BOOK REVIEW

VISION DOCUMENT ON "MINERAL DEVELOPMENT - 2020 FOR ORISSA" by Society of Geoscientists and Allied Technologists (SGAT), Bhubaneshwar, Orissa, 2009, 229p.

This comprehensive vision document, prepared for the Department of Steel and Mines, Government of Orissa by SGAT, perhaps is the first of its kind published by a Society aimed at a holistic growth of the mineral industry in a State of the Indian Union. The following ten committees represented by eminent scientists, technocrats and Government officials, including the Planning Commission, have attempted at a comprehensive evaluation of the present status of development in the mineral sector in the State and have provided a road map for the development of mineral industries by 2020. These include:

1. Mineral Exploration
2. Mining, Quarrying and Processing.
3. Laboratory Facilities
4. Legislative Procedures
5. Infrastructure
6. Development of Mineral Based Industries
7. Environment Management
8. Education and Training
9. Peripheral Development and Corporate Social Responsibility (CSR).
10. Mineral Administration and organizational set up.

The document also deals with allied topics such as: Fiscal incentives, National Mineral Policy-2008 and Orissa Industrial Policy-2007; Foreign trade and Economics of mining. With revenue of over Rs. 1363 crores in 2008-09, Orissa has a major share in the production of iron ore, coal, bauxite, chromite, graphite, and gemstones in India.

Suggestions under the 'Mineral Exploration' carried out by the former Directorate of Mining and Geology, now bifurcated into Department of Geology (DoG) and Department of Mining (DoM) include large scale geological mapping on 1;10,000 to 1;25,000 scale supplemented by state-of-the-art satellite imagery, aerial photographs, and geo-coded sheets, taking up geochemical and geophysical surveys by DoG for metals like Au, PGE, Cu, Pb, Zn, Co, Ni and others with augmentation of analytical facilities besides modernizing drilling rigs with RC and vacuum suction rigs. Detailed exploration of 1000 sq km in the Ib River and Talchir Basin, assessment of bauxite with 35-40% Al_2O_3, re-assessment of reserves of chromite at +10% cut-off in existing and extension areas at Sukinda, Baula-Nuasahi-Bangur belts up to vertical depth of 300 m, re-examine graphite resources including the tailings for W and REE, a holistic 10 year programme in iron ore reserve estimates with 45% Fe threshold value including BMQ, reassessment of Mn-ores at 15% Mn cut-off, seeking low-alkali and low silica limestone in known deposits and extension areas besides exploration for PGE, gemstones and other strategic minerals with related agencies have been proposed. The UNFC system of reserve estimation has been recommended for all ore reserve estimates. The document emphasizes and implores the government to augment funds to achieve these goals in addition to the induction of trained geoscientists with back up analytical facilities. It further suggests that the DoG must prepare list of projects that can seek assistance from UNDP, CIDA, and countries such as US, UK, Russia, France and South Africa.

In "Mining, Quarrying and Processing" sector, the vision document recommends opening up of the proven bauxite and heavy mineral and thorium deposits, hydraulic mining of china clay with simultaneous removal of silica in sluices, with steps for washing and size reduction (for use in the pharmaceutical industry) at Joshipur of Mayurbhanj. Agglomeration of fines in Mn-ore by all producers has been suggested to increase productivity. The problems of waste dumps of chromite have been evaluated and suggested remedial measures include identifying areas for waste dumps outside the lease area, beneficiating waste dumps with over 10% chromite, mandating beneficiation plant at every chromite mine and avoiding fragmentation of single ore bodies into different lease holds which blocks mining of ore-bearing areas between lease hold-boundaries. A 15 point recommendations for better planning, exploitation and environmental management have been made to develop coal mines both old and new in Orissa by 2020 by both government and private lease holders so as to achieve the production target of about 180 Mt by 2020. A Regional Development and Environment Management Plan for iron ore mining regions of Orissa has been proposed involving all stake holders with an emphasize on GPS and computer-aided Truck dispatch systems for better productivity in large mechanized mines and mandating water-recycling in all

beneficiation plants besides a co-operative system for waste disposal which will reduce the overall requirement of land for waste dumping and subsequent reclamation.

Under 'Laboratory Facilities', the document recommends closer liaison and optimal use of existing facilities at IMMT, Bhubaneshwar, IBM, Nagpur, NGRI, GSI, NML and laboratories with DoG and DoM. It also suggests improved laboratory infrastructure and trained manpower besides recommending the Coal Assay and Chemical Assay laboratories to be brought under DoG. It further suggests that the State should recognize and accept analytical reports provided by private companies with better analytical systems such as XRF, ICP-AES and others and also encourage the use of such systems by other lessees.

Existing Legislative procedures and suggested modifications to improve efficiency are dealt extensively. These take into account the recommendations of the High Level Committee that was set up by the Ministry of Mines, Govt. of India, to review the National Mineral Policy, 1993 and to recommend possible amendments to the M & M (D&R) Act, 1957 in the National Mineral Policy of 2008 as well as the Draft Mines & Minerals (Scientific Development and Regulation) Act, 2009. The topics include the whole gamut of activities such as processing and disposal of MC, technical enquiry, forest clearance, environment clearance, illegal mining, transportation and trading of ores, minor minerals, and mining revenue. A time-bound scheme is emphasized at every stage together more empowerment to the DoG and DoM.

Under infrastructure, the document evaluates the road, rail, air and port facilities besides the water, power, communication, health care and others that are existing at present and future requirements and approaches to achieve Orissa's mineral development vision of 2020. With a projected level of production of coal (180 Mt), steel (76 Mt), alumina (7 Mt), aluminium (2 Mt), and ferro-alloys (1Mt) besides others would require substantial growth in the power production (5700 Mw) and water requirements (about 8 BCM) as well as a vigilant environment protection programme and compliance by stake holders, the document envisioned. Besides surface sources, a large portion of water required are expected to come from underground sources and recycling of industrial water.

The document envisages several major mineral based industries besides the iron and steel such as ferroalloys, cement, refractories, alumina-aluminium and coal-based thermal power. With the introduction of Forest Conservation Act, 1980 and Environment Protection Act, 1986 and monitoring by statutory agencies, environmental management has improved perceptibly in the 16 mining zones with 12 major mineral-based industries, identified in the vision document. EIA has been recommended in all these zones with a regional EMP to '*cover reclamation, rehabilitation, afforestation, waste dumping, drainage control, and pollution abatement measures'*. In order to achieve this goal, a full-time Chairman and Member Secretary has been recommended for the Orissa State Pollution Control Board.

A detailed evaluation of the education and training facilities that are available with regard to geology and mining –related subjects within Orissa has led to the recognition of strengths and weaknesses in the existing centers of learning. The document suggests remedial measures that are needed in the various institutes and insists on the need to open up new centers for teaching Applied Geology and Geophysics, branches that are nowhere taught in Orissa. Opening of a new Institute of Earth Sciences at Bhubaneshwar in the pattern of Institute of Physics, Mathematics and Life Sciences has been recommended besides the introduction of a PG programme in Earth and Environment Science in the proposed Central University at Bhubaneshwar.

Sensitive issues of reclamation, resettlement and rehabilitation (RRR) issues arising out of mining activities in the State, especially in forest and tribal habitats have been briefly discussed. Best practices of RRR followed by Tata, NALCO, OSCOM (IREL) should guide future endeavours in Orissa the report opined. In spite of the negative impacts by some NGOs, the vision document calls for the development of the mineral bases-industries within the ambit of the Regional Development plan *'encompassing infra-structure, socio-economic development, compatible EMP and acceptable RRR package'*.

With regard to Corporate Social Responsibility (CSR) and Peripheral Development to be taken care by the mining companies, the document sites the National Mineral Policy Document -2008. To quote: "*an enabling environment will be created to motivate large mining companies to undertake construction of transportation network (rail and road0 on their own. The contribution of mineral development to regional and more specifically peripheral development, commensurate with the huge investment in large mining projects is substantial. In so far as public funding of infrastructure is concerned a much greater thrust will be given to development of health, education, drinking water, road and other related facilities and infrastructure in mineral bearing areas so that the integrated approach emerges, encompassing mineral development, regional development and the social and economic well being of the local and particularly tribal population*".

Fiscal Incentives of NMP-2008 and the Orissa Industrial Policy (OIP) -2007 are also briefly evaluated and improvements have been suggested. While welcoming the policy of 'access to risk funds' from capital markets and venture funds for 'prospecting' in the NMP-2008, the document recommends incentives under the OIP-2007 for graphite beneficiation and crucible manufacturing with < 8%FC, china clay washing plant, chromite beneficiation (< 10% Cr_2O_3), and other sectors such as granite cutting and polishing, pulverizing of pyrophyllite and quartz, calcined bauxite, fly-ash bricks and abrasives. Incentives for reducing wastes, utilization of wastes and beneficiation of sub-grade ores by way of reduced electricity charges and lower rates of royalty has also been recommended.

The section on Foreign trade, especially dealing with major exports of Orissa in commodities such as iron ore (> 14 Mt, in 2008-09) and chromite (42,950 tonnes of ore and 3.62 lakh tonnes of concentrates in 2008-09) besides others (alumina and alluminium, graphite, dimention stones, ilmenite), suggests reduction on duty which should be based on % of fob on DMT basis as also reduction of commission to MMTC from 3 to 1%. It further suggests that cut-off grade for concentrates should be reduced to 35% Cr_2O_3 and export duty earned by GOI should be shared with the State for infrastructure development in the chromite-mine areas.

Commenting on the 'Economics of Mining', of iron ore, chromite, coal, bauxite and Mn-ores, the document lists the numerous challenges the mining companies face regularly including the recent global recession and compliments their resilience and enterprise. The transportation costs including increases in railway freight charges (from Rs. 200-1200 /t of ore depending on distance and mode of transport from mine-head) continue to be a major concern for all mining companies in fixing the ultimate cost of the ore for export or other uses.

The concluding chapter deals with the 'Administrative and Organisational Setup' of agencies dealing with the geology, exploration and mining in Orissa. After a brief historical account of the Directorate of Mining and Geology, it outlines the present organizational set up of DoG, DoM under the Dept., of Steel and Mines, Govt. of Orissa. The report dwells on the Orissa Mining and Geology Service Rules, 1976 and suggests improvements in the HRD and other areas of reporting. It also details the organizational set up of the Orissa Mining Corporation (OMC), established in 1956 besides GSI, IBM, Directorate of Mine Safety (DMS), Mahanadhi Coal Fields limited (MCL), MOEF and other offices located at Bhubaneshwar, and contributing to Orissa's mineral exploration and exploitation programmes.

The 'Vision Document on Mineral Development-2020' for Orissa, by SGAT is thus a model document to emulate by any State interested in developing and realizing their mineral potential and thus raising the economic standards and status of the State and its people.

Geological Society of India P. KRISHNAMURTHY
Bangalore - 560 019 R.H. SAWKAR