

**ASSESSING THE COMPENSATION AND
REINVESTMENT PLANS FOR FUEL SUBSIDY
RATIONALIZATION IN NIGERIA**

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**ASSESSING THE COMPENSATION AND
REINVESTMENT PLANS FOR FUEL SUBSIDY
RATIONALIZATION IN NIGERIA**

by

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LIST OF ABBREVIATIONS

AQI	Air Quality Index
CAN	Climate Action Network
CET	Constant Elasticity of Transformation
CGE	Computable General Equilibrium
CPPA	Centre for Public Policy Alternatives
DSDP	Direct Sale of Crude Oil and Direct Purchase of Product
EOMP	Expected Open Market Price
GEEP	Government Enterprise and Empowerment Program
IDS	Institute of Development Studies
IEA	International Energy Agency
IFPRI	Food Policy Research Institute
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification System
LPG	Liquified Petroleum Gas
MC	Marginal Cost
MSME	Micro, Small and Medium Enterprises
NCTP	N-power, National Cash Transfer Program
NDPR	Niger Delta Petroleum Resources
NLC	Nigerian Labor Congress
NNPC	Nigerian National Petroleum Corporation
NUPENG	Nigerian Union of Petroleum and Natural Gas Workers
OMC	Oil Marketing Companies
PENGASSAN	Petroleum and Natural Gas Senior Staff Association of Nigeria
PPPRC	Petroleum Product Pricing Regulatory Committee
PSF	Petroleum Support Fund

SAM	Social Accounting Matrix
SDG	Sustainable Development Goals
SURE-P	Subsidy Reinvestment and Empowerment Programme
WMO	World Metrological Organization
WTO-ASCM	World Trade Organization's Agreement on Subsidies and Countervailing Measures

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MENILAI PELAN PAMPASAN DAN PELABURAN SEMULA RASIONALISASI SUBSIDI BAHAN BAKAR DI NIGERIA

ABSTRAK

Nigeria telah sepenuhnya memansuhkan subsidi bahan api pada Mei 2023. Untuk mengurangkan kesan dasar ini, kerajaan telah memperkenalkan rancangan yang bercita-cita tinggi untuk mengitar semula hasil daripada pemansuhan subsidi bagi memberi pampasan kepada isi rumah yang terkesan dan melabur semula dalam sektor ekonomi kritikal. Namun, rancangan ini telah menimbulkan persoalan mengenai potensi kesannya, keberkesanan, dan kecekapan pelaksanaannya. Kajian ini menggunakan data matriks perakaunan sosial (Social Accounting Matrix) 2018 untuk Nigeria dan menggunakan model penghitungan keseimbangan umum dinamik (Dynamic Computable General Equilibrium Model) untuk menilai rancangan pampasan dan pelaburan semula kerajaan. Objektif kajian ini adalah: (i) menilai kesan pemansuhan subsidi bahan api tanpa pampasan dan pelaburan semula, (ii) menilai kesan pemansuhan subsidi bahan api dengan pampasan dan pelaburan semula, (iii) menilai kecekapan pengagihan sumber antara perbelanjaan pampasan dan pelaburan semula, (iv) mengenal pasti garis masa yang optimum untuk melaksanakan rancangan pampasan dan pelaburan semula, dan (v) mengenal pasti laluan dasar untuk pengagihan sumber yang cekap dan garis masa pelaksanaan yang optimum. Hasil kajian menunjukkan bahawa pemansuhan subsidi tanpa pampasan dan pelaburan semula membawa kesan buruk kepada ekonomi serta kerugian kebajikan yang signifikan kepada semua isi rumah. Dengan memperkenalkan perbelanjaan pampasan dan pelaburan semula oleh kerajaan, banyak hasil ekonomi bertambah baik, dan kebajikan isi rumah kembali pulih. Walau bagaimanapun, pengagihan sumber kerajaan

antara pampasan dan pelaburan semula didapati tidak begitu cekap. Penambahan 29% dana daripada perbelanjaan pelaburan semula kepada pampasan untuk isi rumah yang terkesan menunjukkan hasil yang lebih baik. Selain itu, melaksanakan rancangan tersebut secara berperingkat antara tahun 2024 dan 2025 memberi manfaat ekonomi yang lebih besar berbanding pelaksanaan sepenuhnya dalam tahun 2024. Gabungan pengagihan semula 29% kepada pampasan dengan pelaksanaan rancangan selama dua tahun didapati menjadi laluan dasar terbaik untuk kerajaan. Berdasarkan dapatan ini, kajian mencadangkan keperluan untuk melaksanakan sepenuhnya rancangan pampasan dan pelaburan semula yang dicadangkan oleh kerajaan bagi mengurangkan kerugian kebajikan isi rumah dan meminimumkan kesan negatif terhadap ekonomi. Namun, sebanyak 29% dana perlu diagihkan semula daripada perbelanjaan pelaburan semula kepada pampasan untuk isi rumah yang terkesan bagi membolehkan mereka menangani kenaikan harga secara lebih efektif. Pelaksanaan rancangan yang dicadangkan perlu dilakukan secara berperingkat dalam tempoh dua tahun, di mana 25% daripada rancangan dilaksanakan pada tahun 2024 dan baki 75% dilengkapkan pada tahun 2025 untuk mengelakkan ekonomi terlalu panas. Kerajaan wajar mengguna pakai kedua-dua cadangan ini secara serentak kerana gabungan ini memberikan manfaat yang lebih besar berbanding pelaksanaan hanya salah satu daripadanya.

ASSESSING THE COMPENSATION AND REINVESTMENT PLANS FOR FUEL SUBSIDY RATIONALIZATION IN NIGERIA

ABSTRACT

Nigeria completely rationalized fuel subsidies in May 2023. To cushion the effect of this policy, the government rolled out ambitious plans to recycle proceeds from the subsidy removal to compensate vulnerable households and reinvest in critical sectors of the economy. Yet these plans have prompted some unsettling questions regarding their potential impacts, adequacy, and efficiency. This research utilizes the 2018 social accounting matrix data for Nigeria and employs a dynamic computable general equilibrium model to assess the compensation and reinvestment plans of the government. The objectives of the study are: (i) to examine the impact of fuel subsidy rationalization without compensation and reinvestment, (ii) to examine the impact of fuel subsidy rationalization with compensation and reinvestment, (iii) to assess the efficiency of resource allocation between compensation and reinvestment expenditure, (iv) to identify an optimal timeline for implementing the compensation and reinvestment plans and (v) to identify a policy pathway for efficient resource allocation and optimal implementation timeline. Results from the research show that subsidy removal without compensation and reinvestment brings detrimental impacts to the economy and significant welfare losses to all households. By introducing government compensation and reinvestment expenditures, many economic outcomes improve and households' welfare recovers. However, the government's allocation of resources between compensation and reinvestment expenditure was not the most efficient. Reallocating an additional 29% of funds from reinvestment expenditure to compensate vulnerable households offered better outcomes. Additionally, sequencing

implementation between 2024 and 2025 was more beneficial to the economy compared to a full-scale implementation of the entire plan in 2024. Combining the reallocation of 29% to compensation with a two-year implementation of the spending plan was the best policy pathway for the government. Based on these findings, the study recommends the need to fully implement the proposed compensation, and reinvestment plans of the government to mitigate households' welfare losses and minimize negative impacts on the economy. However, in doing so, 29% should be reallocated from reinvestment spending to further compensate vulnerable households to enable them to effectively cope with the increase in general price levels. The implementation of the proposed plans should be phased in within a period of two years such that 25% of the plan is implemented in 2024 and the remaining 75% is completed in 2025 to avoid overheating the economy. The government should simultaneously adopt the two latter recommendations as they jointly offer greater gains than the adoption of just one of them.

CHAPTER 1

INTRODUCTION

1.1 Background

Tackling the current global climate crisis and achieving the United Nations Sustainable Development Goals (SDGs) by 2030 requires rationalizing global fossil fuel subsidies. These subsidies promote the consumption and production of carbon-intensive fuels by artificially lowering their prices relative to those of clean energy solutions (Timperley, 2021). Historically, fossil fuel subsidies were introduced against the backdrop of the global energy crises. The Arab oil embargo of 1973 created the global energy crisis that saw oil prices skyrocketing by about 300% (Chaudry & Ali, 2021). Most governments saw the need to phase-in fuel subsidies in addition to other efficiency measures to insulate energy users from the adverse effects of soaring energy prices and avert economic adversities (Strasbourg, 2022). These subsidies are financial mechanism through which governments reduce the price of fuel below market levels by absorbing a portion of the costs with the aim of shielding consumers from volatile or high fuel prices, promote energy affordability, and support economic activities that rely heavily on energy inputs (Sowa, 2006). But even as the embargo ended in 1974, the economic impacts still lingered for decades and reverberated widely across global economies, necessitating those subsidies to persist (Onyekwena et al., 2017). With time, however, these subsidies morphed to become a vital tool for hedging against frequent fluctuations in global energy prices and a useful policy instrument for redistributing income and bolstering economic development (Del Granado et al., 2012; Foo et al., 2020).

There are several rationales for providing fossil fuel subsidies, including supporting the poor and improving social equity. Access to modern energy resources such as kerosene, natural gas, and petrol, is critical to enhancing living standards and sustaining economic growth (Kabir, 2022; Yang et al., 2022). Low-income households that are particularly credit-constrained can usually not afford the upfront cost of gas cylinders, for example, or the operating cost of cooking with Liquefied Petroleum Gas (LPG) (Shari et al., 2022). Without any form of financial intervention, poor households would remain locked in on solid fuels such as firewood, dung, and straw, which are freely collected but deleterious to human health (Tandjaoui-Lambiotte et al., 2022; Younger, 2022). Providing subsidies on modern fossil fuels such as kerosene and LPG, or cleaner cooking appliances, enables the transition to low-carbon fuels while avoiding toxic indoor air pollution from biomass fuels (Maccarty, 2022). In addition, fuel subsidies are crucial for promoting energy security. Global oil prices are volatile, exposing economies heavily reliant on imported fuel to international market risk (Akdeniz et al., 2022). Subsidies that help to diversify the energy portfolio from imported petroleum to home-processed natural gas, for instance, can significantly reduce overdependence on imports and hedge economies against global vulnerabilities (Ooft et al., 2022).

Another benefit of providing fuel subsidies is to encourage and deepen the production capacity of domestic refineries to boost domestic sufficiency and enhance supply reliability (Bhattacharyya, 2022). Besides, in countries where energy markets have become globally uncompetitive or where their export market has disappeared, government subsidies help to revive competitiveness and avoid imminent shutdowns and massive layoffs (Bacon et al., 2010; Climate Action Network [CAN], 2015). The motivation to reduce carbon emissions from traditional biomass sources can also entice

subsidy payments on transition fuels such as natural gas (Peter et al., 2019; Yahong et al., 2022).

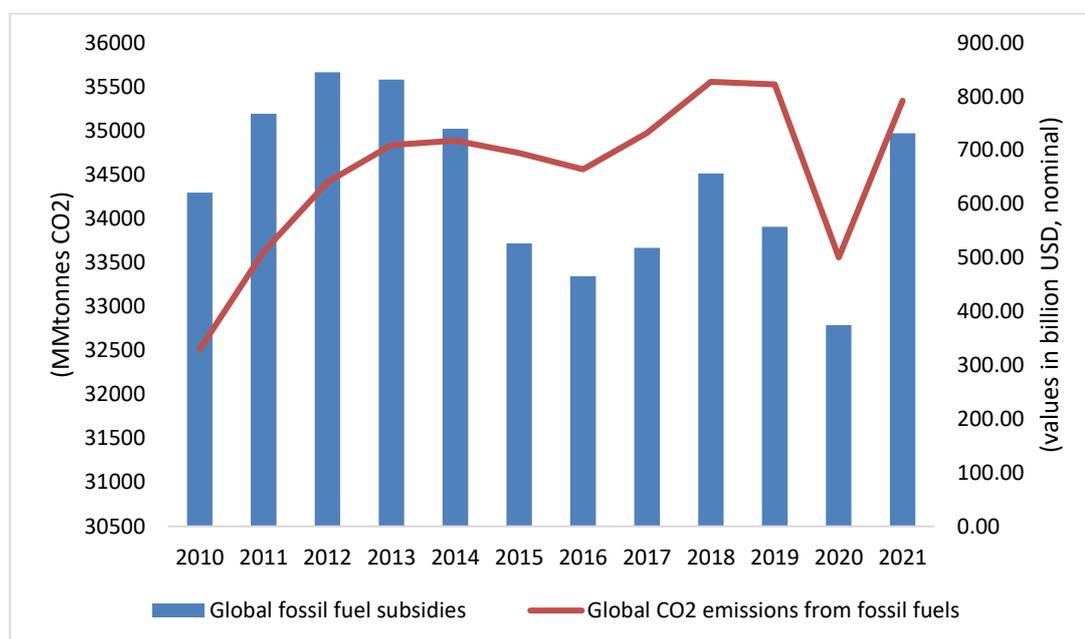


Figure 1.1 Trend of global fossil fuel subsidies and CO_2 emissions

Source: Black et al. (2023) and EIA (2023)

However, despite these benefits, fossil fuel subsidies carry huge fiscal costs and pose a serious development challenge in many countries. For one, these subsidies are on the rise (see Figure 1.1). According to the International Monetary Fund (IMF), global fossil fuel subsidies in 2020 was USD\$5.9 trillion. This amount was 6.8% of global GDP in the same year and is expected to rise to 7.4% by 2025 as energy prices rebound (IMF, 2022). For another, fuel subsidies sap government revenue needed to provide essential public services. The World Bank, for example, noted that many developing economies pay fuel subsidies that manifoldly exceed the entirety of their social safety net expenditure (Inchauste & Victor, 2017). Besides, rationalizing fuel subsidies is key to achieving the United Nations Sustainable Development Goals because it promotes climate action (SDG 13) and help to foster sustainable

consumption and production pattern (SDG 12) in addition to enhancing good health and wellbeing (SDG 3) (Wooders et al., 2019).

The concept of fuel subsidy rationalization entails the systematic reduction or restructuring of government payments that support fossil fuel consumption, aimed at aligning subsidy levels with economic efficiency and sustainability objectives (Coady et al., 2017). This process involves critically evaluating the necessity and impact of these subsidies, retaining only those that can be justified as economically efficient and socially beneficial while eliminating those that encourage excessive fossil fuel consumption, distort market prices, or impose fiscal burdens (Adeoti et al., 2016). Rationalization thus entails a partial reduction or a complete phase-out of subsidies, depending on the extent to which they contribute to inefficiencies, such as artificially lowering fuel prices, promoting overconsumption, and inhibiting the transition to cleaner energy sources. Through this approach, the goal is to create a balanced policy that minimizes economic distortions and environmental impacts, while addressing the needs of vulnerable populations affected by subsidy reductions.

In deciding whether to remove or retain these subsidies, weighing their relative cost and benefit is a crucial decision criterion (Flochel & Gooptu, 2015). In light of this, many empirical studies have shown that fuel subsidies are mostly regressive, inefficient, and pose significant social costs to the environment and human well-being (e.g., Coady et al., 2017; Solarin, 2022a; Taghvaei et al., 2022). Other researchers have reported that these subsidies significantly benefit the rich more than the poor (e.g., Celasun et al., 2022; Soile & Mu, 2015; Solarin, 2022b). And the negative environmental externalities portended by the subsidies have been linked to problems such as cardiovascular diseases, neonatal morbidity, and climate change (Abbasi et al., 2022; Hao et al., 2022; Konduracka & Rostoff, 2022).

These reasons informed the fuel subsidy rationalization policy in Nigeria. The story of fuel subsidy in Nigeria can be traced back to the 1970s when the government introduced subsidies on domestic fuel consumption to cushion the adverse effects of high oil prices instigated by the OPEC embargo in the 1970s (McCulloch et al., 2020). It was supposed to be a temporary intervention but lasted until 2023. Because fuel prices are fixed at a nominal value in the country, subsidy bills have skyrocketed due to rising inflation and currency devaluation. On top of that, these subsidies have also been regressive and prone to corruption (Akov, 2015). As such, since 1973, every Nigeria head of state has implemented a partial rationalization of fuel subsidy (Henshaw & Onyeacholem, 2012). The first attempt was in 1973, and since then, successive governments have continued to gradually adjust regulated pump prices toward efficient market levels (see Table 1.1)

The market for petroleum product in Nigeria offers the narrative for understanding the nuances of fuel subsidy in the country. On the supply side, Nigeria is one of the largest producers of oil and gas in Africa (Ekanem, 2024). In 2020, it had a proven oil and gas reserve of 36,910 million barrels and 203,056.10 billion standard cubic feet, representing a 2.2% and 1.1% increase compared to its reserve in 2017. Most of the country's exploration comes from its reserves in the Niger River Delta and the deep offshore of the bight of Benin, the Gulf of Guinea, and the bight of bonny. Due to security challenges, exploration has largely been on the deep offshore fields, with most investors now divesting their onshore assets (Adesina, 2024). The NNPC plans to issue new crude oil licenses to investors to expand oil extraction and execute five new oil extraction projects in the country; four offshores and one on the onshore.

Table 1.1 Historic attempts at fuel subsidy rationalization in Nigeria

Year	Regime	PMS Price (₦)	PMS Price Adjusted to (₦)	Price change (₦)	% Change	% Price change per regime
1973	Yakubu Gowon	0.06	0.0845	0.0245	41%	41%
1976	Murtala Mohammed	0.085	0.09	0.0055	7%	7%
1978	Olusegun Obasanjo	0.09	0.15	0.06	67%	67%
1982	Shehu Shagari	0.15	0.2	0.05	33%	33%
1986	Ibrahim Babangida	0.2	0.395	0.195	98%	
1988	Ibrahim Babangida	0.395	0.42	0.025	6%	
1989	Ibrahim Babangida	0.42	0.6	0.18	43%	
1991	Ibrahim Babangida	0.6	0.7	0.1	17%	163%
1993	Ernest Shonekan	0.7	5	4.3	614%	614%
1993	Sani Abacha	5	3.25	-1.75	-35%	
1994	Sani Abacha	3.25	15	11.75	362%	
1994	Sani Abacha	15	11	-4	-27%	300%
1998	Abdulsalam Abu.	11	25	14	127%	
1999	Abdulsalam Abu.	25	20	-5	-20%	107%
2000	Olusegun Obasanjo	20	30	10	50%	
2000	Olusegun Obasanjo	30	22	-8	-27%	
2002	Olusegun Obasanjo	22	26	4	18%	
2003	Olusegun Obasanjo	26	42	16	62%	
2004	Olusegun Obasanjo	42	50	8	19%	
2004	Olusegun Obasanjo	50	65	15	30%	

Table 1.1 (Continued)

Year	Regime	PMS Price (₦) ¹	PMS Price Adjusted to (₦)	Price change (₦)	% Change	% Price change per regime
2007	Olusegun Obasanjo	65	75	10	15%	167%
2007	Umaru Yar'dua	76	65	-11	-14%	-14%
2012	Goodluck Jonathan	65	142	76	117%	
2012	Goodluck Jonathan	142	97	-44	-31%	
2014	Goodluck Jonathan	97	87	-10	-10%	75%
2016	Muhammadu Buhari	87	86	-1	-1.1%	
2021	Muhammadu Buhari	86	145	59	69%	
2021	Muhammadu Buhari	145	167	22	15%	
2022	Muhammadu Buhari	167	175	8	5%	87.9%
2023	Bola Ahamad Tinubu	175	546	371	212%	212%

¹₦ is the Nigerian naira, which is the country's official currency.

Source: Updated from Onuegbu (2015)

The projects are the Qua Ibo (90 thousand barrel per day [b/d]), Zabazaba-Etan (120 thousand b/d), Bonga southwest Aparo (150 thousand b/d), Preowei (50 thousand b/d), and Owowo (160 thousand b/d) (EIA, 2020). See Figure 1.2 for the growth of Nigeria oil and gas reserve over time.

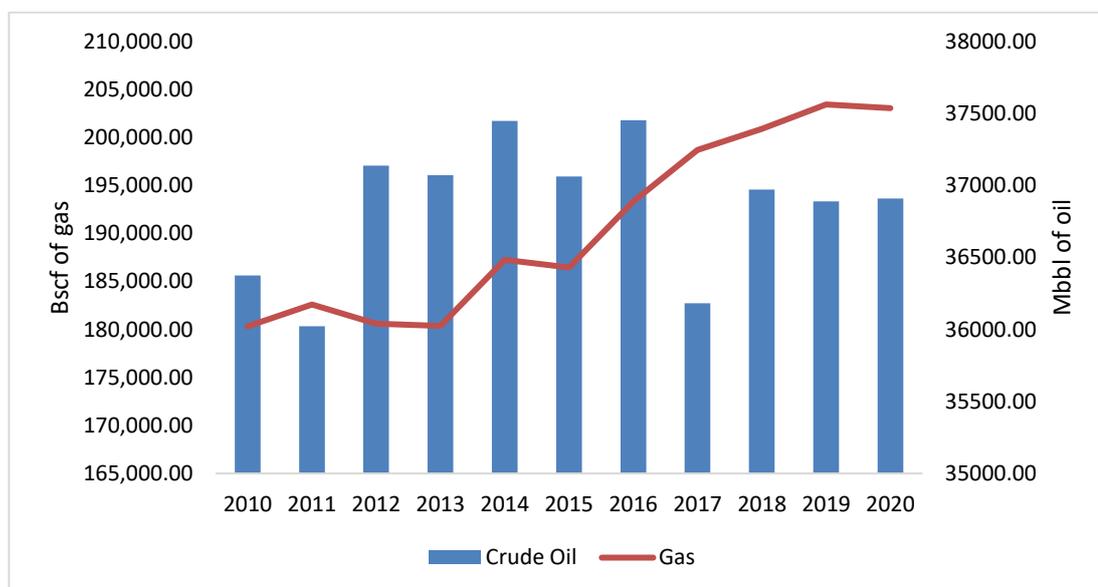


Figure 1.2 Proven crude oil and gas Reserves in Nigeria

Source: NNPC (2020b)

Nigeria has three state-owned refineries, namely Port Harcourt I and II, Warri, and Kaduna refineries, with a combined production capacity of 445,000 b/d. However, only an average of 30% of this capacity is being utilized (see Table 1.2). Despite frequent Turn-Around-Maintenance, the output from these refineries remains low and sometimes even zero (Onyekwelu, 2020). Factors such as operational failures, fires, and sabotage of crude oil pipelines have been responsible for the disruption to output. Oil marketers lift available refined oil from these refineries and import the deficit to meet domestic demand. However, whether home-refined or imported, the government regulates the retail pump price of petroleum through the Petroleum Product Pricing Regulatory Commission (PPPRC) (KPMG, 2014). But this has changed since the

government abolished fuel subsidies and deregulated the downstream oil sector. The prices of petroleum products are now largely determined by market forces.

Recent development in the country’s oil and gas industry point to future self-sufficiency in refined petroleum. A small privately-owned refinery in Ogbele, River state, currently produces 6,000 b/d of residual fuel, oil, marine diesel, and kerosene. The refinery is owned by the Niger Delta Petroleum Resources (NDPR), a subsidiary of the Niger Delta Exploration and Production. The company is planning to expand its refining capacity to 11,000 b/d (EIA, 2020). Additionally, the Dangote refining and petrochemical complex in the Lekki free trade zone of Lagos has a 650,000 b/d crude oil distilling unit, making it the world's largest vertically integrated refinery (EIA, 2020). The refinery is expected to significantly increase the country's refining capacity and contribute to the economic development of Nigeria when it comes to fruition by 2023.

Table 1.2 Domestic output and capacity utilization of state-owned refineries

Year	Kaduna	Port Harcourt	Warri	Capacity Utilization (%)
2011	22.17	-	27.99	50.16
2012	29.12	11.95	27.88	68.95
2013	29.33	9.18	35.99	74.5
2014	-	9.24	17.28	26.52
2015	2.98	4.66	7.07	14.71
2016	9.24	17.28	12.03	38.55
2017	14.98	24.5	10.3	49.78
2018	0.4	8.47	15.05	23.92
2019	0.73	0.29	6.58	7.6

Source: NNPC (2020b)

On the demand side, Nigeria's domestic demand for refined petroleum products is met from two main sources. Firstly, through the three state-owned refineries from which the government sells to oil marketers and the NNPC retailing Ltd. for distribution across the country. However, because of the low refining capacity of these refineries, their combined output is usually not enough to meet domestic demand. For example, between 2003 and 2013, domestic demand for fuel stood at an average of 11 million metric tons, while the combined output from the three refineries was only 5 million metric tons, leaving a production gap of 6 million metric tons (Adeoti et al., 2016). Considering the ever-growing domestic demand, even if all three refineries were to run at full capacity, their combined output would be insufficient to satisfy the current domestic demand. This is because daily demand for Petrol (PMS) is estimated at around 50-60 million litres while all three refineries can only produce 19 million litres p/d when operating at optimum (see Figure 1.3).

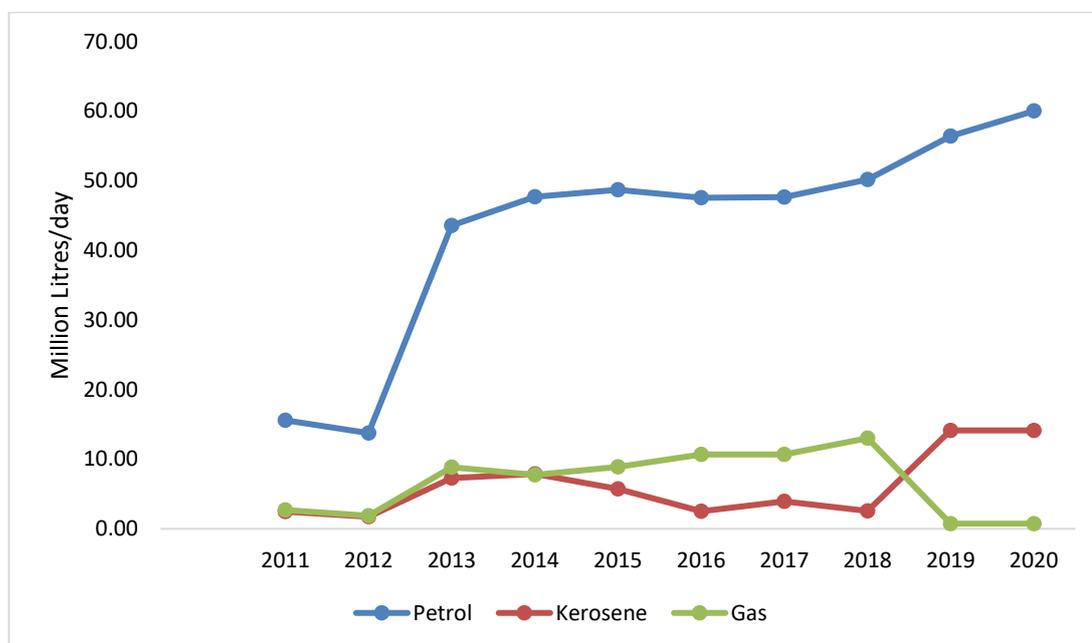


Figure 1.3 Average Daily Petroleum Products Distribution

Source: NNPC (2020b)

The second source of meeting domestic demand for refined petroleum products in Nigeria is through importation. This source constitutes over 80% of domestic consumption (Figure 1.4). Via the Open Account Method, the Pipelines and Products Marketing Company Limited (PPMC), a subsidiary of the NNPC, imports refined oil using oil traders. These traders sell back imported oil to the PPMC in exchange for cash. The PPMC then sells the fuel to retailers and other intermediary companies in the country. However, this Open Account Method of oil importation ended in 2010 when the government's debt to oil-importing companies rose to over USD\$3billion, and local refining capacity declined to a discouraging 20% (Etomi, 2017). For these reasons, the NNPC introduced a new oil swap deal called the Oil-For-Product (RPEA), which pays for imported refined oil in exchange for crude oil. The crude reserve for this contractual transaction is registered in the domestic crude allocation account. But the RPEA deal only lasted between 2010 and 2015 due to challenges, including mismanagements, vague contract terms, and corruption, resulting in unfavourable gains for the government (Suleiman, 2020). Another deal called the Direct Sale of Crude Oil and Direct Purchase of Product (DSDP) replaced the RPEA in 2015. Though the DSDP was contractually similar to the RPEA, the former had clearer terms and tighter regulations that helped to maximize benefits for the Nigerian government.

But even with the new import deal, the government still ensures that oil prices do not completely pass through to the domestic market. As such, it sells refined oil purchased from oil marketers to oil retailers at prices much lower than their production and freight costs. This price difference was previously born by the government in the form of subsidy payment to the oil marketers. Until May 2023 when the president declared that fuel subsidy is gone, all subsidy payment later became upended.

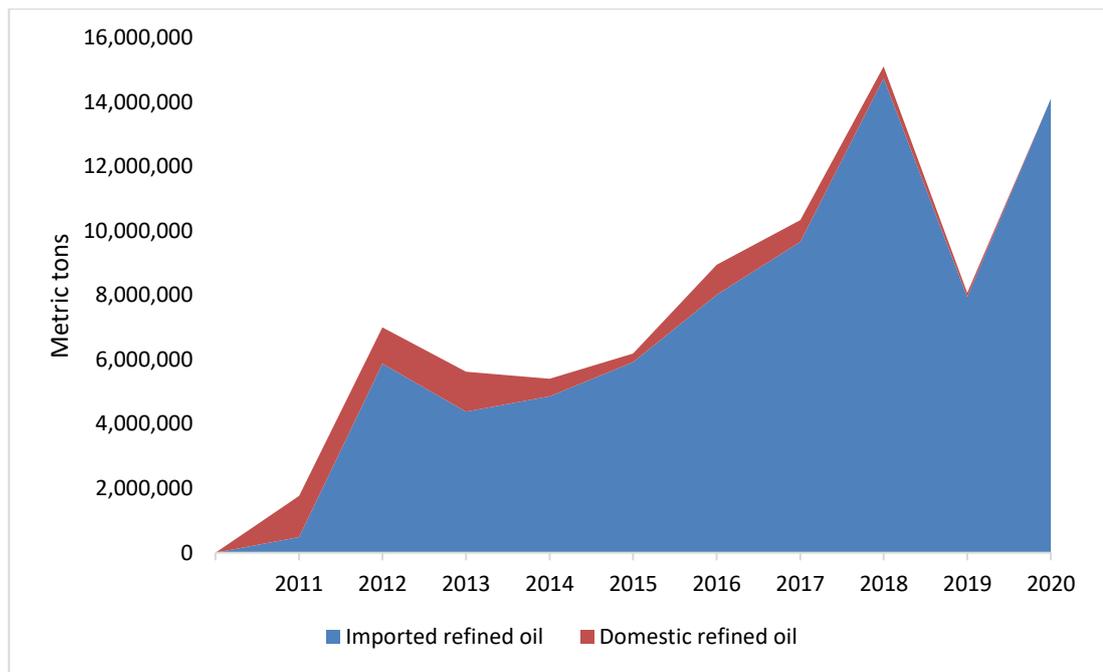


Figure 1.4 Annual sources of domestic petroleum consumption

Source: NNPC (2020a)

The framework for determining consumer fuel subsidies in Nigeria shows that the country operates a subsidy regime for gasoline which is computed as the difference between the Expected Open Market Price (EOMP) and the regulated retail price level approved by the government (Adeoti et al., 2016). The EOMP is the sum of landing costs, distribution costs, profit margins of marketers, and taxes (when applicable). The landing cost, which accounts for about 85% of the total allowable cost, entails the production cost, freight, lightering expenses, and depot charges. However, distribution margins consist of marine transport, transporters allowance, bridging fund, and other admin charges (See Table 1.3).

Table 1.3 Petroleum Product Pricing Template as of May 2016

S/N	Cost Element	Naira/L
1	Average Gasoline Price (FOB Rotterdam Barge)	111.30
2	Average Lightering Expenses	4.56
3	NPA	0.84
4	NIMASA Charge	0.22
5	Jetty Thru' Put Charge	0.60
6	Storage Charge	2.00
7	Average Financing Cost	2.51
	Expected Landing Cost	122.03
	Distribution Margins	
8	Wholesaler Margin	2.36
9	Administrative Charge	0.30
10	Transporters Allowance (NTA)	3.36
11	Bridging Fund	6.20
12	Marine Transport Average (MTA)	0.15
13	Retailers' Margin	6.00
14	Total Margins	18.37
15	Open Market price	140.40

Source: Petroleum Product Pricing Regulatory Agency (PPPRA) (2016)

Conversely, the regulated retail prices are set by the Petroleum Product Pricing Regulatory Committee (PPPRC). This price seems more arbitrary than systematic, as there is no detailed mechanism for determining what pump price should prevail at a given global oil price level (Ushie, n.d.). But because the EOMP varies with changes in international oil prices, domestic exchange rate, and inflation, the pegged retail prices imply that the gap between the amount budgeted for subsidies and the actual amount paid by the government may diverge significantly depending on oil market volatility (Onyekwena et al., 2017). For example, between 2010 and 2019, fuel subsidies strongly correlated with international oil prices, implying that they compete with development finance when oil prices are low and undermine fiscal stamina when oil prices are high (see Figure 1.5).

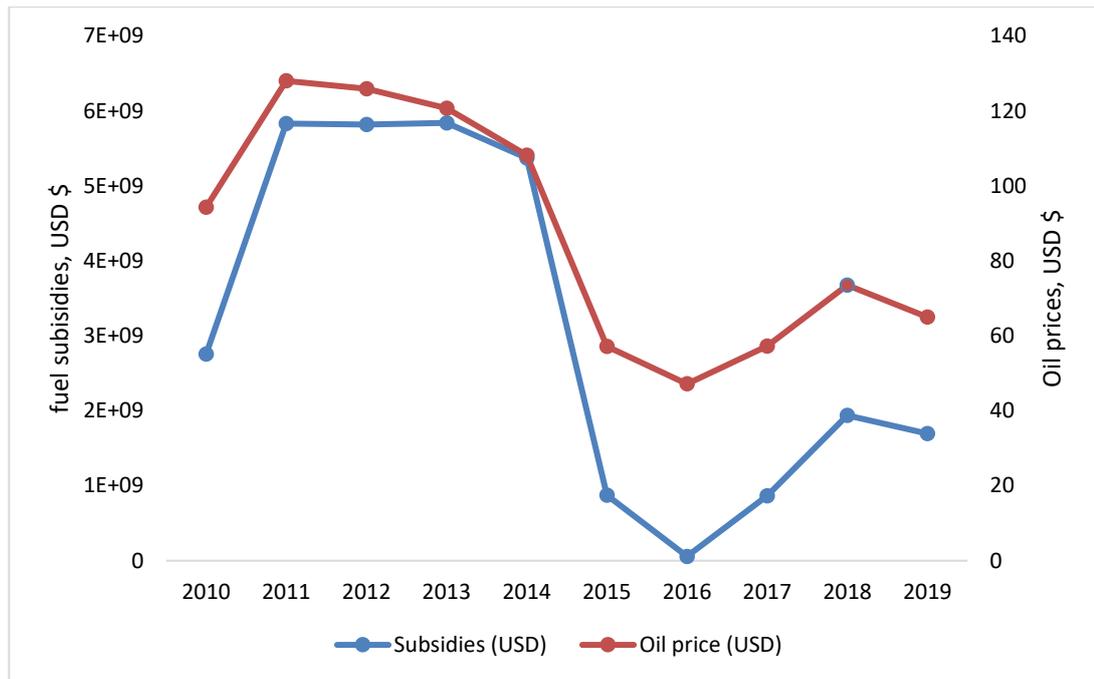


Figure 1.5 Co-movement of oil prices and fuel subsidies in Nigeria

Source: EIA (2022b)

There are several motivations to rationalize fuel subsidies in Nigeria. The first, is their increasing size over time. In 2022, a total of ₦4 trillion was allocated for fuel subsidy payments in the national budget. This amount was 230% higher than the ₦1.2 trillion spent on subsidies in 2021 and 68% lower than the projected ₦6.7 trillion subsidy bill for 2023 (Ashakah, 2022; Radarr Africa, 2022). Besides their size, these subsidies are also highly regressive. A recent estimate by the World Bank revealed that households in the bottom 40% accounted for less than 3% of total gasoline sold in the country. Three-quarter of the sales were consumed by private firms, government agencies, business entities, and public transport (Lee et al., 2021; World Bank, 2022). The distribution of households' gasoline expenditure over the income decile is shown in Figure 1.6.

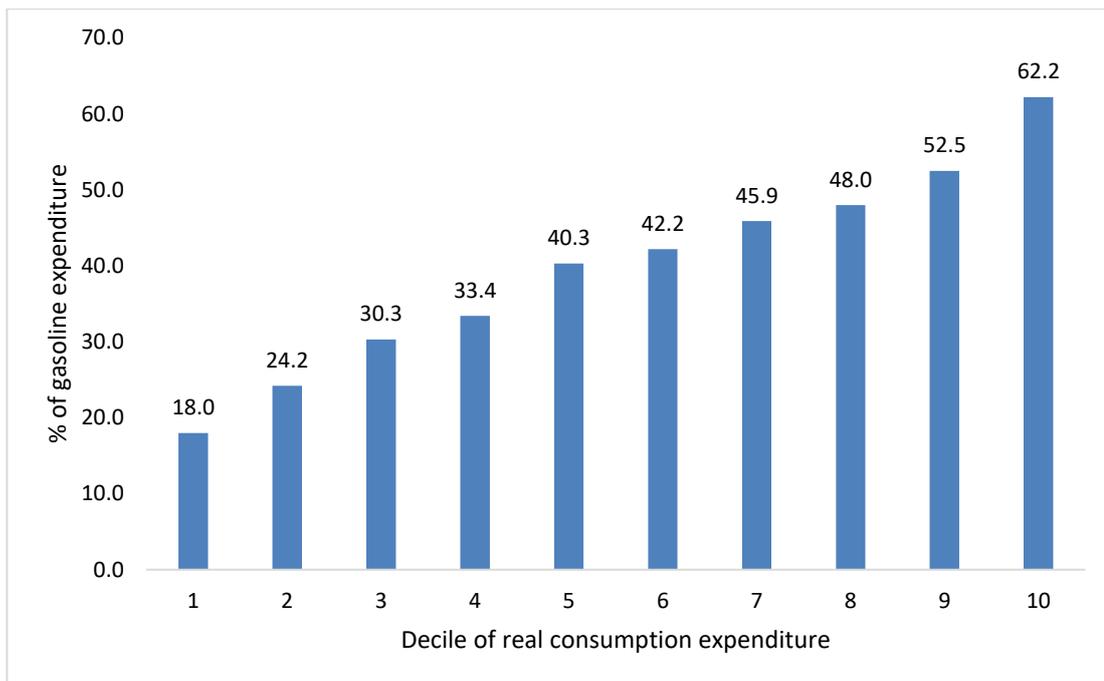


Figure 1.6 Distribution of households' fuel consumption expenditure in Nigeria

Source: World Bank (2022).

Fuel subsidy payment is also twisting Nigeria's fiscal fate. At a time when oil-exporting countries are reaping benefits from rising global oil prices and strengthening fiscal buffers, Nigeria appears to be drowning in dreadful fiscal distress. Despite the 60% increase in oil prices from USD\$42/barrel in 2020 to USD\$70/barrel in 2021, net oil revenue accruing to the government only marginally increased by 3.9% due to sluggish oil production and revenue-eroding subsidies (World Bank, 2022). Amid this fiscal crisis, the World Bank upwardly revised Nigeria's 2022 fiscal deficit position from 5.3% to 5.8% of GDP and 32.3% to 36% of its public debt-to-GDP ratio.

There is also an environmental dimension to the entrenched fuel subsidies. Inefficient gasoline consumption continues to undermine Nigeria's action against climate change and environmental quality. Carbon emissions from gasoline have persistently soared, growing by more than 51% between 2012 to 2015 and 13%

between the three years of 2016 and 2019 (EIA, 2022b). As shown in Figure 1.7, these emissions are not only high in absolute terms but outweigh those in neighbouring African countries at a similar stage of economic development to Nigeria.

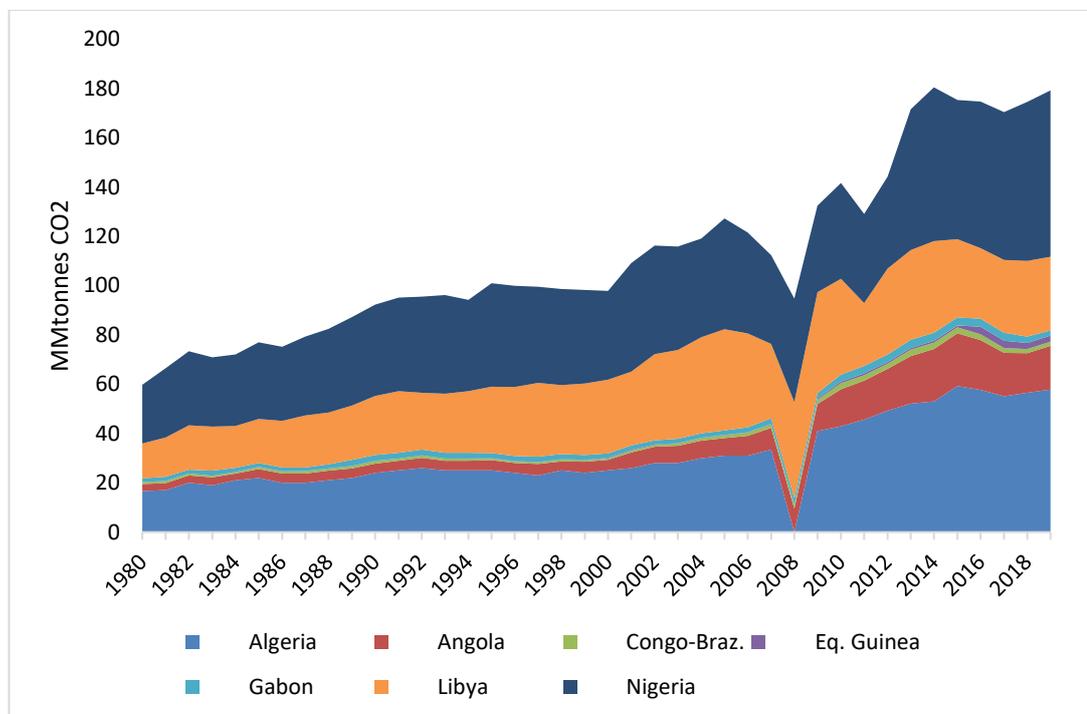


Figure 1.7 Annual CO₂ emissions in selected African countries

Source: EIA (2022b)

Consequently, air quality in the country has deteriorated as PMS2.5 concentration reached $151-200\mu\text{g}/\text{m}^3$ in May 2022, a range that is potentially threatening to the health of sensitive groups, including children and adults. (Air Quality Index [AQI], 2022). A recent IMF report have attempted to monetize the implicit cost of retaining petroleum subsidies in Nigeria. Estimates from the report showed that fuel subsidies in the country were responsible for damages to global warming, local air quality, and road accidents to the tune of USD\$118, USD\$38, and USD\$63 million on average between 2012 and 2019, respectively (Black et al., 2023). These costs have not only climbed in recent times but have also dramatically changed

composition towards more inflicting outcomes of global warming and frequent road accident as illustrated in Figure 1.8.

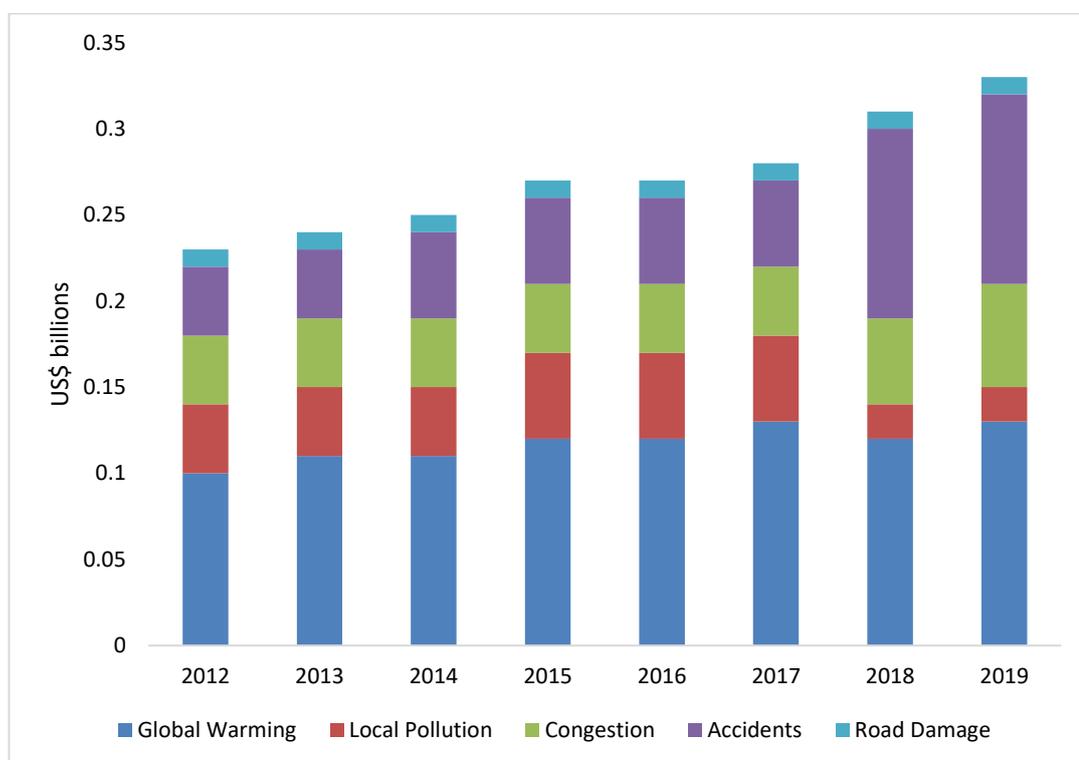


Figure 1.8 Implicit cost of petroleum subsidies in Nigeria

Source: Black et al. (2023)

Meanwhile, much of the subsidized fuel is not consumed locally but smuggled out to other countries with higher pump prices (Usman, 2022). This activity is pronounced in neighbouring African countries like Togo, Benin, and Cameroon, where fuel prices are about three times higher than those in Nigeria (see Figure 1.9). Against this backdrop, Addeh (2023) argued that this activity explains why rising demand for gasoline has not correlated with expansion in economic activities in the country. Yet, the government continue to carry elevated debt levels, tightened fiscal constraints, and shrinking policy space that are precipitated by the payment of fuel subsidies.



Figure 1.9 Gasoline price in selected African countries.

Source: Kamer (2022)

In recognition of the increasing financial burden and gross inefficiency in the payment of fuel subsidies in the country, the government declared that the subsidies were gone on the 29th of May 2023 (Majeed, 2023). Eight weeks after this announcement, it aired its plans on how it intends to minimize the adverse effect of the policy on vulnerable households and economic activities. The policy intervention was in two forms involving compensation and reinvestment. Compensation refers to the use of the realized subsidy saving to assist vulnerable households cope with the negative impacts of fuel subsidy removal. For example, households may face rising cost of energy and non-energy intensive goods which effectively erodes their purchasing power, reduces their consumption expenditure, and depletes their welfare levels (Greve & Lay, 2023). To minimize these negative impacts, government compensation to vulnerable households is crucial to help them cushion the adverse impact of the reform in the economy (IEA et al., 2010).

In line with this, the compensatory plan of the government was to spend ₦1.315 trillion to compensate vulnerable households. From this amount, ₦1.13 trillion was earmarked for a cash transfer of ₦75,000 to 15 million vulnerable households. ₦185 billion was also assigned for food subsidy in the 36 states and Abuja for the procurement of 100,000 bags of rice and 40,000 bags of maize (Jaiyeola, 2023). The implementation of this plan commenced in August 2023 with a release of ₦74 billion to the 36 states and Abuja to procure food items and cushion the impact of rising food prices in the country. However, this amount is only 40% of the ₦185 billion budgeted for food subsidies. According to the government, the partial release of funds was to avoid triggering inflationary pressure due to excess money supply in the economy (Ejechi, 2023).

The other policy intervention was the reinvestment program, involving the utilization of the realized subsidy funds to expand investment in human and physical capitals. As such, a ₦1.575 trillion was set aside for investment expenditures by the government. Of this amount, ₦100 billion was allocated to the transport sector to purchase 3000 units of 20-seater CNG-fuel buses to minimize transport costs for households and businesses. In the agricultural sector, ₦200 billion was allocated for investment, out of which ₦50 billion would be spent to cultivate 150,000 hectares of rice and maize, and another ₦50 billion would be used to cultivate 100,000 hectares of wheat and cassava. In the manufacturing sector, ₦75 billion will be allocated to support 75 manufacturing enterprises, and in the education sector ₦1 trillion was earmarked as student loans. The Micro, Small, and Medium Enterprises (MSMEs) sector, was to receive ₦200 billion. Out of this money, ₦50 billion will be used to support 1 million MSMEs while ₦75 billion will be expended to boost the business activities of 1.5 million market women (Jaiyeola, 2023). These investments are

intended to revive economic activities and consolidate the positive impacts of the reform by empowering firms to boost output, employment, and productivity.

Despite this generous intervention, some issues have been raised. The first concern is the doubt in the government's ability to keep up to its promise of providing the expected compensatory payment to household and investment boost in the economy. This concern emanates from the realization that the Nigerian economy felt the brunt of the COVID-19 pandemic, with income, employment, and output level nosediving (World Bank, 2022). During this time, fiscal space contracted owing to the rollout of costly stimulus and intervention programs to cushion the effect of the pandemic on households and businesses (IMF, 2024). Just as economic recovery took pace in 2022, the energy crises occasioned by the Russian-Ukraine war struck, pushing energy prices and inflation levels upwards. This event plunged the country into a distressing debt situation amidst a narrowed domestic resource mobilization (IFS, 2021). The removal of fuel subsidies in May 2023 was both in response to and a consequence of the unfolding realities challenging the government's ability to spend its way out of lingering and looming economic crises. This reality cast doubt on whether the government would keep to its promise of fulfilling the expenditure requirement to support the fuel subsidy removal and what would be the fate of the economy in the event that such promises are compromised.

The second challenge associated with the government's proposed compensatory and reinvestment plan lies in the potential insufficiency of the funds allocated to support vulnerable households. This concern arises from the anticipated erosion of purchasing power due to elevated current and future price levels (Okojie, 2023). For instance, within just a month of the removal of the fuel subsidy, the prices of food, fuel, and transportation nearly doubled (NBS, 2023b). Furthermore, the

government has revised the initially proposed compensation amounts three times, following public backlash on social media regarding the inadequacy of the initial allocations (Ubanagu, 2023). These repeated adjustments highlight the absence of a concrete framework for determining the resources necessary to adequately compensate affected households. This has perpetuated scepticism about the sufficiency and reliability of the final compensatory plan.

The third issue with the government's compensatory and reinvestment plan pertains to the efficiency of resource allocation between compensatory and reinvestment expenditures. Specifically, there have been calls for the government to allocate additional resources toward compensating vulnerable households, with a corresponding reduction in investment spending (Godfrey & Nathaniel, 2023). This argument is rooted in the recognition that vulnerable households are disproportionately affected by the rising fuel prices and require immediate relief to mitigate the adverse effects of the subsidy removal. Compensation is viewed as a short-term measure to address the immediate fallout from the policy, whereas reinvestment expenditures yield long-term economic benefits. Consequently, it has been suggested that the government prioritize compensatory spending to alleviate hardships and prevent potential economic stagnation (Ubanagu, 2023). This raises an important question concerning the efficiency of government resource allocation between compensation and reinvestment.

The fourth concern relates to the absence of a clearly defined timeline for implementing the government's compensation and reinvestment plans. Official documents outlining these plans lack explicit details regarding the schedule for execution (Jaiyeola, 2023). While expectations are high that most of the plan will be implemented by 2024, this ambiguity poses challenges in addressing immediate

fallout, as price levels continue to rise sharply. For instance, a recent World Bank report underscores the urgency of timely implementation, warning that delays could push an additional 7.1 million people into poverty (Sienaert et al., 2023). However, the government has expressed cautious concerns about full-scale implementation, citing fears of inflationary pressures from excessive fiscal stimulus (Jaiyeola, 2023). Furthermore, revenues for reinvestment are expected to accumulate progressively as subsidy savings are realized. This raises critical questions about how to effectively sequence the implementation to mitigate short-term adverse effects while maximizing the long-term benefits of the reform.

In the past, researchers have made substantial efforts to analyse the effects of fuel subsidy removal in Nigeria. However, these studies exhibit several notable limitations. One major shortcoming is that most of them concentrate exclusively on assessing the direct impact of subsidy removal, while neglecting to account for the potential benefits of utilizing the revenue generated from subsidy savings (e.g., Akinyemi et al., 2017a; Akinyemi et al., 2017b). This narrow focus leads to an incomplete understanding of the broader economic implications of subsidy removal, as the reinvestment or redistribution of the freed-up funds could significantly influence various sectors of the economy, including infrastructure development, education, or healthcare. Furthermore, studies that consider revenue recycling tend to rely on obsolete datasets. For example, some have utilized the 2006 Social Accounting Matrix (SAM) or the 2011 Input-Output data for Nigeria (e.g., Inegbedion et al., 2020; Siddig et al., 2014). Given that Nigeria's economic structure has undergone substantial changes since these datasets were compiled, the continued use of such outdated data can lead to inaccurate or skewed results. These inaccuracies may misinform

policymakers, who require up-to-date and accurate models to make sound decisions regarding subsidy removal and its broader economic impact.

Another limitation of previous literature is the assumption of unrealistic scenarios for subsidy removal, compensation, and reinvestment. Many studies model idealized overly simplistic conditions that fail to capture the complexities of Nigeria's political and economic environment. For example, they assume a complete or almost complete revenue recycling of the subsidy proceed back into the economy in the form of cash transfers to households and investment in infrastructure (e.g., Tajudeen, 2017). In reality, revenue recycling is guided by government priority to grow fiscal space and cut down debt burdens. Hence, only a fraction of the realised subsidy saving can be spent to compensate vulnerable households and reinvest in the economy. The failure to reflect this reality reduces the practical applicability of previous findings and may lead to misguided recommendations that underestimate the risks of subsidy reform.

Based on the existing literature, this study is a first attempt to address the aforementioned shortcomings and provide valuable insight into the economy-wide impact of the government compensation and reinvestment plan for fuel subsidy rationalization in Nigeria.

1.2 Problem Statement

On May 29, 2023, the Nigerian government officially removed fuel subsidies, a move aimed at reforming the economy and addressing fiscal imbalances. To mitigate the negative effects of this policy, especially on vulnerable households and key sectors of the economy, the government announced plans to compensate affected households and reinvest the subsidy savings in critical areas such as education, transportation, agriculture, and business development. While these interventions were designed to

cushion the impact of subsidy removal, the government's limited fiscal capacity raises significant concerns about its ability to follow through on these promises. The consequences of such action could include lower welfare levels of households, decreased industrial productivity, and prolonged economic stagnation that could spark social unrest and deepen distrust in the government. Given these potentially dire consequences, it is crucial to assess the extent of the economic and social damage that could occur if the government fails to effectively recycle subsidy savings. Such assessment is invaluable in helping to identify potential damage early on and offering actionable recommendations for policymakers to adjust their strategies, ensuring that subsidy reform does not worsen the economic situation or further destabilize the country.

Even if the government successfully undertakes the planned expenditures on compensation for vulnerable households and reinvestment in key sectors such as education, transportation, agriculture, and business, there is the uncertainty about the impact and adequacy of these measures. This presents the risk of poorly supporting low-income households to recover from the negative impact of the reform and potentiate the tendency for the public to lose confidence in the reform policy. Hence it is vital to understand the impact of the proposed government compensation and reinvestment plans to ensure effective mitigation of economic hardship, assess the long-term benefits of the intervention, and promote the efficient allocation of resources that avoids over or under spending in the aftermath of the reform.

Beside the impact and adequacy of the government compensation and reinvestment expenditure, a core issue also lies in the potential imbalance between these expenditures. Compensation aims to provide immediate relief to households facing higher living costs due to the removal of subsidies. Conversely, reinvestment is