

GEOLOGY AND MINERAL RESOURCES OF ODISHA

Odisha, situated on the eastern seaboard of India is one of the gifted parts of the world, where a gamut of mineral resources exist in bounty. The state is endowed with large reserves of bauxite, chinaclay, chromite, coal, dolomite, fireclay, graphite, gemstones, iron ore, limestone, manganese ore, mineral sand, nickel ore, pyrophyllite and quartz. Recent discovery of diamond in the Dharambandha area of Nuapada district by the State Directorate of Geology has added a coloured feather in the cap of the state. Other minerals of the state include copper ore, lead ore, titanium bearing vanadiferous magnetite, talc/soap stone and high magnesia igneous rocks. Recent boom of the mineral industry has turned the state into a hotspot, with entrepreneurs from all over the world crowding for their share of fortune.

The rich mineral wealth of the state is attributed to its favourable geological set-up. Situated on the eastern fringe of the peninsular India, Odisha has about 72.5% of the area occupied by Precambrian metamorphic rocks (of Archaean and Proterozoic age) which host the majority of the minerals. The Gondwanas hosting the coal resources occur over about 8% of the land mass. The Tertiary and Quaternary formations, occupying rest of the area, provide avenues for aluminous/nickeliferous laterite and heavy minerals (in beach sand).

The Archaean rocks in northern Odisha include the Supracrustal belts of metasedimentary rocks including Iron Ore Super Group having deposits of iron, manganese, gold and basemetals. These are also represented by the gneisses, granite, migmatite (Singhbhum, Bonai and Mayurbhanj Plutons) and mafic/ultramafic intrusives. These intrusives are associated with the chromite, titaniferous vanadiferous magnetite and PGM. The Bastar cratonic complex of Archaean age in the Western Odisha includes gneisses, granite, migmatite and Strontium-Tantalum-Niobium bearing pegmatites.

Proterozoic rocks in the Western Odisha exhibit platformal sedimentary formations and associated limestone deposits. In north-western Odisha they contain metasediments of low to medium metamorphic grade classified as the Gangpur Group, which host manganese, limestone and Lead-Zinc deposits. In central and southern Odisha, the Proterozoics are represented by the Eastern Ghats granulite belt comprising of khondalite, charnockite, migmatite, anorthosite and alkaline rocks accounting for the mineralisation of bauxite, manganese, graphite and gemstones.

The Mesozoic rocks of Gondwana Super Group host the major coal resources of the state.

Formations of Cenozoic age occupy the eastern coastal plains in form of alluvial sediments, ash beds and low level laterite, providing avenues for occurrence of beach sand minerals and building materials. The deltaic fans extending into offshore regions play hosts for oil and gas.

Odisha has a lion's share of the Country's mineral reserves. The chromite, nickel, bauxite, iron ore and coal resources of the state respectively stand at a staggering 83, 92, 55, 38 and 26 percent of India's total reserves. Some of these minerals also account for a visible spot in the world's mineral map. The state's mining revenue during 2009-10 amounted to Rs.2020.71 crore.

Several mineral based industries have already come up in the State. The major ones include Rourkela Steel Plant, Alumina Refinery and Smelter of Nalco at Damanjodi and Angul, Charge Chrome plants at Baminipal, Bhadrak, Choudwar and Theruvali by OMC, FACOR, ICCL and IMFA respectively, Mineral

sand separation unit at Chatrapur by IRE. Many cement and sponge iron plants have been set up. Coal based thermal power plants have been set up at Talcher, Kanihan and Banaharpali. Captive thermal power plants have also been set up by NALCO, RSP, ICCL, INDAL etc. and many more are in the pipeline.

The dynamic State Government of Odisha has left no stone unturned in cashing in on the attention it has been getting from different business houses in recent times. The visionary Chief Minister with his view on the future development of the state has signed 79 MoUs with various Companies to set up mineral-based industries with a total proposed investment of Rs.3,65,327.20 crores, which is supposed to provide value addition to the mineral wealth thereby augmenting employment and enhancing the economic standard of the public. The huge mineral resources of the state, 480 km long coastal stretch, the liberalised economic policy of Govt. of India, Industrial Policy 2007 and availability of infrastructural support makes the state an investors' paradise.

Mineral Reserves in Odisha (By the end of 2009-10)

(in million tonne)

Minerals / Ores	Total Reserve	% of Total State Reserve of All Minerals
Bauxite	1805.72	2.41
China clay	313.95	0.42
Chromite	170.39	0.23
Coal	65121.37	87.00
Dolomite	329.62	0.44
Fire clay	175.46	0.23
Graphite	4.38	0.01
Iron ore	5073.63	6.78
Lead & Zinc ore (Base metal)	4.98	0.01
Limestone	1004.47	1.34
Manganese ore	119.21	0.16
Heavy Mineral	226.00	0.30
Nickel ore	174.48	0.23
Pyrophy lite	8.33	0.01
Mineral Sand	226.00	0.30
Vanadium ore	2.50	0.00
Quartz & Silica sand	70.39	0.09
Tin ore (tons)	347.56	0.46
Total	74830.88	100.00

Source : Directorate of Geology (Economic Survey 2010-11), Odisha