# Indian Minerals Yearbook 2014

## (Part- III : Mineral Reviews)

## 53rd Edition

# IRON ORE

### (ADVANCE RELEASE)


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

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# 28 Iron Ore

Iron & steel is the driving force behind industrial development in a country. The vitality of the Iron & Steel Industry largely influences its 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 28.52 billion tonnes of haematite ($Fe_2O_3$) and magnetite ($Fe_3O_4$), India is amongst the leading producers as well as exporters 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 1.4.2010 are estimated at 17,882 million tonnes of which 8,093 million tonnes (45%) are under 'Reserves' category and the balance 9,789 million tonnes (55%) are under 'Remaining Resources' category. By grades, Lumps constitute about 56% followed by Fines (21%), Lumps with Fines (13%) and the remaining 10% are Black Iron ore, Unclassified, Not-known and Other grades. Major resources of haematite are located in Odisha (5,930 million tonnes or 33%), Jharkhand (4,597 million tonnes or 26%), Chhattisgarh (3,292 million tonnes or 18%), Karnataka (2,159 million tonnes or 12%) and Goa (927 million tonnes or 5%). The balance resources of haematite are spread in Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Meghalaya, Rajasthan 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 1.4.2010 is estimated at 10,644 million tonnes of which 'Reserves' constitute a mere 22 million tonnes while 10,622 million tonnes are placed under 'Remaining Resources'. Classification on the basis of grades shows 21% resources are of Metallurgical grade while 79% resources belong to grades that are categorised as Unclassified, Not-known and Others. The resources of Coal Washery and Foundry grades constitute meagre proportions. India's 97% magnetite resources are located in four States, namely, Karnataka (7,802 million tonnes or 73%) followed by Andhra Pradesh (1,464 million tonnes or 14%) and Rajasthan & Tamil Nadu (527 million tonnes & 507 million tonnes respectively or 5% each). Assam, Bihar, Goa, Jharkhand, Kerala, Maharashtra, Meghalaya, Nagaland and Odisha together account for the remaining 3% resources (Table-2).

## EXPLORATION&DEVELOPMENT

In 2013-14, GSI, State Directorates of Geology & Mining , Uttar Pradesh and NMDC conducted exploration for iron ore. Details of exploration activities carried out by various agencies in 2013-14 are furnished in Table-3.

## PRODUCTION, STOCKS & PRICES

The production of iron ore constituting lumps, fines and concentrates at 152.4 million tonnes in the year 2013-14, showed an increase of about 11.6% as compared to that in the preceding year as a result of better utilisation of resources and additional demand in Odisha and partial lifting of mining ban in Karnataka by the Hon'ble Supreme Court.

There were 298 reporting mines in 2013-14 as against 310 in the previous year. Among them, 35 mines belonged to the Public Sector and 263 to the Private Sector. Besides production of iron ore was reported as an associated mineral by 16 mines in the year under report. The contribution of Public Sector mines to the total production was about 39.1% as against 38.5% in the preceding year. The remaining 60.9% of the total production in 2013-14 was from Private Sector. Among 35 Public Sector mines, 14 mines (5 in Chhattisgarh, 4 in Odisha, 3 in Jharkhand and 2 in Karnataka) each producing more than one million tonnes annually accounted for 96.9% of the total output in public sector and 37.9% of the total production in the country during 2013-14. Out of 263 iron ore mines and 15 associated mines in Private Sector, 21 iron ore mines (17 in Odisha, 3 in Jharkhand and 1 in Karnataka) each producing more

than one million tonnes annually accounted for about 77.6% of the total output of Private Sector and about 47.3% of the total iron ore production. Thus, 35 iron ore mines, each producing more than one million tonnes of iron ore annually, contributed about 85.2% of the total output in 2013-14.

Out of 29 captive iron ore mines in the country, 13 were in the Public Sector. The production of captive mines in the Public Sector was 25 million tonnes or 42% of the sectoral output in 2013-14. On the other hand, production of captive mines in Private Sector was 25.1 million tonnes or 27.0% of the output in Private Sector.

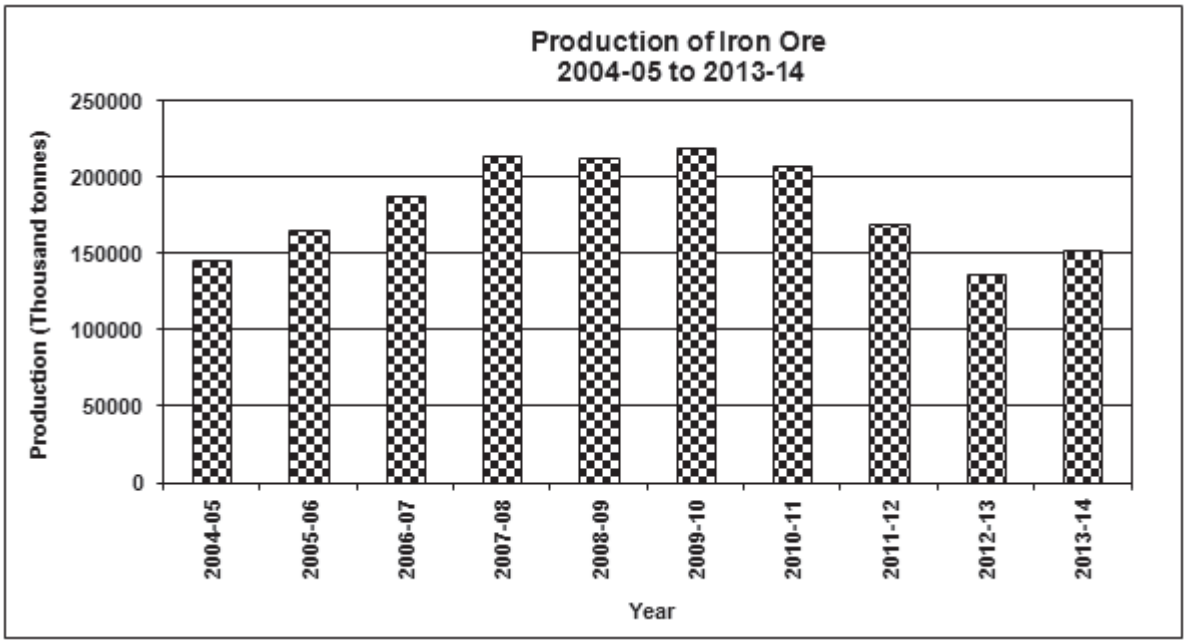
Gradewise analysis of the current year's output reveals that, out of the total output of 152.4 million tonnes, iron ore lumps constituted 58.7 million tonnes or about 38.5%, fines 93 million tonnes or about 61% and concentrates 0.7 million tonnes or about 0.5% of the total output of iron ore. In lumps 16.4 million tonnes or 28% was of grade 65% Fe & above; about 28.1 million tonnes or 47.9% was of grade 62% to below 65% Fe; 6.1 million tonnes or 10.4 % was of grade 60% to below 62% Fe; 2.7 million tonnes or 4.5 % was of grade 58% to below 60% Fe; about 2.1 million tonnes or 3.5% was of grade 55% to below 58% Fe and the rest 3.3 million tonnes or about 5.7% of the production was of grade below 55% Fe. In the case of iron ore fines, 14.7 million tonnes or 15.7% of the production was of grade 65% Fe & above; 44.2 million tonnes or 47.5% was of grade 62% to below 65% Fe; 14.7 million tonnes or 15.8% of grade 60% to below 62% Fe; about 6.7 million tonnes or 7.2% of grade 58% to below 60% Fe; 5.7 million tonnes or 6.2% of grade 55% to below 58% Fe and balance 7.0 million tonnes or about 7.6% of grade below 55% Fe.

Among the States, Odisha recorded the highest production of 76.2 million tonnes or about 50% of the country's production in 2013-14. Chhattisgarh was at the second place with production of 30.1 million tonnes or 19.8% of the total production followed by Jharkhand 22.6 million tonnes or about 14.8%, Karnataka 18.3 million tonnes or about 12% of the country's production. The remaining 5.2 million tonnes or 3.4% production was reported from Andhra Pradesh, Madhya Pradesh, Maharashtra and Rajasthan. No production was reported from Goa due to suspension of mining operation owing to Hon'ble Supreme Court order. (Tables 4 to 7).

The mine-head stocks of iron ore at the end of year 2013-14 were 124 million tonnes as compared to 119.9 million tonnes in the beginning of the year. The stocks relate to iron ore lumps, fines and concentrates in all the States.

The average daily employment of labour was 38,228 during 2013-14 as against 42,645 in the preceding year.

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



## Table – 1 : Reserves/Resources of Iron Ore (Haematite) as on 1.4.2010
## (By Grades/States)

(In '000 tonnes)

| Grade/State | Reserves | | | | Remaining resources | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proved STD111 | Probable | | Total (A) | Feasibility STD211 | Pre-feasibility | | Measured STD331 | Indicated STD332 | Inferred STD333 | Reconnaissance STD334 | Total (B) | Total resources (A+B) |
| | | STD121 | STD122 | | | STD221 | STD222 | | | | | | |
| **All India** | **5982042** | **1173324** | **938180** | **8093546** | **515353** | **756190** | **494738** | **540188** | **1197539** | **3942673** | **2341870** | **9788551** | **17882098** |
| **By Grades** | | | | | | | | | | | | | |
| Lump, High-grade | 704874 | 89475 | 229589 | 1023938 | 85053 | 67668 | 11746 | 53586 | 32222 | 188840 | 35687 | 474803 | 1498741 |
| Lump, Medium-grade | 3411208 | 643575 | 272908 | 4327691 | 90878 | 203315 | 135930 | 156886 | 560175 | 903906 | 42533 | 2093623 | 6421314 |
| Lump, Low-grade | 154561 | 29684 | 61602 | 245847 | 84583 | 36168 | 95031 | 11653 | 91346 | 823326 | 238032 | 1380139 | 1625986 |
| Lump, Unclassified | 29097 | 114 | 40022 | 69233 | 54870 | 183 | 7882 | 52768 | 32934 | 151983 | 22800 | 323420 | 392653 |
| Fines, High-grade | 167700 | 4294 | 56498 | 228492 | 8215 | 6132 | 5675 | 54480 | 8451 | 46459 | 880 | 130293 | 358785 |
| Fines, Medium-grade | 421188 | 233772 | 56194 | 711153 | 38963 | 155282 | 54799 | 173317 | 279600 | 675621 | 18222 | 1395805 | 2106958 |
| Fines, Low-grade | 330476 | 48717 | 49103 | 428296 | 89848 | 57270 | 85045 | 9794 | 76746 | 416943 | 28977 | 764624 | 1192919 |
| Fines, Unclassified | 735 | - | 320 | 1055 | - | - | - | 8452 | 12908 | 118738 | 15200 | 155297 | 156352 |
| Lumps & Fines, High-grade | 256525 | 61689 | 26026 | 344241 | 24990 | 419 | 59151 | 8378 | 7981 | 66977 | 112375 | 280271 | 624512 |
| Lumps & Fines, Medium-grade | 207919 | 38185 | 59596 | 305700 | 3320 | 20531 | 15525 | 9495 | 19461 | 48741 | 238214 | 355287 | 660987 |
| Lumps & Fines, Low-grade | 183839 | 20463 | 31219 | 235520 | 29694 | 13310 | 11174 | 745 | 73912 | 274859 | 100498 | 504191 | 739711 |
| Lumps & Fines Unclassified | 97236 | 10 | 51198 | 148443 | 2103 | 175147 | 10045 | 633 | 725 | 31256 | 3602 | 223511 | 371955 |
| Black Iron Ore | 3150 | - | 1370 | 4520 | 1464 | 4936 | 2716 | - | 1059 | 8294 | - | 18469 | 22989 |
| Others | 11888 | 2501 | 2536 | 16924 | 6 | 13591 | 17 | - | - | 25154 | - | 38769 | 55693 |
| Unclassified | - | - | - | - | 1314 | 389 | - | - | - | 389 | - | 2093 | 2093 |
| Not-known | 1648 | 846 | - | 2494 | 51 | 1850 | - | - | 18 | 161188 | 1484850 | 1647957 | 1650451 |
| **By States** | | | | | | | | | | | | | |
| Andhra Pradesh | 60038 | 58011 | 34167 | 152217 | 551 | 20988 | 32475 | 377 | 4624 | 169955 | 291 | 229261 | 381478 |
| Assam | - | - | - | - | - | - | - | - | 8600 | 4000 | - | 12600 | 12600 |
| Bihar | - | - | - | - | - | - | - | - | - | 55 | - | 55 | 55 |
| Chhattisgarh | 636460 | - | 263650 | 900110 | 114382 | 5080 | 15610 | 107625 | 527563 | 872739 | 748715 | 2391714 | 3291824 |
| Goa | 367378 | 44907 | 57559 | 469844 | 88723 | 63145 | 117393 | 7539 | 10050 | 141984 | 28493 | 457328 | 927172 |
| Jharkhand | 1840594 | 391052 | 72496 | 2304142 | 89372 | 14339 | 113334 | 45282 | 199455 | 594716 | 1235981 | 2292478 | 4596620 |
| Karnataka | 602685 | 95458 | 178723 | 876866 | 73194 | 171202 | 59231 | 245454 | 42843 | 501669 | 188218 | 1281811 | 2158678 |
| Madhya Pradesh | 40534 | 7099 | 9181 | 56814 | 9978 | 587 | 10170 | 4710 | 4014 | 145162 | 10 | 174632 | 231446 |
| Maharashtra | 6937 | 6460 | 17 | 13414 | 7544 | 6093 | 7659 | 79793 | 71806 | 64714 | 32185 | 269795 | 283209 |
| Meghalaya | - | - | - | - | - | - | - | - | - | 225 | - | 225 | 225 |
| Odisha | 2422247 | 569186 | 321568 | 3313000 | 128440 | 471517 | 138365 | 49408 | 317074 | 1404450 | 107978 | 2617232 | 5930232 |
| Rajasthan | 5169 | 1152 | 819 | 7139 | 3168 | 3239 | 500 | - | 11510 | 5004 | - | 23420 | 30560 |
| Uttar Pradesh | - | - | - | - | - | - | - | - | - | 38000 | - | 38000 | 38000 |

*Figures Rounded off.Source:National Mineral Inventory at a Glance 2010 as available on the website of Indian Bureau of Mines.*

## Table – 2 : Reserves/Resources of Iron Ore (Magnetite) as on 1.4.2010
## (By Grades/States)

(In '000 tonnes)

| Grade/State | Reserves | | | | Remaining resources | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proved STD111 | Probable | | Total (A) | Feasibility STD211 | Pre-feasibility | | Measured STD331 | Indicated STD332 | Inferred STD333 | Reconnaissance STD334 | Total (B) | Total resources (A+B) |
| | | STD121 | STD122 | | | STD221 | STD222 | | | | | | |
| **All India : Total** | **15973** | **3672** | **2111** | **21755** | **189478** | **1714** | **50816** | **1513168** | **1984566** | **6313583** | **568980** | **10622305** | **10644060** |
| **By Grades :** | | | | | | | | | | | | | |
| Metallurgical | 2148 | 3047 | 369 | 5565 | 163205 | 102 | 18435 | 690596 | 342792 | 966726 | 255 | 2182111 | 2187676 |
| Coal washery | - | 346 | 510 | 856 | - | 518 | 1981 | 411 | 318 | 4491 | - | 7719 | 8575 |
| Foundry | 330 | 125 | - | 455 | - | - | - | - | - | 303 | - | 303 | 758 |
| Others | 2074 | 139 | - | 2213 | 62 | - | - | - | - | 231 | - | 293 | 2506 |
| Unclassified | 11049 | 14 | 978 | 12041 | 26211 | 1094 | 30400 | 822161 | 1641456 | 5061583 | 568677 | 8151582 | 8163622 |
| Not-known | 372 | - | 254 | 626 | - | - | - | - | - | 280249 | 48 | 280297 | 280923 |
| **By States** | | | | | | | | | | | | | |
| Andhra Pradesh | - | - | - | - | 43034 | - | - | 13800 | 1266666 | 140027 | 14 | 1463541 | 1463541 |
| Assam | - | - | - | - | - | - | - | - | - | 15380 | - | 15380 | 15380 |
| Bihar | - | - | - | - | - | - | - | - | - | 2659 | - | 2659 | 2659 |
| Goa | 12489 | 3186 | - | 15675 | 26211 | 1094 | 30400 | - | - | 147296 | 1997 | 206998 | 222673 |
| Jharkhand | - | 361 | 551 | 912 | - | 518 | 1981 | 411 | 3948 | 2724 | 48 | 9629 | 10541 |
| Karnataka | - | - | - | - | 120022 | - | 18375 | 1498957 | 479372 | 5345018 | 340000 | 7801744 | 7801744 |
| Kerala | - | - | - | - | - | - | - | - | 59912 | 23523 | - | 83435 | 83435 |
| Maharashtra | 559 | - | 315 | 875 | 211 | - | 60 | - | - | 215 | - | 486 | 1361 |
| Meghalaya | - | - | - | - | - | - | - | - | - | 3380 | - | 3380 | 3380 |
| Nagaland | - | - | - | - | - | - | - | - | 5280 | - | - | 5280 | 5280 |
| Odisha | - | - | 54 | 54 | - | 102 | - | - | - | 43 | - | 145 | 199 |
| Rajasthan | 2924 | 125 | 1191 | 4240 | - | - | - | - | - | 522590 | - | 522590 | 526831 |
| Tamil Nadu | - | - | - | - | - | - | - | - | 169388 | 110728 | 226921 | 507037 | 507037 |

*Figures Rounded off. Source:National Mineral Inventory at a Glance 2010 as available on the website of Indian Bureau of Mines.*

**Table – 3 : Details of Exploration Activity for Iron Ore, 2013-14**

| Agency/ State/ District | Location/ Area/ Block | Mapping | | Drilling | | Sampling (No.) | Remarks Reserves/ Resources Estimated |
|---|---|---|---|---|---|---|---|
| | | Scale | Area (sq km) | No. of Boreholes | Meterage | | |
| **GSI** | | | | | | | |
| **Chhattisgarh** | | | | | | | |
| Kabirdham (Kawardha) | Chilpi Group Bhalapuri Eklama, Chelikama Block | 1:2,000 | 3.2 | 13 | 678.60 | - | Prospecting stage (G-3) investigation was carried out for assessment of iron ore for CMDC. Iron ore occurs at the contact of BHJQ and massive quartzite as NE-SW- and NNE-SSW-trending discontinuous band. Iron ore is massive, steel grey, mostly haematite along with goethite, specularite and rarely magnetite. Ore band is discontinuously exposed for a strike length of 9 km with average 8-11 m width. Drilling has proved occurrence of iron ore band up to 60 m vertical depth in Kesda and Bhalapuri blocks. Analytical results of surface (grab, channel) samples of iron ore show Fe content ranging from 58.98% - 67.89% with an average of 64.94%, while analysis of core samples yield Fe content up to 68.24%. Investigation has been completed. |
| **Jharkhand** | | | | | | | |
| West Singhbhum | In parts of Bambasai-Dumurjowa-Mongra Block | 1:12,500 | 79 | - | - | 67 | Reconnaissance stage (G-4) investigation was carried out for assessment of low-grade iron ore, managanese ore and limestone potentiality in rocks of iron ore and Kolihan Group.Iron ore exposures were not noticed. |
| **Meghalaya** | | | | | | | |
| West Khasi Hills | Around Rambrai | 1:25,000 1:5,000 | 20 1.4 | - | - | 45(BRS) | Reconnaissance stage investigation (G-4) was carried out to delineate the vanadiferous-titaniferous magnetite bodieswithin Precambrian Gneissic Complex. The litho-units exposed in the area are granite gneiss, banded gneiss,granite, charnockite metanorite. Lateritised metanorite body with bands of titaniferous-vanadiferous magnetite having a strike length of 1,800 m and width of 300 m was delineated NW of Village Moulih. The analytical results of 26 samples show $Fe_2O_3$ between 6.82% and 30.96%, $TiO_2$ between 1.86% and 4.3%, vanadium up to 1,398 ppm, Cu up to 556 ppm and zirconium up to 1,802 ppm. The other two metanorite bodies were also identified and delineated in the |

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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 | | |
| | | | | | | | northern part of the mapped area. These bodies are 200 m & 600 m in width and 1,500 m & 900 m in length and are associated with magnetite band (2 mm to 4 mm). Samples have been collected from these bodies. Analytical results are awaited. EPMA study indicated presence of ampbibole, pyroxene, plagioclase, titaniferous-vanadiferous magnetite, ilmenite, pyrite, pentlandite and chalcopyrite within these metanorite bodies. |
| **Odisha** | | | | | | | |
| Sundargarh | Kalamang West block & Bonai Keonjhar belt | - | 1 | 12 | 1060.55 | 285 | Prospecting stage (G-3) investigation was carried out for assessment of iron ore potential in the eastern continuity of the area between Ghoraburhani and Sagasai East Block for augmentation of resources. Area is mostly covered by ferruginous laterite with minor iron ore. Twelve boreholes viz. SKB-15 to SKB-26 have been completed. Out of twelve bore holes , eight boreholes have intersected mineralised zone, the details of depths of intersections of minerali-sation in the boreholes are SKB-15:- 0.0-9 m, 44-47 m, 77-79 m & 85-98 m; SKB-16:- 8-11 m, 16.10-32.40 m & 37.30-83.55 m; SKB-18:- 0.0-4.10 m, 55.60-65.60 m; SKB-19:-0.0-54 m; SKB-20:-5-62 m; SKB-23:-14.90-18.85 m & 44.10-51.50 m; SKB-24:-0.0-77.60 m; and SKB-25:- 0.0-49 m. The analytical results received for 285 core samples show encouraging results with Fe content varying from 45.79% to 65.8%, $SiO_2$ from 0.94% to 13.32% $Al_2O_3$ from 0.5% to 12.14%. Out of 285 samples, 241 samples have shown Fe content >45%. |
| | Mendhamaruni block | 1: 2,000 | 0.35 | 4 | 496.55 | 239 | Prospecting stage (G-3) investigation was carried out for assessment of iron ore potentiality for augmentation of resources. |

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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 | | |
| | Mendhamaruni block (concld.) | | | | | | The litho units exposed in the area are mainly shale (Fe-shale/variegated shale) and Fe-laterite. Out of four, three boreholes have intersected mineralised zone, the details of depth of intersections in the boreholes are SMB-1 :- 0.0-85.4 m; SMB- 2:-6.8-95.80 m; SMB-3:- 60.55-137.70m.The mineralised zones intersected hard laminated ore, soft laminated ore powdery ore and blue dust. The analytical data show the average Fe content of Boreholes i.e. SMB-1, SMB-2 & SMB-3 as 62.46%, 58.38% and 64.89% respectively. |
| **Rajasthan** | | | | | | | |
| Karauli, Sawaimadhopur, Tonk, Bundi and Bhilwara | Hindoli Group of Rocks in Karauli- Bundi area | 1:25,000 | 130 | - | 45 | | Reconnaissance stage (G-4) investigation was carried out to delineate iron ore bodies in the rocks of Hindoli Group for future probing. The main litho units exposed in the area are chert breccia, ferruginous chert breccia and quartzite with small patches of shale/ porcelanite and dolomite at places. |
| Bundi | Korma area & Khiniya area | 1:25,000 | 25 | - - | 15 | | Ferruginous body has been mapped. The main litho units exposed in this area are ferruginous breccia, phyllite and dolomite with quartz veins. A number of old workings of variable dimensions have been observed near Khiniya and Korma areas in Bundi district.The ore bodies mainly consist of haematite. XRF analysis of 15 grab samples of iron ore body reveals $Fe_2O_3$ content of 34% (nearly 20 % Fe). |
| **Uttarakhand** | | | | | | | |
| Nainital | Ramgarh Group Neoproterozoic Betalghat Formation and Nagthat Formation (Jaunsar Group) | 1:25,000 | 85 | - | - | 158 | Reconnaissance stage (G-4) investigation was carried out to delineate iron and sulphide mineral occurrences and assessment of economic potentiality of the area. Ramgarh Group consists of granite gneisses and a |

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Table - 3 (Concld..)

| Agency/ State/ District | Location/ Area/ Block | Mapping | | Drilling | | Sampling (No.) | Remarks Reserves/ Resources Estimated |
|---|---|---|---|---|---|---|---|
| | | Scale | Area (sq km) | No. of Boreholes | Meterage | | |
| **Uttarakhand** Nainital (concld.) | | | | | | | sequence of quartzite with few thin bands of phyllite and mafic sills. The rocks of Nagthat Formation (Jaunsar Group) include quartzite. In the area iron ore is manifested as patches of limonite lenses, specks of magnetite in the calcareous phyllite and as ferruginisation of the quartzite band. The results of analysis of 41 bedrock samples/stream sediment samples for Fe , Cu, Pb, Zn, etc. yielded very low values. The investigation will be continued. |
| **DGM** | | | | | | | |
| **Uttar Pradesh** Jhansi | Baragaon area Mauranipur | 1:25,000 | 2 | 4 | - | 20 | The objective of investigation was to delincate iron ore resources for qualitative & quantitttive assessment of their grades.The BHQ is the major host rock for iron ore (haematite & magnetite). . Exploration for iron ore was carried out and 4 trencheswas done with 231.65 cu m excavation. The value of iron ore is 32-52%. |
| **NMDC Ltd** | | | | | | | |
| **Chhattisgarh** | | | | | | | |
| South Bastar Dantewada | Bailadila Iron Ore Deposit Deposit nos. 14 & 11 C | 1:2,000 | - | 33 | 2798 - | | Objective of exploration was to assss the additional resources in Deposit-14 & Deposit-11C. NMDC carried out exploration for iron ore by mapping, pitting, drilling, sampling, chemical analysis etc. About 364 pitting operations were carried out in Deposit nos.14, 11 C & 11B. Resources estimation is under process. |
| | Deposit No. D5 | - | - | 14 | 1754 | 1754 | - |
| | Deposit No. 10/11A | - | - | 12 | 987 | - | - |
| **Karnataka** | | | | | | | |
| Bellary | Donimalai Iron Ore Mine | - | - | 22 | 2060.2 | 846 | Objective of exploration was to know the depth persistance & lateral extesion of the ore body. |

**Table - 4 :Principal Producers of Iron ore 2013-14**

| 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, Andhra Pradesh. | Karnataka<br>Chhattisgarh | Bellary<br>Dantewada |
| Steel Authority of India Ltd, Ispat Bhavan, Lodhi Road, New Delhi – 110 003. | Jharkhand<br>Chhattisgarh<br>Odisha | Singhbhum (West)<br>Durg<br>Keonjhar<br>Sundargarh |
| Tata Steel Ltd, 24, Homi Mody Street, Fort, Mumbai –400 001, Maharashtra. | Jharkhand<br>Odisha | Singhbhum (West)<br>Keonjhar |
| Rungta Mines Pvt. Ltd, 206,A.C.J Bose Road Kolkata – 700 017, West Bengal. | Jharkhand<br>Odisha | Singhbhum (West)<br>Keonjhar |
| Serajuddin & Co., P-16, Bentinck Street, Kolkata-700 001, West Bengal. | Odisha | Keonjhar |
| Sarda Mines Private Limited, Thakurani Iron Ore Mines (Block B) Post Box No. 85, Barbil-758 035, Odisha. | Odisha | Keonjhar |
| Kamaljeet Singh Ahluwalia, P.B.No. 3, Barbil-758 035, Distt. Keonjhar, Odisha. | Odisha | Keonjhar |
| Indrani Patnaik, Bonaikela, P.O. Joda- 758 035 Distt. Keonjhar,Odisha | Odisha | Keonjhar |
| Essel Mining & Industries Ltd, 10, Camac Street, Kolkata- 700 017 West Bengal | Odisha | Keonjhar<br>Sundargarh |
| Aryan Mining & Trading Corp. (P) Ltd 61, Strand Street, Kolkata-700 006, West Bengal. | Odisha | Sundargarh |

(Contd.)

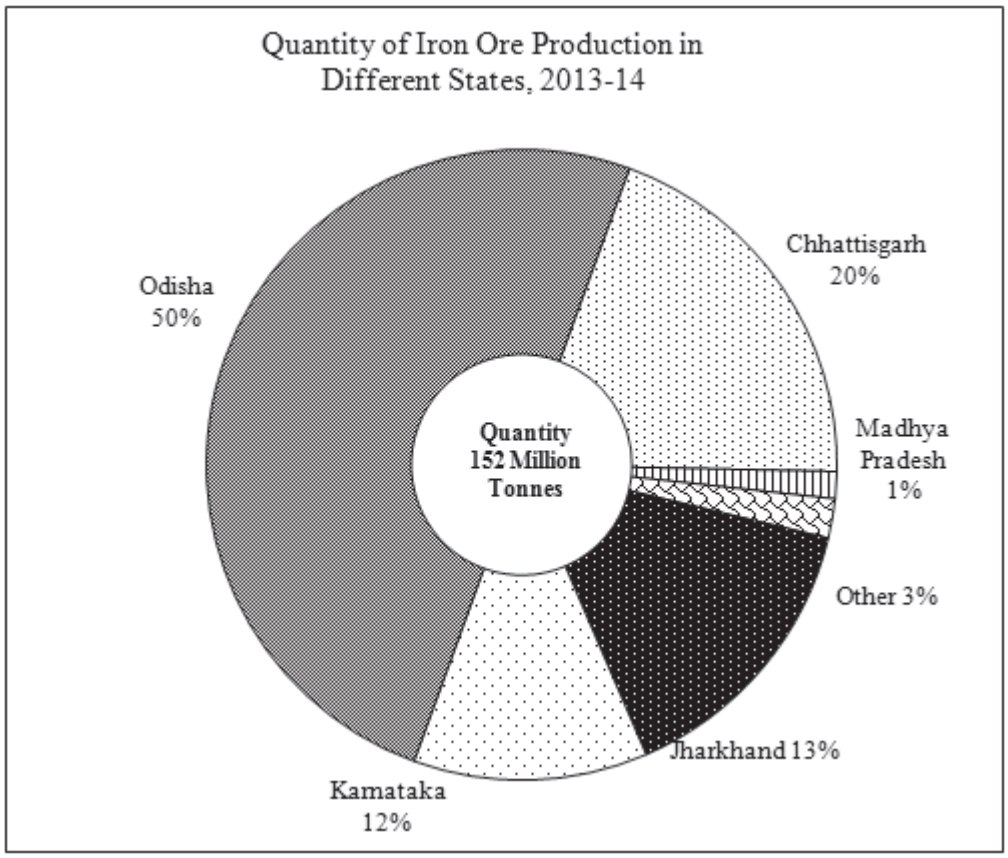
Table - 4 : (Concld.)

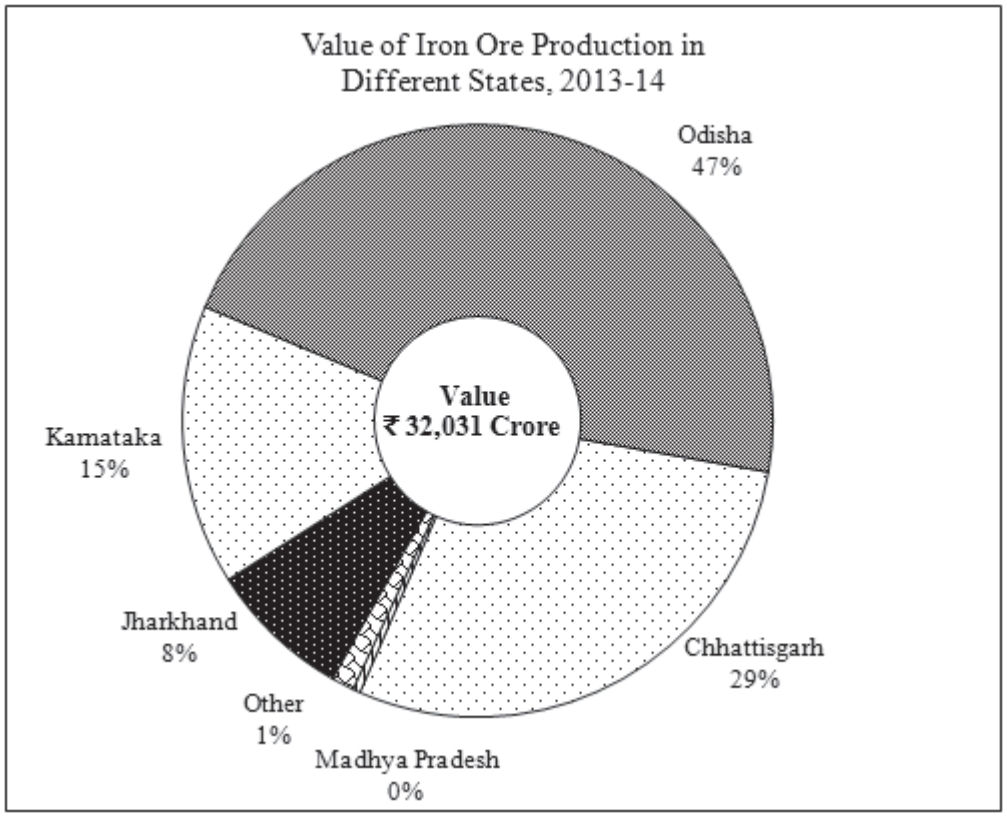
| Name & address of producer | Location of mine | |
|---|---|---|
| | State | District |
| Bonai Industrial Co. Ltd, P.O. Barbil - 758 035, Distt. Keonjhar, Odisha. | Odisha | Sundargarh |
| Rungta Sons(P) Ltd, Rungta House, Chaibasa- 833 201, Jharkhand | Odisha | Sundargarh |
| The Odisha Mining Corporation Ltd. P. B. No. 34, Bhubaneswar-751 001, Odisha. | Odisha | Keonjhar<br>Sundargarh |
| Feegrade & Co. (P) Ltd., 8A, Express Tower, 42A- Shakespeare Sarani, Kolkata - 700 017, West Bengal. | Odisha | Sundargarh |
| Mideast Integrated Steels Ltd, Mesco Tower, Lewis Road, Bhubneshwar-751 016, Odisha. | Odisha | Keonjhar |
| Khatau Narbheram & Co., N.V. Ram Complex, Barbil- 758 035 Distt. Keonjhar, Odisha | Odisha | Keonjhar |
| Jindal Steel & Power Ltd, P.B. No. 6, Delhi Road, Hissar- 125 005, Haryana. | Odisha | Sundargarh |
| Usha Martin Ltd, Mangal Kalash, 2A Shakespeare Sarani, Kolkata-700 071, West Bengal. | Jharkhand | Singhbhum (West) |
| Sesa Goa Ltd, Altinho, Panajim-403 001, Goa. | Karnataka | Chitradurga |
| Kalinga Mining Corporation, Nivas, Sheikh Bazar, Cuttack - 753 008, Odisha | Odisha | Keonjhar |

## Table – 5 : Production of Iron Ore, 2011-12 to 2013-14 (P)
## (By States)

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

| States | | 2011-12 | | 2012-13 | | 2013-14(P) | |
|---|---|---|---|---|---|---|---|
| | | Quantity | Value | Quantity | Value | Quantity | Value |
| **India** | **Total** | **168582** | **383570264** | **136618** | **328244402** | **152433** | **320314998** |
| | Lumps | 62799 | 185777171 | 54270 | 185636387 | 58699 | 172121878 |
| | Fines | 105383 | 197401740 | 82025 | 142218195 | 93014 | 146070131 |
| | Concentrates | 400 | 391353 | 323 | 389820 | 720 | 2122989 |
| **Andhra Pradesh** | **Total** | **1776** | **691697** | **1176** | **605107** | **753** | **404918** |
| | Lumps | 1330 | 571981 | 893 | 518731 | 527 | 327458 |
| | Fines | 446 | 119716 | 283 | 86376 | 226 | 77460 |
| **Chhattisgarh** | **Total** | **30457** | **98741549** | **27963** | **87739541** | **30156** | **92036747** |
| | Lumps | 11549 | 49064846 | 10375 | 45031170 | 11578 | 46928639 |
| | Fines | 18908 | 49676703 | 17588 | 42708371 | 18578 | 45108108 |
| **Goa** | **Total** | **33636** | **69948845** | **10897** | **21414923** | **-** | **-** |
| | Lumps | 6797 | 13001458 | 1828 | 3396883 | - | - |
| | Fines | 26459 | 56568034 | 8990 | 17928456 | - | - |
| | Concentrates | 380 | 379353 | 79 | 89584 | - | - |
| **Jharkhand** | **Total** | **19258** | **20968621** | **17986** | **21410899** | **22557** | **25015272** |
| | Lumps | 8279 | 11453391 | 6697 | 11028177 | 7244 | 10535020 |
| | Fines | 10979 | 9515230 | 11289 | 10382722 | 15313 | 14480252 |
| **Karnataka** | **Total** | **13233** | **31985290** | **11504** | **35811462** | **18308** | **49077330** |
| | Lumps | 4943 | 15722530 | 4999 | 20145978 | 7626 | 22749450 |
| | Fines | 8270 | 16250760 | 6505 | 15665484 | 10682 | 26327880 |
| | Concentrates | 20 | 12000 | - | - | - | - |
| **Madhya Pradesh** | **Total** | **1237** | **801604** | **1225** | **887392** | **2115** | **1318947** |
| | Lumps | 132 | 118933 | 178 | 240767 | 351 | 287629 |
| | Fines | 1105 | 682671 | 1047 | 646625 | 1764 | 1031318 |
| **Maharashtra** | **Total** | **1539** | **1571658** | **1193** | **1251967** | **1621** | **1694901** |
| | Lumps | 1058 | 921469 | 263 | 312834 | 336 | 387083 |
| | Fines | 481 | 650189 | 930 | 939133 | 1285 | 1307818 |
| **Odisha** | **Total** | **67414** | **158852994** | **64439** | **158924967** | **76227** | **148871490** |
| | Lumps | 28679 | 94914557 | 29010 | 104954912 | 30995 | 90895549 |
| | Fines | 38735 | 63938437 | 35393 | 53861028 | 45166 | 57737295 |
| | Concentrates | - | - | 36 | 109027 | 66 | 238646 |
| **Rajasthan** | **Total** | **32** | **8006** | **235** | **198144** | **696** | **1895393** |
| | Lumps | 32 | 8006 | 27 | 6935 | 42 | 11050 |
| | Concentrates | - | - | 208 | 191209 | 654 | 1884343 |


Quantity of Iron Ore Production in Different States, 2013-14
Odisha 50%
Chhattisgarh 20%
Madhya Pradesh 1%
Other 3%
Jharkhand 13%
Kamataka 12%
Quantity 152 Million Tonnes


Value of Iron Ore Production in Different States, 2013-14
Odisha 47%
Chhattisgarh 29%
Madhya Pradesh 0%
Other 1%
Jharkhand 8%
Kamataka 15%
Value ₹ 32,031 Crore

## Table – 6 (A) : Production of Iron Ore, 2012-13
## (By Sectors/States/Districts/Grades)

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

| Sector/ State/ District | No. of mines | Lumps | | | | | | | | Fines | | | | | | | | Concentrates | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Below 55% Fe | 55%- below 58%Fe | 58%- below 60%Fe | 60%- below 62%Fe | 62%- below 65%Fe | 65% Fe & above | Total Qty | Total Value | Below 55% Fe | 55%- below 58%Fe | 58%- below 60%Fe | 60%- below 62%Fe | 62%- below 65%Fe | 65% Fe & above | Total Qty | Total Value | Qty | Value | Qty | Value |
| **India** | **310(16)** | **3381** | **1793** | **2906** | **3970** | **27181** | **15039** | **54270** | **185636387** | **8318** | **5786** | **4153** | **15826** | **34373** | **13569** | **82025** | **142218195** | **323** | **389820** | **136618** | **328244402** |
| Public-sector | 36(1) | 105 | ++ | 218 | 1872 | 12535 | 5958 | 20688 | 76428864 | 79 | 143 | 845 | 11287 | 14098 | 5521 | 31973 | 63399919 | - | - | 52661 | 139828783 |
| Private-sector | 274(15) | 3276 | 1793 | 2688 | 2098 | 14646 | 9081 | 33582 | 109207523 | 8239 | 5643 | 3308 | 4539 | 20275 | 8048 | 50052 | 78818276 | 323 | 389820 | 83957 | 188415619 |
| **Andhra-Pradesh** | **41(3)** | **866** | **27** | **-** | **++** | **-** | **-** | **893** | **518731** | **283** | **-** | **-** | **-** | **-** | **-** | **283** | **86376** | **-** | **-** | **1176** | **605107** |
| Anantpur | 3 | 23 | - | - | ++ | - | - | 23 | 8161 | 1 | - | - | - | - | - | 1 | 257 | - | - | 24 | 8418 |
| Cuddapah | 8 | 415 | - | - | - | - | - | 415 | 251422 | 138 | - | - | - | - | - | 138 | 39611 | - | - | 553 | 291033 |
| Karimnagar | 2 | 1 | - | - | - | - | - | 1 | 280 | - | - | - | - | - | - | - | - | - | - | 1 | 280 |
| Khammam* | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Krishna | 2 | ++ | - | .- | - | - | - | .++ | 642 | - | - | - | - | - | - | - | - | - | - | .++ | 642 |
| Kurnool | 21(2) | 396 | 1 | - | - | - | - | 397 | 217054 | 144 | - | - | - | - | - | 144 | 46508 | - | - | 541 | 263562 |
| Nellore | 1 | 31 | - | - | - | - | - | 31 | 24697 | - | - | - | - | - | - | - | - | - | - | 31 | 24697 |
| Prakasam* | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | .- | - |
| Warangal | (1) | - | 26 | - | - | - | - | 26 | 16475 | - | - | - | - | - | - | - | - | - | - | 26 | 16475 |
| **Chhattisgarh** | **11** | **258** | **++** | **56** | **88** | **4329** | **5644** | **10375** | **45031170** | **90** | **28** | **281** | **5681** | **6025** | **5483** | **17588** | **42708371** | **-** | **-** | **27963** | **87739541** |
| Dantewara | 3 | ++ | ++ | 3 | 58 | 958 | 5506 | 6525 | 35130522 | 1 | 28 | 280 | 1275 | 6025 | 5483 | 13092 | 35503545 | - | - | 19617 | 70634067 |
| Durg | 5 | - | - | - | - | 3287 | - | 3287 | 9329886 | - | - | - | 4400 | - | - | 4400 | 7117021 | - | - | 7687 | 16446907 |
| Kanker | 2 | 258 | - | 53 | 28 | 84 | 138 | 561 | 562371 | 85 | - | 1 | 6 | - | - | 92 | 79959 | - | - | 653 | 642330 |
| Rajnandgaon | 1 | - | - | - | 2 | - | - | 2 | 8391 | 4 | - | - | - | - | - | 4 | 7846 | - | - | 6 | 16237 |
| **Goa** | **65(2)** | **874** | **340** | **511** | **76** | **27** | **-** | **1828** | **3396883** | **3828** | **2551** | **1346** | **648** | **617** | **-** | **8990** | **17928456** | **79** | **89584** | **10897** | **21414923** |
| North Goa | 32 | 604 | 150 | 128 | 13 | 2 | - | 897 | 1745410 | 2665 | 1007 | 258 | 259 | 298 | - | 4487 | 9421600 | - | - | 5384 | 11167010 |
| South Goa | 33(2) | 270 | 190 | 383 | 63 | 25 | - | 931 | 1651473 | 1163 | 1544 | 1088 | 389 | 319 | - | 4503 | 8506856 | 79 | 89584 | 5513 | 10247913 |

(Contd.)

Table - 6 (A) : (Concld.)

| Sector/ State/ District | No. of mines | Lumps | | | | | | | | Fines | | | | | | | | Concentrates | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Below 55% Fe | 55%- below 58%Fe | 58%- below 60%Fe | 60%- below 62%Fe | 62%- below 65%Fe | 65% Fe & above | Total Qty | Total Value | Below 55% Fe | 55%- below 58%Fe | 58%- below 60%Fe | 60%- below 62%Fe | 62%- below 65%Fe | 65% Fe & above | Total Qty | Total Value | Qty | Value | Qty | Value |
| **Jharkhand** | **15(1)** | **358** | **455** | **1255** | **1785** | **2229** | **615** | **6697** | **11028177** | **445** | **1084** | **75** | **2341** | **4946** | **2398** | **11289** | **10382722** | **-** | **-** | **17986** | **21410899** |
| Singhbhum-(West) | 15(1) | 358 | 455 | 1255 | 1785 | 2229 | 615 | 6697 | 11028177 | 445 | 1084 | 75 | 2341 | 4946 | 2398 | 11289 | 10382722 | - | - | 17986 | 21410899 |
| **Karnataka** | **74** | **481** | **223** | **625** | **469** | **3032** | **169** | **4999** | **20145978** | **354** | **447** | **728** | **2982** | **1862** | **132** | **6505** | **15665484** | **-** | **-** | **11504** | **35811462** |
| Bagalkot* | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Bellary | 53 | 396 | 147 | 567 | 465 | 2872 | 133 | 4580 | 18778844 | 268 | 351 | 726 | 2948 | 1737 | 132 | 6162 | 14895465 | - | - | 10742 | 33674309 |
| Chitradurga | 11 | 69 | 17 | ++ | - | 91 | 36 | 213 | 732408 | 86 | 96 | 2 | 34 | 125 | - | 343 | 770019 | - | - | 556 | 1502427 |
| Tumkur | 9 | 16 | 59 | 58 | 4 | 69 | - | 206 | 634726 | - | - | - | - | - | - | - | - | - | - | 206 | 634726 |
| **Madhya-Pradesh** | **14(7)** | **166** | **12** | **-** | **-** | **-** | **-** | **178** | **240767** | **1002** | **27** | **18** | **-** | **-** | **-** | **1047** | **646625** | **-** | **-** | **1225** | **887392** |
| Balaghat | 1 | - | 1 | - | - | - | - | 1 | 2157 | - | - | - | - | - | - | - | - | - | - | 1 | 2157 |
| Gwalior | 1 | 10 | .- | - | - | - | - | 10 | 8033 | 15 | - | - | - | - | - | 15 | 3555 | - | - | 25 | 11588 |
| Jabalpur | 10(7) | 143 | 11 | - | - | - | - | 154 | 217890 | 987 | 27 | 18 | - | - | - | 1032 | 643070 | - | - | 1186 | 860960 |
| Sagar | 2 | 13 | - | - | - | - | - | 13 | 12687 | - | - | - | - | - | - | - | - | - | - | 13 | 12687 |
| **Maharashtra** | **13** | **170** | **35** | **17** | **41** | **.-** | **-** | **263** | **312834** | **620** | **-** | **310** | **-** | **-** | **-** | **930** | **939133** | **-** | **-** | **1193** | **1251967** |
| Chandrapur | 2 | - | 33 | - | - | - | - | 33 | 57750 | 30 | ++ | - | - | - | - | 30 | 31452 | - | - | 63 | 89202 |
| Gadchiroli | 2 | - | 1 | - | - | .++ | - | 1 | 3770 | - | - | - | - | - | - | - | - | - | - | 1 | 3770 |
| Gondia | 4 | 7 | 1 | - | - | - | - | 8 | 7203 | 11 | - | .- | - | - | - | 11 | 4050 | - | - | 19 | 11253 |
| Sindhudurg | 5 | 163 | - | 17 | 41 | - | - | 221 | 244111 | 579 | - | 310 | - | - | - | 889 | 903631 | - | - | 1110 | 1147742 |
| **Odisha** | **75(3)** | **181** | **701** | **442** | **1511** | **17564** | **8611** | **29010** | **104954912** | **1696** | **1649** | **1395** | **4174** | **20923** | **5556** | **35393** | **53861028** | **36** | **109027** | **64439** | **158924967** |
| Keonjhar | 45(2) | 17 | 445 | 116 | 224 | 13164 | 7583 | 21549 | 74835589 | 1308 | 1317 | 879 | 2087 | 16816 | 3875 | 26282 | 42286259 | 36 | 109027 | 47867 | 117230875 |
| Mayurbhanj | 5 | 64 | 256 | 322 | 115 | 170 | 219 | 1146 | 4935046 | 123 | 79 | 33 | 32 | 5 | 6 | 278 | 322485 | - | - | 1424 | 5257531 |
| Sundargarh | 25(1) | 100 | - | 4 | 1172 | 4230 | 809 | 6315 | 25184277 | 265 | 253 | 483 | 2055 | 4102 | 1675 | 8833 | 11252284 | - | - | 15148 | 36436561 |
| **Rajasthan** | **2** | **27** | **-** | **-** | **-** | **-** | **-** | **27** | **6935** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **208** | **191209** | **235** | **198144** |
| Bhilwara | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 208 | 191209 | 208 | 191209 |
| Jaipur | 1 | 27 | - | - | - | - | - | 27 | 6935 | - | - | - | - | - | - | - | - | - | - | 27 | 6935 |

* Only labour reported; All refrences in respect of Andhra Pradesh are as per its undivided statehood position (prior to bifurcation)

## Table – 6 (B) : Production of Iron Ore, 2013-14(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% Fe | 55%- below 58% Fe | 58%- below 60%Fe | 60%- below 62%Fe | 62%- below 65%Fe | 65% Fe & above | Total Qty | Total Value | Below 55% Fe | 55%- below 58%Fe | 58%- below 60%Fe | 60%- below 62%.Fe | 62%- below 65%Fe | 65% Fe & above | Total Qty | Total Value | Qty | Value | Qty | Value |
| **India** | **298(16)** | **3328** | **2068** | **2644** | **6128** | **28116** | **16415** | **58699** | **172121878** | **7037** | **5739** | **6717** | **14680** | **44201** | **14640** | **93014** | **146070131** | **720** | **2122989** | **152433** | **320314998** |
| Public sector | 35(1) | 6 | 37 | 130 | 1897 | 13635 | 7217 | 22922 | 71682242 | 237 | 693 | 2344 | 8222 | 19356 | 5766 | 36618 | 67154435 | - | - | 59540 | 138836677 |
| Private-sector | 263(15) | 3322 | 2031 | 2514 | 4231 | 14481 | 9198 | 35777 | 100439636 | 6800 | 5046 | 4373 | 6458 | 24845 | 8874 | 56396 | 78915696 | 720 | 2122989 | 92893 | 181478321 |
| **Andhra-Pradesh** | **31(3)** | **486** | **41** | **-** | **-** | **-** | **-** | **527** | **327458** | **226** | **-** | **-** | **-** | **-** | **-** | **226** | **77460** | **-** | **-** | **753** | **404918** |
| Anantapur | 2 | 14 | - | - | - | - | - | 14 | 4225 | - | - | - | - | - | - | - | - | - | - | 14 | 4225 |
| Cuddapah | 6 | 146 | - | - | - | - | - | 146 | 90965 | 102 | - | - | - | - | - | 102 | 26997 | - | - | 248 | 117962 |
| Karimnagar | 2 | 2 | - | - | - | - | - | 2 | 713 | 1 | - | - | - | - | - | 1 | 233 | - | - | 3 | 946 |
| Krishna | 1 | - | - | .- | - | - | - | - | - | ++ | - | - | - | - | - | ++ | 496 | - | - | ++ | 496 |
| Kurnool | 18(2) | 324 | - | - | - | - | - | 324 | 206863 | 123 | - | - | - | .- | - | 123 | 49734 | - | - | 447 | 256597 |
| Nellore* | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Prakasam* | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Warangal | (1) | - | 41 | - | - | - | - | 41 | 24692 | - | - | - | - | - | - | - | - | - | - | 41 | 24692 |
| **Chhattisgarh** | **11** | **86** | **3** | **35** | **11** | **4492** | **6951** | **11578** | **46928639** | **12** | **79** | **381** | **3016** | **9358** | **5732** | **18578** | **45108108** | **-** | **-** | **30156** | **92036747** |
| Dantewada | 3 | 1 | 1 | 4 | 11 | 1274 | 6780 | 8071 | 36773411 | 12 | 79 | 381 | 1004 | 7270 | 5732 | 14478 | 38836515 | - | - | 22549 | 75609926 |
| Durg | 5 | - | - | - | - | 3185 | - | 3185 | 8976189 | - | - | - | 2000 | 2088 | - | 4088 | 6244203 | - | - | 7273 | 15220392 |
| Kanker | 2 | 85 | 1 | 31 | - | 33 | 171 | 321 | 1177576 | ++ | - | - | 12 | - | - | 12 | 27390 | - | - | 333 | 1204966 |
| Rajnandgaon | 1 | - | 1 | - | - | - | - | 1 | 1463 | - | - | - | - | - | - | - | - | - | - | 1 | 1463 |
| **Goa*** | **65** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| North Goa* | 28 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| South Goa* | 37 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

(Contd.)

Table - 6 (B) : (Concld.)

| District | No. of mines | Lumps | | | | | | | | Fines | | | | | | | | Concentrates | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Below 55% Fe | 55%- below 58%Fe | 58%- below 60%Fe | 60%- below 62%Fe | 62%- below 65%Fe | 65% Fe & above | Total Qty | Total Value | Below 55% Fe | 55%- below 58%Fe | 58%- below 60%Fe | 60%- below 62%Fe | 62%- below 65%Fe | 65% Fe & abvoe | Total Qty | Total Value | Qty | Value | Qty | Value |
| **Jharkhand** | **23(1)** | **542** | **309** | **1384** | **1480** | **3320** | **209** | **7244** | **10535020** | **440** | **1321** | **297** | **2033** | **9998** | **1224** | **15313** | **14480252** | **-** | **-** | **22557** | **25015272** |
| Singhbhum-West | 23(1) | 542 | 309 | 1384 | 1480 | 3320 | 209 | 7244 | 10535020 | 440 | 1321 | 297 | 2033 | 9998 | 1224 | 15313 | 14480252 | - | - | 22557 | 25015272 |
| **Karnataka** | **62(2)** | **1360** | **465** | **638** | **985** | **3768** | **410** | **7626** | **22749450** | **902** | **1558** | **2579** | **3309** | **2280** | **54** | **10682** | **26327880** | **-** | **-** | **18308** | **49077330** |
| Bellary | 48(2) | 1257 | 369 | 447 | 914 | 3688 | 397 | 7072 | 21284255 | 234 | 988 | 2386 | 3268 | 2184 | 54 | 9114 | 22655362 | - | - | 16186 | 43939617 |
| Chitradurga | 7 | - | 96 | 151 | 63 | 68 | 13 | 391 | 1237988 | 662 | 570 | 193 | 41 | 96 | - | 1562 | 3665040 | - | - | 1953 | 4903028 |
| Tumkur | 7 | 103 | ++ | 40 | 8 | 12 | - | 163 | 227207 | 6 | - | - | - | - | - | 6 | 7478 | - | - | 169 | 234685 |
| **Madhya-Pradesh** | **15(7)** | **323** | **28** | **-** | **-** | **-** | **-** | **351** | **287629** | **1410** | **333** | **20** | **1** | **-** | **-** | **1764** | **1031318** | **-** | **-** | **2115** | **1318947** |
| Balaghat | 1 | - | 5 | - | - | - | - | 5 | 7738 | - | - | - | - | - | - | - | - | - | - | 5 | 7738 |
| Gwalior | 2 | 73 | - | - | - | - | - | 73 | 46628 | 102 | - | - | - | - | - | 102 | 38685 | - | - | 175 | 85313 |
| Jabalpur | 11(7) | 201 | 23 | - | - | - | - | 224 | 171781 | 1308 | 333 | 20 | 1 | - | .- | 1662 | 992633 | - | - | 1886 | 1164414 |
| Sagar | 1 | 49 | - | - | - | - | - | 49 | 61482 | - | - | - | - | - | - | - | - | - | - | 49 | 61482 |
| **Maharashtra** | **17** | **202** | **36** | **81** | **16** | **1** | **-** | **336** | **387083** | **960** | **20** | **305** | **-** | **-** | **-** | **1285** | **1307818** | **-** | **-** | **1621** | **1694901** |
| Chandrapur | 2 | - | 14 | 10 | 8 | - | - | 32 | 84493 | 20 | .- | 10 | - | - | - | 30 | 40222 | - | - | 62 | 124715 |
| Gadchiroli | 2 | - | 1 | .- | - | .- | - | 1 | 1928 | - | - | - | - | - | - | - | - | - | - | 1 | 1928 |
| Gondia | 4 | 7 | ++ | - | - | - | - | 7 | 9341 | 5 | - | - | - | - | - | 5 | 2145 | - | - | 12 | 11486 |
| Sindhudurg | 9 | 195 | 21 | 71 | 8 | 1 | - | 296 | 291321 | 935 | 20 | 295 | - | - | - | 1250 | 1265451 | - | - | 1546 | 1556772 |
| **Odisha** | **71(3)** | **287** | **1186** | **506** | **3636** | **16535** | **8845** | **30995** | **90895549** | **3087** | **2428** | **3135** | **6321** | **22565** | **7630** | **45166** | **57737295** | **66** | **238646** | **76227** | **148871490** |
| Keonjhar | 44(2) | 228 | 756 | 267 | 578 | 12720 | 8050 | 22599 | 64643086 | 2727 | 1242 | 1765 | 3286 | 17615 | 6157 | 32792 | 41111813 | 66 | 238646 | 55457 | 105993545 |
| Mayurbhanj | 3 | 59 | 424 | 217 | 52 | 59 | 61 | 872 | 2745412 | 48 | 231 | 9 | 14 | 2 | ++ | 304 | 292216 | - | - | 1176 | 3037628 |
| Sundargarh | 24(1) | - | 6 | 22 | 3006 | 3756 | 734 | 7524 | 23507051 | 312 | 955 | 1361 | 3021 | 4948 | 1473 | 12070 | 16333266 | - | - | 19594 | 39840317 |
| **Rajasthan** | **3** | **42** | **-** | **-** | **-** | **-** | **-** | **42** | **11050** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **654** | **1884343** | **696** | **1895393** |
| Bhilwara | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 654 | 1884343 | 654 | 1884343 |
| Jaipur | 1 | 41 | - | - | - | - | - | 41 | 10447 | - | - | - | - | - | - | - | - | - | - | 41 | 10447 |
| Sikar | 1 | 1 | - | - | - | - | - | 1 | 603 | - | - | - | - | - | - | - | - | - | - | 1 | 603 |

++ *Negligible,* * *Only Labour Reported;* All refrences in respect of Andhra Pradesh are as per its undivided statehood position (prior to bifurcation)

## Table – 7 : Production of Iron Ore, 2012-13 and 2013-14(P)
## (By Frequency Groups)

| Production Group ( in tonnes) | No. of mines | | Production for the Group (in '000 tonnes) | | Percentage in total production | | Cumulative percentage | |
|---|---|---|---|---|---|---|---|---|
| | 2012-13 | 2013-14(P) | 2012-13 | 2013-14 | 2012-13 | 2013-14(P) | 2012-13 | 2013-14(P) |
| **Total** | **310(16)** | **298(16)** | **136618** | **152433** | **100.00** | **100.00** | **-** | **-** |
| Up to 50,000 | 182(8) | 195(9) | 1159 | 935 | 0.85 | 0.61 | 0.85 | 0.61 |
| 50,001 - 100,000 | 18(6) | 18(7) | 1701 | 1848 | 1.24 | 1.21 | 2.09 | 1.82 |
| 100,001 - 500,000 | 60(2) | 35 | 14770 | 9721 | 10.81 | 6.38 | 12.90 | 8.20 |
| 500,001 - 1,000,000 | 22 | 15 | 16545 | 10124 | 12.11 | 6.64 | 25.01 | 14.84 |
| 1,000,001 – 1,500,000 | - | 4 | - | 4633 | - | 3.04 | 25.01 | 17.88 |
| 1,500,001 – 2,000,000 | 7 | 6 | 11362 | 10597 | 8.32 | 6.95 | 33.33 | 24.83 |
| 2,000,001 and Above | 21 | 25 | 91081 | 114575 | 66.67 | 75.17 | 100.00 | 100.00 |

## Table – 8 (A) : Mine-head Stocks of Iron Ore at the beginning of the year, 2013-14

### (By States/Grades)

(In '000 tonnes)

| State | Lumps | | | | | | | Fines | | | | | | | Concentrates | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | | Lumps, Fines & Concentrates |
| **India** | **4444** | **2266** | **1969** | **1562** | **7743** | **1848** | **19832** | **18205** | **31999** | **3958** | **23405** | **18983** | **3421** | **99971** | **72** | **119875** |
| Andhra Pradesh | 644 | 9 | 2 | - | 2 | ++ | **657** | 295 | - | - | - | ++ | 1 | **296** | - | **953** |
| Chhattisgarh | 5 | 4 | 3 | 26 | 303 | 446 | **787** | 93 | 93 | 40 | 369 | 1158 | 442 | **2195** | - | **2982** |
| Goa | 409 | 260 | 227 | 48 | 35 | - | **979** | 1750 | 939 | 376 | 293 | 354 | - | **3712** | 5 | **4696** |
| Jharkhand | 400 | 587 | 53 | 76 | 235 | ++ | **1351** | 2071 | 19963 | 269 | 530 | 137 | 2 | **22972** | - | **24323** |
| Karnataka | 1848 | 517 | 1346 | 771 | 2779 | 113 | **7374** | 2049 | 1005 | 1117 | 682 | 1213 | 119 | **6185** | ++ | **13559** |
| Madhya Pradesh | 473 | 205 | 23 | - | - | - | **701** | 1993 | 718 | 60 | - | - | - | **2771** | - | **3472** |
| Maharashtra | 117 | 7 | 4 | 17 | ++ | - | **145** | 207 | ++ | 20 | - | - | - | **227** | - | **372** |
| Odisha | 548 | 677 | 311 | 624 | 4389 | 1289 | **7838** | 9747 | 9281 | 2076 | 21531 | 16121 | 2857 | **61613** | 36 | **69487** |
| Rajasthan | ++ | - | - | - | - | - | **++** | - | - | - | - | - | - | **-** | 31 | **31** |

## Table – 8 (A) : Mine-head Stocks of Iron Ore at the end of the year , 2013-14 (P)

### (By States/Grades)

(In '000 tonnes)

| State | Lumps | | | | | | | Fines | | | | | | | Concentrates | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | | Lumps, Fines & Concentrates |
| **India** | **4430** | **2464** | **1427** | **2029** | **7054** | **2135** | **19539** | **22390** | **35631** | **4697** | **21820** | **16585** | **3218** | **104341** | **91** | **123971** |
| Andhra Pradesh | 499 | 13 | - | - | 1 | ++ | **513** | 362 | 10 | - | - | ++ | ++ | **372** | - | **885** |
| Chhattisgarh | 9 | 5 | 1 | 10 | 145 | 538 | **708** | 93 | 94 | 50 | 291 | 1081 | 604 | **2213** | - | **2921** |
| Goa | 410 | 263 | 227 | 48 | 36 | - | **984** | 1751 | 940 | 377 | 292 | 354 | - | **3714** | **5** | **4703** |
| Jharkhand | 403 | 552 | 69 | 117 | 451 | ++ | **1592** | 2144 | 20572 | 288 | 829 | 764 | - | **24597** | - | **26189** |
| Karnataka | 1852 | 586 | 702 | 618 | 1796 | 194 | **5748** | 2026 | 1356 | 872 | 1030 | 947 | 21 | **6252** | **11** | **12011** |
| Madhya Pradesh | 406 | 175 | 5 | - | - | - | **586** | 1526 | 576 | 79 | - | - | - | **2181** | - | **2767** |
| Maharashtra | 25 | 15 | 11 | 1 | 1 | - | **53** | 121 | ++ | 34 | - | - | - | **155** | - | **208** |
| Odisha | 824 | 855 | 412 | 1235 | 4624 | 1403 | **9353** | 14367 | 12083 | 2997 | 19378 | 13439 | 2593 | **64857** | **72** | **74282** |
| Rajasthan | 2 | - | - | - | - | - | **2** | - | - | - | - | - | - | **-** | **3** | **5** |

# 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 the large mechanised iron ore mines in the country at Bailadila (Chhattisgarh) and Donimalai (Karnataka). As part of its plan to enhance production capacity expansion of Deposit 11B mine to 7.0 million tonnes per annum has been taken up by NMDC. The balance work of this project are expected to be completed during FY 2014-15. The construction of Kumaraswamy Iron Ore Mine with capacity of 7.0 million tonnes per annum was taken up.The entire project is being executed through six packages. Civil works are completed for Primary & Secondary Crusher house, Dumper platform, Mine office Building. Erection & trial runs of Primary & Secondary Crusher have been completed. Civil & Structural works of Downhill conveyor system are under progress. The project is expected to be completed during the FY 2014-15. 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.

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 due to 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 Bellary-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 and 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 57.80 million tonnes per annum. However, as per the survey conducted by the Joint Plant Committee the total annual capacity in the Indian Iron Ore Pellet Industry during 2013-14 stood at 66.30 million tonnes. 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, which is suited to soft iron ore in the Bellary-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 as the the company has started producing 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. Iron ore slurry is received at this pellet plant at Visakhapatnam providing vital raw material for their steel plant at Hazira (Gujarat). Integrated pelletisation facility of 12 million tpy is being set up at Paradip, Odisha, in two phases by Essar Steel. Successful commissioning of Phase I (6 million tpy) has been completed, while second phase is under construction. The I$^{st}$ 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 that the pellets are quickly shipped to their steel plant in Hazira. After completion of second phase, the capacity of pellet plant, at Paradip, Odisha, will be scaled up to 12 million tpy and the total pellet plant capacity of the Company would augment 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 for making pellets 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 Bacheli interconnected by a Slurry Pipeline between Bacheli 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 are 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 is aimed not only at contributing significantly 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 17$^{th}$ 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 iron ore fines, other iron bearing wastes and coke dust are blended and combusted. The heat fuses the fines into course 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 70.21 million tonnes per annum. Almost all 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) has commissioned a sinter plant at their IISCO steel plant in West Bengal. This sinter plant has a capacity of 3.8 million tonnes per annum and had started its commercial production in December 2012. The installation of a 0.75 MTPY sinter plant by M/s Monnet Ispat and Energy Ltd has been completed and are 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 $m^3$ capacity with hot metal production from August 17, 2012. With this commissioning, Sesa'spig 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 Mangalore for manufacturing and supplying of foundry grade for 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 2013-14 was 7.95 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 93% of total production for sale of pig iron in the country in 2013-14. The production for sale of pig iron has increased from 1.6 mt in 1991-92 to 7. 95 mt in 2013-14.

## 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 88% of the total sponge iron production in the country in 2013-14 .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 45.00 million tonnes in 2013-14. Production has increased from 0.9 million tonnes in 1990-91 to 22.87 million tonnes in 2013-14.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'.

## 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, 2013-14 (By Plants)**

(In '000 tonnes)

| Name & location of plant | Annual installed capacity | Production | | Iron ore fines consumed | | General specifications of concentrates/fines used |
|---|---|---|---|---|---|---|
| | | 2012-13 | 2013-14 | 2012-13 | 2013-14 | |
| **A) Pellet Plants** | | | | | | |
| i) Rashmi Metaliks Ltd, Shyamraipur, Gokulpur, West Midnapore, WB. | 600 | 308 | 510 | 856 | 1100 | NA |
| ii) JSW Steel Ltd, Vijaynagar Works, Vidyanagar, Toranagally, Bellary, Karnataka | 9200 | 3516 | 3884 | 10406 | 9573 | NA |
| iii) Arya Iron & Steel Co.Pvt. Ltd, Matkambea Barbil, Odisha | 1200 | 936 | 925 | 1005 | 997 | NA |
| iv) Ardent Steel Ltd Phuljhar, Keonjhar, Odisha | 600 | 538 | NA | 602 | NA | NA |
| v) Sarda Energy and Minerals Ltd, Siltara Raipur, Chhattisgarh | 600 | 543 | 52 | 664 | 75 | NA |

(Contd.)

Table - 9 (Contd.

(In '000 tonnes)

| Name & location of plant | Annual installed capacity | Production | | Iron ore fines consumed | | General specifications of concentrates/fines used |
|---|---|---|---|---|---|---|
| | | 2012-13 | 2013-14 | 2012-13 | 2013-14 | |
| vi) KIOCL Ltd, Panambur, Mangalore, Karnataka. | 3500 | 1265 | 1710 | 1265 | 1710 | Fe 64% , $SiO_2$ + $Al_2O_3$ 6% (max.), S 0.05%, P 0.08% (max.), Size - 10 mm. |
| vii) Tata Steel Limited, Jamshedpur | 6000 | 2785 | 4492 | 10579 | 11971 | |
| 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 |
| xi) Godawari Power & Ispat Ltd Siltara, Chhattisgarh | 1800 | NA | NA | NA | NA | 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%, $Al_2O_3$ 1.35 to 2%, Size - 10 mm. |
| xiv) Jayaswal Neco Industries Ltd, Siltara, Raipur, Chhatisgarh. | 300 | NA | - | 589 | 618 | NA |
| xv) Shri Bajarang Power & Ispat Ltd, Borjhara, Tilda & Gondwara, Raipur Chhattisgarh. | 1200 | 0.5 | 467 | - | - | NA |
| xvi) Xindia Steels Ltd, Kunikere & Hirebaganal Ginigera, Koppal, Karnataka. | 800 | 600 | 717 | - | - | NA |
| xvii) Rexon Strips Ltd, Kumakela, Lathikata Rourkela, Sundargarh, Odisha | 300 | 4 | 383 | 21 | 53 | 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 | - | 1466 | |
| **B) Sintering Plant** | | | | | | |
| i) Bokaro Steel Plant, Jharkhand. | 6900 | NA | 4664 | NA | 3454 | Fe 63.88% (max.), $SiO_2$ 5.19% max, $Al_2O_3$ 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%. |

(Contd.)

Table - 9 (Contd.) (In '000 tonnes)

| Name & location of plant | Annual installed capacity | Production | | Iron ore fines consumed | | General specifications of concentrates/fines used |
|---|---|---|---|---|---|---|
| | | 2012-13 | 2013-14 | 2012-13 | 2013-14 | |
| iii) Durgapur Steel Plant, West Bengal. | 3009 | 3118 | 3104 | 2307 | NA | Fe >63%, $SiO_2$ 2.17 to 4.54%, $Al_2O_3$ 2.57 to 3.03%, Size +10 mm <10% , 1mm>75% |
| iv) Rourkela Steel Plant, Odisha. | 5300 | NA | 3763 | NA | 2874 | Fe 62.80%, $SiO_2$ 2.28%, $Al_2O_3$ 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.), $Al_2O_3$ 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 |
| vii) Tata Steel Ltd, Jamshedpur, Jharkhand. | 7700 | 7439 | 7648 | 10579 | 11971 | Fe 63 %, Size +10 mm. |
| viii) Usha Martin Ltd (Usha Alloys and Steel Division) Jamshedpur. | 715 | 639 | 630 | NA | 1466 | NA |
| ix) JSW Ispat Steel Ltd, Dolvi, Raigad, Maharashtra 402 107. | 2800 | NA | NA | NA | NA | NA |
| x) Neelachal lspat Nigam Ltd, Kalinga Nagar, Industrial Complex, Duburi-755 026, Distt. Jajpur, Odisha. | 1711 | NA | NA | NA | NA | Fe 63% (min.), Size + 10 mm |
| xi) Jindal Steel & Power Ltd, Raigarh, Chhattisgarh. | 2300 | NA | NA | NA | NA | NA |
| xii) Jayaswal Necco Industries Ltd, Siltara Growth Centre, Raipur-493 221, Chhattisgarh. | 640 | - | - | 589 | 618 | 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 | 1166 | 1245 | 537 | 736 | NA |
| xv) Kirloskar Ferrous Industries Ltd, Bevinahalli, Hitnal, Karnataka. | 500 | 359 | 377 | 193 | 211 | 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, Bellary, Karnataka. | 12950 | 9821 | 12755 | 10406 | 9573 | NA |
| xviii) Kalyani Steel Ltd, M/s Hospet Steels Ltd., Ginigera, Koppal, Karnataka | 500 | 69 | 246 | 59 | 100 | Fe: 60 - 62% |
| xxiv) Mukund Ltd, M/s Hospet Steel Ltd, Ginigera, Koppal, Karnataka | 500 | 98 | 308 | 82 | 207 | Fe: 60 - 62% |

(Contd.)

Table - 9 (Concld.) (In '000 tonnes)

| Name & location of plant | Annual installed capacity | Production | | Iron ore fines consumed | | General specifications of concentrates/fines used |
|---|---|---|---|---|---|---|
| | | 2012-13 | 2013-14 | 2012-13 | 2013-14 | |
| xx) Rashmi Metaliks Ltd, Shyamraipur, Gokulpur, West Midnapore, WB. | 580 | 270 | 274 | 856 | 1100 | NA |
| xxi) IISCO Steel Plant, Steel Authority of India, Burnpur, West Bengal | 3800 | 8 | 11 | 9 | 103 | NA |
| xxii) Tata Metaliks Ltd. Kharagpur West Bengal | 528 | - | 396 | - | 300 | NA |

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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 | $Al_2O_3 + SiO_2$ | 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 | 65% | 5% | 0.05% | 0.03% |
| | | 10-30 mm | – | – | – | – |
| | | 10-150 mm | – | – | – | – |

# CONSUMPTION

In 2013-14, about 107.88 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. Plantwise consumption of iron ore in steel plants about which information is available is furnished in Table-11. Industrywise consumption of iron ore from 2011-12 to 2013-14 is detailed in Table-12.

## Table – 11 : Consumption and Specifications of Iron Ore, 2012-13 and 2013-14 (By Steel Plants)

(In '000 tonnes)

| Steel plant | Iron ore consumption 2012-13 | | 2013-14 | | Specifications |
|---|---|---|---|---|---|
| | Lumps | Fines | Lumps | Fines | |
| Bokaro Steel Plant, Bokaro, Jharkhand. | NA | NA | 3454 | 2713 | Lumps: Fe 63.40%, $SiO_2$: 2.25%, $Al_2O_3$ 2.39%, Size: 10- 40 mm. Fines: Fe 62.24%, $SiO_2$ 3.36%, $Al_2O_3$ : 3.45% |
| Durgapur Steel Plant, Durgapur, West Bengal. | 1191 | 2307 | 1260 | 2335 | Lumps : Fe 62.48%, $Al_2O_3$ : 2.42%, Size: 10-50 mm. Fines: Fe 62.8%, $SiO_2$ : 2.28%, Size : -10 mm. |
| IISCO Steel Plant, Burnpur, West Bengal. | 369 | 9 | 333 | 103 | Lumps: Fe 62.86%, $SiO_2$ : 2.56%, $Al_2O_3$ : 2.56% (max.), Size: 10-40 mm . |
| Rourkela Steel Plant SAIL, Rourkela, Odisha | NA | NA | 1583 | 2874 | |
| JSW Steel Ltd, Vijay Nagar Works, Vidyanagar, Torangallu Karnataka | NA | NA | 8657 | 9573 | |

## Table – 12: Estimated Consumption* of Iron Ore@ 2011-12 to 2013-14 (By Industries)

(In tonnes)

| Industry | 2011-12 | 2012-13(R) | 2013-14(P) |
|---|---|---|---|
| **All Industries** | **100572400** | **103588300** | **107879300** |
| Alloy steel | 2600(2) | 2600(2) | 2600(2) |
| Cement | 1548600(64) | 1586200(71) | 1448800(71) |
| Ferro-alloys | 3700(4) | 3700(4) | 3700(4) |
| Coal washery ** | 35200(18) | 33000(19) | 32700(19) |
| Iron & steel | 66378400(29) | 72089700(31) | 77416000(31) |
| Sponge iron | 32603200(e) | 29872100(e) | 28971600(e) |
| Others (electrode, foundry, oill well drilling Paint, refractory) | 700(9) | 1000(7) | 3900(8) |

*Figures rounded off.*

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

* *Includes actual reported consumption and/or estimates made wherever required).*

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

** *Magnetite.*

# TRADE POLICY

As per the Foreign Trade Policy (FTP) for 2009-2014 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 supplied to all markets, irrespective of the Fe content | Free | |
| 26011100 | All iron ores 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 iron produced by KIOCL Ltd | STE | Export through KIOCL Ltd, Bengaluru |
| 26011210 | Iron ore pellets manufactured by KIOCL Ltd | STE | Export through KIOCL Ltd, Bengaluru |
| 26011290 | Rejects of iron ore chips and like generated from the manufacturing process after using imported raw material | Free | (i) The quantity of export of such rejects shall not be more than 10% of the imported raw materials<br>(ii) The size of the rejected pellets chips (fines) shall be less than 6 mm. |

***Source**: Export-Import Policy, 2009-2014.*

*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 87 billion tonnes. The world reserves of crude iron ore and iron content by principal countries is furnished in Table - 13.

In 2013, the world production of iron ore was 3,157 million tonnes as against 2,968 million tonnes in the previous year. China (46%), Australia (19%), Brazil (10%), India (5%) and Russia (3%) were the principal producers. These five countries accounted for about 83% of the world production of iron ore. The world production of iron ore is provided in Table-14.

## Australia

Australia was among the top three iron ore producers (in terms of iron content) in the world, along with Brazil and China. Australia's most significant iron ore mines were located in the Pilbara region of Western Australia, which accounted for 97.3% of the country's total iron ore production, followed by South Australia, (1.9%) and the Northern Territory and Tasmania (0.4% each). Owing to its limited domestic demand and production capacities for iron and steel, Australia exported about 95% of its iron ore output to such Asian countries as China, Japan, the Republic of Korea, and Taiwan. In 2013, Australia's iron ore and pellet exports increased to 579 tonnes from 493 tonnes in 2012. Faced with declining iron ore grades of domestic iron ore mines during the past two decades, Chinese iron and steel

producers relied on imported iron ore to meet their demand, and this trend was expected to continue during the next 5 years. Australia's iron ore exports to China increased to 441 tonnes in 2013 from 358 tonnes in 2012. Australia's iron ore exports to Japan increased to 79 tonnes from 75 tonnes, whereas those to the Republic of Korea decreased to 45 tonnes from 46 tonnes.

As a result of an increase in investment during the past several years, expansions and new mines in Australia were expected to support strong growth in iron ore exports from Australia. A number of greenfield and brownfield iron ore projects were at various stages of development. Rio Tinto planned to expand the capacity of its Pilbara iron ore operations to a total of 360 tonnes per year in 2015. BHP Billiton was expected to increase production capacity to 290 tonnes per year in 2014. Fortescue Metals Group's Chichester Hub and Solomon Hub expansion projects were projected to increase the company's iron ore output capacity to 155 tonnes per year in 2014.

## Canada

The country's iron ore typically graded between 30% and 40% iron and required beneficiation to become a marketable product. Canadian iron ore producers used gravitational and magnetic concentration methods to produce concentrates with an iron content of about 65%. In Canada, Arcelor Mittal Mines Canada Inc., Iron Ore Company of Canada (IOC), Cliffs Natural Resources Inc., Tata Steel Minerals Canada Ltd., and Wabush Mines Ltd. were major iron-ore-producing companies and accounted for more than 90% of the country's total output. With limited ironmaking capacity in the country, these companies exported more than 50% of their iron ore output to overseas markets.

In 2011, IOC, which was a subsidiary of Rio Tinto plc, announced that the company planned to expand the concentrator capacity at its operation in Labrador City, Newfoundland. The first phase expansion was completed in 2012, and the output capacity increased to 22 million metric tonnes per year; the second phase expansion was aimed at improving the magnetite recovery circuit and was completed in 2012. A third phase expansion would increase the concentrator capacity to 30 million metric tonnes per year; it was scheduled to be completed in 2015. The company planned to develop two new deposits (Wabush 3 and Wabush 6). The Wabush 3 deposit is located within IOC's existing property boundaries and had iron ore resources of 744 million tonnes (measured and indicated). The company planned to develop an open pit that would have an estimated operating life of about 45 years depending on the mining rate.

Alderon Iron Ore Corp. announced that the Federal Government of Canada had approved the environmental impact statement report for the development of the Kami iron ore project in western Labrador. The Kami project had iron ore resources of 1.27 billion tonnes (Gt) (measured and indicated) at a grade of 29.6% iron. Alderon planned to begin the construction of an open pit mine and processing plant in 2015 that would produce 8 metric tonnes per year of iron ore concentrates containing 65% iron.

## Liberia

ArcelorMittal produced about 4.7 million tonnes of iron ore in 2013, which included direct-shipping ore from its WRP and stockpiled material. The company planned to further increase production capacity to 15 million tonnes per year by replacing the current production of direct-shipping ore (60% Fe content) with that of sinter fines (62% Fe content) by the end of 2015. The WRP consisted of three iron ore deposits located about 300 km northeast of the capital city of Monrovia along Nimba County's mountain range. The WRP deposits consist of a highly weathered 250 to 450 meter (m)-thick itabirite iron formation.

The commissioning of the first phase of the development of the Bong Mines took place on July 30, 2013, at Fuama District in lower Bong County. Upon completion, Wuhan Iron and Steel (Group) Corp. (WISCO) of Hong Kong, through its subsidiary China Union Mining Co. Ltd., planned to produce about 1 million tonnes of iron ore and to ramp up production to 10 million tonnes by 2016.

Vedanta Resources plc. of India continued to advance its Western Cluster Iron Ore project (WCL). As of June 30, 2013, a total of 91,500 m of drilling had been completed for the project. The company was expected to deliver its first shipment of iron ore by March 2014 and to produce 2 million tonnes per year of iron ore by December 2014. Vedanta held 100% interest in the WCL through its subsidiary Sesa Goa Ltd. The WCL included the Bea Mountain, the Bomi Hills, and the Mano River iron ore deposits, which are located between 70 and 140 km northwest of Monrovia. A Joint Ore Reserves Committee (JORC)-compliant study completed in 2012 confirmed reserves of 966 million tonnes of iron ore.

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

(In million tonnes)

| Country | Reserves | |
|---|---|---|
| | Crude ore | Iron content |
| **World : Total (rounded)** | **190000** | **87000** |
| Australia | 53000 | 23000 |
| Brazil | 31000 | 16000 |
| Canada | 6300 | 2300 |
| China | 23000 | 7200 |
| India | 8100 | 5200 |
| Iran | 2500 | 1400 |
| Kazakhstan | 2500 | 900 |
| Russia | 25000 | 14000 |
| South Africa | 1000 | 650 |
| Sweden | 3500 | 2200 |
| Ukraine | 6500 | 2300 |
| USA | 6900 | 2100 |
| Other countries | 18000 | 9500 |

***Source:*** *Mineral Commodity Summaries, 2015.*

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

(In million tonnes)

| Country | 2011 | 2012 | 2013 |
|---|---|---|---|
| **World : Total** | **3018** | **2968** | **3157** |
| Australia | 477 | 520 | 609 |
| Brazil | 460 | 401 | 317 |
| Canada * | 34 | 39 | 43 |
| Chile | 13 | 17 | 17 |
| China | 1327 | 1310 | 1451 |
| India** | 169 | 137 | 152 |
| Iran | 44 | 40 | 40e |
| Kazakhstan | 52 | 53 | 52 |
| Mexico | 19 | 23 | 28 |
| Mauritania | 11 | 11 | 11[e] |
| Russia | 104 | 104 | 102 |
| South Africa@ | 58 | 67 | 71 |
| Sweden | 31 | 32 | 37 |
| Ukraine | 81 | 67 | 70 |
| USA | 55 | 54 | 52[e] |
| Venezuela[e] | 17 | 15 | 11 |
| Other countries | 66 | 78 | 94 |

***Source:*** *World Mineral Production, 2009-2013.*
** Including by-product iron ore.*
*@ including by-product magnetite, e- Estimated.*

*** India's production of iron ore in 2011-12 , 2012-13 and 2013-2014 was 168.58 million tonnes, 136.62 million tonnes and 152.43 million tonnes, respectively.*

**Table – 15 : World Production of Pig Iron* (By Principal Countries)**

(In '000 tonnes)

| Country | 2011 | 2012 | 2013 |
|---|---|---|---|
| **World : Total** | **1160000** | **1183000** | **1239000** |
| Brazil | 33416 | 32448 | 31552 |
| China | 629693 | 657905 | 708970 |
| France | 9697 | 9532 | 10300 |
| Germany | 27943 | 27046 | 27177 |
| India | 66460 | 62057 | 64893 |
| Iran | 12670 | 13725 | 16465 |
| Japan | 81028 | 81405 | 83849 |
| Korea, Rep. of | 42213 | 41718 | 41045 |
| Mexico | 10463 | 10198 | 11011 |
| Russia | 48200 | 50500 | 50000 |
| Taiwan | 12940 | 11784 | 12122 |
| Ukraine | 28878 | 28487 | 29089 |
| USA | 30233 | 32062 | 30381 |
| Other countries | 126166 | 124133 | 122146 |

***Source:*** *World Mineral Production, 2009-2013.*
** the data includes the production of sponge iron & Direct Reduced Iron (DRI)*

# FOREIGN TRADE

## Exports

Exports of iron ore decreased considerably to 16.30 million tonnes in 2013-14 from 18.12 million tonnes in the previous year. In terms of value, the iron ore exports increased to ₹ 9,481 crore in 2013-14 from ₹ 8,985 crore in 2012-13. The exports of iron ore in 2013-14 in terms of volume comprised iron ore fines (81%), iron ore pellets (11%) , iron ore lumps (7%), and very negligible quantity of iron ore non-agglomerated concentrate and iron ore pyrites. Exports were mainly to China (83%), Japan (12%), Korea, Rep of (3%) and Oman (1%) (Tables - 16 to 21).

## Imports

Imports of iron ore decreased drastically to 0.37 million tonnes in 2013-14 as compared to 3.06 million tonnes in the previous year. The imports in 2013-14 comprised iron ore pellets (80%), lumps (16%), iron ore non-agglomerated concentrates (3%) and negligible quantity of iron ore pyrites, etc. Imports of iron ore were from Russia (53%), Bahrain (15%), Australia (12%), South Africa (11%), Senegal (4%), Finland & Mali (2% each) and Ukraine (1%). (Tables-22 to 26).

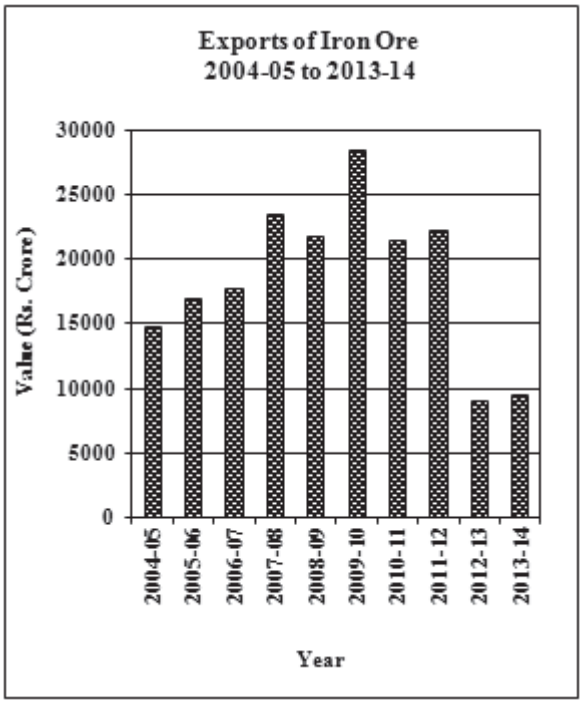


**Table – 16 : Exports of Iron Ore : Total (By Countries)**

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **18122** | **89852116** | **16302** | **94811058** |
| China | 16083 | 76977759 | 13473 | 73378865 |
| Japan | 1543 | 10126589 | 1961 | 14873390 |
| Korea, Rep. of | 134 | 759604 | 407 | 3065125 |
| Oman | - | - | 202 | 1804406 |
| Egypt | - | - | 54 | 460485 |
| Iran | - | - | 34 | 337634 |
| Vietnam | ++ | 109 | 39 | 301512 |
| Saudi Arabia | ++ | 369 | 29 | 284977 |
| Switzerland | - | - | 45 | 231336 |
| UAE | 19 | 75854 | 52 | 64905 |
| Other countries | 343 | 1911832 | 6 | 8423 |

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

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **1519** | **7732861** | **1162** | **7618830** |
| Japan | 387 | 2735793 | 718 | 5674266 |
| China | 1121 | 4954028 | 444 | 1943843 |
| Nepal | ++ | 24 | ++ | 714 |
| Brazil | - | - | ++ | 6 |
| Other countries | 11 | 43016 | ++ | 1 |

**Table – 18 : Exports of Iron Ore : Fines (By Countries)**

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **16563** | **81863595** | **13261** | **71549670** |
| China | 14922 | 71776160 | 11564 | 59050676 |
| Japan | 1156 | 7390796 | 1243 | 9199124 |
| Korea, Rep.of | 134 | 759604 | 407 | 3064859 |
| Switzerland | - | - | 45 | 231336 |
| Nepal | 2 | 5705 | 2 | 3575 |
| Germany | ++ | 4 | ++ | 53 |
| France | - | - | ++ | 47 |
| Other countries | 349 | 1931326 | - | - |

**Table – 19 : Exports of Iron Ore: Concentrates Non-agglomerated (By Countries)**

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **40** | **249059** | **163** | **323083** |
| China | 40 | 247570 | 110 | 255406 |
| UAE | - | - | 52 | 64867 |
| Nepal | ++ | 97 | 1 | 1389 |
| Philippines | - | - | ++ | 1126 |
| Kazakhstan | - | - | ++ | 282 |
| Mauritious | - | - | ++ | 13 |
| Other countries | ++ | 1392 | - | - |

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

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **++** | **202** | **1713** | **15316357** |
| China | - | - | 1355 | 12128939 |
| Oman | - | - | 202 | 1804400 |
| Egypt | - | - | 54 | 460485 |
| Iran | - | - | 34 | 336285 |
| Vietnam | - | - | 39 | 301512 |
| Saudi Arabia | - | - | 29 | 284736 |
| Other countries | ++ | 202 | - | - |

**Table – 21 : Exports of Iron Ore : Pyrites (By Countries)**

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **++** | **6399** | **3** | **3118** |
| Iran | - | - | ++ | 1349 |
| Sri Lanka | ++ | 677 | ++ | 633 |
| Korea Rep. of | - | - | ++ | 266 |
| Saudi Arabia | ++ | 176 | ++ | 241 |
| Qatar | - | - | ++ | 235 |
| New Zealand | - | - | ++ | 139 |
| Nigeria | ++ | 16 | 3 | 83 |
| Cameroon | ++ | 1307 | ++ | 82 |
| Spain | - | - | ++ | 45 |
| UAE | ++ | 835 | ++ | 38 |
| Other countries | ++ | 3388 | ++ | 7 |

**Table – 22 : Imports of Iron Ore: Total (By Countries)**

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **3056** | **25778633** | **369** | **3423552** |
| Russia | 164 | 1527974 | 194 | 1809137 |
| Bahrain | 467 | 4771974 | 57 | 570946 |
| Australia | 425 | 3334513 | 43 | 389602 |
| South Africa | 1162 | 8781908 | 41 | 373604 |
| Senegal | - | - | 15 | 106119 |
| Finland | 54 | 448295 | 7 | 70946 |
| Ukraine | 396 | 3628745 | 5 | 46472 |
| Mali | 67 | 436243 | 7 | 41319 |
| USA | 5 | 40680 | ++ | 4257 |
| China | ++ | 3156 | ++ | 3190 |
| Other countries | 316 | 2805145 | ++ | 7960 |

**Table – 23: Imports of Iron Ore Concentrates: Non-agglomerated (By Countries)**

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **692** | **5581892** | **11** | **79147** |
| Australia | 30 | 228513 | 5 | 38731 |
| Mali | - | - | 6 | 36889 |
| South Africa | 601 | 4782493 | ++ | 3299 |
| Nigeria | - | - | ++ | 236 |
| Sudan | - | - | ++ | 62 |
| Other countries | 61 | 570886 | - | - |

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

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **1474** | **14002063** | **297** | **2748216** |
| Russia | 164 | 1527974 | 194 | 1809137 |
| Bahrain | 444 | 4568849 | 57 | 570946 |
| Australia | 234 | 2086494 | 36 | 282015 |
| Ukraine | 358 | 3264573 | 5 | 46472 |
| Finland | 53 | 433743 | 5 | 39646 |
| Other countries | 221 | 2120430 | - | - |

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

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **1** | **28996** | **2** | **44834** |
| Finland | 1 | 14552 | 2 | 31300 |
| USA | ++ | 1610 | ++ | 4257 |
| China | ++ | 1103 | ++ | 3190 |
| Italy | ++ | 1884 | ++ | 2732 |
| Netherlands | ++ | 3650 | ++ | 1684 |
| Turkey | - | - | ++ | 804 |
| Austria | ++ | 490 | ++ | 576 |
| Pakistan | - | - | ++ | 243 |
| Thailand | ++ | 855 | ++ | 48 |
| Other countries | ++ | 4852 | - | - |

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

| Country | 2012-13 | | 2013-14 | |
|---|---|---|---|---|
| | Qty ('000 t) | Value (₹'000) | Qty ('000 t) | Value (₹'000) |
| **All Countries** | **889** | **6165682** | **59** | **551355** |
| South Africa | 561 | 3999415 | 41 | 370374 |
| Senegal | - | - | 15 | 106119 |
| Australia | 161 | 1019505 | 2 | 68856 |
| Mali | 67 | 436243 | 1 | 4430 |
| Iran | ++ | 493 | ++ | 1576 |
| Other countries | 100 | 710026 | - | - |

# 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 Plan, Planning Commission of India, has estimated that 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 futher 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.