

Oil Subsidy, Corruption Risk, Midstream and Downstream Oil Revenue in Nigeria: Problem, Prospects and Methodology

EFUNTADE, Olubunmi Omotayo, PhD

Federal University Oye-Ekiti, Ekiti State, Nigeria.

Email: bunmiefuntade@yahoo.com

EFUNTADE, Alani Olusegun, FCIB, ACA.

Federal University Oye-Ekiti, Ekiti State, Nigeria.

Email: alaniefuntadee@yahoo.com

DOI: 10.56201/ijefm.v7.no6.2022.pg36.55

Abstract

The exploratory research identified the problem and prospects on the oil subsidy corruption risk and downstream oil revenue in Nigeria. The study focused mainly on the revenue generated from oil refining, storing, marketing, distribution and sale of petroleum products with the purpose of investigating Nigeria's oil subsidy payments and its effects on the growth of downstream oil revenue and finding out if the level of corruption affects the downstream oil revenue sustainability in Nigeria. It is revealed that the following factors could explain downstream oil revenue and models are conceptualized that landing cost of PMS, poverty index, demand for local consumption, refining capacity and official pump price global oil price and exchange rate variation are probable significant variables in determining the volume of oil revenue in the downstream sector in Nigeria. A quantitative study and methodology are recommended to evaluate the impact of fuel oil subsidy and corruption indices on the dependent variable (downstream oil revenue) with a view to predicting and forecasting a sustainable and dependable oil revenue in refining, storing, marketing and distribution of petroleum products in Nigeria

Keywords: OIL SUBSIDY, CORRUPTION RISK, DOWNSTREAM OIL REVENUE

JEL Classification code: H0, E66, H27

1.0 Introduction

At the global level, international organisations and policymakers have raised concerns regarding how well-targeted energy subsidies have been, especially with regards to protecting the poor segment of the society. Those who believe that energy subsidies have outlived their usefulness have called for its abolition in order to free up fiscal resources for economic development.

The crude oil sector in Nigeria contributes substantially to the economy; however, these benefits are being compromised by significant subsidies on refined oil imports. The refined oil subsidy is paid primarily on imported fuel because domestic refineries cannot satisfy the national demand at current prices. Low fuel prices are considered an important benefit to the Nigerian people, where more than half the population lives in poverty in this oil rich country. The costs of these subsidies have been rising in recent years, due to volatile refined oil prices and the cost of corruption.

Nigeria gets 80% of its foreign exchange from oil earnings, but due to rising oil theft and the cost of fuel subsidies, the country has lost nearly \$6billion in planned revenue in 2022. Unavoidably, not much productive capacity is being used to the point that it could be a significant source of foreign exchange earnings. Nigeria's economy is still mostly monocultural and is reliant on the sale of oil and gas.

In 2023, the federal government predicts that petrol subsidies will rise to N6.72trillion if Africa's leading oil producer sticks with the divisive policy. Nigeria is suspected to be subsidizing its neighbours because of the arbitrage that its subsidies have created, as well as not knowing its precise daily fuel consumption. Investigations have revealed that the lowest level of economic confidence has given certain Nigerians, particularly the wealthy and hustlers, the confidence to gamble against the naira.

1.1 Downstream Oil Revenue

Downstream revenues are revenue receipts by government on refining, marketing and distribution of refined products and retailing activities. Nigerian National Petroleum Company (NNPC) Ltd is a fully owned subsidiary of the Nigerian National Petroleum Corporation (NNPC) that operates in the downstream sector of the Nigerian oil and gas industry. NNPC Ltd owns fuel stations in in each state of the federation including Abuja to provide sale outlets to market petroleum products to the Nigerian populace and to ensure stability of product supply for domestic consumptions.

The Downstream Sector is divided into four (4) main segments

- a) Refining
- b) Storing
- b) Marketing and Distribution of Refined Products
- c) Retailing

The Petroleum Industry Act (PIA) 2021 introduces clear distinctions between the Midstream and downstream petroleum industry operations. The midstream sector captures the establishment and construction of refineries and facilities for production of lubricants and petrochemicals. The sector also includes construction of facilities for the transportation and storage of petroleum liquids. The PIA provides players with details of permissible activities in the sector subject to obtaining appropriate licenses or permits.

According to NNPC, downstream oil revenues are accruable to federal government of Nigeria through sales of the following tabulated petroleum products:

Table 1: Downstream petrol products

S/NO	Downstream petrol products
1	Premium Motor Spirit (PMS)-Petrol
2	Automotive Gas Oil(AGO)-Diesel
3	Dual-Purchase Kerosene (DPK
4	Aviation Turbine Kerosene
5	Liquefied Petroleum Gas(cooking gas)
6	Fuel oil
7	Lubricants
8	Bitumen

Source: NNPC Limited

1.1.1 Refining

In 2010, Nigeria consumed approximately 280,000 bbl/d of oil. The country has four refineries (Port Harcourt I and II, Warri, and Kaduna) with a combined capacity of around 450,000 bbl/d. As a result of poor maintenance, theft, and fire, none of these refineries have ever been fully operational. In 2009 and some of 2010 these refineries operated at their lowest levels of between 0 and 30 percent of capacity, and led to the country importing about 85 percent of its fuel needs. By early 2011, operational capacity increased to between 60 and 75 percent but the country still requires product imports to meet demand. New refineries have been planned for several years now but lack of financing has caused several delays. As part of the PIB energy sector reforms described below, the government plans to end price subsidies and privatize the refining sector. In the meantime, according to Business Monitor International, NNPC has signed contracts to swap crude for products under yearly contracts with Trafigura, an oil trading company, and Cote d'Ivoire's national refiner.

The downstream sector involves operations such as refining of crude into its various components, importation of refined products, storage, distribution and marketing. These activities are carried out after exploration and production. The Nigeria National Petroleum Corporation (NNPC) is the largest player in the downstream industry through its subsidiaries, the Petroleum Products Marketing Company (PPMC), the Nigerian Pipelines and Storage Company Limited (NPSC) and the refineries. The PPMC oversees the supply of crude to refineries while the NPSC facilitates the operation of pipelines, depots and product distribution in the country.

Domestic crude allocations are deliveries to NNPC for downstream operations. The crude oil is expected to be delivered to the local refineries however, this was not the case in 2020. Due to the lack of refinery capacity, the domestic crude is now exported under a Direct Sales and Direct Purchase (DSDP) agreement. The total domestic crude allocation in 2020 was 108.464 mmbbls.

Refinery capacity in Nigeria is expected to increase by 400% between 2020 and 2024 as new refineries such as Dangote Refinery spring up in addition to the rehabilitation of the Port Harcourt refinery.

Table 2: Existing and proposed refineries in Nigeria

S/No	Refineries	Condition
1	Dangote Oil Refinery Ltd	Under construction
2	Warri Refinery & Petrochemical Co. Ltd	Existing
3	Union Trans Oil Refinery Ltd (Lagos)	Proposed
4	NNPC (Ohaji)	Proposed
5	Port Harcourt Refinery Co. Ltd	Existing
6	Kaduna refining & Petrochemical Co. Ltd	Existing
7	NNPC (Forcados)	proposed
8	Resource Petroleum Ltd	Existing
9	Rhema COG Energy Development Ltd	Proposed

Source: Public Information, NNPC, DPR

One of the primary responsibilities of NNPC is to ensure sufficient supply of PMS to every part of the country. Supply of PMS was predicated on domestic crude oil allocation, which is equivalent to the combined refining capacity of 445,000 barrel/day. This translates to about 17Million liters of PMS per day. out of PMS in the country has increased to about 60Million liters. This means that the allocation of 445, 000 barrel of crude oil per day for national consumption will not guarantee adequate supply of PMS. It is, therefore, necessary not to predicate allocation of crude oil for domestic consumption to the refining capacity but on the prevailing daily PMS

consumption of the country. It should be noted that crude oil allocated for domestic consumption is paid for at the prevailing international price of crude oil and subject to the same general terms and conditions as the international traders. This is to ensure that there is no value erosion to the Federation.

The Nigerian Gas Company (NGC), was a subsidiary of the defunct NNPC, which is now been replaced with the NNPC Limited under the new Petroleum Industry Act 2021 and other extant regulations which regulates gas supply to the domestic market. It controls a 1000 km gas collection, circulation, and dispersion pipeline grid with 56.6 million M3 capacity per day.

Table 3: Revenue Generating downstream NNPC subsidiaries in Nigeria

S/No	Downstream NNPC Subsidiaries
1	NNPC Retail
2	Duke Global Energy Investment Limited
3	Duke Oil Services UK Limited Incorporated
4	Duke Oil Company Inc products
5	Nigerian Petroleum Development Company
6	Warri Refining Petroleum Company Limited (WRPC)
7	Nigerian Gas Company Limited
8	Port-Harcourt Refining Company Limited (PHRC)
9	Petroleum Products Marketing Company Limited (PPMC)
10	National Engineering and Technical Company Limited
11	Kaduna Refining Company Limited (KRPC)
12	Integrated Data Sendees Limited (IDSL)
13	The Wheel Insurance Company Guernsey, Channel Islands
14	Nigerian Gas Marketing Company Limited (NGMC)
15	Nigerian Pipelines and Storage Company Limited (NPSC)
16	NNPC Health Maintenance Organisation
17	Ngas Limited Bermuda
18	Nidas Marine Limited
19	Nidas Shipping Limited
20	NNPC Liquefed Petroleum Gas (NNPC LPG)
21	NNPC LNG Limited
22	NNPC Oilfield Sendees Limited
23	NNPC Gas & Power Investment Company Limited
24	National Petroleum Telecommunication Limited (NAPET)
25	NNPC Gas and Power Investment Company (NGPIC)

Source: NNPC Group Audited Financial Statement 2020

1.2 Oil subsidy

Petroleum subsidy was introduced in the early 1970s by the Federal Government as a temporary measure to provide relief to Nigerians on high cost of petroleum products. The high cost of petroleum products at that time was partly due to the poor performance of the NNPC Refineries and the need for importation of refined products to ensure petroleum products availability in the country.

While Nigeria is one of the world's major producers of crude oil, the country's capacity for refining it is weak. Nigeria currently has four government-owned refineries under the supervision of the Nigerian National Petroleum Corporation (NNPC)—their combined total

refining capacity is 470,000 barrels per day. Two of the refineries are located at Port Harcourt, with capacity to refine 210,000 barrels per day, and are operated by the Port Harcourt Refining Company (PHRC) Limited. The older of the two has a nominal refining capacity of 60,000 barrels per day and was commissioned in 1965, while the new plant with nominal capacity of 150,000 barrels per day was commissioned in 1989. The two other refineries are located in Warri and Kaduna. The Warri refinery was established in 1978, currently has a refining nominal capacity of 125,000 barrels per day, and is operated by the Warri Refining and Petrochemicals Company (WRPC) Limited. The Kaduna refinery has a nominal refining capacity of 110,000 barrels per day and is operated by the Kaduna Refining and Petrochemicals Company (KRPC) Limited.

The gap between domestic consumption and refining of petroleum products partly reflects capacity utilization deficits in local refineries. Nigeria's refineries have been endemically inefficient, having suffered prolonged neglect and frequent breakdowns. Sadly, occasional turnaround maintenance efforts have failed to engineer sustained improvement in refining capacity over the years.

The rationale behind fuel subsidies in Nigeria, like any other country, is to moderate the impact of rising global oil prices on the welfare of Nigerians. At some point, subsidy payments will constitute a significant drain on public finances, as it is one form of transfer payments.

Remove or retain fuel subsidies? This is one of the many difficult decisions Nigeria might have to take in 2022. The fuel subsidy, conceived initially as a short-term support tool, has endured over time, thereby becoming a threat to fiscal sustainability. What was introduced in the 1970s to cushion the pass-through effects of rising international crude oil prices on Nigeria's domestic fuel price has become a topical issue with substantial fiscal and social dimensions. Over the years, the Government's fuel subsidy burden has heightened, especially during periods of high crude oil price, thereby threatening its sustainability as a price stabilization tool.

NNPC, being the supplier of last resort, has over the years, adopted various products importation arrangements such as Direct Product Importation, Off-shore Processing Arrangements (OPA), Exchange of Crude Oil for Products Arrangement (SWAP) and more recently the Direct Sale, Direct Purchase (DSDP) Arrangement was introduced.

NEITI oil and gas industry audits revealed that between 2006 and 2019, a total sum of N6.855trillion has so far been expended on petroleum subsidy, now referred to as under-recovery.

As in many other resource-rich countries, the Nigeria government introduced a fuel subsidy regime as part of strategies for cushioning the macroeconomic impacts of oil price shocks on the economy. Under this arrangement, the government regulates the domestic price of fuel and pays domestic marketers the difference between the regulated domestic price and the Expected Open Market Price (EOMP), which is determined by the Petroleum Products Pricing and Regulatory Agency (PPPRA). It is estimated that about N10 trillion was spent in fuel subsidy payments during the period 2006-2018 (Budget, 2019).

The Petroleum Products Pricing Regulatory Agency (PPRA) established in 2003, is charged with the responsibility of allocating import quotas to licensed OMCs and estimating the landing cost (ex-depot price) of petroleum products. Based on the estimates done by the PPRA, necessary

payments are made from the Petroleum Support Fund (PSF) to petroleum product marketers. When estimated landing costs are below actual costs to OMCs (under recovery), withdrawals are made from the PSF to support subsidy payments. On the other hand, when estimated costs are above total costs (over-recovery), OMCs remit the excess funds they received which is deposited in the PSF.

Many studies have focused on examining the implications of fuel subsidy for the Nigerian economy. For instance, Umar and Umar (2013) and Siddig et al. (2014) noted that Nigeria's subsidy regime distorts fiscal planning, encourages inefficient consumption, and increases inequality as richer households benefit more.

Subsidy, in economic sense, exists when consumers of a given commodity are assisted by the government to pay less than the prevailing market price of same. In respect of fuel subsidy, it means that consumers would pay less than the pump price per litre of petroleum product. On the other hand, fuel subsidy could be described as the difference between the actual market price of petroleum products per litre and what the final consumers are paying for the same products.

The difference, which is borne by the government, is caused by eight 'import-induced costs'. These costs, according to Afonne (2011) have been discovered to be responsible for the high prices of petroleum products in present day Nigeria. The costs include: (i) The freight, which is the cost of transporting petroleum products from North West Europe to West Africa. Trader's margin is the major component of the freight cost. (ii) There exist lithering expenses incurred on the trans-shipment of imported petroleum products from the "mother" vessel into "daughter" vessel. Mother vessel expenses which are based on the allowable 10 days demurrage. In addition, the shuttle vessel's chattering rate from Lagos offshore to Lagos and offshore Lagos to Port Harcourt. (iii) There is the NPA charge, which is the cargo due charged by the NPA for use of port facilities. Included in the import-induced costs is the stock finance, which is the cost of fund for the imported products. This includes the cargo financing based on the international London inter-bank offered rates. (iv) Here, there is the jetty depot, which is the tariff paid for use of facilities at the jetty by the marketers to move products to the storage depots. (v) depot operations cost covering storage charges and other services rendered by the depot owners. (vi) Landing cost is the cost of imported products delivered into the jetty depots. This comprises all other costs mentioned above. (vii) The last induced cost is the distribution margins, per litre on the template. The components include: retailers cost, transporters cost, dealers' margin, Bridging fund, and administrative charges (Petroleum Products Pricing Regulatory Agency (PPPRA) in (Afonne, 2011). All the eight import-induced costs mentioned above constitute the difference, which the federal government describes presently as fuel subsidy.

The opponents of fuel subsidy removal contend that there is nothing like subsidy in the petroleum sector in Nigeria. Rather, what the government describes as subsidy is the actual difference between the price of imported fuel in Nigeria and what the final consumers pay for same. The opponents were of the view that the price of imported fuel was caused by the eight import-induced costs, which include:

- (i) Freight

- (ii) Lightering Expenses
- (iii) NPA/NIMASA charges
- (iv) Stock Finance
- (v) Jetty Depot Charges
- (vi) Storage Charges
- (vii) Landing Cost and
- (viii) Distribution Margins.

1.2.1 Components of oil subsidy

Expected Open Market Price (EOMP) = *Total Landing Cost + **Distribution Margin + ***Taxes

Oil Subsidy (OS) = EOMP - Government Approved retail Price (GARP)

OS = EOMP - GARP

*Total Landing Cost = Product Cost + Freight + Storage Charges + Jetty Depot Charges + Stock finance + Traders' Margin + NPA/NIMASA Charges + Lightering Expenses.

**Distribution Margins = Retailers' Margin + Dealers' Margin + Transporters' Allowances + Bridging fund + Marine Transport Average (MTA) + Admin Charges

***Taxes = Highway maintenance + Government Tax + Import Tax + Fuel Tax

Source: PPPRA, 2019

The price difference between the EOMP and government-approved retail price does not remain constant: the EOMP follows fluctuations in international oil market prices, while the government price is sticky, and changes only when the government decides to “modulate” prices or a fiscal crisis compels it to attempt a removal of the subsidy.

The crisis was further exacerbated by the re-emergence of oil pipeline vandalism in the Niger-Delta region, leading to a rapid fall in crude oil production; and the imposition of foreign exchange restrictions which caused FOREX scarcity and rapid depreciation of local currency, Naira. The petroleum marketers were faced with difficulties to obtaining FOREX for their importation. The subsidy regime at the time became highly difficult to manage, and thus a reform that would lead to an upward price adjustment became imminent.

Consequently, the government decided to implement a price modulation that led to the increase in petroleum prices from 86.5 naira to 145 naira in January 2016, and now 150.69 naira in May 2017.

Resources spent on fuel subsidies have not only drained government budget, but have also compounded fiscal deficits and ultimately contributed to debt accumulation (Faith, et al., 1995)

1.3 Corruption

According to Adeoti et al. (2016), Massive corruption in the petroleum sector is responsible for astronomical subsidy payments. It is possible to address the corruption but to leave the subsidy itself in place. Without the corruption, the subsidy would be a good policy. The pricing of petroleum products in Nigeria is laden with controversies due to a lack of transparency in the determination of the expected open market price (EOMP) of the products. It is difficult to ascertain the veracity of the claims by the PPPRA due to the opaque nature of the operations of the petroleum industry, especially the NNPC. But given the current templates of the PPPRA, a liberalized regime that allows fuel importers to sell at market-determined prices would free the PPPRA from the burden of setting prices.

Ovaga (2012) examined the issue of fuel subsidy and find out the extent to which it has impacted on the lives of the masses in Nigeria. It was discovered that a group of dissidents and saboteurs otherwise called “cabals” have been working against the functionality of the existing refineries and also make frantic efforts to undermine the building of new ones. According to the study, it is done in order to engage in fuel importation for the purpose of satisfying their selfish desires. To ameliorate this ugly situation, Ovaga (2012) recommended that further importation of fuel should be stopped through building of new refineries and the ailing existing ones revamped without delay.

Nkogbu and Okorodudu (2015) examined the role of leadership in the deregulation of the downstream sector of the Nigerian petroleum industry. Primary data was collected through structured interview from 230 respondents via questionnaire. The survey method using the questionnaire was adopted in collecting data. The study highlighted the importance and role of leadership in the deregulation of the downstream sector of the Nigerian petroleum industry. The study revealed that corruption, brought about by petroleum subsidy, is obvious in the petroleum industry and that importation of petroleum products to meet local demand by Nigerians is attributable to leadership/managerial problem. It further revealed that leadership upon attainment of independence in Nigeria has not been accountable and transparent in the management of the nation’s oil wealth to transform the lives of Nigerians.

Ovaga (2012) asserted that a situation of subsidy exists when consumers are assisted by the government to pay less than the market price for the product they are consuming. In the same vein, Omotosho (2019) conceptualizes subsidy as the loss of revenue that should otherwise have accrued to the Federation Account if petroleum products were sold to consumers at prices above the cost of refining or importation of products, including distribution charges. Thus fuel subsidy

specifically is the difference between the price a consumer pays for the pump price of fuel and the actual total cost of producing or importing it.

Afonne (2011) described deregulation of the downstream sector as the opening of the downstream sector to competition where players are to participate at every segment of the value chain and the removal of entry barriers in the supply and distribution of petroleum products. The PPPRA similarly submit that deregulation of the downstream sector means opening up of the downstream sector of the petroleum industry to competition among all players in the industry. It means allowing every player the opportunity to refine or import petroleum products for use in the country in-so far as the product so refined or imported meet quality specification.

1.3.1 Product Losses from Pipeline Breaks

2020 pipeline performance indicated a 75% reduction in the number of reported pipeline breaks with a corresponding 60% reduction in product loss compared to 2019. According to Pipelines and Storage Company Ltd (NPSC), the improved performance is as a result of:

- Reduced pipeline activities
- Improved Security and maintenance of the pipeline

The vandalisation of crude oil network pipelines is a major challenge in the downstream industry, as petroleum merchandise losses have persistent unregulated. The defunct Nigeria National Petroleum Corporation lately revealed that the organization documented 45,347 pipeline vandalisation on its downstream pipeline system within the nation from 2001 and January to June of 2019. The Nigerian Extractive Industry Transparency Initiative declares that the country has suffered a loss of approximately USD 41.94 billion in 10 years owing to pipeline vandalisation (NEITI, 2019). The opaque nature of the management of the oil and gas sector and the subsidy regime can also explain the increasing activities of vandals who sabotage the distribution of refined petroleum products, and aggravate the leakages in government revenue. The number of pipeline vandalism incidents surged from 895 in 2004 to 3,505 in 2013, peaking at 3,674 in 2006. Although the number of pipeline ruptures and vandalism has reduced drastically to 84 in 2022 due to efforts by the federal government in awarding contract for monitoring and surveillance of pipelines to one of the major repentant militants. Insecurity- Between 2019 and 2020, Nigeria experienced over 1,000 points of pipeline vandalism, kidnapping and other forms of insecurity. This has negatively impacted the performance leading to lower investment, high costs and decline in government revenues.

Also related to the subsidy regime is the power play between the three tiers of government (federal,

state and local) in the management and sharing of revenue accruing into the Federation Account and the Excess Crude Account (ECA) because the payment of subsidies by the federal government through the Petroleum Support Fund (PSF) implicitly draws on the Federation Account. On several occasions, when the Federation Account is drawn down, the ECA is tapped for the rescue. However, the ECA is one of the two accounts (dollar and naira) where the Nigerian government saves revenue earnings from the difference between budgeted benchmark crude oil price and the actual price at the international market in a given year. The ECA is

designed to serve as a stabilization fund or fiscal buffer to shield the economy from crude oil price volatility in the international market.

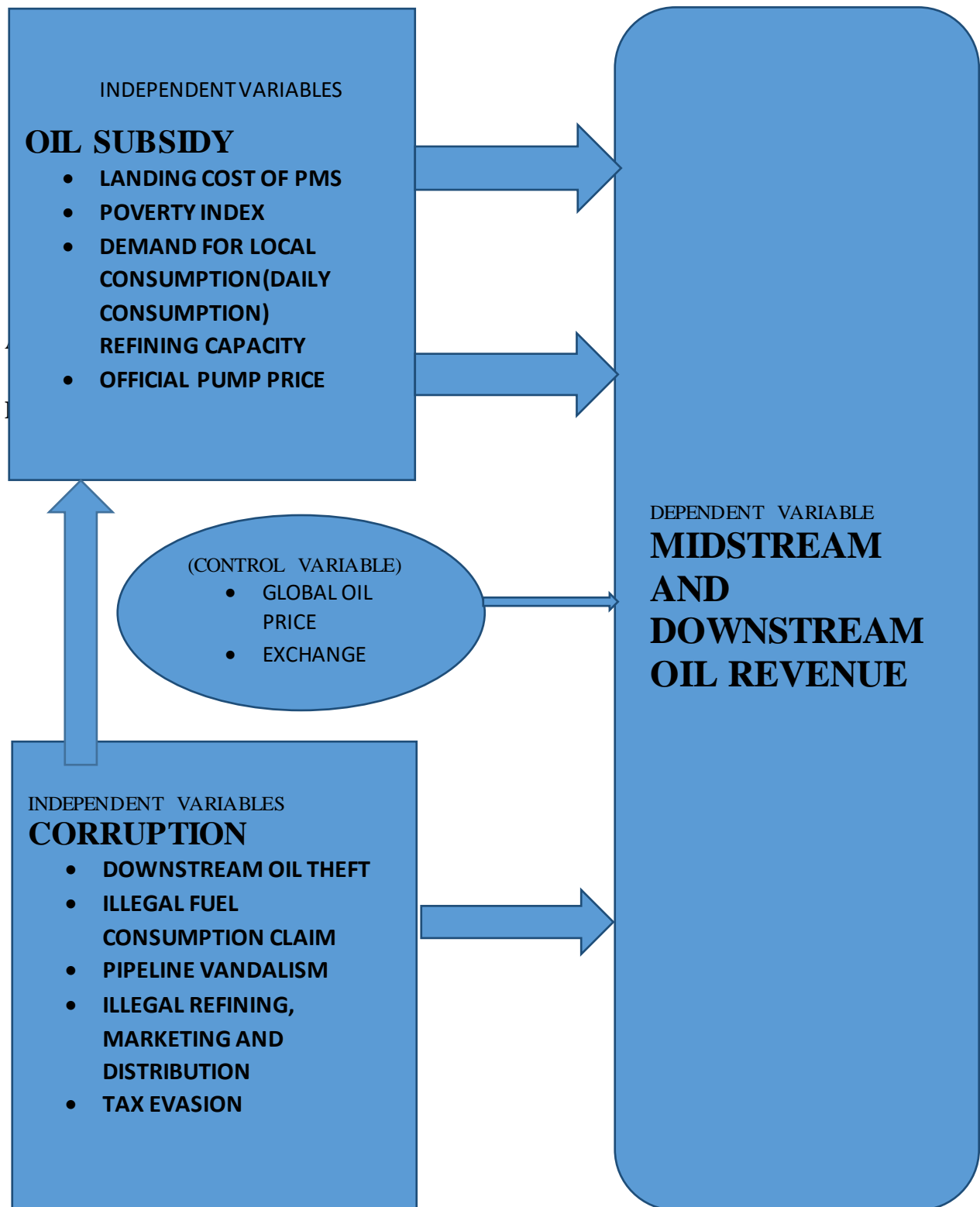
When there is perceived widespread corruption in subsidy disbursements – about 39 percent of annual fuel subsidy payments is lost to corruption (CPPA, 2012). However, we believe that the best way to address persistent corruption is to tackle its root cause.

Table 4: Refining capacity of existing refinery in Nigeria

S/No	Name of refinery	Refining capacity barrel per day (bpd)
1	Kaduna Refinery	110,000 bpd
2	Warri Refinery	125,000 bpd
3	Port Harcourt Refinery 1 & 2	210,000 bpd
4	Niger Delta Refinery (Private)	1000 bpd

Source: Department of Petroleum resources (DPR) 2021

Conceptual framework



Source: Authors' conceptualization and design

Dutch Disease Theory

The boom in the oil and gas sector led to the appreciation of Dutch currency. The boom resulted to the massive revenue generated as at late 1950s, which lead to currency appreciation. According to Ross (2002) the boom identified made other sectors to be neglected, this led to a precarious decline in the other sectors' contribution to gross domestic product in the country. Thus, the Dutch economy witnessed economic crises which arose as a result of gas price fluctuation, making the economy fall back to the sectors which were initially neglected but however, the neglected sectors could not sustain the economy as at that period. A country with abundant capital makes it possible for different sectors to thrive and become more lucrative to foreign investors, thereby, making the reward for labour in terms of wages and salary more rewarding and instigating an upsurge in the demand of labour. Competitive edge of sectors declined because of scuffle for available resources and cost incurred in securing production factors which trigger resource movement to more lucrative sector from less lucrative sector.

According to Brahmhatt et al.(2010) changes in the structure of production arises as a result of an upsurge in the price of goods and services exported. More so, the change in the structure could also arise when there is a new discovery in product line of natural resources which adversely affects output of the manufacturing sector in the country. Ismail (2010) tested Dutch disease on oil manufacturing exporting countries, the data covered the period 1997-2004 and the result of the study showed a negative relationship between oil price and manufacturing sector output. Secondly, countries that are open to foreign capital are prone to windfall shocks resulting to an increase in the above-mentioned sector output, it was also discovered that as windfall increases manufacturing sectors capital intensity increases alongside.

Resource endowment theory of growth: The major advocates of this theory was Adam Smith "absolute cost advantage", David Ricardo "Comparative cost advantage" among others, they argues that countries should specialize to produce and export according to their comparative advantage. The theory of comparative advantage suggests a country gains the greatest

Economic benefit relative to other countries by producing at lower overall cost, commodities which a country has in abundance or can be easily produced. Other countries will therefore benefit from trade only if they accept the cost advantage of the trading country and focus on producing a commodity in which they have an advantage. It is this theory that guides resource endowment economist's belief in free trade, specialization and the international division of labour. This was their reasoning behind why some countries produce agricultural and mineral commodities while others produce industrial goods.

The Dutch disease, the resource curse and the benign perspective. The Dutch disease hypothesis establishes that an exogenous unanticipated surge in foreign exchange revenues from the resource discovery will cause a real exchange rate appreciation and a decrease in output as well as employment of the non-resource traded goods sector, i.e., manufacturing. Hence, discovering natural resources is viewed as a curse for economic development. Similarly, the resource curse hypothesis postulates that countries endowed with natural resources perform poorly relatively to countries which are not endowed with natural

resources such as oil, natural gas, minerals and other non-renewable resources. The hypothesis asserts that natural resources especially oil abundance is a curse to developing countries rather than being a blessing to them. The benign perspective of natural resources abundance argues that natural resource endowments would assist the developing countries to move from the stage of underdevelopment to that of industrial 'take-off'.

From the government fiscal position, between 2015 and 2021, Nigeria has spent a cumulative sum of N3.64 trillion on fuel subsidies, rising from N307 billion in 2015 to N1.77 trillion in 2021 – representing a whopping increase of 477 percent (see Figure 2). Following the fall in the crude oil price to as low as US\$9 per barrel in April 2020 (average price in 2020 was US\$42 per barrel) as a result of the COVID-19 pandemic, fuel subsidies accounted for over 5 percent of the federal Government's retained revenue from around 11 percent in 2019 when crude oil price averaged US\$66 per barrel. However, the current rebound in the crude oil price has increased the fuel subsidy burden. According to the NNPC, the Nigerian Government will spend about N3.4 trillion on fuel subsidies in 2022. This subsidy expense figure is about 31.7 percent of projected government revenue of N10.74 trillion in 2022.

The rationale behind fuel subsidies in Nigeria, like any other country, is to moderate the impact of rising global oil prices on the welfare of Nigerians. At some point, subsidy payments will constitute a significant drain on public finances, as it is one form of transfer payments. Here are some arguments in support of ending the burden of fuel subsidies: persistent increase in crude oil prices. Since fuel subsidies are put in place to stabilize petrol pump prices, in periods of higher global oil prices, the Government faces two options: upward adjustment of the cost of PMS or a phase-out of the subsidy on petrol;

The total amount of subsidy claim by NNPC in 2020 was NGN133.74billion (US\$375.22million), out of which NGN106.99billion (US\$300.19million) was recovered from the Federation in 2020, leaving an outstanding balance of NGN26.74billion (US\$75.03million) to be recovered from the Federation in 2021, through budgetary provision. There was however no report of an independent

validation of these figures. Subsidy remains a heavy cost to the Federation.

There was a huge variance between the volumes of PMS stock reported by NNPC and what was reported by PPPRA. Both entities could not provide any explanation for the variance.

When government revenues from oil and non-oil sources are under intense pressure - Rather than being captured explicitly as an expenditure item in the annual budget estimates, the cost of the petrol subsidy is treated as "forgone revenue". The NNPC directly calculates fuel subsidy costs from the gross oil and gas revenues that it transfers to the Federation Account. This is where the issue of transparency and accountability becomes essential. For instance, pre-COVID-19, fuel subsidies accounted for 11.3 percent of FGN Retained Revenue in 2019, and this share rose more than doubled to 27% in the first eleven months of 2021.

Fixed prices have led to a huge unsustainable subsidy burden. Fuel subsidies do not reach intended beneficiaries, and they benefit the rich mostly. Subsidy administration has been beset with inefficiencies, leakages, and corruption. Subsidy costs have diverted resources away from investment in critical infrastructure. Subsidies have discouraged competition and stifled private investment in downstream petroleum. Huge price disparity has encouraged smuggling to

neighbouring countries. Refinery capacity in Nigeria is expected to increase by 400% between 2020 and 2024 as new refineries such as Dangote Refinery spring up in addition to the rehabilitation of the Port Harcourt refinery.

2.0 Methodology

2.1 Proposed Research Design

The research design for the study will be ex post facto research analysis of annual multivariate time series data. The study will try to examine the historical data in order to understand the current state of budget implementation in Nigeria and causal connections with revenue and budget risk factors. It will be useful to analyse a possible cause-and-effect relationship and predict causes.

2.2 Operationalisation of the Concepts, Model Specification and Variable Measurement

The following multiple linear regression analysis models will be used as guide to study the four specific research objectives:

Objective 1: to investigate the causal effect of oil subsidy on midstream and downstream oil revenue in Nigeria;

$$MDOR=f(LC,PI,DLC,RC,OPP)$$

$$MDOR =\beta_0+\beta_1 LC +\beta_2PI +\beta_3DLC + \beta_4RC + \beta_5OPP + \beta_6 GOP+ \beta_7 ERV + \varepsilon$$

Where;

MDOR represents Midstream and Downstream Oil Revenue (Dependent variable),

LC represents Landing Cost of PMS (Independent variable)

PI represents Poverty Index (Independent variable)

DLC represents Demand for Local Consumption (Independent variable)

RC represents Refining Capacity (Independent variable)

OPP represents Official Pump Price (Independent variable)

GOP represent Global Oil Price (Control variable)

ERV represent Exchange Rate Variation (Control variable)

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ and β_7 are regression coefficients to be estimated.
 ε is Error term.

A-priori Expectation

$\frac{dLC}{dMDOR} > 0$: connote that Landing Cost of PMS is expected to exert negative effect on Midstream and Downstream Oil Revenue in Nigeria.

$\frac{dPI}{dMDOR} > 0$: connote that Poverty Index is expected to exert negative effect on Midstream and Downstream Oil Revenue in Nigeria.

$\frac{dDLC}{dMDOR} > 0$: connote that Demand for Local Consumption is expected to exert positive effect on Midstream and Downstream Oil Revenue in Nigeria

$\frac{dRC}{dMDOR} > 0$: connote that Refining Capacity is expected to exert positive effect on Midstream and Downstream Oil Revenue in Nigeria.

$\frac{dOPP}{dMDOR} > 0$: connote that Official Pump Price is expected to exert negative effect on Midstream and Downstream Oil Revenue in Nigeria

Objective 2: to examine the causal relationship between corruption risk and Midstream and Downstream Oil Revenue in Nigeria;

$MDOR=f(DOT,IFC,IRE,TE,GOP,ERV)$

$$MDOR=\beta_0+\beta_1DOT+\beta_2IFC+\beta_3IRE+\beta_4TE+\beta_5GOP+\beta_6ERV+\varepsilon$$

Where;

MDOR represents Midstream and Downstream Oil Revenue (Dependent variable),

DOT represents Downstream Oil Theft (Independent variable)

IFC represents Illegal Fuel Consumption Claim (Independent variable)

IRE represents Illegal Refining, Marketing and Distribution (Independent variable)

TE represents Tax Evasion (Independent variable)

GOP represent Global Oil Price (Control variable)

ERV represent Exchange Rate Variation (Control variable)

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 are regression coefficients to be estimated.
 ε is Error term.

A-priori Expectation

A-priori Expectation

$\frac{dDOT}{dMDOR} > 0$: connote that Downstream Oil Theft is expected to exert negative effect on Midstream and Downstream Oil Revenue in Nigeria.

$\frac{dIFC}{dMDOR} > 0$: connote that Illegal Fuel Consumption Claim is expected to exert negative effect on Midstream and Downstream Oil Revenue in Nigeria.

$\frac{dIRE}{dMDOR} > 0$: connote that Illegal Refining, Marketing and Distribution is expected to exert positive effect on Midstream and Downstream Oil Revenue in Nigeria

$\frac{dTE}{dMDOR} > 0$: connote that Tax Evasion is expected to exert positive effect on Midstream and Downstream Oil Revenue in Nigeria.

2.3 Sources and methods of data collection

All the data that will be used in this research will come from primary and secondary sources.

2.4 Estimating Techniques

2.4.1 Descriptive Statistics and Normality Tests multivariate time series data

The following descriptive statistics, mean, median, percentage, variance, standard deviation, standard error and coefficient of variation, will be used to summarize the data. Normality of the data will be tested by skewness, kurtosis, Shapiro-Wilk test, Kolmogorov-Smirnov test and Jarque-Bera (JB) test.

2.4.2 Inferential Statistics for multivariate time series data

2.4.2.1 Diagnostic tests

The study will used the following diagnostic test to resolve the following econometric time series problems: Non-stationarity (Unit root)-Dickey Fuller(DF), Augmented-Dickey-Fuller(ADF), Phillips-Perron(PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests; Heteroscedasticity-Breusch-Pagan test, white test and Ramsey-Reset test; Autocorrelation-Durbin-Watson test; Multicollinearity-Variance Inflation Factors (VIF).

2.4.2.2 Estimating Techniques

The following regression, cointegration and causality tests will be conducted on the time series data: Regression: ARDL Bound test, Johansen approach and Error-Correction Mechanism(ECM) models. Causality: Toda-Yamamoto Causality, Engle-Granger causality, Sims-Granger causality and modified WALD test. Time series regression (estimating standard error of regression(S), R-squared, adjusted R-squared and predicted R-squared) using heteroscedasticity models for prediction applying Generalised Auto-Regressive Conditional Heteroscedasticity (GARCH) model and AutoRegressive Integrated Moving average (ARIMA).

3.0 Conclusion

The exploratory research identified the problem and prospects on the oil subsidy corruption risk and downstream oil revenue in Nigeria. The study focused mainly on the revenue generated from

oil refining, storing, marketing, distribution and sale of petroleum products with the purpose of investigating Nigeria's oil subsidy payments and its effects on the growth of downstream oil revenue and finding out if the level of corruption affects the downstream oil revenue sustainability in Nigeria. It is revealed that the following factors could explain downstream oil revenue and models are conceptualized that landing cost of PMS, poverty index, demand for local consumption, refining capacity and official pump price global oil price and exchange rate variation are probable significant variables in determining the volume of oil revenue in the downstream sector in Nigeria. A quantitative study and methodology are recommended to evaluate the impact of fuel oil subsidy and corruption indices on the dependent variable (downstream oil revenue) with a view to predicting and forecasting a sustainable and dependable oil revenue in refining, storing, marketing and distribution of petroleum products in Nigeria

The interest and passion that usually characterize petroleum discourse in Nigeria is due to inexplicable deprivations and sufferings of Nigerians amidst plenty and abundance. Nigeria is blessed with vast quantities of petroleum and is the sixth largest exporter of oil in the Organization of Petroleum Exporting Countries (OPEC). This has generated billions of dollars in revenue over the past 51 years since oil was found in Nigeria. But this has not translated into an improved economic growth. In the bid to solve such problems characterizing the petroleum sector industry in many countries, structural reforms of the petroleum sector has become a necessity hence recourse to deregulation. In deregulation, the role of government in the sector is being redefined, and markets are being deregulated (i.e. state interventions such as special treatment of state owned oil companies, price controls and monopolies are being broken up). Deregulation policy has globally been embraced by several countries in order to lessen public sector dominance for developing a liberalized market while ensuring adequate supply of products. Such is the story in Peru, Argentina, Pakistan, Philippines, Thailand, Mexico, Canada, Venezuela and USA, all of which have systematically dismantled their state-owned oil companies through deregulation.

Deregulation of the downstream sector of the Nigerian petroleum industry, as conceived in 2003, involved the removal of government control on petroleum products prices and the removal of restrictions on the establishment and operations including refining jetties and depots, while allowing privates sector players to be engaged in the importation and exportation of petroleum products and allowing market forces to prevail. The downstream sector operations cover crude oil conversion into refined and petrochemical products and finer chemicals, and gas treatment as well as transportation and marketing of the petroleum products

4.0 Recommendation

Although the subsidy regime is useful for stabilising the domestic economy, its effects on long run growth, agent's welfare and government's fiscal operations require further investigation. The findings of such investigation would provide useful insights relating to the fiscal sustainability of the subsidy programme as well as how best the government could proceed with future reforms (Omotosho, 2019). Federal Government should fully deregulate the downstream sector and savings made from the stoppage of the subsidy regime should be used to

improve the lives of citizens. The PIA is expected to address this issue. NMDPRA should investigate the discrepancy in the PMS stock volumes reported by NNPC and PPPRA.

A key factor that informed the dynamics of the present subsidy reform is the current fiscal crisis of Nigeria, which implied that subsidy payments could not be sustained. The decline in government revenue on the account of falling crude oil price amid falling crude oil output caused by pipeline vandalism and attacks on oil infrastructure in the Niger Delta region severely constrained the government's capacity to provide subsidy payments in the Nigerian Budgets.

Downstream oil activities needs to be explored and diversified by the Nigerian National Petroleum Corporation (NNPC), for this to be effectively done there is need to boost security on the high way this will reduce smuggling incidence by doing this the crude oil illegally exported will be reduced to a great extent

References

- Adeoti, J., Chete, L., Beaton, C. & Clarke, K. (2016). Compensation Mechanisms for Fuel Subsidy Removal in Nigeria. *International Institute for Sustainable Development (IISD) JSTOR*, 2016, 1-13.
- Afonne E. (2011). Politics of Oil Subsidy: The Cartel's Fraudulent Acts. *Nigerian Newsworld*, 24(15), 034-046.
- Agbaeze, E. & Ukoha, K. (2018). Oil a blessing or a curse: The Nigerian experience. *European Journal of Social Sciences*, 56(3), 262-270.
- Brahmbhatt, M., O. Canuto and E. Vostroknutova, 2010. Poverty reduction and economic management dealing with dutch disease. Economic Premise, *The World Bank Working Paper Series*, 16, 1-7.
- Budgit (2019). Nigeria's petrol subsidy regime: dilemma of the world's most populous black nation. *Budgit Policy Brief*.
- CBN (2021) Central Bank of Nigeria Annual Report, Central Bank of Nigeria, Abuja, Nigeria.
- Damodar N., Gujarati & Porter, D. C. (2009). Methodology of Econometrics: Basic Econometrics. McGrawHill companies Inc.
- Faith, B., Aleagha, A. & Ferroukhi, R. (1995). The Economic Impact of Subsidy Phase Out in Oil Exporting Developing Countries: A Case Study of Algeria, Iran and Nigeria. *Energy Policy*, 23(2), 209-215.
- Federal Republic of Nigeria. (2021). Petroleum Industry Act. Abuja: Federal Republic of Nigeria.
- National Bureau of Statistics, (2021). The Nigerian Statistical Fact Sheets on Economic and Social Development. Abuja: NBS.
- Nigerian National Petroleum Corporation Statistical Bulletin, (2021)
- Nkogbu, O. G. & Okorodudu, O. (2015). Deregulation of the Downstream Sector of the Nigerian Petroleum Industry: The Role of Leadership. *European Journal of Business and Management*, 7(8), 35-45.
- Omotosho, B. S. (2019). Oil Price Shocks, Fuel Subsidies and Macroeconomic (In)stability in

- Nigeria. *CBN Journal of Applied Statistics*,10(2),1-36.
- Ovaga, O. H. (2012). Subsidy in the downstream oil sector and the fate of the masses in Nigeria. *Kuwait Chapter of Arabian Journal of Business and Management Review*,1(6),1-12.
- PPPRA, 2019. Pricing Templates. [Online] Available at: <http://pppra.gov.ng/pricing-template/>
- Ross, M.L., 2002. Booty futures: Africa's civil wars and the futures market for natural resources. Paper Presented at the Annual Meeting of the American Political Science Association, Boston Marriott Copley Place, Sheraton Boston & Hynes Convention Center, Boston, Massachusetts.
- Siddig, K., Aguiar, A., Grethe, H., Minor, P., & Walmsley, T. (2014). Impacts of removing fuel import subsidies in Nigeria on poverty. *Energy Policy*,69,165-178.
- The Nigerian Economic Summit Group (NESG), 2021. Making Nigeria's Oil & Gas Sector Deregulation Work for Economic Growth and National Prosperity.
- The Nigeria Extractive Industries Transparency Initiative (NEITI) (2019). Nigeria Lost \$42 Billion to Crude Oil Theft in Nine Years.