MINERAL AND METAL SCENARIO

3 Mineral and Metal Scenario

National Mineral Scenario

3.1 Minerals are valuable natural resources being finite and non-renewable. They constitute the vital raw materials for many basic industries and are a major resource for development. The history of mineral extraction in India dates back to the days of the Harappan civilization. The wide availability of the minerals in the form of abundant rich reserves made it very conducive for the growth and development of the mining sector in India.

3.2 The country is endowed with huge resources of many metallic and non-metallic minerals. Mining sector is an important segment of the Indian economy. Since independence, there has been a pronounced growth in the mineral production both in terms of quantity and value. India produces as many as 86 minerals, which include 4 fuels, 10 metallic, 46 non-metallic, 3 atomic and 23 minor minerals (including building and other materials).

Mineral Production

3.3 Based on the overall trend so far, the index of mineral production (base 1993-94=100) for the year 2008-09 is expected to be 175.38 as compared to 171.57 for 2007-08 showing a positive growth of 2.34%. The trend of index of mineral production for the last five years is depicted in Figure 3.1.

3.4 The total value of mineral production (excluding atomic minerals) during 2008-09 is estimated at Rs. 115980.53 crores, which shows an increase of about 7.10% over that of the previous year. During 2008-09, provisional value for fuel minerals would account for Rs. 73063.37 crores or 62.25% metallic minerals, Rs. 29189.32 crores or 25.17% of the total value and

![Index of Mineral Production](Base 1993-94=100)
non-metallic minerals including minor minerals Rs. 13727.84 crores or 11.84% of the total value. Information on production and value of selected minerals from 2004-2005 to 2008-09 is given in Annexure 3.1. The details of Export and Import of Minerals during the period 2003-04 to 2007-08 is given in Annexure 3.2 and Annexure 3.3. The trend of value of mineral production for last five years is depicted in figure 3.2. The value of minerals by groups for the last five years is given in Figure 3.3.

Price Trend

3.5 The wholesale price index for non-fuel minerals (base 1993-94=100) stood at 609.0 in January, 2009 and the corresponding index for January, 2008 was 471.1. The minerals included in the wholesale price index are Bauxite, Chromite, Iron ore, Manganese ore, Asbestos, Barytes, Dolomite, Felspar, Fireclay, Fluorite, Gypsum, Kaolin, Limestone, Magnesite, Ochre, Phosphorite, Silica sand, Steatite and Vermiculite. The
wholesale price index for metallic minerals was 917.0 in January, 2009 as compared to 691.6 in January, 2008 and that of other minerals was 122.5 in January, 2009 as compared to 122.9 in January, 2008. The wholesale price index for coal stood at 251.8 in January, 2009 as compared to 251.9 in January, 2008. The wholesale price index of mineral oils stood at 389.3 in January, 2009 and that in January, 2008 it was 403.5.

**Gross Domestic Product From Mining & Quarrying Sector**

3.6 The Gross Domestic Product (GDP) accrued from mining and quarrying sector at 1999-2000 price is estimated by Central Statistical Organisation (CSO). In 2008-09 (Advanced Estimate), the mining and quarrying sector accounted for about 1.94% of GDP. The contribution of mining and quarrying sector to GDP in 2008-09 (AE) at Rs. 64,891 crores indicated an increase of 4.7% over that in the preceding period.

**Mining**

3.7 Indian mining industry is characterized by a large number of small operational mines. The number of mines which reported mineral production (excluding minor minerals, petroleum (crude), natural gas and atomic minerals) in India was 2954 in 2008-09 as against 2854 in the previous year. Out of 2954 reporting mines, 433 were located in Gujarat followed by Andhra Pradesh (406), Madhya Pradesh (298), Jharkhand (298), Rajasthan (252), Orissa (236), Karnataka (230), Tamil Nadu (159), Maharashtra (154), Chhattisgarh (150) and West Bengal (113). These 11 states together accounted for 92.38% of total number of mines in the country in 2008-09. The number of reporting mines are given in Table 3.1

3.8 During 2008-09, mineral production was reported from 23 States and Union Territories of which the bulk of value of mineral production of about 78.99% was confined to 8 States (Including offshore areas) only. Offshore areas continued to be in leading position, in terms of value of mineral production in the country and had the share of 19.36% in the national output. Next in order was Orissa with a share of 14.70%

<table>
<thead>
<tr>
<th>Sector</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Minerals*</td>
<td>3005</td>
<td>2854</td>
<td>2954</td>
</tr>
<tr>
<td>Coal (including Lignite)</td>
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<td>691</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>1796</td>
<td>1609</td>
<td>1694</td>
</tr>
</tbody>
</table>

* Excluding atomic minerals, petroleum (crude), natural gas (utilized) and minor minerals.

followed by Chhattisgarh (11.61%), Jharkhand (8.94%), Madhya Pradesh (7.83%), Andhra Pradesh (6.46%), Gujarat (5.09%), Karnataka (5.00%), Maharashtra (4.39%), Goa (3.35%), Assam (3.14%) and West Bengal (3.11%) in the total value of mineral production. Remaining 11 States/Union Territories having individual share of less than 3% together accounted for 7.02% of total value during the year under review.

3.9 State-wise analysis revealed that during 2008-09, the value of mineral production in most of the principal mineral producing States was on higher side as compared to that in the previous year. State-wise increase in the value of mineral production was Meghalaya (51.05%), Bihar (44.54%), Goa (41.95%), Orissa (16.62%), Karnataka (14.61%), Chhattisgarh (13.65%), West Bengal (3.74%) and Assam (2.52%), during the year under review. The all India Reserves & Resources of various minerals as on 01.04.2005 as per UNFC system is given in Annexure 3.4.

3.10 During 2007-08, the Public Sector continued to play a dominant role in mineral production accounting for 67% or Rs.72,863 crores in the total value. Small mines, which were mostly in the private sector, continued to be operated manually either as proprietary or partnership ventures. The minerals which were wholly mined/recovered by the public/joint sector in 2007-08 were Copper ore & concentrate Diamond, Dunite, Fluorite (graded) & concentrate Phosphorite/
Rock phosphate, Rock salt, Sand (others), Selenite and Sulphur. By and large, almost the entire production of Lignite, Gold (primary and secondary of indigenous origin) and Gypsum was from Public Sector. In 2007-08, the Public Sector accounted for sizeable 92% production of Coal, 85% of petroleum (crude), 76% of Natural gas (utilized), 76% of Tin concentrate, 97% of Barytes, 75% of Kyanite, 71% of Sillimanite and 68% of Magnesite.

3.11 India’s ranking in 2007-08 in world production was 2nd in barytes, chromite and talc/steatite/pyrophyllite, 3rd in coal & lignite and bauxite, 4th in iron ore and kyanite/sillimanite, 5th in manganese ore and steel (crude), 7th in zinc and 8th in aluminium. The statistics on indigenous and world production of principal minerals and metals are given in Annexure 3.5.

**Self-Reliance in Minerals & Mineral-Based Products**

3.12 India continued to be wholly or largely self-sufficient in minerals which constitute primary mineral raw materials to industries, such as, thermal power generation, iron & steel, ferro-alloys, aluminium, cement, various types of refractories, china clay-based ceramics, glass, chemicals like caustic soda, soda ash, calcium carbide, titania white pigment, etc. India is, by and large, self-sufficient in coal (with the exception of very low ash coking coal required by the steel plants) and lignite among mineral fuels, bauxite, chromite, iron, manganese ores, ilmenite and rutile among metallic minerals; and almost all the industrial minerals with the exception of chrysotile asbestos, borax, fluorite, kyanite, potash, rock phosphate and elemental sulphur. Despite high degree of self-sufficiency, some quantities of flaky and amorphous graphite of high fixed carbon, kaolin and ball clay for special applications, very low silica limestone, dead-burnt magnesite and sea water magnesia, battery grade manganese dioxide, etc. were imported to meet the demand for either blending with locally available mineral raw materials and/or for manufacturing special qualities of mineral-based products. To meet the increasing demand of uncut diamonds, emerald and other precious and semi-precious stones by the domestic cutting and polishing industry, India continued to depend on imports of raw uncut stones for their value-added re-exports. The degree of self-sufficiency in respect of various principal minerals and metals / ferro-alloys in 2007-08 is given in Annexure 3.6.

**PRODUCTION TRENDS**

**Metallic Minerals**

3.13 The value of metallic minerals in 2007-08 at Rs.24,038 crores increased by about 31% over the previous year. Among the principal metallic minerals, iron ore contributed Rs.18,495 crores or 76.9%, chromite Rs.2020 crores or 8.4%, lead & zinc (concentrate) Rs. 1080 crores or 4.5%, manganese ore Rs. 1098 crores or 4.6%, copper (concentrate) Rs. 383 crores or 1.6%, bauxite Rs. 526 crores or 2.2%, gold Rs. 283 crores or 1.17%, while the remaining was jointly shared by silver and tin concentrates.

The production of iron ore at about 206.45 million tonnes in 2007-08 registered an increase of 10% over the previous year. About 32% of the total production was shared by Public Sector Companies like SAIL (including IISCO), NMDC, etc. The share of Private Sector was 68% which includes Tata Steel (formerly TISCO) (7%). Almost the entire production of iron ore (94%) accrued from Orissa, Karnataka, Chhattisgarh, Goa and Jharkhand during the year. The remaining 6% production was reported from Andhra Pradesh, Madhya Pradesh, Maharashtra and Rajasthan.

The production of copper concentrate at 159 thousand tonnes in 2007-08 increased by about 6% as compared to the previous year. Average metal content in copper concentrate was 21.75% Cu. The production of chromite at 4.80 million tonnes in 2007-08 decreased by 9% as compared to the previous year. Orissa reported almost entire output of chromite (99.7%) in the country. A nominal production was reported from Karnataka. Mining of chromite was mostly dominated by private sector producers; viz, Tata Steel (formerly TISCO), IMFAL, Balasore Alloys Ltd., Jindal Strips Private Ltd. and FACOR having their own plants, jointly
accounted for 63% of total production during 2007-08. Three Public Sector Companies; viz, Orissa Mining Corporation (OMC), Mysore Mineral Ltd. (MML) and Industrial Development Corp. of Orissa Ltd. (IDCOL) together reported 30% of the total production in 2007-08. The production of manganese ore at 2.6 million tonnes in 2007-08 increased by about 21% compared to that in the previous year. (MOIL) continued to be the largest producer of manganese ore with a share of 50% of the total production in 2007-08 followed by Tata Steel (12%), SMIOR (9%) and Mangilal Rungta (4%). Of the total production of manganese ore in 2007-08, Orissa contributed 27%, Maharashtra 33%, Madhya Pradesh 22%, Karnataka 12% and Andhra Pradesh 5%. The remaining 7.1% was jointly shared by Goa and Jharkhand.

The production of gold at 2858 kg (excluding by-product gold recovery from imported concentrates) in 2007-08 registered an increase of about 14.9% as compared to the previous year. Karnataka was the leading producer of gold accounting for 94% of the total production. The remaining production was reported from Jharkhand. The production of bauxite at 23.08 million tonnes in 2007-08 increased by 47% compared to the previous year. The five major companies; namely, NALCO, HINDALCO, Prabhu Das Vithal Das, BALCO and Bombay Minerals Limited engaged in bauxite mining in the country, jointly contributed 49% of the total production of bauxite in 2007-08. Gujarat accounted for 54% of the total output of bauxite during 2007-08 followed by Orissa (20%), Rajasthan (16%), Madhya Pradesh (12%), and Tamil Nadu (9%), Chhattisgarh and Karnataka (8% each). The remaining 13% of the total production was shared by other limestone producing States. About 53% of the total production was reported by 15 private sector companies. Some of them are Grasim Industries Ltd., The Associated Cement Cos. Ltd. and Ultra Tech Cement Ltd. (9% each), India Cement Ltd. and Gujarat Ambuja (5% each), Birla Corporation Ltd. and Madras Cement Ltd. (3% each).

The production of phosphorite/rock phosphate at 1860 thousand tonnes increased by 17% in 2007-08 as compared to the previous year. The entire production was from Public Sector. Jhamarkotra mine of Rajasthan State Mines & Minerals Ltd. (RSMML) alone accounted for 94% of the total production in India and the entire production of Rajasthan during 2007-08. Madhya Pradesh contributed the remaining 6% of the production. The production of dolomite at 5117 thousand tonnes in 2007-08 registered 1% decrease as compared to the preceding year. Four major companies; viz, SAIL (21%), Rashtriya Ispat Nigam Ltd. (13%), Bisra Stone Lime Co. (12%) and Tata Steel (formerly TISCO) (9%) together accounted for 55% of the dolomite produced in 2007-08. Orissa (32%), Chhattisgarh (23%) and Andhra Pradesh (25%) were the principal producing States of dolomite. The remaining 20% was contributed by six States during 2007-08.

Non-Metallic Minerals

3.14 The value of production of non-metallic minerals at Rs. 3446 crores during 2007-08 increased by 2.8% as compared to the previous year. Limestone retained its leading position by contributing 70% of the total value of non-metallic minerals in 2007-08. The other non-metallic minerals in the order of importance were phosphorite/rock phosphate (9%), kaolin (4.5%), dolomite (3.7%), barytes (1.6%) and talc/soapstone/steatite (1.5%), gypsum (1.6%), silica sand (1.2%) and garnet (abrasive) & magnesite (about 1% each). The remaining 5% was from other non-metallic minerals.

The production of limestone at 188 million tonnes in 2007-08 registered a decrease of 4% over the previous year. Limestone is widely produced in India. As much as 84% of the total output in 2007-08 was contributed by seven principal States; viz, Andhra Pradesh (20%), Rajasthan (16%), Madhya Pradesh (14%), Gujarat (12%), and Tamil Nadu (9%), Chhattisgarh and Karnataka (8% each). The remaining 13% of the total production was shared by other limestone producing States. About 53% of the total production was reported by 15 private sector companies. Some of them are Grasim Industries Ltd., The Associated Cement Cos. Ltd. and Ultra Tech Cement Ltd. (9% each), India Cement Ltd. and Gujarat Ambuja (5% each), Birla Corporation Ltd. and Madras Cement Ltd. (3% each).
the year, namely, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra and Rajasthan.

The production of kaolin in 2007-08 at 1292 thousand tonnes decreased by 12% as compared to that in the previous year. Nearly 38% of total output of kaolin in 2007-08 was reported from Gujarat followed by Kerala (30%) and by Rajasthan (16%). Production of gypsum at 2.61 million tonnes in 2007-08 registered a decrease of 13% as compared to the previous year. By and large, the entire production of gypsum was reported from Rajasthan (99%). The remaining 1% was from Jammu & Kashmir and Gujarat. Two Public Sector Companies; namely, RSMML and Fertilizer Corporation of India Ltd. accounted for almost the entire production. The production of magnesite at 248 thousand tonnes during 2007-08 increased by 4% as compared to the previous year.

The production of talc/soapstone/steatite in 2007-08 at 826 thousand tonnes increased by about 12% over the previous year. Rajasthan, the principal State accounted for 70% of the total production in 2007-08. Five principal producers in Rajasthan; namely, Associated Soapstone Distributing Co. (P) Ltd. (25%), Udaipur Mineral Development Syndicate (P) Ltd. (23%), Parbatia Mines (6%) Naivalya Mineral Industries Pvt. Ltd. and Katiyar Mining and Industrial Corp. (5% each) together accounted for 64% of the total production of talc/soapstone/steatite in 2007-08.

**Minor Minerals**

3.15 The value of minor minerals at Rs 10,467.4 crores in 2005-06 was higher by 23.7% as compared to that in the previous year. Andhra Pradesh with share of 32.2% in the value of minor minerals produced in the country, continued to occupy the top position. Rajasthan remained at second place and had a share of 24.6% to the value of minor minerals. Next in the order were Uttar Pradesh with a share of 14.8%, Bihar 10.4%, Gujarat 4.2%, Maharashtra 3.5% and Madhya Pradesh 2.2%. The individual share of Haryana and Kerala was about 1.4% each. The remaining States and Union Territories was less than 1% each.

Mineral-wise analysis revealed that building stone had the largest share of 24.5% to the value of minor minerals followed by brick-earth 20.9%, road metals 17.1%, marble 12.1%, ordinary sand 6.4%, quartzite & sandstone 5.2%, limestone 3.6%, gravel 3.3%, murrum 1.8%, kankar 1.5%, ordinary earth 1.4% and ordinary clay 1.1%. The remaining minerals together contributed 1.1% of the value of minor minerals. The share of minor minerals in the value of mineral production was about 10.4% in 2004-05 and 11.6% in 2005-06.

**State-wise Mineral Scenario**

3.16 During 2008-09, mineral production was reported from 23 States and Union Territories of which the bulk of value of mineral production of about 78.99% was confined to 8 States (including offshore areas) only. Offshore areas continued to be in leading position, in terms of value of mineral production in the country and had the share of 19.36% in the national output. Next in order was Orissa with a share of 14.70% followed by Chhattisgarh (11.61%), Jharkhand (8.94%), Madhya Pradesh (7.83%), Andhra Pradesh (6.46%), Gujarat (5.09%), Karnataka (5.00%), Maharashtra (4.39%), Goa (3.35%), Assam (3.14%) and West Bengal (3.11%) in the total value of mineral production. Remaining 11 States/Union Territories having individual share of less than 3% together accounted for 7.02% of total value during the year under review. The contribution of States/Regions in the value of mineral production during 2008-09 is pictorially shown in Figure 3.4.

3.17 State-wise analysis revealed that during 2008-09, the value of mineral production in most of the principal mineral producing States was on higher side as compared to that in the previous year. State wise increase in the value of mineral production was Meghalaya (51.05%), Bihar (44.54%), Goa (41.95%), Orissa (16.62%), Karnataka (14.61%), Chhattisgarh (13.65%), West Bengal (3.74%) and Assam (2.52%), during the year under review.
The State wise value of mineral production during 2004-05 to 2007-08 is given in Annexure 3.5.

SCENARIO OF MINERAL RICH STATES

3.18 The review of Mineral rich States of India is given in subsequent paragraphs.

1. ANDHRA PRADESH

Mineral Resources

Andhra Pradesh is the leading producer of chrysotile asbestos, barytes, mica, felspar, vermiculite, quartz, laterite, silica sand, dolomite and limestone. State accounts for 94% barytes, 63% ball clay, 61% corundum, 40% diamond, 39% calcite, 28% mica, 26% garnet, 23% ilmenite, 20% limestone and 15% dolomite resources of the country. State is endowed with the internationally known black, pink, blue and multicoloured varieties of granites. Krishna-Godavari basin areas of the State have emerged as new promising areas for hydrocarbons-specially natural gas. Important minerals occurring in the State are apatite in Visakhapatnam district; asbestos in Cuddapah district; ball clay in West Godavari district; barytes in Anantapur, Cuddapah, Khammam, Krishna, Kurnool, Nellore and Prakasam districts; calcite in Anantapur, Cuddapah, Kurnool and Visakhapatnam districts; china clay in Adilabad, Anantapur, Chittoor, Cuddapah, East Godavari, West Godavari, Guntur, Kurnool, Mahaboobnagar, Nalgonda, Nellore, Rangareddy, Visakhapatnam and Warangal districts; coal in Adilabad, East and West Godavari, Karimnagar, Khammam and Warangal districts; corundum in Anantapur and Khammam districts; dolomite in Anantapur, Khammam, Kurnool and Warangal districts; felspar in Anantapur, West Godavari, Hyderabad, Khammam, Mahaboobnagar, Nellore, Rangareddy and Vizianagaram districts; fireclay in Adilabad, Chittoor, Cuddapah, East Godavari, West Godavari, Kurnool, Nalgonda and Srikakulam districts; garnet in East Godavari, Khammam and Nellore districts; granite in Anantapur, Chittoor, Cuddapah, Guntur, Khammam, Medak, Nalgonda, Nellore, Prakasam, Rangareddy, Srikakulam, Vizianagaram and Warangal districts; iron ore (hematite) in Anantapur, Cuddapah, Guntur, Khammam, Krishna, Kurnool and Nellore districts; iron ore (magnetite) in Adilabad, Prakasam and Warangal districts; lead-zinc in Cuddapah, Guntur and Prakasam districts; limestone
in Adilabad, Anantapur, Cuddapah, East Godavari, West Godavari, Guntur, Hyderabad, Karimnagar, Krishna, Kurnool, Mahaboobnagar, Nalgonda, Nellore, Rangareddy, Srikakulam, Visakhapatnam and Vizianagaram districts; manganese ore in Adilabad, Srikakulam and Vizianagaram districts; mica in Khammam and Nellore districts; ochre in Cuddapah, West Godavari, Guntur, Kurnool and Visakhapatnam districts; pyrophyllite in Anantapur district; quartz/silica sand in Anantapur, Chittoor, Cuddapah, West Godavari, Guntur, Hyderabad, Khammam, Krishna, Kurnool, Mahaboobnagar, Medak, Nalgonda, Nellore, Prakasam, Rangareddy, Srika-kulam, Visakhapatnam, Vizianagaram and Warangal districts; quartzite in Kurnool, Srikakulam, Visakhapatnam and Vizianagaram districts; steatite in Anantapur, Chittoor, Cuddapah, Khammam and Kurnool districts and vermiculite in Nellore and Visakhapatnam districts. Petroleum and natural gas deposits of importance are located in the onshore and offshore areas of Krishna-Godavari basin of the State.

Other minerals that occur in the State are bauxite in East Godavari and Visakhapatnam districts; chromite in Khammam and Krishna districts; copper in Guntur, Khammam, Kurnool and Prakasam districts; diamond in Anantapur, Krishna and Kurnool districts; fuller's earth in Medak and Rangareddy districts; gold in Anantapur, Chittoor and Kurnool districts; graphite in East Godavari, West Godavari, Khammam, Srikakulam, Visakhapatnam and Vizianagaram districts; gypsum in Guntur, Nellore and Prakasam districts; kyanite in Khammam, Nellore and Prakasam districts; magnesite in Cuddapah district; marble in Khammam district; pyrite in Kurnool district; sillimanite in West Godavari district; silver in Guntur district; titanium minerals in East Godavari, Krishna, Nellore, Srikakulam and Visakhapatnam districts; and tungsten in East Godavari district.

Production

The value of mineral production in Andhra Pradesh at Rs.9841 crores in 2007-08 was higher by about 14% as compared to that in the previous year. Almost all important minerals are produced in Andhra Pradesh. The principal minerals produced in the State were coal, natural gas (utilised), limestone, petroleum (crude), barytes, dolomite, felspar, iron ore, manganese ore, silica sand, ball clay, laterite and mica (crude), which together accounted for 66% of total value of mineral production in the State during 2007-08. Coal alone contributed 45% of the total value of mineral production in the State.

Andhra Pradesh claims the third position among the States in the country with a contribution of 9.1% to the total value of the mineral production. The share of Andhra Pradesh in the production of principal minerals was barytes 99%, mica (crude) 99%, felspar 88%, vermiculite 84%, quartz 33%, laterite 48%, silica sand 55%, dolomite 25%, clay (others) 19% and limestone 20% in the country.

Among the important minerals produced in the State, output of iron ore increased by 73%, manganese ore by 120% and petroleum (crude) by 11%. In the same manner, increase was observed in silica sand 136%, ochre 86%, quartzite 67%, dolomite 19%, limestone 9% and coal 8%. However, the production of asbestos decreased by 33%, barites by 36%, clay others by 38%, kaoline by 80%, felspar by 6%, fireclay by 26%, sand others by 25% and steatite by 14%.

The production value of minor minerals was estimated at Rs. 3,367 crores for the year 2007-08. The number of reporting mines in the State was 372 in 2007-08 as compared to 415 in the previous year. The index of mineral production in Andhra Pradesh (base 1993-94=100) was 178.3 in 2007-08 as against 167.39 in the previous year.

2. CHHATTISGARH

Mineral Resources

Chhattisgarh is the sole producer of tin concentrates and is one of the leading producers of coal, dolomite and iron ore. State accounts for about 38% tin ore, 28% diamond, 19% iron ore (hematite), 16% coal and 11% dolomite resources of the country. Important mineral occurrences of the State are bauxite in Bastar, Bilaspur, Dantewada, Jashpur, Kanker, Kawardha
MINERAL AND METAL SCENARIO

(Kabirdham), Korba, Raigarh and Sarguja districts; china clay in Durg and Rajnandgaon districts; coal in Koria, Korba, Raigarh and Sarguja districts; dolomite in Bastar, Bilaspur, Durg, Raigarh and Raipur districts; iron ore (hematite) in Dantewada district, Bailadila deposit in Dantewada district, Chhote Dongar deposit in Kanker district, Rowghat, Chargaon, Metabodeli and Hahaladdi deposits in Rajnandgaon district, Boria Tibbu deposits in Dalli-Rajhara area, Durg district. Bailadila-Rowghat hill ranges in the State are considered to be one of the biggest iron ore fields in India. Limestone occurs in Bastar, Bilaspur, Durg, Janjgir-Champa, Kawardha (Kabirdham), Raigarh, Raipur and Rajnandgaon districts; quartzite in Durg, Raipur, Rajnandgaon and Raigarh districts; and talc/steatite in Durg district. Other minerals occurring in the State are corundum in Dantewada district; diamond and other gemstones in Raipur, Mahasamund and Dhamtari districts; gold in Raipur, Jashpur, Kanker and Mahasamund districts; fire clay in Bilaspur, Raigarh and Rajnandgaon districts; fluorite in Rajnandgaon district; garnet and marble in Bastar district; emerald and gold in Raipur district; granite in Bastar, Kanker and Raipur districts; quartz/silica sand in Durg, Raigarh, Raipur and Rajnandgaon districts; and tin in Bastar and Dantewada districts.

Production

The value of mineral production in Chhattisgarh at Rs. 10511 crores in 2007-08, increased by 17.5% as compared to that in the previous year. The State is ranked second in the country and accounted for 9.7% of the total value of the production. The important minerals produced in the State in 2007-08 were coal, bauxite, iron ore, dolomite and limestone, which together accounted for about 99% of the entire value of mineral production in the State. Chhattisgarh was the sole producer of tin concentrate. The State was the second leading producer of coal and dolomite and iron ore with a share of 20%, 23% and 15% respectively in the country. During 2007-08, the production of steatite increased by 58%, bauxite by 10%, coal by 8%, iron ore by 7%, dolomite by 6% and bauxite 10%. There was marginal increase in production of limestone. There was a decrease in production of Tin concentrate 39%, kaoline 37.5% and quartzite by 86%.

The production value of minor minerals was estimated at Rs. 53 crores for the year 2007-08. The number of reporting mines in Chhattisgarh was 142 in 2007-08 as against 144 in the previous year. The index of mineral production in Chhattisgarh (base 1993-94=100) was 219.0 in 2007-08 as against 200.72 in the previous year.

3. GOA

Mineral Resources

Goa is well known for its iron and manganese ores. Bauxite and laterite are the other minerals produced in the State. Iron and manganese ore belts extend from South-East to North-West of the State. Important iron ore deposits are located in Bicholim, Sanguem and Satari talukas. Manganese ores are associated with iron ores and occur as pockets of various sizes in a form of concretionary pebbles in shales. Important manganese ore deposits are confined to the Southern and South-Eastern parts of Sanguem taluka. Bauxite occurs in South-Eastern parts of Goa.

Production

The value of mineral production in Goa at 2421 crores in 2007-08 increased by 24% as compared to the previous year. About 99% of the total value of mineral production in Goa was contributed by iron ore. Production of bauxite and minor minerals was also reported from the State in 2007-08. During the year under review, production of bauxite increased by 16% and iron ore by 2% over the previous year, whereas there was no production of manganese ore during 2007-08. The reasons for fall in production in respect of manganese ore was due to engagement of labour in development work. The production value of minor minerals was estimated at Rs. 6 crores for the year 2007-08. There were 76 reporting mines in 2007-08 as against 72 in the previous year. The index of mineral production in Goa (base 1993-94=100) was 205.4 in 2007-08 as against 203.18 in the previous year.
4. GUJARAT

Mineral Resources

Gujarat is the sole producer of agate, chalk, and perlite and is leading producer of fluorite (concentrate), fireclay, silica sand, lignite, laterite, petroleum and natural gas and bauxite in the country. State is the sole holder of country’s resources of perlite, 69% of fluorite, 28% of diatomite, 18% of bentonite and 10% of wollastonite.

Important mineral occurrences in the State are: agate found in Deccan Trap flows in Bharuch district; bauxite in Amreli, Bhavnagar, Jamnagar, Junagadh, Kheda, Kachchh, Sabarkantha and Valsad districts; ball clay in Banaskantha, Bharuch, Kachchh and Patan districts; bentonite in Amreli, Bhavnagar, Jamnagar, Kachchh and Sabarkantha districts; china clay in Amreli, Banaskantha, Bhavnagar, Jamnagar, Junagadh, Kachchh, Mehsana and Sabarkantha districts; chalk in Porbandar district; diatomite in Bhavnagar district; dolomite in Bhavnagar, Panchmahals and Vadodara districts; fireclay in Bharuch, Kachchh, Mehsana, Rajkot, Sabarkantha, Surat and Surendranagar districts; fluorspar in Vadodara and Bharuch districts; fuller’s earth in Bhavnagar and Kachchh districts; gypsum in Bhavnagar, Jamnagar, Junagadh, Kachchh and Surendranagar districts; lignite in Bharuch, Bhavnagar, Kachchh and Surat districts; limestone in Amreli, Banaskantha, Bharuch, Bhavnagar, Jamnagar, Junagadh, Kheda, Kachchh, Panchmahals, Porbandar, Rajkot, Sabarkantha, Surat, Vadodara and Valsad districts; ochre in Banaskantha, Bhavnagar, Kachchh and Patan districts; perlite in Rajkot district; petroleum and natural gas in oil fields of Ankaleshwar, Kalol, Navgam, Balol and Cambay in Cambay onshore and offshore basins; quartz/silica sand in Bharuch, Bhavnagar, Dahod, Kheda, Kachchh, Panchmahals, Rajkot, Sabarkantha, Surat, Surendranagar, Vadodara and Valsad districts; and steatite in Sabarkantha district.

Production

The value of mineral production in Gujarat in 2007-08 at Rs.6179 crores marginally increased by 0.5% as compared to that in the previous year. The State was ranked seventh in the country and accounted for about 5.7% of the total value of mineral production in India during the year. Gujarat was the sole producer of agate, chalk and fluorite (concentrate) and the leading producer of bauxite and clay (other) in the country.

The State was also the second largest producer of quartz, lignite, petroleum (crude) and natural gas (utilised) in the country during 2007-08. Production of lignite increased by 20%, bauxite by 112% and gypsum 121%. The minerals reporting fall in production during 2007-08 were: Natural gas (utilised) 11%, limestone 35%, silica sand 37%, clay (other) 32%, dolomite 46%, fireclay and steatite 56% each. Fall in production due to less plant requirement, shortage of labour and lack of demand of silica sand due to use of pozydone clay for manufacturing of cement.

The production value of minor minerals was estimated at Rs.440 crores for the year 2007-08 same as of previous year. The number of reporting mines in the State was 430 in 2007-08 as compared to 457 in the previous year. The index of mineral production in Gujarat (base 1993-94=100) was 125.4 in 2007-08 as against 122.74 in the previous year.

5. JHARKHAND

Mineral Resources

Jharkhand carved out of Bihar in November, 2000 is one of the leading mineral producing States. It is one of the leading producers of coal, kyanite, gold, silver, bauxite, and felspar. Uranium ore is being mined and processed by Uranium Corporation of India Ltd. (UCIL) for use as fuel in the country’s nuclear power reactors through four underground mines, an opencast mine,
two processing plants and a by-product recovery plant, all in East Singhbhum district. Jharkhand accounts for about 35% rock phosphate, 29% coal, 28% iron ore (hematite), 27% apatite, 22% andalusite, 16% copper ore and 10% silver ore resources of the country.

Important minerals occurring in the State are bauxite in Dumka, Gumla, Lohardaga and Palamau districts; china clay in Dumka, Hazaribagh, Lohardaga, East & West Singhbhum, Sahebganj and Ranchi districts; coal in Bokaro, Deoghar, Dhanbad, Giridih, Godda, Hazaribagh, Palamau, Pakur, and Ranchi districts; copper in Hazaribagh and East Singhbhum districts; dolomite in Garhwa and Palamau districts; felspar in Deoghar, Dhanbad, Dumka, Giridih, Hazaribagh, Koderma and Palamau districts; fireclay in Dhanbad, Dumka, Giridih, Godda, Hazaribagh, Palamau, Ranchi and West Singhbhum districts; gold in East Singhbhum district; graphite in Palamau district; iron ore (hematite) in West Singhbhum district; iron ore (magnetite) in Gumla, Hazaribagh, Palamau and East Singhbhum districts; kyanite in East & West Singhbhum districts; limestone in Bokaro, Dhanbad, Garhwa, Giridih, Hazaribagh, Palamau, Ranchi, East & West Singhbhum districts; manganese ore in East & West Singhbhum districts; mica in Giridih and Koderma districts; ochre in West Singhbhum district; dunite/pyroxenite in East Singhbhum district; quartz/silica sand in Deoghar, Dhanbad, Dumka, Giridih, Godda, Hazaribagh, Koderma, Palamau, Ranchi, Sahebganj, East & West Singhbhum districts; and quartzite in East & West Singhbhum districts.

Other minerals that occur in the State are andalusite and rock phosphate in Palamau district; apatite, chromite, cobalt, nickel, gold and silver in East Singhbhum district; asbestos in East & West Singhbhum districts; barytes in Palamau and East Singhbhum districts; bentonite in Pakur and Sahebganj districts; garnet in Hazaribagh district; granite in Deoghar, Dhanbad, Dumka, Giridih, Godda, Gumla, Hazaribagh, Koderma, Lohardaga, Palamau, Ranchi and East Singhbhum districts; sillimanite in Hazaribagh district; talc/steatite in Giridih, Palamau, East & West Singhbhum districts; titanium minerals in Ranchi and East Singhbhum districts; and vermiculite in Giridih and Hazaribagh districts.

Production

The value of mineral production in Jharkhand during 2007-08 at Rs.9258 crores increased by about 11.5% over the previous year. The State claiming fifth position in the country accounted for 8.6% of the total value of mineral production during 2007-08. Jharkhand was the leading producer of coal and kyanite and second leading producer of gold in the country. The State was third leading producer of felspar and graphite during the year. Coal, the principal mineral produced in the State contributed 91% of the total value of mineral production in the State. The other principal minerals produced in the State were iron ore, bauxite, dolomite, gold and limestone. Silver was not reported during 2007-08 in the State.

Among the important minerals, production of coal increased by 2.44%, iron ore 12%, limestone 6% dolomite 15% and manganese ore about 20 times during 2007-08 as compared to the previous year. However, the output of bauxite declined by 13%, gold 82%, pyroxenite 38% and kyanite 46% owing to disruptions by naxal outfits and less market demand.

The production value of minor minerals was estimated at Rs. 40 crores. The number of reporting mines in Jharkhand during 2006-07 and 2007-08 was 293. The index of mineral production in Jharkhand (Base1993-94=100) was 123.7 in 2007-08 as compared to 119.96 in the previous year.

6. KARNATAKA

Mineral Resources

Karnataka has the distinction of being the main gold producing State in the country. The State is the sole producer of felsite and leading producer of iron ore, chromite and dunite. Karnataka hosts country’s 78% vanadium ore, 74% iron ore (magnetite), 42% tungsten ore, 38% asbestos, 33% titaniferous magnetite, 30% limestone, 25% granite, 22% manganese ore, 19% corundum, 18% dunite, 17%
gold (primary), 13% kyanite and 11% iron ore (hematite) resources. The important minerals occurring in the State are bauxite in Belgaum, Chickmagalur, Uttar and Dakshin Kannad districts; china clay in Bangalore, Belgaum, Bellary, Bidar, Chickmagalur, Dharwad, Gadag, Hassan, Haveri, Kolar, Uttar and Dakshin Kannad, Shimoga and Tumkur districts; chromite in Hassan district and in two belts viz. Nuggehalli Arsikhera and Nanjangud in Mysore district; dolomite in Bagalkot, Belgaum, Bijapur, Chitradurga, Mysore, Uttar Kannad and Tumkur districts; dunite/pyroxenite in Chickmagalur, Hassan and Mysore districts; felspar in Bangalore, Belgaum, Chitradurga, Hassan and Kolar districts; fireclay in Bangalore, Chitradurga, Dharwad, Hassan, Kolar, Shimoga and Tumkur districts; gold in Chitradurga, Dharwad, Gulbarga, Hassan, Haveri, Kolar, Raichur and Tumkur districts; iron ore (hematite) in Bagalkot, Bellary, Bijapur, Chickmagalur, Chitradurga, Chitradurga, Dharwad, Uttarak Kannad, Shimoga and Tumkur districts; iron ore (magnetite) in Chickmagalur, Hassan, Uttar and Dakshin Kannad and Shimoga districts; kyanite in Chickmagalur, Chitradurga, Mysore, Shimoga and Dakshin Kannad districts; limestone in Bagalkot, Belgaum, Bellary, Bijapur, Chickmagalur, Chitradurga, Davangere, Gadag, Gulbarga, Hassan, Mysore, Uttar and Dakshin Kannad, Shimoga, Tumkur and Udupi districts; magnesite in Mysore and Shimoga districts; manganese ore in Belgaum, Bellary, Chickmagalur, Chitradurga, Davangere, Gadag, Gulbarga, Hassan, Mysore, Uttar and Dakshin Kannad, Shimoga, Tumkur and Udupi districts; magnesite in Mysore and Shimoga districts; manganese ore in Belgaum, Bellary, Chickmagalur, Chitradurga, Davangere, Gadag, Gulbarga, Hassan, Haveri, Kolar, Koppal, Mandya, Mysore, Uttar and Dakshin Kannad, Raichur, Shimoga, Tumkur and Udupi districts; ochre in Bellary and Bidar districts; quartz/silica sand in Bagalkot, Bangalore, Belgaum, Bellary, Chickmagalur, Chitradurga, Davangere, Dharwad, Gulbarga, Hassan, Haveri, Kolar, Koppal, Mandya, Mysore, Uttar and Dakshin Kannad, Raichur, Shimoga, Tumkur and Udupi districts; and steatite in Bellary, Chickmagalur, Chitradurga, Hassan, Mandya, Mysore, Raichur and Tumkur districts.

Other minerals that occur in the State are asbestos in Chickmagalur, Hassan, Mandya, Mysore and Shimoga districts; barytes and pyrite in Chitradurga district; calcite in Belgaum, Bijapur and Mysore districts; copper in Chickmagalur, Chitradurga, Gulbarga, Hassan, Uttar Kannad, Raichur and Shimoga districts; corundum in Bangalore, Bellary, Chitradurga, Hassan, Mandya, Mysore and Tumkur districts; fuller’s earth in Belgaum and Gulbarga districts; granite in Bagalkot, Bangalore, Bellary, Bijapur, Chamrajanganagar, Gulbarga, Hassan, Kolar, Koppal, Uttar Kannad, Raichur and Tumkur districts; graphite in Kolar and Mysore districts; gypsum in Gulbarga district; molybdenum in Kolar and Raichur districts; nickel in Uttar Kannad district; sillimanite in Hassan and Dakshin Kannad districts; silver in Chitradurga and Raichur districts; titanium minerals in Hassan, Uttar Kannad and Shimoga districts; tungsten in Dharwad, Kolar and Raichur districts; vanadium in Hassan, Uttar Kannad and Shimoga districts; and vermiculite in Hassan, Mandya and Mysore districts.

Production

The value of mineral production in Karnataka during 2007-08 at Rs.4495 crores increased by 23% over the previous year. Iron ore, gold, manganese ore, limestone and dolomite being the important minerals produced in the State together accounted for about 99% of the total value of mineral production during the year. Karnataka was the sole producer of felsite and the leading producer of gold with a share of 99% and limeshell (73%) of total production in the country. The State was also the second leading producer of iron ore, chromite, corundum and dunite. Among the important minerals, production of iron ore, gold, manganese ore, lime stone, bauxite and shale rose by 12%, 21%, 23%, 72%, 46% and 23%, respectively. The production of dolomite declined by 12%, laterite 43% and magnesite 58%. Decline in production was also noticed in silica sand 39%, kaoline 70%, dunite 51%, felsite 69%, quartz 81% and steatite 63%.

The production value of minor minerals was estimated at Rs.26 crores for the year 2006-07. The number of reporting mines in Karnataka was 218 in 2007-08 as against 231 in the previous year. The index of mineral production in Karnataka (Base 1993-94=100) was 305.1 in 2007-08 as compared to 248.3 in the previous year.
7. MADHYA PRADESH

Mineral Resources

Madhya Pradesh is the only diamond producing State and is the leading producer of copper concentrate pyrophyllite and diaspore. State hosts country’s 68% diaspore, 41% molybdenum ore, 46% pyrophyllite, 32% diamond, 29% copper ore, 17% rock phosphate, 16% each of manganese ore and fireclay and 11% ochre resources. Important mineral occurrences in the State are bauxite in Balaghat, Guna, Jabalpur, Katni, Mandla, Rewa, Satna and Shahdol districts; calcite in Badwani, Jhabua, and Khargone districts; china clay in Betul, Chhattarpur, Chhindwara, Gwalior, Hoshangabad, Jabalpur, Khargone, Narsinghpur, Raipur, Satna, Shahdol and Sidhi districts; copper in Balaghat, Betul and Jabalpur districts; coal in Betul, Shahdol and Sidhi districts; diamond in Panna district; diaspore & pyrophyllite in Chhattarpur, Shivpuri, and Tikamgarh districts; dolomite in Balaghat, Betul, Chhindwara, Damoh, Dewas, Hoshangabad, Jabalpur, Jhabua, Katni, Mandla, Narsinghpur, Sagar, and Seoni districts; fireclay in Betul, Chhindwara, Jabalpur, Katni, Narsinghpur, Panna, Sagar, Shahdol and Sidhi districts; iron ore (hematite) in Betul, Gwalior, Jabalpur and Katni districts; limestone in Balaghat, Chhindwara, Damoh, Dhar, Hoshangabad, Jabalpur, Jhabua, Khargone, Katni, Mandsaur, Morena, Narsinghpur, Rewa, Sagar, Satna, Sehore, Shahdol and Sidhi districts; manganese ore in Balaghat, Chhindwara and Jhabua districts; ochre in Dhar, Gwalior, Jabalpur, Mandla, Rewa, Satna, Shahdol and Umarias districts; quartz/silica sand in Balaghat, Dewas, Dhar, Jabalpur, Khandwa, Khargone, Morena, Rewa and Shahdol districts; talc/steatite/soapstone in Dhar, Jabalpur, Jhabua, Katni, Narsinghpur and Sagar districts; and vermiculite in Jhabua district.

Other minerals that occur in the State are calcareous shales (used in slate pencil) in Mandsaur district; barytes in Dewas, Dhar, Shivpuri, Sidhi and Tikamgarh districts; felspar in Jabalpur and Shahdol districts; fuller’s earth in Mandla district; gold in Jabalpur and Sidhi districts; granite in Betul, Chhattarpur, Chhindwara, Datia, Jhabua, Panna, Seoni and Shivpuri districts; graphite in Betul and Sidhi districts; gypsum in Shahdol district; lead-zinc in Betul district; molybdenum in Balaghat district; potash in Panna district; quartzite in Sehore district; rock phosphate in Chhattarpur, Jhabua and Sagar districts; and sillimanite in Sidhi district.

Production

The value of mineral production in Madhya Pradesh at Rs.8062 crores in 2007-08 increased by about 17% as compared to the previous year. Madhya Pradesh contributed 7.4% to the total value of mineral production and was sixth among States in the country. The State was the sole producer of diamond and slate. The State was the leading producer of pyrophyllite with a share of 83%, copper concentrates 52% and diaspore 54% in the national output of respective mineral. Madhya Pradesh was also the second leading producer of clay (others) (30%), shale (20%) and phosphorite/rock phosphate (6%). During 2007-08, the production of coal increased by 14%, manganese ore 20%, iron ore 83%, copper concentrates 4%, bauxite 142%, pyrophyllite 49%, diaspore 23% and laterite 49%. However, downward trend in production was shown in limestone 10%, phosphorite 38%, clay (others) 45%, diamond 73%, kaolin 31% and steatite 65%.

The production value of minor minerals was estimated at Rs.232 crores for the year 2007-08. The number of reporting mines in Madhya Pradesh was 319 in 2007-08 as against 336 in the previous year. The index of mineral production in Madhya Pradesh (base 1993-94=100) was 199.4 in 2006-07 as against 176.76 in the previous year.

8. MAHARASHTRA

Mineral Resources

Maharashtra is the sole producer of corundum and is the second largest producer of manganese ore after Orissa. The principal mineral-bearing belts in Maharashtra are Vidarbha area in the East and Konkan area in the West. Important mineral occurrences are bauxite in Kolhapur, Raigad, Ratnagiri, Satara, Sindhudurg and Thane districts; china clay in Amravati,
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Bhandara, Chandrapur, Nagpur, Sindhudurg and Thane districts; chromite in Bhandara, Chandrapur, Nagpur and Sindhudurg districts; coal in Nagpur, Chandrapur and Yavatmal districts; dolomite in Chandrapur, Nagpur and Yavatmal districts; fireclay in Amravati, Chandrapur, Nagpur and Ratnagiri districts; fluorspar and shale in Chandrapur district; iron ore (hematite) in Chandrapur, Gadchiroli and Sindhudurg districts; iron ore (magnetite) in Gondia district; kyanite in Bhandara and Nagpur districts; laterite in Kolhapur district; limestone in Ahmednagar, Chandrapur, Dhule, Gadchiroli, Nagpur, Nanded, Sangli and Yavatmal districts; manganese ore in Bhandara, Nagpur and Ratnagiri districts; corundum, pyrophyllite and sillimanite in Bhandara district; quartz and silica sand in Bhandara, Gadchiroli, Gondia, Kolhapur, Nagpur, Ratnagiri and Sindhudurg districts and quartzite in Gondia and Nagpur districts.

Other minerals that occur in the State are barytes in Chandrapur and Gadchiroli districts; copper in Bhandara, Chandrapur, Gadchiroli and Nagpur districts; felspar in Sindhudurg district; gold in Bhandara and Nagpur districts; granite in Bhandara, Chandrapur, Dhule, Gadchiroli, Nagpur, Nanded, Nasik, Sindhudurg and Thane districts; graphite in Sindhudurg district; lead-zinc in Nagpur district; marble in Bhandara and Nagpur districts; ochre and tungsten in Chandrapur and Nagpur districts; silver and vanadium in Bhandara district; steatite in Bhandara, Ratnagiri and Sindhudurg districts; and titanium minerals in Gondia and Ratnagiri districts.

Production

The value of mineral production in Maharashtra during 2007-08 at Rs. 5110 crores increased by 16% as compared to that in the previous year. Maharashtra accounted for about 4.7% of the total value of mineral production in the country during the year under review. It was the largest producer of corundum in 2007-08. The State was the largest producer of manganese ore sharing 33% of total production of the mineral. Among other important minerals, the State reported higher production during 2007-08 in respect of laterite, (more than 3 folds), fluorite graded (75%), bauxite (31%), manganese ore (35%), sillimanite(54%) and silica(40%). Fall in production was reported in respect of Kaoline(100%), Corundum(50%), Dolomite(73%), Pyrophyllite(45%), Shale (14%), Quartz (11%), Fireclay (17%), Limestone (13%) and Sand(others) 7%.

The value of production of minor minerals was estimated at Rs. 362 crores for the year 2006-07. The number of reporting mines was 149 in 2007-2008 as against 154 in the previous year. The index of mineral production in Maharashtra (base 1993-94 = 100) in 2007-08 was 185.3 as against 179.4 in the previous year.

9. ORISSA

Mineral Resources

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

Important minerals that occur in the State are bauxite in Boudh, Bolangir, Kalahandi, Keonjhar, Koraput, Malkangiri and Sundergarh districts; china clay in Bargarh, Boudh, Bolangir, Keonjhar, Mayurbhanj, Sambalpur and Sundergarh districts; chromite in Balasore, Cuttack, Dhenkanal, Jajpur and Keonjhar districts. Chromite deposits of Sukinda and Nusahi ultramafic belt constitute 95% of the country’s chromite resources. Coal occurs in IB river Valley coalfield, Sambalpur district and Talcher coalfield, Dhenkanal district; dolomite in Keonjhar, Koraput, Sambalpur and Sundergarh districts; dunite/pyroxenite in Keonjhar district; fireclay in Angul, Bhubaneswar, Cuttack, Dhenkanal, Jharsuguda, Khurda, Puri, Sambalpur and Sundergarh districts; garnet in Ganjam and Sambalpur districts; graphite in Bargarh, Boudh, Bolangir, Kalahandi, Koraput, Nuapada, Rayagada and
Sambalpur districts; iron ore (hematite) in Dhenkanal, Jajpur, Keonjhar, Koraput, Mayurbhanj, Sambalpur and Sundergarh districts; limestone in Bargarh, Kalahandi, Koraput, Malkangiri, Nuapada, Sambalpur and Sundergarh districts; manganese ore in Bolangir, Keonjhar, Koraput, Sambalpur and Sundergarh districts; Pyrophyllite in Keonjhar district; quartz/silica sand in Boudh, Bolangir, Kalahandi, Sambalpur and Sundergarh districts; quartzite in Bolangir, Dhenkanal, Jajpur, Keonjhar, Mayurbhanj, Sambalpur and Sundergarh districts; sillimanite in Ganjam and Sambalpur districts; talc/steatite in Keonjhar, Mayurbhanj and Sambalpur districts; titanium minerals in Dhenkanal, Ganjam, Jajpur and Mayurbhanj districts; and zircon in Ganjam district.

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

Production

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

Orissa was the leading producer of iron ore with a share of 33%, bauxite 20%, chromite 99.8%, dolomite 32%, sillimanite 31%, pyroxenite 84%, manganese ore 26% and quartzite 47% in the total production of respective mineral in India during the year 2007-08. The State was also the leading producer of graphite with a share of 44% in the total production in the country.

Of the important minerals, production of iron ore increased by 7%, fireclay 13%, pyroxenite & silleminite 20% each, coal 10%, dolomite 3%, limestone 2% and quartzite 28% in 2007-08 as compared to that in the previous year. On the other hand, production of chromite decreased by 9%, manganese ore by 3%, graphite 43%, garnet(abrasive)132%, talc/soapstone/steatite 94%, silica sand 53%, kaoline 13%, quartz 38%, fireclay 2% and pyrophyllite by 19% during the year under review.

The production value of minor minerals was estimated at Rs.86 crores for the year 2006-07. The number of reporting mines in 2007-08 was 227 as against 233 in the previous year. The index of mineral production in Orissa (base 1993-94 = 100) was 420.8 in 2007-08 as against 378.7 in the previous year.

10. RAJASTHAN

Mineral Resources

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

Country’s more than 90% resources of wollastonite, lead & zinc ore and potash are located in Rajasthan. State has a main share in the total resources of silver ore (84%), gypsum (81%), bentonite (80%), fuller’s earth (74%), diatomite (72%), ochre (71%), marble (63%), felspar (62%), calcite (53%), mica (51%), talc/steatite/soapstone (50%), asbestos (49%), copper (48%), ball clay (36%), rock phosphate (31%), tungsten (31%), fluorite (26%), granite (23%), gold (primary) (17%) and china clay (14%).
Important minerals occurring in the State are asbestos (amphibole) in Ajmer, Bhilwara, Dungarpur, Pali, Rajsamand and Udaipur districts; ball clay in Bikaner, Nagaur and Pali districts; barytes in Alwar, Bharatpur, Bhilwara, Bundi, Chittorgarh, Jalore, Pali, Rajsamand, Sikar and Udaipur districts; calcite in Ajmer, Alwar, Bhilwara, Jaipur, Jhunjhunu, Pali, Sikar, Sirohi and Udaipur districts; china clay in Ajmer, Barmer, Bharatpur, Bhilwara, Bikaner, Bundi, Chittorgarh, Dausa, Jaipur, Jaisalmer, Jhunjhunu, Kota, Nagaur, Pali, Sawai Madhopur and Udaipur districts; and copper in Khetri belt in Jhunjhunu district and Dariba in Alwar district. Deposits of copper are also reported to occur in Ajmer, Bharatpur, Bhilwara, Bundi, Chittorgarh, Dungarpur, Jaipur, Pali, Rajsamand, Sikar, Sirohi and Udaipur districts. Dolomite occur in Ajmer, Alwar, Banswara, Bhilwara, Chittorgarh, Jaipur, Jaisalmer, Jhunjhunu, Jodhpur, Sikar and Udaipur districts; felspar in Ajmer, Alwar, Bhilwara, Jaipur, Pali, Rajsamand, Sikar and Tonk districts; fireclay in Alwar, Barmer, Bharatpur, Bikaner, Jaisalmer, Jhunjhunu and Sawai Madhopur districts; fluorspar in Ajmer, Dungarpur, Jalore, Jhunjhunu, Sikar, Sirohi and Udaipur districts; garnet in Ajmer, Bhilwara, Jaipur, Jhunjhunu, Sikar and Tonk districts; gypsum in Barmer, Bikaner, Churu, Sri Ganganagar, Hanumangarh, Jaisalmer, Jalore, Nagaur and Pali districts; iron ore (hematite) in Dausa, Jaipur, Jhunjhunu, Sikar and Udaipur districts; iron ore (magnetite) in Bhilwara, Jhunjhunu and Sikar districts; lead-zinc in Zawar in Udaipur district, Bamnia Kalan, Rajpura-Dariba in Rajsamand and Rampura/Agucha in Bhilwara district. Lead-zinc occurrences are also reported from Ajmer, Chittorgarh, Pali and Sirohi districts. Lignite deposits occur in Ajmer, Bikaner, Jaisalmer and Nagaur districts. Production of minerals in the State is widespread and occur in Ajmer, Alwar, Banswara, Bhilwara, Bikaner, Bundi, Chittorgarh, Churu, Dungarpur, Jaipur, Jaisalmer, Jhunjhunu, Kota, Nagaur, Pali, Sawai Madhopur, Sikar, Sirohi and Udaipur districts. Magnesite occurs in Ajmer, Dungarpur, Pali and Udaipur districts; marble in Ajmer, Banswara, Bhilwara, Bundi, Chittorgarh, Dungarpur, Jaipur, Nagaur, Sikar, Sirohi and Udaipur districts; mica in Bhilwara district; ochre in Bikaner, Chittorgarh, Jaipur, Sawai Madhopur and Udaipur districts; pyrite in Sikar district; pyrophyllite in Alwar, Jhunjhunu, Rajsamand and Udaipur districts; quartz/silica sand in Ajmer, Alwar, Bharatpur, Bhilwara, Bikaner, Bundi, Dausa, Jaipur, Jaisalmer, Jhunjhunu, Jodhpur, Kota, Pali, Rajsamand, Sawai Madhopur, Sikar, Sirohi, Tonk and Udaipur districts; quartzite in Ajmer, Alwar, Jhunjhunu and Sawai Madhopur districts; rock phosphate in Alwar, Banswara, Jaipur, Jaisalmer and Udaipur districts; talc/steatite/soapstone in Ajmer, Alwar, Banswara, Bharatpur, Bhilwara, Chittorgarh, Dausa, Dungarpur, Jaipur, Jhunjhunu, Karauli, Pali, Rajsamand, Sawai Madhopur, Sirohi, Tonk and Udaipur districts; vermiculite in Ajmer and Barmer districts; and wollastonite in Ajmer, Dungarpur, Pali, Sirohi and Udaipur districts.

Other important minerals that occur in the State are apatite in Udaipur and Sikar districts; bauxite in Kota district; bentonite in Barmer, Jaisalmer and Jhalawar districts; corundum in Tonk district; diatomite in Barmer and Jaisalmer districts; emerald in Ajmer and Rajsamand districts; fuller’s earth in Barmer, Bikaner, Jaisalmer and Jodhpur districts; gold in Banswara and Sirohi districts; granite in Ajmer, Alwar, Banswara, Barmer, Bhilwara, Chittorgarh, Jaipur, Jaisalmer, Jodhpur, Pali, Rajsamand, Sawai Madhopur, Sikar, Sirohi, Tonk and Udaipur districts; graphite in Ajmer, Alwar and Banswara districts; kyanite and sillimanite in Udaipur district; manganese ore in Banswara, Bhilwara, Jaipur, and Pali districts; potash in Jaisalmer and Nagaur districts; silver in Ajmer, Bhilwara, Jhunjhunu, Rajsamand and Udaipur districts; tungsten at Degana in Nagaur district. Tungsten deposits are also reported to occur in Jaipur, Pali, Sirohi and Udaipur districts.

**Production**

The value of mineral production in Rajasthan during 2007-08 at Rs.4931 crores increased by 6% as compared to the previous year. Its share to the total value of mineral production in the country in 2007-08 was about 4.6%. The State produces almost all varieties of minerals in the country. Rajasthan was the sole
producer of jasper, lead concentrate, zinc concentrate and wollastonite. However, no production of jasper was reported during 2007-08. Almost the entire production of calcite and mineral gypsum, in the country was reported from the State. Besides, Rajasthan was the leading producer of copper concentrate accounting for 47%, ochre 93%, phosphorite/rock phosphate 93.6%, silver 99.6%, talc/soapstone/steatite 69.7%, ball clay 63%, fireclay 31%, felspar 9%, mica (w/s) 20%, and quartz 12% of the total production in the country. Increase in production was reported in respect of lignite 31%, natural gas(ut.) 7%, copper concentrate 7%, lead concentrate 17%, zinc concentrate 9%, silver 57%, phosphorite 25% and limestone 10% as compared to that in the previous year. No production of asbestos was reported during 2007-08. Production of gypsum declined by 12%, mica(crude) 98%, ochre 14%, dolomite 69%, barites 17% and magnesite 100% during the year under review.

The value of production of minor minerals was estimated at Rs.2,578 crores for the year 2007-08. The number of reporting mines in Rajasthan was 207 in the year 2007-08 as against 217 in previous year. The index of mineral production in Rajasthan (base 1993-94 = 100) was 200.5 in 2007-08 as against 176.9 in the previous year.

11. TAMILNADU

Mineral Resources

Tamil Nadu is leading producer of garnet (abrasive), graphite, lignite, magnesite, lime kankar and dunite. State accounts country’s 81% lignite, 77% vermiculite, 70% dunite, 63% rutile, 52% molybdenum, 49% garnet, 33% ilmentie and 24% sillimanite resources. Important minerals occurring in the State are bauxite in Dindigul, Namakkal, Nilgiri and Salem districts; dunite/pyroxenite in Salem district; felspar in Coimbatore, Dindigul, Erode, Kanchipuram, Karur, Namakkal, Salem and Tiruchirappalli districts; fireclay in Cuddalore, Kanchipuram, Perambalur, Pudukottai, Sivaganga, Thiruvarur, Tiruchirappalli, Vellore and Villupuram districts; garnet in Chidamabaram, Kanyakumari, Thanjavur, Tirunelveli and Kottabomman districts; granite in Dharmapuri, Erode, Kanchipuram, Madurai, N. Arcot & Ambedkar, P. Muthuramalingam, Salem, Thiruvanmmalai, Tiruchirappalli, Tirunelveli, Vellore and Villupuram districts; graphite in Madurai, Ramnathapuram, Shivganga and Vellore districts and gypsum in Coimbatore, Perambalur, Ramnathapuram, Tiruchirappalli Tirunelveli, Tuticorin and Virudhunagar districts. Lignite deposits are located in Cuddalore Ariyalur, Thanjavur, Thiruvanur, Nagapattinam and Ramanathapuram districts; limestone in Coimbatore, Cuddalore, Dindigul, Kanchipuram, Karur, Madurai, Nagapattinam, Namakkal, Perambalur, Salem, Thiruvarur, Tiruchirappalli, Tirunelveli, Vellore, Villupuram and Virudhunagar districts; magnesite in Coimbatore, Dharmapuri, Karur, Namakkal, Nilgiri, Salem, Tiruchirappalli, Tirunelveli and Vellore districts; quartz/silica sand in Chengai-Anna, Chennai, Coimbatore, Cuddalore, Dharmapuri, Dindigul, Erode, Kanchipuram, Karur, Madurai, Namakkal, Periyar, Perambalur, Salem, Thiruvarur, Thiruvanur, Nagapattinam, Tiruchirappalli, Villupuram, Virudhunagar and Vellore districts; steatite in Coimbatore, Salem, Tiruchirappalli and Vellore districts; titanium minerals in Kanyakumari, Nagapattinam, Ramanathapuram, Thiruvarur, Tirunelveli and Tuticorin districts; vermiculite in Dharmapuri, Tiruchirappalli and Vellore districts and zircon in Kanyakumari district.

Other minerals that occur in the State are apatite in Dharmapuri and Vellore districts; barytes in Erode, Madurai, Perambalur, Tirunelveli and Vellore districts; bentonite in Chengai-Anna district; calcite in Salem district; china clay in Cuddalore, Dharapuram, Kanchipuram, Nilgiri, Sivaganga, Thiruvallur, Thiruvannamalai, Tiruchirappalli and Villupuram districts; chromite in Coimbatore and Salem districts; copper, lead-zinc and silver in Villupuram district; corundum and gold in Dharapuram district; dolomite in Salem and Tirunelveli districts; emerald in Coimbatore district; iron ore (magnetite) in Dharmapuri, Erode, Nilgiri, Salem, Thiruvannamalai, Tiruchirappalli and Villupuram districts; kyanite in Kanyakumari and Tirunelveli districts; molybdenum in Dharmapuri, Dindigul and Vellore districts; pyrite in Vellore district; sillimanite in Kanyakumari, Karur and Tirunelveli districts; tungsten
in Madurai and Dindigul districts; and wollastonite in Dharmapuri and Tirunelveli districts.

Production

The value of mineral production in Tamil Nadu at Rs.3007 crores in 2007-08 increased by 5.4% as compared to that in the previous year. The State contributed 2.8% in the total value of mineral production in the country during the year under review. The principal minerals produced in the State were lignite, petroleum (crude), natural gas (utilised), garnet, limestone and magnesite, which together accounted for 97.5%, of the value of the minerals produced in the State in 2007-08. The State was the leading producer of garnet (abrasive) 99%, graphite (rom) 44%, lignite 63.88%, magnesite 72%, lime kankan 99.5% and dunite 78% in national production of respective minerals. During the year under review, production of natural gas (utilised) increased by 4%, garnet (abrasive) 1%, dunite 38%, vermiculite 13%, limestone 2%, ball clay 21%, lignite 3%, fireclay 40%, silica sand 20% and magnesite 5%.

On the other hand, production of gypsum and steatite decreased by 100%, petroleum by 16%, graphite(rom) by 17%, quartz 12% and lime kankan 15%. The production value of minor minerals was estimated at Rs.59 crores for the year 2007-08.

The number of reporting mines was 156 in 2007-08 as against 177 in the previous year. The index of mineral production in Tamil Nadu (base 1993 - 94 = 100) was 196.2 in 2007-08 as against 193.90 in the previous year.

Metal Scenario

Aluminium

3.19 Aluminium is the most abundant metal in the earth’s crust. It ranks second, next only to steel, in terms of volumes used due to its versatility, which stems from its excellent and diverse range of physical, chemical and mechanical properties. Aluminium, which is only one-third the weight of steel is highly resistant to most forms of corrosion, is non-magnetic, non-combustible, is non-toxic and impervious (hence used in the food and packaging industries) and is also a superb conductor of electricity. Other valuable properties include high reflectivity, heat barrier properties and heat conduction. The metal is malleable and easily worked by the common manufacturing and shaping processes.

3.20 Uses of aluminium metal are as follows:-

(i) In construction- windows, doors, cladding, weather-proofing, light constructions such as conservatories and canopies.

(ii) In transport- auto, aerospace, rail and marine industries.

(iii) Packaging- protection, storage and preparation for food and drinks.

(iv) Electrical uses- overhead conductors and underground power-lines and power cables.

(v) Water treatment and medicine-antacid to combat gastric upsets, anti-perspirants.

(vi) Machineries and Equipments.

(vii) Castings- Domestic Utensils.

3.21 In India the electrical sector is the largest consumer of aluminium. Bulk of the Aluminium usage is in overhead conductors and power cables used in generation, transmission and distribution of electricity. Aluminium is used in switchboards, coil windings, capacitors, and many other applications as well.

3.22 The global aluminium production which was 381.30 lakh tonnes in 2007 rose to 399.09 lakh tonnes in 2008, as per CRU Monitor-Aluminium (March, 09). The world aluminium consumption in 2007 and 2008 was 378.38 lakh tonnes and 376.68 lakh tonnes respectively. India produced 12.33 lakh tonnes aluminium in 2007-08 and 13.48 lakh tonnes in 2008-09 which approximately was a little over 3% of world production.

3.23 India is endowed with rich bauxite reserve of 2300 million tonnes (approx. 6.76% of the world total) and ranks 5th in the world bauxite reserve base. The
primary aluminium industry in India consists of five producers viz. National Aluminium Company Limited (NALCO), HINDALCO Industries Limited, Bharat Aluminium Company Limited (BALCO), Madras Aluminium Company Limited (MALCO) and Vedanta Aluminium Limited (VAL). VAL started its operations in April, 2008. Out of these Companies, only NALCO is in the Public Sector. The production of aluminium by Primary Aluminium Producers in the last three years is given in Table 3.2.

Table 3.2  
Production of Aluminium by Primary Producers  
(in Tonnes)

<table>
<thead>
<tr>
<th>Name of the company</th>
<th>Aluminium production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006-07</td>
</tr>
<tr>
<td>NALCO</td>
<td>3,58,734</td>
</tr>
<tr>
<td>HINDALCO</td>
<td>4,42,686</td>
</tr>
<tr>
<td>MALCO</td>
<td>37,652</td>
</tr>
<tr>
<td>BALCO</td>
<td>3,13,189</td>
</tr>
<tr>
<td>VAL</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>11,52,261</td>
</tr>
</tbody>
</table>

# MALCO had closed its smelter in December, 2008

The total sales figures of aluminium during the last three years is given in Table 3.3

Table 3.3  
Sale of Aluminium  
(In tonnes)

<table>
<thead>
<tr>
<th>Sale</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09 (Provisional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>8,83,111</td>
<td>9,28,544</td>
<td>9,52,958</td>
</tr>
<tr>
<td>Export</td>
<td>26,379</td>
<td>3,03,643</td>
<td>3,81,870</td>
</tr>
<tr>
<td>Total</td>
<td>11,59,490</td>
<td>12,32,187</td>
<td>13,34,828</td>
</tr>
<tr>
<td>Growth</td>
<td>6.27%</td>
<td>8.33%</td>
<td></td>
</tr>
</tbody>
</table>

3.24 The price of aluminium fixed by the primary producers in India is generally aligned to the London Metal Exchange (LME) prices. The LME prices of aluminium climbed up to more than $3,000/tonne in first half of 2008. However, due to global slowdown since July, 2008, the aluminium prices have fallen by around 60% from a high of $3291.50/tonne in July, 2008 to $1290 /tonne in March, 2009. One of the primary producers in India, viz. M/s MALCO temporarily shut down its aluminium production line which had a capacity of 40,000 tonnes per annum.

Though the producers worldwide have taken action for curtailing the capacity of high cost smelters, still huge surplus of metal is available in the market. The inventory with the all Indian primary producers also increased from 9177 tonnes at the end of financial year 2007-08 to 22,392 tonnes at the end of financial year 2008-09, a jump of about 144%.

Copper Industry In India

3.25 Copper is the base metal of strategic importance – an essential component of energy efficient motors and transformers. Its exceptional strength combined with ductility and resistance to creeping and corrosion makes it the preferred and safest conductor. Copper is a critical metal being used in areas such as defence, space programme, railways, power cables, mint, Telecommunication Cables etc.

3.26 At present, the demand for copper minerals for primary copper production is met through two sources i.e. Copper ore mined from indigenous mines and imported concentrates. The indigenous mining activity among the primary copper producers is limited to only Hindustan Copper Limited (HCL). The other primary copper producers in the private sector import the required mineral in the form of concentrate. HCL also imports some quantity of copper concentrates for its Smelter Plants to supplement the shortfall in indigenous production. Indian Copper ores have low grade and large scale mechanisation in the underground mines is rendered difficult due to the geometry of the ore body (narrow width and a flatter inclination). Manufacture of primary copper based on indigenous ores is characterised by high energy consumption because of low scale of operations and minimal automation.

3.27 Till 1997, the only producer of primary refined copper was Hindustan Copper Limited (HCL), a public
sector enterprise under the Ministry of Mines. The installed capacity for refined copper production at its two integrated copper plants was around 47,500 tonne per year, which used to meet approximately 25-30% of India’s requirement for refined copper. The balance demand was met through imports. However, the scenario has changed drastically after coming of the other two primary producers of Copper in private sector namely M/s Hindalco Ind. Ltd. (Unit: Birla Copper) and M/s. Sterlite Industries(I) Ltd. Their present annual capacities are 5,00,000 MT and 4,00,000 MT of refined copper respectively. The plants of M/s Hindalco Ind. Ltd. (Unit: Birla Copper) and M/s Sterlite Industries(I) Ltd. are based on imported copper concentrate. Besides, another private player viz. M/s Jagadia Copper Ltd. (formerly SWIL Ltd.) has started operating its 50,000 tonnes plant based on secondary route. Continuous Cast Rod (CCR) plants of M/s TDT and M/s Finolex are based on imported cathode. The capacity for production of primary copper in India has risen from a mere 47,500 tonnes per year till 1997 to 9,47,500 tonnes in 2008-09, with the result that India is now a net exporter of refined copper.

The details of production of major players in copper industry during 2008-09 are given Table 3.4.

<table>
<thead>
<tr>
<th>Units</th>
<th>No. of Factories</th>
<th>Installed Capacity</th>
<th>Production during 2008-09 (prov.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindustan Copper Ltd.</td>
<td>2</td>
<td>47,500</td>
<td>44,742</td>
</tr>
<tr>
<td>Sterlite Industries (I) Ltd.</td>
<td>1</td>
<td>4,00,000</td>
<td>3,39,294</td>
</tr>
<tr>
<td>Hindalco Ind. Ltd. (Unit: Birla Copper)</td>
<td>1</td>
<td>5,00,000</td>
<td>3,20,930</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>9,47,500</td>
<td>7,04,966</td>
</tr>
</tbody>
</table>

**Price of Copper**

3.28 The domestic price of copper is linked to London Metal Exchange (LME) price. The price of Copper declined sharply till 1998-99. Thereafter it was fluctuating between US $ 1450 & 1800 per tonne. Since 2003-04, the LME price is rising steadily and has reached historical levels. Recently, The London Metal Exchange (LME) price of copper which was hovering in the ranges from US $ 7,000 to US $ 8,600 per tonne during the months of April’08 to September’08 had a drastic fall during the month of October’08 with an average of US $ 4925 per tonne. The price of LME has further fall during November’08 and December’08. As selling price is determined by LME price, due to downward trend the realisation would be drastically reduced. Since then, there has been a slight recovery and the average price during March’09 was US $ 3750 per tonne. Copper price per tonne reckoned for the entire year (2008-09) averaged to US $ 5864 as compared to previous year (2007-08) average of US $ 7584. In view of the current situation, all the copper producers, particularly HCL, would be severely affected.

The year wise average LME price per tonne of copper is shown in the following Table 3.5.
level of economic development. Per capita consumption in India is in the order of 0.45 Kg as compared to 10 Kg in developed nations.

During 2007-08, consumption of refined copper in the country was approximately 5,30,000 MT and its export was 2,00,000 MT. During 2008-09, production of refined copper was 7,04,966 MT. It is apprehended that Demand growth is expected to be 7 to 8% during financial year 2009-10.

Electrical, Electronics and Telecommunications sectors account for nearly 52% of copper usage in India. The demand again is primarily from the telecom, power and infrastructure sectors. There has been substantial reduction in demand of copper in telecom sector with increased application of Fibre optic cables and fast penetration of wireless communication through cell phones, Wireless in Local Loop and DTH Telecasting.

3.29 In the household wiring sector, despite many advantages of using copper conductors, aluminum conductors are widely used. The trend, however, has started reversing and increased usage of copper in this sector is perceptible. But unfortunately, in place of cables and wirings made from high grade electrolytic tough pitch copper, applications are mostly of cables and wirings made from “Scrap recycled” (Commercial copper) resulting to substantial electrical energy loss to the country without counting indirect losses and other costs due to failure of these wirings. Usage of copper in building construction, as prevalent in Western World, is slowly making inroads into the country, mainly in metro cities and industrial projects.

### Table 3.5

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Average LME price of Copper (US $ per ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-96</td>
<td>2844</td>
</tr>
<tr>
<td>1996-97</td>
<td>2257</td>
</tr>
<tr>
<td>1997-98</td>
<td>2096</td>
</tr>
<tr>
<td>1998-99</td>
<td>1581</td>
</tr>
<tr>
<td>1999-2000</td>
<td>1670</td>
</tr>
<tr>
<td>2000-2001</td>
<td>1806</td>
</tr>
<tr>
<td>2001-2002</td>
<td>1527</td>
</tr>
<tr>
<td>2002-2003</td>
<td>1586</td>
</tr>
<tr>
<td>2003-2004</td>
<td>2046</td>
</tr>
<tr>
<td>2004-2005</td>
<td>3000</td>
</tr>
<tr>
<td>2005-2006</td>
<td>4097</td>
</tr>
<tr>
<td>2006-2007</td>
<td>6970</td>
</tr>
<tr>
<td>2007-2008</td>
<td>7584</td>
</tr>
<tr>
<td>2008-2009</td>
<td>5864</td>
</tr>
</tbody>
</table>

### TRENDS IN COPPER CONSUMPTION

Developing countries account for over one-third of refined copper consumption and industrialized countries account for 60%. Global industrial demand for refined copper is over 14 million tones and its usage is growing by around 3% per annum.

Copper consumption in a country is an indicator of its economic level of development. Per capita consumption in India is in the order of 0.45 Kg as compared to 10 Kg in developed nations.

During 2007-08, consumption of refined copper in the country was approximately 5,30,000 MT and its export was 2,00,000 MT. During 2008-09, production of refined copper was 7,04,966 MT. It is apprehended that Demand growth is expected to be 7 to 8% during financial year 2009-10.

Electrical, Electronics and Telecommunications sectors account for nearly 52% of copper usage in India. The demand again is primarily from the telecom, power and infrastructure sectors. There has been substantial reduction in demand of copper in telecom sector with increased application of Fibre optic cables and fast penetration of wireless communication through cell phones, Wireless in Local Loop and DTH Telecasting.

3.29 In the household wiring sector, despite many advantages of using copper conductors, aluminum conductors are widely used. The trend, however, has started reversing and increased usage of copper in this sector is perceptible. But unfortunately, in place of cables and wirings made from high grade electrolytic tough pitch copper, applications are mostly of cables and wirings made from “Scrap recycled” (Commercial copper) resulting to substantial electrical energy loss to the country without counting indirect losses and other costs due to failure of these wirings. Usage of copper in building construction, as prevalent in Western World, is slowly making inroads into the country, mainly in metro cities and industrial projects.