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# FUEL SUBSIDY REMOVAL AND THE NIGERIAN ECONOMY: A SYSTEMATIC REVIEW

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Muktar Bala, Department of Economics, Faculty of Management and Social Sciences, IBB University, Lapai. email: muktarbala@yahoo.co.uk

**Abstract**
The federal government of Nigeria has recently announced the removal of subsidy on fuel. Economic analysts and commentators have aired their views about the implications of the policy, but with mixed feelings. This study seeks to use the existing body of knowledge to guide governments' decision. The study conducted a systematic review of the literature to find the implications of the policy on the Nigerian economy. A protocol was developed following the PRISMA procedure. A search was conducted in Scopus and 43 empirical papers were recorded. A total of 21 articles met the inclusion criteria while 22 papers were excluded. The result shows that fuel subsidy removal undermines households' welfare through the erosion of real income. It also reduces aggregate demand and increases the cost of production. However, the effect of the policy on revenue savings and environment is positive. The findings imply that in developing countries like Nigeria, where fuel has limited substitutes, such policy may aggravate the existing poverty, cripple businesses and causes recession. On environment, the policy may lead to "green paradox", where more environmentally unfriendly activities would be pursued, such as failing of trees for firewood, as alternative energy sources are not readily available and affordable. It is suggested that Nigerian government should pursue fuel subsidy reform with caution and ensure that adequate compensation schemes are rolled out.

**Keywords:** fuel, subsidy, removal, reform

## Introduction

Nigeria has over the years been programmed to depend on subsidized fuel. Aside food, fuel is the second most used product in the country as the source of energy (Ani, Onoja & Humbe, 2021). The alternative sources of energy are highly underdeveloped. Electricity for example is often epileptic. Most households either use kerosene or premium motor spirit (PMS), popularly called petrol, for their domestic use. Small scale businesses such as barbers, hotels, welders, hair dressers, farmers, and etcetera, all depend on cheap fuel for their operations. Private and commercial vehicles also depend on fuel-petrol and diesel as their sources of energy. Consequently, the recent pronouncement by the federal government of Nigeria for the removal of fuel subsidy may have direct and indirect effects on the economy. Although the government is concerned about the huge sum of money being spent on subsidy yearly, and feels that such resources are better channeled to the provision of critical infrastructure, the short run and long run consequences of the policy on the entire economy might not be fully comprehended by the government. This study reviews empirical literature on the economic implications of similar policies from the global perspective. The result of the study would help in directing government's decision.

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## Methodology

A systematic review of literature on fuel subsidy removal was performed using Scopus. Scopus was selected as the search engine because it is the most effective (Tober, 2011) among the popular search engines (i.e., PubMed, ScienceDirect, Scopus and Google Scholar). The systematic review was conducted by following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) procedure (Liberati, Altman, Tetzlaff, Mulrow, Gøtzsche, Ioannidis, Moher, 2009). A protocol was developed for the study. The search term was "fuel subsidy removal". The papers searched were empirical and were published between 2011 and 2023 (the years reported by the Scopus website). The last search was conducted on the 25th August, 2023. The search items were exported from Scopus to Japref via RIS and then to Microsoft Excel for analyses. The records identified after data base searching were 43 papers. There were no duplicates because the search was from one source (Scopus). The papers were then screened. Only papers with fuel AND subsidy AND removal OR reform in their titles, abstracts or keywords were included. A total of 21 papers met the inclusion criteria while 22 papers were excluded. Figure 1 shows the PRISMA flow diagram, which indicates the screening process, inclusion and exclusion criteria.

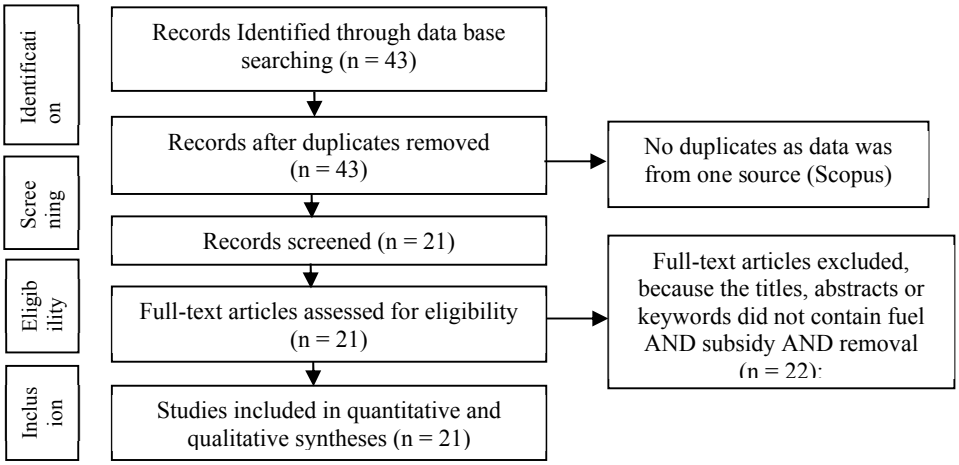



**Figure 1:** The PRISMA Flow Diagram

## Results and Interpretations

This study reviewed 21 papers that have met the inclusion criteria. The result of the review is presented in Table 1. The result shows that studies on fuel subsidy removal commence in 2011 and most of the reviewed studies were from developing nations (with the exception of two studies from China and Paris). Most of the studies also focused on the effect of the policy on welfare, revenue and the environment. Most of the studies also suggested that government provides compensation schemes in countries where fuel subsidy reform is implemented, particularly for the low- and middle-income classes. The result also shows that, countries that implementing fuel subsidy reform may lead to fall in the global oil demand thereby making it cheaper for countries without the reform, but dearer to countries under the reform.

**Table 1**: **Summary of the Reviewed Papers**

| S/N | Author | Year | Country | Welfare effects | Effects on GDP | Environmental Effects | Suggestion/ Observation |
|---|---|---|---|---|---|---|---|
| **1** | Amin et al | 2022 | Bangladesh | — | — | Reduces Co2 emissions | — |
| **2** | Lin and Xu | 2019 | China | — | — | Reduces Co2 emissions | — |
| **3** | Chepelieve & Mensbrugghe | 2020 | Paris | — | — | Reduces Co2 emissions | — |
| **4** | Chatri et al | 2018 | Malaysia | W/fare loss | Revenue gains | Reduces Co2 emissions | — |
| **5** | Aune et al | 2017 | OPEC | — | Cut in demand for fuel in OPEC | — | Consumption in non-OPEC increases |
| **6** | Wessey & Lin | 2017 | Ghana | W/fare loss | — | — | — |
| **7** | Nwachukwu & Chike | 2011 | Nigeria | — | Consumption of fuel declines | — | — |
| **8** | Timilsina & Delugue Curiel | 2023 | Midl. East & N/Africa | — | Revenue gains | Reduces Co2 emissns | — |
| **9** | Antimiami, Costantini & Paglialunga | 2023 | EU | — | Revenue gains | Reduces Co2 emissions | — |
| **10** | Bhuvandas and Gundimeda | 2020 | India | W/fare loss | — | — | Compensation Program |
| **11** | Natalini, Bravo & Newman | 2020 | Global | W/fare loss | — | — | Compensation Program/causes fuel riot |
| **12** | Rentschler | 2016 | Nigeria | W/fare loss | — | — | Differential Compensation scheme |
| **13** | Li, Shi & Su | 2017 | Malaysia | W/fare loss | Revenue gains | — | Compensation Program |
| **14** | Alshahabi | 2013 | Iran | — | Revenue gains | — | Labor retrenchment in the short-run |
| **15** | Wesseh, Lin & Atsagli | 2016 | Ghana | W/fare loss | Revenue gains | — | compensation program |
| **16** | Acharya & Sadat | 2017 | India | W/fare loss | — | Reduces Co2 emissions | subsidize fuel for the poor |
| **17** | Wesseh & Lin | 2016 | Ghana | W/fare loss | Fall in agate. dd | Reduces Co2 emissions | compensation program |
| **18** | Jiang, Ouang & Huang | 2015 | China | W/fare loss | — | — | compensation program |
| **19** | Yusoff & Bekhet | 2016 | Malaysia | W/fare loss | — | — | — |
| **20** | Lin and Li | 2012 | China | W/fare loss | Fall in agate. dd | — | |
| **21** | Bazilian & Onyeji | 2012 | Nigeria | — | Fall in aggregate. dd | — | — |

The summary of the reviewed articles per year is presented in Figure 2. Figure 2 shows that studies on fuel subsidy reform commence in 2011 with more studies being conducted between 2016 and 2017.

**Figure 2: Empirical Studies on Fuel Subsidy Removal by Year of Publication**




**Figure 3: Summary of Findings of the Reviewed Papers**

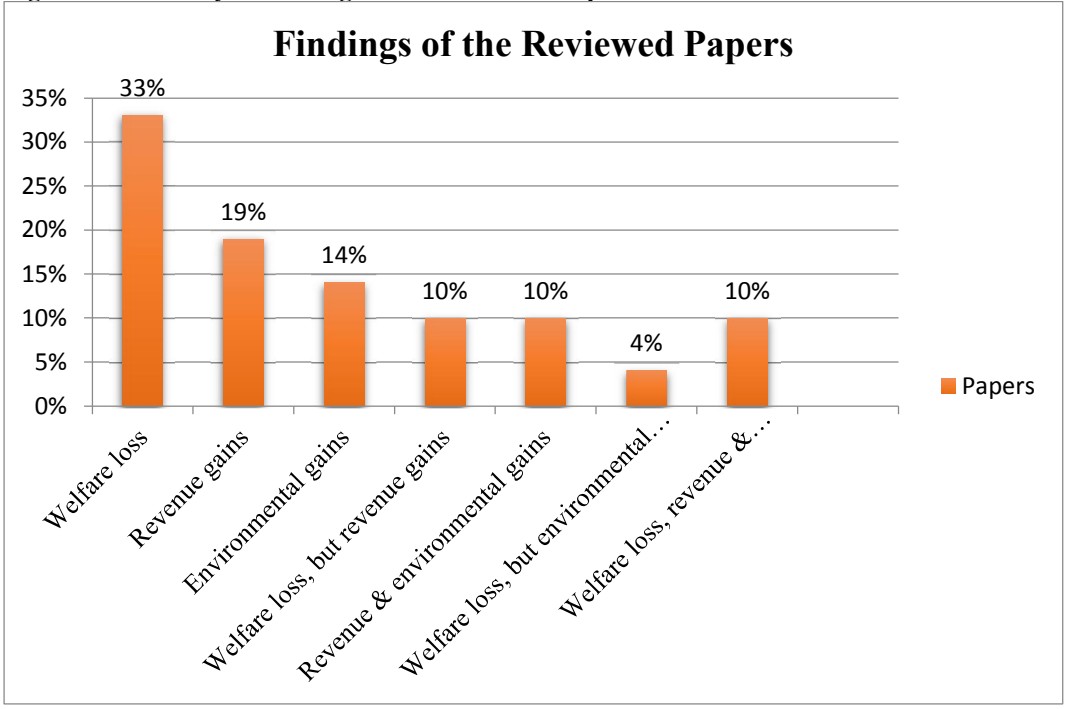



Figure 3 shows that most of the reviewed papers (33%) reported that subsidy removal leads to loss of households' welfare, 19% of them reported gains in revenue as a result of the policy while 14% of the studies found that the policy has positive impacts on environment through the

reduction in carbon dioxide ($Co_2$) emission. Some of the studies reported dual or contradictory findings. A group of studies (constituting 10% of the reviewed papers), reported that fuel subsidy removal leads to loss of households' welfare but revenue gains to the government. Another 10% of the studies found that the policy leads to both revenue gains and environmental benefit. There are 4% of the reviewed articles which showed that the policy leads to welfare loss but environmental benefit. Yet, 10% of the total reviewed papers found that fuel subsidy removal leads to welfare loss, but revenue gains and environmental benefits. Overall, therefore, most of the reviewed studies reported welfare loss as the major effect of the policy even though it might have some revenue and environmental benefits.

**Discussion**

Policies on fuel subsidy removal has begun since 2009 when the 20 most developed nations (G20) met in Pittsburgh, the United States, and agreed to reduce fossil fuel consumption to avert global warming (Jeff & Darren, 2009). Since then, many countries have attempted implementing the policy on fuel subsidy removal, in some places, with great resistance. In developing nations, where households and businesses heavily depend on subsidized fuel for their domestic and business activities, removing subsidy on fuel may have far reaching consequences. This study has reviewed 21 articles and the results show that most of the studies were conducted from 2011. Also, the findings of most of the studies were anchored on welfare, revenue and environmental concerns.

First, for the studies on fuel subsidy removal to have commenced only from 2011 might be an indication that the reform policy began around that time. Perhaps after the G20 Pittsburgh summit in 2009. Although the policy agenda of the summit might be environmentally good, removing subsidy on fuel might not be suitable to developing nations where alternative sources of energy are not available and the rate of fuel related carbon dioxide emission is low compared to what is obtainable in the industrialized nations. Second, the findings that most of the studies (33.3%) reported a negative welfare loss as a result of fuel subsidy removal implies that fuel subsidy reform has microeconomic implications on households as it erodes real income (Acharya & Sadat, 2017). Reduction in real income undermines households' demand for food, cloth, shelter, health and education if proper compensation schemes are not properly implemented (Li, Shi & Su, 2017). The microeconomic effects may also lead to macroeconomic shocks. In the OPEC (Oil Producing and Exporting Countries) for instance, the policy has led to a drastic reduction in the total consumption of fuel in the transport sector (Aune, Grimsrud, Lindholt, Rosendahl, & Storrøsten, 2017). In Iran, a reduction in the aggregate demand for fuel has led to worst labor market outcomes, through the loss of jobs (Alshahabi, 2013). Loss of jobs implies a reduction in income, demand and welfare. The multiplier effects of the policy can therefore lead to a vicious cycle of poverty and economic recession. The effect of the policy would be more serious in developing nations where the size of low- and middle-income class is big (Bhuvandas & Gundimeda, 2020).

Third, a 19% of the total reviewed papers reported that fuel subsidy reform reduces burden on revenue and help government solve its budgetary deficits. However, most of the papers that reported this type of finding also acknowledged that the policy leads to fall in aggregate demand, increase in production cost and a reduction in the competitiveness of the domestic products in the global markets if the country in which the policy is implemented has no alternative source of energy (Bazilian & Onyeji, 2012; Lin & Li, 2012; Wesseh & Li, 2016). In most developing nations, there is no strong and sustainable sources of energy that substitute fuel. Therefore, the

policy might lead to closure of businesses. Fourth, 14% of the papers reviewed found that fuel subsidy reform leads to environmental gains. Although reduction of fossil fuel consumption might achieve the environmental goal of reducing carbon dioxide emission, developing countries with limited alternative sources of energy might be forced to use other sources of energy that are environmentally unfriendly, such as fire wood. For fear of unknown future agenda, oil endowed nations may also be quick to deplete their fossil fuel reserves thereby increasing the rate of global fossil fuel supply and carbon dioxide emission. All these, lead to "green paradox".

**Conclusion and Future Agenda**

This paper, a systematic literature review, provides an opportunity to use the existing knowledge for policy actions. The study follows the PRISMA protocol (Liberati et al., 2009) and reviewed 21 articles that investigated the effects of fuel subsidy removal on the economy. The findings of this study show that removal of fuel subsidy undermines welfare by eroding households' real incomes via increase in the general price levels. Though the policy was reported to have reduced budgetary constraints, the fall in aggregate demand and increase in the cost of production may lead to closure of businesses. The low- and middle-income classes are more hit by the policy. Therefore, developing countries with high poverty rate should implement the policy with caution. Furthermore, the effect of the policy on environment was reported to be positive. However, since energy is a basic necessity, removing subsidy on fuel might make households and businesses to opt for substitutes that are more environmentally degrading than the fuel, thereby leading to "green paradox"— an environmental policy that creates two outcomes, one positive and the other negative.

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