

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. Management of mineral resources has, therefore, to be closely integrated with the overall strategy of development; and exploitation of minerals is to be guided by long-term national goals and perspectives. India with diverse and significant mineral resources is the leading producer of some of the minerals. Of the 89 minerals produced in the country, 4 are fuel minerals, 11 metallic, 52 non-metallic and 22 minor minerals. India is the largest producer of mica blocks and mica splittings; ranks second in the production of chromite, barytes, talc and steatite; ranks third in the production of coal and lignite, and bauxite; 4th in iron ore, fifth in steel, seventh in zinc, eighth in copper, 10th in aluminium and 11th in mica. Iron-ore, copper-ore, chromite ore, zinc concentrates, gold, manganese ore, bauxite, lead concentrates, and silver account for the entire metallic production. Limestone, magnesite, dolomite, barytes, kaolin, gypsum, apatite, steatrite and fluorite account for 92. percent of non-metallic minerals.

The mineral wealth of India as at present known, though by no means inexhaustible, comprises an adequate range of useful products that are necessary for the industrial development of the country. An appraisal of the reserves shows that while in respect of minerals essential for basic industries—coal and iron—the reserves are ample, the country is deficient in a fairly long list of vital minerals like ores of copper, tin, lead, zinc, nickel, cobalt and in sulphur and most important of all, petroleum. The position with regard to aluminium ore, refractories, abrasives, limestone etc may be considered as fairly adequate while in respect of titanium and thorium ores and of mica, the country has considerable reserves.

India has a large number of economically useful minerals and they constitute one-quarter of the world's mineral resources. About two-thirds of its iron deposits lie in a belt along Orissa and Jharkhand border. Other haemaite deposits are found in Madhya Pradesh, Karnataka, Maharashtra and Goa. Magnetite iron-ore is found in Tamil Nadu, Jharkhand and Himachal. India has the world's third largest deposits of coal. Bituminous coal is found in Jharia and Bokaro in Jharkhand and Raniganj in West Bengal. Lignite coals are found in Neyveli in Tamil Nadu. Next to Russia, India has the largest supply of manganese. The manganese mining areas are Madhya Pradesh, Maharashtra and Jharkhand-Orissa area. Chromite deposits are found in Jharkhand, Cuttack district in Orissa, Krishna district in Andhra Pradesh and Mysore and Hassan in Karnataka. Bauxite deposits are found in Jharkhand, southwest Kashmir, central Tamil Nadu, and parts of Kerala. U.? Maharashtra and Karnataka. India also produces three quarters of the world's mica. Belts of high quality mica are, Bihar, Andhra and Rajasthan. Gypsum reserves are in Tamil Nadu and Rajasthan. Nickel ore is found in Cuttack and Mayurbhanj in Orissa. Ilmenite reserves are in Kerala and along the east and the west coastal beaches. Silimanite reserves are in Sonapahar of Meghalaya and in Pipra in M.P. Copper ore bearing areas are Agnigundala in Andhra Pradesh, Singhbhum in Jharkhand. Khetri and Dartiba in Rajasthan and parts of Sikkim and Karnataka.

The Ramagiri fields in Andhra Pradesh, Kolar and Hutti in Karnataka are the important gold mines. The Panna diamond belt is the only diamond producing area in the country, which covers the districts of Panna, Chatarpur and Satna in Madya Pradesh, as well as some parts of Banda in Uttar Pradesh. Petroleum deposits are found in Assam and Gujarat. Fresh reserves were located off Mumbai Coast. The potential oil bearing areas are. Assam, Tripura, Manipur. West Bengal, Punjab, Himachal, Kutchch and the Andamans. India also possesses the all-too-valuable nuclear Uranium as well as some varieties of rare earths.

Until recently, mineral exploration and their utilization in the country received little attention. Except for coal, iron ore and petroleum required for internal use, the majority of minerals were raised in India for purpose of bulk export without any dressing, processing and fabrication. These exports brought but a small return to the country. Nearly a hundred minerals are known to be produced or mined in India of which nearly 30 may be considered more important including several which although comparatively unimportant in quantity today, are capable of material development in future with the expansion of industries. It should be made clear at the outset that though progress has been

made in the survey of mineralized areas in recent years and the principal mineral regions have been ascertained, exploration of mineral resources has not been thorough or complete in most cases and present estimates are just rough guesses. The power resources in India comprise coal, oil and hydro electricity. India's coal mining is centred mainly in Bihar and West Bengal. The total workable reserves of coal down to a depth of 1,000 ft are estimated at 20,000 million tonnes, of which the good quality coal would amount to 5,000 million tonnes. The reserves of coking coal, however, are small amounting to only 2,000 million tonnes. As against relatively meager resources of coal and oil, the hydroelectric resources of India are considerable with estimates varying from about 30 million horse-power to 40 million horse-power. India possesses large quantities of high grade iron ore and may be classified as one of the countries which can reasonably expect a long continued development of heavy industry though, in proportion to the population, these reserves are lower than the main ore regions of the world. Likewise, there are large reserves of bauxite. India is also the world's main source of supply of mica. In India, over the years, a national mineral policy has evolved. The policy addresses certain new aspects and elements like mineral exploration in the sea-bed, development of proper inventory, proper linkage between exploitation of minerals and development of mineral industry, protection of forests environment and ecology from the adverse effects of mining, enforcement of mining plan for adoption of proper mining methods and optimum utilization of minerals, export of minerals in value-added form and recycling of metallic scrap and mineral waste.

The Mines and Minerals (Regulation and Development) Act, 1957 lays down the legal framework for the regulation of mines and development of all minerals other than petroleum and natural gas. The Central Government has framed the Mineral Concession Rules 1960 for regulating grant of prospecting licences and mining leases in respect of all minerals other than atomic minerals and minor minerals. The State Governments have framed the rules in regard to minor minerals. The Central Government has also framed the Mineral Conservation and Development Rules, 1988 for conservation and systematic development of minerals. These are applicable to all minerals except coal, atomic minerals and minor minerals.

In conclusion, all we can say is that though India is rich in a wide variety of minerals, we need to develop ways and means for their detection, mining and utilization, so as to provide rich returns to the Indian economy and to strengthen it.