated STD332	Inferred STD333	Reconnaissance STD334		Total (B)
Cobalt ore	million tonnes	-	-	-	2.5	2.5	5	5
Iron ore (magnetite)	'000 tonnes	-	-	5280	-	-	5280	5280
Limestone	'000 tonnes	825	825	1010000	27000	-	1037000	1037825
Nickel ore	million tonnes	-	-	-	5	-	5	5

Figures rounded off.

Resources of Petroleum crude and Natural gas in the State are included in Assam and are not available separately.

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Table – 68(B) : Reserves of Coal as on 1.4.2007 : Nagaland

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	3.43	1.35	15.16	19.94
Borjan	3.43	1.35	5.22	10.00
Jhanzi-Disai	-	-	2.08	2.08
Tiensang	-	-	1.26	1.26
Tiru Valley	-	-	6.60	6.60

*Source: Coal Directory of India, 2006-07.***Table – 69 : Details of Exploration Activities in Nagaland, 2006-07 and 2007-08**

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
2007-08							
DGM							
Base Metal							
	Ziphu	-	-	2	109.25	-	Base metals detected comprise Cu, Ni, Co, Cr, Ag, Au, Pt, Pd, Ti and rare earths.
Coal							
Northern Mongchen Coalfields	Mongchen	-	-	1	17.95	-	Seven coal seams with thickness ranging from 0.4-5.4 m were encountered.
Granite							
	Old Avangkhu	1:4,000	2	-	-	-	About 8 million tonnes resources of granite suitable for dimension stone were estimated.
Laterite							
Wokha	Aitepyong- Pyochu	1:50,000	200	-	-	16	A number of mineable laterite deposits were located.

ORISSA

Mineral Resources

Orissa is the leading producer of chromite, graphite, bauxite, manganese ore, iron ore, sillimanite, quartzite, pyroxenite and dolomite. The State hosts country's sole resources of ruby and platinum group of metals. It accounts for the country's 95% chromite, 92% nickel ore, 69% cobalt ore, 55% bauxite, 51% titaniferous magnetite, 40% limestone, 36% pyrophyllite, 33% iron ore (hematite), 26% sillimanite, 25% each fireclay & garnet, 24% each coal & zircon and 20% vanadium ore resources.

Important minerals that occur in the State are : **bauxite** in Bolangir, Kalahandi, Kandhamal, Keonjhar, Koraput, Malkangiri, Rayagada & Sundergarh districts; **china clay** in Bargarh, Boudh, Bolangir, Keonjhar, Koraput, Mayurbhanj, Sambalpur & Sundergarh districts; and **chromite** in Balasore, Cuttack, Dhenkanal, Jajpur & Keonjhar districts. Chromite deposits of Sukinda and Nusahi ultramafic belt constitute 95% of the country's chromite resources. Besides, **coal** occurs in Ib river valley coalfield, Sambalpur district & Talcher coalfield, Dhenkanal district; **dolomite** in Bargarh, Keonjhar, Koraput, Sambalpur & Sundergarh districts; **dunite/pyroxenite** in Keonjhar and Sundergarh districts; **fireclay** in Angul, Bhubaneswar, Cuttack, Dhenkanal, Jharsuguda, Khurda, Puri, Sambalpur & Sundergarh districts; **garnet** in Ganjam, Kalahandi & Sambalpur districts; **graphite** in Bargarh, Boudh, Bolangir, Kalahandi, Koraput, Nuapada & Rayagada districts; **iron ore (hematite)** in Dhenkanal, Jajpur, Keonjhar, Koraput, Mayurbhanj, Sambalpur &

Sundergarh districts; **iron ore (magnetite)** in Mayurbhanj district; **limestone** in Bargarh, Koraput, Malkangiri, Nuapada, Sambalpur & Sundergarh districts; **manganese ore** in Bolangir, Keonjhar, Koraput, Rayagada, Sambalpur & Sundergarh districts; **Pyrophyllite** in Keonjhar district; **quartz/silica sand** in Boudh, Bolangir, Kalahandi, Sambalpur & Sundergarh districts; **quartzite** in Bolangir, Dhenkanal, Jajpur, Jharsuguda, Keonjhar, Mayurbhanj, Sambalpur & Sundergarh districts; **sillimanite** in Ganjam & Sambalpur districts; **talceatite/soapstone** in Mayurbhanj, Sundergarh & Sambalpur districts; **titanium minerals** in Dhenkanal, Ganjam, Jajpur & Mayurbhanj districts; and **zircon** in Ganjam district.

Other minerals that occur in the State are **asbestos** in Keonjhar district; **cobalt** in Cuttack & Jajpur districts; **copper** in Mayurbhanj and Sambalpur districts; **granite** in Angul, Boudh, Bolangir, Cuttack, Deogarh, Dhenkanal, Ganjam, Keonjhar, Khurda, Koraput, Mayurbhanj, Nuapada, Rayagada & Sambalpur districts; **lead** in Sargipalli area, Sundergarh district; and **nickel** in Cuttack, Keonjhar & Mayurbhanj districts. Occurrences of **ruby** and **emerald** are reported from Bolangir and Kalahandi districts, respectively. **Platinum Group of Metals** occur in Keonjhar district; **silver** in Sundergarh district; **tin** in Koraput and Malkangiri districts; and **vanadiferous magnetite** occurs in Balasore and Mayurbhanj districts (Tables - 70(A) and 70(B)).

Exploration & Development

The details of exploration activities conducted by various agencies during 2006-07 and 2007-08 are furnished in Table - 71.

Table – 70(A) : Reserves/Resources of Minerals as on 1.4.2005 : Orissa

Mineral	Unit	Reserves				Remaining resources				Total resources (A+B)				
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331		Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222						
Asbestos	tonne	10000	-	27200	37200	-	-	10000	-	-	9500	-	19500	56700
Bauxite	'000 tonnes	380363	161711	65924	607997	-	-	188630	309684	152807	549153	-	1200274	1808271
China clay	'000 tonnes	557	1523	37293	39373	-	-	230	76	35316	201907	1259	238789	278162
Chromite	'000 tonnes	30417	10217	24399	65033	-	1123	2245	39609	29972	39124	25849	137922	202955
Cobalt	million tonnes	-	-	-	-	-	-	-	30.63	-	0.28	-	30.91	30.91
Copper														
Ore	'000 tonnes	-	-	-	-	-	-	3234	-	722	2095	-	6051	6051
Metal	'000 tonnes	-	-	-	-	-	-	40.55	-	3.20	20.69	-	64.44	64.44
Dolomite	'000 tonnes	34821	18577	113845	167243	-	12733	985	43136	15496	596423	63	668836	836079
Dunite	'000 tonnes	4429	876	2965	8270	-	557	1157	-	384	627	-	2725	10995
Fireclay	'000 tonnes	2933	7196	1180	11309	-	4387	3398	26000	42418	87972	-	164176	175485
Garnet	tonne	-	-	13793101	13793101	-	-	-	2000	-	351000	-	353000	14146101
Granite (Dim. stone)	'000 cu m	-	80000	-	80000	-	-	-	330328	-	1432492	240	1763060	1843060
Graphite	tonne	1553293	336327	1217349	3106969	12000	38900	172032	8740	103281	1954721	26290	2315964	5422933
Iron ore (Hematite)	'000 tonnes	1341025	470129	440623	2251777	42459	55443	211673	8668	315042	1863531	12032	2508848	4760625
Iron ore (Magnetite)	'000 tonnes	-	102	54	156	-	-	-	-	-	54	-	54	210
Lead-zinc														
Ore	'000 tonnes	961	-	119	1080	-	-	-	-	-	670	-	670	1750
Lead metal	'000 tonnes	34.32	-	4.25	38.57	-	-	-	-	-	38.39	-	38.39	76.96
Limestone	'000 tonnes	260968	496768	240094	997830	35	120500	183605	56574	20291	359525	-	740530	1738360
Manganese ore	'000 tonnes	31442	11166	18106	60714	1098	3586	3775	1278	4189	76069	2255	92250	152964
Nickel ore	million tonnes	-	-	-	-	-	20.84	20.62	30.70	51.06	51.26	-	174.48	174.48
Platinum Group of metals	tonne	-	-	-	-	-	-	7.70	-	-	6.50	-	14.20	14.20

(Contd.)

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Table - 70(A) (Concl.)

Mineral	Unit	Reserves				Remaining resources					Total resources (A+B)			
		Proved STD 111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332		Inferred STD333	Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222						
Pyrophyllite	tonne	4529600	824800	1097800	6452200	-	66800	3223100	80	1514040	1024800	-	5828819	12281019
Quartz- silica sand	'000 tonnes	907	502	990	2399	167	96	-	-	63077	4022	-	67362	69761
Quartzite	'000 tonnes	3263	11160	4075	18498	753	1014	114	823	234	36534	-	39473	57971
Ruby	kg	143.10	-	1782.00	1925.10	-	-	1683.01	-	-	1662.63	-	3345.64	5270.74
Sillimanite	tonne	-	-	7767913	7767913	-	-	6557013	-	-	4943600	-	11500613	19268526
Silver														
Ore	tonne	960500	-	119000	1079500	-	-	-	-	-	670000	-	670000	1749500
Metal	tonne	27.43	-	3.40	30.83	-	-	-	-	-	34.17	-	34.17	65.00
Talc/steatite/ soapstone	'000 tonnes	137	95	129	361	-	2	73	-	-	268	-	343	704
Tin														
Ore	tonne	12692	-	-	12692	-	1701	101	-	-	1000	-	2802	15494
Metal	tonne	34.63	-	-	34.63	-	522.08	0.90	-	-	10.00	-	532.98	567.61
Titanium minerals														
*Ilmenite	tonne	-	602635	6642180	7244815	-	-	-	-	-	18000000	-	18000000	25244815
*Rutile	tonne	-	760500	286380	1046880	-	-	-	-	-	-	-	-	1046880
Titaniferous magnetite	tonne	-	-	-	-	-	-	-	950000	-	20280000	-	21230000	21230000
Vanadium														
Ore	tonne	-	1220000	-	1220000	-	-	-	1382875	263000	1998920	-	3644795	4864795
Metal	tonne	-	2135.00	-	2135.00	-	-	-	7162.20	552.30	3708.44	-	11422.94	13557.94
*Zircon	tonne	-	852642	193140	1045782	-	-	-	-	-	-	-	-	1045782

Figures rounded off.

* Please refer the respective Mineral Reviews for resources as per Department of Atomic Energy.

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Table – 70(B) : Reserves of Coal as on 1.4.2007 : Orissa

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	17464.55	31455.37	14313.66	63233.58
Ib-River	5153.45	10027.33	7183.33	22364.11
Talcher	12311.10	21428.04	7130.33	40869.47

*Source: Coal Directory of India, 2006-07.***Table – 71 : Details of Exploration Activities in Orissa, 2006-07 and 2007-08**

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
2006-07							
GSI							
Bauxite							
Keonjhar	Kadalia block	-	-	-	-	-	A total of about 1.97 million tonnes of bauxite resources was estimated.
Coal							
Talcher coalfield	Jalatap, Saradhapur (N) - and Phulajhari blocks	-	-	-	-	-	Ten regional Barakar coal seams varying in thickness from 1.0 to 27.85 m were intersected at depth range from 13.17 to 605.46 m.
-do-	Jamujhari-Brahmanbil and Kudanali (N-E) blocks	-	-	-	-	-	Four coal seams (1.08 to 5.96 m thick) were intersected at depth range from 292.13 to 365.6 m in Jamujhari-Brahmanbil block. In Kudanali (N-E) block four coal seams (0.6 to 2.3 m thick) were intersected at depths between 40.5 and 80.92 m.
Ib River coalfield	Kuraloi (A) North block	-	-	-	-	-	Five regional Barakar coal seams with cumulative coal thickness varying from 3.05 to 53.13 m have been intersected at depths between 57.3 m and 577.61 m. Two Raniganj coal seams were also intersected within 8.20 m and 36.60 m depth.
Diamond							
Bargarh	In parts of Bargarh district and adjoining area of Mahasamund distt. Chhattishgarh	-	-	-	-	-	Search of kimberlite clan rocks was taken by large-scale mapping and sampling. Indicator minerals have been picked up from processed stream sediment samples. Two suspected micro-diamond grains have been identified

(Contd.)

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Table - 71 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Iron Ore							
Keonjhar	Burhipada, Juang and Pangaposi blocks	-	-	-	-	-	One borehole intersected iron ore bodies at varying depths.
-do-	Ghutang and Pathargada area	-	-	-	-	-	A small iron ore body of 0.5 m to 6 m width and 30 to 200 m length having 60.75 to 65.5% Fe content has been identified.
-do-	Bhoka-Mankado- munda area	-	-	-	-	-	About 100 to 150 m wide & 300 to 400 m long ferruginous shale body with iron content varying from 51.75 to 58.37% was recorded.
Manganese Ore							
Angul, Boudh and Ganjam	Eastern part of the Eastern Ghat Granulite belt	-	-	-	-	-	Three patches of mangniferous zone at Boirani and Barsar in the Western part, Nuagaon in the eastern part and at east of Sapa Pankal in the intervening areas were delineated and sampled.
Keonjhar	N-E Extn. of Lasarda block	-	-	9	-	-	Boreholes intersected six manganese ore zones having 0.5 to 40 m thickness and grade of 20 to 36.56% Mn. About 2.47 million tonnes of resources with an average grade of 24.61% Mn were estimated.
-do-	Lasarda and Pacheri blocks	-	-	-	-	-	Earlier a resource of 6.78 million tonnes Mn ore was reported for these two blocks. In 2006-07 1.08 million tonnes resources were also estimated. Thus, the total resource of these two blocks stands at 7.86 million tonnes with average grade of 26.15% Mn.
-do-	Lasarda North Extn. block	-	-	-	-	-	A resource of 2.76 million tonnes of manganese ore is estimated with an average grade of 25.29% Mn.
-do-	Kendudihi- Parulipada block	-	-	-	-	-	A resource of 0.7 million tonnes of manganese ore is estimated with an average grade of 22.27% Mn.

(Contd.)

STATE REVIEWS

Table - 71 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
-do-	Pacheri South block	-	-	-	-	-	A resource of 0.19 million tonnes of manganese ore is estimated with an average grade of 25.51% Mn.
Limestone							
Sundergarh	Purkapali, Katopada and Gangajal areas	-	-	-	-	-	Five different dolomite/limestone bands spread over a strike length of 3.5 to 4 km have been delineated.
Platinum Group of Metals							
Baleswar	Jamchua-Garsahi area	-	-	-	-	-	Anomalous concentration of PGE (Pt : 100-360 ppb and Pd : 10-120 ppb) were recorded.
Directorate of Geology							
Bauxite							
Koraput	Tadapani near Ramgarh	1:2,000	1.47	-	-	186	Four plateaux having capping of laterite have been identified. The main plateau has bauxite bearing area of about 1.47 sq km with thickness of bauxite varying from 2 to 6 m.
Chromite							
Jajpur	Kakudia, Giringamali, Ragada	1:25,000	40	-	-	120	Analysis of a few samples revealed Cr ₂ O ₃ content as >1 percent.
Keonjhar	Kathakata- Sankatpalli area	1:25,000	53	-	-	69	Three ultramafic bodies were located around Kathakata and west of Sankatpalli area. But no chromite occurrence was found.
Coal							
Talcher coalfield							
Angul	Talcher West and Nandira block Talcher Coalfield	-	-	14	1264.05	245	Exploration was conducted on behalf of CMPDI. In Talcher West block, Seam-I occurs at depth of 85.50 to 121.72 m having thickness of 15.55 to 20.40 m. In Nandira block, Seam-I occurs at depth of 33.12 to 106.65 m having thickness of 3.88 to 18.90 m.
Diamond							
Koraput	Around Katpal	1:50,000	120	-	-	64	Processing and analysis of gravel and loam samples are in progress.

(Contd.)

STATE REVIEWS

Table - 71 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Nuapada	Arkholi area	1:50,000 1:2000	2 0.2	-	-	37	201 cu m trial excavation dug out and 7.4 tonnes of bulk samples collected.
-do-	Bharuamunda, Santoshpara	1:50,000	12	-	-	63	Three suspected olivine lamproite bodies in Santoshpara area have been located. About 131.70 cu m were dug out for trial excavation and 83 tonnes of bulk samples were collected.
Gem Stone							
Kalahandi	Shagarha, Dhanrakurhaki	1:50,000	102	-	-	29	Two iolite occurrences near Shagarha and one near Dhanrakurhaki were located.
Heavy Minerals							
Puri	Udegiri sector along Puri coast	1:2,000	1.29	263	2104	2104	The beach placer deposit around Udegiri sector had its extension established further up to a coastal length of 0.75 km with average width of 1.6 km. The deposit consists of heavy minerals like ilmanite, rutile, monazite, garnet and sillimanite. Average heavy mineral content is 12%.
Iron ore							
Sundergarh	Dholtapahar near Dengula	1:25,000 1:2,000	51 0.60	1	58.70	102	Soft laminated iron ore body is found exposed over an area of 480 x 140 m having thickness of 10 to 15 m. About 2.65 million tonnes of iron ore resources were estimated.
NALCO Bauxite							
Koraput	Panchpatmali bauxite mine	-	-	409	8241.5	10191	A total of 15 million tonnes of bauxite reserves was estimated.
FACOR Chromite							
Dhenkanal	Kathpal chromite mine	1:2000 1:500 1:200	113.3 (hect.)	82	1651.5	-	As on 31.3.2007, the total mineable reserves of chromite estimated was 0.82 million tonnes containing 44% Cr ₂ O ₃ .
-do-	Ostapal chromite mine	1:2000	72.84 (hect.)	5	394.6	115	As on 1.4.2007, the total reserves of chromite estimated was 53.94 million tonnes containing 37.8% Cr ₂ O ₃ .

(Contd.)

STATE REVIEWS

Table - 71 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
2007-08							
GSI							
Coal							
Talcher coalfield	Jalatap block	-	-	-	-	-	Three regional coal seams varying in thickness from 7.84 to 35.46 m were intersected at depths between 432 m and 520.95 m.
-do-	Jamujhari-Brahmanbil blocks	-	-	-	-	-	Ten Barakar coal seam zones varying in cumulative thickness from 1 to 25.91m were intersected at depths between 65.3 m and 591.15 m.
-do-	Kudanali North-East block	-	-	-	-	-	Five Barakar coal seam zones varying in thickness from 2.77 to 31.7 m were intersected at depths between 40.5 and 452.2 m. One Karharbari seam zone varying in thickness from <1 to 8.54 m was intersected at depths between 281 and 452.72 m.
Ib River coalfield	Kuraloi (A) North block	-	-	-	-	-	Five regional Barakar coal seams with cumulative coal thickness varying from 1.38 to 39.88 m have been intersected at depths between 43.69 m and 533.04 m.
-do-	Piplimal-Khairkuni block	-	-	-	-	-	Five regional Barakar coal seam zones with thickness varying from 1.71 to 29.57 m have been intersected at depths between 17.14 m and 265.98 m.
Diamond	Jharsuguda, Sambalpur & Sundergarh	In parts of Jharsuguda Sambalpur and Sundargarh distts.	-	-	-	-	Search of kimberlite/lamproite bodies was carried out to test the four target blocks identified in FS 2005-06.
Iron Ore	Keonjhar	Pathuripenth-Madhyapur area	-	-	-	-	About 0.043 million tonnes of iron ore resources have been estimated.
Sundergarh	Ghoraburhani block	-	-	-	-	-	The iron ore body at Ghoraburhani-Sagasahi area has a total strike length of 1.95 km with 40 to 250 m surface width. A resource of 6.2 million tonnes of iron ore with 55 to 60.6% Fe has been estimated.

(Contd.)

STATE REVIEWS

Table - 71 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Manganese Ore							
Keonjhar	Bolani block Bonai Keonjhar belt	-	-	-	-	-	Based on results of 8 boreholes drilled in this block a resource of 0.65 million tonnes of Mn ore at 20% Mn cut off has been estimated.
-do-	Lasarda North Extn. (Bolani) block	-	-	-	-	-	In FS 2006-07, 1.37 million tonnes Mn ore resource were estimated. In addition to this, 0.39 million tonnes of resources were also estimated in 2007-08.
Directorate of Geology							
Bauxite							
Kandhamal	Ushabali Plateau	1:12,500 1:2,000	27 1.81	-	-	312	The bauxite occurs as blanket below laterite capping. The thickness of bauxite varies from 1 to 8.4 m and that of laterite capping varies from 0.5 to 5 m. Seven pits involving 220 cu m were dug out.
Coal							
Ib River Coalfield (Jharsuguda)	Madhupur block	1:4,000	2.5	12	195	-	Rampur seam of Barakar formation and Ib seam of Karharbari formation were established.
Talcher Coalfield	Talcher West and Jagannath Blocks	-	-	10	1441	-	In Talcher west block, 18.66 to 21 m thick coal seam was encountered at a depth range of 86.02 to 170.90 m and in Jagannath block at a depth range of 119.51 to 171.85 m.
Dimension stone							
Khurda	Kaluchua, Dhanias, etc.	1:50,000 1:25,000	202 14	-	-	62	Work in progress.
Diamond							
Nuapada	Bharuamunda, Santoshpara, etc.	1:50,000 1:2,000	10 0.525	9	162.85	195	Olivine lamproite body (suspected) was located in Sethjampani.
-do-	Arkholi and Kathiwadi	1:50,000 1:2,000	19 1	-	-	26	The dimensions of olivine lamproite body near Arkholi (240 m x 20 m) and near Kathiwadi (25 m x 1 m) were established.
Heavy Minerals							
Puri	Udegiri NE sector along Puri coast	1:2,000	1.76	302	2398.6	2399	Elongated beach placer deposit 2 km in width extending to a coastal length of 1.05 km was established. Average heavy mineral content varies in these deposits from 12 to 14%.

(Contd.)

STATE REVIEWS

Table - 71 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
-do-	S-W of Brahmagiri to Astranga along Puri coast	-	-	479	805	479	Heavy mineral concentration varies from 8 to 30% in the beach placer deposit.
Iron Ore							
Nabarangapur	Hirapur, Soragurha, etc.	1:25,000	54	-	-	108	Eight iron ore bands of 3850 m cumulative length and up to 20 m average width were located.
Sundergarh	Dholtapahar area near Dengula	-	-	5	227	75	Drilling revealed the thickness of iron ore bands to be varying between 18.6 and 32.9 m.
Limestone							
Nuapada	Garramura	-	-	10	509.6	418	Drilling revealed the cumulative thickness of limestone band to be varying between 15.4 and 44.17 m.
Ultramafics/quartz							
Mayurbhanj	Kesna, Sialgothani, etc.	1:50,000	108	-	-	83	Four ultramafic bodies and seven vein quartz bodies were located.
MECL							
Coal							
Ib Valley Coalfield	Dulunga	-	-	-	1135.3	-	Contractual drilling on behalf of M/s NTPC was carried out.
Talcher Coalfield	Nuagaon- Teleshahi	-	-	-	1204.7	-	Contractual drilling on behalf of M/s APMDC and OMC was carried out.
SAIL							
Iron Ore							
Keonjhar	Bolani Iron ore mines	1:2,000	13.21	-	-	-	As on 1.4.2008, balance mineable reserves of iron ore were estima- ted at 151.3 million tonnes.
NALCO							
Bauxite							
Koraput	Panchpatmali bauxite mine	-	-	476	8830	-	-
OMC							
Chromite							
Jajpur	South Kaliapani	1:2,000	40 Hect	16	1104	100	About 1.2 lakh tonnes of chromite reserves were estimated in 2007-08.
Keonjhar	Bangur	1:200	5 Hect (U/G)	3	343	333	About 60,000 tonnes at 30% cut off of chromite reserves with 10% Cr ₂ O ₃ cut off were estimated in 2007-08.

(Contd.)

STATE REVIEWS

Table - 71 (Concl'd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Keonjhar	Baniapank	1:2,000	50 Hect	2	41.5	-	No significant ultrabasic rock or chromite exposure was encountered.
Iron Ore							
Keonjhar	Kurmitar Iron ore mine	-	18 Hect	61	4001.25	3808	About 74 million tonnes of iron ore reserves were estimated.
-do-	Balda-Palsa Jajang Iron ore mine	1:500	35.75 Hect	56	2333	405	About 2.05 million tonnes of iron ore reserves were estimated in 2007-08.
-do-	Khandbandh	1:500	26.75 Hect	32	1634.6	809	Total reserves of iron ore was estimated at 6.16 million tonnes in 2007-08.
-do-	Dubna- Sakradih Mining lease	-	-	20	822.6	648	About 2.15 million tonnes of iron ore reserves were estimated in 2007-08.
-do-	Barpada Kasia Iron ore mine	1:500	13 Hect	9	361.15	605	Total reserves of iron ore was estimated at 4.22 million tonnes.
-do-	Banspani	-	-	26	974	440	About 1.38 million tonnes of iron ore reserves were estimated in 2006-07.
-do-	SGBK Lease	1:1,000	22.5 Hect	16	438.35	37	About 85,000 tonnes of iron ore reserves were estimated in 2007-08.
Manganese Ore							
Keonjhar	SGBK Lease	1:500	12	58	2272.65	951	About 1.06 lakh tonnes of manganese ore reserves were estimated in 2006-07.
-do-	Sremda Bhadrasahi mine	1:500	15 Hect	37	1153	951	Total reserves of manganese ore was estimated at 8.47 lakh tonnes.
FACOR Chromite							
Dhenkanal	Kathpal chromite mine	1:2000 1:500 1:200	113.3 (hect.)	9	562.95	64	As on 1.4.2008, the total mineable reserves of chromite is estimated at 2.2 million tonnes containing 49.8% Cr ₂ O ₃ .
-do-	Ostapal chromite mine	1:2000	72.84 (hect.)	7	766	116	As on 1.4.2008, the total reserves of chromite is estimated at 52.8 million tonnes containing 37.8% Cr ₂ O ₃ .

STATE REVIEWS

Production

The value of mineral production in Orissa at Rs. 12,987 crore in 2007-08 increased by 29% over that of the previous year. The state contributed 11.34% of the total value of mineral production and claims second position among the states in the country during the year under review. The important minerals produced in Orissa were coal, bauxite, chromite, iron ore, manganese ore, limestone and dolomite which together accounted for about 99.2% of the total value of mineral production in 2007-08.

Orissa was the leading producer of chromite with a share 99.9%, pyroxenite 84%, quartzite 47%, graphite 44%, iron ore 33% and dolomite 32% in the total production of respective mineral in India during the year 2007-08. The state was also the second leading producer of manganese ore 26%, bauxite 20% and third leading producer of sillimanite with a share of 31% in the total production in the country.

Of the important minerals, production in terms of quantity of garnet (abrasive) increased by 132%, quartzite 28%, pyroxenite and sillimanite 20% each, fireclay 13%, coal 10%, iron ore 7%, dolomite 3% and limestone by 2% in 2007-08 as compared to that in the previous year. On the other hand, production of manganese ore decreased by 3%, chrome ore by 9%, kaolin 13%, pyrophyllite 19%, quartz 38%, graphite 43% and silica sand by 53% during the year under review. The fall in production was attributed to less exposure of chrome ore, earth cutting work and discontinuation in compliance with the directive of Orissa State Pollution Control Board (Table-72).

The production value of minor minerals was estimated at Rs. 86 crore for the year 2007-08. The number of reporting mines in 2007-08 was 227 as against 233 in the previous year. The index of mineral production in Orissa (base 1993-94 = 100) was 420.79 in 2007-08 as against 410.30 in the previous year.

**Table - 72 : Mineral Production in Orissa, 2005-06 to 2007-08
(Excluding Atomic Minerals)**

(Value in Rs. '000)

Mineral	Unit	2005-06			2006-07			2007-08 (p)		
		No. of mines	Qty	Value	No. of mines	Qty	Value	No. of mines	Qty	Value
All Minerals		235	-	81068406	233	-	100652131	227	-	129874551
Coal	'000 tonnes	23	70540	29748746	24	81160	33437920	27*	89482	42115599
Bauxite	tonne	3	4871163	1133220	3	4673886	1292562	3	4685973	1349396
Chromite	tonne	16	3705588	10894811	19	5287836	14458302	19	4791258	20157707
Iron ore	'000 tonnes	87	52151	36032752	87	64178	48069518	80	68516	62523445
Manganese ore	tonne	38	611809	1315967	36	686783	1398965	40	663898	1516428
Dolomite	tonne	6	1404577	327401	4	1576617	325403	4	1619988	395560
Fireclay	tonne	6	70753	20022	5	70081	20315	5	79179	20647
Garnet (abrasive)	tonne	-	567	851	-	3681	5706	-	8534	13600
Graphite (r.o.m.)	tonne	20	50835	24021	22	88758	35083	17	50702	25626
Kaolin	tonne	4	4431	1949	3	2874	1599	3	2506	1314
Sillimanite	tonne	1	13207	89662	1	11168	60665	1	13359	79962
Limestone	'000 tonnes	15	2615	503385	15	2707	608336	15	2769	719361
Pyrophyllite	tonne	3	8211	1295	3	7359	1104	4	5997	901
Pyroxenite**	tonne	-	275660	96481	-	221410	64652	-	265088	83970
Quartz	tonne	-	-	-	-	1600	400	-	1000	250
Quartzite	tonne	9	50793	15513	7	30786	10611	6	39289	11965
Silica sand	tonne	1	20100	4523	1	17444	3803	1	8106	2027
Talc/soapstone/ steatite	tonne	3	8983	1040	3	3634	420	2	225	26
Minor minerals@		-	-	856767	-	-	856767	-	-	856767

Note: The number of mines excludes minor minerals.

* *Relates to coal mines as on 31.03.2008.*

** *Associated with chromite.*

@ *Figures for earlier years have been repeated as estimates because of non-receipt of data.*

STATE REVIEWS

Mineral-based Industry

The important large and medium mineral-based industries in organised sector in the State are given in Table - 73.

Table – 73 : Principal Mineral-based Industries in Orissa

Industry/plant	Capacity ('000 tpy)
Aluminium/Alumina	
Hindalco Industries Ltd, Hirakud	100 (Aluminium)
NALCO, Damanjodi	1575 (Alumina)
NALCO, Angul	345 (Aluminium)
Vedanta Aluminium Ltd, Lanjigarh, Dist. Kalahandi	1000 (Alumina)
Vedanta Aluminium Ltd, Jharsuguda, Dist. Sambalpur	500 (Aluminium)
Asbestos Products	
UAL Industries Ltd, Korian, Dist. Dhenkanal	30
Cement	
Bargarh Cement Ltd, Bargarh	960
Ultra-Tech Cement Ltd., Jharsuguda (G)	800
OCL India Ltd., Rajgangpur, Dist. Sundergarh	1800
Toshali Cements Pvt Ltd, Ampavalli, Dist. Koraput	80
Fertilizer	
OCF-Paradeep	325.20 (N ₂) 802.8 (P ₂ O ₅)
Paradeep Phosphates Ltd, Paradeep	129.6 (N ₂) 331.2 (P ₂ O ₅)
SAIL Fertilizer Plant, Rourkela	360 (CAN)
Iron & Steel	
Rourkela Steel Plant, Rourkela	3070 (Sinter) 2000 (Pig iron) 1671 (Saleable steel) 85 (Tin plates)
Visa Steel Ltd, Kalinganagar, Dist. Jajpur	225 (Pig iron) 300 (Sponge iron) 50 (Charge-chrome)

(Contd.)

Table - 73 (Contd.)

Industry/plant	Capacity ('000 tpy)
OCL India Ltd, Lamloi, Dist. Sundergarh	120 (Sponge iron) 85 (Billets)
Orissa Sponge Iron Ltd, Palaspanga, Dist. Keonjhar	250 (Sponge iron) 100 (Steel ingot)
Pig Iron	
Neelachal Ispat Nigam Ltd, Dubri, Dist. Jajpur	1100
IDCOL Kalinga Iron Works Ltd, Barbil, Dist. Keonjhar	170
Sponge Iron	
Action Ispat & Power (P) Ltd, Pandripathar Dist. Jharsuguda	250
Adhunik Metaliks Ltd, Chandrihariharpur, Dist. Sundergarh	180
Beekay Steel & Power Ltd, Uliburu, Dist. Barbil	105
Bhusan Steels & Strips Ltd, Meramandali, Dist. Angul and Dhenkanal	300
Crackers India (Pvt) Ltd, Bobardhanpur, Dist. Keonjhar	60
Deepak Steel & Power Ltd, Topadihi, Dist. Keonjhar	144
Ganesh Sponge Pvt Ltd, Krushnachandrapur, Dist. Angul	30
Kusum Powermet Pvt. Ltd, Kutugaon, Dist. Keonjhar	30
Mayur Electro Ceramics Pvt. Ltd, Pratapgarh, Dist. Mayurbhanj	15
Neepaz Metaliks Pvt Ltd, Sundergarh	60
Rexon Strips Ltd, Kumakela, Dist. Sundergarh	60
Rungta Mines Ltd, Unit-I, Karakola, Barbil, Dist. Keonjhar Unit-II, Kamando, Dist. Sundergarh	330
Scan Sponge Iron Ltd, Rambahal, Dist. Sundergarh	24
Scaw Industries Pvt. Ltd, Gundichapada, Dist. Dhenkanal	100
Sponge sales (India) Pvt Ltd, Kutugaon, Dist. Keonjhar	60

(Contd.)

STATE REVIEWS

Table - 73 (Contd.)

Industry/plant	Capacity (^{'000 tpy})
Sree Metallic Ltd, Loidapada, Dist. Keonjhar	174
Suraj Products Ltd, Barpalli, Dist. Sundergarh	45
Surya Sponge Iron Ltd, Budhakendua, Dist. Jajpur	84
Tata Sponge Iron Ltd, Joda, Dist. Keonjhar	390
Vikram Pvt Ltd, Tumkela, Dist. Sundergarh	60
Ferro Alloys	
Balasure Alloys Ltd, Balgopalpur, Dist. Balasore	100
FACOR, Charge Chrome Plant, Randia, Dist. Bhadrak	65
IDCOL Ferro Chrome & Alloys Ltd., Dist. Jajpur	18
Indian Charge Chrome Ltd., Choudwar, Dist. Cuttack	62.5
Indian Metals & Ferro Alloys Ltd, Therubali, Dist. Cuttack	190
Nav Bharat Ferro Alloys Ltd, Khargprasad, Dist. Dhenkanal	75
Rohit Ferro-Tech Ltd, Kalinganagar, Dist. Jajpur	110
Jaypore Sugar Co. Ltd, Rayagada	22.5
Superb Metals Alloys Pvt. Ltd, Rairangpur	0.3
Tata Steel Ltd, Ferro-Manganese Plant, Joda, Dist. Keonjhar	30.5
Tata Steel Ltd, Charge Chrome Plant, Bamnival, Dist. Keonjhar	50
Refractory	
IFGL Refractory Ltd, Kalunga, Dist. Sundergarh	0.3

(Contd.)

Table - 73 (Concl.)

Industry/plant	Capacity (^{'000 tpy})
Orissa Industries Ltd, Lakhikata, Dist. Sundergarh	125
Orissa Industries Ltd, Barang, Dist. Cuttack	19
Tata Refractories Ltd, Belpahar, Dist. Jharsuguda	172
Silicon Carbide	
Indian Metals & Carbide Ltd, Therbali	NA
Synthetic Rutile	
IRE, Orissa Sands Complex, Ganjam	100

(G) : Grinding units.

PUNJAB

Mineral Resources

Minerals reported to occur in the State are **quartz** and **silica sand** in Hoshiarpur district; and **quartzite** in Hoshiarpur and Ropar (Rupnagar) districts (Table - 74).

Production

Production of sulphur and minor minerals only was reported in the state. Sulphur recovered as by-product, from fertilizer plant during 2007-08 was placed at 3,456 tonnes which showed decrease of 7% from that in the previous year (Table-75).

The value of production of minor minerals was estimated at Rs. 19 crore for the year 2007-08. The index of mineral production in Punjab (base 1993-94=100) was 45.17 in 2007-08 as against 48.60 in the previous year.

STATE REVIEWS

Table – 74 : Reserves/Resources of Minerals as on 1.4.2005 : Punjab

Mineral	Unit	Reserves		Remaining resources		Total resources (A+B)
		Total (A)	Indicated STD 332	Inferred STD 333	Total (B)	
Quartz/silica sand	'000 tonnes	-	2550	1377	3927	3927
Quartzite	'000 tonnes	-	31782	78734	110516	110516

Figures rounded off.

Table – 75 : Mineral Production in Punjab, 2005-06 to 2007-08 (Excluding Atomic Minerals)

(Value in Rs. '000)

Mineral	Unit	2005-06			2006-07			2007-08 (p)		
		No. of mines	Qty	Value	No. of mines	Qty	Value	No. of mines	Qty	Value
All Minerals		-	-	152301	-	-	190534	-	-	190534
Sulphur#	tonne	-	3649	-	-	3721	-	-	3456	-
Minor minerals@		-	-	152301	-	-	190534	-	-	190534

Note : The number of mines for minor minerals are not available.

Recovered as by-product from fertilizer plant.

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

Mineral-based Industry

The important mineral-based industries with their total installed capacities in organised sector in the State are given in Table - 76.

Table – 76 : Principal Mineral-based Industries in Punjab

Industry/plant	Capacity ('000 tpy)
Cement	
Gujarat Ambuja Cement, Ropar (Rupnagar) (G)	2500
Gujarat Ambuja Cement, Bhatinda (G)	500
Grasim Industries, Bhatinda (G)	1200

(Contd.)

Table - 76 (Concl'd.)

Industry/plant	Capacity ('000 tpy)
Chemical	
Siel Chemical Complex, Charatrapur	74.3 (NaOH) 65.8 (Cl) 18 (Bleaching Powder) 66.0 (HCl)
Fertilizer	
NFL, Naya Nangal, Dist. Ropar (Rupnagar)	478.5 (Urea) 318 (CAN)
NFL Sibian Road, Dist. Bhatinda	511.5 (Urea) 8.7 (S)
PNF-Nangal	16.00 (N ₂)
Ferro Alloys	
Mehra Ferro Alloys Ltd, Verka	0.3
Sponge Iron	
Vallabh Steels Ltd, Sahnewal, Ludhiana	120

(G): Grinding units.

RAJASTHAN

Mineral Resources

Rajasthan is the sole producer of jasper, lead & zinc conc. and wollastonite. Rajasthan was the sole producer of garnet (gem) till 2004-05. Almost entire production of calcite and natural gypsum in the country comes from Rajasthan. The State is a major producer of asbestos, copper conc., ochre, phosphorite/rock phosphate, silver, steatite, ball clay, fluorite and felspar. The State is also an important producer of marble of various shades. Makrana area is world famous centre for marble mining.

More than 90% of the country's wollastonite, lead & zinc ore and potash resources are located in Rajasthan. The State is said to possess substantial share of the total resources of silver ore (84%), gypsum (81%), bentonite (80%), fuller's earth (74%), diatomite (72%), ochre (71%), marble (63%), felspar (62%), calcite (53%), mica (51%), talc/steatite/soapstone (50%), asbestos (49%), copper (48%), ball clay (36%), rock phosphate (31%), tungsten (31%), fluorite (26%), granite (23%), gold (primary) (17%) and china clay (14%).

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; **felspar** 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 (hematite)** in Alwar, Dausa, Jaipur, Jhunjhunu, Sikar & Udaipur districts; **iron ore (magnetite)** in Bhilwara, Jhunjhunu & Sikar

districts; **lead-zinc** in Zawar in Udaipur district, Bamnia Kalan, Rajpura-Dariba in Rajsamand & Rampura/Agucha in Bhilwara district have also been reported. Lead-zinc occurrences have also been reported from Ajmer, Chittorgarh, Pali and Sirohi districts. **Lignite** deposits were found to occur in Barmer, Bikaner, Jaisalmer and Nagaur 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, Sirohi, Tonk & Udaipur districts; **vermiculite** in Ajmer & Barmer districts; and **wollastonite** in Ajmer, Dungarpur, Pali, Sirohi & Udaipur districts are other mineral occurrences of the State.

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 and 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** and **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 (Tables - 77(A) and 77(B)).

Table – 77(A) : Reserves/Resources of Minerals as on 1.4.2005 : Rajasthan

Mineral	Unit	Reserves					Remaining resources					Total resources (A+B)
		Proved STD111	Probable STD121	Total (A) STD122	Feasibility STD211	Pre-feasibility STD221	Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
Apatite	tonne	-	-	-	-	-	1016000	-	-	1067521	1067521	
Asbestos	tonne	2961297	203656	2818871	5983824	-	316195	2177860	4526861	57800	7208619	
Ball clay	tonne	8108900	152950	3787607	12049457	112700	1610220	1398102	-	13663957	16784979	
Barytes	tonne	174741	12648	94461	281850	-	310668	1382221	37808	997088	2739285	
Bauxite	'000 tonnes	-	-	-	-	-	-	-	528	-	528	
Bentonite	tonne	-	11415982	574950	11990932	-	-	-	24356005	222017000	139423096	
Calcite	tonne	2985359	114920	3040863	6141142	-	12346	922470	515185	1037038	3399557	
China clay	'000 tonnes	23050	1858	17384	42292	606	22317	25328	545	1017	279266	
Copper												
Ore	'000 tonnes	27535	80	25327	52942	3375	-	10253	16513	42794	542580	
Metal	'000 tonnes	247.93	1.09	266.62	515.64	3.37	-	10.25	320.48	469.37	2662.97	
Corundum	tonne	-	-	-	-	-	-	-	-	-	11925	
Diatomite	'000 tonnes	634	-	-	634	-	-	-	-	-	1440	
Dolomite	'000 tonnes	57862	54	43417	101333	-	24069	34299	33	1772	338798	
Felspar	tonne	12197678	3882963	10924565	27005206	57004	968210	2415248	1224589	821150	23692430	
Fireclay	'000 tonnes	9013	1438	4948	15399	-	126	-	2293	2592	40778	
Fluorite	tonne	633309	165222	199225	997756	-	297036	491530	1528348	489488	1293519	
Fuller's earth	tonne	-	-	-	-	-	-	-	-	350000	189709080	
Garnet	tonne	12964	9041	20054	42059	-	-	-	1957	24128	88959	
Gold												
Ore (primary)	tonne	-	-	-	-	-	-	-	14724000	41840000	9025000	
Metal (primary)	tonne	-	-	-	-	-	-	-	27.20	84.55	14.09	
Granite												
(Dim. stone)	'000 cu m	-	-	4500	4500	-	-	-	-	-	8500708	
Graphite	tonne	47600	-	165920	213520	-	-	-	-	250000	1450034	
Gypsum	'000 tonnes	34381	1142	18670	54192	-	197	653	1353	710454	239951	
Iron ore												
(Hematite)	'000 tonnes	6774	2334	1705	10813	-	2090	419	-	11510	5016	
Iron ore	'000 tonnes	3074	247	904	4225	177	43	-	-	-	522431	
(Magnetite)	'000 tonnes	3074	247	904	4225	177	43	-	-	-	522431	

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

Exploration & Development

The details of exploration activities conducted by various agencies for lignite and other minerals during 2006-07 and 2007-08 are furnished in Table - 78(A).

ONGC and OIL continued seismic survey and drilling for exploration of petroleum and natural gas in Jaisalmer basin. In 2007-08, ONGC discovered new gas prospects namely Chinnewala Tibba-2 in Jaisalmer district and oil discovered gas prospects at Dandiwalla. Details of exploration activities conducted by ONGC and OIL for petroleum and natural gas are furnished in Table - 78(B).

Production

The value of mineral production in Rajasthan during 2007-08 at Rs. 4,829 crore increased by 5.9% as compared to that in the previous year. Its share to the total value of mineral production in the country in 2007-08 was about 4.2%. The state produces almost all variety of minerals in the country. Rajasthan was the sole producer of lead concentrate, zinc concentrate, calcite and wollastonite.

No production of jasper was reported during 2007-08. Almost the entire production of gypsum in the country was reported from the state. Besides, Rajasthan was the leading producer of silver accounting for 99.7%, phosphorite/rock phosphate 93.6%, ochre 93.4%, talc/steatite/soapstone 69.7%, ball clay 62.9%, copper conc. 47.4% and fire clay 31.2% of the total production in the country. Increase in production in terms of quantity was reported in respect of silver (56.8%), lead conc. (17.2%), fire clay, kaolin & limestone (10% each), ball clay (9.4%), zinc conc. (9.3%) and copper conc. (6.8%) from that of the previous year whereas there was decrease in production in ochre (14%), barytes (17.2%), calcite (22.8%), felspar (54.5%) and mica (crude) (98%) over that of the previous year. No production of fluorite and magnesite was reported during 2007-08. The reason for fall in production was due to decline in the number of reporting mines (Table-79).

The value of production of minor minerals was estimated at Rs.2,477 crore for the year 2007-08. The number of reporting mines in Rajasthan was 207 in the year 2007-08 as against 217 in previous year. The index of mineral production in Rajasthan (base 1993 - 94 = 100) was 200.56 in 2007-08 as against 175.70 in the previous year.

Table – 77(B) : Reserves of Lignite as on 1.4.2007 : Rajasthan

(In million tonnes)

District	Proved	Indicated	Inferred	Total
Total	560.91	2620.60	1053.84	4235.35
Barmer	170.40	2177.84	911.09	3259.33
Jaisalmer & Barmer	0	0	13.80	13.80
Bikaner	277.51	382.69	68.60	728.80
Nagaur	113.00	60.07	60.35	233.42

Source : Coal Directory of India, 2006-07.

Table – 78(B) : Exploration for Petroleum & Natural Gas in Rajasthan, 2006-07 and 2007-08

Year/Agency	Drilling					
	Seismic Survey		Exploratory		Development	
	2D(GLKM)	3D(SQKM)	Wells	Meterage	Wells	Meterage
2006-07						
ONGC	81.43	117.11	1	3619	-	-
OIL	-	-	-	7740	-	1014
2007-08						
ONGC	-	180.7	2	2479	-	-
OIL	-	-	-	1650	-	10522

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Table – 78(A) : Details of Exploration Activities in Rajasthan, 2006-07 and 2007-08

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
2006-07							
GSI							
Base Metals							
Alwar	Todi-ka-Bas	-	-	-	-	-	Chemical analysis of channel samples has indicated copper values ranging from 169 ppm to 1600 ppm.
Chittorgarh	Jabarkiya block	-	-	-	-	-	One borehole intersected four zones of chalcopryrite mineralisation with 0.2% to 0.49% Cu and width ranging from 1 to 3.15 m. Stray values of gold between 0.11 and 0.21 g/t have also been recorded.
Dausa	Dogeta-Basi area	-	-	-	-	-	Chemical analysis of channel samples has indicated copper values ranging from 59 ppm to 1500 ppm.
-do-	Dhani-Basri area	-	-	-	-	-	Earlier reported (FS 2004-05) resources of 3.2 million tonnes of copper-gold ore with 1.56 g/t gold and 1.09% copper have been recalculated to 3.8 million tonnes with 1.18% copper and 1.53 g/t gold.
Jhunjhunu	Neori West block (Central Khetri belt)	-	-	-	-	-	Pyrite veins were encountered at depths of 194 to 252 m and chalcopryrite stringers at depths of 326 to 332.55 m.
-do-	Manakas-Jodhpura (South Kheri Copper Belt)	-	-	-	-	-	Analytical data indicated moderate copper values.
-do-	Pacheri Kalan block (NE of Khetri Cu belt)	-	-	-	-	-	Pyrite veins and few chalcopryrite specks were noticed at depths of between 218 m and 224.45 m with 0.2% to 0.3% Cu (VE).
Pali	Kot area	-	-	-	-	-	Large-scale mapping and soil sampling were carried out.
Rajsamand	Gangas block Jasma-Bhupal Sagar belt	-	-	-	-	-	A resource of about 0.8 million tonnes of copper ore with an average grade of 0.5% Cu has been estimated.
Sikar	Mina-ka-Nangal	-	-	-	-	-	Two zones of mineralisation were delineated. Boreholes also intersected mineralised zones.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Sikar	Panchokharkhara area	-	-	-	-	-	Three mineralised zones were delineated on the surface. Boreholes also intersected mineralised zones at varying depths.
-do-	Baleswar- Dariba Belt	-	-	-	-	-	Large-scale mapping brought out a number of mineralised zones. Bed rock samples showed copper values ranging from 163 ppm to 0.39% Cu.
-do-	Halowala Johra block (South Kheri Copper Belt)	-	-	6	-	-	Three mineralised zones of varying width of were intersected with Cu values ranging from 0.2% to 0.8% Cu (VE).
-do-	Halowala Johra block Phase-II South Kheri Copper Belt)	-	-	-	-	-	About 6.45 m wide mineralised zone was intersected with 0.2% to 0.3% Cu (VE).
-do-	Baniwala-ki-Dhani, Kundla-ki-Dhani, Dokan and Dokan North blocks	-	-	-	-	-	In Baniwala-ki-Dhani block copper ore resource has been augmented to 18.17 million tonnes having 0.45% Cu from 5 million tonnes as was reported earlier. In the Dokan block, ore resources have been estimated at 25.56 million tonnes having 0.38% Cu. In Dokan North block ore resources have been estimated at 5.6 million tonnes with 0.3% Cu and in Kundla-ki-Dhani block, ore resources were placed at 1.9 million tonnes with 0.28% Cu.
Udaipur	Bara Sarpatiya block, Parsola area	-	-	-	-	-	From intersection in the first four boreholes it has been found that the oxidised zone continues with diminishing average width towards depth.
Clay Nagaur	Junjala-Padeli- Khera Narnolia areas	-	-	-	-	-	On the basis of earlier drilled borehole data for lignite exploration a potential clay zone has been reported.
Gold Ajmer and Bhilwara	Bhatiwar-Borana- Raipur; Surgati- Kumeri; Raipur- Ghata areas	-	-	-	-	-	Analytical results of stream sediments and bed rock samples from Bhatiwar-Borana-Raipur and Surgati-Kumeri areas did not indicate any gold mineralisation. However, samples from Raipur-Ghata area showed anomalous gold values ranging from 0.05 to 0.07 g/t.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Ajmer, Bhilwara and Tonk	Piparoli, Ekalsingha and Sarwar areas	-	-	-	-	-	During the ground evaluation of airborne geophysical anomalies gold values ranging from 0.11 to 0.43 g/t were recorded.
Banswara	Delwara West block (Bhukia gold belt)	-	-	-	-	-	The mineralised zones exposed in the Western part of the area have been explored during the FS 2005-06 and 2006-07. Analytical results of core samples indicated that width of the mineralised zone varies from 1.12 to 16.65 m with gold values ranging from 0.64 to 4.49 g/t. Besides, gold, Cu mineralisation of thickness 1 to 7 m containing 0.12 to 0.89% Cu is also recorded. A gold ore resource of 4.78 million tonnes with 1.32 g/t gold has been estimated. In Delwara block a resource of 1.3 million tonnes of gold ore has been augmented during 2006-07 (Hence total resource of gold ore in Delwara block stands to be 14.9 million tonnes). In addition, to these in Khankariya Gara block a resource of 1.24 million tonnes of gold ore with 0.96 g/t Au has been estimated. Thus, the total resource of gold ore in Bhukiya gold belt is augmented from 47.9 million tonnes to 55.22 million tonnes with an average grade of 1.87 g/t gold.
-do-	Gundelpara block (Bhukiya gold belt)	-	-	2	-	-	In one borehole two auriferous zones containing 1.06 to 1.87 g/t Au and in other borehole an auriferous zone containing 1.06 to 1.67 g/t Au were intersected.
-do-	N-W and S-E of Village Gundelpara (Bhukiya gold belt)	-	-	-	-	-	Analytical results of channel samples indicated 29 ppm to 0.78% Cu; <25 ppb to 0.12% Co; <50 to 238 ppm Zn and <25 to 229 ppm Ni. The analytical results of other channel samples indicated gold values ranging from 0.05 to 0.54 g/t.
-do-	Pathara block	-	-	-	-	-	Drilling indicated sporadic dissemination of sulphides.
Chittorgarh	Jabarkiya block	-	-	-	-	-	Analysis of borehole samples revealed stray values of gold between 0.11 and 0.21 g/t besides copper.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Udaipur	Dugocha main block and Dugocha North block	-	-	-	-	-	An additional resource of 0.16 million tonnes of gold ore was estimated.
Lignite							
Jaisalmer	Borana East	-	-	-	-	-	About 0.8 m thick lignite seam was intersected at 105.6 m depth.
Rare Metals							
Ajmer	Ruparel, Pagara and Govindgarh areas	-	-	-	-	-	The channel samples from Ruparel area analysed Li : 5 to 450 ppm; Cs : 10 to 470 ppm and Rb : 38 to 150 ppm; samples from Pagara area analysed Li : 5 to 110 ppm; Cs : <10 to 350 ppm and Cs & Rb : 70 to 1100 ppm.
DMG Base Metal							
Ajmer	N/V Naulakha, Tantiya, Hathibatta, etc.	-	-	3	713	187	Chalcopyrite, Arsenopyrite mineralisation intersected at places in 3 boreholes. Analysis of core samples showed : Cu 5 ppm to 1.62%; Zn 2.5 to 121 ppm; Ag 0.9 to 16 ppm and Au 0.045 to 0.289 ppm.
-do-	N/V Chhachhundra, Bandanwara, etc.	1:50,000 1:10,000 1:2,000	100 15 1	1	280	225	Analysis of core samples showed : Cu 37 ppm to 0.25%; Zn 15 to 4075 ppm; Ag 0.9 to 69 ppm and Au 0.4 to 0.742 ppm; Pb 28.6 to 962 ppm and Co 37 ppm to 0.19 percent.
Bharatpur	N/V Khankhera and Kaiar	1:50,000 1:10,000 1:2,000	50 10 1	-	-	12	Primary indication of copper mineralisation in the form of malachite stains were noticed N/v Khankhera.
Jaipur	N/V Morda and Javali	- -	-	1	139	-	Drilling continued.
Sirohi	N/V Golia and Pipela	1:50,000 1:10,000 1:2,000	100 10 1	-	-	328	Extension of base metal mineralisation have been located in the north and north-east of Village Golia.
Bentonite and other minerals							
Barmer	N/V Mokhab Amardhan-ki-Dhani, Jat-ki-Dhani, Amar Singh-ki-Dhani etc.	1:50,000 1:10,000 1:2,000	205 15 2	-	-	12	Due north of Mokhab up to 0.5 m thick bed of bentonite deposits were found to occur in 0.075 sq km area. Exposures of massive sandstone were found in an area of about 0.5 sq km in due N-E of Mokhab. Near Amardhan-ki-Dhani and in Dejar dungar it occurs as hillocks. Near Jat-ki-Dhani it is exposed in about 2 sq km area.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							N/v Amar Singh -ki- Dhani Siliceous earth were found exposed in trench.
Building Stone							
Baran	N/V Jhonpariya to Rajoriya	1:50,000 1:10,000 1:2,000	100 15 1	-	-	34	The total inferred reserves of Masonry stone is estimated at 68 million tonnes.
Barmer	N/V Nausar, Kamthai, Dhanna-ki- Dhani etc.	1:50,000 1:10,000 1:2,000	200 20 2	-	-	40	Occurrences rhyolite was observed in the area from Bhalisar to Kamthai, Nausar and bank of river Luni. Syenite rock found to occur at Goyana-Bhakhar, Dandali, etc. can be used as decorative stone.
-do-	N/V Duda Beri, Nand & Sheo- ki-Magri	1:50,000 1:10,000 1:2,000	120 18 1.5	-	-	5	Occurrences of pink coloured medium to coarse grained granite were identified.
Churu	N/V Dunkar, Charwas, etc.	1:50,000 1:10,000	100 10	-	-	-	Ultrabasic rocks were found exposed in the nallah cutting in S-W of Village Belra and granite rocks were found exposed in a number of open wells N/v Chhapar .
Dholpur	N/V Kankrai, Totpura, etc.	1:50,000 1:10,000 1:2,000	100 15 2.5	-	-	30	A total of about 39.6 million tonnes of sandstone resources were estimated.
Jaipur	N/V Lakher, Arania, etc.	1:50,000 1:10,000	315 32	-	-	-	Gap areas for masonry stone were delineated.
Jaisalmer	N/V Pithla	1:10,000 1:2,000	15 3	-	-	-	Deposits of limestone suitable for flooring were identified.
Jodhpur	N/V Tambriya, Kalan, Bandra, etc.	1:10,000 1:2,000	20 1	-	-	34	Isolated sandstone outcrops were identified.
-do-	N/V Bedu, Suwap	1:10,000 1:2,000	10 3	-	-	20	Dolomitic marble deposit spread over about 4 sq km area between villages Bedu- Bedu Kalan were identified.
Nagaur	N/V Gumpaliya, Chapara, etc.	1:50,000	50	-	-	5	Occurrences of serpentine marble were identified.
Pali	N/V Miniari, Bhawani area	1:50,000 1:10,000	15 10	-	-	18	-
-do-	N/V Chaug, Rojra, Khidar- gaon, etc.	1:10,000 1:2,000	10 1.5	-	-	-	Deposits of blockable granite were located.
Sirohi	N/V Bhimana, Bharja, etc.	1:50,000 1:10,000	200 10	-	-	57	Six million tonnes of Bajri reserves in river Banas and its tributaries were assessed.

(Contd.)

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Calcite							
Sirohi	N/V Rajpura	1:50,000	75	-	-	59	About 1500 tonnes of calcite reserves were estimated.
		1:10,000	10				
		1:2,000	1.5				
Dolomite							
Udaipur	N/V Jhalon- ka-Guda, Piprach, etc.	1:50,000	50	-	-	180	The dolomite band identified is about 1.5 km in length, 75 to 150 m in width with assumed depth of about 30 m.
		1:10,000	10				
		1:2,000	2.5				
Iron ore							
Jaipur and Jhunjhunu	Bagoli, Tonda, etc in Jhunjhunu dist and Kharab, Moriya - Banol etc in Jaipur dist.	1:50,000	190	-	-	117	About 46.52 million tonnes of geological resources estimated in Jaipur dist. and 19.76 million tonnes in Jhunjhunu dist.
		1:10,000	22				
		1:4,000	6				
Lignite							
Bikaner	N/V Ambasar, Gigasar	1:50,000	135	19	2769	51	About 4.12 million tonnes resources of lignite were estimated.
-do-	N/V Lakhasar, Lumbasar	1:50,000	100	7	1239	29	Caboneaceous clay was encountered in four boreholes. Exploration is underway.
-do-	N/V Mokha, Dharnoke, etc.	1:50,000	100	-	-	-	Caboneaceous cuttings were observed in some tube wells located around five km east of Village Chak-Vijaysingpura.
Nagaur	N/V Nimbri- Chandawatan	1:50,000	100	-	-	-	No indication of lignite was observed.
-do-	N/V Luniyas, Bargaon, etc.	1:50,000	100	-	-	-	Lignite occurrences were found N/V Bargaon and clay occurrences were found N/V Phalki, Bargaon, Basni, etc.
Limestone							
Ajmer	N/V Kayam- pura, Magra, etc.	1:50,000	200	7	447	153	Deposits of cement grade limestone of varying dimensions were explored by drilling N/V Magra, Brijpura and Raghunathpura.
		1:10,000	15				
		1:2,000	2				
Ajmer and Pali	N/V Hemdai Kana Rawat- ki-Dhani	1:50,000	150	-	-	5	Elongated mounds of calcite marble/limestone of dimension 100-400 m x 30-100 m N/V Hemdai were mapped.
		1:10,000	15				
		1:2,000	1				
Baran	N/V Chureliya	1:50,000	100	-	-	34	The total resources of limestone estimated at about 0.5 million tonnes.
		1:10,000	15				
		1:2,000	1				

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Bundi	N/V Balapura- Kunwanti, Bardha, etc.	1:50,000 1:10,000 1:3,088	150 16 2.1	-	-	35	A total of about 1.30 million tonnes resources of cement grade limestone were estimated near Balapura Kunwanti.
Chittorgarh	N/V Phalwa- Dhanora- Payri	1:50,000 1:10,000 1:2,000	50 5 1.5	9	586	529	About 60 million tonnes resources of cement grade limestone were estimated.
-do-	N/V Bhatkotri- Lasrawan	-	-	14	645	-	A total of about 516 million tonnes of resources were estimated of which 220 million tonnes were in Javda block and 296 million tonnes in Bhatkotri block.
Jaisalmer	N/V Sam & Sagron-ki-Basti	1:10,000 1:2,000	15 4	36	1063	632	About 210 million tonnes of limestone resources were estimated.
Jhunjhunu	N/V Gothra	-	-	-	-	425	A total of 6.09 million tonnes of limestone resources were estimated.
Nagaur	N/V Somna, Khanwar, etc.	1:10,000 1:2,000	10 2	-	-	35	Potential deposits of chemical/cement grade limestone were identified and about 35 million tonnes of tentative geological resources were estimated.
Rajsamand	N/V Karoli-ki- Dhani, Mando- ki-Dhani, etc.	1:50,000 1:10,000 1:2,000	75 5 1.1	-	-	30	Three dolomitic limestone bands of varying dimensions were identified.
Sirohi	N/V Rajpura and Jharoli	1:50,000 1:10,000 1:2,000	75 10 1.5	-	-	59	Five million tonnes resources of cement grade limestone were estimated.
Noble Metals							
Dungarpur	N/V Padar, Ajhera, etc.	1:25,000 1:10,000 1:2,000	100 5 0.5	-	-	699	Analyses of spot samples revealed Au content varying from 0.16 to 1.5 g/t and Ag from 5 to 62.2 g/t.
Rajsamand	N/V Gangrar, Puthol, etc.	1:50,000 1:10,000 1:2,000	200 10 0.15	-	-	138	Analysed spot sample indicated Ag content up to 98.1 ppm and Au 0.162 ppm.
Udaipur	N/V Kel-ki- Kui, Kodar- wadia, etc.	1:50,000 1:10,000 1:2,000	205 21 1.5	-	-	170	Analysed samples indicated Au - 0.12 to 2.75 ppm; Ag - 0.2 to 1.6 ppm; Cu - 15 to 7,515 ppm; Zn - 49 to 1,620 ppm and Pb - 17.5 to 78.5 ppm.
Rock Phosphate							
Banswara	N/V Lorda, Kushalgarh, etc.	1:50,000 1:10,000	150 10	-	-	60	Deposits of dolomite with Phosphatic stromatolite were identified.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Silica Minerals							
Alwar	N/V Narka, Dhaulti and Senthali, etc.	1:50,000	100	-	-	30	About 0.76 million tonnes of ferruginous quartzite; 19.25 million tonnes Masonry stone and one million tonnes of chert resources were estimated.
		1:10,000	10				
Banswara	N/V Chhuja, Panchpura, etc.	1:50,000	60	-	-	-	Two million tonnes of quartzitic phyllite resources were estimated.
		1:10,000	10				
		1:2,000	0.70				
Bharatpur	N/V Gadhaner, Kharwar, Ulanda, etc.	1:50,000	150	-	-	24	About 5.46 million tonnes resources of silica sand were estimated.
		1:10,000	15				
		1:2,000	1				
Chittorgarh	Manji-ka-Gurha Minana, etc.	1:50,000	100	-	-	90	In the south of village Minana about 200 m wide quartzite band was found exposed for a strike length of about 2500 m.
		1:10,000	8				
			1:2,000	0.5			
Dausa	N/V Bhanwata, Kundal and Chobriwala, etc.	1:50,000	150	-	-	30	Tentative geological resources of silica sand were estimated at 75,000 tonnes N/V Bhanwata; 158,000 tonnes N/V Kundal and 126,000 tonnes N/V Chobriwala.
		1:10,000	10				
		1:2,000	1				
Dungarpur	N/V Sagwaha, Bhitna, etc.	1:50,000	110	-	-	18	About 0.31 million tonnes of sand and 0.43 million tonnes of quartzite resources were estimated.
		1:10,000	6				
		1:2,000	0.82				
Jaisalmer	N/V Lathi, Bhadriya etc.	1:50,000	150	-	-	20	About 2.0 sq km area N/V Lathi that comprises silica sand overlain by lime kankar was demarcated.
		1:10,000	10				
Karauli	N/V Khirkhira, Bariya, etc.	1:50,000	100	-	-	28	A total of about 12.5 million tonnes resources of silica sand was estimated.
		1:10,000	10				
		1:2,000	1				
Rajsamand	N/V Swardi, Samarnaka- Kheri, etc.	1:50,000	75	-	-	30	Pegmatite veins in nine cluster for about 1760 m length 20 m width and 15 m depth containing quartz and feldspar in 40:60 ratio were identified.
		1:10,000	5				
		1:4,000	1.1				
MECL							
Copper							
Bhilwara	Sanganer prospect	1:2,000	5	17	2604	804	Exploration work established ore mineralisation of over 1500 m strike length and 100 m depth from surface. Thickness of ore zone varies from 2.00 to 9.00 m with grade of 1.02 to 1.43% Cu.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
-do-	Devtalai block (Phase II)	1:1,000	1	17	3003	794	Exploration work established vein quartz of over 700 m strike length and 200 m depth from surface. Thickness of ore zone varies from 1.00 to 2.5 m with grade of 0.50 to 2.93% Cu.
Chittorgarh	Dariba block	1:1,000	1	15	2375	362	Three major lodes were identified of which Central and Eastern lodes are promising. A total of about 2.635 million tonnes of ore resources with 0.80% Cu were estimated.
Lead-Zinc Rajsamand	North Sidesar Ridge	1:1,000	1	11	3900	960	In the block two major lodes were identified. A total of 3.84 million tonnes of ore resources with 1.60% Pb and 3.76% Zn has been estimated over 600 m strike length.
-do-	Latio-ka-Khera	1:2,000	0.92	11	3235	870	Occurrences of promising lodes over strike length of 800 m were established. A total of about 7.32 million tonnes ore resources with 1.2% Pb and 4.92% Zn were estimated.
Lignite Barmer Lignite Field	South of Nimba Kurla East	-	-	25 16	6610.8 6027.8	-	Promotional drilling on behalf of Ministry of Coal was carried out.
	Giral Jalipa	-	-	- -	3241.6 2630.0	- -	Contractual drilling on behalf of RSMML was carried out.
Bikaner Lignite Field	Dosarana Bigga-Abhaysingpura Lalamdesar Chhota Jayal	- - - -	- - - -	- 15 - -	2473.0 2725.0 1730.0 258.0	- - - -	Promotional drilling on behalf of Ministry of Coal was carried out.
	Riri Bithnock Hadla	- - -	- - -	93 66 9	13844.4 10635.0 1349.0	- - -	Contractual drilling on behalf of Neyveli Lignite Corpn was carried out.
HZL Lead- Zinc Rajsamand	Rajpur - Dariba mine	1:200 (U/G)	679 (m)	28	3126.15	1132	About 16.82 million tonnes of resources containing 2.12% Pb and 7.71% Zn were estimated.
RSMML Rock Phosphate Udaipur	A Extn & G - Block Jhamarkotra mine	1:1,000	124.84	-	-	-	Work in progress.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
2007-08							
GSI							
Base Metals							
Alwar	Todi-ka-Bas area	-	-	-	-	-	Boreholes intersected mineralised zone.
Bhilwara	Salapura block Pur-Banera Belt	-	-	-	-	-	Drilling has commenced in the block.
Jhunjhunu	Maota block Central Khetri belt	-	-	-	-	-	Large-scale mapping, geochemical sampling and resistivity survey were conducted.
Pali	Kot area	-	-	-	-	-	The analytical results of the soil and bed rock samples have not indicated presence of any promising mineralised zone.
-do-	Dhikan block	-	-	-	-	-	Analysed samples indicated presence of Cu : 153 ppm to 0.77% and Zn : 28 ppm to 0.2 percent.
Sikar	Mina-ka-Nangal	-	-	6	-	-	Boreholes drilled in the northern part of block intersected two mineralised zones while the boreholes drilled in the southern part did not show any promising mineralised zone.
-do-	Panchokharkhara area	-	-	6	-	-	Boreholes intersected mineralised zones at varying depths.
-do-	Dariba block	-	-	-	-	-	Detailed mapping revealed presence of several mineralised zones having malachite stains.
-do-	Nimod area	-	-	2	-	-	Analysed core samples indicated low (0.1% Cu) values.
-do-	Nimod Extn. block	-	-	-	-	-	Mineralised zone 20 m wide manifested by the presence of borntie, chalcocite, chalcopyrite, etc. has been observed. Analytical results show poor Cu, Pb & Zn values.
-do-	Mahawa block	-	-	-	-	-	Mineralised zone 10 to 15 m wide showing malachite stains has been observed.
-do-	Halowala, Johra West block, South Khetri Copper belt	-	-	1	-	-	Borehole intersected occasional sulphide mineralisation at depths varying from 128.5 to 164.5 m.
-do-	Baniwala-ki-Dhani, Kundla-ki-Dhani,	-	-	-	-	-	In Baniwala-ki-Dhani Copper ore resources were re-assessed as

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
	Dokan and Dokan North blocks						20.18 million tonnes from 18.17 million tonnes; in Kundla-ki-Dhani as 2.71 million tonnes from 1.93 million tonnes; in Dokan block as 42.41 million tonnes from 16.85 million tonnes; in Dokan North block as 19.96 million tonnes from 5.6 million tonnes.
Udaipur	Beras-wali-ka-Khera block of Anjani-Bedawal area	-	-	-	-	-	In Wali-ka-Khera a number of old workings (possibly for copper) have been observed. In Beras area mineralisation in the form of chalcopyrite, malachite stains and old workings has been traced for about 600 m.
Gold							
Banswara	Delwara West block (Bhukia gold belt)	-	-	-	-	-	During FS 2007-08, a resource of 5.36 million tonnes of gold ore with 2.09 g/t Au in Delwara West block was established. Subsequently the total gold ore resource in Bhukiya area has been augmented from 55.22 million tonnes with 1.87 g/t Au to 60.58 million tonnes with 1.89 g/t Au.
-do-	Gundelpara block (Bhukiya gold belt)	-	-	7	-	-	Core samples indicated presence of 1.5 m thick gold mineralised zone with 1.05 g/t Au.
-do-	N-W and S-E of (Bhukiya gold belt)	-	-	-	-	-	Channel samples indicated several mineralised zones containing 1.19 g/t to 3.6 g/t Au and 0.05 to 1.2 % Cu.
Dungarpur	Bharkundi area	-	-	-	-	-	The analytical results indicated gold content up to 1.0 g/t.
Udaipur	Dugocha West Block	-	-	3	-	-	Boreholes intersected significant zones of sulphide mineralisation.
Iron Ore							
Jhunjhunu & Sikar	In SE part of Khetri belt	-	-	-	-	-	Six blocks of iron ore deposits were identified.
Lignite							
Bikaner	Hadda block	-	-	-	-	-	A thin (0.3 m thick) lignite seam was recorded at 137.1 m depth.
Nagaur and Pali	Phalki area	-	-	-	-	-	Two lignite seams of thickness 0.55 m and 0.3 m were intersected at depths between 80.05 m and 86.85 m. Strike continuity of these seams was established for about 1 km.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Limestone							
Jaisalmer	Netse block	-	-	5	-	-	Boreholes intersected limestone bed.
Phosphorite							
Pali	Khivandi area	-	-	-	-	-	Grab samples indicated presence of phosphorite.
DMG Base Metal							
Ajmer	N/V Naulakha, Tantiya, etc.	-	-	2	628	643	One million tonnes of ore reserves containing 1% Cu was estimated
-do-	N/V Chawandia, Bandanwara, Chhachundra	1:50,000 1:10,000 1:2,000	100 10 1	2	504	63	Analytical results indicated Cu : 18 to 5250 ppm; Pb : 95 to 284 ppm; Zn : 31-70 ppm, Co : 22-175 ppm and Au : 0.4-9.7 ppm.
Alwar	N/V Lohiti, Isra-ka-Bas, etc.	1:50,000 1:10,000 1:2,000	150 10 1	-	-	60	Base metal indications in the form of malachite and azurite staining were found in the area.
Bhilwara	N/V Kanpura, Tonkarwar, Atalpura etc.	1:50,000 1:10,000 1:2,000	150 10 1	-	-	122	-
Chittorgarh	Satola, Bhervi and Dholapani	1:50,000 1:10,000	150 10	-	-	32	An old working was located N/V Buran in 300 x 10 m area.
Jaipur	N/V Morda, Jawali, etc.	-	-	3	396	192	Analytical results of borehole samples awaited.
-do-	N/v Ladera, Devpura	1:50,000 1:10,000 1:4,000	110 10 1	-	-	44	Base metal indications in the form of malachite and azurite staining, gossan, etc. were noted.
Pali	N/V Jadan, Kharadi, etc.	1:50,000 1:10,000	100 2	-	-	5	Analytical results revealed Pb : 1299 ppm, Cu : 440 ppm, Zn : 482 ppm and Ag : 17 ppm.
Sikar	N/V Kairpura- Badala	1:50,000 1:10,000 1:4,000	100 10 1.1	-	-	53	Base metal indication was noted in rock debris of wells N/V Bamrara and Kairpura. Occurrences of masonry stones also were noted.
Sirohi	Pindwara Teh. .	1:10,000 1:2,000	10 1	-	-	55	In the River Darvot/Banas two gossanised bands were found exposed for a length of about 1.5 km.
Udaipur	N/V Kodarwadia and Barothi- Savankuri	1:50,000 1:10,000 1:2,000	100 10 2	-	-	58	Analytical samples showed Cu : 16 to 760 ppm, Pb : 84 to 500 ppm and Zn : 30-100 ppm.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Bentonite							
Barmer	N/V Bhadka,	1:50,000	350	-	-	5	Bentonite was seen to occur N/V Akli, Thumbli, etc. and siliceous earth was seen exposed at East of Jase-ka-Gaon, Kotra Pahari, etc.
	Akli, Nimla,	1:10,000	15				
	Nimbsar, etc.	1:2,000	3				
Building Stone							
Baran	N/V Benta, Rajput, etc.	1:50,000	150	-	-	2	About 3 million tonnes of sandstone resources were estimated.
		1:10,000	10				
		1:4,000	0.5				
Barmer	N/V Trisulia, Sanpa, etc.	1:50,000	350	-	-	15	Up to 30 m thick sandstone bed exposed in an area of about 0.4 sq km N/V Trisulia was demarcated.
		1:10,000	30				
		1:2,000	5				
Bundi	N/V Murjadpura Narayanpura	1:50,000	150	-	-	12	About 2.6 million tonnes resources of limestone suitable for flooring and 1.04 million tonnes of cement grade were estimated. Besides about 22.5 million tonnes resources of sandstone were also estimated.
		1:10,000	10				
Dhaulpur	Dhanera, Barauli, etc.	1:50,000	150	-	-	25	A total of about 26 million tonnes of sandstone resources were estimated.
		1:10,000	15				
		1:2,000	2.05				
Jaisalmer	N/V Hansu-ki- Dhani, Soro-ki- Dhani, etc.	1:10,000	15	-	-	-	Limestone deposits suitable for its use as building stone were identified.
		1:2,000	3				
Jhalawar	N/V Borkheri, Garra, etc.	1:50,000	100	-	-	10	About 9.63 million tonnes resources of sandstone were estimated N/V Patli-khera.
		1:10,000	10				
		1:4,000	2				
Jodhpur	N/V Gopalsar Utamber, etc.	1:50,000	200	-	-	24	Blockable sandstone was mapped in 1.50 sq km area near Meghwalo-ki-Dhani.
		1:10,000	10				
		1:2,000	2				
Calcite							
Sirohi	N/VDallapura, Kambol, etc.	1:50,000	100	-	-	57	About 0.5 million tonnes resources of calcite were estimated
		1:10,000	20				
		1:4,000	1				
Clay							
Barmer	N/V Bhadka, Akli, Nimla, Nimsar, etc.	1:50,000	350	-	-	5	Up to 10.5 m thick white clay bed was seen to occur in Tanka pits, Nala-river cutting N/V, Nimla, Agoria, Nimsar, etc.
		1:10,000	15				
		1:2,000	3				
Dausa	N/V Haldina and Nangal Charan	1:10,000	4	-	-	-	White/grey clay pocket was marked in 80 x 3 m area and 22,800 tonnes of resources were estimated.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Nagaur	N/V Indawar, Lunias, etc.	1:50,000	300	-	-	-	Clay bed 2 to 6 m thick was observed in wells at Lunias, Badgaon.
Laterite							
Baran	N/V Benta, Barara, etc.	1:50,000 1:10,000 1:4,000	150 10 0.5	-	-	12	About 15.9 million tonnes of laterite resources estimated.
Lignite							
Barmer	N/V Uttarlai, Bhurtiya	1:50,000 1:10,000 1:2,000	120 18 1.5	-	-	3	Occurrences of carboneaceous shale were observed. Besides, occurrences of gypsum bed were also observed.
Bikaner	N/V Ambasar, Gigasar, etc.	-	-	12	1689	16	About 1.91 million tonnes of lignite resources were estimated.
-do-	N/V Ransar, Pabasar, etc.	-	-	6	921	9	Lignite beds were not encountered in boreholes.
-do-	N/V Kuchor, Augani, etc.	1:50,000	530	-	-	-	Carboneaceous cutting was observed in some tubewells at depths of 90 to 140 m.
-do-	N/V Bholasar, Saroopdesar, etc.	1:50,000	520	-	-	-	Carboneaceous cutting were observed in some tubewells at depths between 90 and 140 m.
-do-	N/V Jegla- Bhamatsar, etc.	1:50,000	510	-	-	-	Tubewells N/V Mahayon-ki-Dhani and Surpura encountered lignite.
-do-	N/V Kolayat Hadla, etc.	1:50,000	510	-	-	-	One tubewell N/V Khetolai Bhurj encountered lignite.
Limestone							
Banswara	N/V Amarpura	1:50,000 1:10,000 1:2,000	150 10 1	-	-	18	Ten million tonnes resources of cement grade limestone were estimated.
Bhilwara	N/V Harpura, Fatehgarh etc.	1:50,000 1:10,000 1:2,000	200 10 1	-	-	21	Calcitic limestone bands interbedded with dolomite were located in the area.
Bhilwara and Chittorgarh	In between Kerpura and Barundi village	1:50,000 1:10,000 1:4,000	150 10 1	-	-	7	A limestone band of dimension 1000 m x 30 m was identified.
Chittorgarh	(i) Phalwa- Dhanora- Payri block (ii) Gopalnagar- Bherusinghji-ka Khera	1:50,000 1:10,000 1:4,000	150 15 2.75	14	756	973	About 100 million tonnes resources of cement grade limestone in Phalwa-Dhanora-Payri block and 150 million tonnes in Gopalnagar-Bherusinghji-ka-Khera block were estimated.

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Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Jaipur	N/V Ajitpura, Kujota, etc.	1:50,000	150	4	283	-	Concealed limestone bearing area of 600 x200 m inferred. About 20 million tonnes of limestone resources were computed in gap area.
		1:10,000	10				
		1:4,000	4				
Jaisalmer	N/V Sam and Sagron-ki- Basti, etc.	1:10,000	20	51	1643	1014	About 176 million tonnes of SMS grade and 176.5 million tonnes of cement grade limestone resources were assessed.
		1:2,000	7				
Nagaur	N/V Jayal, Kathoti, etc.	1:50,000	300	-	-	36	Limestone bands of varying dimensions were located N/V Jayal and a limekankar zone was identified N/V Khiyala.
		1:10,000	20				
		1:2,000	2				
-do-	Harima, Pitasar, etc.	1:10,000	30	-	-	75	Potential area for cement/ chemical grade limestone was located.
		1:2,000	4				
-do-	N/V Godhan, and Bher	1:10,000	20	-	-	26	Bands of cement grade limestone were identified.
		1:2,000	4				
Rajsamand	N/VLasariya Barlachona Kukra etc.	1:50,000	150	-	-	135	About 21.52 million tonnes resources of cement grade limestone were estimated.
		1:10,000	10				
		1:2,000	1				
Magnesite and other skarn minerals							
Rajsamand	Sayon-ka- Khera, Chikalwas, etc.	1:50,000	100	-	-	50	Up to 2 cm thick magnesite veins in ultramafic band with strike length of 900 m was identified.
		1:10,000	10				
		1:4,000	1				
Noble Metal							
Banswara	N/V Kharwa, Unalwala	1:50,000	100	-	-	28	Gold indications were noted in dolomite, graphitic schist.
		1:10,000	10				
		1:2,000	1.2				
-do-	N/V Padar, Amjhora	1:50,000	50	-	-	22	Indications of gold, iron ore and manganese ore were noted.
		1:10,000	10				
		1:2,000	1				
Jaipur	N/V Gumanpura Ramsinghpura, etc.	1:10,000	15	-	-	869	Analytical results are awaited.
-do-	Matasula Gol, Pachapur, etc.	1:10,000	20	-	-	48	Analytical results revealed presence of Cu, Ag and Au.
		1:2,000	2.5				
Ochre							
Alwar	N/V Biderka	1:10,000	4	-	-	-	Red ochre deposits marked in 50 x 20 m area N/V Biderka and 22,200 tonnes of resources were estimated.
Silica Minerals							
Ajmer	N/V Morla, Adusia, etc.	1:50,000	150	-	-	22	-
		1:10,000	15				
		1:2,000	1.5				

(Contd.)

STATE REVIEWS

Table - 78(A) (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Alwar	N/V Jestika	1:50,000	100	-	-	24	About 4.57 million tonnes resources of silica sand were estimated.
	Langarwas	1:10,000	10				
	Bamanhedi	1:2,000	1				
Bharatpur	Thekri, Budli,	1:50,000	150	-	-	33	About 0.52 million tonnes of silica sand and 37.5 million tonnes of masonry stones resources were estimated.
	Bas Papra	1:10,000	15				
		1:2,000	1				
Dausa	N/V Biderka and Banwar	1:10,000	2	-	-	-	Quartz pockets were marked in 60 x 5 m area and 8,000 tonnes of reserves were estimated.
Jaisalmer	N/V Khuhra, Madasar, etc.	1:50,000	300	-	-	20	-
		1:10,000	10				
		1:2,000	2				
Jalore	N/VBankli	1:50,000	100	-	-	13	Two jasper veins of sizes 25 x 0.1 to 5 m and 100 x 3 to 5 m were observed.
		1:10,000	10				
		1:2,000	0.5				
Karauli	N/V Saimarda, Garain, Khirkhira etc.	1:50,000	200	-	-	51	During 2006-07 and 2007-08 a total of about 30.3 million tonnes of silica sand resources was estimated.
		1:10,000	20				
		1:2,000	2				
Sirohi	N/VBhimana, Sarupganj etc.	1:50,000	100	-	-	57	About 0.5 million tonnes resources of quartz were estimated.
		1:10,000	20				
		1:4,000	1				
Udaipur	N/V Gurli, Bambora- Panund, etc.	1:50,000	200	-	-	-	Occurrences of quartz vein and pegmatite bodies containing mainly feldspar and quartz were located.
		1:10,000	20				
		1:2,000	1.5				
Wollastonite							
Jaipur	Jingaur, Kaliba ki-Dhani, etc.	1:10,000 1:2,000	20 1.5	-	-	18	Wollastonite bearing skarn zones were noted N/V Kaliba-ki-Dhani, Jingaur and Bhadaj.
Sikar	Rajpura- Dhandela, etc.	1:10,000 1:2,000	20 1.5	-	-	18	Wollastonite bearing skarn zones were noted N/V Rajpura-Dhandela.
MECL Copper							
Bhilwara	Sanganer	-	-	2	268	100	Mineralised zone 2 to 9 m thick was established over 1500 m strike length and 100 m depth. Grade of the ore varied from 1.02 to 1.43% Cu.
Chittorgarh	Devtalai (Phase-II)	1:1,000	1	17	3003	794	Detailed exploration established vein quartz over 700 m strike length and 200 m depth from the surface. Ore zone thickness varied from 1 to 2.5 m with grade 0.50 to 2.93% Cu.

(Contd.)

STATE REVIEWS

Table - 78(A) (Concl.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Dausa	Dhani-Basri	1:1,000	1	16	4215	714	Two main lodes varying in thickness from 6.17 m to 12.60 m with + 1% Cu was established. Besides, the ore also contained gold up to 1 g/t.
Jhunjhunu	Satkui	1:2,000	1.5	6	2972	330	Mineralised zone 2 to 3 m thick was intersected with grade varying from 0.80 to 1% Cu.
Gold							
Banswara	Bhukia (East)	1:1,000	0.5	9	1763	2043	Three major gold bearing lodes of thickness varying from 2.0 to 15.0 m were encountered up to 250 m depth for over a strike length of 700 m. Average grade of ore is about 2 g/t Au.
Lignite							
Barmer	East of Kurla	-	-	18	7764.7	-	Promotional drilling on behalf of Ministry of Coal was carried out.
Lignite Field	Kagau East	-	-	6	1518.6	-	
Bikaner	Bikaner-Palana	-	-	51	12065.0	-	Promotional drilling on behalf of Ministry of Coal was carried out.
Lignite Field	Ramsar-Sinthal Nagaur basin	-	-	44 -	7363.9 2023.0	-	
	Riri	-	-	14	1791.6	-	Contractual drilling on behalf of Neyveli Lignite Corpn was carried out.
	Bithnock	-	-	132	4819.0	-	
	Hadla	-	-	17	2571.0	-	
	Jalipa	-	-	-	8650.7	-	Contractual drilling on behalf of M/s BLMC was carried out.
HZL							
Lead- Zinc							
Udaipur	Zawar mines Mochia	1:200 (U/G)	12507m	167	7481	3434	As on 1.4.2008, the total reserves of lead & zinc ore was estimated at 21.93 million tonnes.
-do-	Balaria	1:200 (U/G)	1037m	259	8116	2590	As on 1.4.2008, the total reserves of lead zinc ore was estimated at 16.4 million tonnes.
-do-	Zawarmala	1:200 (U/G)	220m	6	787	723	As on 1.4.2008, the total reserves of lead & zinc ore was estimated at 7.1 million tonnes.
-do-	Baroi	1:200 (U/G)	150m	148	4182	1572	As on 1.4.2008, the total reserves of lead & zinc ore was estimated at 10.5 million tonnes.

STATE REVIEWS

**Table – 79 : Mineral Production in Rajasthan, 2005-06 to 2007-08
(Excluding Atomic Minerals)**

(Value in Rs. '000)

Mineral	Unit	2005-06			2006-07			2007-08 (p)		
		No. of mines	Qty	Value	No. of mines	Qty	Value	No. of mines	Qty	Value
All Minerals		235	-	34814643	217	-	45614624	207	-	48293452
Lignite	'000 tonnes	2	687	505659	2	463	427400	2	606	511799
Natural gas (utilised)	m cu m	-	242	726000	-	239	764800	-	255	816000
Copper ore	tonne	-	931508	-	-	1000419	-	-	1002792	-
Copper conc.	tonne	2	64461	1074530	2	70384	1394379	2	75147	1582896
Iron ore	'000 tonnes	1	18	3609	1	17	3262	1	16	3016
Lead & zinc ore	tonne	-	4801184	-	-	5139915	-	-	5817059	-
Lead conc.	tonne	7	95738	768073	7	107334	1331434	7	125756	1421788
Zinc conc.*	tonne	-	889007	5719678	-	947387	9714664	-	1035827	9375366
Manganese ore	tonne	-	-	-	-	-	-	1	1454	1091
Silver**	kg	-	24261	182808	-	51295	386508	-	80403	1515760
Phosphorite/Rock phosphate	tonne	2	1871160	2878477	1	1393630	2103566	1	1740351	3035039
Asbestos	tonne	4	1688	328	-	-	-	-	-	-
Ball clay	tonne	7	198593	29413	16	368451	73335	19	402935	72835
Barytes	tonne	2	6051	5371	2	9170	8661	1	7590	7180
Calcite	tonne	4	72903	19388	4	105574	37497	4	81548	30705
Dolomite	tonne	1	233402	28008	-	217882	29160	-	66682	13618
Felspar	tonne	25	79362	10205	21	80611	10622	13	36677	5088
Fireclay	tonne	2	84260	5979	6	130526	13740	6	143579	20999
Fluorite (graded)	tonne	3	1671	3772	1	48	175	1	-	-
Gypsum	tonne	18	3258733	379505	23	2953661	468671	16	2596253	534217
Jasper	tonne	4	536	196	-	-	-	-	-	-
Kaolin	tonne	12	178936	22851	11	186943	24227	14	206325	25423
Laterite	tonne	1	-	-	1	-	-	1	-	-
Limestone	'000 tonnes	21	26176	3228296	19	27310	3492160	19	30041	3901654
Magnesite	tonne	-	-	-	1	352	411	-	-	-
Mica (crude)	tonne	4	72	881	6	125	1252	5	2	58
Mica (waste & scrap)#	tonne	-	864	-	-	56	-	-	674	-
Ochre	tonne	8	965905	57923	10	999906	86324	9	857158	74937
Quartz	tonne	19	63819	7386	16	50153	8153	7	58410	10352
Quartzite	tonne	1	8810	1322	1	5630	563	1	5793	579
Silica sand	tonne	10	314773	43473	7	295170	51965	10	464575	67578
Talc/soapstone/steatite	tonne	73	458814	273105	57	478049	295805	63	575941	389393
Selenite	tonne	-	-	-	-	-	-	2	3341	2339
Vermiculite	tonne	-	1412	177	-	-	-	-	-	-
Wollastonite	tonne	2	128582	99294	2	131572	114086	2	118666	101938
Minor minerals@		-	-	18738936	-	-	24771804	-	-	24771804

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

** Number of mines covered under lead concentrates.*

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

Includes mine waste and that obtained while dressing of crude mica.

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