

THE NIGERIAN COAL CORPORATION:
AN EVALUATION OF PRODUCTION
PERFORMANCE (1960 - 1987)

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ABSTRACT

Coal was discovered in Nigeria in 1909 and coal mining started with a drift mine at Ogbete, Enugu in 1915. Since 1958/59, when coal production reached its peak, there has been a persistent fluctuation in the amount of coal produced in subsequent years. This paper therefore investigates the major causes of the decline of the Nigeria coal Industry and provides a framework for greater (improved) performance.

KEYWORDS: Nigeria, Coal, Industry, Mining, Costing, Production, Market, Revitalization scheme performance, analysis, Enugu

JEL NO: D40, D24, M10, L10, L70, Q30

1.0 INTRODUCTION

Coal was discovered in Nigeria in 1909 and coal mining started with a drift mine opened in 1915 at Ogbete in Enugu (Nigerian Coal Corporation, 1982). In 1950 an ordinance establishing the Nigerian Coal Corporation was enacted and solely charged with the responsibility of developing the coal resources of Nigeria.

Coal is mined in Anambra State and Benue State. We have Oyeama Mine and Okpara Mine in Anambra State while Owupka and Okaba Mine exist in Benue State. The coal resources discovered so far in Nigeria occur within geological units known as the "Coal-measures". The coal measures outcrop along the Enugu exarpment right through Nsukka, Ezimo to Okaba, Kotomi Karifi Dekena and Idah (Nigerian Coal Corporation, 1982). The coal measures are concentrated within the Anambra Basin, but coal occurs in other rocks within Nigeria such as Lafia-Obi in Plateau State, Lamja, Gombe in Bauchi State and Afikpo in Imo State. There are two major types of coal namely anthracite and bituminous. A little below bituminous in quality is sub-bituminous which is the major type found in Nigeria. It is important as fuel because it burns slowly and gives out a lot of heat.

At present, Nigeria's most exploited coal mines are located at Enugu. Mining, on a much smaller scale is in progress at Okaba in Benue State. Commercial Local Production from the Enugu Mines started in 1916 which was halted during the civil war as it was abandoned and flooded. Production resumed again in 1972 after the war. In 1976, the coal mining was mechanized under agreement between Nigerian Government and Kopex Overseas Mining Construction Company of Poland. Unfortunately this mechanization failed and till today, multiplicity of problems are encountered by the corporation.

Since 1958/59, when coal production reached its peak, there has been a persistent fluctuation in the amount of coal produced in subsequent years till date with an average effect of a decrease in quantity. The disruptive effect of the decline can be inferred

from the importance of the coal industry to Nigeria. Such importance in providing livelihood for a large number of people explains the reason for a concern over the deteriorating performance of the industry.

The problem of this study is therefore to investigate the major causes of the decline of the Nigerian Coal Industry and to provide framework for greater performance. This work aims at providing a comprehensive account of the performance of the coal industry through analysis of the output trends and also highlighting the technical problem of coal production. Such findings however will be useful for the effective management of the Nigerian Coal Corporation. The criticisms and suggestions advanced, will contribute to a more efficient management and organization of the corporation in addition to providing information which policy makers can use to revitalize the Nigerian Coal Industry. The study follows the descriptive approach. It examines the corporation with a view to evaluating its performance and suggesting measures for improvement.

The basic limitation of this work has not been much of the usual "lack of data", but rather that of managing the vast volume of data to a reasonable size as to make a definite and sensible impact. In other words the study is limited by time, finance and space restriction which has made it impossible for all the research findings to be incorporated within the specific page limit. Furthermore, apart from coal figures being estimated, all the figures were not available. The study did not in any way consider the social structure of coal rather it considered the extent of understanding the production performance of the industry.

Indeed, there are many literary discussions relating to the coal industry in general and to the decline of the industry in particular. Schatzl Ludwig (1969, p.24) has noted that the discovery of oil in late fifties led to the dieselization of the Nigerian Railways and has permanently dampened the demand for coal.

R.O. Nwabueze (1966, p.11), identified the major problems confronting the local industry as high production cost, transportation difficulties and declining demand. In particular, he noted that the inability of the corporation to supply adequate quantities of coal was due to the failure of the Railway Corporation to supply reasonably large number of wagons to remove the coal from the mines. Contributing to the assessment of coal mining operation costs in Oklahoma, U.S.A. T. Ghebremedhin et al (1978, p.780), contend that the cost of coal production primarily depends on the depth of coal. They point out that some sites mines must be stripped quite deep to locate the coal. The deeper the coal production must mine, the higher are production costs. The annual production of coal at Enugu increased only from 1916-1959. since then quantities of coal mined have decreased at fluctuating rates and after the war in 1970 production steadily declined till data (Ayuambum, 1983). In similar contribution, Engineer F.N. Ugwu (1988), observed that enough money could be used to offset the corporation's indebtedness and resuscitate the old labor intensive methods of under ground mining in the short-run pending the re-mechanization to enable the Nigerian Coal Corporation meet its share of domestic and export markets. None of these studies has presented a comprehensive revitalization package based on a critical analysis of the performance of the industry; this work therefore will include the more recent years in evaluating the production performance of the corporation, as an extension of previous work while putting forward more revitalization measures.

For a systematic approach, this work is divided into four sections. The introductory section includes statement of problem, significance of study, approach of study, limitations, delimitation and literature review, as presented in section one. Section two discusses the mining, costing and performance analysis of coal production. Section three concentrates on the production problems, market diversification and revitalization measures for the industry. Section four is the conclusion of the whole paper.

2.0 COAL PRODUCTION

2.1 MINING AND COSTING

The Nigerian Coal Corporation currently operates four mechanized long wall faces at Enugu. This mechanized long wall mining is cheaper than the previous pillar and stall method that was in operation at Enugu mines both in terms of cost and convenience of mining. The cost of operation mechanically is about twenty naira per tonne of coal while the cost of operation in terms of labor stands at twenty-six naira per tonne of coal. This was the cost before the introduction of second tier foreign exchange value, that is pre-stem value.

The object of mechanization is not just to get more coal, it is mainly to ensure the future of the industry on a prosperous and progressive basis, that is reducing the cost of production and making the task of producing the coal easier. For efficient and safe working of the mine and to eliminate or avoid the bottleneck in production.

Mechanization has progressed from material handling at the surface to the coal face and complete mechanization is reached with machines which both can cut and load the coal. Transportation cost of coal by the corporation is a direct function of this distance of the users from the mine. For all practical purposes, thus the price of coal (cost to users) is made up of two components a fixed part that reflects mining cost distorted by the country's energy pricing structure and a variable part that reflects the cost of transportation.

2.2 PERFORMANCE ANALYSIS

The performance of the Nigerian Coal Industry can be evaluated by examining the trend of production of the industry. The industry's annual output of coal from 1960 to 1987 is shown in table 2.1. The output figures are analyzed by the method of semi-averages as shown in the table.

TABLE 2.1: ANALYSIS OF TREND OF NIGERIA'S COAL OUTPUT USING METHOD OF SEMI-AVERAGES (TONNES)

Annual Year Change	Annual Output	Semi-Averages Output	Semi-Average Difference	Average Rate of
1960	565,681			
1961	596,502			
1962	615,681			
1963	600,229.19			
1964	689,502			
1965	730,183			
1966	630,126	385,007		
1967	94,563			
1968	Nil			
1969	19,840			
1970	24,404			
1971	176,927			
1972	323,007			
1973	314,457		-225,040	-15003

1974	277,753	
1975	271,397	
1976	282,729	
1977	243,317	
1978	201,601	
1979	163,000	
1980	118,317	159,967
1981	114,812	
1982	56,017	
1983	52,730	
1984	83,461	
1985	139,744	
1986	117,499	
1987	117,159	

SOURCES: Nigerian Coal Corporation Thirty Second Annual for the year 1985 and various issues of Economic and Financial Review of Central Bank of Nigeria.

As can be seen from the time-series graph, apart from a moderate drop in 1963, production rose almost consistently from 1960 and reached an all-time peak of 730,183 tons of 1965. Thereafter output experienced declining trend with a very sharp drop in output, from the 1966 figures of 630,126 tons to the 1967 figure of 94,563 tons. This sharp drop can be explained by the increasing dieselization of the Nigerian rail transport; the growing reliance on petroleum and hydro energy sources; and the civil crises which started in 1966 and which has disorganized economic activities by the time the civil war broke out in July, 1967. As can be seen from the figure in 1968 coal output was nil because the coal mines at Enugu were closed during the civil war and the Okaba coal mines in Benue State was yet to start production. Coal output from the later started in 1969. Thus one can see a pick-up of production from 1969 with a sharp jump in production between 1971 and 1972 owing to the reactivation of the Enugu mines after the civil war.

It is important to note that even at full recovery, the average level of output (1974-1987) was quite below the average level of output between 1960 and 1973 (that is; pre-war, war and early pre-war period). From the 1972 "Low peak", coal output experienced a moderate but almost consistently prolonged downward trend so that by 1987, output was only 117,159 tons.

The above description of the time-series graph traces the path of coal production overtime. It is however useful to have a summary picture of the production trend which has clearly shown that the Nigerian Coal Industry is really facing hard times. In this regard, the trend line which in this case is calculated by the semi averages method serves a useful purpose. The trend as derived in table 2.1 is negatively sloped showing that coal production in Nigeria was a declining function of time over the period (1960 - 1967).

From a semi-average of 385,007 tons for 1960 - 1973, coal output dropped to a semi-average of 159,967 tons for 1974 - 1987, a decrease of 225,040 tons. The average annual rate of decline (the gradient of the trend line) was 15,003 tons. This has shown that Nigerian coal corporation is characterized by poor production performance in the face of continuous declining of coal output hence if the situation is not checked positively, one may visualize or predict that within the next five to ten years, the corporation might come to zero level of output.

3.0 PROBLEMS REVITALIZATION AND DIVERSIFICATION

3.1 PRODUCTION PROBLEMS

Among the major cause of the poor performance of the Nigeria coal industry is technical limitations. For a technologically backward country like Nigeria, mechanization is beset by many constraints.

(a) There is the problem of foreign exchange with which to import equipment. Even when such equipment have been imported and installed, there will be need for foreign exchange for the continued importation of replacement wares and spare parts.

(b) The fact that replacement wares and spare parts for maintenance have to be imported means that even if foreign exchange is available, a breakdown of existing plant often implies a prolonged period of work stoppage because it takes time before ordered components can be received.

(c) This is the problem of inappropriateness of imported technology. Machines are often designed to reflect the environmental conditions of the producing country and not necessarily those of the importing countries. A typical case of the Kopex mechanization project of Nigeria's coal mining.

Among other inhibiting factors are inadequate electric power supply, inadequate transportation facilities etc. power fluctuations and stoppage disrupt and slow down production. The coal corporation distributes its coal through railways and roads. Because of the inadequacy of road wagons the main mode of distribution are the rails. Also the inadequacy of equipment for open cost mines are building of new coal fire powdered stations to assist both NEPA (National Electric Power Authority) and NCC (Nigeria Coal Corporation), to enable the carriage of about 25,000 tones as opposed to 5,000 per vessel was an added problem.

The main labor problem in the Nigerian Coal Corporation is that miners are poorly motivated considering the tedious nature of their job. This poor motivation makes the corporation loose a lot of its workers. There is shortage of able-bodied young men who could have increased the productivity of the industry. Mine workers are not paid on a different scale that would reflect the hazardous nature of their occupation and unpaid gratuities and pensions of its retired workers exists.

It is also pertinent to point out that since government's policy in subsidizing its operation as per oil boom era had stopped, it made it difficult to meet the challenges and prospects of improving the domestic and export sales of coal.

3.2 REVITALIZATION SCHEME AND MARKET DIVERSIFICATION

It is unrealistic to expect that the government can provide the huge investment capital needed for revitalization. This is particularly so now that the national treasury is virtually empty. In view of this, a reorganization of the ownership structure of the coal industry is necessary; the aim should be to tract private business interests to fund the revitalization. The Federal Government which now owns the coal industry 100% should seriously consider relinquishing about 60% the equity participation to private interests. This scheme can also secure part of its capital as loans. It is also likely that United Agencies like the World Bank and Food and Agricultural Organization (FAO) may also be interested in supporting the coal project.

The revitalization of the coal industry depends mainly on providing a large reliable market for coal, not only should old market be recovered, strengthened and expanded where possible, but also and more importantly new markets should be developed as a way of diversifying the markets should sustain the coal industry. And this can be done in the following ways:

- i) Replacement of Hydro-Electric Power Generation
- ii) Substituting coal for wooding fuel,
- iii) Processing coal for By-product, and
- iv) Exploiting the export market.

4.0 CONCLUSIONS AND RECOMMENDATIONS

This research was intended to investigate the major causes of the decline of the Nigerian coal industry with the view of suggesting a frame work for the revitalization of the corporation and greater utilization's of the country's coal resources. The study has revealed that the annual production of coal at Enugu increased only from 1916-1959 and from 1960-1965. Since then the quantities of coal mined have decreased at fluctuating rates and after the war in 1970 production steadily declined till date. (The Appendix

shows total coal production figure, 1916-1987).

Although the mines have been mechanized, the high expectations of the mechanization exercise in terms of increased coal output, are far from being realized because of the poor performance of the installed machines and equipment. The true position being that the volume of production has increasingly found it impossible to break-even or even make progress.

Besides the coal face mechanization investment, the government should invest seriously to mine developments and tunneling, establishment of industries to use coal in order to generate a cash flow for the industry and ineffective mine machineries. At this point, I suggest that the Project Development Agency (PRODA) which is aided by government should produce cooking equipments that uses the Nigeria Coal. While investing on mine machines programs should be fully and carefully conceived. It should where necessary, take into account the drainage of necessary road way, careful selection of suitable machineries, and careful study of mining hazards and manpower requirements.

The market for the coal industry can be diversified by processing coal to extract such valuable by-products as coal tar, ammonia and nitrogenous compounds useful for fertilizer production. Moreover now that many countries are showing coal fired power generation, an overseas market research is likely to find considerable export market for Nigerian's coal. With foreign demand estimated at five million tones annually, it is a prospect for the industry and hope for foreign exchange accumulation. This is backed by our coal reserve of 1.5 billion tones and its position as one of the best in the world.

A form of regulatory policy controlling the application of each source of energy in our economic development should be formulated (Wushishis 1987, p.14). this then will enable the coal industry to contribute its own socio-economic quota and consequently make a appreciable impact in the overall development of the nation. in this direction, the Federal Government must be prepared to invest heavily on the coal industry in all its ramifications. For this purpose, F.N. Ugwu (1988), suggested the sum of two hundred million Naira, for revitalization of the corporation. With the government emphasis on the economic importance of coal in our overall development programs, many industrial establishment should be forced to delve into finding ways of how to incorporate our coal as a source of raw materials in their production process while those establishments who imports coal should be made to rely totally on Nigerian coal which will then instinct these establishments to aid the corporation to meet their demand.

Finally, Nigerian's should persistently and consistently present their bundles of constructive and meaningful suggestions and words of advice to the government on how best to place coal mining in its right perspective in our economy. The government on the other hand, should endeavor as quick as possible, to release more money into the industry especially to the newly appointed board of directors (charged with the responsibility of developing and revitalization of Nigerian Coal Corporation) so as to facilitate the quick resuscitation of the corporation.

TOTAL COAL PRODUCITON FIGURE

YEAR	TONS	YEAR	TONS
1916	25,511	1951	562,270
1917	83,405	1952	613,374
1918	145,400	1953	679,437
1919	137,844	1954	675,919
1920	180,122	1955	750,058
1921	187,027	1956	790,030
1922	194,073	1957	846,526
1923	112,818	1958	905,397
1924	175,137	1959	684,800

1925	220,161	1960	565,681
1926	242,583	1961	596,502
1927	353,274	1962	615,681
1928	345,303	1963	600,229.19
1929	363,743	1964	698,562
1930	347,115	1965	730,183
1931	327,681	1966	630,126
1932	263,548	1967	94,563
1933	259,860	1968	Nil
1934	234,296	1969	19,840
1935	258,892	1970	24,404
1936	257,289	1971	176,927
1937	310,308	1972	323,007
1938	323,266	1973	314,457
1939	300,091	1974	297,753
1940	318,594	1975	271,397
1941	402,640	1976	282,729
1942	463,978	1978	201,601
1943	528,421	1979	163,000
1944	668,158	1980	118.317
1945	314,576	1981	114,812
1946	607,652	1982	56,017
1947	572,354	1983	52,730
1948	607,759	1984	83,461
1949	550,517	1985	129,744
1950	583,425	1986	117,499
1987	117,159		

SOURCES: Nigerian Coal Corporation Thirty Second Annual Report for the year 1985 and various issues of Economic and Financial Review of Central Bank of Nigeria.

REFERENCES

1. Ayaumbum, P. (1983) "Economic and Social Structure of Development at Enugu" Unpublished B. Sc. Thesis, Department of Agricultural Economics, University of Nigeria, Nsukka.
2. Eden, R. et al. (1981) Energy Economics: Growth, Resources and Policies, Cambridge: Cambridge University Press.
3. Edokpayi, S. (1960) "The Problems facing our coal industry". The Nigerian Journal of Economics and Social Studies, 3:1
4. Ghebremedhin, F. et al (1978) An Analysis of Oklahoma's Coal Industry, Oklahoma State University Research Report.
5. Nigerian Coal Corporation (1982) Information on the Nigerian coal Industry, Enugu: Johnny Harmony Press.
6. Nigerian Coal Corporation (1985) Annual Reports of the Nigerian Coal Industry, Enugu.
7. Nwabueze, R. (1966) Economics of the Nigerian Coal Industry" Unpublished M.A. Thesis, University of New Castle.
8. Olaloku, F. et al (1979) Structure of the Nigerian Economy, Lagos: Longman Group Limited.
9. Opara, I. (1985) "Economic Utilization of Coal Resources in Nigeria" Unpublished B. Sc. Thesis Department of Economics, University of Nigeria, Nsukka.

10. Schatzi, L. (1969) The Nigerian Coal Industry, Ibadan: Nigeria Institute of Social and Economic Research.
11. Swardt, de A.M.J. and Casey, O.P. (1963) "The Coal Resources of Nigeria". Geological Survey of Nigeria Bulletin, No. 28, Kaduna.
12. Ugwu, F. (1988) "Nigerian Coal Industry". Business Times, March, 28
13. Wushishi, G. (1987) "Reviving Coal Industry in Nigeria" Business Times, May, 18.