MINING AND QUARRYING STATISTICS

1. Introduction

Mining is the extraction of mineral occurring naturally such as coal, ores, crude petroleum and natural gas. In view of their significance to the Nigerian economy and peculiarities, the compilation of statistics of petroleum and natural gas (which are coded as division 11 of the ISIC) is discussed separately from that of solid minerals.

Mining is one of the oldest economic activities in Nigeria dating back to prehistoric times when man crudely exploited iron and clay, and perhaps other metals, for the production of his cosmetics, crude implements and utensils. The early European explorers, mainly German, Spanish and British, located and mined tin, galena, gold, etc.for export to their home countries. Records show that organised exploration activities in Nigeria commenced in 1903 and 1904 when the Secretary of State for Colonies inaugurated mineral surveys of the Southern and Northern Protectorates respectively. The principal mineral occurrences discovered by the survey teams included lignite deposits at Asaba, lead-zinc ores at several locations, tin and columbite in the south-east, monazite, limestone and lead-zinc ores at Abakaliki district. Others were coal at Enugu, brine springs at Arufu and Awe, Galena in Jos area, iron ore deposits in Niger and Kwara districts and marble deposits in Jakura. Mining activity in controlled form, however, commenced in the country in 1915 with the production of coal at the Enugu mines.

Prior to the discovery of petroleum, Nigeria was impressively sustained by agriculture and few solid minerals known at the time, namely coal, tin, columbite and gold. Coal, for example, met fully the needs of our railway system and electricity supply while tin yielded substantial foreign exchange earnings for the nation. In addition, these minerals also offered employment opportunities.

The downturn in the economy and the introduction of the Structural Adjustment Programme (SAP) necessitated a review of Government thinking. The result is the crystallisation of the concept of diversification of activities, and the promotion of privatization and commercialization.

By the end of 1994, Government canvassed a private sector-led economic revival programme in solid minerals, agriculture and manufacturing as a means of diversifying the economy. This programme recommended the establishment of a Ministry of Solid Minerals Development, the creation of which was subsequently announced by the Head of State in his 1995 Annual Budget Speech.

Improved geological data over the years have revealed that Nigeria is endowed with numerous deposits of industrial, metallic and non-metallic minerals. There are about thirty-four [34] minerals that have been identified in the country, of which only 13 are being actually mined, processed and marketed. They are coal (which has an export potential of 15 million tonnes per annum valued at US$1billion), kaolin, baryte, limestone, dolomite, feldspar, glass sand, ganstones [haphazard], gold [in small quantities], iron ore, lead-zinc, tin and its associated minerals and recently gypsum. The remaining twenty-one [21] minerals, though in demand are untapped. The volumes of domestic trade deficit and foreign exchange losses resulting from this deficiency are colossal.

The availability of these minerals opens up opportunities in the following areas:
[a] exports and use in domestic industries for generation of foreign exchange and internal revenue.
[b] emergence of new industrial and downstream products.
[c] increased employment of Nigerians, particularly in the rural areas where the minerals are found. The multiplier benefits to the citizenry are enormous. In fact, the solid minerals sector can very easily be the largest employment sector of the economy, since deposits abound in virtually every State of the Federation.
[d] technology transfer and development.
[e] development of infrastructure, especially in the rural areas [roads, hospitals, rail, schools and housing].

Prior to the creation of the new Ministry of Solid Minerals Development, enquiries and demands were being made for Nigerian solid minerals, especially coal. Since inception, orders to the tune of 15 million tonnes of coal have been received. When the necessary infrastructure is put in place and the abandoned mines reactivated and modernized, coal export can yield the nation about US$1 billion per annum. The high demand for Nigerian coal is attributed to its low sulphur and moderate ash content. In order to increase coal production to meet the demand, Government is encouraging private investment by offering various incentives including joint venture. The

Nigerian Coal Corporation is being reinvigorated and equipped and some of its obsolete equipment replaced to enhance increased production.

The Federal Government has embarked on formulation of well-articulated policy objectives and programmes, the implementation of which will avail the nation of the enormous opportunities offered by our mineral wealth. The focus of these programmes is the development of the solid mineral sector with a view to improving its economic importance relative to other sectors of the economy. They are also designed to facilitate favourable climate for foreign investors in all their ramifications.

The creation of the Ministry of Solid Minerals Development and the restoration of the pride of place to the sub-sector is commendable.

2. **Coverage, Scope, Uses and Users of Statistics on Solid Minerals**

The solid minerals that are included in this sub-sector are coded as divisions 10, 12, 13, and 14 of the International Standard Industrial Classification of all Economic Activities, revision 3 released in 1988. Since the sub-sector is a small component of the Nigerian economy and as most of the solid minerals are not produced at all or in any significant quantities, it was decided to give it the ISIC division code of 14.

In this document, the solid minerals division covers the following activities:

(i) mining of various types of hard coal (anthracite, bituminous or other hard coal), lignite (brown coal), digging and agglomeration of peat, underground or open cut (strip) mining. Mining operations include all activities designed to improve quality and facilitate transport or storage.

(ii) mining and concentration of uranium and thorium ores.

(iii) mining of iron and metal ores including the extraction of metals from the ores, concentrating ores for metallurgical operations and production of sintered iron ores.

(iv) mining of ores valued chiefly for non-ferrous metal content, including ores of aluminium (bauxite), copper, lead, chrome,

manganese, nickel, lead-zinc, zinc, tin, ferro-alloys, precious metals (gold, silver, or platinum group metals).

(v) operations of quarries producing monumental and building stones in the rough, roughly trimmed or cut by sawing or by other means typically done at the quarry, such as slate, marble, granite parphyr or basalt, mining of chalk or dolomite; crushing and breaking stone for use as a flux or raw material in lime or cement manufacture or building material; road metal or ballast; gypsum and anhydrite mining; mining of clay for the ceramic or refractory industries for drilling and/or as a filter medium; operations of sand or gravel pits.

(vi) mining of chemical and fertilizer minerals, extraction of salt and other mining and quarrying not classified elsewhere.

Consequently, what is hereby classified as division 14 consists of 4 divisions (10, 12, 13, 14) and 8 classes (101-103, 120, 131, 132, 141 and 142) of the ISIC. The coding system is such that any of these merged divisions (which in future becomes a significant sub-sector of the Nigerian economy) can be classified separately as a division.

Information on mining and quarrying is collected on establishment basis and refers to the country as a whole regardless of the State in which the mines are located. The information includes form of ownership, description of products, unit of measurement, quantity produced and value, quantities of major inputs and value, employment and wage bill. The time-series are for 12-month periods, although the observations are tabulated on annual basis in most cases.

Like most economic statistics, data on mining and quarrying are useful for national planning, research and (at the micro level) for investment decision making. They are also used in computing the index of industrial production and as inputs in the compilation of the national accounts.

Users of mining and quarrying statistics include the National Planning Commission, National Bureau of Statistics, Central Bank of Nigeria, research institutes, economic consultants and international agencies.

3. Sources and Methods of Compiling Statistics on Mining and Quarrying [Solid Minerals]

There are two categories of sources of data on this sub-sector. These are returns and reports which are produced on routine basis and surveys and censuses. The Ministry of Solid Minerals Development as

the line ministry supervising the various mines is a major source of routine statistics on solid minerals. These statistics are compiled by the Mines Department, Planning Research and Statistics Department and the Budget Division of the ministry. These datasets produced on routine basis include time-series on quarrying and mining licences and titles, revenue from mining activities, budget, employment and personnel costs. The following seven returns and two publications are prepared by the Ministry's departments or divisions:

(1) Returns on Quarrying Licences: This is compiled monthly from returns of the zonal offices of the Mines Department.

(2) Revenue Returns: Compiled monthly by the Budget Division, these constitute an aggregation on Local Government Area, State and National bases of revenue collected from mining and quarrying companies.

(3) Expenditure Returns, which are submitted monthly by zonal offices.

(4) Mineral Production Returns, which contain information on solid mineral production are compiled nationally and annually from half- yearly submissions from the Jos Office of the Ministry.

(5) Personnel Cost Returns contain expenditure on staff salaries and allowances as submitted monthly by the Zonal Offices.

(6) Explosives Returns contain monthly information on explosives used by the over 600 mining companies operating in Nigeria. Annual aggregations are prepared for each company and the nation by the records section of the Ministry.

(7) Quarrying Returns contain monthly information submitted by about 250 quarrying companies on their production of minerals and royalties paid.

(8) Annual Report published by the Ministry contains information on the activities of its Mines Department. It is made available to the Federal Government, Mining and Quarrying Companies, Universities, Research Institutes and the general public.

(9) Revenue and Expenditure Returns are prepared on request, using Returns (2) and (3) and made available to the Honourable Minister of Finance, the Accountant-General of the Federation and the National Planning Commission.

The steel companies also forward weekly or monthly reports of production of different types of products to the supervising ministry — Ministry of Solid Minerals Development. The returns are aggregated on a national basis.

In its active years, the Nigerian Coal Corporation was one of the major producers of administrative statistics on solid minerals. The

items of data produced that are summarized annually for Nigeria as a whole include those on output, employment and earnings, sales and accidents in coal mines.

The Nigerian Association of Chambers of Commerce and Industries, Mines and Agriculture (NACCIMA) is also a source of register information on mineral companies operating in Nigeria.

The National Bureau of Statistics is the sole source of survey and census data on solid minerals. The National Integrated Census of Industries and Businesses (NCIB) has a module on Mining and Quarrying. The inquiry is supposed to be conducted annually to collect information on the activities of industrial mining and quarrying establishments nationwide. Items of data covered in the questionnaire include employment, wages and salaries, cost, gross output, stocks, value-added and ownership of establishment. An exercise that might reveal useful information on the quality of the NBS survey data is the comparison of the data supplied on the Returns (4) and (7) above with similar information submitted to the NBS in the census of mining and quarrying establishments.

4.   Current Methods of Data Storage and Dissemination

A database on solid minerals is yet to be developed for Nigeria. Most of available items of data on activities in this sub-sector are published by the NBS in its Annual Abstract of Statistics. The section on mining and quarrying statistics is detailed on annual time-series on coal mining.

Information on activities of mining and quarrying companies as compiled by the Nigerian Mining Corporation and the Mining Department of the Ministry are disparately available in hard copies of annual reports and mimeographs. Much work needs to be done to establish a database of time-series of solid mineral statistics.

5.   NBS Data Base Coding System for Mining and Quarrying [Solid
Minerals] Statistics

5.1 The Division Code

Attempts have been made to follow the coding system used in the International Standard Industrial Classification [ISIC], revision 3 released in 1988. Thus the division code or the first two digits of the code assigned a six-code-variable (which identifies the division to which the dataset belongs) is wherever feasible taken from the ISIC.

The ISIC division codes have been allocated on the basis of exact correspondence in respect of most sectors except where proximity to the nearest closely-related ISIC code and existence of un-used codes were the basis for the allocation. Going by this system, Solid Minerals that are included in this sector are coded as Divisions 10, 12, 13 and 14 of the International Standard Industrial Classification of all economic activities. Since the sub-sector is a small component of the Nigerian economy and as most of the solid minerals are not produced at all or in any significant quantities, it was decided to give the sub-sector the ISIC Division Code "14".

5.2 The Items and Details Code

While efforts have been made to ensure that the Division Code or the first two digits of the code assigned to each variable conforms as much as possible with the ISIC, the items and details code which form the last four digits of the code assigned to each variable are arbitrarily determined. The Division-Item-Detail [DID] coding system is the basis for coding NBS's datasets. The item under each dataset is the elementary entity or group of elementary entities [multiple-item cases] about which statistical data are gathered. For example, in Mining and Quarrying division, "Aggregates" coded 1401 is an item with 22 details.

Generally, the National Bureau of Statistics [NBS] is using a six-digit-code for attributes [variables]. The first two digits are used to identify a particular division. The first four digits are used for a particular item under the division, while the first two are the division code and the last two the item code.

In coding the details, six digits are used to identify a particular attribute [variable] as follows: the first two digits for the division, the next two for the item under that division and the last two [that is, the 5th and the 6th digits] for the detail [variable of interest] under the division and the item.

In all, there are 37 products-based items with 2,749 details in Mining and Quarrying [Solid Mineral] datasets. The SOR also contains items and details of data which are sub-sector specific in the sense that they bring together information on all mineral products.

Based on this coding system, the NBS data structure [Statement Of Requirements, SOR) for Mining and Quarrying [Solid Minerals] Statistics is as shown below. The data set is coded 14 in conformity with the ISIC.

The time-series for the proposed 2,749 detail names are to be recorded annually. The dimensions and coverage are as stated in the text.

6. CONCLUDING REMARKS

Unlike the crude petroleum and natural gas sub-sector with detailed and fairly well-organised time-series data, the solid minerals sub-sector has no well organised items of data.   Since mining and quarrying companies have to obtain licences which are renewable, the Ministry of Solid Minerals Development can effectively enforce adherence to a well-structured solid minerals reporting system, which can be readily computerised. Non-compliance will automatically lead to cancellation or non-renewal of operating licences.

The NBS should collaborate with the Ministry in the production of census-based data on solid minerals. This will not only facilitate the verification of the authenticity of data collected during the censuses but may also lead to a higher response rate.

Finally, the authorities should increasingly check the activities of smugglers, illegal miners and legitimate operators who submit false returns, and prosecute culprits accordingly. This will not only instil sanity into the sub-sector, boost Government revenue, but also improve the quality of mining and quarrying statistics.