Indian Minerals Yearbook 2013

(Part- I)

52nd Edition

STATE REVIEWS
(Madhya Pradesh)

(FINAL RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

PHONE/FAX NO. (0712) 2565471
PBX : (0712) 2562649, 2560544, 2560648
E-MAIL : cme@ibm.gov.in
Website: www.ibm.gov.in

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MADHYA PRADESH

Mineral Resources

Madhya Pradesh is the only diamond producing State in the country and is the leading producer of copper conc. pyrophyllite, manganese ore, diaspore and clay (others). The State hosts the country's 90% diamond, 63% diaspore, 61% laterite, 56% pyrophyllite, 41% molybdenum, 29% dolomite, 17% each of rock phosphate & fireclay resources.

Important mineral occurrences in the State are: **bauxite** in Balaghat, Guna, Jabalpur, Katni, Mandla, Rewa, Satna, Shahdol, Shivpuri, Sidhi & Vidisa districts; **calcite** in Barwani, Jhabua, Khandwa & Khargone districts; **china clay** in Betul, Chhatarpur, Chhindwara, Gwalior, Hoshangabad, Jabalpur, Khargone, Narsinghpur, Raisen, Satna, Shahdol & Sidhi districts; **copper** in Balaghat, Betul & Jabalpur districts; **coal** in Betul, Shahdol & Sidhi districts; **diamond** in Panna district; **diaspore & pyrophyllite** in Chhatarpur, Shivpuri & Tikamgarh districts; **dolomite** in Balaghat, Chhindwara, Damoh, Dewas, Harda, Hoshangabad, Jabalpur, Jhabua, Katni, Mandla, Narsinghpur, Sagar and Seoni districts; **fireclay** in Betul, Chhindwara, Jabalpur, Katni, Narsinghpur, Panna, Sagar, Shahdol & Sidhi districts; **iron ore (hematite)** in Betul, Gwalior, Jabalpur & Katni districts; **limestone** in Balaghat, Chhindwara, Damoh, Dhar, Hoshangabad, Jabalpur, Jhabua, Khargone, Katni, Mandsaur, Morena, Narsinghpur, Neemach, Rewa, Sagar, Satna, Sehore, Shahdol & Sidhi districts; **manganese ore** in Balaghat and Jhabua districts; **ochre** in Dhar, Gwalior, Jabalpur, Katni, Mandla, Rewa, Satna, Shahdol & Umaria districts; **pyrophyllite** in Chhatarpur, Sagar, Shivpuri & Tikamgarh districts; **quartz/silica sand** in Balaghat, Dewas, Dhar, Jabalpur, Khandwa, Khargone, Morena, Rewa & Shahdol districts; **talc/steatite/soapstone** in Dhar, Jabalpur, Jhabua, Katni, Narsinghpur & Sagar district and **vermiculite** in Jhabua district.

Other minerals that occur in the State are: **barytes** in Dewas, Dhar, Shivpuri, Sidhi & Tikamgarh districts; **calcareous shales** (used in slate pencil) in Mandsaur district; **felspar** in Jabalpur & Shahdol districts; **fuller's earth** in Mandla district; **gold** in Jabalpur and Sidhi districts; **granite** in Betul, Chhatarpur, Chhindwara, Datia, Jhabua, Panna, Seoni & Shivpuri districts; **graphite** in Betul & Sidhi districts; **gypsum** in Shahdol district; **lead-zinc** in Betul district; **molybdenum** in Balaghat district; **potash** in Panna district; **quartzite** in Sehore district; **rock phosphate** in Chhatarpur, Jhabua & Sagar districts; and **sillimanite** in Sidhi district (Table - 1). The reserves/resources of coal along with various coalfields in Madhya Pradesh are given in Table - 2.

Exploration & Development

ONGC carried out its seismic survey and drilling for exploration of petroleum & natural gas. One exploratory well with meterage of 3,150 was drilled during 2012-13. The details of exploration activities conducted by various agencies for coal and other minerals during 2012-13 are furnished in Table - 3.

Table – 1: Reserves/Resources of Minerals as on 1.4.2010 : Madhya Pradesh

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						
Barytes	tonne	-	-	-	-	-	18500	4472	-	35000	233940	-	291912	291912
Bauxite	'000 tonnes	17144	1068	1590	19802	3151	11733	1199	6640	53715	50551	-	126989	146791
Calcite	tonne	-	-	-	-	215327	82577	194333	20250	180226	400791	97476	1190980	1190980
China clay	'000 tonnes	-	-	-	-	942	-	61	-	415	11741	-	13160	13160
Copper														
Ore	'000 tonnes	90909	71481	35929	198319	-	-	-	49650	33700	95519	-	178869	377188
Metal	'000 tonnes	1218.18	957.84	467.08	2643.1	-	-	-	155.75	104.7	916.02	-	1176.47	3819.57
Diamond	carat	1045318	-	-	1045318	-	-	-	104118	-	27645359	-	27749477	28794795
Diaspore	tonne	719609	562818	174476	1456903	51764	386086	349488	248335	132794	1081412	46068	2295946	3752849
Dolomite	'000 tonnes	26637	28553	27244	82434	17893	85680	67042	17250	291229	1601188	115087	2195369	2277803
Felspar	tonne	-	-	-	-	-	-	-	-	-	339851	-	339851	339851
Fireclay	'000 tonnes	2167	2026	269	4462	829	3747	5690	1582	2823	101081	100	115852	120314
Fuller's earth	tonne	-	-	-	-	-	-	-	-	-	117200	-	117200	117200
Gold														
Ore														
(primary)	tonne	-	-	-	-	-	-	-	-	5841000	1947000	-	7788000	7788000
Metal														
(primary)	tonne	-	-	-	-	-	-	-	-	6.18	2.22	-	8.4	8.4
Granite														
(Dim. stone)	'000 cu m	-	160	-	160	-	-	-	-	-	1885924	108000	1993924	1994084
Graphite	tonne	-	-	-	-	-	-	-	-	-	1006660	-	1006660	1006660
Gypsum	'000 tonnes	-	-	-	-	-	-	-	-	-	69	-	69	69
Iron ore														
(Hematite)	'000 tonnes	40534	7099	9181	56814	9978	587	10170	4710	4014	145162	10	174632	231446
Laterite	'000 tonnes	-	-	-	-	-	-	-	-	-	158910	129778	288688	288688

(Contd.)

Table – 1 (Concld.)

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						
Lead-zinc													-	-
Ore	'000 tonnes	-	-	-	-	129	117	-	1510	4006	5930	3150	14841	14841
Lead metal	'000 tonnes	-	-	-	-	-	-	-	26.12	5.13	5.04	-	36.29	36.29
Zinc metal	'000 tonnes	-	-	-	-	5.2	4.71	-	114.76	41.93	186.02	101.12	453.74	453.74
Limestone	'000 tonnes	460445	1166513	24865	1651823.09	287634	204089	88311	514783	560472	3971168	264247	5890703	7542526
Manganese ore	'000 tonnes	30094	1944	2954	34992	7769	3934	1719	2179	943	4190	-	20733	55725
Molybdenum														
Ore	tonne	-	-	-	-	-	-	-	-	-	8000000	-	8000000	8000000
Contained MoS_2	tonne	-	-	-	-	-	-	-	-	-	5020	-	5020	5020
Ochre	tonne	486269	128178	41027	655474	253245	1549706	1094108	267721	2141616	3732142	749250	9787788	10443262
Potash	Million tonnes	-	-	-	-	-	-	-	-	1206	-	-	1206	1206
Pyrophyllite	tonne	6779943	5239637	2622217	14641797	585596	3451594	2062603	2407790	3753640	4418648	248405	16928276	31570073
Quartzite	'000 tonnes	-	-	-	-	-	-	-	-	-	832	-	832	832
Quartz/ silica sand	'000 tonnes	144	11	14	169	51	-	86	47	316	2191	-	2692	2861
Phosphorite/Rock Phosphate	tonne	6589894	1763187	9787162	18140243	3131683	13700000	5990814	-	2730000	5725000	-	31277497	49417740
Sillimanite	tonne	-	-	-	-	-	-	-	-	-	-	101600	101600	101600
Silver														
Ore	tonne	-	-	-	-	-	-	-	-	2096000	1120000	-	3216000	3216000
Metal	tonne	-	-	-	-	-	-	-	-	150.61	9.25	-	159.86	159.86
Talc/steatite/ soapstone	'000 tonnes	-	-	-	-	4	375	954	-	1679	6107	-	9119	9119
Vermiculite	tonne	-	-	-	-	197	-	66	-	-	66	-	329	329

Figures rounded off.
Resources of coal bed methane (CBM) of Madhya Pradesh are included in the western offshore areas of India and are not available separately.

Table – 2 : Reserves/Resources of Coal as on 1.4.2013 : Madhya Pradesh

(In million tonnes)

Coalfield	Proved	Indicated	Inferred	Total
Total	**9817.61**	**12354.80**	**2888.76**	**25061.17**
Johilla	185.08	104.09	32.83	322.00
Umaria	177.70	3.59	-	181.29
Pench-Kanhan	1465.78	878.66	692.13	3036.57
Pathakhera	290.80	88.13	68.00	446.93
Gurgunda	-	47.39	-	47.39
Mohpani	7.83	-	-	7.83
Sohagpur	1751.56	5304.25	190.18	7245.99
Singrauli	5938.86	5928.69	1905.62	13773.17

Source: *Coal Directory of India, 2012-13.*

Table – 3 : Details of Exploration Activities in Madhya Pradesh, 2012 - 13

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Coal							
Chhindwara	Bhurkumdhana Sector	1:25,000	8	3	1029.35	-	Regional exploration under G-2 stage was carried out to establish the dip continuity of Barakar coal seams already recorded in Payalidhana sector to the south, below the Deccan trap under favorable structural set up and to assess coal resource potentiality of the area. About 373.88 m of GP logging was completed. Borehole (BH-2) was closed in Barakar Formation after intersecting four regional seams within 420.95 m and 460.85 m depths. Individual coal sections in these seams vary in thickness from 0.50 m to 2.50 m. The work is in progress.
-do-	Payalidhana area	-	-	1	106.45	-	Prospecting stage (G-3) regional exploration was continued as spill over item to establish the strike extension of Barakar coal seams below the Deccan Traps under favourable structural set up, already recorded in Bagbardiya sector to the south-west and Dhankasa area in the south-east and to assess the coal resource potentiality of the area. In the area a total of 341.16 m of GP logging was completed. Three regional Barakar coal seams varying in thickness from 1.50 m to 3.50 m were intersected between 289.76 m and 312.15 m depths. The investigation was completed.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Coal							
Shahdol (Sohagpur Coalfield)	Bihar block	-	-	2	487.15	-	Regional exploration under G-2 stage was carried out at Sohagpur coalfield in order to a) establish developmental pattern of superior grade Barakar coal seams at shallow depth. b) decipher major structural set-up of the area. c) evaluate additional coal resources. The block area is mostly covered by Lameta Formation. Four regional Barakar coal seams were intersected between depths of 141.80 m and 291.50 m. Thickness of individual coal section varies from 0.70 m to 3.50 m. The work is in progress
-do-	Maiki (North) block	1:10,000	10	7	2911.95	-	Regional exploration under G-2 stage was continued in Sohagpur Coalfield, with the following objective: a) establish the developmental pattern of superior grade Barakar coal seams at shallow depth. b) decipher major structural set-up of the area. c) evaluate additional coal resources. About 3015.89 m of GP logging was completed. Four regional Barakar coal seams were intersected within the depth range from 404.00 m to 579.50 m. Thickness of individual coal section varies from 0.30 m to 6.35 m. The work is in progress.
-do-	Malka block	-	-	1	89.00	-	Regional exploration under G-2 stage for coal was carried out in Sohagpur Coalfield, in order to a) establish developmental pattern of Barakar coal seams at moderate depth and few Raniganj coal seams at shallower depth. b) decipher major structural set-up of the area. c) evaluate additional coal resources. Three Raniganj coal seams varying in thickness from 0.50 m to 1.62 m were intersected at shallow depth range from 12.95 m to 41.32 m. The work is in progress.
-do-	Pachri block	-	-	4	917.65	-	Regional exploration under G-2 stage was continued in Sohagpur Coalfield to establish developmental pattern of superior grade Barakar coal seams at shallow depth; to decipher major structural set up of the area and to evaluate additional coal resources. During the period about 947.96 m GP logging was completed. Four regional Barakar coal seams ranging in thickness from 0.55 m to 6.15 m were intersected within the depth range from 79.80 m to 257.00 m. The investigation was completed.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Coal							
Singrauli (Singrauli Coalfield)	Sarai (East) block	-	-	2	167.00	-	Reconnaissance stage (G-4) exploration by scout drilling was continued during FS 2012- 13 (Spill Over Work) in Singrauli Coalfield, Singrauli district as spill over item to assess the coal development pattern and resource potentiality; establishing stratigraphic set up of the area and to generate CBM baseline data. A total of 1082.87 m GP logging was completed. The investigation was completed .
Singrauli (Singrauli Coal field)	Sarai(West)	1:10,000	5	5	2259.30	-	Regional exploration for coal was carried out in Singrauli Coalfield, for (1) development pattern and resource potentiality of coal horizons in Raniganj and Barakar formations with determination of coking propensity. (2) extension of coal seams of Hatta-Dudhmaniya and Sarai (East) area and to identify high rank coal at shallow/intermediate depth range. (3) stratigraphic set up and structural frame work of the area. (4) generation of CBM baseline data. A total of 1527.79 m of Geophysical logging was completed. Three regional (R-I to R-III) and three Raniganj local seams (RL-I to RL-III) with thickness varying from 0.54 m to 3.43 m, were intersected at very shallow depth (25.60 m to 146.11 m). Seven regional and few local Barakar coal seams were intersected between depths of 288.12 m and 531.67 m. Thickness of individual coal section varies from 0.51 m to 2.40 m. The work is in progress.
Gold							
Katni	Nanhwara-Vilayal-Kalan	1: 12,500	75.0	-	-	150	Reconnaissance stage investigation (G-4) was carried out belonging to Mahakoshal Group for delineation of auriferous zones for follow up probing. The area exposes an interbanded sequence of dolomitic marble, chert, quartzite and metabasalt (Agori Formation) in the northern part and phyllite with bands of QPC and quartz-wacke (Parsoi Formation) in the southern part. The regional trend of the formational units is ENE-WSW with moderate to steep dip to south-east. The rocks of Mahakoshal Group are traversed by quartz veins/ reef of variable thickness. Large scale

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Gold							
Katni	Nanhwara-Vilayal-Kalan (Concld.)	1: 12,500	75.0	-	-	150	mapping was carried out. Besides, 75 cubic meters of pitting and trenching along with collection of bedrock and stream sediment samples were done. The Agori Formation of Mahakoshal Group is exposed in the area. It is represented by grey to green phyllite, meta-volcanics, and dolomite with thin chert bands and quartzite intruded by quartz veins. Six prominent sulphide bearing quartz veins were identified in the area which trend in NNW-SSE to N-S direction. The quartz veins are greyish white to brown; oxidised at places and are emplaced with in phyllite, dolomite and meta-volcanics. The sulphide mineralisation was also recorded within meta-volcanics, dolomite and quartz veins. The pyrite occurs as disseminations in meta-volcanics, dolomite, phyllite and quartz veins. The analytical results of thirty five samples so for received indicate gold content varying from 100 ppb to 180 ppb. One Bedrock sample from chert band shows 0.42% Cu. The investigation will be continued in F.S.2013-14.
Graphite							
Betul	Tikri, Gauthana & Chiklar	1: 12,500 1: 2,000	7.50 1.0	-	-	-	Reconnaissance stage investigation (G-4) was carried out to evaluate the extent and potential of graphite mineralisation. The investigation was carried out involving Large Scale Mapping. The graphite bearing zones were traced having strike length of 3.5 km with exposed width varying from 5m to 130 m hosted in quartz mica schist, which forms a part of the supracrustals and occurs as enclaves within the Betul gneisses. It contains encrustations, pellets and flakes of graphite. The graphite bearing zone occurs discontinuously as lensoid bodies which is enechelon in outcrop pattern. The surface geochemical sampling carried out across the zones has indicated the fixed carbon content ranging from less than 1% to a maximum of 15.4%. More than 50% (75 Nos) of the chemical analytical data received indicates the Fixed Carbon values between 5% and 15.4%. The remaining samples contain fixed carbon values between 1% and 5%. The investigation has been completed.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Phosphorite							
Chhatarpur and Sagar	Tauro-Surajpura	1: 2,000	0.75	-	-	-	Prospecting stage investigation (G-3) was carried out for detailed assessment of phosphorite bands associated with Hirapur Formation. The mapped area exposes mostly dolomite, massive / brecciated phosphatic chert, nodular ferruginous chert (associated with stromatolytic dolomite) and shale. The P_2O_5 content ranges from 10% to 30%. Detailed mapping was carried out and ten phosphatic bodies were delineated within Hirapur Formation.The study area comprises dolomite of Bajno Formation and ferruginous shale, ferruginous chert, ferruginous phosphatic chert, meta-volcanic and ferruginous concretionary shale of Hirapur Formation of Bijawar Group. Ten mineralised zones (two in Tauro block and eight in Surajpura block) were demarcated. The total cumulative strike length of ore body was 1699 m. The width of ore body varies from 1 m to 10 m. The maximum exposed thickness was recorded to be 5.69 m. The mineralisation is of massive and brecciated nature in the area. The mineralisation has both structural and lithological control. The stromatolitic cherty dolomite also shows low phosphatic contents in Tauro block. The banded brecciated chert associated with iron horizon act as a marker horizon for high grade phosphorite zone. The analytical results of PTS samples so far received indicates P_2O_5 content varying from 5.85% to 34.26%. The total cumulative strike length and grade of the phosphorite ore bodies indicate that the area is potential for phosphorite. The drilling was not taken up due to non availability of forest clearance. The investigation has been completed.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Phosphorite							
Khandwa	Modri, Sadkhera & surrounding area	1: 12,500	150.0	-	-	-	Reconnaissance stage investigation (G-4) was carried out along western part of Harda inlier to delineate phosphatic zone in rocks of Bijawar Group. Large scale mapping was carried out in parts of the area. The Bijawars are represented by siliceous dolomite interlayered with shale and phyllite (very thin partings) exposed in the low lying areas mostly river sections. This dolomite is with poorly developed stromatolites and oncolites which are non phosphatic in nature. Another important unit is the brecciated quartzite, containing irregularly distributed brecciated chert. Phosphorite is associated with chert especially ferruginous, which might be of epigenetic origin as the phosphatic nature is closely associated with specularite veins. The mineralisation is confined to lenses and is highly irregular in its distribution. In Modri area, a band of ferruginous chert with specularite shows P_2O_5 values varying from 8 to 27.44%. In Nandiya area, a small lenticular exposure of chert and dolomite inter layered with thin iron bands and sporadic occurrence of manganese veins and pockets haves been located. This area is about 1.0 sq.km in dimension, and is characterised by occurrence of many small old workings and quarries located about 500 m NNE of village Nandiya. Out of forty samples submitted, six samples indicate MnO between 8% and 10.9%, and another six samples indicate MnO between 4% and 8% whereas remaining samples also have manganese incidence between 0.16% to less than 4%. Presence of 8 to 10 m thick Hematite Band has been located SSE of Modri. The band has been traced for about 100 m to 150 m in strike length, sandwiched between siliceous dolomite and ferruginous quartzite with a varying thickness. The analytical results of P_2O_5 received so far indicate, that the ferruginous chert band in Modri indicates P_2O_5 values from <0.1 to 27.44% with a resource of nearly 36,500 tonnes rock phosphate. The investigation has been completed.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
RM/REE							
Chhatarpur	Sarkana-Malguwan-Gairwar	-	-	-	-	-	Reconnaissance stage investigation was carried-out to evaluate the potentiality of REE mineralisation of the carbonatite-syenite-lamprophyre and felsic intrusives within Banded Gneissic complex. The area comprises three types of granitoids: (i) Hornblende bearing granitoids (ii) Biotite bearing granitoids (iii) Leucocratic granitoids with numerous pegmatites and quartz veins. The basic and ultrabasic dykes have intruded into different granitoids of BGC. Thin syenite bodies are recorded near Angore village. Sulphide mineralisation is recorded in granitoids and basic rocks in the area. The syenite bodies vary in length from 200 to 500 m and occur in discontinuous pattern. The composition of syenite varies from syenite - quartz syenite - monzo syenite. The emplacement of NE-SW, N-S and E-W trending pegmatite and quartz veins occur within Bundelkhand Granitoid Complex. These pegmatite veins are mostly un zoned and are comprised by quartz, orthoclase and minor biotite. The quartz veins are devoid of any mineralisation. The bed rock samples are collected from the pegmatite and syenite bodies for estimation of REE. The investigation will be continued in F. S. 2013-14.
MOIL							
Manganese ore							
Balaghat	Balaghat	-	-	02	1391.6	-	The strike length of the deposit was found to be 2.8 km. The average true thickness is 10 m and the deposit is thick at its central part and thin on either side. Brunite is the principle mineral associated with secondary minerals of oxide & dioxide origin. As on 1.4.2012, the total manganese ore resources were estimated at 24.28 million tonnes which is of 30-50% Mn grade.

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Table - 3 (Concld.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
MOIL Manganese Ore-							
Balaghat	Sitapatore/Sukli	-	-	-	-	-	Strike length & depth of the deposit were found to be 1.5 km and 330 m. respectively. Average width is 3.5 m. As on 1.4.2012 the total manganese ore resoures were estimated at 0.40 million tonnes which is of 25 - 42% Mn grade.
-do-	Tirodi	-	-	03	460	-	As on 1.4.2012, the total manganese ore resources were estimated at 1.40 million tonnes of 25 - 38% Mn grade.
-do-	Ukwa	-	-	-	-	-	Strike length of the deposit was found to be 5.5 km and depth 260 m. As on 1.4.2012, the total manganese ore resources were estimated at 8.70 million tonnes.

Production

The value of mineral production in Madhya Pradesh at ₹12,742 crore in 2012-13 increased by about 10% as compared to the previous year. It was mainly due to increase in the production of coal, diamond, iron ore, manganese ore and phosphorite. Madhya Pradesh contributed 4% in the total value of mineral production and claimed eighth position in the country. The state was the sole producer of diamond and also the leading producer of pyrophyllite with a share of 84%, copper ore 62%, copper concentrates 55% and manganese ore 30%. It was also the second leading producer of diaspore with a share of 45%, clay (others) 21%, phosphorite 12% and laterite 11% to total output of the respective minerals.

During 2012-13, the production of diamond increased by 73%, dolomite 27%, manganese ore 16%, iron ore 15%, copper ore 8%, phosphorite and coal 7% each and that of bauxite 1% as compared to the previous year. However, decline in production was observed in clay (others) and shale (4% each), phyrophyllite (7%), copper concentrates (10%), fireclay (22%), laterite (29%), ochre (36%) and diaspore (40%) as compared to that of the previous year. (Table - 4).

The production value of minor minerals was at ₹1,935 crore for the year 2012-13.

The number of reporting mines in Madhya Pradesh was 382 in 2012-13 as against 417 in the previous year.

The index of mineral production in Madhya Pradesh (base 2004-05=100) was 142.5 in 2012-13 as compared to 133.7 in the previous year.

Table – 4 : Mineral Production in Madhya Pradesh, 2010-11 to 2012-13 (Excluding Atomic Minerals)

(Value in ₹ '000)

Mineral	Unit	2010-11			2011-12			2012-13 (P)		
		No. of mines	Quantity	Value	No. of mines	Quantity	Value	No. of mines	Quantity	Value
All Minerals		**317**		**123469521**	**417**		**115952516**	**382**		**127416363**
Coal	'000t	71	71104	93673600	71	71123	83305500	71	75948	93737900
Bauxite	t	19	616319	262437	24	813399	460884	17	822165	370060
Copper Ore	t	-	2233523	-	-	2082959	-	-	2257288	-
Copper Conc.	t	1	78778	2477950	1	75239	2934838	1	67640	3002631
Iron Ore	'000t	8	1762	785316	17	1237	801604	14	1421	853066
Manganese Ore	t	29	716285	4226787	38	607968	4033483	43	706194	4792119
Phosphorite	t	5	133378	76946	3	240142	159189	3	257097	224442
Clay (others)	t	-	434722	48025	-	426256	30776	-	410147	37264
Diamond	crt	2	11222	106776	2	18490	198240	2	31989	366471
Diaspore	t	*	11165	9251	*	12115	15376	*	7275	10827
Dolomite	t	43	279859	41788	68	460494	110094	60	585096	104215
Fireclay	t	11	44519	4199	12	66823	7894	6	52183	6854
Kaolin	t	3	6106	484	2	6950	621	2	11200	672
Laterite	t	5	132539	9995	19	536220	50505	18	378844	71038
Limestone	'000t	85	33276	4785685	119	34072	4344022	110	33942	4333915
Ochre	t	13	44897	5593	16	54089	8339	11	34491	6323
Pyrophyllite	t	20	207521	73945	21	220980	130815	19	205990	138952
Quartz	t	2	1754	173	2	-	-	2	340	31
Shale	t	-	598912	5349	2	543481	6321	2	519551	5519
Steatite	t	-	-	-	-	66	7	1	140	56
Minor Minerals@		-	-	16875222	-	-	19354008	-	-	19354008

Note: *The number of mines excludes minor minerals.*

** Associated with pyrophyllite.*

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

Mineral-based Industry

The important large and medium-scale mineral-based industries in organised sector in the State are furnished in Table-5.

Table – 5 : Principal Mineral-based Industries in Madhya Pradesh

Industry/plant	Capacity ('000 tpy)
Asbestos Products	
Everest Building Products Ltd, Kymore.	NA
Kalani Industries Pvt. Ltd, Pitampur, Dhar.	NA
Ramco Industries Ltd, Maksi, Dist. Sajapur.	66
Cement	
ACC Ltd, Kymore, Dist. Katni.	2200
Birla Corpn. Ltd (Satna Cement Works), Satna.	2200
CCI Ltd, Mayagaon, Dist. Neemuch.	1400
Diamond Cement, Narsingarh, Dist. Damoh.	1525
Jaypee Rewa Cement, Dist. Rewa.	3500
Jaypee Cement, Bela.	2200
Maihar Cement, Maihar, Dist. Satna.	3800
Prism Cement Ltd, Satna.	2510
Vikram Cement, Khor, Dist. Neemuch.	4500
Ceramic	
EID Parry India Ltd, Dewas.	9
H&R Johnson India Ltd, Dewas.	6.7
Govind Tiles Pvt Ltd, Garra, Dist. Balaghat.	758 million nos.
Fertilizer	
Khaitan Chemical & Fertilizers Ltd, Nimrani, Dist. Khargone	400 (SSP) 115.5 (H_2SO_4)
NFL-Vijaipur, Dist. Guna.	1452 (Urea)
Ferro-alloys	
Crescent Alloys Pvt. Ltd, Seoni.	4.5
Jalan Ispat Castings Ltd, Meghnagar, Dist. Jhabua.	12
MOIL Ferro Manganese Plant, Bharveli, Dist. Balaghat.	10
Petroleum Refinery	
Bharat Oman Refineries Ltd, Bina, Dist. Sagar.	6000
Refractory	
ACC Refractories, Katni.	65
Premier Refractories India Pvt. Ltd, Katni.	12.9

(Contd.)

Table-5 (Concld.)