Prospects of Mineral Based Small and Medium Scale Chemical Industries in Orissa

Dr A Suryanarayana, Non-member
Dr G K **ROY,** Fellow
Dr S C Naik, Fellow

Department of Chemical Engineering
Regional Engineering College Rourkela

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In this paper, the *minerals available in Orissa along with their exact location, quantum and quality have been detailed,* constraints in the growth 0/ mineral based chemical industries *have been discussed and suitable* remedial measures have been proposed. Prospects *of a few* important mineral based *chemical industries in* • the small and medium *scale* sectors *have* been outlined.

Introduction

Poverty amidst plenty can rightly be said for the prevalent economic and social status of the state of Orissa, in spite of the rich minerals, forest and marine wealth, Orissa has not been developed significantly even after four decades of country's independence. To plan for an economic upliftment of the state on the foundation of industrialization due attention should be paid to the effective utilization of natural resources in general and mineral wealth in particular.

Unfortunately, the overall growth of the chemical industry has not been commensurate with the exploitation of industrial minerals in this region and distinct developmental prospects exist in this particular field. It will be in the national interest at large and in the interest of the region in particular to concentrate efforts in developing the mineral based chemical industry,in keeping with the availability of a wide range of exploitable mineral resources of the region.

Classification

Based on capital investments, industries can be classified as : small scale, medium scale and large scale industries. Any industry which requires a capital investment of Rs 20 lakhs or less can be classified as a small scale industry. Industries with investment above Rs 20 lakhs and less than Rs 1 crore come under the medium scale and the ones with more than Rs 1 crore are in the large scale sector.

On the basis of the products the chemical industries can be categorized as:

(i) Raw materials based,
(ii) Intermediates,
(iii) Import-substituting, and
(iv) Export oriented.

It is seen that the limited growth of chemical industries in Orissa during the last decades is predominated by the raw materials based category of industries. There has not been significant development in the other three categories of industries although the state is bestowed with physical industrial infrastructure which can be matched only by a few other regions in the country.

More than 80% of the mineral wealth of Orissa is concentrated in the five western districts of the state. Table 1 depicts some of the important minerals of Orissa with their exact occurrence, quantum of reserve and the quality of the mineral. As is evident, most of the minerals are of very high quality and their conversion to other useful industrial chemicals is economically feasible.

Growth Constraints

Growth rate of chemical industries in the mineral rich region of Orissa has been very slow. Various factors have been responsible for this. Large scale chemical industries are normally capital intensive with low return on investment. Further, adequate measures have not been taken up for a significant development of chemical industries in the small and medium sectors which prove to be more viable compared to the large units.

There are certain infrastructural bottlenecks leading to the problem of exploitation of mineral resources and their ultimate utilization in the development of chemical industries in Orissa. In the first place, most of the deposits in this region are located in the inaccessible mountainous and forest regions. Hence, exploitation of the deposits has been both difficult and uneconomical. Secondly, most of the public sector undertakings and state owned mines are running at a loss for lack of proper organization and scientific management, thereby, affecting the exploitation of minerals to a considerable extent. Thirdly, the various industrial consultancy organizations existing

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Table 1 Important Mineral Reserves of Orissa

Minerals	Important Reserves	Total Quantum of Reserve(Mt)	Quality of Reserve
Iron ore	Kiribur, Joda, Bonai Malangtori, Thakurani of Keonjhar, Daitari-Tomka	6 000	61 to 64% Fe
	Khandadhar block, Dandsahan Kahar, Taldih, Kalta of Sundargarh, Gandhamardan,	1 800	59 to 64% Fe
	Nailbasa hill of Sambalpur, Banspani	200 (10 000)	55 to 60% Fe
Manganese ore	Siljora, Balda, Bonai–Keonjhar belt,	33	30% and above Mb
	Koira valley, Malda of Sundargarh	7	30% and above Mn
	Ladhipur, Lorma, Barjol of Bolangir	1	38 to 54% Mn
	Sirlijod, Lilipadar, Haldi of Kalahandi	1	48% Mn
Chromite	Baula-Nuasahi of Keonjhar	42	30% Cr_2O_3
	Sukinda, Dhenkanal	44	
Limestone	Birmitrapur, Lanjiberna; Purnapani of Sundargarh	350	Flux and Cement grade
	Dungri, Putka of Sambalpur, other districts	350	Flux and Cement Grade
Dolomite	Birmitrapur, Sapai river valley of Sundargarh,	350	17 to 22% mgO
	Kainsara, Sulai, Singipali of Sambalpur, other districts	50	17 to 22% mgO
Bauxite	Ghandhamardan plateau of Bolangir and Sambalpur	650	40% Al_2O_3
	Karlapat, Kharian of Kalahandi	350	40% Al_2O_3
	Koraput, Keonjhar & Phulbani districts	6 000	40% Al_2O_3
Coal	Rampur of Sambalpur,	20 000	non-coking
	Talcher and Ib valley coal fields	50 000	non-coking
Fire Clay	Belpahar of Sambalpur	30	Grade 1 and 2
	Kiripasira of Sundargarh	60	
	Talcher and Banki		
Nickel	Nuasahi of Keonjhar	38	0.5% Ni
	Sukinda of Cuttack, Simplipal	82	
Lead	Jolorpodor, Baddipada of Bolangir	4	5% lead
	Sargipali of Sundargarh	0.5	0.5 to 3.0% Cu
	Jhuman, Padmapur of Sambalpur	0.5	0.6 to 1.8% Zn
Quartzite and Quartz	Anjhor of Kalahandi	0.2(15)	96 to 98% SiO_2
Graphite	Sargipali, Chaulbanj of Bolangir; Ranikot and Sindhekuti of Kalahandi; Balupali & Bilanjore of Sambalpur	< 0.1	55 to 60% fixed Carbon
Kyanite	Kodumunda of Sundargarh	< 0.1	Low grade
Mica	Singhjharam, Desngangi of Kalahandi & Balupati, Kalimite of Sambalpur	< 0.1	Low grade

Figures in brackets are total Orissa figures

in the state have not been able to impart the requisite technical knowhow successfully to the potential entrepreneurs. Fourthly, there used to be a dearth of technically sound personnel in the field of chemical engineering and chemical technology in the state during the past four decades of industrialization of the post-independence era. And lastly, communication has been another serious hindrance in the exploitation of minerals and their transportation to various industrial sectors with a view of developing mineral based chemical industries.

Growth Prospects

There is excellent scope for the development of mineral based small and medium scale chemical industries in Orissa. These industries mainly act as ancillary industries to medium and large scale units respectively, with an objective of either supplying raw materials or components. These ancillary units can also produce chemical intermediates, import substituted and export-oriented chemicals utilizing the byproducts and wastes of the large units with or without the mineral resources of the region. Starting from the main mineral resources available in Orissa, a list of chemicals can be manufactured either in the small or in the medium sector. A few important chemicals are presented in Table 2.

Possible Centres

For the best possible utilization of the abundant mineral wealth of the state, the following zones can be considered as ideal

Table 2 Small and Midium Scale Chemical Industries Based on Minerals

Mineral	Chemicals	Uses	Category of Industry
Iron ore	Ferric chloride	treating sewage sludge and wastes, pigment	M
	Ferrous acetate	dyeing of textiles, leather, wood preservative	S
	Ferric stearate	photocopying, water proofing, cement, paints	M
	Ferrous suphate	iron oxide pigment, writing inks, photography	M
Lead	Lead acetate	cosmetics, pigments and in leather industries	S
	Lead monoxide	paints, storage batteries, enamels, match boxes	M
	Lead tetra ethyl	antiknocking agent in liquid fuel	M
Nickel	Nickel carbonate	nickel catalyst, colouring matter	S
	Nickel sulphate	nickel plating, ceramics, dyeing	S
	Nickel chloride	antiseptic, nickel plating	S
Aluminium	Aluminium chloride	catalyst in polymers, lubricant	M
	Alum	water purification, dye and paper	S/M
	Aluminium	glass, ceramics, paper, coating	
	Hydroxide	cosmetics	M
Manganese	Manganese sulphate	textile dyeing, printing, pottery, catalyst	M
	Manganese acetate	food packing, additive, catalyst	S
Limestone	Calcium carbonate	paints, rubber, plastics, cement, cosmetics	M
	Calcium bromide	photography, food and wood preservative	S
	Calcium phosphate	ceramics, porcelains, tooth paste, rubber	M
Chromite	Chromic acid	oxidising agent, electroplating	M
	Chromium acetate	dyeing, printing of textiles, tanning	S
	Chromium-sulphate	dyeing, printing, ceramics, catalyst preparation	M

M = medium industries
S = small industries

centres in western side of the state.

- Rourkela and its adjoining area
- Barbil-Joda region
- Sambalpur-Hirakud region

The chemical industries which can be located in and around Rourkela are mainly those which depend upon the steel and fertilizer plants, either for the raw materials supply or for the consumption of their products. Mineral based chemical industries will be of the latter type supplying the various chemicals used for water treatement (eg, alum, hydrated lime', etc), rolling mills (sodium orthosilicate, phenol sulphonic acid, etc) and a number of laboratory chemicals for use in various chemical and analytical laboratories. in addition, there is great potentiality for growth of. mini cement plants based on conventional raw materials or blended cement materials (eg, blast furnace and open hearth slag, flyash, etc). Barbil-joda is rich in mineral wealth of iron ore and manganese. The hydroelectric power plant at Hirakud should have given scope for a large number of electrochemical industries in Sambalpur-Hirakud region. There is ample scope for titanium chemicals, mini cement plants, calcium, carbide, silicon carbide, etc in this zone keeping in view the minerals of the area and the available hydroelectric power.

The Recommendations

For healthy growth of mineral based chemical industries (small and medium scale) in Orissa, a few recommendations have been proposed :

(1) A detailed exploration of mineral wealth present in the region must be taken up and all the vital statistics with reference to the extent of availability of raw materials, their quality and distribution must be worked out and made up-to-date from time to time.

(2) Keeping in view the industrial growth pattern, the requisite manpower planning at various levels (technical and non-technical) must be made accurately.

(3) The organizations of the government should work out programs to initiate the spirit of entrepreneurship in the minds of educated youth. Many incentive schemes can be worked out and simplified procedures are to be adopted to scrutinize the proposals brought forward by potential entrepreneurs.

(4) The industrial consultant organizations should function more efficiently and try to convince the people through common meetings and assemblies about the importance of mineral based chemical industries. This in turn will tackle the evergrowing problem of unemployment in the state.

(5) The financial institutions should be well equipped with competent technical personnel so that undue delay in project examination and sanction is avoided.

(6) it is vital to see that the communication network should be well developed to implement the above programs. More rail links or roadways are to be developed to bring as many places as possible close together, which will help the movement of men, materials and ideas.

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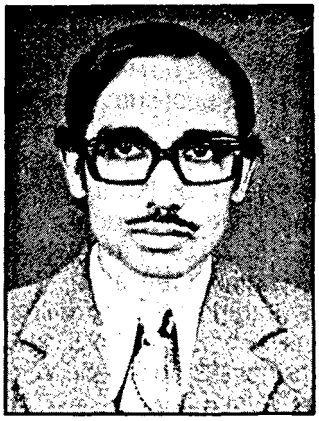
About the Authors



Dr G K Roy

Dr Roy received B Sc in Chemical Engineering in 1966 from Banaras Hindu University, M Tech in 1971 from IIT, Kharagpur and Ph D in 1975 from Sambalpur University. He was postdoctoral Fellow at the University of Karlsruhe, West Germany during 1977-78. At present he is Professor in the Chemical Engineering Department of Regional Engineemg College, Rourkela. He is author of more than 55 research publications and five books. He received Sir Gangaram Memorial Award in 1974 and certificates of merit in 1978 and 1984 of the Institution of Engineers (India) for his papers published in the Institution journal.

Dr S C Naik

Dr Naik received B Tech, M S and Ph D degrees from Madras, Ottawa and Wales Universities, respectively. He had been a postdoctoral fellow in the USA and a visiting faculty member in the UK. He served for three years in industries in India. At present, he is Professor and Head of Chemical Engineering, R E College, Rourkela. He has published around 50 papers and three books. His specializations are Reaction Engineering.Thermodynamics, Environmental Pollution, Coal Chemicals and Fertilizers. He is now Chairman of Chemical Engineering Division of the Institution.

Dr A Suryanarayana

Dr Suryanarayana received B. Tech from Andhra University, Waltair, M S from the University of Iowa, and Ph D from Sambalpur University. He is with Regional Engineering College, Rourkela since 1972. He has published around 25 papers and two books. He is the recipient of Sir Gangaram gold medal of the Institution for the year 1982-83. He is now an Asst Professor at REC, Rourkela.