Report on the challenges faced by refining in nigeria:

ABSTRACT:

Oil was ‘ struck’ in the late 50’s in the Niger-Delta area of Nigeria by British, German and Dutch engineers, this brought about the building of oil refineries. Nigeria currently has four refineries, all of which are owned by Nigerian National Petroleum Company (NNPC), however the oil industry has been seriously impacted by operational problems since inception with production well below capacity. This research paper seeks to analyse the challenges of refining in Nigeria with respect to internal setbacks of corruption, vandalisms, breakdowns and international issues of the global market and OPEC.

The objective of this paper is primarily in partial fulfilment of the requirement for Petroleum Policy and Economics (CP51009).

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LIST OF ABBREVIATIONS

NNPC Nigerian National Petroleum Company

BPE Bureau of Public Enterprises

OPEC Organisation of Petroleum Exporting Countries

EFCC Economic and Financial Crime Commission

TBPD Thousand Barrels Per Day

DPR Department of Petroleum Resources

KRPC Kaduna Refining and Petrochemical Company

PHRC Port Harcourt Refining Company

WRPC Warri Refining and Petrochemical Company

MEND Movement for Emancipation of the Niger Delta

SYNFUEL Synthetic Fuel

CEPMLP Centre for Energy Petroleum Mineral Law and Policy

CHAPTER ONE: Introduction

Oil refineries convert crude oil into fuel products, lubricating oils, bitumen and chemical feedstock. There are 43 operating and 4 mothballed oil refineries in Africa which range from small topping and reforming refineries to sophisticated complex refineries which can compare with the best in the world, and 4 synfuel plants. The total distillation capacity for the continent is approximately 142, 700 kilotonnes per annum (2, 854 tbpd) or an average of 3, 400 kilotonnes per annum (68 tbpd) per refinery.

Nigeria’s first refinery was built at Alesa Eleme, Port Harcourt (PH I) in 1965 boasting a capacity of 38 tbpd which was enough to meet domestic demand at the time, it was later expanded to 60 tbpd in the 70’s but failed to meet demands of the rapidly growing Nigerian economy. The NNPC then built an additional refinery in Warri with a capacity of 100 tbpd which became operational in 1979; technical problems and shutdowns for routine maintenance reduced production and the combined total of petroleum processed by the two plants by the end of 1979 averaged 89 tbpd, about 83 percent of the domestic requirement.

The NNPC had to transport considerable amounts of oil to be refined abroad (mostly by Shell) to make up for the short-fall in the late 1970s and early 1980s, some oil was also processed in neighboring Ghana, Cameroon and

Ivory Coast. A third refinery, with a capacity of 100 tbpd, began operations at Kaduna but did not produce at maximum until the mid-1980s. A fourth refinery was completed in March 1989 at Alesa Eleme (known as PH II as it is joined with the first refinery); increasing Nigeria’s refining capacity to 445, 000 barrels per day. At this time, domestic petroleum demand was below production so a portion of the output of the four refineries could now be exported. However, by the early 1990s petroleum output was sufficiently short of the growing domestic demand to require that the NNPC still revert to refining some petroleum abroad. By 1988, about 96 percent of the oil Nigeria produced came from companies in which the NNPC held at least 60 percent of the equity. The NNPC also was responsible for 75 percent of total investment in petroleum. In the late 1980s, the major Western oil companies exploring oil resources in Nigeria were Shell, Chevron, Mobil, Agip, Elf Aquitaine, Phillips, Texaco, and Ashland. In 1985-88, 11 percent of all extracted oil (about 66 percent of domestic requirements) was refined in Nigerian refineries, where the NNPC owned majority equity shares. The nation’s four refineries, with a name-plate capacity of refining 445 tbpd of crude, were established about 27 years ago. But the barrage of corruption, poor management, fire, sabotage and lack of the mandatory turn around maintenance (TAM) every two years, has made all the four refineries inefficient, thereby operating annually at about 40% of full capacity; 214 tbpd at best.

REFINERIES AVERAGE ANNUAL CAPACITY UTILIZATION %: 1997 – 2009

REFINERIES/ YEAR

1997

1998

1999

2000

2001

2002

2003

2004

2005

2006

2007

2008

KRPC

28. 10

0. 00

24. 60

22. 65

31. 39

34. 95

15. 96

26. 00

33. 08

8. 34

0. 00

19. 56

PHRC

49. 31

38. 03

48. 07

30. 95

60. 73

52. 17

41. 88

31. 04

42. 18

50. 26

24. 87

17. 84

WRPC

63. 39

55. 13

43. 51

5. 04

48. 29

55. 53

14. 27

9. 10

54. 85

3. 85

0. 00

38. 52

140. 80

93. 16

116. 18

58. 64

140. 41

142. 65

72. 11

66. 14

130. 11

62. 45

24. 87

75. 92

AVERAGE %

46. 93

31. 05

38. 73

19. 55

46. 80

47. 55

24. 04

22. 05

43. 37

20. 82

8. 29

25. 3

Fig. 1. NNPC – Annual Statistics Bulletin

Fig. 2. Graphical representation of the average utilization of refineries from 1997-2009.

Fig. 1 and Fig. 2 show how the fluctuations and drop in capacity of the refineries as a result of the setbacks mentioned earlier which has consequently caused the ceaselessly fluctuations of oil production and strangulating fuel price hikes, with the attendant effect on prices of goods, services as well as the country’s economy in general.

The essence of this research paper is to answer the question why a country like Nigeria which is rich in both natural resources and human capabilities has not been able to maximize the use of its refineries for the general benefit of the nation.

CHAPTER 2: Challenges of Refineries

2. 1 Incompetence and Corruption

The Port Harcourt refinery plant’s cracker stopped operating in May 1997 after an accident, which caused a serious shortage of gasoline. In mid-1998 its units, apart from the crude oil distillation column, were shut down for

repair. Shell was asked to do the repairs. As Shell’s bid price was judged too high, the plant’s management contracted ‘ less qualified’ firms to do the work. As a result, most units continue to operate at less than their capacity. In the Warri refinery, on August 13 2002, the NNPC awarded N3bn ($23m) turn-around and maintenance contract to DPN Entrepose Engineering of Italy. Work was finished in early 2003, but the refinery is currently un-operational. The Kaduna refinery with a capacity of 110 tbpd was closed down in late July 1997 due to an accident. Total in late August 1997 won a three-year contract worth about $200m to repair the plant, but in May 1999 the NNPC dismissed Total as a contractor, claiming that its work was inadequate.

Corruption is nothing new in the oil and gas industry in Nigeria, the most controversial, and still causing ripples, is the one that occurred in the regime of General Ibrahim Babangida where in an ‘ oil windfall’ of $12. 2bn, realized during the Gulf war crisis, has been unaccounted for till date.

These incidences are just but a few out of thousands of the unscrupulous practices of those charged with leading in the country. Nigeria must have earned up to $340 billion in all of our more than forty-four years of discovering oil. Yet an oil wealth that should have been transformed into substantial and sustained economic development has instead resulted in very costly internecine strife (e. g. in the Niger-Delta), a dollar-a-day citizenry, and in many instances a culture of official corruption within a distorted economy with no direction.

2. 2 Mechanical Breakdowns, Fires, Militants and Vandalism

In the last ten years, there have been more than 15, 000 cases of pipeline breaks (mostly vandalism and less than 8% is attributable to wear and tear) and over 400 cases of fire outbreaks in the refineries which have amounted to unfathomable monetary losses to the industry.

In October 2005, a pipeline fire in Delta State resulted in the deaths of about 60 people. This was followed by a December attack, in which armed men in speed boats blew up Shell's pipeline in the Opobo Channel. In January 2006, a pipeline attack from the Brass Creek fields to the Forcados terminal forced Shell to announce a force majeure on Forcados commitments to February-end. Additional attacks made on the pipeline and the Forcados terminal in February made it necessary for Shell to extend the force majeure beyond the end-February date. Shell estimated that 455, 000 bbl/d of its Oil production was shut-in because of the attacks. A February 2006 attack on the Escravos pipeline, that supplies oil to the Warri refinery, caused the refinery to shutdown. Nigeria had re-commissioned the Excravos-Warri pipeline in January 2005 after 18 months of repairing the damage caused by sabotage during the 2003 Niger Delta Crisis.

In addition to pipeline vandalism, Nigeria has seen an increase in kidnappings of both local and expatriate oil workers in the Niger Delta region. Since December 2005, Nigeria has lost an estimated 16 billion dollars in export revenues due to shut-in oil production. Shell has incurred the majority of shut-in oil production (477, 000 bbl/d), followed by Chevron (70, 000 bbl/d) and Agip (40, 000 bbl/d). Militant attacks on oil infrastructure have

also crippled Nigeria’s domestic refining capabilities. In January 2006, four foreign employees of Royal Dutch Shell were kidnapped and then held for 19 days before being released on ‘ humanitarian grounds’. In February 2006, nine additional oil workers were kidnapped in the region and the Movement for the Emancipation of the Niger Delta (MEND) took responsibility for the kidnappings and for blowing up a Crude Oil pipeline owned and operated by Royal Dutch Shell. In December 2006, operators shutdown Nigeria’s two Port Harcourt refineries for two months due to technical problems. The Niger Delta rebel group (MEND), and other militia organizations in search of monetary compensation and/or political leverage are the ones behind the attacks. In addition to abductions, thousands of foreign workers and their families have left the Niger Delta due to continued hostilities. At least three companies, including a private drilling company and pipeline laying company have also left. MEND has stipulated numerous conditions to the Nigerian government that it wants met or else it has vowed to continue the attacks. Chief among the conditions is greater revenue sharing of the oil wealth, increased local control of oil property, the release of tribal prisoners, and transparency of government budgets.

In 2007 Nigeria withdrew the licenses awarded to local and foreign companies to set up oil refineries, five years after the companies failed to commence work. The NNPC had handed licenses to 18 companies in 2002 to build private oil refineries in a major restructuring of the country’s downstream petroleum sector launched by the government to boost domestic supply of petroleum products. Most of the foreign investors claimed that it was due to the unrest in the Niger-Delta; kidnappings and destruction

of property that discouraged them from further investment in the area. Pipeline vandalism and disruption of oil production activities regrettably are now integral part of oil and gas operation in Nigeria.

The vast oil infrastructure erected in the Niger-Delta region explains their vulnerability; there are currently 600 oil fields of which 360 are onshore and 240 offshore with over 3, 000 kilometres of unsecured pipelines crisscrossing the region linking some 275 flow stations to various terminals. It must be noted that these spills resulting from pipeline vandalism has continued to be a challenge, with most incidents along major pipelines and manifolds.

In January 2010, the NNPC reported that the refineries at Warri and Kaduna were ready for operation but could not commence due to the damage of pipelines.

2. 3 OPEC regulations

One major question that has been asked in recent past is whether Nigeria's membership with OPEC is a fair deal or not: Would Nigeria in the short run or ultimately lose or gain from such a drastic move as leaving OPEC? This arises from the fact that the OPEC's regulation of oil production of its members has not favoured Nigeria to maximize it production.

The OPEC was founded in September 1960 by Venezuela (as lead instigator), Kuwait, Saudi Arabia, Iran and Iraq. An additional five countries: Qatar, Libya, Indonesia, United Arab Emirate, Algeria joined before Nigeria did in 1971. Ecuador and Gabon joined afterwards but soon pulled out and in 2008 Indonesia followed suit (Ecuador later returned in 2008), maybe they perceived something that Nigeria did not. Since 1982, members of OPEC

have frequently agreed upon an overall oil production ceiling and individual production quotas. Nonetheless, OPEC has never adopted a published, explicit formula for allocating those quotas but they seemingly allocated production on an ad hoc basis. In 2007, OPEC's agreed that production target for its 11 members would be 24. 845 million barrels per day, even though presently actual production is running close to 2 million barrels per day higher, this means that everything being equal, each OPEC member is to produce 2. 258 million barrels per day. Reuters latest survey of OPEC output shows Nigeria pumped 2. 19 million bpd in October 2010, up from 2. 17 million in September 2010 but under the implied agreement with OPEC, Nigeria's target quota is 1. 67 million bpd meaning that the country ' cannot' turn an excesses of 500 tbpd into ' petrodollars' for its economic development. So except for historical and deep political reasons, why would Saudi Arabia with a population of about 28 million (about 7. 5% of OPEC total population) have a quota of 8. 014 million barrels per day (about 30% of the total crude oil quota), while Nigeria with a population of 156 million (42% of OPEC total), have a quota of 1. 704 million barrels (6. 8% of total quota) per day remains a mystery. Even UAE with a population of just over 6 million people (1% of OPEC total population) has a higher quota (2. 226 million or 8. 9% of total quota) than Nigeria.

Nigeria has a much higher population than Saudi Arabia, but because the Saudi has a bigger reserve level of crude oil deposits, her production quota in several multiples of Nigeria's. Thus, while Saudi Arabia generates a lot of petrodollars to develop her own country, Nigeria has to make do with her lower quota and much smaller export earnings to meet her development

needs. Oil is the main export commodity of Nigeria, if Nigeria does not take advantage of oil now by producing and exporting more, of what value would it be in future when demand for it will have drastically reduced or even totally stopped? So far OPEC has been a cartel that leads to inefficient production and consumption conditions and is therefore a stumbling block to smooth flow of international trade and world economic development to Nigeria. It appears that Nigeria's remaining in OPEC has more to do with politics than economics and the effects of Nigeria's membership has hindered its refineries because due to the economies of scale principle, Nigeria is not maximizing its production because of the quota imposed by the OPEC.

There is also the challenge faced by Nigeria's refineries by the threat of the growing market of other African exporting countries like Angola and Algeria. On December 2010, the NNPC announced that due to the disruptions of production of oil due to refinery breakdowns, OPEC disclosed that Nigeria lost some of its market to Angola.

CHAPTER 3: The Way Forward

A lasting solution to this problem is to have a situation where all the refineries work. For instance, take Singapore which does not have crude oil, but a third of the world's refined fuel is done in Singapore. Take other examples like Indonesia or Venezuela that has 18 refineries, or Norway. All these are public, government owned refineries, so why should Nigeria be any different?

Firstly, corruption within and outside the system, political and ethnic sentiments while considering appointments, and lack of dedication and commitment on the part of those entrusted with the maintenance and survival of the refinery must be checkmated. The competence of those charged with maintenance of these refineries must be credible and they must be charged with operating in an efficient, accountable and transparent manner. To tackle the issue of militancy, the Federal Government, in June 2009 offered an Amnesty agreement to the militants on the condition of full immunity for surrender of their arms and cessation of all criminal activities of kidnapping and vandalism; this, has been a bold step and has significantly reduced the violence on the sector and the areas.

Secondly, the move for the liberalising of private petroleum refining must be adhesively followed through. In the regime of former President Chief Olusegun Obasanjo, the BPE announced that the four refineries were for sale and the government would welcome any investments both foreign and domestic into the refining sector and in 2009 the position was made more attractive when the Federal Government removed the non-refundable $1 million deposit requirement for potential private refiners, this has been a terrific plus as so far today, other countries and international parties have shown serious intentions of transforming the refining sector. The local consortium Blue Star Oil Services controlled by influential Nigerian tycoon Alhaji Alhaji or Al-Hajj (Arabic ØÙ„ ØØØ¬Ù‘) is a term of respect used to address a Muslim man who has completed one of the Five Pillars of Islam by going on the Hajj, or religious pilgrimage to Mecca. Aliko Dangote Aliko Dangote is a businessman based in Nigeria. He is the owner of the Dangote

Group, which has operations in Nigeria and several other countries in West Africa. A wealthy supporter of erstwhile President Olusegun Obasanjo and the ruling People's Democratic Party (PDP), Dangote in May 2010 acquired 51% stakes in Nigeria's biggest refining complex at Port Harcourt (här`kÉ™rt, -kôrt), city (1991 est. pop. 362, 000), SE Nigeria, a deepwater port on the Bonny River in the Niger delta. (210, 000 b/d) for $561m and the Kaduna refinery (110, 000 b/d) for $160m, thus hoping to consolidate its grip on the nation's refining sector. Also in the foreign scene, in May 2010, Nigeria and China signed a Memorandum of Understanding that would permit the Chinese government to build 3 refineries and a petrochemical complex in the country. As at August 2010, there were 9 licensed private refineries and petrochemical plants.

Finally, Nigeria's membership to the OPEC has been somewhat of a burden than a gain to its economic development. According to the NNPC, Nigeria pumped 2. 19 million bpd as at October 2010 as against 1. 67 million bpd quota imposed by the OPEC and due to high investments made in the refining sector in recent past, production is expected to more than double by 2012 and this is just for crude. Nigeria has 188 trillion cu ft in natural gas reserves, the seventh largest, and it plans to make the transition to a gas-producing country as opposed to a crude producing country in the next two years, since we have a lot more gas reserves than we have crude so maximum production will be required from the refineries. Whatever be the case, I believe that Nigeria should be in the forefront of demanding a more productive re-negotiation of OPEC terms – or else it should re-consider its membership.

CHAPTER 4: Conclusion

It is important to note that this research has by no means exhausted what is an extensive list of fundamental and technical questions which must be addressed with respect to the refining sector in Nigeria. There are still some questions that must be determined in order to better understand the hindrances and prospect of the refining industry: there are issues of potential environmental concern; the question of refining capacity and the implications on downstream market fundamentals, is there sufficient demand potential and possibility of over-supply; question on sustainability, product specification and quality especially for international requirements; and last but not the least, the cost and profitability of the refineries. Other setbacks include discrepancies in data, for example, Nigeria Energy Intelligence; (October 2009 edition) stated that Nigeria’s total petroleum products consumption was put at over 300 tbpd, while the NNPC’s statistical data suggested total delivered petroleum products to be about 240 tbpd.

However for Nigeria to overcome these challenges, which I believe it is on the right course of doing, a detailed plan and for refining capacity targets, both in a domestic and international context, must be set out, understood and adhesively followed through and backed up by transparent national and international policies. This would require a medium to long-term analysis of market fundamentals, both domestically and in the global context.