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NATURAL GAS RESOURCE IN NIGERIA'S  
ECONOMIC PLANNING

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A Research Topic Proposal Presented  
to  
The Graduate Faculty of  
Beirut University College

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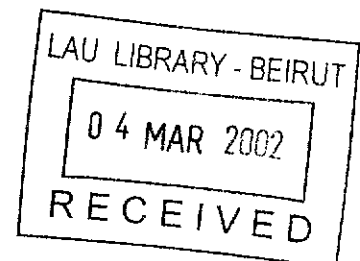
In Partial Fulfillment of the  
Requirements For The Degree

Master of Science  
in  
Business Management

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By  
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BEIRUT UNIVERSITY COLLEGE

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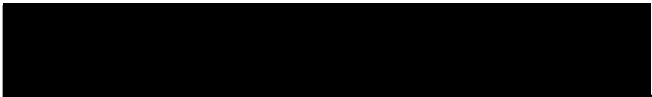
Natural Gas Resource in Nigeria's Economic Planning

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Date

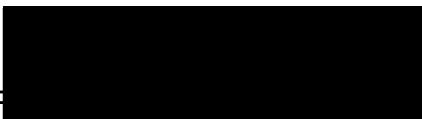


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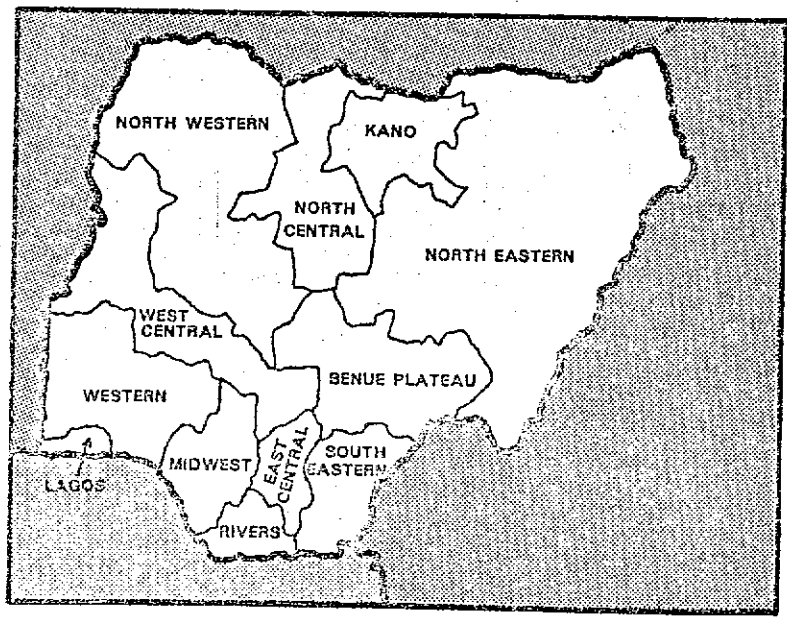
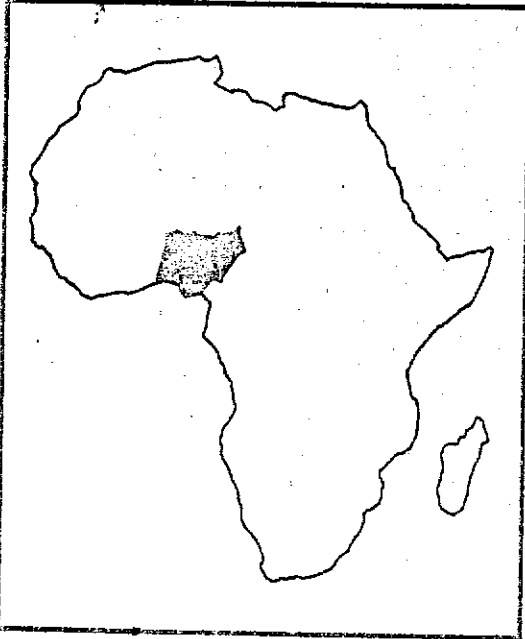
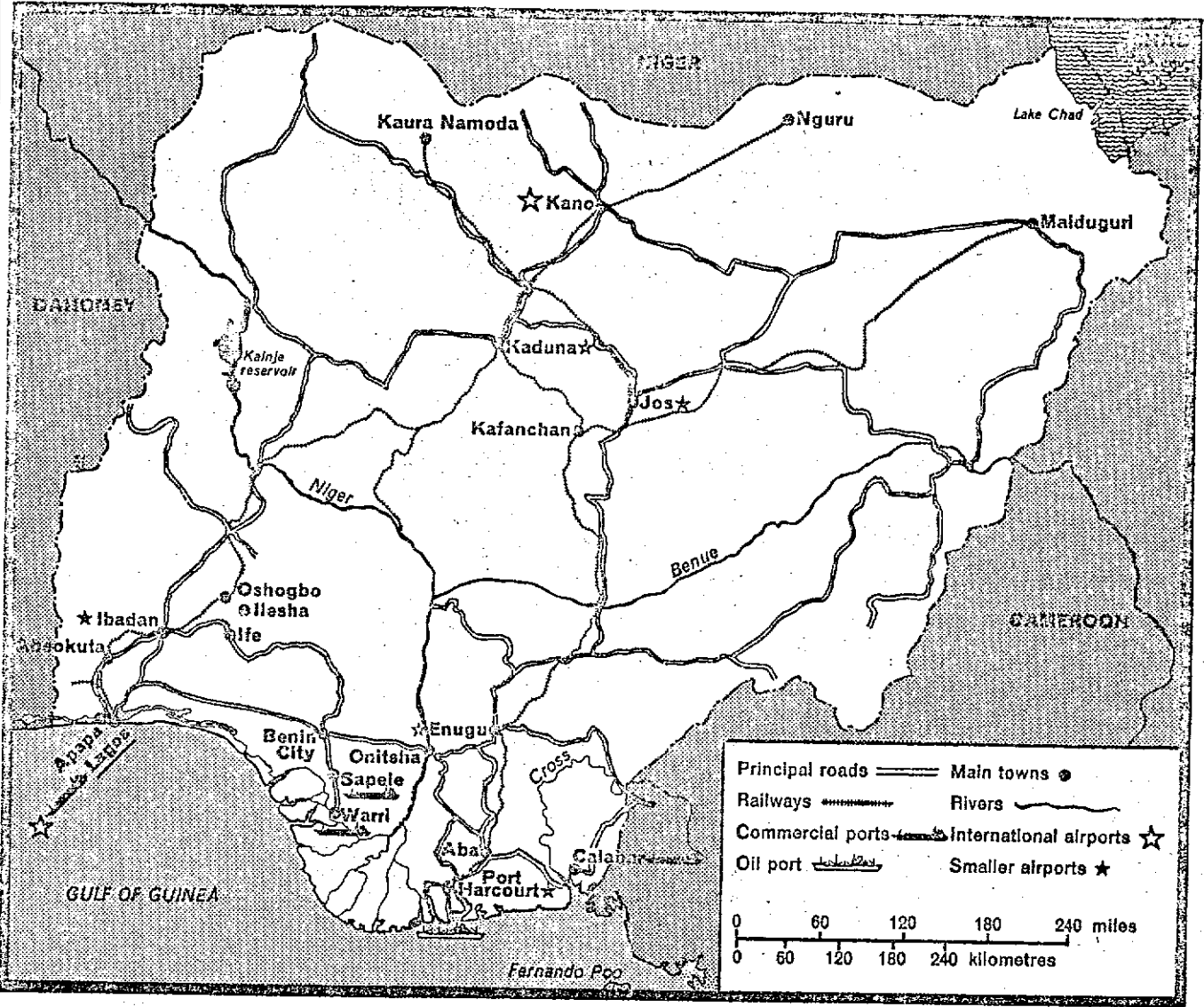
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# NIGERIA



The twelve new states of Nigeria



Flaring of natural gas in a Nigerian field.

SOURCE: THE HERALD TRIBUNE - 1/3/80

Amo Tully

## CHAPTER ONE

### INTRODUCTION

#### A COUNTRY NAMED NIGERIA

The Nigerian nation, lying in the western region of the African continent, was formally proclaimed when in 1914 the Northern and Southern British protectorates of what later became known as Nigeria were amalgamated. It was this amalgamation by the British Government and The Crown that brought together into one country these regions of the British Protectorate lying "within the tropics between latitudes 4° and 14° North of the Equator, and longitudes 3° and 14° East of the Greenwich Meridian",<sup>1</sup> with an area of 923,768 square kilometers. The country's two major rivers, the Niger and the Benue, with their tributaries and other rivers, provides adequate water supply for agricultural cultivation, irrigation, and hydro-electric power supply.

Unlike in the temperate regions, the nation has two annual seasons - the Rainy season (April to October) and the Dry season (November to March). "Temperatures at the coast seldom rise above 32° centigrade, but humidity can be as high as 95 percent. The climate is drier further North where extremes of temperature are common, sometimes ranging from 36°

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1. External Publicity Division, Dept of Information, Executive Office of the President, Lagos, Nigeria - December 1982.



centigrade to 12° centigrade".<sup>1</sup>

Although the last official population census was conducted in 1963, Nigeria's population is currently estimated at about 95 million.<sup>2</sup> Before she attained full independence, Nigeria was provided with constitutional powers to make the region stand on her feet. For example, the 1922, 1926, and 1957 constitutions, which provided autonomous powers to the then regional governments of the Eastern Region, Western Region, Northern Region, and the Colony of Lagos. It was this constitutions that laid the ground-work for full independence in October 1960.

Since attaining independence, Nigeria has worked hard to become a leading nation in Africa. The nation enjoys better telecommunication, educational, cultural, social, and communicational facilities than many other states in Black Africa. Nigeria is a member of a string of world's major organizations such as the U.N.O., the O.A.U., the O.P.E.C., A.C.P/E.E.C., the Group of 77, N.A.M., E.C.O.W.A.S.,<sup>3</sup> the British Commonwealth, and a few other leading organizations. Her membership of these important organizations has helped Nigeria to play important roles in some major world and international affairs especially in the continent of Africa, that the nation is being looked at from the outside world

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1. External Publicity Div., Dept. of Information, Lagos, December 1982.

2. National Population & Census Bureau, Lagos, December 1985.

3. Glossary.

with great expectations and as a leader in the African continent and the Black world.

In the early days of her independence, agricultural export was largely responsible for Nigeria's revenues (Figure 1). However, by the mid-1970s the discovery of crude oil had made petroleum export to take over as the major contributor of national revenue (Figure II). The current slump in the international oil market has led to serious consideration of its natural gas resources in dire attempt to obtain alternative source of revenue that would keep the nation through its current economic slump.

NIGERIA'S ECONOMIC FACTFILE\*

1985 ESTIMATES

Population was estimated at 95.7 million.

Growth rate was estimated at 3 percent per annum.

G.D.P. -- ₦48,651.7 million (estimated at 1983 current prices).

Agriculture -- 26%

Industry -- 34%

Manufacturing -- 5%

Services -- 40%

G.N.P. per capita -- U.S. \$770 (1986 Estimate).

Urban Unemployment -- 9.9% as at June 1985.

Foreign Trade : Imports-- ₦9.00 billion

Exports-- ₦11.10 billion

Current a/c surplus -- ₦907.60 million

Inflation Rate : 39.6% (1984).

Currency - One Naira (₦) - One hundred Kobo (K).

₦1.25 = U.S. \$1.00 (July 1986).

₦4:00 = U.S. \$1.00 (After introduction  
of the Two-Tier Foreign Exchange  
System: Sept. 1986).

- \* SOURCES: - The South Magazine.... September 1986.  
Federal Republic of Nigeria's Budget Report, 1986.  
Economic and Social Statistics Bulletin (1985).  
Central Bank of Nigeria, 1985/86 reports.  
The World Bank, Regional Reports, Dec. 1985.  
The International Monetary Fund, 1st Quarterly  
report, March 1986.

## I. IMPORTANCE AND VALIDITY OF THE TOPIC

Since the discovery of crude petroleum in Nigeria in the late 1950s, and the set-up of the petroleum industry in the late 1960s, the trend of economic growth in Nigeria has taken another course. By 1970, barely ten years after attaining independence, agriculture had to give way to petroleum export as the main pillar of the national economy. Big revenues from crude oil and petroleum export provided the means to execute some of the nations mostly desired projects. But, nevertheless, a lot was left undone before the collapse of the oil-fed economy. One of such neglected sectors was the natural gas resource that was allowed to flare away ceaselessly despite a whole decade, at least, of real national prosperity and economic boom.

The trend by which the oil industry almost solely shoulder the responsibility of the national economy continued at a very fast rate that by the year 1979 the oil and petroleum industry alone accounted for more than 20 per cent of the nation's GDP,<sup>1</sup> more than 95 percent of export values, and about 80 percent of government revenues.<sup>2</sup> As a result of her heavy dependence on oil, Nigeria became very vulnerable to the erratic changes of the oil market, thereby putting the situation of the national

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1. G.D.P. Gross Domestic Product.

2. The South, March 1985.

economy in a risky and dangerous position. In order to effectively ameliorate the risky economic situation, the nation set in search of alternative industrial avenues that will support the almost mono-product economy, and transfer it into a broadly based and well rounded economy. In this attempt, agriculture, which had been neglected in the days of oil boom became a natural choice. But the government equally began to give serious considerations to the conservation and processing of the natural gas that was available in large reserves in the country and now being flared and wasted away on the oil fields as the oil drilling process goes on (Plate I). Attempts to stop this wastage and prevent the hazards of pollution through legislative fines and other penalties had not succeeded in putting an end to the wastage and free release of the natural gas into the atmosphere. As the need arose to diversify the basis of the national economy into other industries from the oil and petroleum industry, government attention was thus focused on the Liquefied Natural Gas (LNG) industry where the natural gas that was being flared away could be processed and sold on the international LNG markets.

As feasibility studies revealed that there were a lot of opportunities for Nigeria in the LNG market, attempts were made by successive governments in Lagos to invest in this industry. At a certain point in time, the need to utilise the wasting natural gas became an important element, along with the agricultural sector, in the attempt to diversify the mainly oil economy. The decision by the government in Lagos to diversify

into the LNG industry continued to gain importance because of the following reasons:

- (a). It was believed by Nigerian economic planners that the processing of the natural gas would create locally as well as exportable source of energy that would yield additional revenue badly needed by the nation.
- (b). It was equally upheld that the diversification into the LNG industry will create a major avenue through which the nation's heavy dependence on the oil industry could be reduced.
- (c). The economic planners believed that attempts to diversify into the LNG industry would constitute a key element of national industrial planning and technological advancement.
- (d). The Federal Government of Nigeria in 1979 saw the decision to diversify into the LNG industry as an adequate attempt to combat the natural gas wastage on the oil fields, thus giving her blessing to the proposed Bonny LNG project.

Because of the above reasons, and along with national opinions, the rationality and successfulness of this decision was thus crucial to the economical and technological development of Nigeria. In addition, the choice of liquefied natural gas in the face of other uses and alternative ventures into which natural gas could be usefully employed equally demand careful scrutiny. These were the major reasons why this paper

has chosen this important subject as its central focus of study and research.

## II. BACKGROUND ANALYSIS

### HISTORICAL AND ECONOMICAL ANALYSIS OF THE NIGERIAN ECONOMY: THE YEARS BEFORE THE BIAFRAN CIVIL WAR.

Economic planning in Nigeria has gone through varying levels typical of any developing nation. Economic development planning in Nigeria went as far back as the pre-independence years when in 1964 the governing British administration devised a Ten-Year Plan of Development and Welfare for the colony. This Ten-Year Plan envisaged expenditures of £ 55 million (sterlings).<sup>1</sup> But a Select Committee of the British House of Commons condemned this plan and pointed out that "the allocation of expenditure on the Ten-Year Plan... does not give anything like a complete picture of the future development of the territory. The plan does not propound a complete strategy of development, it is merely, an aggregate of proposals for spending money".<sup>2</sup> This plan began "by laying down the maxim that development should be conceived as a military operation but proceeds without any attempt to appreciate the situation or define the objectives. Admittedly, there is a list of "certain fundamentals" which must be put right before any policy of wide economic development can be usefully considered.

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1. STOPLER, W.F.: Planning without facts, HARWARD UNIVERSITY PRESS, 1966.

2. HOUSE OF COMMONS, LONDON: 5<sup>th</sup> Report from the Select Committee on Estimates, Colonial Development, 1948.



Beginning with water supply, the list goes on with education, agriculture, forestry and veterinary services - in fact through the whole gaunt of possible development".<sup>3</sup> This did not sound like good planning though. It was not that these kinds of proposed expenditures were unnecessary or undesirable. However, if the plan were carried out overnight, as it was actually being executed by the governing administrators, the improvement in the condition of the mass of Nigerians would be barely perceptible.

The non-specialized approach to development planning, the inadequacy of the administrative machinery to provide the high-level manpower for plan implementation, and the absence of properly defined objectives relevant and meaningful to the local populace were all contributory factors to the ineffectiveness of early attempt at national development planning in Nigeria.

Nevertheless, another development plan adopted in 1955 to revive the objectives of the earlier plan, and which went through the independence days in 1960, and up to 1962, did not achieve much economic goals either. This plan was bogged down by ineptitude and lack of adequately qualified economic planners, since the economic planning mantle of the nation was haphazardly left in the hands of indigenious officials. The immediate post-independence years were among the worst times

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3. Stopler, W.F., Planning without facts, pp. 37 - 38.

in Nigeria with regard to serious economic planning. By this time the mantle of economic activity and planning had come under the direct control of the political government of the day, both at the center and in the provinces. In consequence, economic life and planning became politicised in Nigeria, "less through the imposition of colonial rule than its withdrawal".<sup>1</sup> Throughout this period agriculture and farm produce, in addition to a few other minerals such as columbite, tin ore, and tin metal had been largely responsible for export revenues (Figure 2). Aid packages and foreign grants and assistances came from abroad, given to be utilised in the development of the newly independent nation. But "by a natural regression in the circumstances of the time, additional resources entering the public domain in the name of development, and through ever-increasing export earnings were used to serve political ends - party, communal and personal - of less abstract kinds. Not entirely, but to a substantial extent, they were used primarily to secure political loyalties, repay political debts, and build personal fortunes".<sup>2</sup> "Adaptation of the development effort to such political exigencies was most pronounced in the regional governments. Their 'welfare and public works' powers.....

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1. Morris-Jones & Austen: *Soldiers And Oil - The Political Transformation of Nigeria*  
Frank Cass, 1978.

2. *Ibid.*, p. 49.

offered huge opportunities for patronage, and went far to consolidate the power of each governing party".<sup>3</sup>

As a result of these inadequacies, corruption, embezzlement, and nepotism there was not much to be shown in terms of real economic growth and national development by the national leaders in the first civilian administration (1960-1966) after colonial rule in Nigeria, though the capital resources and potentialities abound in staggering figures (Figure 3).

#### THE BIAFRAN CIVIL WAR AND THE NIGERIAN ECONOMY

It was with the unclear situation of economic activities in Nigeria as earlier explained that the nation drifted into the latter part of the 1960s. By the middle of the 1960s, the national economy appeared to have lost almost all signs of a brighter economic planning despite the mounting potentialities. As a result, the political crisis that blew up in the country in 1966, and the consequent military conflict of 1967 only help to disrupt and prevent an already evident trend of developing growth rate. The slowing down in the general level of economic activities was caused primarily by the fall in the growth of both government expenditure and private investment. The unstable conditions of 1966 and 1967 were not conducive to either booming agricultural export or bouyant domestic capital formation. The beginning of military operations during the Biafran civil war, and the eventual blockade of the Eastern States

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<sup>3</sup> Morris-Jones & Austen: Soldiers And Oil-  
The Political Transformation of Nigeria  
Frank Cass, 1978, pp. 51, 52.

(the region that formed the seceding Republic of Biafra) from the middle of 1967 had negative consequences on domestic production and manufacturing, inter-state commerce, and the balance of payment (Fig. 3).

As the war progressed, the latest inflationary pressure started to surface. One major source of inflationary tendency was the government's budgetary action which was austere in attempt to provide for war armaments. Another factor was the resulting expansion in domestic credit creation. Other contributory factors were bottlenecks in transport and distribution system which worsened the inability of agricultural and industrial supplies to match the growing urban demands.

#### YEARS OF ECONOMIC PROSPERITY

With the surrender in 1970 of the Biafran rebel troops, and the final declaration of an end of hostilities, Nigeria entered an era of decade-long prosperity. The years that followed the civil war were years of rapid growth in export earnings. The expansion this time around had come about as a result of the increased importance of crude petroleum in Nigeria's export trade. Agriculture having suffered a decline in general output of nearly 40 percent between the crisis years of 1964/67 and the years just after the civil war, 1972/74 (Fig. 4); nevertheless, rising prices for these non-oil exports since 1973 have allowed proceeds at current prices to be maintained at about the level of the mid-1960s. In contrast, the volume of petroleum production increased more than five-fold

between 1966 and 1974, and the respective price value of petroleum export increased nearly thirty-fold. Between 1969 and 1975, total petroleum exports at 1975 current prices increased from Naira 636 million to Naira 5,000 million despite the fact that petroleum exports temporarily fell in volume in 1975 due to Federal Government's policy directed at tailoring crude oil production to marketing conditions and the conservation of national natural resources. (Fig. 5)

The huge rise in the price of petroleum after 1973 gave an extra impetus to the Nigerian economy. As a member of OPEC, and the world's ninth largest producer of oil in 1981, Nigeria stood a good chance to utilise enormous amount of benefits and gains from the oil boom of the 1975-80 era. The foreign exchange position was greatly strengthened, of course, and the economy expanded a great deal, at an estimated annual rate of 8 percent in real terms between 1971 and 1977. As a result, foreign aid and assistance were greatly reduced while a number of jobs were created mostly in the civil engineering and building construction sectors.

Between the oil boom days of 1975-80 agriculture, which used to be the mainstay of the economy in the 1950s, 1960s and early 1970s had suffered considerable set-backs as the pillar of the Nigerian economy. Agriculture which actually provided about 66 percent of the G.D.P. in the 1960s had by 1981 lost ground to petroleum as the back-bone of the Nigerian economy as a result of vast growth in the volume and value of

petroleum output. By this time agriculture had dropped to about 20 percent of the G.D.P. (Fig. 3), although it still employs about two thirds of national work-force, most of them on small holdings and subsistence farming. Actual production, particularly of cash crops such as ground-nuts, cocoa, coffee, and cotton had declined during this period as a result of the impacts of the civil war, drought and pest problems in some regions of the country, distribution and payment problems which discouraged farmers, and largely by the poor handling of the agricultural sector of the national economy by the Federal and state governments. The poor situation of the agricultural sector was further exacerbated by the demographic drift to urban areas from the mainly agricultural rural areas of able-bodied farmers in search of higher wages in the service industries. This caused a big shift of manpower from the agricultural sector to industries, which dealt a big blow to agriculture and domestic food production in the short run, and the entire economy in the long run.

With these developments in the Nigerian economic scene, the situation had by now turned full circle - shifting from a completely agro-based economy to an almost oil-based economy. Whether such a pattern could persist for a long time became a major point to ponder for watchers of the Nigerian system both within and outside the country. But as late as the year 1980 the oil sector continued on its upward trend with regard to external revenue contribution. The oil industry provided the nation with about U.S. \$11.9 billion in 1980 alone, the

highest so far, and thus making the industry the pillar of the national economy.

### ECONOMIC DEPRESSION IN NIGERIA

Nigeria's over-dependence on the oil and petroleum industry started to exhibit some of its inherent dangers with the collapse of the international oil market in 1982. Nigeria's hopes of rapid economic growth had been fuelled by the steady increase of oil production. But heavy dependence on oil in the shaping of the national economy while other key sectors that could have given the economy a very solid base were left to stagnate proved very risky and dangerous for the nation, especially at this point in time. "Because of the world oil glut and the consequent fall in oil demand, there has been a marked decline in oil exploration. World inflation and the high cost of money has meant high drilling costs, which have dampened the enthusiasm of oil companies to undertake exploration and development activities. This means that for some time to come Nigeria will not be able to expand its oil industry as fast as it would have liked".<sup>1</sup>

With the country's oil revenue dropping from U.S. \$11.9 billion in 1980 to U.S. \$6.4 billion in 1983, and without any sign of an early up-turn, Nigeria was really in dire economic crisis. It became quite obvious that the economic depression troubling many developing countries now hovers

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1. The South, September 1985.

above Nigeria. The impact of the collapse of the formerly sky-rocketing oil prices was quickly felt in Nigeria. By 1982 inflation was running at about 40 percent while the unemployment situation worsened following widespread retrenchment of workers in both the private and the public sectors. In dire attempt to put new life in the national economy, the government now turned to neglected sectors such as agriculture and the gas industries.

#### DIVERSIFICATION INTO THE LNG INDUSTRY

With the economic situation in Nigeria at a cross-road as a result of over-dependence on the oil industry, the government took a serious look at the LNG industry. It all started as it became more and more difficult for the government to control the continuous flaring away of natural gases on the oil fields. As the oil drilling process is undertaken, the process allows the escape into the atmosphere of natural gases that lie on the surface of the besought crude oil. Among its many attempts to control these unnecessary wastage of natural gas, the government decreed that oil drilling companies should prevent the escape of the gas or re-inject escaped gas back into the ground if carelessly allowed to escape. Failure to meet these requirement was penalised by heavy fines imposed by the government on the oil drilling companies. But as these and other control measures failed to yield any tangible result, the government then took a serious look into how to better utilise the natural gas instead of leaving it to waste away.



A somewhat appropriate alternative to handle this problem was found when in the late 1970s the international trade in liquefied natural gas experienced remarkable growth. The government, having believed that the best way to handle the natural gas wastage problem was to collect it, process it, and export it abroad, went into partnership with foreign investors to build a big liquefied natural gas processing plant at the Bonny oil fields in south-eastern Nigeria. The Bonny LNG Consortium was composed of the Nigerian Government - 60%, Shell Group International - 10%, British Petroleum - 10%, Phillips Oil Company (USA) - 7.5%, Agip of France - 7.5%, and Elf Oil Company - 7.5%.

But despite the interests of foreign investors and international organizations and corporations in the development of the Nigerian gas industry, attempts at building Nigeria's LNG plant are yet to bear fruit. Nevertheless the Nigerian government is tirelessly working to implement her plans in this direction.

#### STATEMENT OF THE PROBLEM

As earlier explained, it was initially up-held that Nigeria was to benefit from the problems of pricing, marketing, and other crisis that affected the LNG producers especially in North Africa in the early 1980s.

Because of highly competitive pricing agreements signed in 1980 by Nigeria with eight European companies to purchase LNG from Nigeria's proposed natural gas processing plant at the

Niger delta's Bonny oil fields, both Libya and Algeria were obviously under-cut by Nigeria. However, by the year 1981, the emerging economic crisis in Nigeria started to cast doubts over the possibility of Nigeria providing the needed financial support for the proposed LNG plant. Before the year ran out, more and more financial support was expected from the foreign partners in the project. But in 1981, Phillips Incorporation of U.S.A., the most important United States member of the Bonny LNG Consortium announced that it was leaving the group. This news came as a big blow to the entire project and the aspirations of the authorities in Lagos to diversify the national economy into the LNG industry. To further worsen the matter, some other foreign members of the consortium also pulled out as the expected prospects of the project continued to look slimer day by day.

With the position of the LNG project now left in uncertainty, it became a major problem for the Nigerian government to decide on what to do with the natural gas that continued to be flared away on the oil fields without adequate control. To abandon the project would create the problem of what the government should do with the natural gas that was wasting away. On the other hand, the mere desire to go ahead with the proposed plan of implementing the project was not sufficient in the face of inavailability of badly needed financial support to implement the project. These are the major problems which this research study propose to explore and possibly resolve within the context of actual government

decision on this matter and the appropriate step to take in such a time of crisis and difficult decision making.

#### PROBLEM QUESTIONS

- (a). Should the natural gas be allowed to flare away or be preserved or collected ?
- (b). Is the natural gas really a natural resource that could actually be utilised to generate or provide Nigeria with good returns on the millions of dollars that was to be invested ?
- (c). What are the other alternative avenues open to Nigeria to better utilise the natural gas ?

#### HYPOTHESIS

In order to generate more financial resources and revenues at home and abroad that would help cushion the ailing economy and reduce the nation's over-dependence on the oil industry, the Nigerian government should utilise the wasting away natural gas. However, this should be done within the capabilities of the nation and foreign resources available to her. Failure to take advantage of the benefits open to the nation as regards her possession of natural gas would result into neglect of potential financial resources, while the nation continue to suffer, as far as this sector is concerned, in terms of economical benefits and technological development and advancement.

## STATEMENT OF PURPOSE

It is highly imperative for me to study and research deeply the Nigerian government's plans and actions to put to better use the natural gas available in the country both for domestic as well as export purposes. This subject is even of greater importance at this point in time that the ailing Nigerian economy, which depend almost solely on the oil sector, needed overhauling and diversification along with good planning, implementation, and better management. The nation is seriously groping for additional support from other industries to shore up the almost mono-product oil economy, yet none has come into clear focus.

The desire to industrialize Nigeria became very paramount in Nigeria's planning programs since late 1970s when the nation was reaping the good benefits of the oil boom. This had led to a hurry decision to set up a gigantic LNG plant project in Nigeria. But with a bad turn-around in the state of the economy, it was becoming more and more difficult to execute this project. The desire to utilise the wasting-away natural gas thus became a "to be or not to be" issue, and a decision on this matter has to be made without unnecessary delay, especially now that the nation is in dire need of hard foreign currencies to shore up the fragile national economy.

It is therefore the purpose of this research paper to study and analyze whether the wasting away natural gas should be allowed to flare away at no additional cost than the cost

of anti-pollutants; or to gather the gas and process it for badly needed financial resources.

In order to accomplish the major purpose of this research, I have collected reasonable amount of up-to-date secondary and primary data directly related to the topic. These data would be utilised along with other information to further analyse the issues under discussion and thus obtain better understanding. It is very much hoped that by the time the study was concluded, better ways of handling the problem of unnecessary wastage of natural gas in Nigeria would be devised.

#### PERFORMANCE OBJECTIVE

In choosing this research paper, it is my intention to complete the project by the end of the Fall Semester in February 1987. Substantial relevant data had already been gathered from the Stolfus Library of B.U.C., The Jaffet Library of the American University of Beirut, and other universities and colleges of higher learning in Lebanon. Attempt is also being made to collect more information relevant to the topic from the British Council Library in Ras-Beirut. More information are equally being sought from the Embassy of Nigeria in Cairo and Petroleum and LNG business organizations and associations in this country.

It is my prime objective to utilise this information to carry out a well-organized and carefully guided research

study that will result in a better understanding of how to utilise the wasting natural gas in Nigeria and similar developing countries. In attempt to achieve this objective, comparative studies will be made with nations that experienced similar problems as the one now confronting Nigeria with respect to natural gas.

The project proposal will be submitted on the 13<sup>th</sup> of January 1986. The complete project, began in August 1986, would be completed and submitted in January 15, 1987. The final draft would also be sent for editing and review during this week. The final weeks of the semester would be utilised for correcting mistakes and typographical errors, final typing and binding.

## CHAPTER TWO

### REVIEW OF RELEVANT LITERATURE

#### 1. LIST OF SELECTED LITERARY MATERIALS

- (a). Olaloku, F.A. (et al): Structure Of The Nigerian Economy.
- (b). Panter-Brick, K. : Soldiers And Oil.
- (c). Stopler, W.F. : Planning Without Facts.
- (d). The I.B.R.D. : The Economic Development of Nigeria.
- (e). The Royal Institute of NIGERIA - The Political And International Affairs Economic Background.
- (f). The U.N.C.T.A.D.\* : NIGERIA

#### JOURNAL AND PERIODICALS

- (a). The Africa Now magazine.
- (b). The Herald Tribune.
- (c). The Middle East Economic Digest.
- (d). The Petroleum Economist.
- (e). The Nigeria Trades Journal.
- (f). The New African magazine.
- (g). The South magazine.
- (h). The African Concord Magazine.
- (i). The West Africa magazine.
- (j). The Wall Street Journal.
- (k). Publications of : The Central Bank of Nigeria  
The Ministry of Information, Lagos.  
The I.M.F.\*, The World Bank, and GATT.\*

\* Glossary

## SUMMARY OF AUTHORS' FINDINGS AS THEY RELATE TO RESEARCH STUDY.

As a general review, the above listed materials provided good enough information on the background of the Nigerian economy as well as the circumstances surrounding the proposals and plans for the nation's natural gas resource. Most of these data covered the early days of the formation of the nation under colonial administration, through the early days and later period of independence and full autonomy, and up till the present time. It is believed that such a complete source of data would bring about a better understanding of the issue under discussion and provide the opportunity for better judgement and logical recommendations.

In his book, *Planning Without Facts*, W.F. Stopler provided useful information about the mistakes committed in the past in earlier attempts to develop a formalised economic system in Nigeria. According to Stopler, and in agreement with some other authorities on the Nigerian economy, the errors committed in the 1940s and 1950s by Nigeria's economic planners were the non-specialised approach to development planning, the inadequacy of the administrative machinery to provide the high-level manpower for national plan implementation, and the absence of properly defined objectives relevant and meaningful to the local populace. However, in the 1960s other factors emerged which hinted that Nigerians were not prepared for serious economic planning. As Stopler reported, another development plan adopted in 1955 to revive the objectives of the earlier



plan of 1946 was bogged down by ineptitude and lack of adequately qualified economic planners. After independence the colonial administrators that set up the new economic development program had to leave for their homeland, and thus the control of economic activities and planning now came into the hands of the indigenous government of the day. At the same time, constitutional changes were underway that introduced electoral politics, replaced foreign by native norms in public administration and conduct of public enterprises. But the indigenous authorities used their authorities on planning and development to secure political loyalties, to repay political debts, and build personal fortunes without giving adequate attention to serious economic planning. As a result natural resources such as natural gas and associated gases that did not focus prominently on the minds of the economic planners of the time failed to be well-planned for in the national economic planning programs. In attempt to drive home the point that indigenous Nigerian economic planners did not do better, F.A. Olaloku<sup>1</sup> provided datas and tables (Fig. 3 & 4) which gave detailed account of Nigeria's exports and revenue during this period, but most of the revenue realised from external trade during this time was eaten by corruption and embezzlement built into the operating political system.

As carefully analyzed by Douglas Rimmer<sup>1</sup>, it was in the circumstances of the above situation that Nigeria drifted into the latter part of the 1960s. There were some political

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1. Douglas Rimmer - Elements of the Political Economy (Nigeria) F. Cass, 1978.

crisis in the country in 1966, and this later led to a bloody coup-d'état in 1966. This period of paralysis and instability later culminated into a civil war in 1967. The consequent unstable situation were of course not conducive to either booming agricultural export or buoyant domestic capital formation. As a matter of fact, there was an absolute fall in gross domestic product between 1966 and 1967 (Fig. 3). Agricultural production, especially for export, was lost by a combination of unfavorable weather conditions, transportation bottlenecks, the civil war crisis, and declining market prices. For some time during the war days production of mineral oil virtually stopped while export of vegetable oil suffered a severe setback as a result of the complete cut-off of supplies from the Eastern region (Biafra). It is important to note that many of the writers on the development of the Nigerian economy agreed that the civil crisis could have prevented a careful study of the amount of reserves as well as the quality of the nation's natural gas resource since this natural resource is generally found in the Eastern region. This factor, in addition to the six years of instability and civil war actually hindered attempts to device and implement development plans for the nation's natural gas resource and other natural resources that did not feature well on economic planners' list. Until late 1968, the general trend of foreign exchange earnings, as many researchers have come to agree, were downward or at best stagnant while the import level moved in sympathy under the weight of stringent fiscal measures dictated by war mobilisa-

tion. Many development programs and economic development activities were virtually suspended so as to devote attention and efforts to the civil war. To make matter worse, the volume of output of some major agricultural export crops, notably cocoa and groundnut (peanut) declined, but the shortfalls were more than compensated in value as prices in the world market were on the upward trend (Fig. 4). The pacification of the oil producing areas in 1968 resulted in a rapid advance in the production and export of crude petroleum in 1969.<sup>1</sup> The growth in manufacturing activities also continued in response to the stringent fiscal measure on import. However, as the war progressed, the latest inflationary pressure started to surface.

From the reports of Rimmer,<sup>2</sup> Tomori and Fajana,<sup>3</sup> and Terisa Turner,<sup>4</sup> one could deduce that the period following the civil war brought a lot of prosperity and rapid growth to Nigeria. For example, it was generally estimated by experts in the oil industry that production of petroleum in 1975 averaged 2.2 million barrels per day, while earnings also increased considerably - standing at U.S. \$23,405 million in 1980 - due partly to OPEC's price increases and reduced oil production activities in the Middle East as a result of instability in

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1. The Nigeria Trades Journal, Volume 36, No.2, March/April 1970.
  2. Douglas Rimmer - Elements of the Political Economy (Nigeria) F. Cass, 1978.
  3. Tomori & Fajana - Development Planning in Nigeria, St. Martins, 1979.
  4. T. Turner - Commercial capitalization in Nigeria and the 1975 coup, F. Cass, 1978.

the region. In addition, bigger revenues from oil taxation and levies further boost the already buoyant economy of Nigeria. According to Nigeria's Petroleum Profit Tax Ordinance of 1959, 50 percent of companies' net profit were payable to the Federal Government as royalties, rentals, and residual profits tax. By 1966 however, revenues from petroleum had reached nearly 10 percent of total government revenue, and from that year on a series of changes in fixed arrangements for the industry was made. This included reductions in 1966 and 1971 in the rate of allowable depreciation of investments; in 1976 oil royalties was redefined as costs of production instead of offsets against profit tax; and in the same year the tax rate was raised from 50 to 55 percent of net income. However, the most important change was yet to come. According to The Petroleum Economist,<sup>1</sup> the introduction in late 1967 of OPEC'S deviced posted price went a long way to push up Nigeria's oil income. Taxable profits had previously been computed on the basis of 'realised' prices which, because of the intergrated character of the companies' operations, were internal transfer prices determined at their discretions. The OPEC posted price substituted for the so-called 'realised prices' on the other hand was a price negotiated between the government and the oil companies. By early 1972, increase in the posted price and changes to the disadvantages of the companies in the method of deriving the reference prices from it had roughly doubled the tax taken per barrel of crude oil as compared with takes charged before the

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<sup>1</sup>. The Petroleum Economist, March 1985, pp. 81-85.

adoption of this tax system. Nevertheless, the astute watchers of Nigeria's oil revenue still maintained that these charges and tax increases were modest in comparison to following conditions on the oil pricing scene. "By virtue of the bargaining power of OPEC, the Nigerian posted price was raised to U.S. \$8.31 in November 1973, and \$14.69 per barrel of crude oil in January 1974, and later in February 1985 to a staggering \$28.65".<sup>1</sup>

As reported by Tomori and Fajana along with some other reporters on this topic, failure to properly utilise these large sums of revenues that came from the petroleum industry had led to lopsidedness in the national economic planning. While the revenue continued to flow into the country in bigger and bigger amounts, practically no action was taken on the utilization of the natural gas that was wasting away on the oil fields. Nevertheless, policy statements continued to be issued by the government on her hopes and aspirations to develop the gas industry, yet no concrete action was taken to back up these statements which featured very prominently in the government's budget plans and the so-called Five Year Development Plans of 1970-74 and 1974 to 1980. Therefore Martin Quinlan<sup>2</sup> seem to have correctly pointed out that the serious economic depression that began to appear in the country in the early 1980s had driven the nation into serious economic problems. A great percentage of revenues obtained from the oil boom had

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<sup>1</sup>The South, October 1985, p. 61.

<sup>2</sup>.Martin Quinlan - Nigeria - Tough Policy Boosts Revenues, March, 1985.

been mainly utilised in the building of a completely new federal capital city at Abuja, highly expensive roads, bridges and highways, "ghost housing estates", and a handful of industries and so-called development projects that would take many more years in the future to complete, such as the iron and steel projects at Aladja and Ajaokuta,<sup>1</sup> and the River Basin projects scattered around the country.<sup>2</sup> The economic depression that set in in 1980 thus created bigger problems than the government was prepared for. Not only was the nation groping for recovery, but it was becoming more and more difficult to execute already planned projects or to complete the ones that had been started.

As if a new era had dawned in Nigeria, the first civilian administration, since the parliamentary government system that collapsed in 1966, began to show concrete interest in the development and utilisation of the nation's natural gas resource. Going along this line, sometime in 1980 Phillips Incorporation of the United States called, on behalf of the Federal Government for tenders for the design and construction of a gas liquefaction plant at Bonny, in the delta area of the Niger River. This plan was to utilise natural gas from the Nigerian oil fields, process them, and sell the liquefied gas on the international LNG market. The plant was scheduled to go into

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1. Appendix 1A

2. Appendix 1B.

operation in the mid-1980s, and to use the Phillips devised "optimized cascade process" to cool the gas to the point of liquefaction with an estimated output capacity of 616,000,000 million Btu\*annually (equivalent to 16,650 million cu.m. of gas in the form of LNG annually). About two million tonnes of gas liquids will also be produced annually. As for the cost, it was estimated that the plant would need more than U.S. \$10,000 million to complete, including pipelines and a minimum of 14 LNG tank-ships. As generally expressed by many insiders of the LNG industry, the plant appeared to be the world's largest LNG project.<sup>1</sup> But as the national economic crisis set in in 1980, without any clear sign of an early upturn, the hope that the gas would come to market were dashed as the day goes by. Most of the foreign and international members of the consortium responsible for the construction and management of the LNG plant feared the looming economic depression and left the country abandoning the project.

#### A BRIEF WORLD SURVEY OF THE LNG INDUSTRY

After four consecutive years of steady growth there was a drastic drop in 1980 in the world liquefied natural gas output as a result of pricing disputes, falling demand, and oil production cutbacks among other factors. But <sup>some</sup> authorities on the in the industry think<sup>s</sup> that these expected decreases are very likely to be only a short-term phenomenon. As a

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1. Jeffrey Segal - World's Largest LNG Project for Nigeria, Dec. 1980.

\* Glossary.

matter of fact, and in stark recognition of early opinions, most of the newer producing nations of LNG outside North America and West Europe are making concrete plans for both expanded domestic use and higher gas exports which should guarantee a period of substantial growth internally from the mid 1980s as a mean of checking the depression in the industry.

Within the OPEC nations, the falls in Iranian gas output as a result of the revolutionary upheavals, and the cut-back in Kuwait as a result of a parallel drop in oil production - since all Kuwaiti's gas is associated, meant that the organization produced a mere 6.0 percent of world natural gas in 1980 compared with 7.1 percent the year before, though this low share also reflects excessive rates of gas flaring in member countries. According to a report by Exxon Petroleum Incorporation,<sup>\*1</sup> while Middle Eastern countries flared off 58 percent of their gross gas output in 1980, the proportion reached 96 percent in Nigeria in the same year. Nigeria's high losses are reflected in the low figures for gas usage there, as prevarication over the Bonny gas gathering complex continues.

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1. Exxon Corporation, Middle East Oil & Gas.



## DEVELOPMENTS IN SOME SELECTED COUNTRIES

### THE SITUATION IN MALAYSIA \*

In Malaysia, the construction of the LNG plant and associated gas plant has been on schedule in its later years, but the whole project started slowly owing to a dispute over production-sharing terms and the country's inexperience in handling large-scale projects. Although there was marked depression in the crude oil market in 1983, official crude prices have remained stable enough as far as Malaysia is concerned, to form the basis for long-term gas contracts.

But, important as it is for the country's future, the nation's Bintulu LNG export plant was only one of Malaysia's projects to export off-shore natural gas reserves. In November 1982, Esso Production Malaysia Inc. and Petronas of Malaysia signed an agreement for the sale and purchase of natural gas for the Trennaggau Gas Project. This particular project will use associated gas which has so far been flared from Esso Production Malaysia Inc.'s (EPMI) oilfields, with non-associated gas from fields developed by EPMI and Petronas Carigali Exploration Company. According to the Malaysian International Chamber of Commerce and Industry, natural gas only provided less than 1 percent of Malaysia's current energy needs, compared with 4 percent for hydro and 93 percent for oil. Gas usage is forecast to rise from one percent to 39 percent by 1990 and to replace oil as the country's chief energy source by the turn of the century. The Chamber of Commerce foresaw

shifts in energy consumption patterns as well as changes in the fuel supply mix. When oil dependence has fallen to 40 percent by the year 2000, its use will be dominantly in the transportation sector, hydro will be supplying some 30 percent of power generation needs; gas will have become the major fuel for industry and thermal power plants; and coal will make a come-back in the form of imports as primary energy for the power generation and cement industries.

With regard to the above report, a four-fuel strategy seems to be in clear focus in Malaysia since the nation is fortunate enough to have a choice of fuels. In addition, the Malaysian government has consistently tried to balance its needs for revenues from petroleum to pay for development and to finance economic growth against the need to conserve limited resources. Abandonment of the previous depletion policy initially adopted by the country has not been inconsistent with the need to produce more crude oil to make up reduced values of exports of tin, rubber and other agricultural products including timber. Successful integration of hydro power will however depend on the transmission of hydro-generated electricity to penninsular Malaysia, a problem under current study which will take some time to solve. As for coal, Malaysia Mines and the National Electricity Board believe that the coal requirements of West Malaysia will have to be supplied mainly by imports of coal from Australia, the U.S.A. and Canada. But gas production will be Malaysia's main energy resource to sustain domestic growth and meet export requirements.

\* G. Vernon Hough, Malaysia - Gas Opens A New Era, Feb.1983.

PROGRESS REPORT FROM THE MIDDLE-EASTERN GULF STATES\*

Natural gas, formerly neglected as a poor alternative to abundant oil supplies, is now increasingly used as feedstock for new industries springing up around the Arab Gulf. But so far almost all gas consumed in the region is associated gas produced in conjunction with crude oil. The squeeze on gas supplies felt in the past few years is therefore an unavoidable result of the current fall in oil output, and has prompted the development of non-associated gas as well as a search for new reserves.

As reported by Isabel Gorst,<sup>\*</sup> proved natural gas reserves in the Middle East stood at 21.9 trillion cubic meters, about 25 percent of total world gas reserves, and an equivalent in energy content of up to 43 percent of the region's vast oil reserves. In this region Iran, with 13.6 trillion cubic meters reserves of natural gas has the greatest reserve. Saudi Arabia also has substantial reserves of 3.4 tcm and Qatar, with 1.8 tcm, has one of the biggest accumulations of non-associated gas in the world. But developments of these resources only took off in the 1970s, and this region still has a poor gas utilisation rate when compared with other oil producing areas.

A 1984 study carried out by Exxon<sup>1</sup> revealed that gas usage rose by 38 percent to an overall 51 percent between 1972 and 1982 in this region. Attempts by the Gulf states to make

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\* ISABEL GORST: Middle East:- Increasing use of natural gas, May 1985.

<sup>1</sup>. Exxon Corporation, Middle East Oil & Gas, 1985, p.164.

WORLD: LNG IMPORTING/EXPORTING COUNTRIES  
 1978 - 1979  
 (million cu ft/day)

	1978	% share	1979	% share
Importing countries				
Japan	1510.4	60.0	1866.5	56.2
U.S.A.	231.3	9.2	692.1	20.9
France	278.4	11.0	306.2	9.2
Italy	231.3	9.2	231.4	7.0
Spain	193.1	7.7	163.2	4.9
U.K.	72.3	2.9	61.1	1.8
WORLD TOTAL	2516.8	100.0	3320.5	100.0
Exporting countries				
Algeria	617.1	24.5	1105.6	33.3
Indonesia	502.9	20.0	833.5	25.1
Brunei	711.7	28.3	731.9	22.0
Libya	389.3	15.5	348.4	10.5
U.A.E.	170.1	6.7	167.9	5.1
U.S.A.	125.7	5.0	133.2	4.0
WORLD TOTAL	2516.8	100.0	3320.5	100.0

**TABLE II**  
**WORLD: LNG TRADE 1978-1980**

	Volume (million cu ft/day)	Average cif price (US\$/thousand cu ft)	Average cif price (US\$/million Btu)		Volume (million cu ft/day)	Average cif price (US\$/thousand cu ft)	Average cif price (US\$/million Btu)
<b>Abu Dhabi-Japan</b>				<b>Brunei-Japan</b>			
<i>Exporter: Abu Dhabi Gas Liquefaction (ADNOC/BP/CFP/Mitsui/Bridgestone)</i>				<i>Exporter: Brunei LNG (Shell/Mitsubishi/Brunei government)</i>			
<i>Importer: Tokyo Electric</i>				<i>Importers: Tokyo Electric/Tokyo Gas/Osaka Gas</i>			
<i>Liquefaction plant: Das Island. Plateau volume: 400 MMcf/d. Start-up: 1977. Expiry: 1997.</i>				<i>Liquefaction plant: Lumut. Plateau volume: 755 MMcf/d. Start-up: 1973. Expiry: 1995.</i>			
1978	170.1	2.30	2.20	1978	711.7	2.27	2.04
1979	167.9	2.42	2.31	1979	731.9	2.45	2.20
1979 Jan-Aug	142.3	2.36	2.25	1979 Jan-Aug	738.8	2.45	2.20
1980 Jan-Aug	240.9	5.31	5.07	1980 Jan-Aug	774.9	4.70	4.22
<b>Algeria-France</b>				<b>Indonesia-Japan</b>			
<i>Exporter: Sonatrach</i>				<i>Exporters: (i) Pertamina/Huffco (ii) Pertamina/Mobil</i>			
<i>Importer: Gaz de France</i>				<i>Importers: Jilco consortium (Osaka Gas/Kansai Electric/Chubu Electric/Kyushu Electric/Nippon Steel)</i>			
<i>Liquefaction plant: (i) CAMEL, Arzew (ii) Skikda. Plateau volume: (i) 100 MMcf/d (ii) 350 MMcf/d. Start-up: (i) 1965 (ii) 1973. Expiry: (i) 1990 (ii) 1997.</i>				<i>Liquefaction plant: (i) Badak, Bontang (ii) Arun. Plateau volume: (i) 410 MMcf/d (ii) 640 MMcf/d. Start-up: (i) 1977 (ii) 1978. Expiry: 1997.</i>			
1978	278.4	1.92	1.81	1978	502.9	2.93	2.80
1979	306.2	2.20	2.07	1979	833.5	3.61	3.45
1979 Jan-Aug	319.9	2.08	1.95	1979 Jan-Aug	769.8	3.25	3.11
1980 Jan-Aug	171.5	3.20	3.02	1980 Jan-Aug	1 145.6	5.43	5.19
<b>Algeria-Spain</b>				<b>Libya-Italy</b>			
<i>Exporter: Sonatrach</i>				<i>Exporter: Esso</i>			
<i>Importer: Enagas</i>				<i>Importer: SNAM</i>			
<i>Liquefaction plant: Skikda. Plateau volume: 450 MMcf/d. Start-up: 1976. Expiry: 1999.</i>				<i>Liquefaction plant: Marsa el Brega. Plateau volume: 235 MMcf/d. Start-up: 1970. Expiry: 1990.</i>			
1978	35.1	1.44	1.36	1978	231.3	1.17	1.12
1979	46.2	2.28	2.15	1979	231.4	1.52	1.45
				1979 Jan-June	278.8	1.17	1.12
				1980 Jan-June	208.5	3.11	2.97
<b>Algeria-UK</b>				<b>Libya-Spain</b>			
<i>Exporter: Sonatrach</i>				<i>Exporter: Esso</i>			
<i>Importer: British Gas</i>				<i>Importer: Enagas</i>			
<i>Liquefaction plant: CAMEL, Arzew. Plateau volume: 100 MMcf/d. Start-up: 1964. Expiry: 1979 (under renegotiation)</i>				<i>Liquefaction plant: Marsa el Brega. Plateau volume: 110 MMcf/d. Start-up: 1970. Expiry: 1985.</i>			
1978	72.3	1.06	0.99	1978	158.0	1.04	0.99
1979	61.1	1.22	1.15	1979	117.0	1.65	1.58
1979 Jan-Sept	78.6	1.16	1.09				
1980 Jan-Sept	81.4	1.33	1.25				
<b>Algeria-USA (1)</b>				<b>USA-Japan</b>			
<i>Exporter: Sonatrach</i>				<i>Exporter: Kenai LNG (Phillips/Marathon)</i>			
<i>Importer: Distrigas</i>				<i>Importers: Tokyo Gas/Tokyo Electric</i>			
<i>Liquefaction plant: Skikda. Plateau volume: 115 MMcf/d. Start-up: 1971. Expiry: 1998.</i>				<i>Liquefaction plant: Kenai, Alaska. Plateau volume: 160 MMcf/d. Start-up: 1969. Expiry: 1984.</i>			
1978	39.9	2.55	2.39	1978	125.7	2.32	2.30
1979	78.3	2.96	2.72	1979	133.2	2.41	2.39
				1979 Jan-Aug	148.5	2.41	2.39
				1980 Jan-Aug	105.3	4.56	4.52
<b>Algeria-USA (2)</b>				<b>WORLD TOTAL</b>			
<i>Exporter: Sonatrach</i>							
<i>Importer: El Paso (for Columbia LNG/Consolidated Systems LNG/Southern Energy)</i>							
<i>Liquefaction plant: LNG-1, Arzew. Plateau volume: 1000 MMcf/d. Start-up: 1978. Expiry: 2003</i>							
1978	191.4	1.32	1.17	1978	2 516.8	2.08	1.93
1979	613.8	1.94	1.70	1979	3 320.5	2.51	2.33

Note: 1978 figures are revised.

Sources: Importing countries' trade statistics, except USA: Dept. of Energy.

WORLD ESTIMATED COMMERCIAL PRODUCTION OF NATURAL GAS AND PROVEN RESERVES

Billion (thousand million) cubic metres†

	Commercial production a)		Reserves b)		as % of world	Life of reserves c)		Commercial production a)		Reserves b)		as % of world	Life of reserves c)	
	1979	1980	1st Jan 1970	1st Jan 1981				1979	1980	1st Jan 1970	1st Jan 1981			
<b>NORTH AMERICA</b>														
Canada .....	73.44	68.08	1473	2492	3.2	37								
USA .....	579.67	568.88	7791	5670	7.3	10								
	653.11	636.96	9264	8162	10.5	13								
<b>CARIBBEAN AREA</b>														
Barbados .....	0.01	0.01	na	na	na	na								
Colombia .....	2.64	3.18	79	142	0.2	45								
Cuba .....	0.15	0.15	na	na	na	na								
Mexico .....	26.38	32.35	340	2195	2.8	68								
Trinidad .....	3.17	2.40	85	227	0.3	95								
Venezuela* .....	8.87	8.71	751	1250	1.6	144								
	41.22	46.80	1255	3814	4.9	82								
<b>OTHER SOUTH AMERICA</b>														
Argentina .....	9.18	9.87	181	623	0.8	63								
Bolivia .....	2.09	2.34	85	120	0.2	36								
Brazil .....	1.12	1.30	26	53	0.1	41								
Chile .....	2.97	3.00	79	70	0.1	23								
Ecuador* .....	0.07	0.08	20	115	0.1	—								
Peru .....	1.17	1.14	5	35	negl	31								
	16.60	17.73	396	1016	1.3	57								
<b>MIDDLE EAST</b>														
Abu Dhabi* .....	5.72	5.78	249	580	0.7	100								
Bahrain .....	2.88	2.76	11	280	0.4	101								
Dubai* .....	0.83	0.73	20	43	0.1	59								
Iran* .....	19.99	8.27	3030	11000	14.2	—								
Iraq* .....	2.23	1.76	552	780	1.0	443								
Israel .....	0.10	0.22	2	2	negl	9								
Kuwait*d) .....	5.17	3.30	1215	938	1.2	284								
Oman .....	0.50	0.60	57	142	0.2	237								
Qatar* .....	3.26	3.10	207	1848	2.4	596								
Saudi Arabia*d) .....	12.57	14.90	1498	2678	3.4	180								
Sharjah* .....	na	na	na	15	negl	—								
Syria .....	0.03	0.03	14	90	0.1	—								
Turkey .....	0.10	0.10	9	14	negl	140								
	53.38	41.55	6864	18410	23.7	443								
<b>AFRICA</b>														
Algeria* .....	15.40	10.00	4106	3724	4.8	372								
Angola .....	0.20	0.26	28	30	negl	115								
Congo .....	0.01	0.01	na	57	0.1	—								
Egypt .....	1.11	2.19	40	84	0.1	38								
Gabon* .....	0.06	0.07	14	14	negl	200								
Libya* .....	4.60	3.30	736	674	0.9	193								
Morocco .....	0.08	0.07	1	3	negl	50								
Nigeria* .....	2.00	2.00	142	1161	1.5	581								
Rwanda .....	0.01	0.01	na	na	na	na								
South Africa .....	—	—	na	11	negl	—								
Sudan .....	—	—	—	3	negl	—								
Tanzania .....	—	—	—	1	negl	—								
Tunisia .....	0.33	0.35	14	159	0.2	—								
Zaire .....	—	—	—	2	negl	—								
	23.80	18.26	5081	5923	7.6	324								
<b>WEST EUROPE</b>														
Austria .....	2.32	1.94	11	11	negl	6								
Belgium e) .....	0.04	0.05	na	na	na	na								
Denmark .....	—	—	—	105	0.1	—								
France .....	7.76	7.53	204	81	0.1	11								
W Germany .....	20.36	18.66	292	190	0.2	10								
<b>EUROPE</b>														
Albania .....	0.30	0.30	9	10	negl	33								
Bulgaria .....	0.14	0.15	28	5	negl	33								
Czechoslovakia .....	0.68	0.51	14	12	negl	24								
E Germany .....	9.01	9.60	14	75	0.1	8								
Hungary .....	6.53	6.13	119	110	0.1	18								
Poland .....	7.34	6.33	9	120	0.2	19								
Romania .....	27.19	28.19	170	125	0.2	4								
USSR .....	407.00	435.00	9119	30500	39.2	70								
Yugoslavia .....	1.86	1.82	34	60	0.1	33								
	460.05	487.43	9516	31017	39.9	64								
<b>USSR &amp; EAST EUROPE</b>														
<b>WORLD TOTAL</b> .....														
	1525.41	1522.26	38099	77711	100.0	51								
<i>Of which</i>														
OPEC countries .....	109.04	90.75	12619	25585	32.9	282								

† For rough equivalents in cubic feet divide by 10 for billion cubic feet daily; divide reserves by 30 for trillion (million million) cubic feet. One cubic metre = 35.3147 cu. ft.

\* Member of OPEC.

negl: Negligible (less than 0.05%).

a) Excluding flared or reinjected; mainly excluding field usage. b) Mainly excluding probable and possible reserves. c) Reserves at 1st January 1981 divided by 1980 rate of commercial production. Exclusion of wasted gas production means life of reserves is overstated; however, reserves figures are conservative, being confined to proven. d) Kuwait and Saudi Arabia figures include half-shares of Partitioned Zone. e) Production from coal mines only. f) Includes 60.88% of Frigg production. g) Includes 39.12% of Frigg production. Possible marginal production from Cameroun, Ghana, Guatemala, Ivory Coast, Philippines and Zaire — all producing crude oil in 1980 — is not accounted for. With the exception of Zaire, reserves in these and some ten other countries where natural gas finds have been made are principally confined to non-proven.

1979 production figures are revisions and may not correspond to our August 1980 estimates.

Main sources: Production: United Nations Monthly Bulletin of Statistics, Cedigaz. Reserves: Cedigaz.

Table 1

## MIDDLE EAST: PROVED NATURAL GAS RESERVES 1983

	Trillion cu metres	Trillion cu ft	Billion toe*	% share of world
Abu Dhabi	0.6	20.5	0.5	0.6
Bahrain	0.2	7.4	0.2	0.2
Dubai	0.1	4.3	0.1	0.1
Iran	13.6	480.0	12.2	15.1
Iraq	0.8	29.0	0.7	0.9
Kuwait	0.9	31.0	0.8	1.0
Qatar	1.8	62.0	1.6	1.9
Saudi Arabia	3.4	121.0	3.1	3.8
Others	0.5	18.8	0.5	0.6
Total	21.9	774.0	19.7	24.2

\* Tonnes of oil equivalent.

Source: Adapted from BP Review of World Gas.

Table II

## MIDDLE EAST: GAS PRODUCTION AND UTILIZATION

(in million cubic feet a day)

Country	1972			1982		
	Gross production	Utiliz- ation	% utilized	Gross production	Utiliz- ation	% utilized
Abu Dhabi	1085	121	11	1080	730	68
Iran	4024	1724	43	2370	990	42
Iraq	718	90	13	410	70	17
Kuwait	1774	688	39	450	400	89
Qatar	493	107	22	560	510	91
Saudi Arabia	3150	533	17	3250	1310	40
Other a)	500	300	60	1500	900	60
Total	11744	3563	30	9620	4910	51

a) Includes Bahrain, Oman and United Arab Emirates (excluding Abu Dhabi)

Source: Exxon Corporation, "Middle East Oil & Gas".

Table III  
MIDDLE EAST: NGL CAPACITY

Country	As of January 1st 1984
	Thousand b/d
Saudi Arabia	675
Kuwait	200
Abu Dhabi	190
Iran	60
Qatar	55
Dubai	20
Bahrain	10
Iraq	*
Total	<hr/> 1210

\* Two major plants are completed but not operating.

Source: Exxon Corporation estimates.



better use of its gas was boldly registered in a 1985 agreement to build a gas grid linking the six member states of the Gulf Cooperation Council - Saudi Arabia, Kuwait, Bahrain, The United Arab Emirate, Qatar, and Oman. Main consumption of gas so far in the Gulf region is at new petrochemical and fertilizer plants, power stations, and desalination units. Natural gas liquids capacity has risen to 1.2 million barrels per day, the bulk of which is installed in Saudi Arabia where plants have a potential throughput of 675,000 barrels per day. It is thought that gas usage in both the industrial and domestic sectors will rise steadily so that crude oil and products can be freed for export.

On the other hand, the great distance of the Middle East from world's major gas markets, coupled with the enormous costs of exporting gas over this distance dampens the region's overall prospects of becoming active in world gas markets.

#### THE SITUATION IN NIGERIA: A POT OF PROBLEMS

#### SPECIAL REPORT ON THE SITUATION ON THE NIGERIAN GAS SCENE\*

Despite huge proven reserves, natural gas utilization and development in Nigeria appears deflated, and the highly valued commodity (LNG) may not come to the market in time to rescue the country from its current economic slump. According to gas and petroleum industry executives\*, Nigeria's proposed liquefied natural gas (LNG) plant at Bonny is unlikely to be completed before the middle of the 1990s, and

even then, there is considerable doubt whether the project will go ahead at all. The LNG project has long been riddled with a lot of delays and false starts. In the mid 1970s, the British Petroleum Company and Shell Petroleum jointly formed the Bonny LNG Consortium to develop the liquefied natural gas project. This Consortium then signed a letter of intent to sell LNG to a group of European utilities, under a 20-year contract, but failure to obtain government backing made the proposed sale fall through and the Bonny LNG Consortium eventually slid into oblivion.

To add more to the skepticisms over the development of the gas industry in Nigeria, a plan to use more gas at home has also stalled. Saipem SpA of Italy and Mannesman AG of West Germany were to build a \$1.00 billion gas gathering system and pipeline between Escravos in the Niger Delta and Igbini, near Lagos, where the gas would feed into a newly built power plant. But work cannot resume until the government approves a new financing proposal from Italy. Some of Nigeria's gas is to be used in the country's new petrochemical plants, although parts of that project also are likely to be postponed as the government reviews its spending priorities.

Industry sources<sup>1</sup> estimates Nigeria's proven reserves of natural gas at 45.7 trillion cubic feet (about 1.29 trillion cubic meters), that is an energy equivalent of about eight trillion barrels of oil, compared with the country's oil

reserves of about sixteen billion barrels. But despite these staggering figures of proven estimates, experts still maintain that a determined search for gas would probably uncover far larger quantities of natural gas reserves. In light of this great amount of natural gas availability, and in dire attempt to curb the wastage of this natural resource, the Federal government of Nigeria introduced new penalties in 1975 to discourage this wastage and prevent the flaring away of the natural gas. Nevertheless, the penalties imposed have made little impact, if any at all, in curbing the flaring away of natural gas because the cost of re-injecting flared gas into the ground for later use is so high in most cases that the government has to grant exemptions to the rules in certain instances in order to keep the oil flowing.

Another major trouble with Nigeria's huge gas reserves is that they are far from the major markets while demand at home is small because of the nation's scant industrial base and tropical weather which together limits the utilisation of gas to certain applications. Subsidies on petroleum and related products which was only removed very recently had made fuel oil and petroleum products artificially cheap, thereby under-cutting demand for gas.

Industry experts concludes that Europe was the most likely market for Nigeria's gas. But leaders in the international gas industry such as The Soviet Union, Norway, The Neatherlands, and Algeria have dominated this market while

Canada and Mexico are well placed to sell to the United States and other parts of the region. Therefore the market for LNG, especially in West Europe and North America really does not look too healthy for Nigeria.

Another major problem faced by the LNG project in Nigeria was the inavailability of funds. In December 1983 the Royal Dutch/Shell group entered into an agreement to manage the proposed LNG project on behalf of the Nigerian government. Both Elf Aquitaine of France and Agip SpA of Italy also expressed willingness to invest in the project if it looks attractive enough. But no formal agreement was concluded between the government and the Shell group as a result of administrative blunders on the path of government officials. The government officials had, since the initiation of this idea, had little or no liason with the Shell group. Assuming that a formal agreement was finally reached between the two parties, the partners would have to provide financial support for the execution of the project. The project was roughly estimated to cost between U.S.\$7 to \$8 billion in 1985. But the heat of the matter was that the Nigerian government would have to come to terms with the International Monetary Fund (I.M.F) so that international banks and investors could participate in a major loan for the project. But, up till the present moment, the Nigerian authorities have not come to terms with the I.M.F., thereby preventing financial backing for the project, and thus further keeping the entire project stalled.

In addition, the partners in the project would also have to find customers willing to commit themselves to buying the LNG over a long period of time, say twenty years. But such commitments are difficult to obtain in a glutted market as the LNG market. Apart from the glut, potential customers would have to worry about the political instability of Nigeria. There is a great amount of worries over the political instability in Nigeria after many coups and counter coups. A lot of foreign investors give a great deal of weight to an atmosphere of peace and tranquility in deciding whether or not to invest in the country.

Should Nigeria pass the litmus tests of overcoming the above enumerated problems, one can then allocate a minimum of six years to build the LNG plant itself. In the final analysis, the possibility of an active and cost effective liquefied natural gas industry in Nigeria seems far removed from the 1980s and only possible in the 1990s or beyond. This last issue would then bring the additional problems of profitability of the investment and competitiveness with well established LNG producers into focus. Some European gas experts<sup>1</sup> now doubt that the Nigeria's liquified natural gas, if it eventually enter the market at all, would only be profitable at a price low enough to attract customers. This line of thought cast a great doubt on the profitability of the entire project itself.

## CHAPTER THREE

### RESEARCH DESIGN AND METHODOLOGY

From the on-set, the author of this research study had postulated that the Nigerian authorities should make use of its natural gas resources for economical benefits rather than let it waste away. In attempt to prove or disprove this hypothesis, I would rummage through the relevant amount of data gathered for this study to achieve this objective without any bias. The research design and methodology is thus organized in the following pattern:

The amount of relevant data gathered for this research study include Published books on the Nigerian economy with adequate coverage of the petroleum industry and the problem of natural gas wastage. Although most of the published textbooks are not recent publications, as lately published textbooks on this subject are hard to come by in Lebanon nowadays because of the on-going crisis. Nevertheless, this deficiency had been compensated with the availability of relevant and up-to-date publications, periodicals, trade journals, recent and current research studies and publications, as well as universities', colleges' and various associations' and organizations' publications available at the libraries of the American University of Beirut, the Beirut University College, Haigazian College, and other universities and colleges in the country.

The materials gathered so far include the following:

1. THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT (IBRD):  
THE ECONOMIC DEVELOPMENT OF NIGERIA. JOHN HOPKINS, 1960.
2. OLALOKU et al: STRUCTURE OF THE NIGERIAN ECONOMY.  
ST. MARTINS, 1979.
3. PANTER-BRICK, K.: SOLDIERS AND OIL - THE POLITICAL TRANSFORMATION OF NIGERIA.  
FRANK CASS, 1978.
4. STOPLER, W.F.: PLANNING WITHOUT FACTS, HAVARD UNIVERSITY, 1966.
5. THE ROYAL INSTITUTE OF INTERNATIONAL AFFAIRS: NIGERIA.

In addition to these listed materials, information and useful data had been gathered from other texts and publications that are listed in the bibliography and/or mentioned in the table of reference. The combination of relevant data from all these enumerated sources and others not yet listed provided the opportunity for a carefully designed, well documented and guided research study. These materials would be utilised strictly in major areas of vital relevance to analyze the economic planning in Nigeria with great emphasis on the availability of natural gas, and in support of or against the initial hypothesis, as the case may be.

The nature of this research study, coupled with the fact that the research study was not being conducted in Nigeria,

did not permit the use of elaborate interviews and questionnaire methods of information gathering. Nevertheless, a lot of trouble was taken to carefully analyse, collect, assemble, and analyze the very important secondary data already obtained with the aim of arriving at reasonable and appropriate conclusions. It is very much believed that the method being applied in this particular case is generally accepted as adequate for standard academic work applicable to and practicable on the grounds of reality.



## CHAPTER FOUR

### PRESENTATION AND ANALYSIS OF RESEARCH RESULTS

In chapter one attempt was made to describe the nature of the Nigerian economy before the discovery of oil and the development of the oil industry in Nigeria. During this era, it was discovered, from this research study, that the Nigerian economy was basically an agro-based economy, and that the bulk of revenue realised by the Nigerian government from external trade during this period came from the agricultural sector. This point is further illustrated by Figure I and Figure II. Figure I is an illustrative chart of the distribution of Nigerian exports between 1946 and 1974 (selected years) based on major export commodities. The selected years, 1946, 1950, 1955, 1960, 1965, 1970, 1974, are found to be adequate representative samples of the period in entirety. On the chart, the percentage of each of the listed commodities with respect to total annual export was given. In addition, the equivalent of these individual export commodities are valuerised in the Nigerian currency, the Naira, for better comparability and analysis. With a careful analysis of this chart, one could deduce that the agricultural sector was largely responsible for the bulk of external revenue collected by the Nigerian government from 1946 until the end of 1970 when petroleum and crude oil exports started to provide a larger portion of Nigeria's foreign trade earnings. The contribution of other major commodities such as columbite,

tin ore, tin metal, etcetra were also illustrated on this chart.

Figure II is a straight line descriptive chart of major Nigerian exports between 1965 and 1969 on an annual basis. This analysis reveals the true nature of Nigeria's export trade five years after independence, within a period of about three years of independence, and just before the end of the civil war that devastated mostly the national economy and the eastern region of the country in particular. Apart from providing the quantitative aspect of annual units of specific commodities exported, this chart equally provide us with the value of these quoted quantities in British Sterling pounds, thus permitting easy comparability with other foreign currencies at that point in time.

Figure III provides a clearer picture of the effect of the war on the national economy. The chart referred directly to the war years.

Between 1966 and 1967 there was a noted big fall in the national gross domestic product. As Figure III clearly indicates, agricultural production, especially the major export produces, were badly affected by a combination of unfavorable weather conditions, transportation bottlenecks- as a result of the war crisis; and declining market prices. Production and export of mineral oil almost virtually stopped while export of vegetable oil and other important commodities suffered a severe set-back because of the complete cut-off of supplies

from the Eastern Region (Biafra) to the Federal capital and the port-city of Lagos. This important fact could be easily deduced from an analysis of Figure III.

Until late 1968, the general trend of foreign exchange earnings were downward or at best stagnant, and the import level moved in sympathy under the weight of stringent fiscal measures dictated by war mobilisation. However, the national economy adjusted afterwards to the prospect of a long-drawn civil war, and started to pick up again in 1969. In the regions not directly affected by the civil war, general marginal improvement in the external trade sector. The civil war itself stimulated demand, and had a beneficial effect on the level of unemployment as many men were recruited into military forces, while others had to be employed into military services. Export substituting manufacture were given such a big boost that by the end of 1968, the index of industrial production for the rest of the country not directly affected by the war had surpassed the 1966 level for the entire country.

In 1969 production was generally better than the previous year, although there were still uneven development. The volume of output of certain agricultural export crops, notably cocoa, and groundnut declined, but the short-falls was more than compensated in value as prices in the world market were in upward trend. The pacification of the oil producing areas in 1968 resulted in a rapid advance in the production and export of crude petroleum in 1969 (Figure III). The growth in manu-

facturing production also continued in response to the stringent fiscal measures on import.

As for the contribution of petroleum to the economic growth of Nigeria, the signs were clearly written by the late 1960s and mainly in the 1970s. Figure IV is an illustration of production and export of crude petroleum in Nigeria between 1962 and 1975. Column C of Figure IV provide us with an analytical view of the value of Nigeria's petroleum exports in Million Naira between 1962 and 1975, while Column D interpretes these values in terms of percentages of total national annual exports. One could thus see the drastic rise of the contribution of petroleum exports in the Nigerian economy. This is further illustrated by Figure V which describes the post-civil war expressed exports of Nigeria in terms of oil and non-oil commodities. From these data, it was clear enough to draw the conclusion that the Nigerian government earlier obtained a bulk of her foreign revenue from agricultural exports and foreign aids. However, in later years the discovery of petroleum and development of the petroleum industry in Nigeria brought a greater impetus to Nigeria's revenues from foreign trade. As a matter of fact, the years between 1974 and 1980 were clearly years of economic prosperity in Nigeria as a result of the so-called oil boom. This point is further explained by Figures V and VI. Bigger and bigger revenues were realised between this period from year to year as the price of oil appreciated on the world oil market. As a result, there were a lot of financial resources available for developmental

planning in Nigeria.

According to many data gathered on the ways and manners in which development and economic plannings were devised and executed in Nigeria, most of these plannings were adopted on political grounds, and as such their executions were wasteful, and not much results and benefits were obtained in the end. The agricultural sector was almost completely neglected from the time the authorities saw quick gains from petroleum oil fields. Not much was thought about the natural gas that was flaring away on the oil fields. As a matter of fact, in its Second National Development Plan of 1970-1974, the Federal Government of Nigeria merely made reference to the fact that natural gas came second in importance to crude oil. (Figure VI). But according to this plan nothing concrete was said about any plan to utilise these natural resource. All that the plan did was to emphasise that "mineral resources are wasting and expendable assets. It is important therefore, that proceeds from mineral exploitation should be translated into permanent and productive assets that will continue to generate income and employment within the economy for future generation".<sup>1</sup> It is therefore, no surprise that the Federal government had nothing to report about on the utilisation or development of the natural gas resource at the end of the term of the Second National Development Plan in 1974. Nothing was done and nothing was achieved.

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1. Second National Development Plan - 1970-74, Fed. Ministry of Information, Lagos, 1970 - pp. 133-136.

Again, in its Third National Development Plan of 1975-1980 government planners came again with such statements that would in the end amount to nothing concrete with regard to natural gas in terms of development. The government's policy statement went thus: "It is government's policy to stop the wasteful flaring of gas and encourage the commercial utilization of this valuable material. Gas can be utilized in the production of fertilisers, iron and steel, electricity, etc. It is also a major source of fuel. Government will therefore harness the nation's gas resources especially as fuel, in view of the growing scarcity of alternative sources".<sup>1</sup> "Since minerals are depleting assets, it is important that their consumption should be so controlled as to ensure that they make an optimum contribution to the growth of the economy. This implies development of a conservation policy which will include measures designed to avoid rapid exhaustion of minerals. It is government's policy to stop the flaring of associated gas".<sup>2</sup> However, in the allocation of physical cash to projects in this section, nothing was virtually allocated or said about natural gas.

Information obtained from the Nigerian Trades Journal<sup>3</sup> equally revealed that the Federal Government was much concerned with the problem of preventing the wastage of flaring away of

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1. Third National Development Plan, 1975-1980, Policy Nos. 18, 21, Ministry of Information, Lagos, March 1975.

2. Ibid.

3. Nigerian Trades Journal, Min. of Information, Lagos, March 1985.

natural and associated gas resources than with its utilisation in the process of national and/or economic development. About three decrees had been promulgated so far to penalise those that carelessly allowed the escape of the natural gas. In some other circumstances the government even imposed the re-injection into the ground of escaped gas at very expensive costs instead of giving more attention to how the gas could be utilised even at a small scale level of activity.

In the Middle East attempts had been made to increase the utilisation of natural gas as explained in previous chapters. With the help of the above charts, and in addition to information provided in chapter two, one could easily notice the improvement in the utilization of natural gas in most of these Middle Eastern countries. Mention had already been made in chapter two of the leadership roles of Libya and Algeria in this field. In other parts of the world, there were also marked increases in the utilisation of natural and associated gases in the Pacific region e.g. Malaysia and Indonesia; in Latin America e.g. Mexico and Columbia; and in Europe e.g. The U.S.S.R., the Neatherlands, and Norway. On the contrary the Nigerian case has not revealed any sign of improvement since the days of policy statements on the issue until the present time, and there is no concrete plan in sight for the future.

With the above analysis and general study of various data, one could draw the conclusion that there were a lot of

neglects on the part of the authorities in Nigeria in making effective plans and appropriate arrangements to make adequate utilisation of its natural gas resource. Such a finding would be in favour of the initial postulation that it is essential for the Nigerian government to utilise the wasting away natural gas in order to generate more financial resources and revenues that would help cushion the ailing national economy while helping to reduce the nation's over-dependence on the oil industry. It should equally be upheld that such attempt at utilising the natural gas should be done within the context of many alternatives open to a developing nation endowed with natural gas resource as those that were reviewed in chapters 2 and 4 respectively.



FIGURE I

DISTRIBUTION OF NIGERIAN EXPORTS BY MAJOR

COMMODITIES: 1946-1974 (SELECTED YEARS)

	1946		1950		1960		1965		1970		1974	
	N. m.	%	N. m.	%	N. m.	%	N. m.	%	N. m.	%	N. m.	%
Cocoa	7.6	15.4	38.0	21.1	73.5	21.7	85.4	15.9	133.0	15.0	159.0	2.7
Ground-Nuts	11.3	22.9	30.4	16.9	45.8	13.5	75.6	14.1	43.6	4.9	6.8	0.1
Ground-Nut Oil	-	-	0.5	0.3	10.6	3.1	20.0	3.7	23.2	2.6	11.4	0.2
Palm Kernels	8.7	16.9	33.4	18.5	52.1	15.4	53.1	9.9	21.8	2.5	43.7	0.8
Palm Oil	4.1	8.3	24.1	13.4	28.0	8.4	27.2	5.1	1.2	0.2	*	*
Hides & Skins	2.7	5.5	12.8	7.4	8.6	2.5	9.1	1.7	5.6	0.6	10.6	0.2
Rubber (Net)	2.8	5.7	5.7	3.1	28.5	8.4	22.0	4.1	17.4	2.20	33.2	0.6
Timber (Logs & Sawm)	0.7	1.4	4.9	2.7	14.1	4.1	12.5	2.3	6.2	0.7	11.2	0.2
Raw Cotton	1.1	2.2	6.0	3.3	12.4	3.7	6.6	1.2	13.2	1.5	-	-
Bananas	0.1	0.2	3.5	1.9	5.2	1.5	-	-	-	-	-	-
Petroleum (Crude)	-	-	-	-	8.8	2.6	136.2	25.4	510.0	57.6	5365.7	92.6
Columbite	0.3	0.6	0.6	0.3	4.2	1.3	2.3	0.4	2.0	0.2	1.4	*
Tin Ore	5.7	11.6	12.0	6.7	12.1	3.6	*	*	-	-	-	-
Tin Metal	-	-	-	-	-	-	29.8	5.6	33.8	3.8	26.4	0.4
Other Exports	4.6	9.3	8.5	4.7	35.5	10.4	56.7	10.6	74.4	8.4	125.4	2.2
	49.3	100	180.4	100	339.4	100	536.5	100	885.4	100	5974.8	100

FIGURE II  
NIGERIA'S MAJOR EXPORTS - 1965 - 1969

	UNIT	Quantity (in 000's)					Value in £'million				
		1965	1966	1967	1968	1969	1965	1966	1967	1968	1969
Groundnut	Tons	512	573	20	638	518	37.8	40.8	35.4	38.0	35.9
Groundnut Oil	Tons	91	108	71	109	99	10.00	10.00	7.20	9.50	11.10
Ground Cake	Tons	163	133	131	171	168	5.30	4.70	4.20	4.90	5.00
Cocoa	Tons	255	190	242	206	171	42.70	28.30	54.70	51.50	52.60 +
Petroleum Crude Oil	Tons	13.020	18.945	14.774	6.890	26.867	68.10	92.00	72.10	37.00	136.00
Palm Kernels	Tons	416	394	163	158	176	26.50	22.40	7.80	10.20	9.80
Rubber	Tons	68	70	48	52	56	10.90	11.50	6.30	6.30	9.60
Raw Cotton	Tons	14	23	33	14	14	3.30	5.20	6.50	3.30	3.40
Cotton Seed	Tons	70	66	63	29	42	1.80	1.90	1.90	0.90	1.00
Palm Oil	Tons	150	140	16	3	8	13.60	11.00	1.30	0.10	0.40
Tin Metal	Tons	11	16	10	11	10	14.90	15.40	13.00	13.70	13.90
Timber & Plywood	cu.ft	20.106	18.896	11.598	11.353	12.133	7.70	6.80	4.30	4.30	5.20
Hides & Skin	cwt	171	163	158	144	144	4.70	5.80	4.40	4.00	4.20
Total Major Commodities							247.10	255.80	219.10	183.70	288.10
Other Commodities							16.20	22.90	19.00	22.80	32.0
TOTAL DOMESTIC EXPORT							263.30	278.70	238.10	206.50	320.10

FIGURE IV

PRODUCTION AND EXPORT OF CRUDE PETROLEUM, 1962, 1966, 1969-75

A	B	C	D	E
Year	Production Index (1965 = 100)	Value of Petroleum Exports (N.m)	Petroleum Export As % of Total Exports	Av. Posted Price (U.S. \$ Per Barrel)
1962	25.9	33.5	9.9	
1966	152.3	184.0	32.4	
1969	197.1	262.0	41.2	2.17
1970	389.1	510.0	57.6	2.25
1971	568.5	953.0	73.7	3.05
1972	662.5	1176.2	82.0	3.39
1973	750.0	1893.5	83.1	4.80
1974	822.8	5365.7	92.6	14.69
1975	650.9 (Prov)	4629.6 (Prov)	92.9	12.95

Source:- Central Bank of Nigeria, : Annual Reports and Economic and  
Lagos. Financial Reviews.

FIGURE V

YEARS OF ECONOMIC PROSPERITY: POST CIVIL WAR EXPORTS - 1974-1980

COMMODITIES	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
<u>A. Non-Oil</u>						
Cocoa	140.00	145.80	152.40	158.40	164.60	171.00
Ground-Nuts	70.00	34.40	36.40	38.00	41.90	45.70
Ground-Nut Oil	35.00	36.20	37.80	39.40	39.20	40.30
Rubber	17.50	16.90	15.00	14.60	14.40	14.20
Palm Kernels	20.70	22.70	23.00	23.20	23.50	23.80
Timber Logs & Plywood	7.60	8.00	8.60	8.60	8.40	8.00
Benni Seed & Soya Beans	2.20	2.40	2.40	2.40	2.60	2.60
Hides & Skin	4.00	6.20	6.40	6.60	6.30	6.00
Other Commodities	46.50	49.20	53.60	54.40	64.10	64.40
Tin Ore & Metals	20.30	25.00	20.00	23.00	22.00	22.00
Total (A) (Non-Oil)	304.30	346.00	355.60	368.60	387.00	396.00
B. Oil	6,458.10	7,120.30	7,913.00	8,665.10	9,603.80	10,663.20

FIGURE VI

CONTRIBUTION OF PETROLEUM COMPANIES TO BALANCE  
OF CURRENT EXTERNAL PAYMENTS, 1966, 1969 - 74

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Year		As % of Value of Petroleum Exports
1966	86.0	46.7
1969	106.6	40.7
1970	253.2	49.6
1971	604.8	63.5
1972	808.1	68.7
1973	1,403.3	74.1
1974	5,192.9	96.8

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Source:- Central Bank of Nigeria, Lagos.

## CHAPTER FIVE

### CONCLUSION

The immense opportunity to undertake this research study has facilitated the possibility of arriving at the following logical conclusions.

(a) In the first case, I have been able to demonstrate that the Nigerian authorities had negligently allowed the continuous wastage of its natural gas resource through its many errors and inadequate economic planning methods which had been plaguing the nation since its foundation. Tracing the different economic plannings from 1946 until the present time I have been able to identify the specific mistakes that led to lopsided economic plannings in Nigeria. A mere allocation of expenditure to so-called Development Plans was the order of the day during the colonial era. But to be more precise, these so-called plans constituted a series of projects which had not been co-ordinated or related to any overall economic target. The post-independent plans were initially bogged down by ineptitude and lack of adequate and qualified economic planners. While the nation's First National Development Plan failed to achieve much because of serious interruptions by political crises and the civil war, the Second National Development Plan had as its principal goals and objectives ideas which on the surface appear to be very embracing, but were in actual fact much less amenable to quantitative analysis.

The achievement of some of the principal objectives set forth in the Second National Development Plan actually call for the pursuit of policies which are strictly not economic.

(b) Despite all the discrepancies in national economic planning, the availability of great amount of natural resources prevailed in keeping the nation prosperous. Charts and tables have been used to drive home the point that Nigeria realized large sum<sup>s</sup> of income from export trades especially from the agricultural sector and later from the oil boom. Nevertheless, corruption and embezzlement was finally allowed to prevent serious economic development in Nigeria. A lot was spent to achieve little. Economic planning was politicised along with the system of government, thereby leading to corruption and nepotism while vital sectors of the economy that requires proper attention suffers. It thus became easier to realise that the Nigerian authorities did not give much importance to the development and beneficial utilisation of its natural gas resource as she did to the building of a completely new capital city and the construction of very expensive bridges and high-ways. As a result of all these mistakes and inadequacies in national economic planning, the economy was mistakenly allowed to go in the direction of an almost monoprodukt economy - depending almost solely on the oil industry while agriculture and other sectors such as the gas and mining sectors stagnate.

(c) It had been established that the Nigerian authorities became aware of the usefulness of the available natural gas

reserves lately. It was this late recognition that prompted the issue of policy statements lately by the government to restrain the flaring away of the gas. But the effort of the government was far from enough to demonstrate her full understanding of the immense usefulness of the natural gas. In attempt to provide the many avenues into which natural gas resource could be gainfully employed, I have cited examples of many nations around the globe, developing nations in particular, where the availability of natural gas had helped in the improvement of the national economy. Amongst cited examples was Malaysia, a developing nation in which the availability of natural gas has fuelled the device and successful implementation of a four-fuel policy in which natural gas, hydro power, coal, and crude oil play increasingly important roles to advance the country economically and technologically. In the Middle East, natural gas, formerly neglected as a poor alternative to abundant oil supplies, is now increasingly used as feedstock for new industries springing up around the Arab Gulf. Algeria and Libya from North Africa became leaders in the LNG market around the world because of their better handling of their natural gas resource. Developed nations in Eastern and Western Europe provides many other avenues through which natural gas could be usefully applied. Mexico's activities in this industry in Latin America had allowed this nation to carry the lead in the LNG market in continental North and South America. This research study has therefore provided and proved the many avenues through which natural gas could be profitably applied to



generate revenues for Nigeria. But the failure of the Nigerian government and her economic planners to carefully look into these alternatives and choose one that will be most profitable and affordable to the nation have led to the continuous wastage of this important and valuable natural resource, while the nation continue to grope for survival in the face of acute economic depression.

(d) With the turning of the table on the Nigerian economic scene, and at a time when the oil boom is gone and replaced with economic depression and austerity, the authorities now think of developing the natural gas in attempt to revive the economy and set the nation again on the course of prosperity. But this was inappropriate. One would therefore be justified to conclude that Nigeria's natural gas resource had been allowed to waste away much more as a result of neglect and improper economic planning, and because the authorities in the country attached little or no importance to this vital commodity until when it was very late to do this. Had a development program been devised for the gas industry when the nation was awashed with oil boom income, this industry could very well have served as an immediate alternative to help the nation survive very well the after-effect of the oil market crunch. A drastic, well-designed and carefully implemented effort is needed to take full advantages of the availability of natural gas in Nigeria in attempt to revive the economy and enjoy the benefits of this valuable resource.

(e) Although attempts had recently been made by Nigeria to start a liquefied natural gas (LNG) plant in the country, but this attempts were equally riddled with similar loopholes and wrong planning tactics that affected earlier economic plans. The proposed LNG plant was generally believed to be the world's largest and would cost the nation about U.S.\$10 billion which could not be raised internally. The gigantic nature of this project and the big amount of money needed for its implementation had in fact prevented its take-off!. It is time for Nigeria to cut her coat according to her size. There are many other alternatives than a gigantic LNG plant through which natural gas could be profitably applied in Nigeria at less costs and with quicker returns on investment.

(f) Other writers on this topic have noted, although with less emphasis, that Nigeria's proposed LNG plant was bogged down largely by the large amount of finance required for the construction and other facilities related to the project. A new dimension more clearly brought into focus by this research study is the prove of a close relationship between poor economic planning in Nigeria and the continuous neglect of the very important natural resource natural gas that could have yielded better revenues and other benefits for the nation had it been well taken care of. It was bad economic planning methods that was responsible for the prominence of natural gas in policy statements of successive Nigerian rulers for almost two decades but without any concrete action taken towards its development and

profitable utilisation, even when it would not cost the nation a lot of money then<sup>a</sup> she could afford. It was also bad economic planning that was responsible for the decision to propose the construction of the world's largest LNG plant in Nigeria without counting the cost and without proper home-work on the ability to obtain financial resources that will put the project in motion.

### RECOMMENDATIONS

In order to overcome the mistakes of the past and make good use of whatever remains of the natural gas that had been allowed to flare away ceaselessly, the Nigerian authorities should set at work to make adequate use of this important natural resource starting with maximum application and utilization affordable by the nation under the current austerity condition in the country. Therefore, I would like to propose the following recommendations on the basis of the findings of this research study and the proceeding conclusions.

(a) To begin with, decision should be made on what utilization alternative is best for the nation and most affordable to the government in making use of the natural gas resource. Possible useful avenues include the production of chemical fertilizers, industrial use by power plants and electricity supply stations, production of methanol, and processing into LNG and domestic gases for home use as well as industrial use. Each

of these alternatives had been expounded in Chapters 2 & 4 respectively.

(b) After a decision had been reached on the mode of utilization, action should be taken on the means of financing this project. The decision to make on this issue hinges upon the kind of project decided upon by the government. As the production of methanol is somewhat exotic, while the processing and sales of LNG is complex and uncertain, I would therefore like to recommend the utilization of the natural gas in the production of chemical fertilizer because of the following reasons:

- I. It is comparatively less expensive to set up a fertilizer plant. As<sup>a</sup>matter of fact, the financial resources needed to support such a project could be raised internally without resorting to the International Monetary Fund, the World Bank, or other international investors and financiers.
- II. The production<sup>of</sup> chemical fertilizers is also less complicated than the production processes of methanol or LNG. Thus it costs less to produce fertilizers than it would cost to set up plants for each of the other alternatives and maintain them.
- III. The agricultural sector in the country is currently enjoying a great degree of revival both from the private sector and from the government agencies. Therefore the production of fertilizers would complement the efforts to boost agricultural production, thus making it a step in the right direction as such a project would be of immense contribution to the efforts currently being made to revive the agricultural sector of the economy, which had been stagnating for quite some time.
- IV. With the possibility of providing fertilizers for the agricultural sector, the returns on this investment could as well be many-fold. The natural gas that could have been wasted would be usefully utilised. In addition, hard earned foreign currencies which would have been spent on the importation

of fertilizers into the country from abroad would be saved and used in the execution of other development projects.

- V. As this project gets bigger and bigger, Nigeria would eventually become a net-exporter of fertilizers to neighbouring African countries and other nations. In this respect, another opportunity to earn badly needed foreign currencies is open to the nation, which would go a long way in attempts to overcome the current economic depression in the country.

In the final analysis, the decision to manufacture locally consumable products such as chemical fertilizers would undoubtedly attract financial support locally and from abroad because of the relatively small size of the project and the possibility of making quick returns on investment, unlike in the case of the gigantic and very complex proposed Bonny LNG plant. Nevertheless, and despite the feasibility of utilising natural gas in the production of chemical fertilizers, other alternatives have to be critically and carefully considered before a final decision is made on this particular issue.

(c) After a decision had been reached on the project for which the natural gas would be used, in addition with the provision of adequate financial support, the method of gathering the gas itself should be given prominent and careful consideration. The method of collecting the natural gas from the oil fields from which it is currently being wastefully flared is very important. The issue of transportation of the natural gas from the reserves' location to the processing plant, transportation costs, delays and dangers during transportation process, as well as dangers of leakages to the environment should be

carefully studied and taken care of. It is therefore recommended that the gathering and storage of the gas not be taken to very far distant for processing. It would be much safer if the processing plant is located near the gas reservoir. But final decision on this issue would depend on other major factors that could not possibly be anticipated now and in this context.

(d) In the end it should be enshrined on the minds of the government and her economic planners that a larger scope of utilization of this natural resource and a profitable investment in this regard to help in the improvement of the national economic performance and technological advancement was the major objective of setting up whatever project was finally agreed upon. Therefore attempts should be made to enlarge utilization activities from the small scale to a bigger scope of utilization as time goes on. Therefore, in the general plan designed for the utilization of the gas and to industrialize the nation, concrete actions to fully utilize the gas including the reserves, should be adopted so as to develop Nigeria's gas industry and revitalize the economy through this sector in addition to efforts being made in other sectors of the economy.

Most of all, appropriate cost-benefit analysis should be made with every positive and negative points carefully calculated and reviewed before a final decision is made. Good judgement and highly effective management effort is equally

needed to plan and implement the plan, and to appraise the situation of the development effort from time to time. Ideas of other nations in managing the same natural gas resource under similar and varied conditions should be carefully studied, compared, and adopted where it is feasible and affordable. The development of the gas industry as hereby recommended is believed to be one of the important and very beneficial and objective way to make good use of Nigeria's national resources to expedite the technological advancement of Nigeria, to diversify the national economy, as well as to rescue the nation from economic depression.

#### SUMMARY

In the national crude oil and petroleum industry, Nigeria has for many years been flaring the natural gas that is released with the production of oil wastefully. More than a decade ago, discussion began on liquefying the gas for home consumption and export. But this attempt at economic advancement is ill-conceived and void of careful examination and cost-benefit analysis. Just like earlier attempts at national economic planning, there were many mistakes in this attempt to utilise the nation's natural gas resource. Towards the end of the 1970s, the Nigerian government decided to set up a massive U.S.\$10 billion project that would liquefy the natural gas and supply LNG mainly to the European market. But this project has failed to take off as a result of the slump in the international oil market which was directly connected with the economic depression in Nigeria;

the current decline in worldwide demand for LNG; and the refusal by many reputable international financiers and investors to provide financial backing for the project since Nigeria refused to adopt an economic recovery plan designed and proposed by the International Monetary Fund (IMF).

Limitations that erupted in Nigeria's gigantic and expensive attempt to enter the LNG industry further delayed the utilization and stoppage of the natural gas that continued to be flared wastefully away on the nation's oil fields. Still convinced that the best way to make use of the natural gas was through the liquefaction of the gas and the sale of the resultant LNG on the international market, the government in the early 1980s began to consider a small scale version of the initial plan. Yet, processed gas, the long awaited great export hope of Nigeria, has not come to the market in time to rescue the nation from her current economic slump. Despite the huge proven gas reserves in Nigeria, the LNG project appears deflated. Some experts in the LNG industry even claim that such a project can only take off in Nigeria in the mid-1990s or even later.

Very recently the Federal Government of Nigeria has finally shown deep interest and determination to find ways to use the natural gas resource and prevent its continuous wastage. This resolve in this direction came as the authorities decided to reduce the nation's overwhelming dependence on the export of crude oil. This research study has established



the reasons behind the continuous delays in making use of Nigeria's natural gas resource. The study has also facilitated the perception of the causes of continuous flaring away of the natural gas, and has as well provided reasons for the doubts on the minds of LNG industry experts on the possibility of Nigeria's liquefied natural gas coming into market in the near future. All these laxities and failures are of course connected with bad economic and development planning, coupled with inappropriate and inadequate economic implementation of such plans by the Nigerian authorities. Useful recommendations were provided to justify the claim that the nation should not be stuck with the single idea of only liquefying the gas to obtain and sell LNG. The mistakes of sticking to this single idea were scholarly exposed and carefully analysed. Other alternatives of utilization of the natural gas were presented for the authorities in Nigeria to pick and choose from. The method of making this choice in a clearly logical and quantitative manner were clearly analysed.

In the final analysis, the claims of the initial hypothesis rings through. The research study has proved that in order to generate more financial resources and incomes at home and from abroad which would help cushion the ailing national economy, the Nigerian government should utilise the wasting away natural gas resource without further delay. The research study has also proved that Nigeria should not needlessly be stuck with only one idea of utilisation of the gas while other

alternative uses are available. Rather the utilisation process should be chosen and applied within the balanced realm of the nation's capabilities and need. It is nonetheless crystal clear at the end of this study that the failure of successive past administrations in Nigeria to take advantage of the benefits open to the nation in the availability of great reserves of natural gas has resulted in continuous neglect of tapping the financial and other gains open to the nation in this regard, while the nation continue to suffer in terms of economical benefits and technological and developmental advancement, it is time enough for the authorities in Lagos to take a drastic and positive action in this direction.

## APPENDIX 1A

Since the late 1970s, huge amount of sums have been invested in establishing a steel industry. The U.S. \$5 billion Ajaokuta Steel project, started in the late 1970s, is a prime example. The first phase the project involves a long rod production capacity of 1.3 million tonnes per annum, the second phase the production of 1.3 million tonnes of flat sheets per annum and the final phase 2.4 million tonnes of mixed products. The first phase is likely to be completed by 1990.

A smaller steel plant, the 1-million tonnes capacity Delta Steel complex at Aladja, has been in operation for four years. But it has shown little sign of triggering off an industrial boom. Industries which use its can products or supply it with material have not developed. Over 99 percent of its spare parts requirements and consumables are imported. At the project's inception, it was intended that it would use iron ore deposits from Itakpe in Nigeria's Kwara State. But the plant cannot use the ore because of its low quality, and has to import iron ore from Liberia and Brazil.

In addition, the Ajaokuta and Delta (Aladja) steel projects are incompatible. The Ajaokuta complex instead of using billits produced by the Delta Company, has to import its requirement. The net result is steel produced with a high import content and at high cost, making it incompetent on the international market.

## APPENDIX 1B

An inter-ministerial panel set up during the Shagari administration found that the cost of a completed irrigation scheme per hectare was Nigerian Naira (N) 250 in Liberia, N500 in the Ivory Coast and N2,470 in Nigeria. In the case of Nigeria's Bakolori irrigation scheme, the cost reached N7,540 per hectare.

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## GLOSSARY

1. ACP/EEC : African, Pacific, and Carribean States associated with the European Economic Commission through LOME III Convention.
2. Bt.u. : British Thermal Unit.
3. ECOWAS : Economic Community of West African States.
4. GATT : General Agreement on Tariffs and Trades.
5. G.D.P. : Gross Domestic Product.
6. I.B.R.D : The International Bank for Reconstruction and Development.
7. I.M.F. : The International Monetary Fund.
8. LAGOS : Capital City of Nigeria.
9. N or (N) : Naira - The Nigerian currency.
10. N.A.M. : The Non-Aligned Movement.
11. O.A.U. : The Organization of African Unity.
12. O.E.C.D.: Organization for Economic Cooperation and Development.
13. OPEC : Organization of Petroleum Exporting Countries
14. UNCTAD : United Nations Conference on Trade and Development.
15. U.N.O. : United Nations Organizations.
16. World Bank : Another name for the International Bank for Reconstruction and Development.