e-ISSN: 3027-0650
Vol. 3, Issue 1, 202-217., October 30-Novermber 1, 2025

ENERGY POLICY REFORM AND RURAL POVERTY: A REVIEW OF THE IMPACT OF PETROLEUM SUBSIDY REMOVAL ON NIGERIAN FARMERS

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Abstract
Petroleum subsidy in Nigeria was introduced to stabilize fuel prices and protect consumers from global market fluctuations. Over time, the policy became fiscally unsustainable, consuming significant public resources and encouraging inefficiency and corruption. The removal of the subsidy was implemented to promote fiscal stability, improve market efficiency, and redirect savings to development programs. However, the reform has imposed severe hardship on rural farmers who rely on fuel for irrigation, mechanized farming, and transportation. Higher fuel prices have increased production costs, reduced farm profitability, and deepened rural poverty. Evidence from existing studies shows that while subsidy removal improved fiscal transparency, it worsened welfare conditions due to weak social protection and poor program targeting. The findings highlight disparities between rural and urban households and limited access to affordable energy alternatives. Policy responses should focus on promoting equitable energy access, supporting agricultural productivity, and strengthening livelihood resilience to ensure that fiscal reforms foster inclusive and sustainable rural development in Nigeria.

Keywords: Petroleum subsidy removal; energy policy reform; rural poverty; farmers; Nigeria; livelihood; socioeconomic impact

1. Introduction

The economy of Nigeria relies heavily on petroleum as a source of energy, transport, and industrial activity. Economic volatility subsides during the suspension of the petroleum subsidy-act, which is aimed at protecting the interests of consumers and domestic fuel prices. Onyambayi, Abdullahi, Alogwuja, Adejo and Esther (2024) mention the subsidies - aimed as a 'social protection' mechanism - as an 'encouragement of fuel energy affordability'. However, the system's failure to recover petroleum subsidies economically resulted in fuel twiddling. Uzochukwu (2023) and Ogundipe (2021) noted that the subsidy has utilized huge public expenditures that would have been channelled to education, infrastructure, and agriculture. Mohammed (2022) associated the persistence of subsidies with corruption, leakages, and lack of fiscal transparency, making its welfare objective weak.

Reforms to solve the fiscal burden and structural inefficiencies that the subsidy regime produced were tried by successive governments. In 2012 and 2023, when the authorities decided to deregulate the petroleum industry completely, the greatest contributions were made. According to Adewole (2023), the removal of subsidies was necessary to bring the public finance into balance and secure the reallocation of resources to productive industries. Adebayo and Olamide (2023) discovered that although the reform boosted fiscal efficiency, it created inflationary pressure, which undermined purchasing power. Oladipo and Ahmed (2022) documented the tripling of the fuel price in a few weeks of the deregulation, and this raised the cost of transportation in rural markets. The figures released by the National Bureau of Statistics (2023) have confirmed the fact that there was a great increase in consumer prices after the withdrawal of subsidies.

Agriculture remains the mainstay of Nigeria's rural economy and provides livelihoods for the majority of rural households. As demonstrated by Garba and Musa (2023), smallholder farmers utilize fuel for purposes such as irrigation, mechanization, and transportation. Olasunkanmi (2023) illustrated how fuel

price inflation is correlated with reduced cultivated land and farm produce, negatively impacting food supply. Abdullahi and Musa (2023) noted that small-scale farmers incur a large proportion of their operational costs from fuel and other energy-related expenses. The Federal Ministry of Agriculture (2023) stated that rural producers' market access is limited by the high cost of fuel and transport, which, in turn, affects the competitiveness and profitability of their agricultural enterprises.

According to Onyambayi et al. (2024), economic pressure, especially in rural areas, increased immediately after the removal of the petroleum subsidy. The high prices of food and agricultural inputs, the rising costs of transport, and the weakening of buying power became critical issues. Rural households spend disproportionately more of their budgets on fuel and transportation, which Adebayo and Olamide (2023) showed, limits households' spending on education and health. The lack of targeted social support mechanisms, as revealed by Bello (2023) and Usman (2022), contributed to the economic pressure on vulnerable farmers. The lack of social support, as Ibrahim (2023) identified, became a driver of rural to urban inequity, rising poverty and indebtedness among smallholder households, and the worsening of inequality.

This review synthesizes the existing evidence on the socioeconomic impact of petroleum subsidy removal on Nigerian farmers. The objective is to examine how energy policy reform influences agricultural productivity, income distribution, and rural poverty. Adewole (2023) identified the cost transmission pathways through which fuel prices affect farm operations and market access. Garba and Musa (2023) linked higher energy prices to reduced input use, while Abdullahi and Musa (2023) observed a decline in farm income across surveyed communities. Adebayo and Olamide (2023) emphasized disparities between rural and urban households in coping with energy shocks. The review provides a unified understanding of these relationships and identifies practical policy lessons for future reforms.

The reviewed evidence contributes to policy discussions on equitable energy reform and agricultural sustainability. Onyambayi et al. (2024) and Bello (2023) recommended targeted agricultural subsidies, improved access to rural credit, and investment in renewable energy technologies. Studies by Uzochukwu (2023) and Mohammed (2022) called for greater transparency in managing subsidy savings to enhance public trust. The synthesis highlights research gaps on gendered effects, long-term welfare outcomes, and the effectiveness of compensation programs. Addressing these issues would support a balanced approach to fiscal reform, agricultural resilience, and inclusive growth across Nigeria's rural economy.

2. Conceptual and Theoretical Framework

2.1 Conceptual Clarifications

A petroleum subsidy is a policy of the government that maintains the price of fuel below market rates by the government via financial intervention to the marketers or direct price control. It is meant to cushion citizens against unstable prices of international oil and to make energy affordable. According to Onyambayi, Abdullahi, Alogwuja, Adejo, and Esther (2024), the subsidy is a social welfare mechanism that promotes domestic markets and assists household welfare. Uzochukwu (2023) and Ogundipe (2021) observed that despite subsidies making the markets short-term affordable, they distort the market, promote inefficiency, and place a heavy burden on the fiscal budget. Decades of subsidy expenditures in Nigeria have eaten up much of the public revenues, preventing investment in agriculture, infrastructure, and education.

Energy policy reform: Governmental policies that have been taken to reorganize regulatory, pricing, and institutional structures to manage energy production and consumption. Adewole (2023) defined energy reform as matching domestic prices to market terms to improve fiscal efficiency. Adebayo and Olamide

(2023) pointed out that the main point of such reforms is to eradicate corruption and enable the market to be competitive in terms of energy. Subsidy removal is one of the aspects of reform in Nigeria. Oladipo and Ahmed (2022) noted that even though the policy introduces balance to the fiscal system, in most cases, it increases the cost of living, particularly to low-income earners who rely on affordable fuel to sustain their lives.

Rural poverty is an economic deprivation state where there is a low income, scarce resources, as well as poor infrastructure. According to Garba and Musa (2023), rural poverty is a multidimensional issue based on income, education, healthcare, and social participation. According to the Federal Ministry of Agriculture (2023), endemic poverty among rural households was one of the challenges to inclusive development. Abdullahi and Musa (2023) discovered that the increased fuel prices affect poverty in rural areas, deteriorating transportation and farming inputs and food production costs. Through these pressures, the purchasing power of farmers is diminished, and they are constrained in their ability to invest in productive activities.

Livelihood resilience is the capacity of the person or family to absorb a shock, cope with change, and maintain well-being over a period of time. Olasunkanmi (2023) stated that resilience relies on access to assets, social networks, and institutional support. According to Bello (2023), rural livelihoods in Nigeria have been vulnerable because they have poor access to energy, credit, and technology. By eliminating petroleum subsidies, the government lowers the resilience by increasing the cost of production and profitability of the smallholder. Usman (2022) supplemented that households having diversified sources of income and networks of cooperation are in a better condition to survive the shock in the price of fuel and remain productive.

Energy prices affect rural economies through several transmission channels. Higher fuel prices increase transportation costs for moving inputs and outputs. Garba and Musa (2023) reported that transport expenses account for a large portion of farm operating costs, and higher prices reduce profit margins. Increases in energy costs also raise the price of inputs such as fertilizer and mechanized equipment, reducing productivity and output. Abdullahi and Musa (2023) linked these costs to a decline in household income and employment opportunities. The National Bureau of Statistics (2023) reported that consumer prices rose sharply after subsidy removal, intensifying food insecurity and widening inequality between rural and urban households.

2.2 Theoretical Perspectives

The Energy-Poverty Nexus Theory refers to the description of the interrelation between affordable energy and poverty alleviation. The Social Reproduction Framework investigates the manner in which households reproduce production and the social/biological reproduction of work between generations that is market-oriented (Elson, 1995; Bakker and Gill, 2019). This framework is very applicable to the examination of the effects of energy policy to agricultural families. According to Bezanson and Luxton (2006), energy is a necessity to productive processes, such as farm mechanization, irrigation, and reproductive activity, such as food processing, water collection, cooking.

By withdrawing petroleum subsides, rural households are put under a twofold squeeze. To begin with, production expenses increase lowering farm revenue and profitability in the market, as reported by Abdullahi and Musa (2023). Second, the work of reproduction rises when households replace the non-monetary labor with the commodified energy (going back to manual processing, gathering wood, making longer visits to the markets). It is an unpaid work typically done by women and children, a type of

unknown subsidy that helps the household to survive at the expense of the future development of human capital (Onyambayi et al., 2024).

Differential vulnerability is also shed light on through the framework. Subsistence farming with low external demands exposes households that are highly embedded in market systems to fuel price shocks (buying inputs, selling outputs, recruiting labor, etc.). The decline of incomes among commercialized smallholders was more aggravated after the elimination of subsidies (As noted by Garba and Musa, 2023). Also, the focus of the framework on inter-generational reproduction provides the reason why existing energy shocks, which require them to reduce spending on food, healthcare, and education, cause poverty traps that endure after the crisis (Ibrahim, 2023).

This point of view is a complement of the Energy-Poverty Nexus Theory, given that it specifies household-level processes through which energy access translates into poverty. It also develops the Livelihood Framework by pre-empting the reproductive aspect of rural livelihoods, which can be easily overlooked in traditional economic analysis but which is essential to the comprehension of the entire welfare impact of subsidy reform.

*2.3 **Conceptual Model***

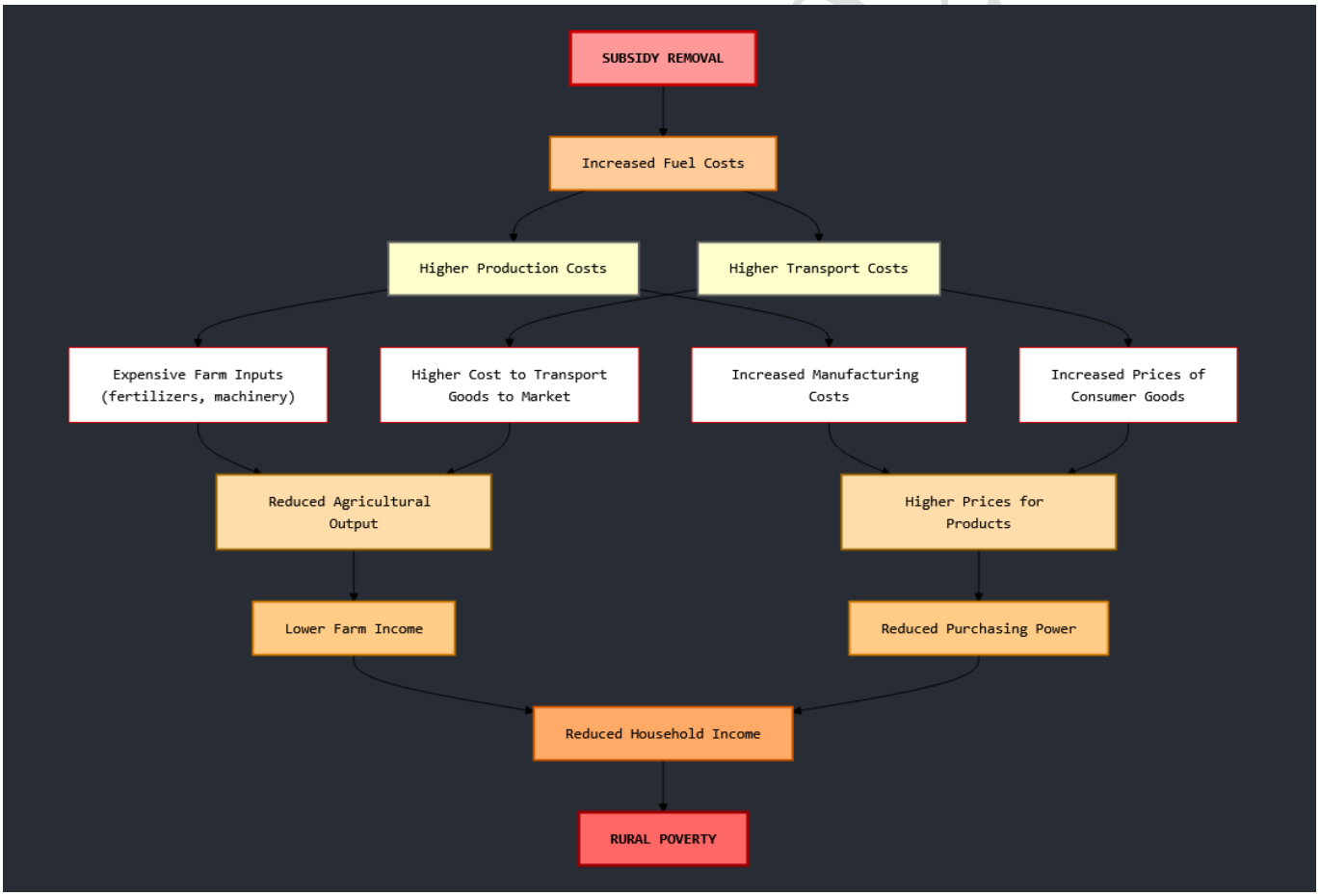

Figure 1: A conceptual Framework Diagram showing the impact of subsidy removal on livelihoods

Figure 1 shows the economic trickle-down effect that would take place on taking off fuel subsidies. It starts with the elimination of subsidies and this directly results in high prices of fuel since players and consumers are now required to pay the market rate of petroleum products. This rise in prices generates two parallel lines of economic stress. To start with, the cost of production increases as farmers incur high

cost of inputs such as fertilizers and diesel to use in their machines, and manufacturers have a high cost of operation. Second, increased transport expenses make agricultural products transportation to markets more expensive, and the consumer goods to rural markets more expensive. The combination of the two pressures brings about the result of lower agricultural output (with fewer inputs possible and operational costs rising) and an increase of the prices of all products. The outcome is that the countryside households are impacted on both ends because of a decrease in farm revenue, both in terms of productivity and increased production costs, and because of less purchasing power since the prices of basic staples increase. These are what result in low household income that eventually forces rural populations into poverty.

3. Methodology of the Review

This review used a narrative and systematic method to keep a synthesis of existing evidence on the socioeconomic implications of petroleum subsidies on Nigerian farmers. The review design was informed by the necessity to obtain a conceptual and empirical understanding of the topic amongst various academic and policy resources. Onyambayi, Abdullahi, Alogwuja, Adejo, and Esther (2024) affirm that a systematic review allows covering all the relevant studies and is also analytically coherent. The story aspect enabled subsidy reform in Nigeria to be interpreted in the context of the overall economy. The review concentrated on research that directly studied the interconnections between the removal of fuel subsidies, poverty in rural areas, and agricultural productivity, as proposed by Adewole (2023).

The inclusion criteria included peer-reviewed journal articles, policy papers, and government reports that covered petroleum subsidy reform and its effect on rural livelihoods published covering the period from 2010-24. Research articles that concentrated on the urban effects or were not done in the Nigerian context were eliminated. Sources that focused on macroeconomic tendencies while ignoring rural and agricultural perspectives were also excluded. Adebayo and Olamide (2023) describe 'scope constraint' as producing a high degree of analytical precision while also ensuring that overly abstracted conclusions are avoided. To ensure a thorough understanding of the issue, the review incorporates empirical, theoretical, and qualitative analyses.

Data was extracted from reputable databases and institutions, including journal articles from Scopus, JSTOR, and Research Gate, as well as publications from the World Bank, International Monetary Fund, and African Development Bank. National agencies, including the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), and Nigerian National Petroleum Company (NNPC) provided authoritative data on the prices, poverty rates, and fiscal performance. Consistent with Garba and Musa (2023), all other sources were assessed for methodological strength, relevance, and the integrity of the data.

Thematic synthesis was used in analyzing the data. The results were classified into three groups, namely, economic impacts, social impacts, and environmental implications. This method aligns with Abdullahi and Musa (2023) and helped establish common tendencies and gaps in the current studies of the petroleum subsidy removal and rural poverty in Nigeria.

4. Overview of Petroleum Subsidy and Energy Policy Reform in Nigeria

4.1 Evolution of Petroleum Subsidy Policy

The idea of the petroleum subsidy in Nigeria can be traced back to the 1970s, when the country initiated a fiscal tool through an attempt to stabilize fuel prices within the country and to cushion consumers against the inherent ups and downs within the international oil market. As Onyambayi, Abdullahi, Alogwuja, Adejo, and Esther (2024) identified, the reason behind implementing the subsidy was the fact that the

refineries of the country were newly built, and the government was interested in transferring oil wealth to societal benefits. At this time, the subsidized fuel prices were perceived as a vital aspect of social welfare and national growth. As it was noted, Uzochukwu (2023) found that the early subsidy regime had been able to maintain the affordability of fuel, facilitate industrialization, and even maintain stability of prices in major sectors. But with time, it weakened its efficiency due to a lack of effectiveness in the administration of subsidies and corruption by marketers.

The onset of the structural problems came in the 1980s, when the world oil prices were volatile and impacted Nigerian fiscal stability. Ogundipe (2021) and Mohammed (2022) reported the increase in the cost of subsidies as the amount of imports and decreasing refinery capacity increased. The policy that started as a distribution of oil wealth by subsidy slowly turned to be the biggest drain on the national budget. According to Adewole (2023), the economic recession in the 1980s and 1990s, as well as the declining oil income, made consecutive regimes rethink the sustainability of the policies of holding the fuel prices artificially low. The Structural Adjustment Program (SAP) of the mid-80s had the introduction of partial deregulation, which caused a reduction in government expenditure and brought in more participation in the downstream petroleum by the people.

The financial effect of subsidies was more apparent in the early 2000s. The Obasanjo government tried partial deregulation between the year 2003 and the year 2006 because subsidy payments were draining funds allocated to infrastructure and other social services. Adebayo and Olamide (2023) have described that fuel prices were a politically sensitive issue despite policy changes. The government encountered massive resistance from labor unions and other civil society groups. As Garba and Musa (2023) stressed, these protests manifested the extreme scepticism towards how the government could afford the savings on its subsidies in an open manner. The same opposition was witnessed in later efforts under the Yar'Adua and Jonathan regimes.

One of the most controversial endeavors to do away with fuel subsidies occurred in 2012 with the reform by President Goodluck Jonathan. The authors indicated that N65 to N141 per liter was the sudden rise in fuel prices when it was announced that the removal would take place in January 2012, which led to the protests around the country in the Occupy Nigeria movement (Oladipo and Ahmed, 2022). Bello (2023) and Usman (2022) reported that the government's rationale for the move was to curb corruption, decline savings for infrastructure, and enhance fiscal stability. The masses, however, saw it as an anti-poor policy that does not consider the good of the citizens. According to Abdullahi and Musa (2023), the consequent unrest compelled the government to once again partially reimburse subsidies and the creation of the Subsidy Reinvestment and Empowerment Program (SURE-P) to finance social projects. This notwithstanding, the program was plagued with mismanagement and political interference, which hurt its credibility.

The economic cost of subsidies became overwhelming. In between the years of 2015 to 2022, the Nigeria National Petroleum Company (NNPC) revealed that the subsidies cost more than N1.4 trillion every year. Payments, confirmed by the Federal Ministry of Finance (2022), accounted for over 25% of the public expenditure which left key sectors underfunded. According to Adewole (2023), the lingering subsidies were the result of the politically induced Government’s social fear. Sustained and unregulated subsidy spending was responsible for fiscal deficit, exchange rate instability, and growing public debt which were all outlined by the Central Bank of Nigeria (2023). Such trends prompted the necessary, unavoidable reforms and the full subsidy removal in 2023.

4.2 Recent Policy Shifts

With the removal of the 2023 petroleum subsidies, the energy policy of Nigeria started changing drastically. After coming to power, President Bola Ahmed Tinubu declared the subsidy program over, saying that it was no longer viable due to the fiscal limitations of the country. The policy had an aim of letting market forces set the prices of fuel, enabling investment into the downstream sector, and decreasing intra-border smuggling (Nigerian National Petroleum Company Limited, 2023). According to the National Bureau of Statistics (2023), in May 2023, the price of petrol was approximately N185 per liter, but it has since soared beyond N617 per liter in August 2023, which is a 233% increase in three months.

As Adewole (2023) said, this choice was in line with that of the International Monetary Fund (IMF) and the World Bank, which had consistently suggested the removal of subsidies as a tool of instilling fiscal discipline and enhancing efficiency in the overall spending of the populace. Adebayo and Olamide (2023) noted that although the reform was anticipated to liberate resources for infrastructural projects, education, and healthcare, it had an instant effect due to the inflationary pressures cutting across the board in the economy. The inflation rate improved to 27.3% in September 2023 after reaching 22.4% in April 2023 (NBS, 2023).

The government also came up with complementary activities that mitigated the impact on the vulnerable groups. These were cash transfer schemes, subsidies on public transport, and subsidies on agricultural support. As noted by Garba and Musa (2023) and Bello (2023), the logistics and administration issues of the initial rollout resulted in the slow execution and the lack of coverage. Monetary tightening was also practiced by the Central Bank of Nigeria (2023) to control the impact of inflation. Most observers say, however, that the lack of proper social safety nets and poor institutional coordination minimized the efficiency of these interventions.

Market liberalization did not just stop at the removal of subsidies. The Petroleum Industry Act (PIA) of 2021 provided the basis of the reorganization of the petroleum industry, such as the transformation of NNPC into a limited liability company and a commercially oriented company. The Federal Ministry of Petroleum Resources (2023) states that the PIA was aimed at having transparency, encouraging the inflow of private investments, and enhancing the governance of upstream and downstream operations. Oladipo and Ahmed (2022) pointed out that liberalization was also supposed to allow competition and lessen the scope of monopoly. Despite these plans, structural constraints like the lack of refinery capacity and dependence on imports still impede the efficiency of the market.

4.3 Stakeholder Perspectives and Controversies

The 2023 subsidy removal generated mixed reactions across different sectors of Nigerian society. From the government's perspective, the policy was necessary to restore fiscal balance and create room for productive spending. Adewole (2023) claimed that the move was an aggressive move towards macroeconomic stability in the long run. The government estimated that money saved in the removal of the subsidy was to be channelled back into infrastructure, education, and healthcare. Nonetheless, the policy was mostly negatively perceived by the population. According to the report provided by Byonyambayi et al. (2024), the move was perceived as a hardship-inducing intervention by many Nigerians and disproportionately impacted the low-income households.

One of the most powerful opponents was represented by trade unions and civil society organizations. The Trade Union Congress (TUC) and Nigeria Labour Congress (NLC) launched nationwide demonstrations because the policy aggravated poverty and unemployment in the country. As was recorded by Bello (2023) and Usman (2022), these groups sought wage changes, transportation subsidies, and responsibility in the handling of savings. The deficiency of consultation and transparency in the process of the reform was criticized by the civil society groups, including the Centre for Social Justice (CSJ) and BudgIT. Garba and

Musa (2023) states that this scepticism of the population appeared due to experience with poorly managed reform programs, including SURE-P and other social investment programs that do not meet the promised benefits.

One of the most affected parties of the policy was the farmers and the rural communities. According to Abdullahi and Musa (2023), a rise in fuel prices also escalated the cost of production and transportation, making it less profitable and competitive in the market. The National Bureau of Statistics (2023) monitored that the increase in food prices that occurred between June and December 2023 (more than 30%) further contributed to food insecurity. Investigations by Olasunkanmi (2023) established that small-hold farmers found it difficult to employ low-cost inputs and instead resorted to cutting down on the fields under the plow. The Federal Ministry of Agriculture (2023) admitted that the policy made rural producers more vulnerable but stated that there would be long-term gains because savings would be reinvested in the agricultural infrastructure and mechanization programs.

Although there has been a lot of criticism, there were other stakeholders who expressed coupled optimism. Adewole (2023) and Adebayo and Olamide (2023) perceived subsidy elimination as a pain but a needed step in achieving a more sustainable fiscal system. They argued that the policy in question would solicit private investment in refining and downstream distribution and reduce dependency on imports if managed efficiently. The Petroleum and Natural Gas Senior Staff Association of Nigeria (PENGASSAN) also expressed their support for the reform but asked the government to prioritize local refining in order to improve the stability of electricity supply. In reference to Bello (2023), it is a long dialogue that the government needs to have with the private investor and labor unions in order to regain trust and equitably distribute the benefits of the reforms.

Controversies arising from the reform of petroleum subsidies are largely the outcome of structural governance institutional failures. Illiquidity of policy consistency and institutional opacity has lasted for decades and contributed to the unpopularity of economic reform efforts (Ogundipe, 2021). Engaging the public requires asserting the savings which are lying idle, communicating, and extending market and social protective enclosure. Onyambayi et al. (2024) states the rationality and the social and political element of its administration are critical determinants of the sustainability of removed economic subsidies. The Nigerian case illustrates that removed subsidies are economically sustainable, provided the responsible economy management does not introduce economically punitive strategies.

5. Impact of Petroleum Subsidy Removal on Rural Farmers

The removal of petroleum subsidy in Nigeria altered the economic foundations of rural agriculture. The revision increased the cost of fuel and altered the structure of production, marketing, and the household consumption of the farming communities. Evidence from multiple states indicates that since the policy change in 2023 there has been an increase in the price of inputs, an increase in the cost of transportation and an increase in the parameters of household poverty. The immediate financial benefits that come from the withdrawal of subsidies in the short term do not compare to the social and economic burdens that rural producers are facing.

5.1 Rising Production Costs and Input Price Inflation

In Nigeria, farming activities are fuel-dependent. Farmers need petrol and diesel for running tractors, pumps for irrigation systems, and transport vehicles. Value chain actors also need diesel for processing fuel and for milling machines. The removal of petrol subsidies saw average prices tripled. The aforementioned led to unprecedented increases in production costs and also inputs. Studies in Benue State

reported that the average cultivated area per farmer declined from 3.95 to 3.06 hectares because many farmers reduced their use of mechanized land preparation and also became fuel impoverished. A similar outcome was recorded in Oyo State, where high fuel cost, high cost of fertilizers, and high cost of fuel resulted in smallholders losing profitability (Olakunle, Tijani, & Akintola, 2025). In Bayelsa State, Amaegberi & Enize (2025), reported that fish farmers also experienced similar challenges and were also forced to scale down their operations because the cost of fish feed and the cost of labour necessary for pumping water and other tedious tasks had become economically unsustainable.

Increases in the price of fuel shifted the distribution costs of agricultural inputs. Transport costs of fertilizers, agrochemicals, and seeds became more expensive, and price increases of rural suppliers became more pronounced to keep profit margins. These increases in costs weakened farmer's ability to invest in productivity. Most smallholders, in the absence of credit support or energy-efficient alternatives, responded by reducing input intensity. The decline in the use of fertilizers and mechanization brought lower yields, higher income losses, and slower growth in agriculture. Hence, the withdrawal of subsidies and the resulting cost-price squeeze unsustainably eroded the financial position of smallholder agriculture.

5.2 Transport and Market Access Constraints

Increased transport costs are a clear consequence of withdrawing subsidies. Farmers in the countryside use ground transport to acquire supplies and move their produce to the cities. When the price of gasoline rises, transport costs and freight charges go up as well, which in turn, reduces the effectiveness of agricultural marketing. In Makurdi, over 70% of the farmers interviewed mentioned higher transport costs, while close to 50% claimed that transport costs increased by over 50% within months of the reform (Yakubu & Abubakar, 2025). Farmers are further restricted in their access to buyers as increased transport costs reduce the number of trips they can make to the market.

Directly linked to the increases in transportation costs are the increases in the price of food. Farmers received lower prices for their goods because intermediaries subtracted higher transport costs, while city dwellers are the ones who pay higher prices for food. In Nasarawa State, a study establishes how expensive fuel and transport costs frustrate food market participation from farmers and contribute to food insecurity (Bemgba and Adadu, 2025). Ondo City reported similar outcomes as households faced a deterioration in their savings and purchasing power due to the high price of food and transport (Ogboru and Akinyotu, 2024). The findings show how energy price reforms undermine market efficiency, widen spatial price differentials, and affect rural-urban trade relations. The asymmetry further limits market profitability for farmers while heightening food price inflation at the consumer level, thus worsening the urban-rural welfare gap.

5.3 Changes in Cropping Patterns and Input Use

Changing cropping every few seasons is unlike how farmers implement mechanization for crops production decisions, particularly for irrigated crops. Rising mechanization and irrigation costs influenced farmers in Benue and Oyo States to shift from growing rice and maize to growing millet, sorghum, and cowpea, which are less energy-intensive. This decision was further influenced by increased costs associated with mechanization and irrigation (Ochimana, Adikwu, & Aernyi, 2025; Olakunle, Tijani, & Akintola, 2025). Many smallholder fisheries also diminished feeding frequency and extended production cycles and, as a result, the excessive quality loss and associated decreased profitability. (Amaegberi & Enize, 2025) expressed similar observations.

Inefficient production systems are not unique to the fisheries. Since the subsidy removal, there have been increased transport costs and, subsequently, higher feed costs, which precipitated a major reduction of the average flock of chickens from 4,850 to 2,670 per farm in the south western parts of Nigeria (Kolawole

et al., 2024). This, along with the reduced production scale, exemplifies how the energy policies shift along the supply chains, impacting production and investment decisions. Such behaviors are evident as farmers adjust to price shocks by abandoning energy-intensive production methods. This response, though effective for short-term cost mitigation, poses a significant risk to worsening long-term productivity and undermines the fulfilment of the food security goals set by a country.

5.4 Effects on Household Welfare and Poverty

Removing these subsidies poses serious welfare implications in rural areas, since many rural households still rely on farms for low, irregular income. As fuel and food prices increase, the purchasing power and cost of living balance inequalities deepens poverty. In the case of Kebbi State, a 1 percent increase in the cost of transportation resulted in a 14 percent decrease in food security for households, proof of the sensitivity that fuel price shocks have on the welfare of people living in the rural areas (Ahmed Abdulfatahi Yusuf et al., 2024). Evidence from Nasarawa State reaffirms this correlation with a strong correlation ($r = 0.87$) on transport price increases and food security going down (Bemgba & Adadu, 2025).

Ondo City households, in the cases studied, have also been credited with perceiving negative shocks on their income and savings, and these people have also been reviewed for causing severe budget cuts by lowering the frequency of meals, postponing medical care, and withdrawing children from school (Ogboru & Akinyotu, 2024). Onyambayi et al. (2024) fuel price inflation and the increase in the cost of living were also described as causing a weakening of small businesses in the rural areas of advance countries as these businesses provide a decrease in economic opportunities and stability of income. The evidence as whole describes the rise in poverty lack of indicators for the growth of economic activities in the rural areas. The data from the National Bureau of Statistics also describes the rise in poverty. In the rural areas this has been described as the economic activities having been done for a whole year. 2024 data clearly shows the incidence of rural poverty has increased within the year.

The short-term coping strategies used by households may deepen their vulnerability over the longer term. Borrowing from informal lenders, selling livestock, and liquidating household assets to meet basic needs prompt the depletion of productive capital, posing risks to future income. In the absence of specific measures aimed at relief, for example, subsidized input programs and conditional cash transfers, the rural poor will continue to face the cumulative consequences of rising energy costs.

5.5 Labour Market and Rural Employment Effects

The effects of subsidy removals on labor markets have also been negative. Since the prices of fuel became high, the cost of hiring labor and mechanized equipment also became high. Farmers in Benue State cut back on the amount of hired labor they used, worsening agricultural output and income (Ochimana, Adikwu, & Aernyi, 2025). More family labor is used on the farms which increases the burden on women and children. This also increases the educational and non-farm earn income time activities available to the family, thus, perpetuating poverty.

The transport sector, which is critical for providing employment for the youth in the rural areas, has also contracted due to high fuel prices. A substantial portion of the commuter population in Makurdi (79%) stopped paying for public transport, and as a result, the income of drivers and traders declined (Yakubu & Abubakar, 2025). The rising cut off operational costs of fuel subsides have also caused transport workers to lose their jobs which in turn increases the lack of jobs in rural areas. This has also been noted in Nasarawa and Ondo States where jobs and businesses shut down due to transport inflation (Bemgba & Adadu, 2025; Ogboru & Akinyotu, 2024). The lack of employment in rural areas has a huge impact on the cash flow of a family and increases the dependency of family members.

Evidence accrued across various states indicates that removal of subsidies on petroleum products has had negative effects on rural agricultural producers across the board and extensively. It caused increases in the costs of inputs and transport, a decrease in the profitability of farms, a decrease in the scale of production, and, consequently, a negative impact on the welfare of the rural farm households. Such effects have the potential to undermine food security in the country and the economy of rural areas. The removal of petroleum subsidies from the fiscal regime, without adequate support measures in the agricultural sector, will overburden economically vulnerable groups. Policymakers should emphasize the need for rural transport, energization of rural transport, community-based renewable energy development, focused input subsidy schemes, and affordable financing for rural producers in order to cushion the effects of energy price reforms and improve the destabilized rural production systems and the poverty that these reforms generate.

6. Policy Responses and Mitigation Strategies

The removal of petroleum subsidies in Nigeria has generated far-reaching economic and social effects, particularly among rural farmers whose livelihoods depend on affordable energy. The government, private sector, and international agencies have implemented several strategies to mitigate the negative consequences of this policy. These interventions aim to protect vulnerable groups, promote inclusive growth, and sustain agricultural productivity. The policy responses can be examined under government-led initiatives, institutional and private sector participation, and comparative lessons from other countries.

6.1 Government Interventions

The Nigerian government came up with various programmes that could alleviate the pressure of subsidy withdrawal on the citizens, especially the poor and rural people. Cash Transfers underground Conditional cash transfers (CCTs) were conceived to support households with low incomes (temporarily) in response to the increasing fuel prices. As noted by Onyambayi, Abdullahi, Alogwuja, Adejo, and Esther (2024), the cash transfer program was directed to the households in the lowest income group of people, and particularly those who are participating in small-scale agriculture and informal occupation. Adewole (2023) observed that the program was able to enhance short-term consumption rates but with no much impact on productive capacity. Youth empowerment and micro credit were also added to the National Social Investment Programme (NSIP) to promote self-employment. Nonetheless, Adebayo and Olamide (2023) claimed that the program was ineffective because of the inefficiencies in implementation, coupled with political interference, as most target beneficiaries were not reached and accessed since the identity system was weak.

Another major response of the government was agricultural subsidies. These were the fertilizer subsidies, seed distribution, and mechanization subsidies to counterbalance the increased production cost. According to Garba and Musa (2023), subsidized input programs have temporary effects on operating expenses, but were not well targeted, and the program lacked permanency. The Federal Ministry of Agriculture (2023) has admitted the logistical hurdles and restricted access, particularly in remote localities. Also, there were high fuel costs that augmented transportation and storage costs, which undermined the gains of input subsidies. Credit interventions were adapted by the Central Bank of Nigeria (2023) via the Anchor Borrowers' Programme and the Agricultural Credit Guarantee Scheme; these measures were aimed at increasing the accessibility to finances by smallholders. Abdullahi and Musa (2023) discovered that

although such credit schemes assisted some farmers, the repayment difficulties and bureaucracy coupled with the effectiveness of the same.

Social investment programs were also advanced by the government through the National Poverty Reduction and Growth Strategy (NPRGS). Bello (2023) clarified that these programs were to increase the digital payment system to transfer cash, enhance school feeding, and provide rural job opportunities. According to Usman (2022), these programs were effective at bringing social stability in the short run but failed to reintegrate into creating wealth in the long term. In terms of coverage and targeting, the National Bureau of Statistics (2023) estimated that less than 30% of rural households had received government assistance since the 2023 subsidy removal, which is the gap. The overall evaluation of the reviewed studies is that these interventions alleviated the immediate welfare issues, but had no significant improvement on the structural poverty and agricultural resilience.

6.2 Institutional and Private Sector Roles

Beyond government-led efforts, institutional and private actors have played crucial roles in reducing the adverse impacts of subsidy removal. Development agencies such as the World Bank, International Monetary Fund (IMF), and United Nations Development Programme (UNDP) have provided financial and technical assistance for policy design and social protection delivery. Oladipo and Ahmed (2022) state that to back the post-subsidy reform in Nigeria, the World Bank provided the Nigeria Social Safety Nets Project, which funded cash transfers and enhanced surveillance. IMF (2023) urged the Nigerian government to use subsidy savings by reinvesting in select social and infrastructure projects. But in line with the latter, Ogundipe (2021) maintained that external agencies tend to focus more on fiscal stabilization than on social protection, which creates strain between macroeconomic objectives and welfare interests.

Farmer-based organizations and cooperatives have also become significant as institutional coping tools with the shocks in fuel prices. Olasunkanmi (2023) discovered that cooperatives of agricultural organizations also assist the smallholder in sharing transportation facilities, buying inputs in large quantities, and acquiring group loans at financial institutions. Bello (2023) has found that cooperatives enhance market access and bargaining power, especially for women and youths contributing to small-scale farming. There has also been the introduction of low-interest credit facilities by the private financial institutions, such as the microfinance banks, to assist in rural entrepreneurship, but the lack of collateral and credit risk still pose as the key problems. Abdullahi and Musa (2023) noted that the high cost of borrowing among farmers has resulted in the reliance of informal sources of borrowing, such as community savings groups, by many farmers to finance production.

The concept of public-private partnerships (PPP) is currently fundamental in helping rural communities' access energy and provide agricultural production. Garba and Musa (2023) reported the partnership between the Federal Government and the oil and natural gas industry to facilitate renewable energy resources like solar mini-grids and the production of biofuels. The objectives of these projects are to cut the rural reliance on petroleum-generated energy and enhance the production of the farms. Nigerian National Petroleum Company (NNPC) and Rural Electrification Agency (REA) have assisted in implementing renewable energy using joint ventures with private investors. Adewole (2023) argued that PPPs increase energy delivery levels of innovation and efficiency, whereas sustainability is determined by regulatory stability and community involvement.

6.3 Best Practices from Other Countries

Various developing nations have introduced petroleum subsidy reforms and have also implemented compensatory measures that would be insightful to Nigeria. In Indonesia, subsidy reforms in the years 2005 and 2014 involved massive cash transfer initiatives and rural development initiatives. Uzochukwu (2023) indicated that the Indonesian government used some of the savings to invest in education, health, and infrastructure that improved social performance and minimized opposition to change. Indonesia failed to replicate the success of this strategy due to the absence of effective communication, effective targeting of the population using national identification systems, and transparency regarding the management of savings. A gradual subsidy withdrawal that started in 2014 was also undertaken by Egypt. As explained by Ogundipe (2021), Egypt balanced price changes with food and fuel subsidies for low-income-earning households, and invested in the mass transportation system to cut the cost of transportation.

Another instance of fiscal reform-social protection balancing can be seen in Ghana. Garba and Musa (2023) outlined the gradual strategy used by Ghana in the subsidy removal process by consulting with stakeholders, conducting awareness campaigns to the population, and compensating via the support of the transport sector. As it was seen, according to Bello (2023), in Ghana, institutional trust and believable reinvestment of savings in subsidy salvage into visible community projects were important. On the contrary, the 2023 subsidy removal in Nigeria happened with little warning, and with little communication and lagging response efforts. The inflation and social unrest are the consequences of the lack of a coordinated implementation plan.

The removal of subsidy in Nigeria now which was executed by the current government, was included in a larger market liberalization process. As noted by Adewole (2023), the deregulation was intended to remove artificially imposed distortions of prices in the petroleum downstream sector to allow the market to invest in the area privately. According to Adebayo and Olamide (2023), the policy also caused an immediate rise in fuel prices, which caused a ripple effect in production, transportation, and consumption sectors. The rationale by the government was that the reform was necessary to ensure fiscal sustainability, but the way it worked and the social implications were criticized by the groups of civil society and labor unions. Both the Trade Union Congress (2023) and the Nigeria Labour Congress (2023) were against the removal, and they wanted it to be phased and better socially cushioned. The associations of farmers had warned that food production and livelihoods in the rural setting were in danger due to high fuel prices.

The opinion of the population concerning the withdrawal of the subsidies is split. According to Onyambayi et al. (2024), urban households considered deregulation higher because of their expectations of a better infrastructure and a decrease in corruption. Rural respondents, on the contrary, were not satisfied, indicating immediate deprivation and the absence of palpable benefits. Usman (2022) and Ibrahim (2023) discovered that a lack of effective communication and saving mistrust toward government control over savings were the real factors that fuelled resistance. It is the political economy of reform in Nigeria that indicates the tension between fiscal responsibility and social equity, where policymakers find it difficult to balance between poverty reduction and macroeconomic stability.

The government, institutional, and international reaction analysis show that there is a need to make use of orchestrated, unbiased, and pluralist solutions to subsidy modification. The case of Nigeria and other countries has proved that effective reforms should be supported by effective communication, effective targeting of the compensatory programs and reinvesting the savings to productive areas. Improving the

cooperatives, expanding renewable energy initiatives and trust in the institutions are also important in mitigating the alleviation of socioeconomic impact of the petroleum subsidy cut on the rural farmers. The policy continuity, accountability as relating to the case that the fiscal reform has to be accompanied by the equitable rural development will necessitate the policy continuity, accountability and the presence of the stakeholders that will provide the sustainable recovery.

7. Conclusion and Policy Implications

Deregulation of petroleum subsidy in Nigeria has had both positive fiscal benefits and negative social consequences. The reform decreased the spending of the government and enhanced accountability in the petroleum industry, yet it worsened the lives of rural families that rely on cheap fuel to sustain themselves. The increase in the cost of fuel increased the cost of production and transportation, resulting in less production on the farm and the income of the household. The aforementioned has caused many smallholder farmers not to be productive since the price of inputs and farm inputs like fertilizers, irrigation, and runners have been higher. The bigger impact has been the reduction of the agricultural profit, increased food prices, and increased rural poverty. Experience indicates that although fiscal austerity is being realized, the lack of effective safety nets exposes the vulnerable population to economic shocks.

The dilemma between fiscal prudence and social insurance is still present in the setting of subsidy reform in Nigeria. The reduction of savings as a result of subsidy elimination has failed to depict remarkable changes in welfare due to the restriction of the coverage and the inconsistency in delivering compensatory programs. There was short-term relief as a result of conditional cash transfer and agricultural subsidy programs, but no sustainable capacity was developed among the rural producers. Lack of effectiveness has been brought about by poor coordination, lack of data on who is benefiting, and low rate of monitoring. The policy has further increased inequality between cities and rural regions without a detailed system of social inclusion. The needs to balance the economic reform and the social equity have to be based on the institutional mechanisms that guarantee the efficient redistribution of resources and the equal provision of access to the necessary services.

The policies must aim at enhancing energy justice, farm resilience, and inclusive growth. The savings in the subsidy should be reinvested in the rural energy infrastructure, renewable technologies, and agricultural value chains, which will allow curbing the reliance on fossil fuels and stabilizing the prices in the industry. The accessibility to the markets and increased productivity will be boosted through the strengthening of the rural credit systems and expansion of the cooperative networks, as well as the enhancement of the transport infrastructure. Subsidy management should be transparent in order to rebuild trust with constituents. Engaging with stakeholders in implementing renewable energy options in agricultural development strategies and investing in the most economically deprived regions will foster enduring resilience. In Nigeria, the implementation of a reform agenda focused on the integration of fiscal responsibility and social inclusion will provide the country with a solid rural development strategy. In doing so, disparate rural development will be largely minimized.

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