



Indian Minerals Yearbook 2015

(Part- III : Mineral Reviews)

54th Edition

IRON ORE

(FINAL RELEASE)

**GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES**

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Iron & steel is the driving force behind industrial development in any country. The vitality of the Iron & Steel Industry largely influences a country's economic status. The mining of iron ore, an essential raw material for Iron & Steel Industry, is arguably of prime importance among all mining activities undertaken by any country. With the total resources of over 31.32 billion tonnes of haematite (Fe_2O_3) and magnetite (Fe_3O_4), India is amongst the leading producers of iron ore in the world.

RESOURCES

Haematite and magnetite are the most important iron ores in India. About 59% haematite ore deposits are found in the Eastern Sector while about 92% magnetite ore deposits occur in Southern Sector, especially in Karnataka. Of these, haematite is considered to be superior because of its higher grade. Indian deposits of haematite belong to the Precambrian Iron Ore Series and the ore is within banded iron ore formations occurring as massive, laminated, friable and also in powdery form.

As per UNFC system, the total resources of haematite as on 1.4.2013 is estimated at 20,576 million tonnes of which 6,607 million tonnes (32%) are under 'Reserves' category and the balance 13,969 million tonnes (68%) are under 'Remaining Resources' category. By grades, Lumps constitute about 58% followed by Fines (18%), Lumps with Fines (16%) and the remaining 8% are Black Iron ore, Unclassified, Not-known and Other grades. Major resources of haematite are located in Odisha (7,183 million tonnes or 35%), Jharkhand (5,069 million tonnes or 25%), Chhattisgarh (4,031 million tonnes or 20%), Karnataka (2,269 million tonnes or 11%) and Goa (1,019 million tonnes or 5%). The balance resources of haematite are spread in Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Meghalaya, Rajasthan, Telangana and Uttar Pradesh (Table-1).

Magnetite is another principal iron ore that also occurs in the form of oxide, either in igneous or metamorphosed banded magnetite-silica formation, possibly of sedimentary origin. As per UNFC system, the total resources of magnetite as on 1.4.2013 is estimated at 10,747 million tonnes of which 'Reserves' constitute a mere 34 million tonnes while 10,713 million tonnes are placed under 'Remaining Resources'. Classification on the basis of grades

shows 20% resources are of Metallurgical grade while 80% resources belong to grades that are categorised as Unclassified, Not-known and Coal Washery. The resources of Others and Foundry grades constitute meagre proportions. India's 98% magnetite resources are located in five States, namely, Karnataka (7,802 million tonnes or 72%) followed by Andhra Pradesh (1,392 million tonnes or 13%), Rajasthan (627 million tonnes or 6%), Tamil Nadu (507 million tonnes or 5%) and Goa (226 million tonnes or 2%). Assam, Bihar, Jharkhand, Kerala, Maharashtra, Meghalaya, Nagaland, Odisha and Telangana together account for the remaining 2% resources (Table-2).

EXPLORATION&DEVELOPMENT

In 2014-15, GSI, State Directorates of Geology & Mining (Maharashtra), MECL, NMDC and Mysore Minerals Ltd conducted exploration for iron ore. Details of exploration activities carried out by various agencies in 2014-15 are furnished in Table-3.

PRODUCTION, STOCKS & PRICES

The production of iron ore constituting lumps, fines and concentrates was at 128.9 million tonnes in the year 2014-15, showing a decrease of about 15% as compared to that in the preceding year mainly due to stoppage of mining activities in some mines of Odisha State.

There were 290 reporting mines in 2014-15 as against 322 in the previous year. Among them, 34 mines were in the Public Sector and 256 in Private Sector. Besides, production of iron ore was reported as an associated mineral by 20 mines in 2014-15 as against 18 in 2013-14. The contribution of Public Sector to the total production was about 46% as against 39% in the preceding year. The remaining 54% of the total production in 2014-15 was from the Private Sector. Among 34 Public Sector mines, 14 mines (5 in Chhattisgarh and 3 each in Odisha, Jharkhand and Karnataka) each producing more than one million tonnes annually accounted for 95% of the total output in Public Sector and 44% of the total production in the country during 2014-15. Out of 256 iron ore mines and 19 associated mines in Private Sector, 15 iron ore mines (10 in Odisha, 3 in Jharkhand and 1 each in Madhya Pradesh and Rajasthan) each producing more than one million tonnes annually ac-

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counted for about 68% of the total output of Private Sector and about 37% of the total iron ore production. Thus, 29 iron ore mines, each producing more than one million tonnes of iron ore annually, contributed about 81% of the total output in 2014-15.

Out of 32 captive iron ore mines in the country, 12 were in the Public Sector. The production of captive mines in the Public Sector was 23 million tonnes or 38.6% of the sectoral output in 2014-15. On the other hand, production of captive mines in Private Sector was 20.7 million tonnes or 29.9% of the output in Private Sector.

Gradewise analysis of the current year's output reveals that, out of the total output of 128.9 million tonnes, iron ore lumps constituted 47.2 million tonnes or about 36.7%, fines 80.6 million tonnes or about 62.5% and concentrates 1.1 million tonnes or about 0.8%. In lumps 12.5 million tonnes or 26.5% was of Grade 65% Fe & above; about 21.8 million tonnes or 46.2% was of Grade 62% to below 65% Fe; 6.0 million tonnes or 12.7% was of Grade 60% to below 62% Fe; 2.7 million tonnes or 5.7% was of Grade 58% to below 60% Fe; about 1.5 million tonnes or 3.2% was of Grade 55% to below 58% Fe; and the rest 2.7 million tonnes or about 5.7% of the production was of Grade below 55% Fe. In the case of iron ore fines, 14.9 million tonnes or 18.5% of the production was of Grade 65% Fe and above; 31.9 million tonnes or 39.6% of Grade 62% to below 65% Fe; 16.7

million tonnes or 20.7% of Grade 60% to below 62% Fe; about 4.3 million tonnes or 5.4% of Grade 58% to below 60% Fe, 6.4 million tonnes or 7.9% of Grade 55% to below 58% Fe; and balance 6.4 million tonnes or about 7.9% of Grade below 55% Fe.

Among the States, Odisha recorded the highest production of 52 million tonnes or about 40.4% of the country's production in 2014-15. Chhattisgarh was at the second place with production of 29.4 million tonnes or 22.8% of the total production followed by Karnataka with 20.2 million tonnes or about 15.6%, Jharkhand with 19.2 million tonnes or about 14.9% of the country's production. The remaining 8.1 million tonnes or 6.3% production was reported from Andhra Pradesh, Madhya Pradesh, Maharashtra and Rajasthan. No production was reported from Goa due to suspension of mining operations owing to the order of the Hon'ble Supreme Court.

The mine-head closing stocks of iron ore for year 2014-15 were 129 million tonnes as compared to 124 million tonnes in 2013-14. The stocks relate to iron ore lumps, fines and concentrates in all the States.

The average daily employment of labour was 38,059 during 2014-15 as against 39,127 in the preceding year.

Domestic prices of iron ore are furnished in the General Review of 'Prices'.

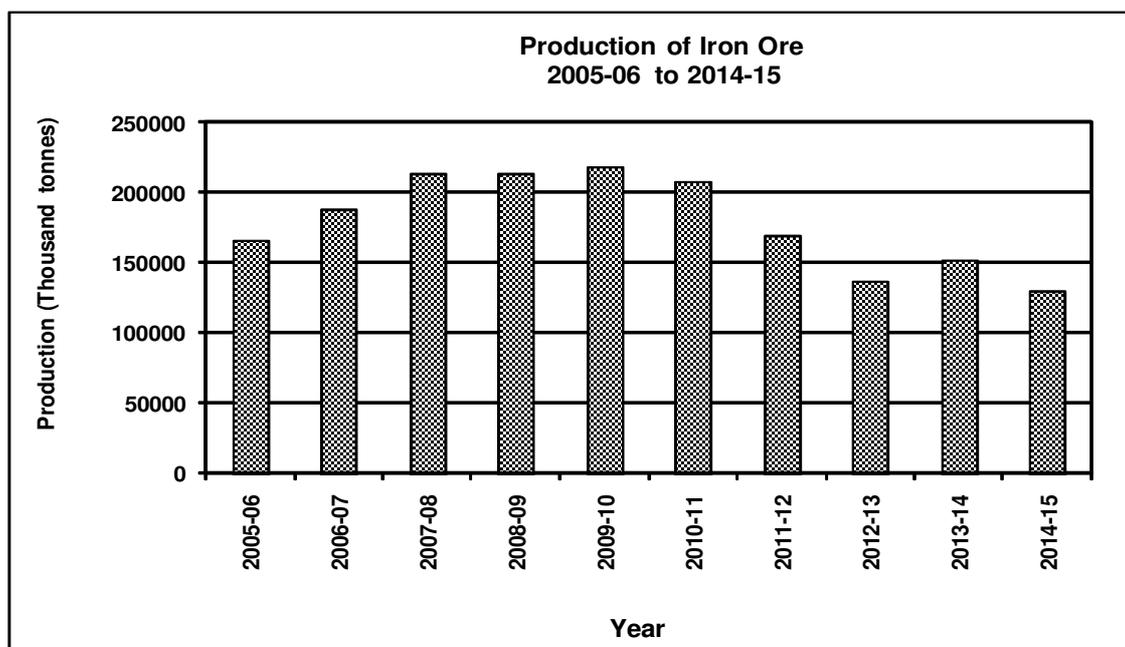


Table – 1 : Reserves/Resources of Iron Ore (Haematite) as on 1.4.2013
(By Grades/Stages)

(In '000 tonnes)

Grade/State	Reserves						Remaining Resources						Total Resources (A+B)
	Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
		STD121	STD122			STD221	STD222						
All India	5029221	746910	830431	6606562	2742272	1018515	1009051	1105212	1320700	4358014	2415382	13969145	20575708
By Grades													
Lump, High-grade	1388639	34889	215441	1638969	299305	64898	134545	137176	46417	304537	48316	1035194	2674163
Lump, Medium-grade	2351674	525822	331086	3208582	1157082	370831	207705	509875	582393	1179488	31954	4039328	7247910
Lump, Low-grade	71264	46908	56468	174640	132202	75333	166001	19776	78248	811788	228538	1511885	1686525
Lump, Unclassified grade	260	3616	2123	5999	61907	2504	10671	16969	34488	152312	23981	302832	308831
Fines, High-grade	374659	6340	94026	475025	32204	7408	17851	74650	8451	89890	-	230454	705479
Fines, Medium-grade	124570	3093	25967	153630	98388	252820	47258	186646	281069	518330	13100	1397611	1551241
Fines, Low-grade	44411	14418	3236	62065	358461	129492	104960	58684	79379	384596	18197	1133770	1195835
Fines, Unclassified grade	-	-	-	-	2035	2017	81	8452	13019	118725	15200	159528	159528
Lumps & Fines, High-grade	141834	4239	-	146073	99135	31352	104128	8378	7981	74220	112375	437569	583642
Lumps & Fines, Medium-grade	337334	8738	57716	403788	137786	40736	124811	5368	20366	141262	240286	710615	1114402
Lumps & Fines, Low-grade	59032	2616	17090	78738	261311	13988	62355	32323	67203	299580	193990	930749	1009487
Lumps & Fines Unclassified	127856	94850	26131	248837	76247	10253	22753	44063	100360	99728	4088	357493	606330
Black Iron Ore	-	-	-	-	15366	4576	1355	-	1059	6794	-	29150	29150
Others	4146	713	952	5811	3381	371	76	448	116	671	506	5569	11380
Unclassified	1428	-	197	1625	6140	5945	4416	2404	-	4475	-	23380	25005
Not-known	2113	667	-	2781	1323	5990	87	-	151	171618	1484850	1664019	1666799
By States													
Andhra Pradesh	14886	680	8206	23772	46153	49641	66485	377	4666	148384	506	316213	339985
Assam	-	-	-	-	-	-	-	-	8600	4000	-	12600	12600
Bihar	-	-	-	-	-	-	-	-	-	55	-	55	55
Chhattisgarh	1091050	52350	215600	1359000	247902	16700	81970	175945	527563	873508	748715	2672303	4031303
Goa	978590	369346	78797	1426733	998679	180145	195521	59001	172573	727763	27330	1019176	1019176
Jharkhand	289811	8010	80546	378367	507851	55804	203160	250976	47245	598541	226876	1890453	2268819
Karnataka	31177	3471	12051	46700	18218	1685	14982	20367	6108	145292	10	206662	253362
Madhya Pradesh	9231	7872	1296	18400	9886	6135	8997	80340	71806	67887	32185	277236	295636
Maharashtra	-	-	-	-	-	-	-	-	-	225	-	225	225
Meghalaya	2607013	301435	433554	3342003	425591	542769	286368	460342	452876	1601542	71092	3840580	7182582
Odisha	7382	3644	380	11406	3892	4619	471	-	11510	7044	-	27535	38941
Rajasthan	81	102	-	183	1402	381	500	-	-	23477	-	25760	25942
Telangana	-	-	-	-	-	-	-	-	-	38000	-	38000	38000
Uttar Pradesh	-	-	-	-	-	-	-	-	-	-	-	-	-

Figures rounded off.

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**Table – 2 : Reserves/Resources of Iron Ore (Magnetite) as on 1.4.2013
(By Grades/States)**

(In '000 tonnes)

Grade/State	Reserves				Remaining Resources							Total Resources (A+B)
	Proved STD111	Probable STD122	Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333	Reconnaissance STD334	Total (B)	
					STD221	STD222						
All India : Total	18180	16412	34592	206758	17354	61453	1513195	1984616	6344986	584402	10712763	10747355
By Grades :												
Metallurgical	297	221	519	164794	3130	18435	690623	342792	966632	255	2186661	2187180
Coal washery	17504	15847	33350	265	10635	11510	411	318	36689	15422	75249	108599
Foundry	-	-	-	330	125	-	-	-	381	-	836	836
Others	8	101	109	5814	985	3	-	-	1567	-	8369	8478
Unclassified	-	-	-	35556	2479	31493	822161	1641506	5059468	568677	8161339	8161339
Not-known	372	243	615	-	-	11	-	-	280249	48	280308	280923
By States												
Andhra Pradesh	-	-	-	43034	-	-	13800	1266666	68527	-	1392027	1392027
Assam	-	-	-	-	-	-	-	-	15380	-	15380	15380
Bihar	-	-	-	-	-	-	-	-	2659	-	2659	2659
Goa	-	-	-	42959	4032	30400	-	-	146389	1997	225777	225777
Jharkhand	-	-	-	-	865	2502	411	3997	2845	48	10667	10667
Karnataka	-	-	-	120022	-	18375	1498957	479372	5345018	340000	7801744	7801744
Kerala	-	-	-	-	-	-	-	59912	23523	-	83435	83435
Maharashtra	305	322	627	149	-	63	-	-	90	-	302	929
Meghalaya	-	-	-	-	-	-	-	-	3380	-	3380	3380
Nagaland	-	-	-	-	-	-	-	5280	-	-	5280	5280
Odisha	-	-	-	-	-	-	27	-	43	-	153	153
Rajasthan	17875	16090	33965	595	12374	10113	-	-	554904	15422	593407	627373
Tamil Nadu	-	-	-	-	-	-	-	169388	110728	226921	507037	507037
Telangana	-	-	-	-	-	-	-	-	71500	14	71514	71514

Figures rounded off.

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Table – 3 : Details of Exploration Activity for Iron Ore, 2014-15

Agency/ State/ District	Location/ Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/ Resources Estimated
		Scale	Area (sq km)	No. of Boreholes	Meterage		
GSI							
Andhra Pradesh							
Chittoor	Vedullacheruvu Krishnapuram, Chandragiri and Srikalahasti	-	-	-	-	-	G4 stage investigation for iron and manganese ore was carried out with an objective to delineate the iron ore bands along with manganese ore. The study area exposed quartzite and phyllite of Bairenkonda Formation and phyllite of Cumbum Formation & Cuddapah Supergroup. The intercalated sequence of quartzite and phyllite was found to host iron and manganese bands. The band very close to the contact with massive quartzite is the thickest, with a width ranging from 8-12 m for a strike length of around 1.5 km. Another significant band that occur in the east-central part of the intercalated sequence of quartzite and phyllite measured on average thickness of 8 m. The work will continue in FS 2015-16.
Arunachal Pradesh							
West Siang	Jaiyor Yongum Gamkak area	-	-	3 (Scout)	400	-	G4 stage investigation was carried out in this area. Bands of magnetite quartzite were mapped by detailed mapping. Three inclined scout boreholes with depth ranging from 100-150 m (total 400 m) were drilled for establishing the depth persistence of the magnetite quartzite and associated iron stone bands. In the first Borehole YJ-1, manifestation of iron mineralisation and disseminated sulphides have been observed from 38.50 m to 150 m depth. A zone of magnetite with relatively higher concentration has been observed from 62.90 m to 94.50 m along borehole depth and at a vertical depth of 35 m. A rich zone of sulphide mineralisation (pyrite, chalcopyrite, pyrrhotite, bornite) has been intersected from 38.85-39.30 m along the borehole depth. The second Borehole YJ-2 has intersected the iron mineralised zone at the depths of 52-58 m, 82.35-88 m and 93.50-97.00 m along the

(Contd.)

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Table – 3 (Contd.)

Agency/ State/ District	Location/ Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/ Resources Estimated
		Scale	Area (sq km)	No. of Boreholes	Meterage		
West Siang (Concl.)	Jaiyor Yomgum Gamkak area	-	-	3 (Scout)	400	-	borehole. Sulphide mineralisation occurs in the form of disseminations, specks, veinlets/stringers and smears of pyrite and chalcopyrite from 38.10-82 m along the borehole and rich zones have been intersected at depths of 38.10-46 m, 49-61m, 73-82 m, 88.10-88.15 m and 122.0-124.0 m. In the third Borehole YJ-3, highly ferruginised quartz-mica schist (\pm garnet) has been observed from 24.55-50.00 m. Magnetite bearing quartzite has been intersected at borehole depth of 84-86 m and 97.20-100 m. Magnetite occurs as disseminations and also as stretched grains along the foliation. Sulphide mineralised zone has been intersected at 50-58.50 m along the borehole.
Karnataka Bagalkot	Amingad- Kamatgi- Sirur (Hungund Kushtagi Schist belt)	-	-	-	-	-	G4 stage investigation for iron ore was carried out. The Hungund-Kushtagi schist belt forms NW continuation of Ramgiri-Penakacherla schist belt in Karnataka. The schist belt comprises metabasalt, meta-acid volcanics, banded iron Formation (BIF), meta-argillite and minor intercalated meta-sedimentary units like quartz-chlorite schist and greywacke. These are intruded by younger granites and basic dykes. Four banded haematite quartzite bands trending NNW-SSE have been delineated with width ranging from 10 -35 m. One BHQ band has also been traced for 2.4 km strike length east of Huvinahalli. The bands are highly deformed. Analytical values obtained indicated Fe ₂ O ₃ up to 45%.The work will continue in FS 15-16.

(Contd.)

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Table – 3 (Contd.)

Agency/ State/ District	Location/ Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/ Resources Estimated
		Scale	Area (sq km)	No. of Boreholes	Meterage		
Davanagere	Basavapatna Kerebilichi block Channagiri taluka	-	-	-	-	-	A G4 stage investigation for iron ore was taken up with an objective to assess iron ore and gold in BIF. The area exposes BIF, phyllite, acid volcanics and quartz along with sericite/ chlorite schist. The BIF in the area is mainly banded haematite quartzite, at places it is banded magnetite quartzite/ banded haematite chert. Three parallel bands of BIF extend from Hosahalli to Basavapatna with width varying from 1 m to 10 m for a strike length of 4 km. The BIF in the Yalodahalli area also consists of three bands with a maximum width of 17 m. Work has been completed.
Odisha Sundargarh	Kalamang West Block (Northern Part)	-	-	11	1040.85	-	G 3 investigation has been taken up with an objective to assess iron ore potential in the eastern continuous area of Ghorhaburhani and Sagasahi east block for augmentation of resource. Eleven boreholes were drilled at 200 m × 200 m grid interval. Borehole SKN-1 to SKN-7 intersected the medium to high-grade iron ore body (occasionally powdery ore and laminated ore) with a considerable cumulative thickness of 78 m, 50.80 m, 43 m, 30.30 m, 44.60 m, 93.10 m and 54 m with average grade 59.61% Fe, 57.82% Fe, 61.61% Fe, 62.07% Fe, 61.17% Fe, 60.77% Fe and 60.11% Fe respectively. Borehole SKN-8 to SKN-11 intersected the medium-grade iron ore body with 50-60% Fe as per visual estimation (as analytical results are yet to be received) with a considerable cumulative thickness of 76.30 m, 72 m, 104 m and 69.25 m respectively. The contiguous area towards north has been found to be encouraging.

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Table – 3 (Contd.)

Agency/ State/ District	Location/ Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/ Resources Estimated
		Scale	Area (sq km)	No. of Boreholes	Meterage		
Sundargarh (Concl'd)	Ghortha burhani South block	-	-	7	-	-	Exploration was taken up with an objective to assess the iron ore potential in the southern continuous area of this block for augmentation of resource. All the seven boreholes intersected the mineralised zone with thickness varying from 14 m to 76 m. The borehole data indicate that the ore body is closely associated with shale and its thickness varies along strike as well as in the dip direction. The study area comprises ferruginous shale, iron ore and laterite. The work will continue in FS 15-16.
Telangana Yerraballi Karimnagar	Yerraballi	-	-	-	-	-	G4 stage investigation was carried out to search for iron ore. Large scale Mapping helped in delineation of a NW-SE trending banded magnetite/haematite quartzite band over a strike length of 4.5 km with width varying from 50 m to 70 m. Another band trending NNW to SSE over a strike length of 2 km length with a width of 30 m was recorded to the east of the above band. Fe ₂ O ₃ values within the banded magnetite/haematite quartzite ranges from 30.94 to 80.22%. Work has been completed.
Uttarakhand Nainital	Ramgarh	-	-	-	-	-	G 4 stage investigation for iron ore and sulphide mineralisation was taken up. The study area comprises litho assemblages belonging to Ramgarh, Jaunsar and Almora Group of rocks. Thin veins of iron oxides were observed within siliceous limestone of Betalghat Formation of Jaunsar Group in Paswara area. The mineralisation is localised and uneconomical. Work has been completed.

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Table – 3 (Contd.)

Agency/ State/ District	Location/ Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/ Resources Estimated
		Scale	Area (sq km)	No. of Boreholes	Meterage		
Uttar Pradesh Sonbhadra	Bharhari Area	-	-	-	-	-	G 4 stage investigation was carried out for resource evaluation of iron ore in Mahakoshal Group. The area is characterised by Son Narmada North Fault (SNNF), trending ENE–WSW and other sympathetic faults in phyllitic country rock. In the mapped area, five BIF bands parallel to each other have been observed trending N70E- S70 W over a strike length of 20 km with width ranging from 170 to 450 m. The BIF bands are interbanded with phyllite. Apart from this major BIF zone, several other banded haematite jasper (BHJ), banded haematite chert (BHC) noticed. Analytical results of grab samples from BIF yielded Fe ₂ O ₃ value that ranges from 40.63% to 62.51%. Work has been completed.
MECL Karnataka Ballari	M.L. No. 2186 Sandur	1:1000	0.1589	14	487.50	500	The ore zone is highly patchy and not continuous. The reserve/resources have not been estimated during the year for 45% Fe cutoff. However, 35% Fe, about 2.84 million tonnes with 39.01% Fe resources have been estimated (G3).
	M.L.No. 2525	1:1000	0.1743	12	644	657	At 45% Fe cutoff, the estimated resources have been placed at 35.86 million tonnes with 62.51% Fe (G1).
	M.L.No. 2487	1:1000	0.8612	56	1671.50	1605	At 45% Fe cutoff, the resources have been estimated at 14.71 million tonnes with 52.91% Fe (G1).
	M.L.No. 2313	1:1000	0.2161	14	644	620	At 45% Fe cutoff, the resources have been estimated at 10.03 million tonnes with 54.41% Fe (G1).
	M.L. No. 2559	1:1000	0.2671	17	1000.50	985	At 45% Fe cutoff, the resources have been estimated at 28.47 million tonnes with 55.33 % Fe (G1).

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Table – 3 (Concl.)

Agency/ State/ District	Location/ Area/ Block	Mapping		Drilling		Sampling (No.)	Remarks Reserves/ Resources Estimated
		Scale	Area (sq km)	No. of Boreholes	Meterage		
MECL							
Karnataka							
Ballari (Concl.)	M.L. No. 2290 Sandur	1:1000	0.2161	48	2240.50	2182	At 45% Fe cutoff, the resources have been estimated at 28.618 million tonnes with 56.69% Fe (G1). Objective of exploration was to know the depth persistence & lateral extension of the ore body and augmentation of reserves to enhance the life of the mine.
NMDC Ltd							
Chhattisgarh							
South Bastar (Dantewada)	Bailadila Iron ore Mine Deposit 14 & 11 C	1:2000	23	-	1943.50	-	Exploratory drilling is under progress. Reserves/Resources estimation is also under process.
	D.10 /11A	-	2	-	192	-	-
Karnataka							
Ballari	Donimalai DIOM-SB, 3 W and 2E- Deposits	-	-	24	974.20	360	111 Category: About 2.36 million tonnes in 3 W Deposit & 0.25 million tonnes in 2 W Deposit. 122 Category: About 2.10 million tonnes in 2 E and 3W Deposit. 333 Category: About 2.00 million tonnes in 2 E Deposit and about 0.50 million tonnes in 3W Deposit.
Mysore Minerals Limited							
Karnataka							
Ballari	Subbara- Yanahalli Sandur	-	32	-	2055	-	Estimated Reserves Proved : 21.27 million tonnes Probable : 46.16 million tonnes
	Krishna- Nagar Sandur	-	2	-	92	-	Estimated Reserves/Resources Proved : 8.28 million tonnes Probable : 2.01 million tonnes Inferred : 4.09 million tonnes

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**Table - 4 :Principal Producers of Iron ore
2014-15**

Name & address of producer	Location of mine	
	State	District
National Mineral Development Corporation Ltd, 10-3-311/A, Khanij Bhavan, Masab Tank, Hyderabad -500 028, Telangana	Karnataka	Ballari
Steel Authority of India Ltd, Ispat Bhavan, Lodhi Road, New Delhi - 110 003.	Chhattisgarh	Dantewada
	Jharkhand	Singhbhum (West)
	Odisha	Kendujhar
Tata Steel Ltd, Bombay House, 24, Homi Mody Street, Fort, Mumbai -400 001, Maharashtra.	Odisha	Sundargarh
	Jharkhand	Singhbhum (West)
Rungta Mines (P) Ltd, 8A Express Tower, 42A-Shakespeare Sarani, Kolkata - 700 017, West Bengal.	Odisha	Kendujhar
	Jharkhand	Singhbhum (West)
Serajuddin & Co., P-16, Bentinck Street, Kolkata-700 069, West Bengal.	Odisha	Kendujhar
	Odisha	Kendujhar
Rungta Sons (P) Ltd, 8A Express Tower, 42A-Shakespeare Sarani, Kolkata - 700 017, West Bengal.	Odisha	Kendujhar
	Odisha	Singhbhum (West)
Indrani Patnaik, A/6, Commercial Estate, Civil Township, Rourkela - 769 004 Odisha.	Odisha	Kendujhar
	Odisha	Kendujhar
Jindal Steel & Power Ltd, O.P. Jindal Marg, Delhi Road, Hissar- 125 005, Haryana.	Odisha	Sundargarh
	Odisha	Sundargarh

Table - 4 : (Concl.)

Name & address of producer	Location of mine	
	State	District
Mysore Minerals Ltd., No. 39, M.G. Road, Bangaluru - 560 001, Karnataka.	Karnataka	Ballari
	Karnataka	Ballari
The Odisha Mining Corporation Ltd., OMC House, Unit - 5, P.B. NO. 34, Dstt. Khurda, Bhubaneswar - 751 001, Odisha	Odisha	Kendujhar
	Odisha	Kendujhar
Pacific Exports, 11-12 Dum Market, Baragwan, Katni - 483 501, Madhya Pradesh	Madhya-Pradesh	Jabalpur
	Madhya-Pradesh	Jabalpur
Essel Mining & Industries Ltd, Industry House, 18 th Floor, 10, Camac Street, Kolkata- 700 017 West Bengal	Odisha	Sundargarh
	Odisha	Sundargarh
Usha Martin Ltd, Mangal Kalash, 2A Shakespeare Sarani, Kolkata-700 071, West Bengal.	Jharkhand	Singhbhum (West)
	Jharkhand	Singhbhum (West)
Kamaljeet Singh Ahluwalia, Near MMTC Weigh Bridge P.B.No. 3, Barbil-758 035, Distt. Kendujhar, Odisha.	Odisha	Kendujhar
	Odisha	Kendujhar
Jindal Saw Ltd, A-1, UPSIDC Industrial Area, Nandgaon Road, Kosikalan, Mathura- 281 403, Uttar Pradesh.	Rajasthan	Bhilwara
	Rajasthan	Bhilwara

(Contd.)

IRON ORE

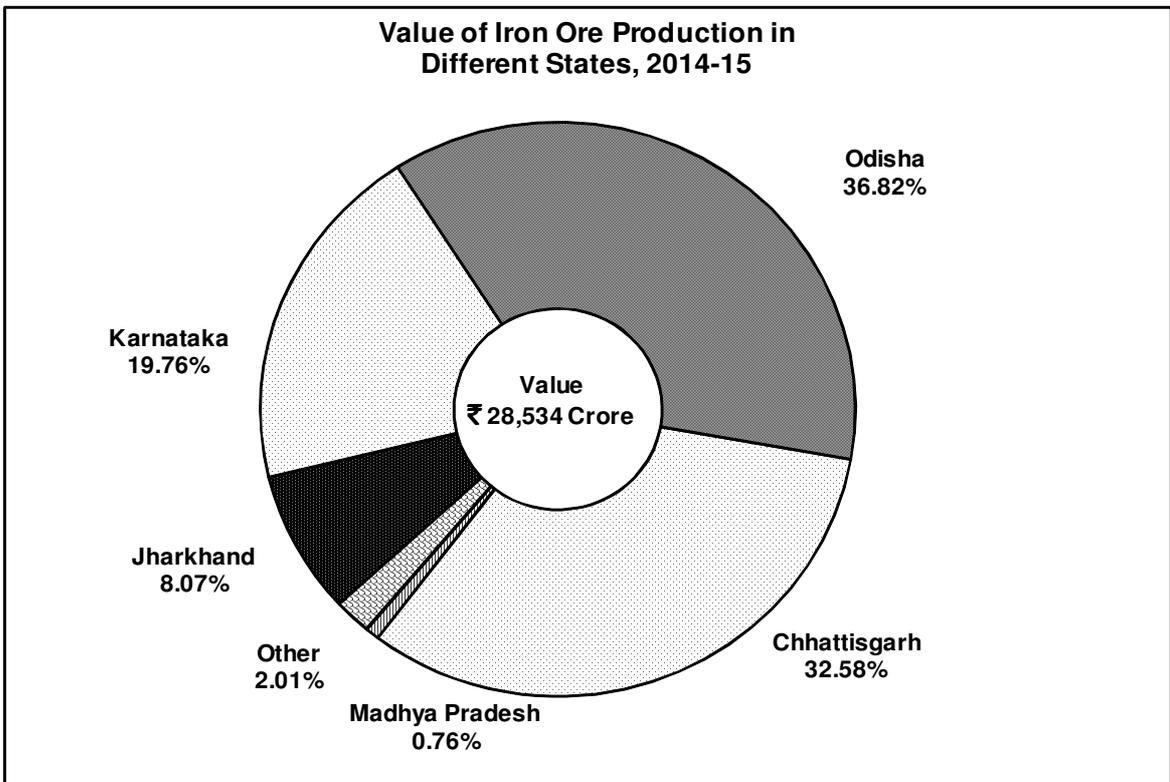
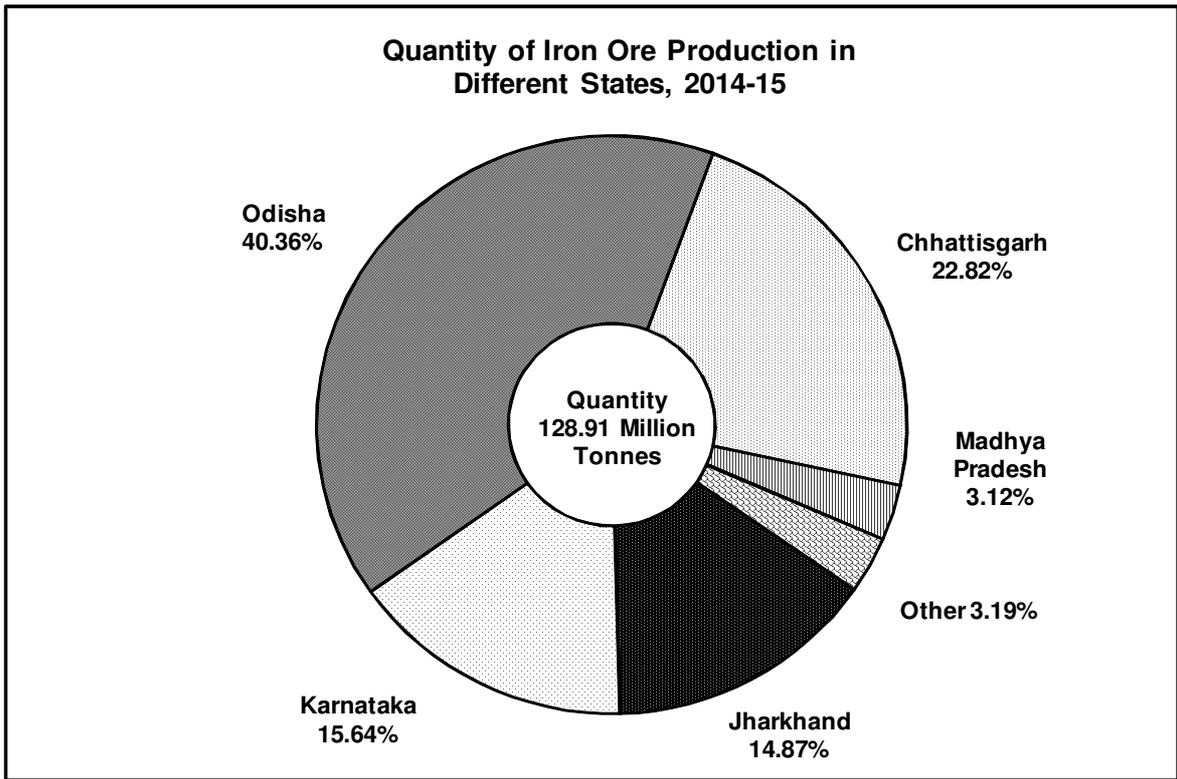
Table – 5 : Production of Iron Ore, 2012-13 to 2014-15 (P)
(By States)

(Quantity in '000 tonnes; Value in ₹ '000)

States		2012-13		2013-14		2014-15 (P)	
		Quantity	Value	Quantity	Value	Quantity	Value
India	Total	136618	328244402	152183	316491777	128909	285336637
	Lumps	54270	185636387	58495	168586933	47246	132828993
	Fines	82025	142218195	92946	145738162	80586	149619101
	Concentrates	323	389820	742	2166682	1077	2888543
Andhra Pradesh #	Total	1149	588352	709	403897	908	491871
	Lumps	866	501976	483	325020	624	411493
	Fines	283	86376	226	78877	284	80378
Chhattisgarh	Total	27963	87739541	29250	89293192	29418	92958372
	Lumps	10375	45031170	10929	43879092	10616	41038958
	Fines	17588	42708371	18321	45414100	18802	51919414
Goa	Total	10897	21414923	-	-	-	-
	Lumps	1828	3396883	-	-	-	-
	Fines	8990	17928456	-	-	-	-
	Concentrates	79	89584	-	-	-	-
Jharkhand	Total	17986	21410899	22624	23912896	19173	23024755
	Lumps	6697	11028177	7390	10459724	6982	9359668
	Fines	11289	10382722	15234	13453172	12191	13665087
Karnataka	Total	11504	35811462	18684	50484086	20157	56395912
	Lumps	4999	20145978	7896	24305739	6746	22931164
	Fines	6505	15665484	10788	26178347	13411	33464748
Madhya Pradesh	Total	1225	887392	2090	1246385	4019	2163491
	Lumps	178	240767	333	289067	627	671290
	Fines	1047	646625	1757	957318	3392	1492201
Maharashtra	Total	1193	1251967	1888	1962604	2050	2360611
	Lumps	263	312834	401	454850	371	586752
	Fines	930	939133	1487	1507754	1679	1773859
Odisha	Total	64439	158924967	76188	147262824	52026	105048130
	Lumps	29010	104954912	30970	88832708	21160	57741743
	Fines	35393	53861028	45130	58147799	30827	47223414
	Concentrates	36	109027	88	282317	39	82973
Rajasthan	Total	235	198144	708	1901189	1121	2871545
	Lumps	27	6935	52	16239	83	65975
	Concentrates	208	191209	654	1884365	1038	2805570
	Fines	-	-	2	585	-	-
Telangana #	Total	27	16755	42	24704	37	21950
	Lumps	27	16755	41	24494	37	21950
	Fines	-	-	1	210	-	-

Figures mentioned against 2012-13 and 2013-14 are of districts which are part of present Andhra Pradesh & Telangana states

IRON ORE



IRON ORE

Table – 6 (A) : Production of Iron Ore, 2014-15 (P)
(By Sectors/States/Districts/Grades)

(Quantity in '000 tonnes; Value in ₹'000)

Sector/ State/ District	No. of mines	Lumps										Fines										Concentrates				Total	
		Below 55% 55% below		58% 60% below		60% 62% below		62% 65% below		65% above		Total		Below 55% 55% below		58% 60% below		60% 62% below		62% 65% below		65% above		Total		Total	
		Fe	Value	Fe	Value	Fe	Value	Fe	Value	Fe	Value	Qty	Value	Fe	Value	Fe	Value	Fe	Value	Fe	Value	Qty	Value	Qty	Value	Qty	Value
India	290(20)	2666	1477	2716	6014	21850	12523	47246	132828993	6368	6348	4318	16668	31935	14949	80586	149619101	1077	2888543	128909	285336637						
Public Sector	34(1)	5	163	257	2881	12274	6377	21957	66574787	63	1396	2170	9671	18047	6168	37515	81897202	-	-	-	59472	148471986					
Private Sector	256(19)	2661	1314	2459	3133	9576	6146	25289	66254206	6305	4952	2148	6997	13888	8781	43071	67721899	1077	2888543	69437	136864651						
Andhra Pradesh	25(1)	624	-	-	-	-	-	624	411493	284	-	-	-	-	-	284	80378	-	-	908	491871						
Anantapur	2	6	-	-	-	-	-	6	1721	-	-	-	-	-	-	-	-	-	-	6	1721						
Cuddapah	4	338	-	-	-	-	-	338	228958	237	-	-	-	-	-	237	60161	-	-	575	289119						
Krishna	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	726	-	-	1	726						
Kurnool	17(1)	280	-	-	-	-	-	280	180814	46	-	-	-	-	-	46	19491	-	-	326	200305						
Prakasam*	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Chhattisgarh	14	220	41	39	56	4069	6191	10616	41038958	126	134	299	3094	8835	6314	18802	51919414	-	-	29418	92958372						
Dantewara	3	-	-	-	12	897	6133	7042	31727963	8	116	285	1114	6677	6162	14362	43274331	-	-	21404	75002294						
Durg	5	-	-	-	-	3104	-	3104	8203810	-	-	-	1966	2150	-	4116	7835682	-	-	7220	16039492						
Kanker	4	168	1	6	6	37	58	276	537806	23	-	4	7	7	152	193	575114	-	-	469	1112920						
Rajnandgaon	2	52	40	33	38	31	-	194	569379	95	18	10	7	1	++	131	234287	-	-	325	803666						
Goa*	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
North Goa*	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
South Goa*	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Jharkhand	22(1)	293	261	1016	2090	2650	672	6982	9359668	200	1176	51	3315	5733	1716	12191	13665087	-	-	19173	23024755						
Singbhum (West)	22(1)	293	261	1016	2090	2650	672	6982	9359668	200	1176	51	3315	5733	1716	12191	13665087	-	-	19173	23024755						
Karnataka	60(2)	328	395	524	1633	3672	194	6746	22931164	769	1971	2837	4526	3255	53	13411	33464748	-	-	20157	56395912						
Bagalkot*	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Ballari	44(2)	328	375	475	1569	3520	194	6461	21980934	697	1726	2566	4510	3135	53	12687	31710104	-	-	19148	53691038						
Chitradurga	7	-	20	49	35	152	-	256	877633	72	245	271	16	120	-	724	1754644	-	-	980	2632277						
Tumakuru	7	-	-	-	29	-	-	29	72597	-	-	-	-	-	-	-	-	-	-	-	29	72597					

(Contd.)

IRON ORE

Table - 6 (A) : (Concl.)

Sector/ State/ District	No. of mines	Lumps										Fines										Concentrates				Total					
		Below 55% Fe		58% below 60%		60% below 62%		62% below 65%		65% above Fe &		Total		Below 55% Fe		58% below 60%		60% below 62%		62% below 65%		65% above Fe &		Total		Qty	Value	Qty	Value		
		23	602	2	-	-	-	2	602	3319	69	4	-	-	-	3392	1492201	-	-	-	-	-	-	-	-					-	-
Madhya Pradesh	14(12)	602	23	2	-	-	-	627	671290	3319	69	4	-	-	3392	1492201	-	-	-	-	-	-	-	-	-	-	-	-	-	4019	2163491
Balaghat	1	-	6	-	-	-	-	6	4189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	4189	
Gwalior	1	-	-	-	-	-	-	-	-	7	-	-	-	-	-	3415	-	-	-	-	-	-	-	-	-	-	-	-	7	3415	
Jabalpur	11(12)	589	17	2	-	-	-	608	650822	3312	69	4	-	-	3385	1488786	-	-	-	-	-	-	-	-	-	-	-	3993	2139608		
Sagar	1	13	-	-	-	-	-	13	16279	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	16279		
Maharashtra	14	181	75	63	52	-	-	371	586752	1360	52	202	65	-	1679	1773859	-	-	-	-	-	-	-	-	-	-	-	2050	2360611		
Chandrapur	2	2	49	++	-	-	-	51	124543	17	++	20	-	-	37	51802	-	-	-	-	-	-	-	-	-	-	-	88	176345		
Gondia	4	8	-	-	-	-	-	8	10482	4	-	-	-	-	4	1950	-	-	-	-	-	-	-	-	-	-	-	12	12432		
Sindhudurg	8	171	26	63	52	-	-	312	451727	1339	52	182	65	-	1638	1720107	-	-	-	-	-	-	-	-	-	-	-	1950	2171834		
Odisha	67(3)	335	645	1072	2183	11459	5466	21160	57741743	310	2946	925	5668	14112	6866	30827	47223414	39	82973	52026	105048130	-	-	-	-	-	-	1950	2171834		
Keonjhar	41(2)	108	42	846	228	8110	4784	14118	34512063	80	1987	70	2908	10445	5582	21072	32491804	39	82973	35229	67086840	-	-	-	-	-	-	1828	5921113		
Mayurbhanj	3	141	414	207	14	158	361	1295	5029107	59	225	68	98	83	-	533	892006	-	-	-	-	-	-	-	-	-	-	-	-		
Sundargarh	23(1)	86	189	19	1941	3191	321	5747	18200573	171	734	787	2662	3584	1284	9222	13839604	-	-	-	-	-	-	-	-	-	-	14969	32040177		
Rajasthan	4	83	-	-	-	-	-	83	65975	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1038	2805570	1121	2871545	
Bhilwara	2	2	-	-	-	-	-	2	465	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1038	2805570	1040	2806035
Jaipur	1	54	-	-	-	-	-	54	14320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	14320		
Sikar	1	27	-	-	-	-	-	27	51190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	51190		
Telangana	3(1)	++	37	-	-	-	-	37	21950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	21950		
Karimnagar*	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Khammam	1	++	-	-	-	-	-	++	197	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	++	197		
Warangal	(1)	-	37	-	-	-	-	37	21753	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	21753		

* Only labour reported.

IRON ORE

Table – 6 (B) : Production of Iron Ore, 2013-14
(By Sectors/States/Districts/Grades)

Sector/ State/ District	No. of mines	Lumps										Fines										Concentrates				Total			
		Below 55% Fe		55% below Fe		58% below Fe		60% below Fe		62% below Fe		65% below Fe		65% above Fe		62% below Fe		60% below Fe		58% below Fe		55% below Fe		65% above Fe		Total		Total	
		Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
India	322(18)	3463	1912	2775	6331	28214	15800	58495	168586933	7482	5675	6665	14608	44114	14402	92946	145738162	742	2166682	152183	316491777								
Public Sector	34(1)	6	37	131	1999	13602	6572	22347	68207990	236	693	2357	8161	19196	5700	36343	68835146	-	-	58690	137043136								
Private Sector	288(17)	3457	1875	2644	4332	14612	9228	36148	100378943	7246	4982	4308	6447	24918	8702	56603	76903016	742	2166682	93493	179448641								
Andhra Pradesh*	33(2)	483	-	-	-	-	-	483	325020	226	-	-	-	-	-	226	78877	-	-	709	403897								
Anantapur	3	13	-	-	-	-	-	13	3989	-	-	-	-	-	-	-	-	-	-	13	3989								
Cuddapah	8	148	-	-	-	-	-	148	106672	102	-	-	-	-	-	102	26997	-	-	250	133669								
Krishna	2	-	-	-	-	-	-	-	-	++	-	-	-	-	-	++	496	-	-	++	496								
Kurnool	18(2)	322	-	-	-	-	-	322	214359	124	-	-	-	-	-	124	51384	-	-	446	265743								
Nellore*	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Prakasam*	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Chhattisgarh	11	85	4	28	12	4491	6309	10929	43879092	12	79	380	3020	9165	5665	18321	45414100	-	-	29250	89293192								
Dantewara	3	1	1	4	12	1273	6139	7430	33952836	12	79	380	1004	7077	5665	14217	38220040	-	-	21647	72172876								
Durg	5	-	-	-	-	3185	-	3185	8822606	-	-	-	2004	2088	-	4092	7164176	-	-	7277	15986782								
Kanker	2	84	2	24	-	33	170	313	1102187	-	-	-	12	-	-	12	29884	-	-	325	1132071								
Rajnandgaon	1	-	1	-	-	-	-	1	1463	-	-	-	-	-	-	-	-	-	-	1	1463								
Goa*	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
North Goa*	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
South Goa*	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Jharkhand	23(1)	576	239	1454	1582	3330	209	7390	10459724	440	1321	297	1968	9986	1222	15234	13453172	-	-	22624	23912896								
Singhbhum (West)	23(1)	576	239	1454	1582	3330	209	7390	10459724	440	1321	297	1968	9986	1222	15234	13453172	-	-	22624	23912896								
Karnataka	66(2)	1383	459	705	1068	3787	494	7896	24305739	860	1602	2592	3352	2328	54	10788	26178347	-	-	18684	50484086								
Bagalkot	2	30	-	-	-	-	-	30	81300	-	-	-	-	-	-	-	-	-	-	30	81300								
Ballari	50(2)	1250	387	491	997	3707	480	7312	22758324	240	988	2398	3307	2232	54	9219	22789829	-	-	16531	45548153								
Chitradurga	7	-	72	175	63	68	14	392	1238925	614	614	194	45	96	-	1563	3381040	-	-	1955	4619965								
Tumakuru	7	103	++	39	8	12	-	162	227190	6	-	-	-	-	-	6	7478	-	-	168	234668								

(Contd.)

IRON ORE

Table - 6 (B) : (Concl.)

Sector/ State/ District	No. of mines	Lumps						Fines						Concentrates			Total					
		Below 55% Fe		58% below 60%		62% below 65%		Below 55% Fe		58% below 60%		62% below 65%		65% below 65%	65% above	Total	Qty	Value	Qty	Value	Qty	Value
		55%	60%	58%	62%	62%	65%	55%	60%	58%	60%	62%	62%									
Madhya Pradesh 15(9)	320	13	-	-	-	-	-	333	289067	1527	209	20	1	-	-	1757	957318	-	-	2090	1246385	
Balaghat	1	-	5	-	-	-	-	5	7739	-	-	-	-	-	-	-	-	-	-	5	7739	
Gwalior	2	50	-	-	-	-	-	50	30939	67	-	-	-	-	67	37767	-	-	-	117	68706	
Jabalpur	11(9)	221	8	-	-	-	-	229	190009	1460	209	20	1	-	1690	919551	-	-	-	1919	1109560	
Sagar	1	49	-	-	-	-	-	49	60380	-	-	-	-	-	-	-	-	-	-	49	60380	
Maharashtra	17	274	29	82	16	-	-	401	454850	1163	19	305	-	-	1487	1507754	-	-	1888	1962604		
Chandrapur	2	-	13	11	8	-	-	32	79512	20	-	10	-	-	30	44176	-	-	-	62	123688	
Gadchiroli	2	-	1	-	-	-	-	1	1928	-	-	-	-	-	-	-	-	-	-	1	1928	
Gondia	4	7	++	-	-	-	-	7	8881	5	-	-	-	-	5	2172	-	-	-	12	11053	
Sindhudurg	9	267	15	71	8	-	-	361	364529	1138	19	295	-	-	1452	1461406	-	-	-	1813	1825935	
Odisha	71(3)	288	1129	506	3653	16606	-	30970	88832708	3251	2445	3071	6267	22635	7461	45130	58147799	88	282317	76188	147262824	
Kendujhar	44(2)	229	700	267	577	12791	7993	22557	63180358	2891	1242	1701	3232	17684	5988	32738	42124159	88	282317	55383	105586834	
Mayurbhanj	3	59	423	218	52	59	61	872	2771094	48	230	9	14	2	303	289919	-	-	-	1175	3061013	
Sundargarh	24(1)	-	6	21	3024	3756	734	7541	22881256	312	973	1361	3021	4949	1473	12089	15733721	-	-	19630	38614977	
Rajasthan	4	52	-	-	-	-	-	52	16239	2	-	-	-	-	2	585	1884365	708	1901189			
Bhilwara	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	654	1884365	654	1884365	
Jaipur	1	41	-	-	-	-	-	41	12024	-	-	-	-	-	-	-	-	-	-	41	12024	
Jhunjhunu	1	10	-	-	-	-	-	10	2870	2	-	-	-	-	2	585	-	-	-	12	3455	
Sikar	1	1	-	-	-	-	-	1	1345	-	-	-	-	-	-	-	-	-	-	1	1345	
Telangana #	2(1)	2	39	-	-	-	-	41	24494	1	-	-	-	-	1	210	-	-	-	42	24704	
Karimnagar	2	2	-	-	-	-	-	2	700	1	-	-	-	-	1	210	-	-	-	3	910	
Warangal	(1)	-	39	-	-	-	-	39	23794	-	-	-	-	-	-	-	-	-	-	39	23794	

* Only Labour Reported; # Figures are of districts which are part of present Andhra Pradesh and Telangana States.

**Table – 7 : Production of Iron Ore, 2013-14 and 2014-15
(By Frequency Groups)**

Production Group (in tonnes)	No. of mines	Production for the Group (in '000 tonnes)		Percentage in total production		Cumulative percentage	
		2013-14	2014-15 (P)	2013-14	2014-15 (P)	2013-14	2014-15 (P)
Total	322(18)	290(20)	152183	100.00	100.00	-	-
Up to 50,000	221(11)	189(12)	1014	0.67	0.66	0.67	0.66
50,001 – 1,00,000	15(6)	17(4)	1512	0.99	1.12	1.66	1.78
1,00,001 – 5,00,000	35(1)	38(4)	9892	6.50	8.25	8.16	10.03
5,00,001 – 10,00,000	16	17	10707	7.04	9.41	15.20	19.44
10,00,001 -15,00,000	4	6	4897	3.22	5.56	18.42	25.00
15,00,001 - 20,00,000	6	1	10597	6.96	1.20	25.38	26.20
20,00,001 and Above	25	22	113564	74.62	73.80	100.00	100.00

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Table – 8 (A) : Mine-head Closing Stocks of Iron Ore, 2013-14
(By States)

State	Lumps										Fines					Concentrates		Total Lumps, Fines & Concentrates
	Below 55% Fe	55%-below 58% Fe	58% below 60% Fe	60%-below 62% Fe	62%-below 65% Fe	65% Fe & above	Total	Below 55% Fe	55%-below 58% Fe	58%-below 60% Fe	60%-below 62% Fe	62%-below 65% Fe	65% Fe & above	Total	Total			
																2013-14	2013-14	
India	4594	2437	1417	2060	7119	2117	19744	28194	30073	4679	21533	16790	3264	104533	101	124378		
Andhra Pradesh #	455	9	-	-	1	++	465	348	-	-	-	++	1	349	-	814		
Chhattisgarh	9	4	1	10	189	518	731	93	94	49	336	1107	702	2381	-	3112		
Goa	444	263	227	48	36	-	1018	1768	940	376	293	354	-	3731	5	4754		
Jharkhand	403	552	69	116	349	-	1489	2144	20571	288	830	764	-	24597	-	26086		
Karnataka	1925	584	674	655	1941	194	5973	2291	1383	865	1071	984	17	6611	-	12584		
Madhya Pradesh	481	158	23	-	-	-	662	1505	576	79	-	-	-	2160	-	2822		
Maharashtra	7	8	11	2	++	-	28	4	++	34	-	-	-	38	-	66		
Odisha	824	856	412	1229	4603	1405	9329	20015	6509	2988	19003	13581	2544	64640	93	74062		
Rajasthan	2	-	-	-	-	-	2	1	-	-	-	-	-	1	3	6		
Telangana #	44	3	-	-	-	-	47	25	-	-	-	-	-	25	-	72		

Figures are of districts which are part of present Andhra Pradesh & Telangana states.

Table – 8 (B) : Mine-head Closing Stocks of Iron Ore, 2014-15 (P)
(By States)

State	Lumps										Fines					Concentrates		Total Lumps, Fines & Concentrates
	Below 55% Fe	55%-below 58% Fe	58% below 60% Fe	60%-below 62% Fe	62%-below 65% Fe	65% Fe & above	Total	Below 55% Fe	55%-below 58% Fe	58%-below 60% Fe	60%-below 62% Fe	62%-below 65% Fe	65% Fe & above	Total	Total			
																2014-15 (P)	2014-15 (P)	
India	6899	2234	7990	2051	6667	1822	27663	26144	28494	5044	20333	12518	8368	100901	100	128664		
Andhra Pradesh	518	9	-	-	2	++	529	466	-	-	-	++	1	467	-	996		
Chhattisgarh	35	8	8	7	83	184	325	179	114	68	391	1499	695	2946	-	3271		
Goa	350	78	144	++	1	-	573	1745	585	318	199	339	-	3186	5	3764		
Jharkhand	373	534	83	63	178	80	1311	2031	20254	47	607	873	150	23962	-	25273		
Karnataka	3829	352	620	1074	1886	141	7902	1266	598	1478	1254	1310	39	5945	-	13847		
Madhya Pradesh	692	159	21	-	-	-	872	2590	470	54	-	-	-	3114	-	3986		
Maharashtra	23	7	7	32	++	-	69	345	4	++	3	-	-	352	-	421		
Odisha	998	1077	7107	875	4517	1417	15991	17497	6469	3079	17879	8497	7483	60904	83	76978		
Rajasthan	26	-	-	-	-	-	26	-	-	-	-	-	-	-	12	38		
Telangana	55	10	-	-	-	-	65	25	-	-	-	-	-	25	-	90		

MINING, MARKETING & TRANSPORT

Iron ore mining is carried out by opencast method, by manual, semi-mechanised and mechanised operations.

The method of mining and deployment of machinery vary from place to place depending upon characteristics of iron ore as per geological set up. Large mechanised mines are mostly in the Public Sector. Manual and semi-mechanised mines are mainly in Private Sector. Some mechanised mines in Goa, Jharkhand and Odisha are also operated by the Private Sector.

Manual Mines

Generally, these mines are confined to float ores where mining is done by digging the ore with pick axes, crow bars, chisels and spades. The mined material is screened manually to separate +10 mm float ore which is then stacked separately. The waste is backfilled into the pits. In some reef workings, 35-40 mm diameter holes are drilled to 0.6 m depth by hand-held jackhammers at a spacing of about 0.6 m and each hole is charged with 150-200 g gunpowder or special gelatine cartridges. Blasted tonnage per kg gunpowder is usually 2.5-3 tonnes. Blasted ore is manually loaded into trucks for transport to either railway sidings or to buyer's destination directly. Output per man shift (OMS) is normally between 1.5 and 2 tonnes.

Mechanised Mines

Most of the mechanised mines are captive belongings of different steel plants and have been developed to cater to specific requirements. Mining is done by formation of systematic benches in overburden and ore. The height of the benches normally varies from 10 to 12 m and width up to 20 m in the ore. Drilling holes of 300 mm diameter and till 12 m depth by crawler drills and use of explosives, such as, ANFO, SMS and emulsion explosives for blasting are in practice. Loading is done by earth-moving machinery powered by diesel or electric engines, such as, hydraulic excavators in the range from 1.9 cu m to 10 cu m. Ripper dozers and motor graders are also deployed for excavation and levelling purposes.

In some Goan mines, where ore is predominantly in powdery form, hydraulic shovels with boom height of 9 m are used for excavation and loading. Heavy-duty Ripper-Dozers are preferred for mining as Goan ores are soft. Height of the benches is restricted to 7 m for safe and efficient operations. Width of working benches is maintained at more than 15 m and bench slope is maintained at about 80°. The ore produced is transported to short distances by dumpers up to 40-tonne capacity. For longer distances and barge loading, dumpers/trucks up to 10-tonne capacity are used. The barges carry the ore to harbours. The ore from the barges is loaded to ships either through berth or through transshippers.

Almost all the Public Sector mines including Kiriburu, Barsua, Gua, Bailadila, Donimalai, Daitari and Dalli-Rajhara operated by SAIL, NMDC and OMC are fully mechanised. Kudremukh iron ore mine of KIOCL closed since December 2005 was also mechanised. In Private Sector, mines operated in Goa region and Tata Steel's captive mines are mechanised. Approximately, 90% iron ore production comes from mechanised mines. NMDC operates a couple of large mechanised iron ore mines in the country at Bailadila (Chhattisgarh) and Donimalai (Karnataka). With a strategic vision to augment production, the construction of Deposit 11B mine at an enhanced capacity of 7.0 million tonnes ROM per annum has been taken up. The construction of Kumaraswamy Iron Ore Mine with capacity of 7.0 million tonnes per annum is being taken up. The entire project is being executed through six packages. Orders have been placed for all the packages and the major works have been completed. To augment the production capacity of Kirandul complex, the construction of 12.0 million tpy screening plant with loading facilities is envisaged. This plant caters to both Deposit 11-B & Deposit 14 of Kirandul complex. The entire project has been planned to be executed in seven packages.

The processing of iron ore in the country involves crushing, screening, washing and in some cases beneficiation and agglomeration. Crushing and screening are adopted mainly for sizing the ore and also for removing the adherent gangue minerals. Dry and wet grinding is also resorted to in some cases.

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The lumps and fines of iron ore are marketed after washing, screening and beneficiation. Fines are converted into sinters for use in steel plants while pellets made from concentrates/fines are predominantly exported and also are utilised for internal consumption in sponge iron units.

ENVIRONMENTAL FACTORS

Afforestation, waste dump management, top soil management, management of sub-grade minerals, mechanical beneficiation, dust suppression, monitoring of water & air quality, vibration survey, publicity and propaganda are some common environmental restoration efforts pursued by all mechanised and semi-mechanised iron ore mines. Mining and beneficiation of ores carried out on large-scale cause environmental problems. A specific problem in iron ore mining is the disposal of tailings and other deleterious silica minerals and phosphorous. To safeguard the environment and prevent ecological degradation, thrust has been laid on green belt development, solid waste management, monitoring of liquid & air effluents and other crucial environmental parameters.

Goa region is prone to siltation of agricultural fields, nallahs, riverbeds and creeks due to wash off from iron ore dumps in rainy season. Loss in crop yield and reduction in fish population in streams and navigation difficulties are the problems caused by silting. To overcome these problems, check dams and water filter beds at higher contours have been constructed. Tailing ponds are also being maintained at some mines. Afforestation is the mainstay in reclaiming the mined out areas in Goa. In a few cases, pits are used as water reservoir for pisciculture.

In Ballari-Hospet area, Karnataka, dust concentration (suspended particulate matter) is the main environmental problem. Environmental concerns had led to closing down of mining operations at Kudremukh iron ore mine of KIOCL in December 2005, in compliance with the order passed by the Hon'ble Supreme Court in this regard. In Bailadila Sector, Chhattisgarh, forest is fairly widespread and dense, supported by

good rainfall and rich flora and fauna. The deforestation taking place due to mining and waste dumping needs to be compensated continuously by afforestation at suitable slopes and in township areas. In Jharkhand, afforestation of land is the main recourse adopted for reclamation of degraded lands or improvement in land uses.

INDUSTRY

Iron ore is the basic raw material used for making pig iron, sponge iron and finished steel. The iron ore is used mainly in blast furnaces, mini-blast furnaces (MBF), DRI & sintering and pelletisation plants.

Pelletisation

In general, the pelletisation process involves mixing of iron ore and required limestone with water which later is ground in ball mills to the desired size. The discharged slurry from ball mills is filtered in pressure filters. The filter cake from filters is then mixed with dry-ground coke fines to which bentonite is mixed in suitable proportion to form green pellets in pelletising discs. The coke fines and bentonite are ground separately. The green pellets are then dried, heated and fired in indurating machine to produce iron ore pellets. There is an increasing trend for utilisation of pellets or sinters in the recent years. The use of pellets as feed in the blast furnace has several advantages because of their uniform size, known composition and strength. Iron ore pellet is a kind of agglomerated fines which has better tumbling index as compared to that of parent ore and can be used as a substitute used in blast furnaces in countries where lump ore is not available.

The twenty-one pelletisation plants in the country, about which information is available have a total capacity of 59.79 million tonnes per annum. The JSW Steel Ltd Company has a manufacturing capacity of 9.2 million tonnes of pellets annually at Vijayanagar. The pellet production unit consists of India's first dry process pelletising plant, ideally suited for the soft iron ore

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of Ballari-Hospet region. Amba River Coke Limited a wholly subsidiary Company of JSW Steel has set up a 4 million tpy pellet plant at Dolvi.

Jindal Steel & Power Ltd has a total installed capacity of 9 MTPA production for different grades of pellets and has commenced production of pellets from its second unit of 4.5 MTPA iron ore pelletisation plant at Barbil.

Essar Steel Pelletisation plant at Visakhapatnam has installed capacity of 8 million tonnes per annum. The plant receives iron ore slurry which after pelletisation is provided as vital raw material for their steel plant at Hazira (Gujarat). Setting up of integrated pelletisation facility of 12 million tpy is under progress at Paradip, Odisha, and is implemented in two phases by Essar Steel. Successful commissioning of Phase I (6 million tpy) has been completed, while the second phase is under construction. The 1st Phase pellet plant at Paradip has an assured supply of high-quality iron ore from the beneficiation plant at Dabuna. The plant's proximity to the Paradip port ensures expeditious shipment of pellets to their steel plant in Hazira. After completion of second phase, the capacity of pellet plant, at Paradip, Odisha, would get scaled up to 12 million tpy and the total pellet plant capacity of the Company would get augmented to 20 million tpy.

NMDC is in the process of setting up two Pellet plants, one at Donimalai in Karnataka with 1.2 million tpy capacity by using slimes of tailing dam of Donimalai and the second at Nagarnar with 2 million tpy capacity, along with 2 million tpy beneficiation plant at Bachelu interconnected by a slurry pipeline between Bachelu and Nagarnar in Chhattisgarh.

The installation of a 1.8 MTPY pelletisation plant by M/s Monnet Ispat and Energy Ltd has been completed and is at commissioning stage.

To ensure gainful use of the extra-fine iron ore fines which are generated while mining and processing, Tata Steel has implemented a 6 million tpy pelletising plant in Jamshedpur with capabilities to convert these fines into pellets for use as replacement of iron ore lumps as a blast

furnace feed. This not only is aimed at contributing significantly to energy savings in the blast furnace operations but also at cutting cost of operations. The Eastern region accounts for 55% of the total number of iron ore pellet units in the country, the rest 45% is equally divided between the Southern and Western part. The Northern region is devoid of any presence as far as the Iron Ore Pellet Industry is concerned—a key feature of this Industry, which is in sync with the pattern of spread of the Indian Sponge Iron Industry.

Steel plants are likely to increase usage of pellets in their production process to reduce pollution and increase productivity. Moreover, the forecast of spike in growth in Infrastructure, Real Estate and Automobile Sectors in the ensuing years is expected to augment demand for steel, which in turn would raise the demand and prices of pellets in the near future.

To encourage beneficiation and pelletisation of iron ore fines in the country, basic customs duty on the plants and equipment required for initial setting up or for substantial expansion of iron ore pellets plants and iron ore beneficiation plants has been reduced from 7.5% to 2.5% w.e.f 17th March 2012. To ensure easy availability of raw material in domestic market at reasonable prices, export duty on iron ore @ 30 % and export duty on iron ore pellet @ 5% were imposed.

Sintering

In sintering process iron ore fines, other iron-bearing wastes and coke dust are blended and combusted. The heat fuses the fines into coarse lumps that can be charged to a blast furnace. The sintering plants in the country, about which information is available, have a total capacity of about 71.11 million tonnes per annum. Most of the integrated steel plants (ISP) in the country have their own sintering plants. Sinter plants receive raw material mostly from their captive mines. Steel Authority of India Ltd (SAIL) had started its commercial production in December 2012 at IISCO steel plant in West Bengal, with a capacity of 3.8 million tonnes per annum. The installation of a 0.75 MTPY sinter plant by M/s

Monnet Ispat and Energy Ltd has been completed and is at commissioning stage. Pellets along with sinters have resulted in growth in utilisation of iron ore fines and blue dust. Information on capacity and production of pellets and sintering plants is provided in Table-9.

Pig Iron

Pig iron is one of the basic raw materials required by Foundry and Casting Industry for manufacturing various types of castings for the engineering section. The post-liberalisation regime has witnessed Expression of Interest from a large number of entrepreneurs for setting up mini-blast furnaces for production of hot metal/pig iron. Commissioned pig iron units are mostly of stand-alone type.

Sesa Goa Limited, one of the largest producers and exporters of iron ore in the Private Sector, has commissioned its third blast furnace of 450 m³ capacity with hot metal production from August 17, 2012. With this commissioning, Sesa's pig iron plant becomes the largest producer of low phosphorous pig iron in India with an installed capacity of 0.625 million tpy which is higher than the earlier capacity of 0.250 million tpy. The Company has also successfully completed the expansion of its metallurgical coke capacity from 0.28 million tpy to 0.56 million tpy along with the 30 MW waste heat recovery power plant.

KIOCL also has its Pig Iron Complex (Blast Furnace Unit) at Mangaluru for manufacturing and supplying pig iron of foundry grade to the domestic market. However, the operation of this unit is kept under suspension since 2009 due to negative contribution.

India is an important producer of pig iron. The production for sale of pig iron in the country in 2014-15 was 9.69 million tonnes. Post-liberalisation, with setting up of several units in the Private Sector, not only imports have drastically reduced but also India has turned out to be a net exporter of pig iron. The Private Sector accounted for 91% of total production for sale of pig iron in the country in 2014-15. The production for sale of pig iron has increased from 1.6 million tonnes in 1991-92 to 9.69 million tonnes in 2014-15.

Sponge Iron

India is the world's largest producer of sponge iron or Direct Induced Iron (DRI) with a host of coal-based units located in the mineral-rich states of the country. Over the years, the coal-based route has emerged as a key contributor and accounted for 90% of the total sponge iron production in the country in 2014-15. The growth of Sponge Iron Industry during the last few years in terms of capacity has been substantial. The installed capacity of sponge iron increased from 1.52 million tonnes per annum in 1990-91 to around 48.63 million tonnes in 2014-15. Production has increased from 0.9 million tonnes in 1990-91 to 24.24 million tonnes in 2014-15. India has been the world's largest sponge iron producer every year since 2003.

Sponge iron is a good substitute for scrap which is required by the electric arc furnaces and induction furnaces or mini-steel plants in the country. The availability of indigenous metal scrap is scarce, and therefore, to meet the domestic demand, scrap is usually imported. Sponge iron is a viable alternative for scrap and is produced by direct reduction of high-grade iron ore or pellets to metallic iron ore in solid state by using coal or natural gas as reductant. It is also known as Direct Reduced Iron (DRI) or Hot Briquetted Iron (HBI).

Iron & Steel

The details of the Iron & Steel Industry are provided in the Review on "Iron & Steel and Scrap".

Ferro-alloys

Iron is an important constituent of ferro-alloys, like ferro-manganese (high carbon, medium carbon and low carbon), ferro-silicon, ferro-chrome (high carbon and low carbon)/charge-chrome, ferro-molybdenum, ferro-vanadium, ferro-tungsten, ferro-silicon-magnesium, ferro-aluminium, ferro-silicon-zirconium, ferro-titanium, etc. Ferro-alloys in turn are either used in Steel Industries to impart some special qualities or are exported. The details about the Ferro-Alloys Industry are provided in the Review on 'Ferro-Alloys'.

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Cement

Iron ore lumps and powder containing +58% Fe, are normally used in the Cement Industry as they improve burning properties, impart colour and balance the composition of the mix. Further details about the Cement Industry are provided in the Review on 'Cement'.

Coal Washeries

Magnetite ore is used as heavy media in coal washeries. As information available in Energy Statistics 2015, there are 18 washeries for coking coal and 34 washeries for non-coking coal with 29.69

million tpy and 101.55 million tpy installed capacity, respectively. Details on the coal washeries are provided in the Review on 'Coal & Lignite'.

USES & SPECIFICATIONS

Iron ore is mainly used for manufacturing pig iron, sponge iron and steel. It is also used in cement, coal washeries, ferro-alloys, foundry, vanaspati and glass industries. The specifications of iron ore consumed by major sponge iron plants are furnished in Table-10 and by major steel plants in Table-11.

**Table – 9 : Installed Capacity & Production of Pellets/Sinters, 2014-15
(By Plants)**

Name & location of plant	Annual installed capacity	Production				Iron ore fines consumed		General specifications of concentrates/fines used		
		2013-14		2014-15 (P)		2013-14			2014-15 (P)	
(In '000 tonnes)										
A) Pellet Plants										
i) Rashmi Metaliks Ltd, Shyamraipur, Gokulpur, West Midnapore, West Bengal	1800	578	1082	NA	NA	NA				
ii) JSW Steel Ltd, Vijaynagar Works, Vidyanagar, Toranagally, Ballari, Karnataka	9200	3884	4710	9573	13602	NA				
iii) Arya Iron & Steel Co.Pvt. Ltd, Matkambea Barbil, Odisha	1200	925	NA	997	NA	NA				
iv) Ardent Steel Ltd Phuljhar, Keonjhar, Odisha	600	NA	NA	NA	NA	NA				
v) Sarda Energy and Minerals Ltd, Siltara Raipur, Chhattisgarh	600	52	NA	75	NA	-				
vi) KIOCL Ltd, Panambur, Mangaluru, Karnataka.	3500	1710	785	1710	745	Fe 64%, SiO ₂ + Al ₂ O ₃ 6% (max.), S 0.05%, P 0.08% (max.), Size - 10 mm.				
vii) Tata Steel Limited, Jamshedpur	6000	4492	5409	15962	15688					
viii) Essar Steel Ltd, Visakhapatnam, Andhra Pradesh.	8000	NA	NA	NA	NA	NA				
ix) Essar Steel Ltd, Paradip Port, Odisha.	6000	NA	NA	NA	NA	NA				
x) Jindal Steel & Power Ltd, Barbil	9000	NA	NA	NA	NA	NA				

(Contd.)

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Table - 9 (Contd.)

(In '000 tonnes)

Name & location of plant	Annual installed capacity	Production		Iron ore fines consumed		General specifications of concentrates/fines used
		2013-14	2014-15 (P)	2013-14	2014-15 (P)	
xi) Godawari Power & Ispat Ltd Siltara, Chhattisgarh	2100	903	1532	986	1646	NA
xii) BMM Ispat, Karnataka.	2400	NA	NA	NA	NA	NA
xiii) Mandovi Pellets Ltd, Near Borim Bridge, Shiroda, Goa – 403 103.	1800	NA	NA	NA	NA	Fe 62%, SiO ₂ 2 to 3.5%, Al ₂ O ₃ 1.35 to 2%, Size - 10 mm.
xiv) Jayaswal Neco Industries Ltd, Siltara, Raipur, Chhattisgarh.	792	NA	NA	618	568	NA
xv) Shri Bajarang Power & Ispat Ltd, Borjhara, Tilda & Gondwara, Raipur Chhattisgarh.	1200	467	NA	-	NA	
xvi) Xindia Steels Ltd, Kunikere & Hirebaganal Ginigera, Koppal, Karnataka.	800	717	NA	-	NA	
xvii) Rexon Strips Ltd, Kumakela, Lathikata Rourkela, Sundargarh, Odisha	300	383	NA	NA	NA	
xviii) Orissa Manganese & Minerals Limited (OMML), Kandra Saraikela Kharsawan, Jharkhand	1200	NA	NA	NA	NA	NA
xix) Arya Iron and Steel Company (AISCO) Barbil, Odisha	1200	NA	NA	NA	NA	NA
xx) MSP Steel & Power Ltd, Raigarh, Chhattisgarh	900	NA	NA	NA	NA	NA
xxi) Usha Martin Ltd, Usha Alloy & Steel Division, Jamshedpur	1200	136	671	1466	2461	NA
B) Sintering Plant						
i) Bokaro Steel Plant, Jharkhand.	6900	4664	5062	3454	3806	Fe 63.88% (max.), SiO ₂ 5.19% max, Al ₂ O ₃ 2.69% (Av), Size - 3 mm.
ii) Bhilai Steel Plant, Bhilai, Chhattisgarh.	8380	NA	NA	NA	NA	Fe 62.6% (min.), Size 0-10 mm or <10% & 1 mm or >75%.
iii) Durgapur Steel Plant, West Bengal.	3009	3105	3991	2335	2425	Fe >63%, SiO ₂ 2.17 to 4.54%, Al ₂ O ₃ 2.57 to 3.03%, Size +10 mm <10% , 1mm>75%
iv) Rourkela Steel Plant, Odisha.	5300	3763	4010	2874	3406	Fe 62.80%, SiO ₂ 2.28%, Al ₂ O ₃ 3.04%, Size -10 mm.
v) RINL, Visakhapatnam Steel Plant, Plant No. -1 & 2 , Visakhapatnam Andhra Pradesh.	5256	5101	NA	3791	NA	Fe 64.50% (min.), Al ₂ O ₃ 3.0% (max.), SiO ₂ 3% (max.), Size (-) 10 mm.
vi) RINL, Visakhapatnam Steel Plant, Plant No. -3, Visakhapatnam, Andhra Pradesh.	3600	NA	NA	NA	NA	NA

(Contd.)

IRON ORE

Table - 9 (Concl'd.)

(In '000 tonnes)

Name & location of plant	Annual installed capacity	Production		Iron ore fines consumed		General specifications of concentrates/fines used
		2013-14	2014-15 (P)	2013-14	2014-15 (P)	
vii) Tata Steel Ltd, Jamshedpur, Jharkhand.	7700	7648	7370	15962	15688	Fe 63 %, Size +10 mm.
viii) Usha Martin Ltd (Usha Alloys and Steel Division), Jamshedpur.	715	630	NA	1466	NA	NA
ix) JSW Ispat Steel Ltd, Dolvi, Raigad, Maharashtra 402 107.	2800	NA	NA	NA	NA	NA
x) Neelachal Ispat Nigam Ltd, Kalinga Nagar, Industrial Complex, Duburi-755 026, Distt. Jajpur, Odisha.	1711	NA	NA	NA	NA	Fe 63% (min.), S ize + 10 mm
xi) Jindal Steel & Power Ltd, Raigarh, Chhattisgarh.	2300	NA	NA	NA	NA	NA
xii) Jayaswal Neco Industries Ltd, Siltara Growth Centre, Raipur-493 221, Chhattisgarh.	1200	-	-	618	568	Fe 56.5 %, CaO 9.0%, MgO 2.25%.
xiii) Bhushan Power & Steel Ltd, Sambalpur, Odisha.	1000	NA	NA	NA	NA	NA
xiv) JSW Steel Ltd Salem Works , Pottaneri, Salem, Tamil Nadu.	1180	1245	1275	736	775	NA
xv) Kirloskar Ferrous Industries Ltd, Bevinahalli, Hitnal, Karnataka.	500	377	448	211*	185*	NA
xvi) Sunflag Iron and Steel Co. Ltd, Bhandara, Nagpur, Maharashtra.	364	NA	NA	NA	NA	NA
xvii) JSW Steel Ltd Vijaynagar Works, Vidyanagar -583 175, Tornagallu, Ballari, Karnataka.	12950	12755	13386	9573	13602	NA
xviii) Kalyani Steel Ltd, M/s Hospet Steels Ltd., Ginigera, Koppal, Karnataka	500	246	247	100	162	Fe: 60 - 62%
xix) Mukund Ltd, M/s Hospet Steel Ltd, Ginigera, Koppal, Karnataka	500	309	336	207	184	Fe: 60 - 62%
xx) Rashmi Metaliks Ltd, Shyamraipur, Gokulpur, West Midnapore, West Bengal.	580	274	199	NA	NA	NA
xxi) IISCO Steel Plant, Steel Authority of India, Burnpur, West Bengal.	3800	113	658	103	579	NA
xxii) Tata Metaliks Ltd, Kharagpur, West Bengal.	528	396	476	300	362	NA
xxiii) KIC Metaliks Ltd, Raturia, Angadpur, Durgapur, West Bengal.	336	84	194	123	238	NA

* Includes iron ore lumps & low-grade iron ore.

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Table - 10 : Specifications of Iron Ore Consumed by Major Sponge Iron Plants

Sl. No.	Name of the Plant	Specifications				
		Size	Fe	Al ₂ O ₃ + SiO ₂	P	S
1.	Orissa Sponge Iron Plant	5-18 mm	65% min.	4.5% max.	0.03% max.	N. A.
2.	Welspun Max Steel Ltd	9-16 mm	66%	2.6% max.	0.05%	0.01%
3.	Sunflag Iron & Steel Ltd	5-20 mm	67.5%	–	–	–
4.	NMDC Ltd (Sponge iron unit)	6-20 mm	55-58% & 64-66%	–	–	–
5.	Essar Steel Ltd	10-40 mm	67%	2.60% max.	0.05%	0.01%
6.	Jindal Steel & Power Ltd	10-30 mm	65% min.	3% max. (SiO ₂)	0.05%	–
7.	Tata Sponge Iron Ltd	5-18 mm	65% min.	5% max.	–	–
8.	Steel Exchange India Ltd	10-40 mm	62%	–	–	–
9.	Sarda Energy & Minerals Ltd	5-18 mm	65-66%	–	–	–
10.	OCL Iron & Steel Ltd	Sized	62% min.	–	–	–
11.	Nalwa Steel & Power Ltd	5-20 mm	63% min.	–	–	–
12.	Shri Bajrang Power & Ispat Ltd	5-18 mm	64% min.	–	–	–
13.	Jai Balaji Industries Ltd	5-18 mm 10-30 mm 10-150 mm	65% – –	5% – –	0.05% – –	0.03% – –

CONSUMPTION

In 2014-15, about 113.48 million tonnes iron ore were consumed in various industries like Iron & Steel, Sponge Iron, Ferro-alloys, Alloy-steel, Coal Washery and Cement. Iron & Steel including

Sponge Iron industries were the major consumer of iron ore and accounted for over 99% of the consumption. Plant-wise consumption of iron ore in steel plants about which information is available is furnished in Table-11. Industry-wise consumption of iron ore from 2012-13 to 2014-15 is detailed in Table-12.

Table – 12: Consumption* of Iron Ore[@] 2012-13 to 2014-15 (By Industries)

Industry	(In tonnes)		
	2012-13	2013-14 (R)	2014-15 (P)
All Industries	103589700	108339300	113480600
Alloy steel	2600(2)	2600(2)	2600(2)
Cement	1586200(70)	1455000(71)	1397000(72)
Ferro-alloys	3700(4)	3700(4)	3900(5)
Coal washery **	31100(18)	30800(18)	30800(18)
Iron & steel	72089700(20)	77723100(21)	79434300(21)
Sponge iron	29872100 ^(e)	29120000 ^(e)	32608000 ^(e)
Others (electrode, foundry, oil well drilling, paint, refractory)	4300(10)	4100(11)	4000(11)

Figures rounded off.

Figures in parentheses denote the number of units in organised sector.

[@] Does not include consumption of pellets & sinters; includes consumption of iron ore (fines) consumed in the production of pellets & sinters.

** Magnetite.

* Paucity of data hence coverage may not be complete.

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**Table – 11 : Consumption and Specifications of Iron Ore, 2013-14 and 2014-15
(By Steel Plants)**

(In '000 tonnes)

Steel plant	Iron ore consumption				Specifications
	2013-14		2014-15 (P)		
	Lumps	Fines	Lumps	Fines	
Bokaro Steel Plant, Bokaro, Jharkhand.	2713	3454	2635	3806	Lumps: Fe-63.40%, SiO ₂ :2.25%, Al ₂ O ₃ 2.39%, Size: 10-40 mm. Fines: Fe - 62.24%, SiO ₂ - 3.36%, Al ₂ O ₃ - 3.45%
Durgapur Steel Plant, Durgapur, West Bengal.	1260	2335	1244	2425	Lumps : Fe - 62.48%, Al ₂ O ₃ - 2.42%, Size: 10-50 mm. Fines: Fe - 62.8%, SiO ₂ - 2.28%, Size : -10 mm.
IISCO Steel Plant, Burnpur, West Bengal.	333	103	444	579	Lumps: Fe - 62.86%, SiO ₂ - 2.56%, Al ₂ O ₃ - 2.56% (max.), Size: 10-40 mm .
Rourkela Steel Plant SAIL, Rourkela, Odisha.	1583	2874	1761	3406	-
Tata Metaliks Ltd Kharagpur West Bengal.	357	300	277	362	-
Mukund Ltd, M/s Hospet Steel Ltd, Giniger, Koppal, Karnataka.	220	207	306	184	-
JSW Steel Ltd Salem Works , Pottaneri, Salem, Tamil Nadu.	556	736	596	775	-
Kalyani Steel Ltd, M/s Hospet Steels Ltd., Giniger, Koppal, Karnataka.	187	100	219	162	-
JSW Steel Ltd Vijaynagar Works, Vidyanagar -583 175, Tornagallu, Ballari, Karnataka.	8657	9573	4669	13602	-

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TRADE POLICY

As per the Foreign Trade Policy (FTP) for 2015-20 and the amended Export and Import Policy incorporated in the FTP, the present export

policy for iron ore is furnished below in brief. As per the policy, imports of iron ore lumps, fines, concentrates and agglomerated pellets are freely allowed.

HS Code	Item	Export Policy	Nature of restrictions
26011100	Iron ore other than those specified under Free category.	STE	Export through MMTC
26011100	Iron ore of Goa origin when exported to China, Europe, Japan, South Korea and Taiwan, irrespective of the Fe content.	Free	
26011100	Iron ore of Redi origin to all markets, irrespective of the Fe content.	Free	
26011100	All iron ore of Fe content up to 64%.	Free	
26011150	Iron ore concentrate prepared by beneficiation and/or concentration of low-grade ore containing 40% or less of iron produced by KIOCL Ltd.	STE	KIOCL Ltd, Bengaluru
26011210	Iron ore pellets manufactured by KIOCL Ltd.	STE	KIOCL Ltd, Bengaluru
26011290	Rejects of iron ore chips and like generated from the manufacturing process after using imported raw material.	Free	The quantity of export of such rejects shall not be more than 10% of the imported raw materials i.e. pellets. The size of the rejected pellets chips (fines) shall be less than 6 mm.

Source: Export-Import Policy, 2015-20 ; STE: State Trading Enterprise

WORLD REVIEW

The world reserves of crude iron ore are estimated to be around 190 billion tonnes. In term of iron content, the iron ore reserves are estimated to be around 85 billion tonnes. The world reserves of crude iron ore and iron content by principal countries is furnished in Table - 13.

In 2014, the world production of iron ore was 3,378 million tonnes as against 3,180 million tonnes in the previous year. China (45%), Australia (22%), Brazil (10%), India (4%) and Russia (3%) were the principal producers. These five countries accounted for about 84% of the world production of iron ore. The world production of iron ore is provided in Table-14.

Australia

Australia's reported Economic Demonstrated Resources increased by year end 2014 to 54.4 Gt with

24.6 Gt of contained iron; however, the estimated resource life decreased to 75 years from the 85 years estimated in 2013.

The three leading miners in Australia—BHP Billiton Ltd., Fortescue Metals Group Ltd., and Rio Tinto Group—were three of the four leading iron ore mining companies in the world and accounted for over 70% of production in Australia in 2014. Operations in Australia were affected by seasonal cyclone. All three mining companies focused on adding capacity while reducing production costs, which ranged from less than \$20 per metric ton to around \$35 per metric ton for iron ore mined in situ.

BHP Billiton's share of production among Australian operations in FY 2014 rose to 193 Mt, a 21% increase from 159 Mt in FY 2013.

Fortescue's production in FY 2014 increased to 140 Mt, a 48% increase over the 94.6 Mt produced in FY 2013.

IRON ORE

Rio Tinto's share of production among Australian operations in 2014 was 225 Mt, a 12% increase compared with the 200 Mt produced in 2013. Rio Tinto completed its first-phase expansion at Pilbara to reach a 290-Mt/yr capacity with a second-phase expansion planned to reach 330 Mt/yr in 2015 and 350 Mt/yr in 2017. The company continued investing in automated technologies to lower costs and improve efficiencies, which included converting four drills to an autonomous drilling system, expanding automated haulage systems, and testing autonomous heavy-haul rail system.

Brazil

Vale S.A.'s production in 2014, including Vale's share of production at the Samarco Mine, was 332 Mt, 7% greater than the 311 Mt produced in 2013. Of the total ore produced, pellets accounted for 55.1 Mt in 2014, an increase from 49.6 Mt in 2013. The Samarco Mine began operations at a fourth pellet plant, increasing capacity by 8.3 Mt/yr to 30.5 Mt/yr. Anglo American plc completed the Minas-Rio project. The Minas-Rio Mine, an open pit mine and processing facility, was expected to produce 11 to 14 Mt (wet basis) at 67% Fe in 2015 and 24 to 26.5 Mt in 2016.

China

In 2014, stockpiles of iron ore in China surpassed 100 Mt for the first time since 2012. Traders reportedly increased stockpiles of iron ore to use as collateral for credit. The China Metallurgical Mining Enterprise Association reported that 20% to 30% of iron ore mines in China closed or were idled in 2014 owing to low prices. Credit Suisse Group AG estimated that production in China will decline by 16% to 310 Mt in 2014 and to 275 Mt in 2015. Some mines in China, notably those owned by steel mills or central Government enterprises, were expected to maintain operations despite price forecasts ranging from \$70 to \$90 per ton. A study by the China Iron and Steel Association indicated that more than 20 major iron ore mines in China that were owned by major steel mills maintained consistent production rates throughout 2013. Producers in China's larger Provinces, such as Anhui, Guangdong, Hubei and Sichuan, increased production in 2014.

Canada

The Mary River Mine began shipping iron ore to its port site for stockpiling in preparation for exporting in the summer of 2015, when the weather is favourable. Rio Tinto's subsidiary, Iron Ore Co. of Canada, completed the second stage of its concentrate expansion plan by installing new equipment and upgrading infrastructure, enabling an additional 1.3 Mt of concentrate capacity.

ArcelorMittal Mines Canada completed the transition of the Fire Lake Mine to year-round operations, increasing production to 6.26 Mt of crude ore from 2.5 Mt in 2013, which was shipped to the Mont-Wright Mine for concentrating.

Cliffs Natural Resources Inc. idled its Wabush Scully Mine in Newfoundland and Labrador in March and began closure 5.6-Mt/yr-capacity facility, produced concentrates for pelletizing at the company's Pointe Noire plant in Quebec, which had been idled in the second quarter of 2013.

In November 2014, the company also began pursuing exit options for the Bloom Lake Mine, a 7.2-Mt/yr-capacity concentrate facility, owing to unfeasibility of the Phase 1 expansion and the mine's unprofitability. In December 2014, the mine was idled and its owners entered restructuring proceedings under Canada's Companies' Creditors Arrangement Act in January 2015.

India

The Honourable Supreme Court of India lifted mining bans in Goa after 19 months, although production was capped at 20 Mt/yr of iron ore. Steel Authority of India Ltd. announced a \$1.4 billion investment for expanding iron and steel operations, specifically at the Rowghat and Chiria Mines; the mines were expected to increase capacity to 14 Mt/yr and 15 Mt/yr, respectively, after completion.

Mexico

Authorities in Mexico closed 11 mineral loading docks, seized \$15 million worth of mining equipment, and confiscated 119,000 t of iron ore being exported by an organized crime group at the Port of Lazaro Cardenas in March, 2014. About 300,000 t of iron ore was stolen from mining companies in Michoacan in 2013, with an additional 100,000 t stolen from the nearby Port of Manzanillo in Colima in the first quarter of 2014. Authorities estimated that additional funds, averaging \$15 per ton of iron ore, were being surrendered by miners, shippers and foreign traders throughout the supply chain to the cartels.

Liberia

Arcelor Mittal S.A. delayed the \$1.7 billion expansion of its iron ore mine in Liberia, owing to volatile iron ore pricing and regional effects of the Ebola virus disease.

Cameroon

Noble Group Ltd. signed a 10-year contract, pending financier approvals, to purchase all iron ore produced at Sundance Resources Ltd.'s Mbalam-Nabebe project in Cameroon and the Republic of Congo that is not allocated to project equity participants.

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The project has reserves containing an estimated 436 Mt of iron ore at 62.6% Fe, and will have a planned 35-Mt/yr production capacity.

Pakistan

The Metallurgical Corp. of China signed an agreement with the government of Punjab Province to

**Table – 13 : World Reserves of Iron Ore
(By Principal Countries)**

(In million tonnes)

Country	Reserves	
	Crude ore	Iron content
World : Total (rounded)	190000	85000
Australia	54000	24000
Brazil	23000	12000
Canada	6300	2300
China	23000	7200
India	8100	5200
Iran	2700	1500
Kazakhstan	2500	900
Russia	25000	14000
South Africa	1000	650
Sweden	3500	2200
Ukraine	6500	2300
USA	11500	3500
Other countries	18000	9500

Source: Mineral Commodity Summaries, 2016.

FOREIGN TRADE

Exports

Exports of iron ore considerably decreased to 7.49 million tonnes in 2014-15 from 16.30 million tonnes in the previous year. In terms of value, the iron ore exports decreased to ₹ 3,212 crore in 2014-15 from ₹ 9,481 crore in 2013-14. The exports of iron ore in 2014-15 in terms of volume comprised iron ore fines (80%), iron ore pellets (10%), iron ore lumps (9%), and very negligible quantity of iron ore non-agglomerated concentrate and iron ore pyrites. Exports were mainly to China (60%), Japan (25%), Iran & Korea, Rep.of (7% each) (Tables- 15 to 20).

explore iron ore deposits in Chiniot. The Chiniot district was estimated to contain 600 Mt of iron ore resources, including 500 Mt of inferred or undiscovered resources and 100 Mt of indicated resources, of which 27 Mt were measured reserves. A study carried out by the Geological Survey of Pakistan indicated that the deposit contained iron grades ranging from 44% to 77% Fe.

**Table – 14 : World Production of Iron ore
(By Principal Countries)**

(In million tonnes)

Country	2012	2013	2014
World : Total	2980	3180	3378
Australia	520	612	746
Brazil	401	317	346
Canada *	39	43	44
Chile	17	17	19
China	1310	1451	1514
India**	137	152	129
Iran	43	49	50 ^e
Kazakhstan	53	52	52
Mauritania	11	13	13
Mexico	23	29	25
Russia	104	102	102
South Africa [@]	67	72	81
Sweden	32	37	36
USA	54	53	58 ^e
Ukraine	67	70	68
Venezuela	16	11	11
Other countries	86	100	84

Source: World Mineral Production, 2010-2014.

* Including by-product iron ore.

@ including by-product magnetite.

** India's production of iron ore in 2012-13, 2013-2014 and 2014-15 was 136.62 million tonnes, 152.18 million tonnes and 128.91 million tonnes, respectively.

Imports

Imports of iron ore increased drastically to 12.09 million tonnes in 2014-15 as compared to 0.37 million tonnes in the previous year. The imports in 2014-15 comprised iron ore non-agglomerated concentrates (41%), fines (40%), lumps (14%), iron ore pellets (5%) and negligible quantity of iron ore pyrites, etc. Imports of iron ore were from South Africa (42%), Brazil (28%), Australia (16%) and Canada (6%) (Tables-21 to 27).

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**Table – 15 : Exports of Iron Ore : Total
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
All Countries	16302	94811058	7491	32119579
China	13473	73378865	4480	12584967
Japan	1961	14873390	1882	11246552
Iran	34	337634	537	4831543
Korea, Rep. of	407	3065125	512	3046800
Oman	202	1804406	28	43779
UAE	52	64905	1	11888
Saudi Arabia	29	284977	++	7184
Nepal	3	5677	1	5050
Germany	++	53	++	1711
Unspecified	-	-	50	335987
Other countries	141	996026	++	4118

**Table – 16 : Exports of Iron Ore : Lumps
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
All Countries	1162	7618830	662	2559524
Japan	718	5674266	275	1496671
China	444	1943843	386	1059165
Nepal	++	714	1	3688
Other countries	++	5	-	-

**Table – 17 : Exports of Iron Ore : Fines
(By Countries)**

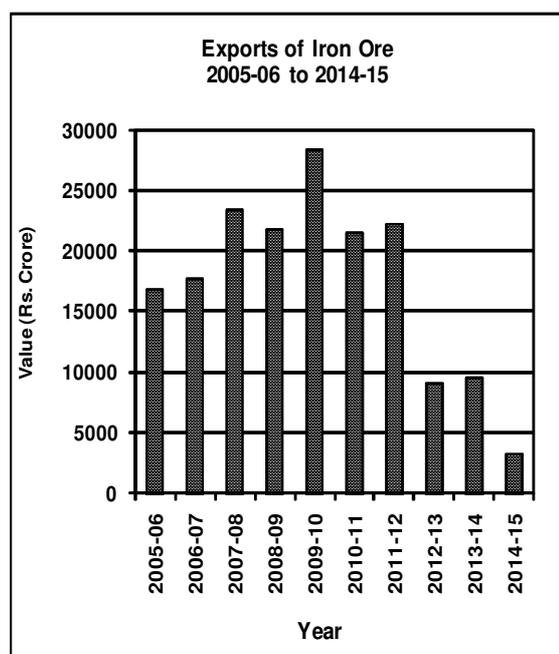
Country	2013-14		2014-15 (P)	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
All Countries	13261	71549670	5999	22803834
China	11564	59050677	3918	10251630
Japan	1243	9199124	1541	9460702
Korea, Rep. of	407	3064859	512	3046800
Oman	-	-	28	43779
Nepal	2	3575	-	876
USA	-	-	-	47
Other countries	45	231435	-	-

**Table – 18 : Exports of Iron Ore: Concentrates
Non-agglomerated
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
All Countries	163	323083	70	312791
Japan	-	-	66	289177
UAE	52	64867	1	10629
Saudi Arabia	-	-	++	6743
China	110	255406	3	5757
Nepal	1	1389	++	485
Other countries	++	1421	-	-

**Table – 19 : Exports of Iron Ore: Pellets
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
All Countries	1713	15316357	760	6434851
Iran	34	336285	537	4830448
China	1355	12128939	173	1268415
Unspecified	-	-	50	335987
Other countries	324	2851133	++	1



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**Table – 20 : Exports of Iron Ore : Pyrites
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (’000 t)	Value (₹’000)	Qty (’000 t)	Value (₹’000)
All Countries	3	3118	++	8579
Germany	-	-	++	1711
South Africa	-	-	++	1621
UAE	++	38	++	1260
Iran	++	1349	++	1094
UK	-	-	++	837
Italy	-	-	++	721
Saudi Arabia	++	241	++	441
Netherlands	-	-	++	390
Vietnam	-	-	++	342
Malaysia	-	-	++	92
Other countries	3	1490	++	70

**Table – 21 : Imports of Iron Ore: Total
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (’000 t)	Value (₹’000)	Qty (’000 t)	Value (₹’000)
All Countries	369	3423552	12093	65947416
South Africa	41	373604	5044	28973403
Brazil	-	-	3419	17634296
Australia	43	389602	1995	9929560
Canada	-	-	690	4089490
Mauritania	-	-	297	1386004
Oman	-	-	207	1297227
Malaysia	-	-	147	659058
Qatar	-	-	88	464950
Ukraine	5	46472	53	457406
Russia	194	1809137	49	448662
Other countries	86	804737	104	607360

**Table – 22: Imports of Iron Ore Concentrates:
Non-agglomerated
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (’000 t)	Value (₹’000)	Qty (’000 t)	Value (₹’000)
All Countries	11	79147	4939	24964706
South Africa	++	3229	1708	9117925
Brazil	-	-	1910	8935947
Canada	-	-	690	4089490
Australia	5	38731	335	1551599
Malaysia	-	-	147	658935
Mauritania	-	-	149	609027
Sweden	-	-	++	1405
China	-	-	++	147
Sudan	++	62	++	98
USA	-	-	++	55
Other countries	6	37125	++	78

**Table – 23 : Imports of Iron Ore : Pellets
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (’000 t)	Value (₹’000)	Qty (’000 t)	Value (₹’000)
All Countries	297	2748216	656	5151575
Brazil	-	-	323	2491750
Oman	-	-	93	822907
Australia	36	282015	79	585207
Ukraine	5	46472	53	457406
Russia	194	1809137	49	448662
Qatar	-	-	44	232472
China	-	-	10	68840
Finland	5	39646	5	44331
Other countries	57	570946	-	-

**Table – 24 : Imports of Iron Ore : Pyrites
(By Countries)**

Country	2013-14		2014-15 (P)	
	Qty (’000 t)	Value (₹’000)	Qty (’000 t)	Value (₹’000)
All Countries	2	44834	4	52272
Finland	2	31300	2	21425
Turkey	++	804	1	12257
Pakistan	++	243	1	6982
China	++	3190	++	6707
Italy	++	2732	++	3853
UAE	-	-	++	1015
USA	++	4257	++	32
Other countries	++	2308	++	1

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Table – 25 : Imports of Iron Ore : Pyrites Roasted (By Countries)

Country	2013-14		2014-15 (P)	
	Qty ('000 t)	Value (₹'000)	Qty ('000 t)	Value (₹'000)
All Countries	++	727	++	122
China	-	-	++	122
Other countries	++	727	-	-

Table – 26: Imports of Iron Ore : Lumps (By Countries)

Country	2013-14		2014-15 (P)	
	Qty ('000 t)	Value (₹'000)	Qty ('000 t)	Value (₹'000)
All Countries	59	551355	1657	10498236
South Africa	41	370374	1476	9424348
Australia	2	68856	133	826496
Qatar	-	-	44	232472
Senegal	15	106119	2	12174
Nicaragua	-	-	2	2620
China	-	-	++	125
Other countries	1	6006	++	1

FUTURE OUTLOOK

India is the leading producer of iron ore in the world. Cement Industry is the second major consumer of iron ore after Iron & Steel Industry (including Sponge Iron Industry). In order to conserve iron ore resources of the country for long term domestic value addition, export duty on all varieties of iron ore (except pellets) has been increased from 20% to 30% ad valorem.

The Working Group for 12th Five Year Plan, Planning Commission of India, has estimated that

Table – 27 : Imports of Iron Ore Fines (By Countries)

Country	2013-14		2014-15 (P)	
	Qty ('000 t)	Value (₹'000)	Qty ('000 t)	Value (₹'000)
All Countries	-	-	4837	25280627
Australia	-	-	1448	6966257
Brazil	-	-	1186	6206599
Malaysia	-	-	++	123
Mauritania	-	-	148	776977
Oman	-	-	114	474320
Qatar	-	-	++	6
South Africa	-	-	1860	10431130
Turkey	-	-	1	4658
Venezuela	-	-	80	420557
Other countries	-	-	-	-

the production of iron ore would be about 374 million tonnes by 2016-17 at 8% growth rate. The apparent consumption is estimated at 218 million tonnes by 2016-17 at 8% growth rate.

The Working Group has pointed out that to promote the domestic Steel Industry, assured iron ore linkages need to be promoted. It has further recommended that fiscal and non-fiscal incentives will need to be provided through joint effort of the Ministry of Mines and Ministry of Steel. In particular, technologies for agglomeration, pelletisation and direct use of fines to produce steel must be identified and taken up in mission mode to achieve the national goal to produce 200 million tonnes of steel per annum by 2020. Acquisition of technology assets abroad pertaining to application of low-grade iron ore and other technology for pig iron, sponge iron and pelletisation has also been underlined by the Working Group in its Report.