

THE SOLID MINERALS SUB-SECTOR: PROBLEMS AND PROSPECTS

Introduction

Solid mineral mining forms a sub-sector of the mining sector of the Nigerian economy. The solid minerals are usually exploited in solid forms unlike petroleum which is exploited in liquid form. In Nigeria, this sub-sector consists of minerals like coal, cassiterite, columbite, limestone, clay, marble, zinc, gypsum, etc. At present, however, only some of these minerals such as coal, columbite, cassiterite and limestone are commercially exploited, while the remaining ones are in various stages of development.

The ownership and control of all minerals is vested in the Federal Government. The Mines Division of the Ministry of Mines and Power is responsible for the enforcement of the Minerals Act and ancillary legislations. The Division is responsible for issuing "prospecting right" and other authorisations related to the search for, retention and disposal of solid minerals. Mining may be undertaken by private individuals, partnerships, private or public companies registered in Nigeria. A public company that engages in solid mineral exploitation is the Nigerian Mining Corporation.

Before the advent of petroleum exploitation, the commercial-ly-exploited solid minerals contributed in one form or the other to the economic development of the country. For example, exports of these earned the country the necessary foreign exchange to import the essential machinery and equipment, while their production also generated revenue to government and offered employment to several Nigerians. However with the advent of petroleum exploitation, the importance of this sub-sector declined. Production of these fell while revenue and employment derived from their production dwindled. This trend has been due to many problems which confront this sub-sector of the Nigerian economy.

The objective of this paper is to identify these problems and examine the future prospects of this sub-sector. Section I briefly reviews the production figures for the period 1960-1985 while Section II tries to identify these problems. Section III contains prospects and recommendations.

(I) Production Trends, 1960-1985

Table 1 shows the production of Nigeria's major solid minerals for the period 1960-1985. Output of these minerals with few exceptions has shown general tendency of increases in the 1960s and declines in the 1970s and early 1980s. Below we briefly review the production of each of these products.

Nigeria is the only country in West Africa which produces **coal**. The main coal mines are in Enugu in Anambra State and Kabba in Benue State. Coal is mined in both underground and open pits. Output of coal reached a peak of 743,000 tonnes in 1965 but fell to 643,000 tonnes in 1966. Production was interrupted by the civil war in 1967/69. Post war output reached a high of 404,000 tonnes in 1974, thereafter declined progressively to 54,000 tonnes in 1983. Estimated figures for 1984 and 1985 however show slight improvements on the 1983 figure.

Cassiterite, the source for refined tin, is mainly mined in Jos, Plateau State although deposits occur in Bauchi, Kaduna and Kano States. Production of cassiterite rose from 10,581 tonnes in 1960 to 13,284 in 1968 but fell to 10,797 tonnes in 1970 and since then production has fallen progressively to estimated 802 tonnes in 1985.

Nigeria began refining its own tin ore in 1961. The refined **tin metal** is of 99.9 per cent grade and is mostly exported. Output of refined tin stood at 9,939 tonnes in 1968, the highest during the period under review. Since then, production has declined progressively to provisional figure of 1,449 tonnes in 1984.

Columbite occurs in Bauchi and Plateau States. Output of columbite increased from 2,086 tonnes in 1960 and reached a high of 2,599 tonnes in 1965. Thereafter production has witnessed a steady decline to three digits in the 1970s and to estimated two-digit figure of 95 tonnes in 1985.

Gold is mainly mined at Ilesha, Oyo State. Small amounts have also been discovered from stream-beds in many parts of the country. Production in 1960 was 20,877 grammes, fell by 33.6 per cent to 13,858 grammes in 1961, then declined drastically by 39.5 per cent to 8,385 grammes in 1962. Thereafter production fell rapidly to 796 grammes in 1967, picked up in 1968 and 1969, but fell again to 2,531 grammes in 1970. Since then production has fallen rapidly and for a greater part of 1970s and 1980s there was no production.

The main area of **marble** production is Jakura in Kwar State. Available figures show that production started in 1964 with 1.696 tonnes. Production was not impressive until the 1970s when production reached a peak of 8,726 tonnes in 1978. However, production has since then declined to 292 tonnes in 1984.

Extensive deposits of **limestone** are found throughout the country. These provide the necessary raw materials for the country's cement factories at Calabar, Ewukoro, Sokoto, Nkalagu, Ukpilla, Ashaka, Shagamu, etc. Production of limestone was upwards between 1960 and 1965. Production fell during the civil war and picked up afterwards reaching a high of 2.5 million tonnes in 1981. Although still in the million-tonne mark, production has however fallen to 1.7 million tonnes in 1985. This trend has been dictated by the fortunes of the construction industry. In the 1970s the construction industry enjoyed a boom, but in recent years the construction industry has suffered from the recession in the economy.

(II) Problems of the Sub-Sector

Problems of the sub-sector can be grouped into production related problems, market related problems and general problems.

1. PRODUCTION RELATED PROBLEMS

(a) *Obsolete Machinery and Equipments:*

Most of the machinery and equipments used by the miners are obsolete. For example, the equipment used by the Nigerian Tin Mining Company, which produces the bulk of Nigeria's tin ore are at least 30 years old. Similarly the flooding of and disruption in the Enugu Coal Mines is partly traceable to the failure in operation of the Old Kopek face mechanism.

(b) *Erratic Power Supply:*

Another problem is the erratic power supply. Irregular power supply to the coal mines has led to the flooding of the underground coal mines and causing serious damages to the electrical equipments. For example, the two underground mines of Okpara and Onyema were flooded in February 1982 due to a failure in power supply from Nigeria Electric Power Authority

(NEPA). In 1984, due to power failures, the Okpara coal mines alone lost 920 productive hours.

(c) Low productivity

Low productivity is one of the problems confronting the mining of solid minerals in Nigeria. A study on the productivity of the Nigerian Coal Industry for instance shows that output per man year has steadily declined from an already extreme low of 61.7 tonnes in 1979 to 41.3 tonnes in 1981. This compares unfavourably with a range of 731.6 to 1,219 tonnes per man year in the United Kingdom¹. The causes of this low productivity are obsolete machinery and equipment and overstaffing.

(d) Small-Scale Operations

Mining of these minerals, especially tin ore and columbite is undertaken by small-scale entrepreneurs who do not have modern technology. In addition, the farmers undertake mining as a seasonal activity. The overall effects of all these is inefficiency and low production.

2. MARKET-RELATED PROBLEMS

The decline in the production of solid minerals in Nigeria could be explained also in terms of lack of demand for these products in the domestic and in the international markets.

In the domestic market, the most affected mineral is coal. Available figures for the local consumption of coal show a steady decline from 327.6 tonnes in 1973 to 168.0 in 1980 and to 108.3 tonnes in 1981. The fall is due mainly to the utilisation of alternative energy sources like petroleum and its associated products whose prices are lower than that of coal. At average production cost of ₦49.00 per tonne, coal is clearly not competitive with any of the other fuels like high power fuel oil and low power fuel oil. As a result major users like Nigerian Railway Corporation, Nigerian Electric Power Authority, etc. have now switched to petroleum, because of its neatness and cheapness. At present the consumption of coal is mainly by the cement mills.

Demand for limestone is by the cement companies. During the 1970s the production of limestone was upwards due to increase in demand by the cement companies arising from increase in tempo of construction activities. Of recent however with the downturn in economic activity in the country, demand for limestone has been declining.

On the international market, exports of steam coal totalled 52.4 tonnes in 1973, fell to 4.6 tonnes in 1980 and since then nothing has been exported. Problems include the relatively high cost, the poor handling of the coal and strong competition from low cost producers such as the United States of America, Columbia and Poland.

As regards tin ore, at the moment there is no industry in the country using it, consequently Nigerian tin is mainly exported. Like the international market for crude petroleum which is suffering from oil glut, the international market for tin has been glutted resulting in low prices. In addition Nigeria's tin suffers from poor marketing strategy.

3. GENERAL PROBLEMS

Like the other sectors of the Nigerian economy, the solid minerals sub-sector is bedevilled with shortage of foreign

¹World Bank and UNDP – *Nigeria Issues and Options in the Energy Sector*, page 99.

exchange. This has made it impossible to import new machinery and equipment for the replacement of old ones and spare parts for service and repairs. Inadequate geological survey to determine the number and reserves of these minerals has also posed a problem. For example, there is a considerable uncertainty surrounding the estimates of coal. Proven estimates have been put at between 274 and 996 million tonnes. This wide range is an indication of inadequate geological survey and it has created a lot of problems for policy makers.

(III) Prospects and Recommendations

The solid mineral subsector has played a prominent role in pre-petroleum era and we think the subsector still has an important role to play in the future of this country. For example, the solid mineral sub-sector can be harnessed for exports to earn foreign exchange and can be used as inputs for industries like cement, iron and steel, etc to conserve foreign exchange.

However, given the present production and market conditions in the subsector the prospects for it to play this role do not look bright. To achieve a bright future for this subsector, most of the problems which at present confront it have to be tackled and eliminated. In the pursuit of this goal, the following are recommended:

1. Replacement of Obsolete Technology

There is a need to replace the obsolete machinery at present being used by miners by making available to the companies adequate foreign exchange to import them and by encouraging foreign technical partners participation in the exploration and exploitation of these minerals through incentives similar to those operating in the oil industry. This will have the effect of advancing the sub-sector into a more dynamic technological age and help in the realisation of modern technological acquisition. In this respect, there is need to review the Mineral Act to simplify the procedure for obtaining mining and prospecting licences.

2. Need for Efficiency in Production

The production of some solid minerals by small-scale entrepreneurs or farmers on seasonal basis, should be discouraged. In its place, medium to large-scale companies should be encouraged in order to increase productivity, reduce costs and maximise the advantages of economies of scale. In this respect, the Nigerian Tin Mining Company should be well funded to realise its objectives.

3. Curtailment of Erratic Power Supply

To curtail the erratic power supply to the coal mines, the Coal Corporation could consider using its coal to generate electricity instead of relying on NEPA source. If the project is found feasible, it will greatly enhance coal production.

4. Review of Oil Subsidy

There is a need for government to review its oil subsidy in order to encourage greater utilisation of coal. If fuel oil prices are changed to reflect actual economic opportunity costs, coal might be able to capture its old domestic customers and even compete in the world market and thereby encourage its exports. Alternatively the government may consider compelling some industries by law to use coal as it is done in Venezuela, another oil producing country.

5. Need to Stimulate Increased Domestic Use

For minerals like tin and columbite, which are worst hit by international glut, the government should stimulate increased domestic use. It should be noted here that tin ore produced by Nigeria is wholly exported as mentioned earlier, due to lack of domestic demand, whereas the country used to import a large quantity of tin plates every year. Therefore there is need to establish in the country tin plating plants and other plants that will use the remaining solid minerals as inputs.

There is great need at present to develop the solid minerals sub-sector and the earlier some of these recommendations are implemented the better for the economic development of the country.

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NIGERIA: MAJOR SOLID MINERALS PRODUCTION BETWEEN 1960-1985
(In metric tons, unless otherwise stated)

Table 1

Year	Cassiterite	Columbite	Limestone	Coal	Refined Tin	Gold (Grammes)	Marble
1960	10581	2088	243,942	573,000	—	20,877	—
1961	10723	2393	598,992	609,000	632	13,858	—
1962	11318	2051	722,159	636,000	7786	8,385	—
1963	11932	2309	817,297	579,000	9195	4,980	—
1964	12021	2386	996,376	702,000	8889	6,429	1696
1965	13142	2599	1,312,252	743,000	9488	1,612	1138
1966	12817	2265	1,115,560	643,000	9301	1,020	1422
1967	12872	1952	847,283	—	9250	796	603
1968	13284	1152	657,804	—	9939	4,368	147
1969	11864	1523	690,830	—	8881	6,082	1168
1970	10797	1642	688,364	48,207	8067	2,531	8067
1971	9938	1386	813,425	195,000	7359	964	7359
1972	9134	1365	1,406,036	343,000	6746	368	6746
1973	7887	1244	1,801,174	327,131	5983	648	9983
1974	7373	1308	1,810,870	404,035	5545	197	5936
1975	6268	991	1,697,954	248,791	4657	256	5714
1976	5009	673	1,697,954	298,765	3937	5	1435
1977	4409	860	1,072,734	269,698	3779	—	8087
1978	4080	567	1,096,410	221,899	2786	—	8726
1979	3824	568	1,184,191	172,144	2985	—	1031
1980	3570	554	2,064,067	175,977	2678	8	640
1981	3172	377	2,518,205	104,225	2486	—	3735
1982	2429	169	1,508,899	57,007	1809	—	2733
1983	1964	113	1,865,929	53,573	1245	—	991
1984 ¹	1781	120	1,891,457	83,461	1449	—	292
1985 ²	802	95	1,665,718	85,397	n.a.	—	n.a.

SOURCES: (i) Federal Ministry of Mines, Power and Steel, Lagos
(ii) Nigerian Coal Corporation, Enugu
(iii) C.B.N. Economic and Financial Review, various years.

¹Provisional figures

²C.B.N. Estimates