

by

H.N. Siddiquie, A.R. Gujar and V.V.R. Varadachari
National Institute of Oceanography
Dona Paula, Goa, 403 004

A B S T R A C T

The Exclusive Economic Zone (EEZ) of India comprising the continental shelf, slope and parts of the deep sea covers an area of over 2.3 million km². Heavy mineral placers containing ilmenite, magnetite, monazite, zircon and rutile are reported from many localities along the coasts of Maharashtra, Kerala, Tamilnadu and Andhra. These deposits are expected to extend to the innershelf but very little work has been carried out to trace their offshore extension except along the Konkan Coast. The recent surveys by the NIO indicate that the ilmenite placers off the Konkan Coast extend offshore to a distance of 2 - 8 km, a depth of 18 - 20 m and the reserves are estimated to be more than 12.5 million tonnes.

Biogenous sediments of very pure calcareous sands are reported from shallow offshore areas of Laccadive and Andaman Nicobar Islands, Gulf of Kutch, the outer shelf off Bombay and the back waters of Kerala. The deposits in the Laccadives are estimated to contain 712 million tonnes, Gulf of Kutch 2 million tonnes and the back waters and

estuaries of Kerala 3 million tonnes. The deposits of oolites on the outer shelf of Bombay though extensive do not appear to be attractive at present because of the comparatively greater depths and distances from shore. Occurrences of chemogenous deposits i.e., barium nodules are reported from the continental slope and the adjacent deep sea while recent studies indicate that some areas are favourable for the formation of phosphorite also. However, these occurrences at present do not appear to be of economic interest.

The polymetallic nodules in the deeper areas of the Indian Ocean cover an area of over 10 million km². Paramarginal (ore grade) nodules with more than 2.47 % Cu + Ni + Co from the Central Indian Basin and submarginal grade nodules with 1.63 to 2.47 % of Ni + Cu + Co from the West and South Australia have been reported. The exploration and exploitation of the deposits in the Indian Ocean is of considerable interest to India because of the limited resources of manganese on land, substantial present imports and the likely increase in demand for Cu and Ni.

An appraisal of the available data indicates that only the deposits on the continental shelf and the deeper areas of Indian Ocean offer prospects for mining. The calcareous sand deposits in the shallow offshore areas of the Laccadives and the western shelf are likely to be

exploited in the near future because of the paucity of local construction material and the development activity. This may be followed by offshore mining in shallow areas bordering the known placer deposit on shore. An integrated mining of onshore and offshore placers deposits would be attractive as the technology for beneficiation and metallurgy will be common.

The limited resources of manganese on land and likely increasing demand for Ni, Cu and Co would also lead to the development of deep sea mining and the Central Indian basin appears to be the most promising for location of first generation mining sites. The exploration and exploitation of these seabed deposits undoubtedly would require a concerted effort in R & D in mining and metallurgy where technology in some cases would differ considerably from that adopted on land.
