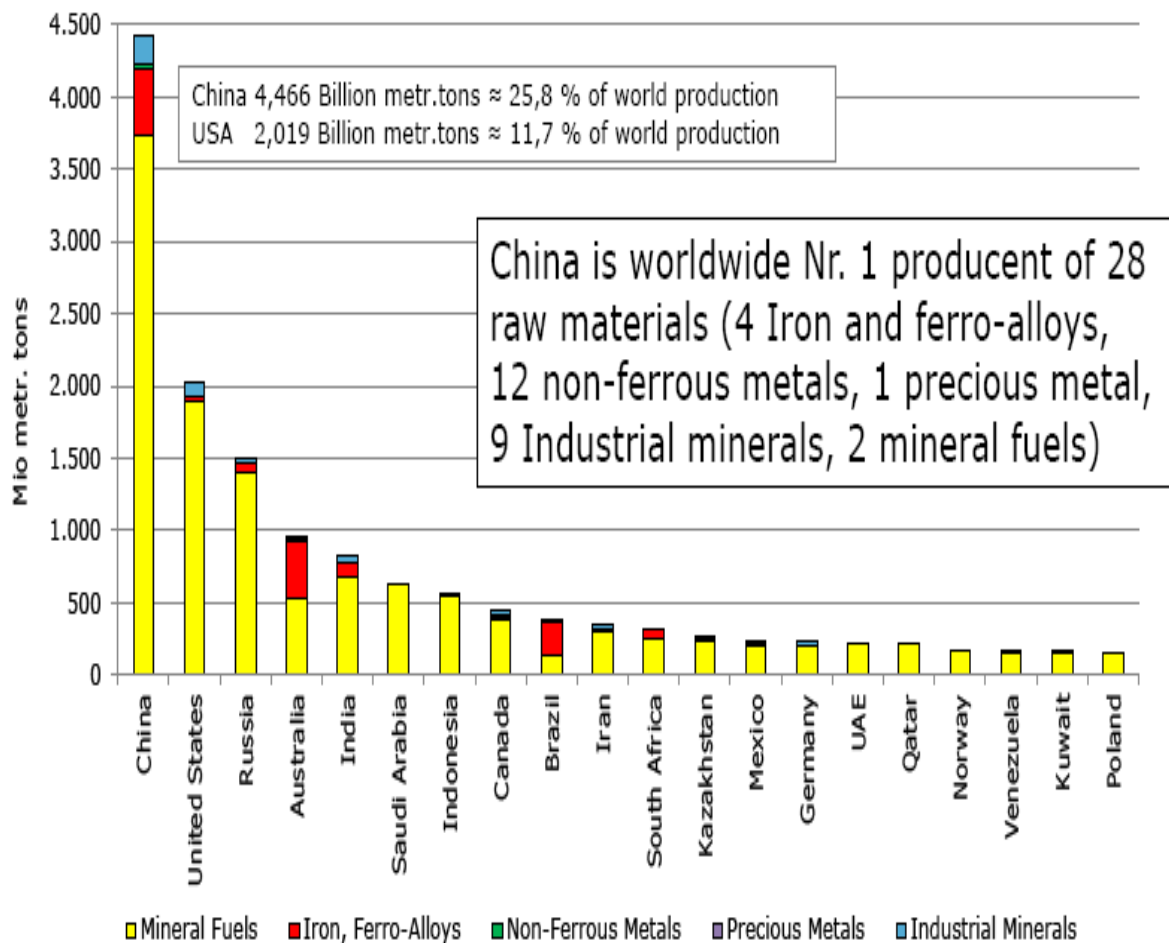


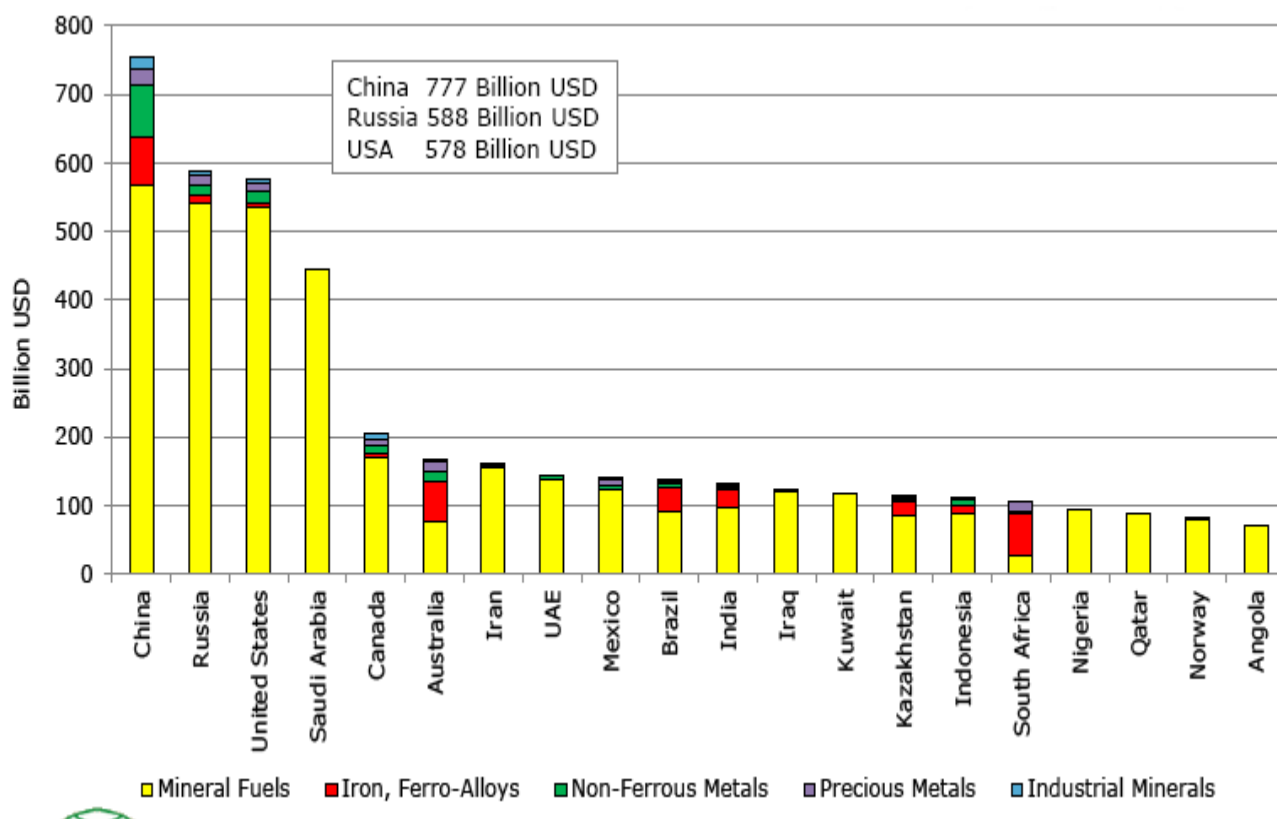
## CHAPTER-15 MINING

**15.1 World scenario & India :** Minerals are valuable natural resources being finite and non renewable. Besides catering to the energy requirements of the world, they are valuable inputs for diverse industrial activities. Natural endowment of minerals increases the potential wealth of a country but their distribution across the world varies substantially. As per Report on Mineral Production by International Organizing Committee for the World Mining Congress, during 2013, India ranked 5<sup>th</sup> amongst the mineral producer countries on the basis of volume of production. However, it ranked 9<sup>th</sup> position on the basis of value of Mineral production during 2013.

**Twenty largest producer countries 2013  
( without construction minerals, in metric t )**



**Twenty largest producer countries, 2013**  
**( without construction minerals, by Value in Billion US \$)**



**15.2 Significance of Mining Sector in India :** Since independence, there has been a pronounced growth in the mineral production both in terms of quantity and value. Even though performance of Indian economy is not exceedingly dependent on mining, as is the case in some middle eastern countries like Saudi Arabia , mining continues to be an important sector of Indian economy. The recently released new series of national accounts, revising the base year from 2004-05 to 2011-12 and applying changed methodology, whose details are not yet available, gives considerably improved estimates of growth in the industrial sector in 2012-13 and 2013-14 as compared to those based on the 2004-05 series . This is mainly due to much better performance in the mining and manufacturing sectors as per the new series. In 2013-14, manufacturing sector growth is estimated at 5.3 per cent as compared to the (-) 0.7 per cent estimated under the 2004-05 series. The Advance Estimates (AE) for the year 2014-15 show industrial growth of 5.9 per cent as per 2011-12 base year. The manufacturing, electricity, and construction sectors have grown remarkably while growth in the mining sector has declined as compared to 2013-14. The improved performance in manufacturing is attributed to the change in methodology and use of new data sources. The growth in electricity, gas, and water supply and construction shows marked improvement in 2014-15 as compared to the previous two years.

**Table 9.11 : Employment in the Industrial Sector**

	Persons employed (million)			Share in employment (%)			Share in GDP (%)		
	1999-2000	2004-2005	2009-2010	1999-2000	2004-2005	2009-2010	1999-2000	2004-2005	2009-2010
Mining	2.3	2.6	2.9	0.6	0.6	0.6	3.0	2.9	2.3
Manufacturing	43.8	56.1	52.4	11.0	12.2	11.4	15.1	15.3	16.0
Electricity	1.0	1.2	1.3	0.3	0.3	0.3	2.3	2.1	2.0
Construction	17.5	26.1	44.2	4.4	5.7	9.6	6.5	7.7	7.9
Industry	64.6	85.9	100.7	16.2	18.7	21.9	26.9	27.9	28.1

**Source :** The numbers have been derived applying NSSO segment-wise workers population ratios and Labour force participation rates to the population.

**Note :** Employment as per usual principal and subsidiary status (UPSS) basis.

**Contribution and Rank of India in World Production of Principal Minerals & Metals, 2011**

Commodity	Unit of quantity	Production		Contribution (Percentage)	India's rank in order of quantum of production
		World	India*		
Mineral Fuels					
Coal & lignite	Million tonnes	7739	582	7.5	3rd
Petroleum (crude)	Million tonnes	3980	38	1	24th
Metallic Minerals					
Bauxite	'000 tonnes	2,48,000	12,877	5.2	6th
Chromite	'000 tonnes	26,300	3,764	14.3	3rd
Iron ore	Million tonnes	3,012	167	5.5	4th
Manganese ore	'000 tonnes	47,300	2,349	5.0	6th
Industrial Minerals					
Barytes	'000 tonnes	9000	1,723	19.1	2nd
Kyanite, andalusite & sillimanite	'000 tonnes	460 <sup>(M)</sup>	62	13.5	4th
Magnesite	'000 tonnes	23,100	217	1.0	11th
Apatite & rock phosphate	'000 tonnes	2,03,000	2330	1.1	14th
Talc/steatite/pyrophyllite	'000 tonnes	7,800	1198	15.4	2nd
Mica (crude)	tonne	3,07,000	1807	0.6	15th
Metals					
Aluminium	'000 tonnes	45,200	1,654	3.7	8th
Copper (refined)	'000 tonnes	19,500	504	2.6	10th
Steel (crude/liquid)	Million tonnes	1,516	73.8 <sup>(R)</sup>	4.8	4th
Lead (refined)	'000 tonnes	10,400	92	0.9	18th
Zinc (slab)	'000 tonnes	13,000	783	6.0	3rd

\* Figures relate to 2011-12, \*\*Mineral Commodity Summary 2012, USGS.

@ Annual Report 2011-12, Ministry of Steel

Source: World mineral production, 2007-2011; British Geological Survey.

15.3 India produces as many as 89 minerals, which includes 4 fuel, 10 metallic, 48 non-metallic, 3 atomic and 24 minor minerals (including building and other materials) and India's ranking in 2011 as compared to world production was 2nd in barytes, and talc /steatite /pyrophyllite, 3rd in chromite, coal & lignite and zinc (slab), 4th in iron ore, kyanite/ andalusite/sillimanite and Steel (Crude), 6th in manganese ore and bauxite and 8th in aluminium.

## Trends During Last Decade & Present Status:

### No. of Reporting Mines:

15.4 Indian mining industry is characterized by a large number of small operational mines. Number of mines has not changed substantially over the years, because as new mines are explored, empty ones are closed down. Number of reporting mines during the last decade has been around 3000 to 3200.

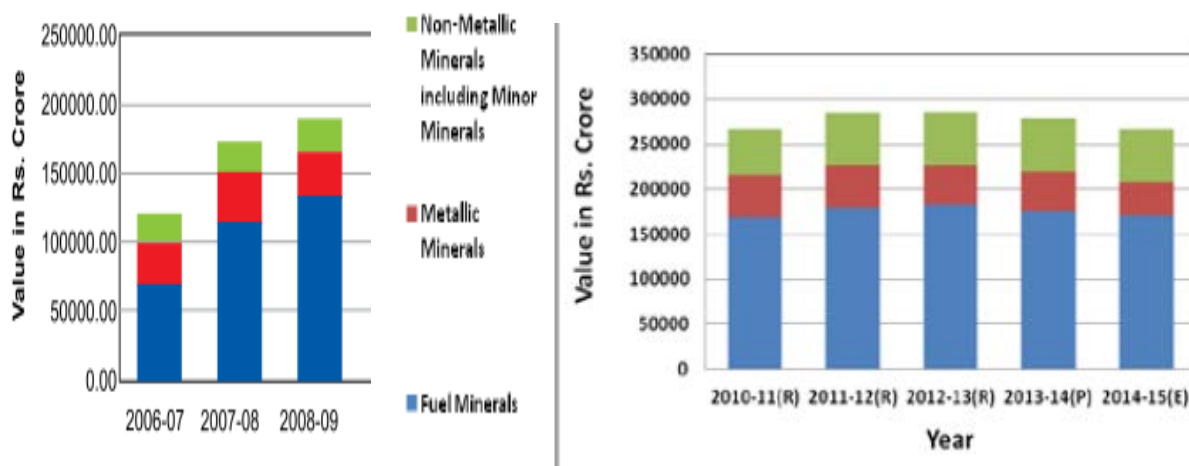
The number of mines which reported mineral production (excluding minor minerals, petroleum (crude), natural gas and atomic minerals) in India was 3318 in 2014-15 as against 3461 in the previous year.	Sector	2011-12	2012-13	2013-14	2014-15(E)
	All Minerals	3603	3694	3461	3318
	Coal (including lignite)	573	575	573	575
	Metallic minerals	682	635	626	595
	Non-metallic minerals	2348	2484	2262	2148

**15.5 Statewise Distribution :** 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 3318 in 2014-15 as against 3722 in the previous year. Out of 3318 reporting mines, 498 were located in Rajasthan followed by Andhra Pradesh (444), Gujarat (362), Madhya Pradesh (326), Tamil Nadu (272), Jharkhand (250), Chhattisgarh (201), Karnataka (178), Odisha (173), Maharashtra (150), Telangana (145) and West Bengal (120). These 12 States together accounted for 94% of total number of mines in the country in 2014- 15.

**15.6 Mineral Production :** Based on the overall trend so far the index of mineral production (base 2004- 05) for the year 2014-15 is estimated to be 127.7 as compared to 124.7 for 2013- 14 showing a positive growth of 2.4%. The total value of mineral production (excluding atomic minerals) during 2014-15 has been estimated at Rs,67,637 crore, which shows a decrease of about 3.78% over that of the previous year. During 2014-15, estimated value for fuel minerals accounts for Rs. 1,71,014 crore or 63.90%, metallic minerals, Rs. 36,773 crore or 13.74% of the total value and non-metallic minerals including minor minerals Rs. 59,850 crore or 22.36% of the total value . The WPI for minerals (base 2004- 05=100) stood at 348.1 in October 2014, and the corresponding index was 355.3 for October, 2013. The minerals included in the wholesale price index are bauxite, chromite, iron ore, copper ore, zinc concentrate, manganese ore, barytes, dolomite, fireclay, gypsum, kaolin, limestone, magnesite, phosphorite, graphite, steatite and sillimanite. The wholesale price index for metallic minerals was 398.9 in October, 2014 as compared to 375.8 in October, 2013 and that of other minerals was 208.2 in October, 2014 as compared to 212.3 in October, 2013. The wholesale price index for Coal stood at 189.8 in October, 2014 as compared to 191.5 in October, 2013. During 2000-01 to 2010-11, Index of Mineral Production (Quantum Index, Base Year 1993-94=100) increased from 131 to 205 for all minerals. During the period, index for fuel minerals increased from about 130 to 195, for metallic minerals from 130 to about 300 and for non metallic minerals from 142 to 259 . During the same period , index for production of iron ore increased from 135 to about 350. However the Index of Mineral Production has continuously declined since 2010-11 and was estimated to be 122.7 during the year 2013-14 as compared to 125.5 for 2012-13 showing a negative growth of 2.23%.

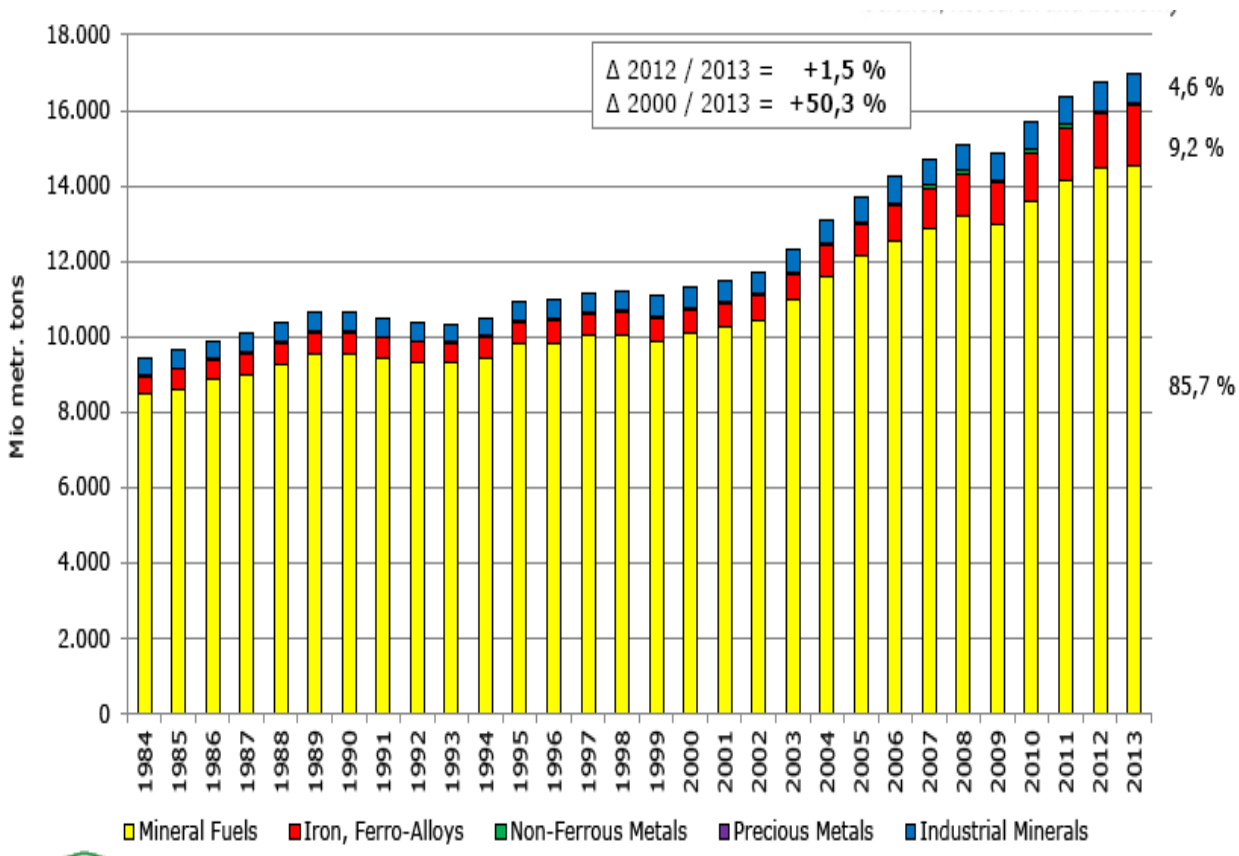
15.7 On the basis of significance in terms of production value , fuel minerals were given weight of 857, metallic minerals 80, non metallic minerals 42 & minor minerals weight of about 20 for construction of the index ( Base Year 1993-94). The relative importance seems to continue as reflected by the production over the years, though the share of metallic & non metallic minerals has increased and new base year 2004-05 has the weights of 812, 104, 27 and 26 for fuel metallic, non metallic and minor minerals respectively .

#### Value of Mineral Production (By Groups)



15.8 Similar feature is reflected in the overall world mineral production also where mineral fuels have primacy with much less share of metallic & non metallic minerals, whose share continues to be less despite of increase over the years.

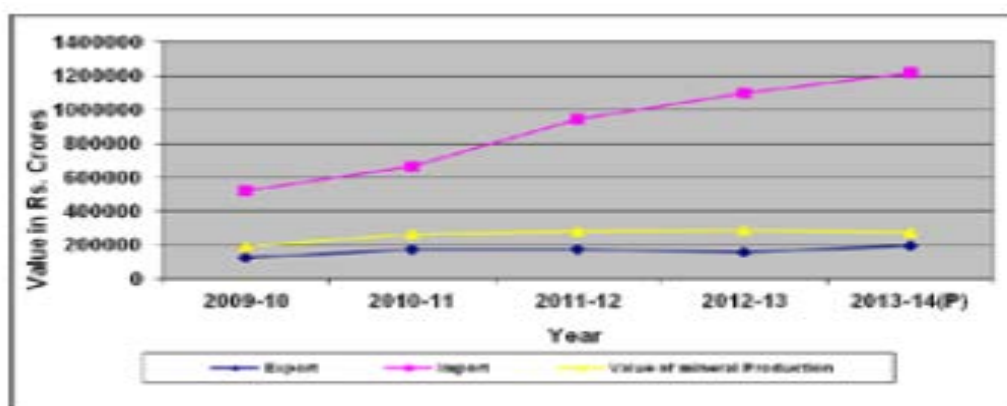
#### World Mining production 1984-2013 by groups of minerals ( without construction minerals, in metric t)



**15.9 Imports & Exports :** Even though India continues to be largely self sufficient in minerals which constitute primary mineral raw material to industries like iron ore, ferro alloys , aluminium , cement etc and mineral fuels like coal (except low ash coking coal) etc. , its value of imports still far exceeds its production .But the high value of imports is largely due to only two minerals viz. crude petroleum & diamond . Together they accounted for about 83 per cent of the import during 2012-13. Petroleum ( accounting for about 72 % of import value) is essential to meet the energy requirements whereas the import of raw diamond is for value added re-exports. Exports of Minerals during 2013-14 increased to Rs1,94,783 Cr from Rs 1,60,101 Cr during the previous year whereas the value of imports also increased to Rs 12,15,721 Cr from Rs 11,00,800 Cr during the period.

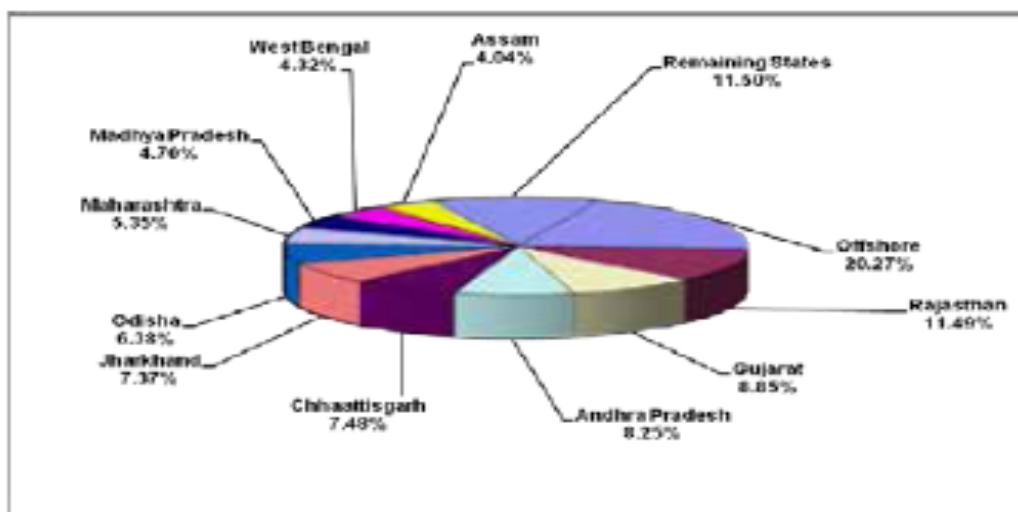
### Trends of Value of Mineral

## Production, Exports & Imports ( Rs Crores)



**15.10 Statewise Distribution :** During 2014-15, Mineral production was reported from 33 States/Union Territories (actual reporting of MCDR & fuel minerals from 23 states and estimation of minor minerals for all 32 States/Union Territories) of which the bulk of value of mineral production of about 94.18% was confined to 13 States (including off shore areas) only. Offshore areas are in leading position, in terms of estimated value of mineral production in the country and had the share of 20.27% in the national output. Next in order was Rajasthan with a share of 11.49% followed by Gujarat (8.85%), Andhra Pradesh (8.25%), Chhattisgarh (7.48%), Jharkhand (7.37%), Odisha (6.38%), Maharashtra (5.35%), Madhya Pradesh (4.76%), West Bengal (4.32%), Assam (4.04%), Karnataka (2.96%) and Uttar Pradesh (2.72%) in the total value of mineral production. Remaining States and Union Territories having individual share of less than 2.5% all together accounted for remaining of total value during the year under review. The contribution of States/ Regions in the value of mineral production during 2014-15 estimated is pictorially.

### Share of States in Value of Mineral Production 2014-15 (Estimated)





15.11 The Gross Domestic Product (GDP) accrued from mining and quarrying sector at 2004-05 prices for the first two quarters of 2014-15 is estimated at Rs 50,960 crore, indicated a increase of about 2.0% over that in the same period of previous year. Similarly, the advance estimates of GDP (at current prices) for the first two quarter of the year 2014-15 is estimated at Rs 1,07,585 crore. The mining and quarrying sector contribution to GDP accounted for about 2.0 % for the first two quarters of the year 2014-15. The underlying cause of the poor performance in Mining & Manufacturing has been considerable deceleration in investment particularly by the private corporate sector during 2011-12 and 2012-13, a trend that appears to be continuing as the overall gross fixed capital formation (GFCF) has further declined during 2013-14

15.13 State-wise analysis revealed that during 2014-15, the value of mineral production have shown a mixed trend as compared to that in the previous year. The states which have indicated an increase in the value of mineral production are Tripura (14.3%), Karnataka (1.6%), Bihar (6.6%), Himachal Pradesh (16.5%), Meghalaya (61.6%), Uttar Pradesh (0.8%) and Chhattisgarh (0.7%). However, some of the principal mineral producing states revealed decrease in value of mineral production and those include Odisha (25.8%), Arunachal Pradesh (18.3%), Andhra Pradesh (8.8%), Tamil Nadu (8.4%), Jharkhand (4.6%), Assam (3.4%), Madhya Pradesh (3.3%), Gujarat (3.2%), West Bengal (2.8%), Rajasthan (2.3%), Maharashtra (1.7%), Goa (1.0%), Jammu & Kashmir (0.7%) and Off-shore (0.3%). The all India Reserves and Resources of various minerals as on 01.04.2010, as per UNFC System.

#### **Sources of Data :**

15.14 **Indian Bureau of Mines (IBM)**, a subordinate office of Ministry of Mines, is the principal government agency responsible for compiling exploration data and mineral maps and for providing access to the latest information in respect of mineral resources in respect of **Major Minerals under Mineral Conservation & Development Rules, MCDR 1988**. Besides statistical activities, IBM offers technical expertise and proven experience in the fields of geology, mine planning and feasibility studies. The geological services of IBM include survey and preparation of mine plans, preparation of geological plans, preliminary geological appraisal of mineral properties, including the formulation of an initial scheme of detailed exploration with estimate of cost and preliminary reconnaissance, quick survey to determine potential areas out of large properties etc.

15.15 Amongst the mineral fuels , information on Coal & lignite production is obtained from **Office of Coal Controller**, Kolkata whereas that for production of petroleum & natural gas is obtainer from **Ministry of Petroleum & Natural Gas**.

(The Ministry of Mines is responsible for the survey and exploration of all minerals (other than Natural Gas and Petroleum), for mining and metallurgy of Non-ferrous metals like Aluminum, Copper, Zinc, Lead, Gold, Nickel, etc., and for the administration of the Mines and Minerals, other than Coal, Natural Gas and Petroleum. **Geological Survey of India, GSI**, another subordinate office of Ministry of Mines, helps through



assessment of geological and regional mineral resources of the country through scientific surveys and research and for locating mineral resources & geological mapping. **Mineral Exploration Corporation Limited MECL** is a public sector company, which undertakes detailed exploration of various minerals / ores by drilling and exploratory mining. It is also engaged in proving the existence of reserves for their eventual exploitation. Exploration is taken up both on a promotional basis on behalf of the Government of India and on contractual basis for other agencies)

### **Acts & Rules Governing Mining Sector :**

15.16 **The Mines and Minerals Development and Regulation Act, 1957, ('MMDR')** and the **Mines Act, 1952**, together with the rules and regulations framed under them, constitute the basic laws governing the mining sector in India. The relevant rules in force under the MMDR Act are the **Mineral Concession Rules, 1960**, and the **Mineral Conservation and Development Rules, 1988**. The health and safety of the workers is governed by the **Mines Rules, 1955** created under the jurisdiction of the Mines Act, 1952.

#### **Mines and Mineral (Development and Regulation) Amendment Bill, 2015**

3.17 Based on the recommendations of the High Level Committee set up in the Planning Commission, Government of India, in consultation with State Governments, the National Mineral Policy (NMP) was notified on the 13th March, 2008. The NMP 2008 provides for a change in the role of the Central Government and the State Governments to incentivize private sector investment in exploration and mining and for ensuring level playing field and transparency in the grant of concessions and promotion of scientific mining within a sustainable development framework so as to protect the interest of local population in mining areas. This has necessitated harmonization of the extant legislation with NMP 2008.

15.18 The Mineral Concession Rules, 1960 outline the procedures and conditions for obtaining a Prospecting License or Mining Lease. The Mineral Conservation and Development Rules, 1988 lays down guidelines for ensuring mining on a scientific basis, while at the same time, conserving the environment. The provisions of Mineral Concession Rules and Mineral Conservation and Development Rules are, however, not applicable to coal, atomic minerals and minor minerals. The minor minerals are separately notified and come under the purview of the State Governments. The State Governments have for this purpose formulated the Minor Mineral Concession Rules.

15.19 **Issues with Mining Sector** : Mining, unless properly regulated, can have adverse environmental and social consequences. On the one hand, mining disturbs the soil, water and ecological regimes and on the other hand, unless accompanied by proactive measures to promote inclusiveness through social education, health and other interventions, it can lead to alienation of the local population and assume socially unacceptable dimensions. Issues of Technology for zero waste or low waste mining, relief & rehabilitation, mine closure which otherwise leads to land degradation are important issues which require continuous attention.

**References :**

- Economic Survey India 2014-15
- Annual Report 2014-15, Ministry of Mines
- World Mining Data 2015, DI Christian Reichl – International Organizing Committee for the World Mining Congress.