

The Impact of Kerosene Price Subsidy Removal on Households' Cooking Energy Consumption in Nigeria: Implications for National Development

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Abstract: *The study aimed to determine the effect of kerosene price subsidy removal on deforestation in Nigeria using primary data from 200 respondents randomly selected from Ibadan and Owerri. The descriptively analysed data showed that fuel wood and kerosene are the most popular cooking fuel used in Nigerian households. Since the removal of subsidy on kerosene price the number of households using firewood and charcoal as cooking fuel increased by about 6 percent, and the quantity of firewood and charcoal used increased by about 40 percent and 15 percent respectively. Households with large family size and low income households were mostly affected by the price subsidy removal. Some farmers and some government workers were found to have reduced their quantity of kerosene usage and shifted to using more firewood as firewood business is now emerging lucrative among some unemployed youth. This is found to have a serious implication for deforestation and constitute an impediment to national development. Availability and affordability are the most popular reason for choice of cooking energy in Nigeria. The government should consider making more volumes of kerosene available at affordable prices to Nigerians by reactivating existing refineries and subsidise cooking gas to make it affordable to majority of Nigerian to reduce pressures on the forest.*

Keywords: *Kerosene, Price subsidy, cooking energy, Nigeria,*

1. INTRODUCTION

Biomass, such as firewood, charcoal, etc has long been the most popular source of cooking fuel in Nigeria, as in most developing countries, especially in the rural areas. As at 2006 firewood was a major cooking fuel in about 56 percent of Nigerian households (NPC, 2010). In the 1970s the Federal Government of Nigeria made a deliberate effort to encourage people to use other sources of cooking fuel than firewood and charcoal in order to conserve the Nigerian forest. One of these efforts was subsidisation of prices of kerosene to encourage its domestic private consumption by ensuring uninterrupted distribution of the products for equal accessibility to all Nigerians.

The achievement of government objective was hindered by inefficiency in the product market and huge fiscal burden on the government. This led to the policy of gradual removal of subsidy on petroleum products prices since 1986. Even then, the subsidy on kerosene was retained such that kerosene price remained the lowest among major petroleum products in Nigeria. Government retained the subsidy on kerosene to achieve two major objectives of making the product available and accessible to all Nigerians anywhere in the country. However, these objectives were not achieved as kerosene rather became inaccessible and unavailable to majority of Nigerian households, and unreliable due to adulteration. This was to the extent that many Nigerian families become more comfortable using alternative sources of cooking fuel than kerosene, and overwhelmingly depend on wood products, especially firewood and charcoal (Gbadegesin and Olorunfemi, (2011).

This paper aimed to highlight the result of a study on the effect of kerosene price subsidy removal on households' choice of cooking energy and on the Nigeria's natural environment especially the forests. It specifically aimed to identify factors influencing choice of cooking fuel in Nigeria, and evaluate changes in households' pattern of cooking fuel consumption before and after subsidy removal in Nigeria. The study is germane for more understanding of the impact of continual increase in kerosene prices on Nigeria's forests for appropriate policy actions. It is also important to fill the gap of

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empirically linking removal of subsidy on prices of kerosene with fuel wood consumption at the household level, which has not been research on so far. The report is arranged in four sections of introduction, materials and methods, results and discussion, implications for national development, and conclusion.

2. MATERIALS AND METHODS

2.1. Data Type and Sources

The study used primary data that were sourced from household survey by use of semi-structured questionnaire. The variables sought for, obtained and utilised included quantities and prices of kerosene, charcoal, firewood, cooking gas, and sawdust for the years 2010 and 2012. Other information sought for and utilised were household income, age and level of education of respondents as well as respondent's occupation.

2.2. Sampling Technique and Sampling Size

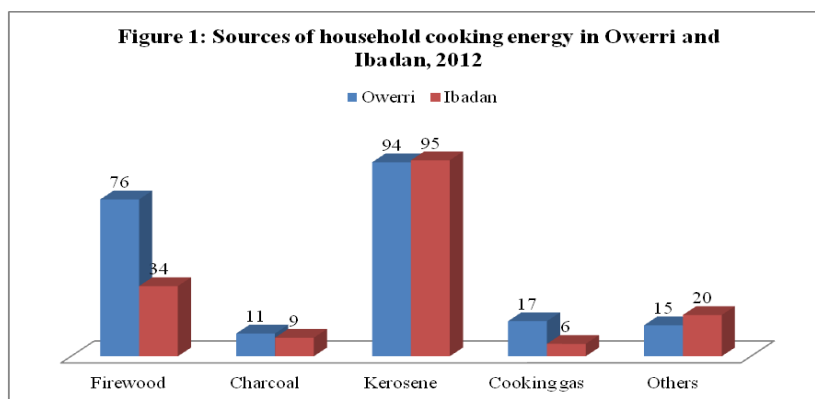
The choice of Owerri and Ibadan was purposive just to capture the glimpse of situations in the South-East and South-West geopolitical zones of Nigeria. Two communities were selected from each city to represent the urban and rural segments. In Owerri, Uratta (urban) and Obinze (rural) were selected while Agbowo (urban) and Adebayo (rural) communities were surveyed for Ibadan. A sample of 50 households was selected from each community resulting in a sample size of 100 households per city and to an overall sample size of 200 for the two cities. The mother in the household was interviewed in her absence the next elderly member of the house was interviewed.

2.3. Analytical Technique

Descriptive method of analysis was applied using SPSS software package. The results were presented in cross-tabulation forms and in graphs. Ex-post impact analytical technique was applied to assess the impact of kerosene price subsidy removal on households' consumption of cooking energy. Ex-post impact analysis is used to determine whether a programme or policy has intended effects on individuals or households. It also helps to assess the unintended positive or negative consequences of the programme or policy on individuals or households (Walker, T. et al. 2008). Changes in the households' use of cooking fuels between 2010 and 2012 were evaluated using 'before' and 'after' method of evaluation. The year 2010 stands for 'before' subsidy removal while 2012 represents 'after' subsidy removal.

3. RESULT AND DISCUSSION OF FINDINGS

3.1. Major Sources of Cooking Fuel in Ibadan and Owerri



Source: Survey data, December, 2012

The most common source of cooking energy was kerosene as indicated by 94 percent of respondents in Owerri and 95 percent in Ibadan (Figure 1). The figure shows that firewood was the next popularly used cooking energy having the weight of 76 percent of respondents in Owerri and 34 percent in Ibadan. Charcoal is next to firewood with 9 percent and 11 percent of respondents in Ibadan and Owerri as users. Cooking gas was popular only to 6 percent of households in Ibadan and 17 percent in Owerri.

3.2. Impact of Kerosene Price Subsidy Removal on Households' Cooking Energy Consumption

Changes in quantity and expenditure on cooking energy utilised

Table2. *Cooking Energy Utilisation and Expenditure per week before after subsidy removal*

Location	Owerri			Ibadan		
	2010	2012	Change (%)	2010	2012	Change (%)
Firewood (bundle)	3.4	5	47.1	2.2	3	36.4
Amount (Naira)	948	1305	37.6	402	465	13.5
Number of users	72	76	5.6	32	34	6.3
Charcoal (bags)	1.05	1.2	14.3	1.45	1.7	17.2
Amount (Naira)	793.2	829.2	4.5	998.6	1108.4	11.0
Number of users	11	11	0	8	9	12.5
Kerosene (litres)	10.2	7	-31.4	6.9	4.3	-37.7
Amount (Naira)	1019	1141	12.0	604	623.5	3.2
Number of users	94	94	0	96	95	-1.0
Cooking gas (12.5kg cylinder)	0.49	0.5	2.0	1.3	1.2	-7.7
Amount (Naira)	2562	2557	-0.2	5156.2	5324.4	3.3
Number of users	17	17	0	23	23	0
Total amount spent per week	963.9	1190.9	23.6	1018.2	616.0	-39.5
Total amount spent per month	3855.5	4763.7	23.6	4072.7	2464.3	-39.5
Total household expenditure per month	25157.8	29840	18.6	32209	22545	-30.0

Source: *Survey data, December, 2012*

Table 2 shows that changes occurred in the quantity and expenditure on the selected cooking fuels between 2010 and 2012. It also shows disparities in the number of users of the fuels between the two years in Owerri and Ibadan. Analysis shows that quantity of firewood and charcoal consumed in Owerri increased by 47.1 percent and 14.3 percent respectively between 2010 and 2012. As the quantity of firewood consumed in Owerri increased from 3.4 bundles per week in 2010 to 5 bundles in 2012, the quantity of charcoal increased from 1.05 bundles in 2010 to 1.2 bundles in 2012. The rise in the quantity of firewood and charcoal consumed in Ibadan between 2010 and 2012 was by 36.4 percent for firewood and 17.2 percent for charcoal. The quantity of firewood consumed in the city rose from 2.2 bundles in 2010 to 3 bundles in 2012, while charcoal increased from 1.45 bags in 2010 to 1.7 bags in 2012. The quantities of fuel wood consumed in the two cities increased after subsidy removal.

The same trend appears in terms of the Naira amount spent on firewood and charcoal in the two cities before and after subsidy removal. The amount spent on firewood per week in Owerri increased from N948 in 2010 to N1305 in 2012 while expenditure on charcoal rose from N793.2 in 2010 to N829.2 in 2012. The percentage increase in the amount spent on these items between 2010 and 2012 was 37.6 percent and 4.5 percent respectively. In Ibadan N402 was spent on firewood per week in 2010 as against N465 in 2012 indicating an increase of 13.5 percent in the amount spent on firewood between the two periods. The amount spent on charcoal increased by 11 percent from N998.6 in 2010 to N1108.4 in 2012. Both the quantities of the items consumed and total amount spent by respondents increased after subsidy removal.

Analysis for petroleum products-Kerosene and cooking gas revealed that as quantity of kerosene consumed between 2010 and 2012 decreased, amount of money spent on the product in both cities increases (Table 2). While the increase in the quantity of kerosene used for cooking decreased by 31.4 percent and 37.7 percent in Owerri and Ibadan respectively, total amount of money spent per week on the product in the two cities increased by 12 percent and 3.2 percent respectively. The result for cooking gas was different for the two cities. As the quantity of cooking gas consumed between 2010 and 2012 in Owerri increased, the total amount of money spent on the product decreased. The contrary is the case for Ibadan, where the quantity decreased as the amount of money spent increased. In Owerri, the quantity of cooking gas consumed increased by 2 percent from 0.49 cylinder per week in 2010 to 2 cylinders in 2012, the amount of money spent per week dropped by 0.2 percent from N2562 in 2010 to N2557 in 2012. Results for Ibadan show that as quantity of cooking gas consumed dropped by 7.7 percent from 1.3 cylinders in 2010 to 1.2 cylinders in 2012, amount of money spent rose by 3.3 percent from N5156.2 to N5324.4. Ibadan results suggest that reduction in quantity

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consumed might have been influenced by the increased price of cooking gas and reduction in household income.

Comparison of share of expenditure on cooking fuel in the overall expenditure of the respondents shows that in Owerri, the share of expenditure of cooking fuel from the total expenditure increased from 15.3 percent in 2010 to 16 percent in 2012 (Table 2). The result for Ibadan showed a decrease from 12.6 percent of total expenditure in 2010 to 10.1 percent in 2012. Comparison of the weight of cooking fuel expenditure on the respondents' total income shows increase from 9.5 percent in 2010 in Owerri to 10.1 percent in 2012, and a decrease from 9.7 percent in 2010 in Ibadan to 6.9 percent in 2012. While there was increase in the share of expenditure on cooking fuel as percentage of total expenditure and total income of the respondents in Owerri, a decrease is witnessed in the share of expenditure on cooking fuel from total expenditure and income in Ibadan between 2010 and 2012.

Changes occurred in number of users of firewood between subsidy period and post subsidy period. The number of households using firewood in Owerri increased by 5.6 percent from 72 households in 2010 to 76 households in 2012 and in Ibadan by 6.3 percent from 32 households to 34 households. The number of households using charcoal, kerosene and cooking gas remained the same in Owerri between the two periods, but Ibadan has an increase of 12.5 percent in the number of users of charcoal. The number of households using kerosene as cooking fuel in Ibadan marginally reduced by 1.0 percent from 96 in 2010 to 95 in 2012.

3.3. Implications of Choice of Cooking Energy Consumption for National Development

As the removal of subsidy increased the number of users of firewood and charcoal, and the quantity of the two types of cooking energy demanded, the popularity of firewood and charcoal among Nigerians is further enhanced. This has implications for deforestation. The consequences of deforestation on the environment, human health and livelihood are very impeding to national development. Between 1990 and 2005, Nigeria is said to have lost 21 percent of its forest with an annual deforestation rate of 3.5 percent. Between 2005 and 2010, more than 2 million hectares of Nigeria's forest land was lost (FAO, 2010). Deforestation has a lot of implications for government and the society. One of the reasons often given by government for removing subsidies on petroleum products prices is to reduce fiscal burden on the budget. It is estimated that rising deforestation and environmental degradation will cost Nigeria more than \$6 billion Dollars a year. This implies that further deforestation resulting from rising demand for fuel wood and charcoal prompted by increase in prices of kerosene will lead to higher fiscal burden on the government budget.

Deforestation exacerbates the problems of drought, desertification, soil erosion, biodiversity losses and consequently further energy crisis, increase poverty and hunger, and creates more serious threat to livelihood of many Nigerians. It exacerbates rural poverty and reduces contribution of forestry to economic growth (Acheampong and Marfo, 2011; Okunomo, 2010; Amiebenomo, 2002). The increasing use of firewood and charcoal will constitute a constraint in the achievement of the Millennium Development Goals especially that of achieving environmental sustainability and this is tantamount to constraining national development.

4. CONCLUSION

The government should consider making more volumes of kerosene and cooking gas available not just by importation but by reactivating the existing production facilities. This will make the products more available and affordable to Nigerian consumers and thereby reducing consumption of fuel wood. Until the domestic petroleum products facilities are put in proper shape for production of adequate cooking fuels to satisfy the needs of Nigerian, government should not only consider retention of subsidy especially on kerosene pump prices but increase the subsidy since it is consumed by the poor majority. Subsidisation of the price of cooking gas is also necessary to make it accessible to many Nigeria considering its environmental friendliness. The use of biogas for cooking, which is now making ground in some poor Asian countries, should be introduced and taught to Nigerian rural dwellers especially in view of the high cost of cooking gas. The technology for production of biomass briquette should be introduced in Nigeria. This will encourage the use of biomass briquette as alternative source of cooking energy in both urban and rural Nigeria.

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