

# Crude oil refining or petroleum product importation: which is economical for nige...

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CRUDE OIL REFINING OR PETROLEUM PRODUCTS IMPORTATION: WHICH IS ECONOMICAL FOR NIGERIA? ABSTRACT: One of the most crucial challenges facing Nigeria is being able to meet the energy need of the energy hungry populace; the exponential population growth makes it even more challenging. The approach adopted to meeting this need has impacted severely on the economy of the nation as reflected in the year-on-year economic figures. This can be attributed to her choice of net importer of petroleum products status to the much more economic domestic refining option.

This paper analyses the best economic option between refining crude oil and importing the products in Nigeria, at the end making probable suggestions.

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13 ABBREVIATIONS BPSD Barrels per Stream Day B/D Barrels per Day CBN

Central Bank of Nigeria GDP Gross Domestic Product

NNPC Nigerian National Petroleum Corporation NPRC Nigerian Petroleum

Refining Company PHRC Port Harcourt Refinery Company 1. INTRODUCTION

The role of crude oil remains key among the energy sources, hence we have to still live with the consequences that are associated with it, one of which is economical. This obviously is an aspect no country, importer and exporter have been able to overcome, though its impact on some countries is less than in others.

Nigeria is definitely one of those countries whose economy has been monumentally impacted, ironically though, a leading crude oil producer and exporter in the world. However, this is not to take away crude oil's enormous contribution to the Nigerian macro-economy over the years it holds sway.

The discovery of oil in Nigeria was thought to be a big respite to the growing energy supply challenges facing her and to bring economical gains, especially as the price of oil has often been on the increase. Hence, should have made huge sums of money from it.

Incidentally, this is not to be, as oil suddenly took shine off the hitherto major sources of the country's GDP. Sectors like agriculture and manufacturing

went moribund, making Nigeria a mono-economy, with oil being the mainstay of the economy. It provides 95% of foreign exchange earnings and about 80% of government budgetary revenues[1]. The Nigeria economy plays into the hands of the volatility of extremely vulnerable external shocks, particularly the vicissitude of world oil market prices, and the consequent inflations that characterise it most of the times.

With the production of 229, 008, 126 barrels of crude oil and condensates increased in the third quarter of 2010 with an average of 2. 49 million barrels per day of domestic production in recent years, four refineries of 445, 000 b/d refining capacity, the issue of meeting domestic oil demand should have been substantially addressed. However, with the 0 - 15% refining capacity in 2009[2], which is often the case over the years, importation became the only available alternative. Hence, Nigeria though a leading exporter of crude oil in the world is also, ironically, a net importer of petroleum products.

This paper is divided into four chapters; chapter 2 looks at crude oil refining in Nigeria, offering an overview and challenges that confronts it. In chapter 3, crude oil refining and petroleum products economics is examined and chapter 4 looks at the implications of both crude oil refining and importation vis - a - vis the economy. The chapter 5 concludes the paper with few suggestions as to what the best economic option should be in meeting the petroleum products demand in Nigeria.

## 2. CRUDE OIL REFINING IN NIGERIA

### 2.1 OVERVIEW

The petroleum products consumed in Nigeria had been imported from refineries abroad; this continued even a couple of years after the discovery of crude oil in a commercial quantity in the country. However, as the demand for the products increased and with the availability of the feedstock, the two Multinationals operating in the country then saw it as a viable business to establish refinery that would serve the domestic demand. This led to the 50/50 joint venture refining company between Shell Darcy Petroleum Company and British Petroleum called the Nigerian Petroleum Refining Company (NPRC) in 1960.

The construction of the refinery took two years to complete; by 1965 it commenced operation at an installed refining capacity of 38, 000 bpsd[3] to refine local crude into five petroleum products. It was located at Alesa-Eleme, near Port Harcourt, some kilometres away from the crude oil production location. In order to meet the ever increasing demand for the products, the refinery was de-bottlenecked to increase its production capacity from the initial 38, 000 bpsd to 60, 000 bpsd. Running as a private entity, the company was able to run efficiently, profitably and met the domestic product consumption demand. In 1970, the Federal acquired and paid for a 60 percent equity share in all private international companies working in the Upstream and Downstream sectors of the Petroleum Industry in the country[4], NPRC inclusive. Despite being the major shareholder, the Federal Government allowed NPRC to operate without interference. It was only represented by its own corporation, the Nigerian National Oil

Corporation (NNOC), on which the shares were invested on to represent it at the board meetings of NPRC.

Hence, the company was commercially profitable, well maintained and ran very efficiently. A decree in 1977 gave birth to the Nigerian National Petroleum Corporation (NNPC), which was later to appoint the Chairman of NPRC, and then acquired the remaining 40 percent stake in NPRC. This in effect made the NPRC a full Government entity under the Refinery Division of the NNPC, headed by a general manager. The name was changed to NNPC Refinery, Alesa-Elеме, now headed by a managing director and having a new management structure.

It was under the general manager of NNPC Refinery Division at the headquarters. A wholly Government built Refinery commenced operation in 1978, after a 30-month construction. It was located at Warri, and had an installed refining capacity of 100, 000 b/d. But was de - bottlenecked in 1985 to have a total capacity of 125, 000 b/d. The Warri Refinery was essentially built to process crude oil products and to add value to some of the refinery by-products such as propylene rich stock and decant oil[5]. Soon after, in 1980, another refinery, the Kaduna Refinery came on stream.

It was meant to cope with the ever growing demand for petroleum products, especially in the Northern axis of the country. The refinery consisted of two streams, 50, 000 b/d fuel units and 50, 000 b/d lubes, Asphalt plants. It was designed to produce 3, 857mt/d of Premium Motor Spirit (PMS), 1, 686mt/d of Kerosene, 3, 000mt/d of Automotive Gas Oil (AGO), 1, 796mt/d of Asphalt,

91mt/d of LAB, 657mt/d of Base Oils, 620mt/d of Liquefied Petroleum Gas (LPG), 2, 100mt/d of Fuel Oil. The existing products pipeline linking Warri Refinery to Kaduna was converted to pump crude oils for supply to the new Kaduna Refinery.

Again, like the previous refineries, the fuel section of Kaduna Refinery was de-bottlenecked from the 50, 000 b/d to 60, 000 b/d. This brought the Kaduna Refinery to overall 110, 000 b/d capacity[6]. The fourth and final refinery was a new grassroots refinery, adjacent to the existing Port Harcourt Refinery, with an install capacity of 150, 000 bpsd. With this, Nigeria total installed refining capacity is 445, 000b/d, which was originally built to serve both the domestic and international petroleum product demand.

Unfortunately, the purpose for these refineries were short-lived, serving only for a couple of years before each began to experience various man-made challenges that made them cost centres instead of the originally intended commercially profitable centres. The ever growing domestic product demands were no more met, as acute scarcity became a normal phenomenon. This led, unfortunately to the return of high propensity of petroleum product importation in order to meet the energy need of the nation. 2. 2 CHALLENGES OF PETROLEUM PRODUCT REFINING IN NIGERIA

The Nigerian state-owned four refineries have undergone, and still undergo several man-made challenges that have made it more of a liability to the country than an asset. One of the issues that reduced the refineries to cost centres is bureaucracy. Immediately NNPC took over the running of the first

refinery, bureaucracy silenced the commercial cultures that make a business thrive. Tens of signatures would have to be appended on a letter seeking to fix or procure working materials. These unnecessarily delay maintenance and impact the efficient running of the refineries.

Also, being fully under the control of Government, all the funds for running the refineries would have to come from Government coffers. This occasioned delays and outright insufficient funding. Working capital especially meant to procure the needed spare parts, chemicals and all other necessary items for operations was not forthcoming, hence leading to the continues breakdown often experienced in the various refineries. The recommended 24-36 months normal industry Turnaround Maintenance (TAM) was hardly done[7].

It took years, far above the recommended time in between for TAM at the various refineries. The results were failures, wear and tear of the equipment, frequent shutdowns and complete non operations. Efficiency of the refining industry is such that needs well trained manpower. However, most of the refinery staff like any other state- ran enterprise were employed or appointed on ethnic or political sentiment. In such case, proper management and efficiency is thrown to the wind. Dedication and commitment to duty is hardly there, and the consequence is obvious. The big one is corruption.

The refineries have over the years become conduit pipes of siphoning tax payer's money. Some individuals in Government seem to have become rich by the comatose state of these refineries, hence would do everything within their powers to make them remain so. These challenges have rendered the



refineries helpless and never operating at the capacity utilization. Because of these, the country never really enjoyed product sufficiency with its vast reserve and refineries it ordinarily should have. Hence, Nigeria has always been a net importer of petroleum products. 3.

### CRUDE OIL REFINING AND PETROLEUM PRODUCT ECONOMICS 3. 1CRUDE OIL

REFINING ECONOMICS The overall economics or viability of a refinery depends on the interaction of three key elements: the choice of crude oil used (crude slate), the complexity of the refining equipment (refinery configuration) and the desired type and quality of products produced (product slate). Refinery operating cost, utilization rate and environmental considerations also influence refinery economics[8]. The type of crude used would determine whether there would be investment in the upgrading processes of the refinery.

Light, sweet crude require less upgrading, heavy crude do need more upgrading. Also, the product demand in the market determines the configuration of the refinery. For instance, the U. S. refineries are configured to process a large percentage of heavy, high sulphur crude and to produce large quantities of gasoline and low amounts of heavy fuel oil. The Canadian refineries are configured for light, sweet crude, hence would upgrading to process heavy crude. Most of the European refinery configuration favours the production of diesel; gasoline accounts only 20% production[9].

Obviously, the Nigeria refineries were configured for the light crude the country produces and produces a wide range of products meant for her

market and other markets. The refinery utilization rate is a very critical component of refining economics. High percentage capacity utilization is needed for a refinery to increase operating efficiency and reduce costs per unit of output. A utilization rate of about 95% is considered optimum as it allows for normal shutdown required for maintenance and seasonal adjustments. The operable capacity of Nigerian refineries has on average 0 - 15% utilization, which make them grossly under utilized.

High utilization capacity is one of the things that make for profit margin scenario for refineries. The refinery industry has historically been a high-volume, low- margin industry, characterised by low return on investments and volatile profits. Profitability is measured by return on investment, defined as the net income contributed by refining/marketing as a percentage of net fixed assets (net property, plant, and equipment plus investments and advances)[10]. One way to represent the economics of a refinery is to calculate its Refinery Gross Margin[11].

For example, if a refinery receives \$80 from the sale of the products refined from a barrel of crude oil that costs \$70/bbl, then the Refinery Gross Margin is \$10/bbl. The Net or Cash Margin is equal to the gross margin minus the operating costs (excluding income taxes, depreciation and financial charge. If a refinery experiences operating costs of \$2 per barrel, then the Net Margin is \$8/bbl[12]. The refinery margins are normally set on a competitive market, where the market is open. The contrary is the case in the Nigerian environment, the refineries are not working, and whenever they do, profit is never the aim. 3. PETROLEUM PRODUCT ECONOMICS Refined

products market is different from crude oil market in a number of ways, owing to the scale of operation ( much smaller for refined products: a typical crude oil transaction involves 500, 000 or even one million barrels of oil, while a typical refined products sale may involve only 5, 000 to 10, 000 bbls), quality considerations, price differentials and market size. In a competitive market, refined product prices are determined by supply, demand and inventory conditions at a given location and time[13]. International (border) price comes to play in the economics of refined products.

The exchange rate used to convert the dollar value of imports into the domestic currency is the interbank exchange market rate, which is market determined. A freight charge (including insurance margin) is added to the value to get the landed cost. Import duty, domestic distribution, storage, marketing, and transportation margins are then added to obtain the order price at retail level[14]. Imported petroleum products also has additional cost like; Port charges, taxes and export duties at source country, insurance costs for transportation and brokerage costs for agents.

The obvious reality is that there exists a wide range of domestic prices for petroleum products, determined mainly by the market and subject only to taxes and special charges in the developed countries. However, in developing countries like Nigeria, the prices are fixed by the government. Hence, the products are bought at the international price with a very high interbank exchange rate, and sold at a heavily subsidized, domestic rate, which has serious implications to the economy. 4. CRUDE OIL REFINING,

PETROLEUM PRODUCTS IMPORTATION AND THE NIGERIAN ECONOMY. For a start, the estimated daily crisis-free demand for petroleum products in Nigeria today, are 30 million litres of petrol (PMS), 12 million litres of kerosene (DPK), 18 million litres of diesel oil (AGO), and 780 metric tons (1. 4 million litres) of cooking gas (LPG)... "(Braide, 2003)[15]. Nigeria with a population of 158. 2 million (UN, 2010) and increment to workers salary in the recent years, which have empowered quite a number of people to acquire some petroleum products demanding appliances, is much more pent-up now than in the last ten years.

This makes it more challenging to satisfy. Government have obviously chosen a very hard alternative, importation, to have the demand met. With a weak currency (of N153 = \$1), at a current price of crude on the international market and heavily subsidized domestic price of petroleum products. For instance, PMS have been at N65 (\$42 cents)/litre in Nigeria for a couple of years now, as against the expected open market price of N131. 32 (\$84 cents)/litre[16]. Importation, though the only alternative to the non-functional refineries, is economically catastrophic.

For instance, Government spent \$1. 34billion[17] from January to March, 2011 to import petroleum products to the country. In a year, this will amount to \$5. 36 billion for importation alone, this excludes importations from marketing companies in Nigeria, tax waivers, demurrage and other implied costs that makes the total amount of importing the commodities extremely high. Government Petroleum Support Fund (PSF), which was established to

disburse funds to the importing companies and the NNPC have between January, 2006 and July 2008 spent US\$ 9. 2 billion[18] for subsidy alone.

The fund also spent over US\$ 3 billion from 2009 to the first quarter of 2010[19] for subsidising the importation of PMS and HHK within the period.

The Year-on-year importation of petroleum products keep depleting the country's external reserve, thereby putting the economy in bad standing. On the other hand, the KRPC, WRPC and PHRC (new) were built with lump sums of \$525 million, \$478 million, and \$850 million respectively[20].

Unfortunately, with the poor management, the refineries from every statistics available have become liabilities to the country.

With ultra low capacity utilization, a huge staff, high operating cost, no profit from NNPC year-on-year accounts[21], the refineries at present state are not economical. The implication of these is that the cost of crude oil, refining, importation, and distribution of the products are borne by the country's treasury. A private sector run refinery industry is the only answer for meeting domestic demand at a very huge economic gain and energy security to the country.

This will also revive the ailing petrochemical industry, which has a massive ripple effect on job creation, directly and through other dependent industries like Paint and Plastic industries. But before this can be realised the unavoidable deregulation has to take place. Little wonder why the over 18 private licensed refinery companies are yet to mobilise to site. Therefore, Government should revisit the issue of deregulation, and then privatise the

state-run refineries. This massive importation does no good at all to the country, and should be reduced to near zero minimum. 5.

CONCLUSION Government should be commended for taking up the challenge of building the capital intensive refineries, being beyond the ability of any local company at the time. It created energy security, jobs, averted looming crisis arising from massive shortage of supply of petroleum products and saved so much cost. But its continual running of the refineries is, to say the least wasteful and harmful to the economy. Refineries are commercial ventures, with huge financial implications, and do not provide much employment opportunities to warrant such protectionism by Government[22].

Obviously, it is only a few that benefits in a State-run refinery at the expense of many. Privatisation of the refineries holds more prospects economically to the country than what obtains. At the time being, the unenviable net importer position of the country is no more sustainable. Less Importation would save so much cost and the Nigerian economy shielded from the unstable, volatile international petroleum price. Subsidy has caused considerable loss of revenue and a rapid growth in domestic oil consumption as low price does not reflect real cost for consumption.

It has contributed to the collapse of local refineries, as price of fuel do not show cost of supply. Reluctance of private players to invest in refineries, persistent fuel shortages at filling stations, dilapidated supply and distribution infrastructures, smuggling, and product adulteration, all of which

impact substantially on the economy are the consequences of the continues subsidy regime in place. Everything should be done to encourage a functional refinery industry to check the crippling importations. An efficient refinery industry in Nigeria would have massive market both within the country and in the neighbouring countries, and this brings immeasurable economic gains that are able to change the economic outlook of the country.

**BIBLIOGRAPHY PRIMARY SOURCES NATIONAL LEGISLATIONS** The Nigerian National Petroleum Corporation Act, 1977 The Petroleum Products Pricing Regulatory Act, 2003, No 8, Laws of the Federal Republic of Nigeria

**SECONDARY SOURCES BOOKS** Gary, J. H. , Handwerk, G. E. , Kaiser, M. J. , Petroleum Refining Technology and Economics, (5th Edition) (United States of America, Florida, CRC Press, 2007). **OTHERS INTERNET SOURCES** Braide, K.

M. The Mechanics of Fuel Scarcity in Nigeria, [http://www.nigerdeltacongress.com/marticles/mechanics\\_dynamics\\_fuel\\_scarc.htm](http://www.nigerdeltacongress.com/marticles/mechanics_dynamics_fuel_scarc.htm). (assessed 13/04/2011). CBN, [http://www.cenbank.org/Out/2011/pressrelease/gvd/CommuniqueforMPCMeetingofMarch21222011\\_21stMar\\_.pdf](http://www.cenbank.org/Out/2011/pressrelease/gvd/CommuniqueforMPCMeetingofMarch21222011_21stMar_.pdf) (assessed 01/05/2011). CIA, The World Factbook, <http://www.cia.gov/library/Publications/the-world-factbook/geos/ni.html> (assessed 18/04/2011). Hossain, M. S. , Taxation and Pricing of Petroleum Products in Developing Countries: A Framework for Analysis with Application to Nigeria, <http://www.imf.org/external/Pubs/ft/wp/2003/wp0342.pdf> (assessed 20/04/2011). Iba, L. , Fuel Crisis: Still waiting for private refineries, <http://64.182.172/webpages/news/2010/july/12//busines-12-2010.001.htm> (assessed 09/05/2011). Nigerian Refineries: History, Problems and Possible solutions, [http://www.businessdayonline.com/NG/index.php/oil/3256-](http://www.businessdayonline.com/NG/index.php/oil/3256-https://assignbuster.com/crude-oil-refining-or-petroleum-product-importation-which-is-economical-for-nigeria/)

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nigerian-refineries-history-problems-and-possible-solutions-1 (assessed 09/05/2011). NNPC, Annual Statistics Bulletin, [http://www.nnpcgroup.com/Portals/0/MonthlyPerformance/2009ABS Web. pdf](http://www.nnpcgroup.com/Portals/0/MonthlyPerformance/2009ABS%20Web.pdf) (assessed 01/05/2011). NNPC, Subsidiaries, <http://www.nnpcgroup.com/NNPCBusiness/Subsidiaries/> (assessed 09/05/2011). PPPRA, Report on the Administration of the Petroleum Support Fund (PSF), [http://www.pppra-nigeria.org/briefonadministrationofPSF. pdf](http://www.pppra-nigeria.org/briefonadministrationofPSF.pdf) (assessed 01/05/2011). Refinery Economics, <http://nrcan.gc.ca/eneene/sources/petpet/refraf-eng.php> (assessed 19/04/2011). Refining & Product Specifications - Overview, [http://www.petroleumonline.com/content/overviemCont.asp? mod= 8&vd= 10](http://www.petroleumonline.com/content/overviemCont.asp?mod=8&vd=10) (assessed 19/04/2011). ----- [1]CIA-The World Factbook, at <http://www.cia.gov/library/Publications/the-world-factbook/geos/ni.tml> (assessed 18/04/2011) [2] NNPC 2009 annual report and EIA Nigeria Energy Data, Statistics and Analysis-oil, Gas, Electricity, coal [3] This is the maximum number of barrels of input that a distillation facility can process when running at full capacity under optimal crude and product slate condition with no allowance for downtime. [4] Nigerian Refineries: History, Problems and Possible solutions, at <http://www.businessdayonline.com/NG/index.php/oil/3256-nigerian-refineries-history-problems-and-possible-solutions-1> (assessed 09/05/2011) [5] Ibid [6] Ibid [7] Ibid [8] Refinery Economics, at <http://nrcan.gc.ca/eneene/sources/petpet/refraf-eng.php> (assessed 19/04/2011) [9] Ibid [10]Ibid [11] The difference in dollars per barrel between its product revenue (sum of barrels of each product multiplied by the price of each product) and the cost of raw materials (primarily crude, but also purchased additives like butane and ethanol) [12]

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Refining & Product Specifications - Overview, at <http://www.petroleumonline.com/content/overviewConti.asp?mod=8&vd=10> (assessed 20/04/2011) [13] Gary, J. H. , Handwerk, G. E. , Kaiser, M. J. , Petroleum Refining Technology and Economics, (5th Edition) (United States of America, Florida: CRC Press, 2007) at 18-19. [14] Hossain, M. S. , Taxation and pricing of Petroleum Products in Developing Countries: A Framework for Analysis with Application to Nigeria, at <http://www.imf.org/external/pubs/ft/wp/2003/wp0342.pdf> (assessed 20/04/2011) [15] Braide, K. M. , The Mechanics of Fuel Scarcity in Nigeria at [http://www.nigedeltacongress.com/martiles/mechanics\\_dynamics\\_of\\_fuel\\_scarc.htm](http://www.nigedeltacongress.com/martiles/mechanics_dynamics_of_fuel_scarc.htm) (assessed 20/04/2011). [16] Ibid [17] CBN, [http://www.cenbank.org/Out/2011/pressrelease/gvd/CommuniqueforMPCMeetingofMarch21\\_22\\_2011\\_21stMarch\\_.pdf](http://www.cenbank.org/Out/2011/pressrelease/gvd/CommuniqueforMPCMeetingofMarch21_22_2011_21stMarch_.pdf) (assessed 02/05/2011). [18] PPPRA, Report on the