

AN APPRAISAL OF THE IMPACT OF NNPC ON THE GROWTH AND DEVELOPMENT OF NIGERIA: 1970 - 2017

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Abstract

The Nigeria National Petroleum Corporation's (NNPC) crude oil development operations in Nigeria has over the years impacted on the economic, political and socio-cultural activities of the Nigerian state. This study therefore examines the impact of NNPC on the development of Nigeria from 1970 to 2017 with a view the bringing to lime light the negative and positive impact of NNPC operations in the country. To generate the required data for this study, primary and secondary data collection techniques were applied in the form of oral interviews, consultation of text books, newspaper reports, journal publications in the oil and gas industry, monographs, and internet resources. The study reveals that the impact of NNPC operations cut-across the environment, economic, political, Human Capital and infrastructural developments in Nigeria. The paper submits that NNPC operations has positively impacted on the lives of average Nigerians in the area of employment generation, Human Capital Development, empowerment programs among others. However, the operations of NNPC from our discussion and findings have shown that the environmental challenges and economic sabotage, exploitation, mismanagement of resources and fraud occasioned by the NNPC activities are quite enormous. The paper therefore recommends a total overhaul, re-organization, deregulation and privatization of NNPC for a better service delivery and sustainable development in Nigeria.

Key Words: NNPC, Nigeria, oil sector, development

Introduction

The Nigeria National Petroleum Corporation's (NNPC) crude oil development operations in Nigeria brought about several impacts to Nigeria. These results covering environmental, economic, political, human capital and infrastructural development forms the subject that is under review in this chapter. While NNPC operation has positive implications, the organization has not added real value to Nigeria's crude oil development despite the huge proceeds accruing to it since 1970. Crude Oil exploration and exploitation in general have brought about serious environmental challenges to communities where oil is produced. Petroleum exploration and production activities produce wastes of varying chemical compositions, which are generated at each phase of the operation. Some of these wastes include atmospheric emissions, drill cuttings, drilling fluid, deck drainage, sanitary sewage and accidental oil spills (Alabi, 2018). Such environmental pollutions have affected both human and plants, animals, and the air we breathe. Environmental challenges arising from oil spillage are quit enormous.

Impact of NNPC on the Growth and Development of Nigeria

Impact of NNPC on the Environment

The NNPC has a policy put in place to reduce the damage which its activities has done to the environment. It has a department of Health, Safety, and Environment (HSE) called Group Health, Safety and Environment Department (GHSED) which supervises matters on occupational Health, Safety and Environmental protection, formulates HSE policies and guidelines in line with industry best practice. The GHSED facilitates timely and all-inclusive compliance and maintains efficient service delivery to protect staff, assets and the environment. According to NNPC sources, the requirements to sustain the environment and tackle environmental problems arising from its operations remain urgent and cannot be compromised. It equally asserts that its business decisions are guided by the quest to protect and preserve the environment from negative impacts (NNPC group, 2018).

Furthermore, the NNPC sees itself responsible for 'tackling the global burden of climate change through its strategic approach which focuses on efficient use of energy and natural resources, biodiversity protection, reduction of atmospheric emission and reducing environmental impact using new and ongoing initiatives, awareness campaigns/programs and technologies' (NNPC group, 2018, 3).. One of such initiatives was carried out in 2011 in compliance with United Nations Environmental Programme (UNEP) partnership for clean fuels and clean vehicles (PCFCV). In 2011, NNPC disposed the residual Tetraethyl Lead (TEL) in its four refineries, its facilities in Warri Refining and Petrochemical Company (WRPC), Kaduna Refinery and Petrochemical Company (KPPC), and Port Harcourt Refining Company (PHRC) were also decommissioned, decontaminated and remediated to make for a Lead-free environment (NNPC group, 2018).

Oil spillage

Despite this lofty goals stated above, NNPC and its joint venture partners have not succeeded in achieving this goal. Oil spill and gas flaring by oil companies are the most important negative conditions arising from crude oil exploration. Record of oil spill from NNPC facility in 1980 referred to as Funiwa-5 incident. A 14-day blowout at an offshore well 60 percent owned by NNPC, but operated by Texaco, spilled 146,000 barrels of crude oil into the environment and may have been responsible for the deaths of 180 people and illnesses among a further 3,000 (Funding universe, 2005). Apart from cases of pipeline vandalism which have contributed to environmental degradation, NNPC's ageing pipelines have equally caused environmental problems. In 2014, 32 cases of pipeline break resulting from system deterioration and leading to a loss of 355.69 thousand metric tons (mt) of petroleum products amounting to N44.75 billion. The figure was even higher in 2016; NNPC recorded a total of 55 line breaks due to corrosion of its facility such as rupture, and the failures led to a loss of 80.93 thousand mt of petroleum products at a cost of N12.36 billion. These crude oil discharges into the environment had devastating consequences on the environment and on the inhabitants of the areas where the crude oil spills occurred (NNPC Annual Statistical Bulletin 2014 –1st Edition, and 2016 Edition).

Also, the environmental devastation caused by the oil companies has been scientifically documented by the UNEP study, Environmental Assessment of Ogoni land. The study, which examined impact on soil and ground water, terrestrial and aquatic vegetation, and public health, concluded that it would take 25 to 30 years to restore the Ogoni environment. This environmental condition in Ogoni is an example of the state of other oil bearing communities in the Niger Delta that have been subjected to the same degree of unsustainable oil exploration' (Naanem and Tolani, 2014:64).

Gas flaring

Crude oil production is usually associated with gas which is usually flared due to the absence of associated gas gathering facilities. NNPC and its joint ventures flared 514,779,616 standard cubic feet (scf) of associated gas out of 619,032,858 scf of total associated gas flared in 2011. Nigeria flares over 75 % of the associated gas it produces and this represents a pollution equivalent to 45million tons of CO₂ per day. In recent times, there are over 123 flaring sites in the Niger Delta region and Nigeria has been regarded as one of the highest emitter of greenhouse gases in Africa (Ite, and, Ibok, 2012). When associated gas is flared into the atmosphere, it releases a greenhouse gas (GHG) which contributes to global warming and climate change. Also, Valuable energy worth approximately 30.6 billion dollars each year is wasted around the world through flaring and venting of about 400 million tons of carbon dioxide gas in petroleum production, and this also harms the environment. The enormous volume of gas flared by NNPC and its joint ventures yearly is enough to satisfy Nigeria's energy needs. (Agboola, Nwulu, Egelioglu and Agboola 2010).

Nwankwo posits that the environmental effect of gas flaring has a worldwide dimension and causes global warming and climate change, yet it effects the immediate or local environment more negatively. To buttress the point, environmental experts tell us that flares contains up to 250 toxins and discharges particulate matters such as sulphur dioxide, nitrogen dioxide and carcinogenic substance, unburned fuel and hydrogen sulphide several of which can lead to asthma, cough, chronic bronchitis, decreased lung functions, difficult or painful breathing and premature death. Flares as well create acid rain corrosive to metal roof (corroded roof), acidifies lakes and streams, lower crop yield, and kills vegetation (Nwankwo and Ogagarue 2011). Ibeanu (2008) also points out that flaring gas within the surrounding area of human dwellings contributes to acid rains, causes destruction of farmland and fishing waters, deforestation and devastation of wildlife and threatens resource flows and livelihoods (Ifesinachi and Aniche, 2015). It is in this respect that NNPC have performed dismally. Nigeria was among countries with highest gas flare rates, but a number of Clean Development Mechanism (CDM) projects aimed at proper gas use have improved the country's standing in this regard, leading to Nigeria being the seventh largest gas flaring country in the world as at 2017. (NNPC News & Update, 2016).

Table 1: Amount of gas produced, used and flared in Nigeria from 1970 – 2011

Year	Production(Mm ³)	Utilization (Mm ³)	Flared (Mm ³)
1970	8029.0	72.0	7957.0
1971	12975.0	185.0	12790.0
1972	17122.0	274.0	16848.0
1973	21882.0	395.0	21487.0
1974	27170.0	394.0	26776.0
1975	18656.0	323.0	18333.0
1976	21276.0	659.0	20617.0
1977	21924.0	972.0	20952.0
1978	21306.0	1866.0	19440.0
1979	27619.0	1546.0	26073.0
1980	24551.0	1647.0	22904.0
1981	17113.0	2951.0	14162.0

1982	15382.0	3442.0	11940.0
1983	15192.0	3244.0	11948.0
1984	16255.0	3438.0	12817.0
1985	18569.0	3723.0	14846.0
1986	18739.0	1822.0	12291.0
1987	17085.0	4794.0	12291.0
1988	20253.0	5516.0	14737.0
1989	25053.0	6323.0	18730.0
1990	28163.0	6323.0	18730.0
1991	31588.0	7000.0	24588.0
1992	32464.0	7058.0	25406.0
1993	33444.0	7536.2	25908.0
1994	32793.0	6577.0	26216.0
1995	32980.0	6910.0	26070.0
1996	36970.0	10150.0	26820.0
1997	36754.8	10207.0	26547.8
1998	36036.6	10886.5	25150.1
1999	35856.4	12664.6	23191.8
2000	47537.0	21945.0	25592.0
2001	57530.0	29639.7	27890.3
2002	101976.0	26203.4	75772.7
2003	53379.0	30583.0	22796.0
2004	69748.0	45156.0	24592.0
2005	58247.0	34818.0	23429.0
2006	57753.0	39374.8	18376.9
2007	65936.5	43188.4	22748.1
2008	66640.8	48796.0	17844.8
2009	41534.2	28076.5	13457.2
2010	58006.0	44506.6	13499.3
2011	55099.1	38898.2	16200.5

Source: Nigeria National Petroleum Corporation (NNPC), Department of Petroleum Resources (DPR) and Central Bank of Nigeria (CBN) Estimates)

From the table above gas utilization have actually improved over the past six decades, yet the volume of gas flaring by NNPC and its subsidiaries still portend grave consequences to the environment. In other major OPEC countries, gas flaring is almost eliminated.

NNPC's Initiatives towards gas flaring reduction

It is not as if NNPC is passive in the task of achieving gas flare-out regime. NNPC plays a vital role towards achieving gas flare out policy of the Nigerian government. As a specialised

public agency representing the interest of government in the oil industry particularly upstream oil sector, NNPC supervises the government efforts at enforcing zero-gas flaring regime such as the regulatory and legal frameworks for enforcement of gas flaring reduction and elimination, international engagements and initiatives for gas flaring and climate change mitigation, and setting realistic deadlines or timeframe for zero-gas flaring in Nigeria. NNPC is as well involved in stimulating and coordinating gas development in Nigeria. For example, Nigerian Gas Company (NGC), a subsidiary of NNPC is charged with the responsibility for gas gathering and transmission in Nigeria. There is also a gas division in NNPC with responsibility for coordinating gas investment and management arrangements. (Etete 1995, Aghalino 2009, Orji 2014).

Another attempt at reducing the environmental impact of gas flaring was NNPC involvement in the drafting of Gas Master Plan in 2007 intended basically to encourage domestic use of natural gas for cooking and power sector development. The goal of the Gas Master Plan is to make proper use of existing gas transmission capacity by the international oil corporations (IOCs) operating in the joint venture partnerships with NNPC. Also, the plan intends to create a secure and viable atmosphere for gas sales to domestic buyers and users (UGBO, 2013). However, the challenge of gas use is NNPC's failure to enforce government policy on gas flaring and venting. Indeed, from 1979, the Associated Gas Reinjection Act prohibited oil companies in Nigeria from flaring gas after 1984 without ministerial permission. However, these flaring policy and regulations were not properly enforced by the NNPC (Associated Gas Re- Injection Act, 1979).

While the NNPC claims that gas flaring is reducing, available evidence proves otherwise. The total volume of natural gas flared by oil and gas companies in the country rose by 17.46 per cent year-on-year to 287.59 billion standard cubic feet in 2017. Latest data obtained from the Nigerian National Petroleum Corporation showed that gas supply in 2015 only increased by 8.1 per cent to 2.79 trillion scf. In 2016, 2.58 trillion scf of gas was supplied to the market, while 244.84 billion scf was flared by the oil companies. The NNPC data showed that 24.77 billion scf of gas was flared in January, 2016; 20.42 billion scf in February; 21.47 billion scf in March; 20.50 billion scf in April; 21.75 billion scf in May, and 19.90 billion scf in June. In the second half of the year, the country recorded the highest volume of gas flared in December at 31.88 billion scf, up from 26.24 billion scf in November; 24.24 billion scf in October; 25.53 billion scf in September, and 28.51 billion scf in August.

Out of the total gas supply of 2.79 trillion scf in 2016, 391.95 billion scf and 1.23 trillion scf were commercialized for the domestic and export markets, respectively, while 1.17 trillion scf was used for re-injection as fuel gas and flared. For the period of January to December 2017, an average of 1.08 billion scfd of gas was supplied to the domestic market, made up of an average of 668.08 million scfd or (62.07 per cent) as gas supply to the power plants and 408.26 million scfd or (37.93 per cent) as gas supply to industries," the corporation said (Asu, 2018). As part of Nigeria government's efforts to reduce the environmental impact of gas flaring, in January 2017, the Minister of Finance, Mrs. Kemi Adeosun said the Federal Government intends to make gas flaring more costly for companies that had escaped the payment of billions of dollars despite being fined. Adeosun remarked that in the 'legal framework for the gas flaring penalty, it was drafted as a charge. A charge is tax deductible. So, what do the international oil companies do? They flare; they pay the charge on which they get tax relief. That's just bad drafting,' she stated.

However, there are indications that NNPC is planning to eliminate at least reduce gas flaring in the nearest future. It intends to use a two pronged approach to achieve this goal.

Firstly, NNPC intends to reduce existing flares through a combination of targeted policy interventions in the Gas Master-plan as well as the re-invigoration of the flare penalty through the 2016 Nigeria Gas Flare Commercialization Programme (NGFCP) and through legislation, that is, ban on gas flaring via the recent Flare Gas (Prevention of Waste and Pollution) Regulations 2018 (Eboh, 2017). As stated by NNPC authorities, the legislations will facilitate Nigeria dropping from being the second highest gas flaring nation in the world to seventh, it would also signify a major milestone in its gas commercialization prospects. NNPC is also looking forward to eliminate gas flaring, and it claimed that the volume of gas flaring have considerably reduced to current levels of about 800mmscfd and in the next 1-2 years we would have completely ensured zero routine flares from all the gas producers (Ughamadu, 2018)

According to the Managing Director of NNPC Mikanti Baru, NNPC has embarked on the most aggressive expansion of the gas infrastructure network aimed at creating access to the market. It is hoped that gas flaring will be eliminated on the completion and commissioning of almost 600km of new gas pipelines that connects all existing power plants to permanent gas supply pipeline; and the 127km Obiafu-Obrikom-Obie gas pipeline – “OB 3” which connects the Eastern gas supply to the Western demand centres (Ughamadu, 2018). Also, the corporation has successfully looped Escravos-Lagos Pipeline System (ELPS 2) gas pipeline projects to increase gas volume capacity to at least 2Bcf/day, the corporation has recently signed the contracts to kick off the 614Km Ajaokuta-Kaduna-Kano (AKK) pipeline project, which on completion, would deliver gas to the ongoing power plants in the areas and revive the manufacturing industries in the northern part of Nigeria.

The above claim notwithstanding, following the trends in investment in the oil industry, Foreign Oil Company’s main motive is to increase its profits, hence, increasing oil production in Nigeria. The Foreign oil companies place high premium on profits, through increased oil production, more than on environmental protection. The oil companies have indeed succeeded in this venture through the use of ‘cutting edge technology’ to enhance crude oil recovery from oil wells and to increase deep water drilling. So, the development of sophisticated technology to increase gas gathering and use becomes secondary. The fact is that the NNPC’s joint venture partners are just like NNPC itself, more concerned with increasing profits through improved and efficient crude oil production in Nigeria than developing or improving the capacity of associated gas gathering facility to meet the zero-gas flaring deadline. Foreign Oil companies in joint venture partnerships with NNPC are investing more in oil production to make more profits through increased oil production than investing to increase the capacity of associated gas use facilities which will eventually reduce the environmental impact of gas flaring on the host communities (Ifesinachi, and Aniche, 2016).

Evidence abounds to make us understand that the primary concerns of NNPC and its joint ventures is increase in crude oil production though for different reasons. For instance, NNPC’s increase in oil revenues is for the purpose of national security and increased revenue, and for the foreign oil companies their goal is increased profit. Under this state of affairs, achieving zero-gas flaring is a mere expression and as such secondary (Aniche 2015). The implication of the above situation is that the environmental challenges faced by communities where NNPC operations are carried out will remain unchanged, except there is a change from the present state of affairs in the industry.

Impact of NNPC on the Nigeria economy

Since 1958 when commercial production of crude oil began in Nigeria, Nigeria earned enormous revenue from crude oil sales. Over the years, Nigeria transited from agriculture being its main stay to oil and gas as its major foreign exchange earner. The management of the oil and gas

sector has been the preserve of the NNPC since 1977, thus, the contribution of the NNPC to Nigeria economy is briefly assessed in this segment of the work. NNPC's role in Nigeria economy is underlined as it is charged with the responsibility of crude oil and gas production, refining, distribution and marketing, training of workers, managing oil licenses, encouraging indigenous participation, and ensuring uniform pricing of petroleum products in all parts of Nigeria (Building Construction Directory of Nigeria, 2015). In fact its activities cover all aspects of Nigeria petroleum industry as stipulated in the NNPC ACT.

Crude oil & Gas Revenues

NNPC's major contribution is in the generation of revenue through crude oil lifting and sales. In Nigeria, Crude Oil and Gas lifting by the federal government are in two segments; Equity and Domestic export. NNPC takes responsibility for haulage and sales of both categories and the earnings remitted into the Federal Government Account. NNPC also lifts crude oil and gas on behalf of DPR and Federal Inland Revenue Service (FIRS), the earnings are paid into Federal government Account. NNPC collects equity export receipts from crude oil sales, then it makes adjustment for Joint Venture (JV) Cash Calls, the balance are paid directly into Federal Government Account lodged in Central Bank of Nigeria (CBN). Domestic Crude Oil of 445,000bpd is billed for refining to meet home products supply. Payments are made to Federation Account by NNPC after adjusting crude and product losses, pipeline repairs and running cost incurred during the operations. (NNPC News Update, 2018). Crude oil is also lifted to cater for Third Party finance lifting, which are Crude Oil and Gas lifting from fields that are financed using alternative finance/loan facility which require the servicing of debt obligations before paying the balance into the Federation Account as Price Balance (NNPC News Update, 2018: January 24: 1).

Between 1960 and 2012, NNPC Crude oil sales grew from 12 million dollars in 1960 to 94.6 billion dollars in 2012, amounting to 932.5 billion dollars in gross income (Naanem and Tolani, 2014). From 1970 to 2017, Nigeria has exported over US\$301 billion worth of crude oil. In 1998 alone, the revenue from crude oil and gas that went into the Federal government's purse was 6,961.51 million US dollars, consisting of 4,610.18 million dollars from NNPC equity oil and gas sales, 1,125.39 dollars from Royalties. Taxes, penalty for gas flared, and rentals generated and a balance of 189.44 million dollars. (NNPC Annual statistical bulletin, 1998). NNPC earned N79.59 trillion from crude oil sales between 1981 and 2016. From 1999 to 2016, it earned 96% of which was earned from 1999 till 2016, which is N76.622 trillion (Babalola, 2018).

In 2005 alone, crude oil sales reached \$2.6 billion, hence, NNPC is a major revenue earner for the federal government of Nigeria and it additionally provided employment to over 15,000 people. In 2013 and 2014, the contribution of Oil revenue to the Federal Government stood at 6,809.23 billion naira, and 6,793.72 billion naira respectively (Neiti Audit Report, 2014).

Crude Oil Produced in Selected Years

In 2014, NNPC produced 798,541,589 barrels of crude oil and condensate giving a daily average of 2.19 mmb/pd in 2014. This is slightly lower than the previous year's by 0.24%. In the gas sector, a total of 2,524.27 Billion Standard Cubic Feet (BSCF) of Natural Gas production was reported by Twenty-Eight (28) Companies. This shows an increase of 8.56% when compared with 2013 production. Of the quantity produced, 2,233.49 BSCF (88.53%) was utilized, while 289.60 BSCF (11.47%) was flared. Out of the 798,541,589 barrels of crude oil and condensate that was produced, NNPC sold a total of 796,654,109 barrels (2.18 million barrels per day) of crude oil and condensate for domestic and ex-port purposes, showing a

slight decrease of 0.46% against year 2013. NNPC lifted 349,721,431 barrels (42.86%), averaging 958,141 barrels per day for both domestic use and export purposes (NNPC Annual Statistical Bulletin, 2014: 1st Edition).

In 2015, NNPC average daily crude oil production was 2,120,310.32. It earned over \$4 billion in 2015. Total export proceeds of \$197.15 million were recorded in November 2015, consisting of Crude oil receipt of \$161.90 million, Liquefied Petroleum Gas (LPG) & Escrivos Gas to Liquids (EGTL) proceed of \$34.84 million, and Miscellaneous receipt amounting to \$0.42 million. Gas production in 2015 amounted to 1,326,534 Metric Tons of Natural Gas Liquid (NGL) which NNPC and its JV produced. Mobil and NNPC had a share of 51% and 49% of the quantity respectively. A total of 1,272,058 Metric Tons was lifted. Liquefied Petroleum Gas (LPG) production was about 483,529 Metric Tons while lifting was 472,537 Metric Tons. (NNPC Annual Statistical Bulletin, 2014: 1st Edition). Total Natural Gas Liquid (NGL) produced in 2016 was 2,835,361 Metric Tons, reported by Mobil, Chevron and NLNG Companies. A total of 1,031,187 Metric Tons was lifted. The lifting was for NNPC, Mobil, and Chevron equity shares. While there was no NLNG Lifting /export for NNPC, proceeds were paid in dividend (NNPC Annual Statistical Bulletin, 2016: 1st Edition)

Aside crude oil lifting and sales, NNPC through its subsidiaries provides fuel to industrial facilities, commercial enterprises and individuals. Its retail subsidiary; NNPC Retail, runs 37 Mega Stations, 12 Floating Mega Stations and over 265 Affiliate Stations from where it provides fuel to end users (NNPC News, 2018. January 24). In 2015 NNPC had 513 retail outlets nationwide. Also, the Nigeria Gas Company (NGC), a subsidiary of NNPC supplies gas to several industrial establishments in Nigeria for power generation, industrial heating, fertilizer and petrochemical manufacturing and as feedstock for direct steel reduction.

Table 2: 1997 NGC Gas Sales Statistics

Buyer	Volume (bscf)	Proceeds (=N= million)
Alscon Ikot Abasi	4.160	170.571
ASCL Ajaokuta	-	0.004
DSCL Aladja	0.009	0.078
Igil Aba	0.185	25.403
NAFCON Onne	13.901	178.347
NEPA, Afam IV	2.909	26.078
NEPA, Delta IV	14.615	131.245
NEPA, Egbin	59.611	535.310
NEPA, Sapele	20.305	182.339
WAPCO Ewokoro	3.176	464.040
WAPCO Shagamu	5.708	719.264
WRPC, Warri	3.829	34.882
Grand Total	128.403	2, 467.561

Source: (NNPC Annual Statistical Bulletin, 1997)

Natural Gas Production and Sales

During crude oil production, an associated gas is usually involved. Natural gas produced in association with oil in 1997 stood at 1,142 Bscf. Out of this quantity, 801.8 Bscf (70.21%) was flared, while the remaining were re-injected, used as fuel, sold or converted to NGL. Natural gas sales were made both by Shell Development Producing Company (SPDC) and Nigeria Gas Company (NGC), a subsidiary of NNPC. SPDC made a total sale of 110.138 Bscf amounting to 772,224 million, while NGC sold 1218.403 Bscf amounting to 2.4768 billion. Available oil statistics shows that crude oil exports stood at 767,949,757 barrels averaging 2,103,972 barrels per day. NNPC equity crude oil exports total 392,279,889 barrels amounting to \$7,402,215,884 or 161,191,292,312 (NNPC Annual Statistical Bulletin, 1997).

The National Gas Company (NGC) supplies gas for power generation, as source of fuel or as feedstock to current industries, and the demand is increasing. Makuachukwu explains that a large potential gas market exists in Nigeria for investors. He puts domestic gas demand to about 400 million cubic feet a day (MMcf/d) which is very low compared to the size of Nigeria's population and its gas resources. The low domestic gas use is due to low industrial capacity and the inadequacy of the gas transmission and distribution infrastructure. Before 1999, the power sector accounted for almost 90% of gas sales (Makuachukwu, Salami, Alam, and Oke, 2012).

The highest user of gas in Nigeria is Nigeria Liquefied Natural Gas Company (NLNG). Nigerian's LNG project had been on the drawing board since the 1960s. However, due to funding and technology, the LNG project did not mature until 1990 when NNPC concluded financial arrangements for the project. The company was founded in 1992, the following year marked the actual construction, and it was completed in 2000. The NLNG is a joint venture between NNPC with 49 per cent stake; Shell Gas BV, 25.6 per cent; Total Gaz Electricite Holdings France, 15 per cent; and Eni International, 10.4 per cent. The shipment of gas from the Bonny Plant to overseas buyers in Europe began late in 1999. Since then, NLNG have remained the largest gas user in Nigeria. The NLNG have made financial contributions to Nigeria economy worth more than \$100bn revenue and about \$15bn dividend to the government directly and since it became tax-paying company in 2009, it have contributed more than \$6.5bn in taxes (Attah, 2018).

Refining and Distribution of Petroleum Products

The four NNPC refineries received a total of 25,839,373.09 barrels (3,491,903 mt) of (dry) crude oil, condensate and slops and processed 23,360,372.27 barrels (3,156,914 mt) into various petroleum products in 2014. The total production output by the refineries was 2,665,289.09 metric tons of various petroleum products. The combined average refining capacity utilization for year 2014 was 14.4% as against 22% in the previous year. The PPMC distributed a total of 23,883.83 million liters of petroleum products nationally, consisting of an average daily consumption of 47.67 million litres of Premium Motor Spirit (PMS), 8.82 million litres of Automotive Gas Oil (AGO), 7.90 million litres of House Hold Kerosene (HHK) and 1.04 million litres of Aviation Turbine Kerosene (ATK). Out of the total volume distributed, NNPC Retail outlets handled 1,672.43 million litres which is about 7.00% of total volume. PPMC evacuated 3,208,461 metric tons (mt) of petroleum products from the refineries and it also imported 7,038,264.33 mt of PMS and HHK for distribution valued at N6.76 billion on Offshore Processing Agreement (OPA) and Crude oil for product SWAP arrangements. PPMC sold a total of 10.59 billion liters of various grades of petroleum products through depots and coastal lifting. During the year, 634.89 million liters of Low Pour Fuel Oil (LPFO) and Naphtha worth about N66.13 billion was exported. (NNPC Annual Statistical Bulletin, 2014: 1st Edition).

NNPC average capacity use for the period was 4.88%. From January to December 2015; the three Refineries produced 767,490 MT of finished Petroleum Products out of 1,080,183 MT of Crude processed at an average capacity utilization of 4.88%. A total value of 80.34 billion naira was collected as sales revenue for white products (PMS, AGO, and DPK) sold by PPMC in the month of December 2015 compared with 66.96 billion naira collected in the previous month of November 2015. Total revenues generated from the sales of white products for the period January to December 2015 stands at 661.34 billion naira where PMS contributed about 88.02% of the revenues collected with a value of 582.14 billion naira.

Table 3: Petroleum Products Refined by NNPC Refineries in 2015

PERIOD	PMS (Litres)	DPK (Litres)	TOTAL (Litres)
January	180,510,669	63,937,104	244, 447, 773
February	60,764,733	0	60, 764, 733
March	55,103,031	0	55,103,031
April	58,084,074	0	58,084,074
May	28,980,351	0	28,980,351
June	57,822,579	0	57,822,579
July	53,394,597	29,859,984	83, 254, 581
August	116,464,509	83,780,928	200,245, 437
September	72,011,700	3, 774, 848	75, 786, 548
October	102, 469, 833	0	102, 469, 833
November	50, 524, 857	0	50, 524, 857
December	25, 197, 390	14, 435, 344	39, 632, 734
Total	861,328,323	195,788,208	1,057,116,531

Source: NNPC Monthly Financial and Operations Report December 2015.

In 2016, the local refineries received a total of 32,720,453.86 barrels (4,423,312 mt) of (dry) crude oil, condensate and slops and processed 22,509,393.25 barrels (3,042,321 mt) into various petroleum products. The total production output by the re-fineries was 2,920,894.00 metric tons of various petroleum products. The combined average refining capacity utilization for year 2016 was 13.82% as against 4.92% in the previous year. PPMC evacuated 2,735,039.15 mt of petroleum products from the refineries and it also imported 8,320,829.20 mt of PMS and HHK for distribution through Offshore Processing Agreement (OPA), Direct Supply, Direct Purchase (DSDP) arrangements and On-Spot delivery. PPMC sold a total of 12.66 billion liters of various grades of petroleum products through depots and coastal lifting. During the year (2016), 280.12 million liters of Low Pour Fuel Oil (LPFO) and Naphtha worth about N15.73 billion was exported. A total of 22,898.67 million liters of petroleum products was distributed nationally giving an average daily consumption of 47.56 million litres of PMS, 10.66 million litres of AGO, 2.51 million litres of HHK, 1.46 million litres of ATK, 0.23 million litres of Fuel Oil and 0.09 million litres of LPG. Out of the total volume distributed, NNPC Retail outlets handled 1,657.43 million litres which is slightly above 7% of total volume (NNPC ASB 2016:1st Edition)

A total of ₦155.10 billion and ₦184.40 billion representing 50.68% and 60.26% of monthly budget was collected as operating revenue by the NNPC group for the months of November and December 2015. Equally, operating expenditure for the same periods were ₦169.39 billion and ₦196.26 billion respectively, which also represents 63.42% and 73.48%

respectively of budget for the months. Operating deficits of ₦14.29billion and ₦11.86 billion for November and December 2015 respectively was attained as against monthly budgeted surplus of ₦38.91billion. 1.095 Trillion naira was paid to the FGN by NNPC in 2015. (NNPC Financial and Operations Report, 2015).

From the evidence above, the state of the four refineries is quite depressing: Since 1990, capacity utilization of the refineries have not gone beyond 45%, in some periods the refineries did not produce at all. For instance, in 2014, the four NNPC refineries produced 2,665,289.09 metric tons of various petroleum products which are about 2,665.38million litres, meanwhile a total of 23,883.83 million litres of petroleum products was distributed nationally, and the combined average refining capacity utilization for year 2014 was 14.4% (Neiti Audit Report, 2014). In 2017 Port Harcourt Refining Company (PHRC) 1 and 2, Kaduna Refining & Petrochemical Company Limited (KRPC), and Warri Refining & Petrochemical Company Limited (WRPC), recorded an operational deficit of N66.278 billion. Breakdown of the deficits showed that KRPC suffered a loss of N32.617 billion; WRPC, N22.147 billion and PHRC, N11.514 (Nigeria Oil and Gas News, 2018: April 4). Also, the domestic capacity was very low.

Table 4: NNPC 10 –Year Domestic Refining Capacity Utilization (%)

Refineries	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
KRPC	-	19.56	22.17	20	22.17	29.12	29.33	9.24	2.98	9.24
PHRC	24.87	17.84	15.24	9	17.33	11.95	9.18	17.28	4.66	17.28
WRPC	-	38.52	41.34	43	27.99	27.99	35.99	12.03	7.07	12.03

Source: NNPC 2016 Annual Statistical Bulletin

NNPC's poor performance contrasts other OPEC countries that have gone beyond producing for local consumption but as well produce for exports. A study commissioned by the Nigeria Natural Resource Charter (NNRC) and conducted by the Centre for Petroleum, Energy Economics and Law (CPEEL), University of Ibadan on the contributions of Nigerian National Petroleum Corporation (NNPC) to Nigeria's Gross Domestic Product (GDP) has showed that their average contribution was just about 0.55 per cent as at 2016. The study also stated that the contribution of the refineries to the GDP of other sectors of the Nigerian economy as at that time was 0.18 per cent, in addition to a -1.69 per cent contribution of the refineries to the gross net output in the country's economy. It focused on the contribution that NNPC refineries and pipelines have made to the Nigerian economy in 2016. Its estimations were done along the lines of direct contributions; indirect contributions and induced contributions, as well as their contributions with respect to Gross Domestic Product (GDP); Gross Net Domestic Product (GNDP); value-added; indirect taxes; compensation in terms of wages and salaries for employees; as well as employment. The report noted that its evaluation of value-added was made up of wages and salaries; operating surplus and depreciation, while indirect taxes included value added tax (VAT); excise and custom duties. Furthermore, the refineries contributed 0.35 per cent value added in the economy; 0.19% to indirect taxes in the economy; 0.13% to compensation of employees in the economy; and 0.05% to employment in the economy. The little input made to the economy by NNPC refineries and pipelines is traceable to the sector's low capacity use which is 18 per cent. (Olatunde, 2018). This has led to an unprecedentedly high importation of its products at the expense of the economy as every item of import is a leakage in the system. The importation is making negative contribution to the economy," said the report. It added: The sector has also been running at a huge loss thereby reducing its contribution to the economy (Nigeria Natural Resource Centre, 2018).

Furthermore, the three refineries: Port Harcourt Refining Company (PHRC) Kaduna Refining & Petrochemical Company Limited (KRPC), and Warri Refining & Petrochemical Company Limited (WRPC), recorded an operational deficit of N66.278 billion in 2017. Breakdown of the deficits showed that KRPC suffered a loss of N32.617 billion; WRPC, N22.147 billion and PHRC, N11.514.

Table 9: Petroleum Products Refined by NNPC Refineries in 2015

PERIOD	PMS (Litres)	DPK (Litres)	TOTAL (Litres)
January	180,510,669	63,937,104	244, 447, 773
February	60,764,733	0	60, 764, 733
March	55,103,031	0	55,103,031
April	58,084,074	0	58,084,074
May	28,980,351	0	28,980,351
June	57,822,579	0	57,822,579
July	53, 394, 597	29, 859, 984	83, 254, 581
August	116, 464, 509	83, 780, 928	200, 245, 437
September	72, 011, 700	3, 774, 848	75, 786, 548
October	102, 469, 833	0	102, 469, 833
November	50, 524, 857	0	50, 524, 857
December	25, 197, 390	14, 435, 344	39, 632, 734
Total	861,328,323	195,788,208	1,057,116,531

Source: NNPC Monthly Financial and Operations Report December 2015.

The low utilization capacity of NNPC refineries is further shown in the refineries production in 2015. NNPC imported 6,179,719,852.27 litres of PMS, and 1,526,394,559.54 litres of DPK totaling 7,706,114,411.81litres. Meanwhile for the same period its refineries produced 861,328,323litres of PMS, 195,788,208 litres of DPK, totaling 1,057,116,531 litres. Therefore, what NNPC refineries produced in 2015 is a paltry 9.7% of what was consumed in 2015.

Table 10: Imported Petroleum Products in litres in 2015

Product Year	PMS (Litres)	DPK (Litres)	Total (Litres)
January	518,772,435.65	328,471,903.76	847,244,339.41
February	472,805,826.73	84,308,867.10	557,114,693.84
March	928,342,421.75	84,985,825.23	1,013,328,246.98
April	575,901,484.32	171,709,078.46	747,610,562.78
May	700,039,657.96	349,630,514.46	1,049,670,172.43
June	295,642,465.38	67,562,199.94	363,204,665.32
July	773,679,148.25	36,968,789.09	810,647,937.33
August	701,294,113.85	-	701,294,113.85
September	567,601,005.43	196,295,727.94	763,896,733.37
October	645,641,292.96	206,461,653.55	852,102,946.51
November	787,212,195.72	116,356,458.06	1,009,037,151.69
December	977,838,435.39	116,356,458.06	1,094,194,893.45
Total	6,179,719,852.27	1,526,394,559.54	7,706,114,411.81

Source: NNPC Annual Statistical Bulletin 2016

Although the NNPC through its subsidiary NPDC produces crude oil, yet what NPDC produces is very insignificant to make any meaningful contribution to Nigeria economy. To buttress this statement, out of a total crude oil production of 855,721,134 in 1997, NPDC contributed only 1,725,924bbls, which is a paltry 0.2% of total crude oil production. The bulk of crude oil is produced by Foreign Oil Companies in Joint venture with NNPC. (NNPC Annual Statistical Bulletin, 1997). This informs the reason why NNPC's contribution to the economy is small. Most of its revenue is derived from rent arising from production paid by joint venture and production sharing partners, who happened to be Foreign Oil Companies.

One major contribution of NNPC to the economy is the development of NNPC Okpai Power Plant in Delta State. This project is the largest gas-power initiative in the African

continent, is on the verge of becoming operational. On completion, the project will 1,000 MW of electricity. The project as well has a UN contribution under the auspices of Clean Development Mechanism Protocol of the UN Framework Convention on Climate Change. (Building Construction Directory of Nigeria, 2015). The company also made several key partnerships at this time. Working with Chevron Texaco and British Gas, NNPC developed a LNG project in the border town of Olokola. It was expected that the project would gross \$57.4 billion in its lifetime. In February 2005, NNPC signed a \$1 billion contract with Chevron Texaco Nigeria to construct the Floating, Production, Storage, and Offloading Vessel (FPSO) for the Agbami deep offshore oil field. The FPSO was expected to process 250,000 barrels per day of crude oil and 450 million standard cubic feet of gas per day (Okafor, 2018).

Impact of NNPC on Human Capital Development

One of the reason why NNPC is in joint venture with foreign oil companies is due to lack of requisite technology to operate the oil industry. Hence, there exists a manpower lag in NNPC to effectively manage the oil industry free from foreign interference. To buttress this point, let us take a look at NPDC, which is an NNPC subsidiary charged with the responsibility to prospect for petroleum, and its operations covering exploration and production activities, and the entire aspects of the upstream Oil and Gas sector. Due to lack of necessary technology, NPDC had to partner with a foreign company. In the same vein, NETCO another NNPC subsidiary charged with engineering development of local engineers in the oil and gas sector NNPC wanted to develop local engineering capability which will enable Nigerians to design and build plants and facilities for the nation's oil and gas industry, and other allied industries. So, since NETCO lacked the manpower it entered into Joint Venture partnership with an American company called Bechtel, Inc (nnpc group/netco).

The pertinent question is, what has NNPC done in the past to bridge the manpower and technological deficiencies? Recent NNPC sources claim that it has put in place measures to fill up the gap. In an attempt to fast track the realization of the set targets for developing indigenous capabilities and participation in the Nigerian oil and gas industry, the NNPC has embarked on an aggressive manpower development. NNPC's Group Executive Director, Exploration and Production, Mr. Philip Chukwu at a workshop tagged "Increasing Local Capacity through Sustainable Human Capital Development" organised by the Nigerian Content Division in Abuja opined that "in order to achieve the National aspirations and Nigerian content targets, there is a crucial need as a nation to embark on an aggressive manpower development program". In this regard, he explained that the NNPC kicked started the initiative to build local capacity on the back of ongoing projects and operations in the oil and gas industry. The GED further stressed that despite the execution of mega projects and development of deep water blocks, there have been acute local skill shortages and dearth in competent technical manpower to execute these projects. He said the NNPC in collaboration with the Petroleum Trust Development Fund (PTDF) was implementing Engineering design program through which over 1600 Engineers in targeted design software have been trained (NNPC News Update, 2018, November 7: 1).

In addition to that, he said 2, 500 welders have been trained and certified on global standards through the Welders Training and Certification Program. Mr. Chukwu said the NNPC has already issued implementation guidelines for Nigerian Content Human Capacity Development to the Joint Venture partners and other project promoters in the Industry. To ensure maximum benefit and consolidate various industry human capital development programs, we would continue to foster collaboration between all stakeholders'. NNPC organizes an annual quiz competition cutting across the states of the federation. The NNPC

Quiz Competition was inaugurated in 2000 and limited to participants from the Niger Delta but went national in 2001. The Corporation is fostering educational development and national unity through the competition. As part of its Corporate Social Responsibility (CSR), NNPC pays the sum of N100, 000 to the winner. NNPC's record in championing the Nigerian content initiative in the oil and gas industry was a noble and patriotic step, noting that the essential philosophy behind the National Science Quiz Competition was to ensure that the production line of highly skilled labour remained intact and prolific designed mainly for students in the nation's secondary schools, the competition has impacted positively on the intellectual attainment of young Nigerians. It has provided financial succour to successful contestants who have been placed on scholarship throughout their university education. Many of the awardees had moved on to achieve academic laurels in tertiary institutions, locally and internationally.

In fulfillment of its objectives, most NNPC scholarship beneficiaries ended up studying Science and Technology related courses in the universities. In 2010, a past winner of the competition, emerged 2nd in a contest involving students from the Organisation of Petroleum Exporting Countries (OPEC) Member Countries, and Austria to observe the 50th Anniversary of OPEC (NNPC News Update, 2018: June 7). As we discuss the contributions of the NNPC to Human Capital Development (HCD), we need to mention some programmes and projects executed by the Joint ventures. NNPC and Chevron Nigeria Limited (CNL) are credited with annual competition in science subjects. For instance, the Awokoya Memorial Chemistry Competition through which NNPN/CNL Joint Venture promotes the study of the subject among secondary school students of Delta State and in memory of Stephen Awokoya, a Chemistry Professor, who died on March 15, 1985. Over the years, the Joint Venture has shown its commitment through investment in education, infrastructure, sponsorship of manpower development programmes and award of scholarships (Idowu, 2018).

Conclusion

The study has shown that NNPC's operations have impacted on the Nigerian society in diverse ways. Indeed the revenue accruing to the federal government has helped finance several projects in Nigeria. For instance, the enormous funds invested in building the Federal capital territory in Abuja was sole revenues derived from the oil receipts from the NNPC. The revealed that NNPC subsidiaries such as Nigeria Gas Company (NGC), Nigeria Liquefied Natural Gas (NLNG) plant have provided sources of energy to power plants in Nigeria. Afam Power Plant for instance receives its gas supply from NNPC/Shell facility. NLNG produces for exports to European markets while NGC supplies gas to industries such as Indorama Fertilizer Company. Equally important as its contribution to economic development of Nigeria, NNPC imports various petroleum products to satisfy domestic demand. Dual Purpose Kerosene, Premium Motor Spirit, and Diesel are some of the products NNPC imports into Nigeria to satisfy local demand. These notwithstanding, NNPC activities have impacted negatively on the environment. Pollution arising from oil spillages and gas flaring still plague the communities where crude oil is produced. It is against this background that this paper recommends a total overhaul, reorganization and privatization of NNPC for sustainable growth and development of Nigeria.

References

- Agboola, Oluwatoyin & I Nwulu, Nnamdi & Egelioglu, Fuat & Agboola, Phillips. (2010). Gas Flaring in Nigeria: Opportunity for Household Cooking Utilization. *International Journal of Thermal and Environmental Engineering*. 2. 10.5383/ijtee.02.02.002. Retrieved November 1, 2018 from

https://www.researchgate.net/publication/267560061_Gas_Flaring_in_Nigeria_Oppor_tunity_for_Household_Cooking_Utilization.

Alabi, S. (2018). NNPC, Shell Sign N240 Million Contract On Environment.

Fundinguniverse, (2005). Nigerian National Petroleum Corporation History. Retrieved November 2, 2018 from <http://www.fundinguniverse.com/company-histories/nigerian-national-petroleum-corporation-history/>.

ArticleView/articleId/158/NNPC-Embarks-on-Aggressive-Manpower-Development.aspx.

Anichie, T. An Assessment of the Role of Nigerian State in Enforcing Zero-Gas Retrieved October 29, 2018 from:[://www.iiste.org/Journals/index.php/CER/article/viewFile/27433/2814](http://www.iiste.org/Journals/index.php/CER/article/viewFile/27433/2814).

Associated Gas Re-injection Act, (1979). Retrieved December 6, 2018 from <http://extwprlegs1.fao.org/docs/pdf/nig150976.pdf>

Asu, F. (2018). Gas flaring increased by 17.5% last year – NNPC. Retrieved October 29, 2018 from <https://punchng.com/gas-flaring-increased-by-17-5-last-year-nnpc/>Published March 13, 2018.

Attah, T. (2018). We've paid \$15bn dividends, \$6.5bn taxes to FG – NLNG. The Managing Director, NLNG, Mr Tony Attah was testifying before the House of Representatives Committee on Gas Resources and Allied Matters chaired by a member from Bayelsa State, Mr Frederick Agbedi. Retrieved November 20, 2018 from <https://punchng.com/weve-paid-15bn-dividends-6-5bn-taxes-to-fg-nlng/>.

Babalola, T. (2018). Dimensions of NNPC's Contribution to the Nigerian Economy. Economics Desk. Being discussion notes for Proshare CEO at the Nigeria Natural Resource Charter (NNRC) stakeholder workshop assessing NNPC group [site.com/nnpcbusiness/subsidiaries/netco](http://www.netco.com/nnpcbusiness/subsidiaries/netco). Retrieved November 2, 2018 from <http://dev.nnpcgroup.com/netco/Welcome.aspx>.

Building Construction Directory of Nigeria (2015). NNPC: Achievements and Contributions to the Nigerian Economy. Retrieved October 30, 2018 from <http://www.buildingconstructiondirectory.com.ng/nnpc-achievements-and-contributions-to-the-nigerian-economy/> NNPC News Update, and 2018: January 24: 1). NNPC Records \$239.10 Million Crude Oil Export Sales. Retrieved November 9, 2018 from <http://nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/949/NNPC-Records-23910-Million-Crude-Oil-Export-Sales.aspx>.

Eboh, M. (2016). No plan to sack NNPC staff — Kachikwu on February 4, 2016, 8:25 pm In News2 Comments By Michael Eboh. Retrieved October 31, 2018 from <https://www.vanguardngr.com/2016/02/no-plan-to-sack-nnpc-staff-kachikwu/>).

Eboh, M. (2017). Stopping gas flaring will boost Nigeria's revenue — NNPC. Vanguard News June 5, 2017. Retrieved October 29, 2018 from <https://www.vanguardngr.com/2017/06/stopping-gas-flaringll-boost-nigerias-revenue-nnpc-2>.

Fundinguniverse, (2005). Nigerian National Petroleum Corporation History. Retrieved November 2, 2018 from <http://www.fundinguniverse.com/company-histories/nigerian-national-petroleum-corporation-history>.

- Ifesinachi, K. and Aniche, E. (2015). The NNPC and Enforcement of Zero Gas Flaring Regime in Nigeria. *ANSU Journal of Arts and Social Sciences*, 4, (1), 48-74. Retrieved July 25, 2018 from https://www.researchgate.net/publication/301347935_The_Nigerian_National_Petroleum_Corporation_NNPC_and_Enforcement_of_Zero_Gas_Flaring_Regime_in_Nigeria).
- Ite, A., Ibok, U (2012). Gas Flaring and Venting Associated with Petroleum Exploration and Production in the Nigeria's Niger Delta... *Science and Education Publishing*, 1(4). Retrieved November 1, 2018 from <http://pubs.sciepub.com/env/1/4/1/index.html>.
- Ite, A., Ibok, U., Ite, M. (2013). Peters, S. Petroleum Exploration and Production: Past and Present Environmental Issues in the Nigeria's Niger Delta. *American Journal of Environmental Protection* 1.4 (2013): 78-90. Retrieved June 19, 2018 from <http://pubs.sciepub.com/env/1/4/2>.
- Makuachukwu, O. Kareem, S. Kari, F. Alam, G. and Oke, M. (2012). Impact of Gas Industry on Sustainable Economy in Nigeria: Further Estimations through E view. *Journal of Applied Sciences*, 12: 2244-2251. Retrieved November 15, 2018 from <https://scialert.net/fulltext/?doi=jas.2012.2244.2251>.
- Naanen, B. and Tolani P. (2014). *Private Gain Public Disaster, Social Context of Illegal Oil Bunkering and Artisanal Refining in the Niger Delta*. Panam Publishers.
- Neiti Audit Report, (2014). Oil and Gas Industry Report. Retrieved November 16, 2018 from <http://www.neiti.gov.ng/phocadownload/NEITI-Oil-Gas-Report-2014-Full-Report-190417>.
- Nigeria Natural Resource Centre, (2018). Assessing NNPC's Contributions to the Nigerian Economy. Retrieved October 30, 2018 from <http://www.nigerianrc.org/assessing-nnpcs-contributions-to-the-nigerian-economy>.
- NNPC News Update, (2018: November 7). NNPC Embarks on Aggressive Manpower Development. Retrieved November 8, 2018 from <http://www.nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/>
- NNPC's contributions to the Nigerian Economy and Implications thereof, held on Thursday, March 29, 2018 at Protea Kuramo Waters, Victoria Island, Lagos. Retrieved November 2, 2018 from <https://www.proshareng.com/news/OIL%20&%20GAS/Dimensions-Of-NNPC%E2%80%99s-Contribution-To-The-Nigerian-Economy/39327>
- NNPC News Update, (2018: June 7). NNPC Yearly Quiz Competition Kicks off at Grassroots, State Levels. Retrieved November 8, 2018 from <http://www.nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/1028/NNPC-Yearly-Quiz-Competition-Kicks-off-at->
- NNPC Annual Statistical Bulletin, (2014 –1st Edition) . Retrieved November 7, 2018 from [http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/2014%20ASB%201st%20Edition%20\(2\).pdf](http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/2014%20ASB%201st%20Edition%20(2).pdf)
- NNPC Annual Statistical Bulletin, (2016 –1st Edition). Retrieved November 7, 2018 from [http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/2016%20ASB%201st%20Edition%20\(2\).pdf](http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/2016%20ASB%201st%20Edition%20(2).pdf)
- NNPC News Update, 2018: January 24: 1). NNPC Records \$239.10 Million Crude Oil Export Sales. Retrieved November 9, 2018 from

- <http://nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/949/NNPC-Records-23910-Million-Crude-Oil-Export-Sales.aspx>
- NNPC News Update, (2018: June 7). NNPC Yearly Quiz Competition Kicks off at Grassroots, State Levels. Retrieved November 8, 2018 from <http://www.nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/1028/NNPC-Yearly-Quiz-Competition-Kicks-off-at->
- NNPC Annual Statistical Bulletin, (1997). Retrieved November 6, 2018 from <http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/1998%20Annual%20Statistical%20Bulletin%20ASB.pdf>
- NNPC Annual Statistical Bulletin, (2014 –1st Edition) . Retrieved November 7, 2018 from [http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/2014%20ASB%201st%20Edition%20\(2\).pdf](http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/2014%20ASB%201st%20Edition%20(2).pdf)
- NNPC Annual Statistical Bulletin, (1998). Retrieved November 6, 2018 from <http://www.nnpcgroup.com/Portals/0/Monthly%20Performance/1998%20Annual%20Statistical%20Bulletin%20ASB.pdf>
- NNPC group site. Retrieved June 25, 2018 from. <http://nnpcgroup.com/Upstream/Pages/IDSL.aspx> NNPC News and Update: October 24.
- NNPC News Update, (2016). Retrieved November 7, 2018 from [http://nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/.](http://nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/)
- Nwankwo C. N. & Ogagarue D. O. (2011). Effects of Gas Glaring on Surface and Ground Waters in Delta State, Nigeria. *Journal of Geology and Mining Research* Vol. 3(5), pp. 131-136, May 2011. Retrieved October 29, 2018 from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.865.2253&rep=rep1&type=pdf>
- Olatonde, D. (2018). Experts describe NNPC's contribution to economy devt as poor. Retrieved October 30, 2018 from [https://www.tribuneonline.ng.com/141179/April 4, 2018](https://www.tribuneonline.ng.com/141179/April%204,2018).
- Okafor, C. (2018). Nigeria: NNRC - NNPC's Input to Economy Hampered By Operational Secrecy. Retrieved November 2, 2018 from <https://allafrica.com/stories/201804030247.html>
- OPEC Annual Statistical Bulletin 2017. OPEC Member States Crude Oil Refined Oil data: downstream. The 16th Gulf of Guinea Conference (Gog 16) Holding at Abidjan, Cote D'ivoire, On 7th November, 2013.
- Ugbo, F. (2013). The Gulf of Guinea: The Nigerian Gas Master Plan and Opportunities for the Development of Gas Infrastructure Being a Paper Presented.
- Ughamadu, (2018). NNPC Announces Policies to End Gas Flare. NNPC News and Update. May 2, 2018. Retrieved October 29, 2018 from <http://nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/1007/NNPC-Announces-Policies-to-End-Gas-Flare.aspx>.