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Price Increases on Liquefied Petroleum Gas (LPG) in the New Juaben Municipality: an implication for Women Home

Management Budget Constraints

Jamal Mohammed & Mrs. Doris Ntim

Dept. of Liberal Studies, Faculty of Business and Management Studies, Koforidua Polytechnic, Koforidua, Eastern Region, Ghana

Abstract

This study sought to assess Price Increases on Liquefied Petroleum Gas (LPG) in the New Juaben Municipality: an implication for Women Home Management Budget Constraints. The specific objectives of the study were to identify the challenges and opportunities associated with the usage of LPG by women in the New Juaben Municipality and to examine the effects or impacts of price increases of LPG on women home management budget in the New Juaben Municipality. To achieve the set objectives, questionnaires and interview were the data collection method used in the Municipality. A sample size of 397 was used along with simple random sampling. Data was fed into SPSS version 20 for analysis. An ordinary least square multiple regression model was used explain the impact of independent variables on the dependent variable. The result was that, majority of the women 90% (307) believed that, price increases on LPG has brought about reduction in expenditure of other household items. The study also showed other constraints and opportunities in the use LPG by women in the New Juaben Municipality. It was however recommended that, government could reduce taxes on cylinders and LPG to make them more affordability to the poor household. In addition, the government could find an efficient way of billing the commercial users separate from domestic users of LPG; this could in a long way increase LPG usage and reduce demand on the natural environment.

Key Words: Price Increase, LPG, Women, Home Management, New Juaben Municipality.

Introduction: Among the essential needs of man is energy, which is used in cooking, boiling water, lighting and heating. It is thus seen as a prerequisite for good health but has not been taken seriously by the world in totality (WHO, 2006).

There are many different forms of energy available to man and are been exploited either in the raw or finished form. Estimates from World Health Organization (2006) has it that, more than three billion people still burn wood, dung, coal and other traditional fuels inside their homes. These aforementioned energy forms are considered not to be clean energy partly due to 1.5 million deaths annually for indoor air pollution mostly of young children and their mothers blamed on unclean energy usage.

Unclean energy usage is a prerequisite for poverty and as such energy poverty which is seen as a phenomenon for the poor in the world. Energy poverty could be seen as existent because of lack of infrastructure. An IEA (2006) study postulated that, countries could escape energy poverty if the demand for traditional energy could be reduced to 1.85 billion in 2015 but shockingly their estimates put demand for traditional energy to increase to 2.55 billion in 2015.

As WHO (2006) puts it "A rigorous acceleration of energy provision is needed to break the vicious cycle of energy poverty and lack of development in the world's poorest countries". Many governments headed to the advice of making clean energy available and affordable, and thus give rise to the adoption of liquefied Petroleum Gas (LPG) in many countries including Ghana.

Liquefied Petroleum Gas (LPG) is acknowledged to be a clean-burning, very efficient, adaptable and easily carried by product of natural gas extraction and crude oil refining used as fuel. This particular energy

The accessibility of clean energy for cooking predominantly has been seen as a gender issue, mainly as some cultures have viewed women to be responsible for cooking and bringing in or choice of energy for cooking. More so, indoor air pollution and inefficient household energy practices are a significant in affecting the lives of women and young in the population, as the young help the parents in cooking, and are therefore a threat to the achievement of the Millennium Development Goals.

Open Working Group made a proposition on Sustainable Development Goals for 2030 for inclusion of goal 5 to take care of achievement of gender equality and empower all women and girls. This particular goal 5 extended to eliminating all forms of discrimination against women and girls, recognise and value unpaid care and domestic work through the provision of infrastructure, ensure women's effective participation and equal opportunities, and enhance the use of enabling technologies (WLPGA, 2014).

Gender issues matter in home management and energy provision; and therefore, a study on price increases on Liquefied Petroleum Gas (LPG) and female home management budget constraints in the New Juaben Municipality is very necessary and important.

Problem of the Study: Energy is an essential component of every household's consumption basket. Energy sources ranges from the traditional biomass (fuel wood, charcoal, etc) to modern fuel types like Liquefied Petroleum Gas (LPG).

Ghana has introduced policy measures aimed at reducing dependence on the natural environment and increasing domestic usage for LPG. Estimates from Energy Commission (2008) cited in Acharibasan and Apatinga (2014) showed domestic usage of LPG in 2008 to be 55%, this was an increased from 14000 tonnes in 2003 to 46000 tonnes in 2007 depicting 35.16% average growth over the estimated period.

The direct users of LPG domestically within Ghana either for cooking, heating and so on are in majority terms carried by women. Whether male or female headed household, in most cases, the female has to purchase the LPG from their allocated home management budget. The amount of money provided to the women for home upkeep has some constraints and is eroded by price increases on LPG.

The question is, how much impact are the increases in the prices of LPG on women home management budget, the answer is scanty. Due to income constraints, resistance to increase home management allowance in some cases from men, the budget of women suffers whenever there are increases in the price of LPG. Ghanaian customers of Liquefied Petroleum Gas (LPG) are subject to exploitation. . A gas cylinder that used to take a household four to five months a year or two ago, now only takes them two months. This makes planned budget by women to erode leading to adjustments and could perhaps affect nutritious content of food prepared at homes.

This particular study is a novelty from the researchers attempt to look at hidden issues regarding gender budget constraints from the perspective of women and how this erodes the amount of women home management allowances.

Using the New Juaben Municipality as a case, the study would contribute to the literature of price increases on LPG in Ghana by looking at the impact on women planned budget in the households.

Objectives of the Study: The main objective of this study is to assess Price Increases on Liquefied Petroleum Gas (LPG) in the New Juaben Municipality: an implication for Women Home Management Budget Constraints.

The specific objectives of the study are as follows:

- To identify the challenges and opportunities associated with the usage of LPG by women in the New Juaben Municipality.
- To examine the effects or impacts of price increases of LPG on women home management budget in the New Juaben Municipality.

Research Questions:

1. What are the challenges and opportunities associated with using LPG in the New Juaben Municipality?

2. What are the effects or the impact of price increases of LPG on women home management budget in the New Juaben Municipality?

Hypothesis for the study:

H₀: Price increases on LPG does not affect women home management budget.

The particular study will be limited to the price increases of Liquefied petroleum Gas (LPG) and its implication for women home management in terms of budgetary constraints in the New Juaben Municipality. The choice of New Juaben Municipality is also due to the newness of the topic and an increasing demand by households for LPG in the area.

With the increase debate on the need to increase usage of LPG and switch form the use of less clean energy consumption in Ghana, this study is timely and will contribute to the debate by providing further explanations for the challenges to LPG consumption for the household citing budget constraints, prices increases and frequent availability. The study's findings will also serve as a source of secondary data for other researchers and students who will want to conduct similar studies.

Empirically, available studies have pointed to the seemly interest in the usage and demand for LPG in the world and Ghana is no exception.

Poongodi and Madurai (2014) studied the impact of LPG on the Indian economy. They concluded that, the prices of oil are often seen as being connected in a cause and effect relationship. The effect of increasing oil price had a negative impact on the common man, middle class families as a result of the high cost of living. They explained that oil is a major input in the economy as it is use for fueling transportation and providing heat at homes etc. Therefore, as the oil price increases it leads to economic slowdown within an economy.

Cooke et al. (2014) estimated the impact of poverty on Ghana's fuel subsidy reform and its mitigating response. They argued that the removal of the fuel subsidies, by causing an increase in prices, results in a negative impact on household welfare. The negative effect was worst for the poorest group who experience a reduction in their total consumption of 2.1%. Given that people in the poorest quintile are living in chronic poverty with no margin for manoeuvre, such a decline in their consumption would have a long---term negative impact on their health, education, nutrition and their consequent ability to contribute productively to development.

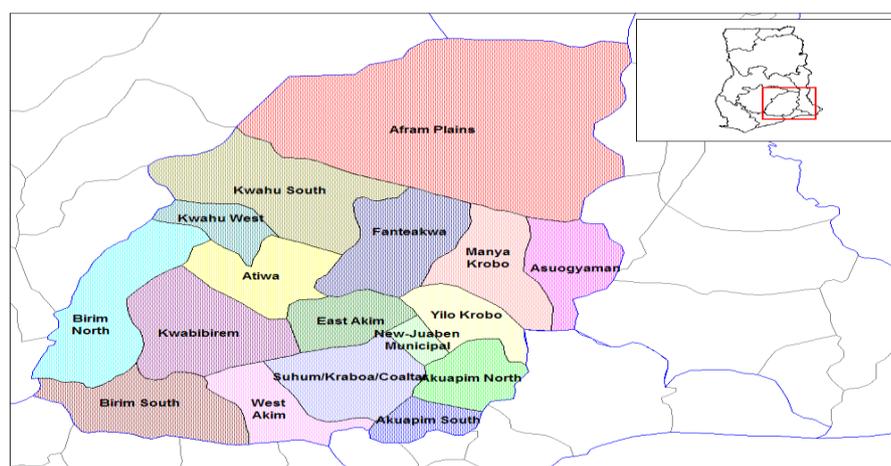
Ayakwah and Mohammed (2014) sought to evaluate fuel price adjustments and growth of SMEs in the New Juaben Municipality of Ghana. Their specific objectives were to: find out whether fuel price adjustment affects SMEs negatively or positively, and explain the effect of fuel price adjustment on employment, turnover and output of SMEs in the New Juaben Municipality. This study was a social survey with a sample size of 204 and a purposive sampling was used to illicit information from respondents in which quantitative and qualitative analysis were undertaken. The results of the study showed that, increases in fuel price due fuel price adjustment result in increases in transportation costs, raw material costs, capital costs and other costs but have a negative relationship with consumer real income. In addition, increases in fuel price constrained the growth of SMEs. The study recommended that, government should take steps to subsidize the fuel costs of SMEs to enhance their growth which could lead to increase in employment. SMEs should be provided with managerial training to enhance their understanding of their activities.

Acharibasam and Apatinga (2014) studied about Ghana and the liquidified petroleum gas dilemma critical analysis of Ghana's LPG policy. They argued that fuel wood and charcoal have lost prominence in recent literature since their contribution to deforestation in Ghana is glaring. Fundamental problems must therefore be tackled seriously if deforestations is to be reduced. First, the government must pass laws prohibiting cars either private or commercial from running on LPG. Second, ensure regular supply of LPG at lower prices than charcoal and fuel wood. Besides, the provision of alternative employment to those employed by the fuel wood and charcoal industry. Also, the government should strengthen its borders to help curb the problem of smuggling. Additionally, the government should continue to provide logistics to forest guards to help them in executing their duties. Perhaps, charcoal producers could be trained and made LPG distributors. Finally, mass reforestation and public education are necessary to change people's strong preference for fuel wood and charcoal as cooking fuel.

Adam *et al.* (2013) in their study confirm the hypothesis that, access to modern forms of energy increases as income levels increase. Their results show that the number of households using electricity as the main source of lighting increased with increasing income levels whereas kerosene had a decreasing trend. In the same vein, charcoal and gas were also observed to be the fuels of choice as their usage increased with increasing income, unlike wood use, which was observed to decrease as income levels increased. Similar trends were observed at the regional level where, apart from the three northern regions, all the other regions in Ghana had a clear trend with an increasing number of households using electricity as the main source of lighting, and charcoal and gas as the main fuel for cooking, as the income quintile levels increased.

Methodology: This particular study is a cross sectional survey aimed at evaluating price increases on liquefied petroleum gas (LPG) in the New Juaben Municipality (NJM): an implication for women home management budget constraints. The NJM is located in the Eastern Region and capital town is Koforidua. As it was not possible to deal with all households within the New Juaben Municipality, the study was done with a sample of some selected households and women engaged in home management within the NJM. The New Juaben Municipality (NJM) is depicted in the map below showing districts in the Eastern Region (Ayakwah and Mohammed, 2014).

Map of Eastern Region



Source: http://en.wikipedia.org/wiki/NewJuaben_Municipal_District#mediaviewer/File:Eastern_Ghana_districts.png

The 2010 Population and Housing Census has put the total population in the households in the NJM to be 173,653 with the number of households as 49,474 with household size as 3.5. The urban household population as 171,376 and rural household population as 12,351. This particular study concentrated in the urban locality as many studies showed increases consumption of LPG to be higher in the urban locality. The study defined household as people who eat from the same pot of cooked meal. It therefore requires that, the same source of LPG is used for cooking and thus, the researchers answered the number of households and not the population in the households. The highest use of LPG for cooking in the Eastern region is in New Juaben (12.5%) followed by Akwapim South (7.3%) and Akwapim North (5.4%). In the remaining 12 districts the use of L.P Gas for cooking is less than 3.5 per cent of households in any district Ghana Statistical Service, 2010).

Sample Size and Sampling Technique: When the target population is definite, in determining the sample size the formula below is used:

$$n = \frac{N}{1 + N(\alpha^2)}$$

Where: n is the sample size

N (49,474) is the target population and the sample frame

α (5%) is the error margin and the confidence interval is 95%.

The sample size is therefore by computation is 396.79 and therefore, the sample size for this particular study was 397.

This means that using the formula by convention and principle the sample size for this study is 397. However, to allow for non-response and protest cases in the study communities, a sample of 400 questionnaires was printed.

The sampling technique for this study was simple random sampling aimed at reducing bias and providing equal opportunity for all respondents. The raw data obtained was fed into SPSS version 20 for analysis and interpretation.

Empirical Model: The researchers have provided an economic model based on experiences on a prior expectations and theoretical variables that could possible influence the demand for LPG by households in the NJM. The demand for LPG at the household level is said to be influenced by the income of the individual household, education, number of immediate dependents, age and substitute energy availability. The econometric model therefore takes the form as:

$$\text{LPG Demand} = \beta_0 + \beta_1 \text{Income} + \beta_2 \text{Education} + \beta_3 \text{Age} + \beta_4 \text{Immediate Dependents} + \beta_5 \text{Substitute Energy} + \text{Error}$$

The above econometric model has variables that influence the demand for LPG, the expectation is that, income, education, immediate dependents, and age should have a positive relationship with demand for LPG whereas substitute energy has a negative relationship with demand for LPG.

Results and Dicussions: The results of the study revealed interesting results as regards Price Increases on Liquefied Petroleum Gas (LPG) in the New Juaben Municipality: an implication for Women Home Management Budget Constraints.

Table 1. Gender Distribution of LPG Usage

Gender	Number of Respondents	Percentage (%)
Male	90	22.67
Female	307	77.33
Total	397	100

Source: Field study, 2015

From the above table 1, 90 (22.67%) out of the total respondents of three hundred and ninety seven (397) users of LPG in the New Juaben Municipality which are males and 307 (77.33%) are females. The above results confers with what WLPGA (2014) when they opined that, women want and love LPG despite risks associated with it including fears of accidents, often higher fuel expenses, and supply issues.

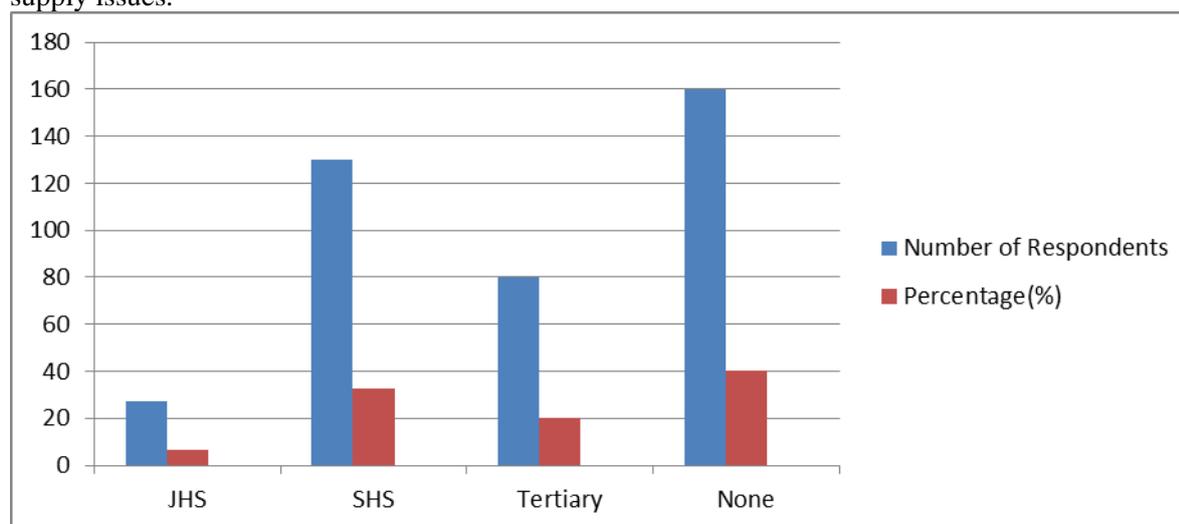


Figure 1: Educational Background of Respondents

Source: field Survey, 2015

The figure 1 above indicates that, 27(6.8%) of the respondents had completed JHS, 130 respondents representing 32.75 percent of the sample size, 80 (20.15%) of the respondents completed tertiary education and whilst 160 (40.30%) representing those respondents’ who did not have any form of education. Considering the entire Eastern Region in terms those who never had any form of education, it was revealed that 111,357 of the inhabitants of the eastern region had not had any form of attendance to school.

Table 2 Number of Years of LPG usage

Number of Years	No. of Respondents	Percentage (%)
At least 1 year	88	22.17
At least 2 years	206	51.89
3 years and above	105	26.45
Total	397	100

Source: field survey, 2015

From the table 2 above, eighty eight (88) respondents constituting 22.17% of the total number of respondents have been using LPG for at least 1 year, two hundred and six (206) respondents representing 51.89% of the total number of respondents have been consuming LPG for at least 2 years, and one hundred and five (105) respondents representing 26.45% of the total number of respondents have been consuming for 3years and above. The above results demonstrated massive adoption of LPG as a preferred source of energy for cooking and heating among households in the NJM. The creation of profitable and sustainable supply chains is the flagship intervention project by the government of Ghana. A more active involvement of the private sector and local community-based organizations.

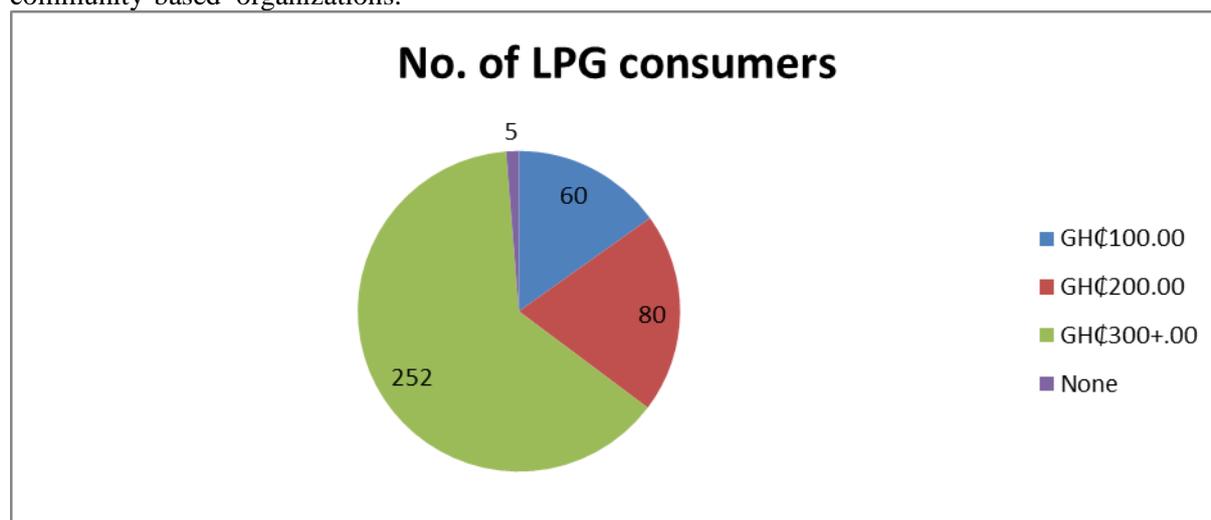


Figure 2: Level of Income per Month

Source: field survey, 2015

The figure 2 above shows that, sixty (60) respondents earn GH¢100.00 per month, eighty (80) respondents earn GH¢200.00, two hundred and fifty two (252) respondents earn GH¢300.00 and above, and five (5) respondents revealed that they did not earned any form income yet uses LPG.

How often does the Price of LPG Increase?

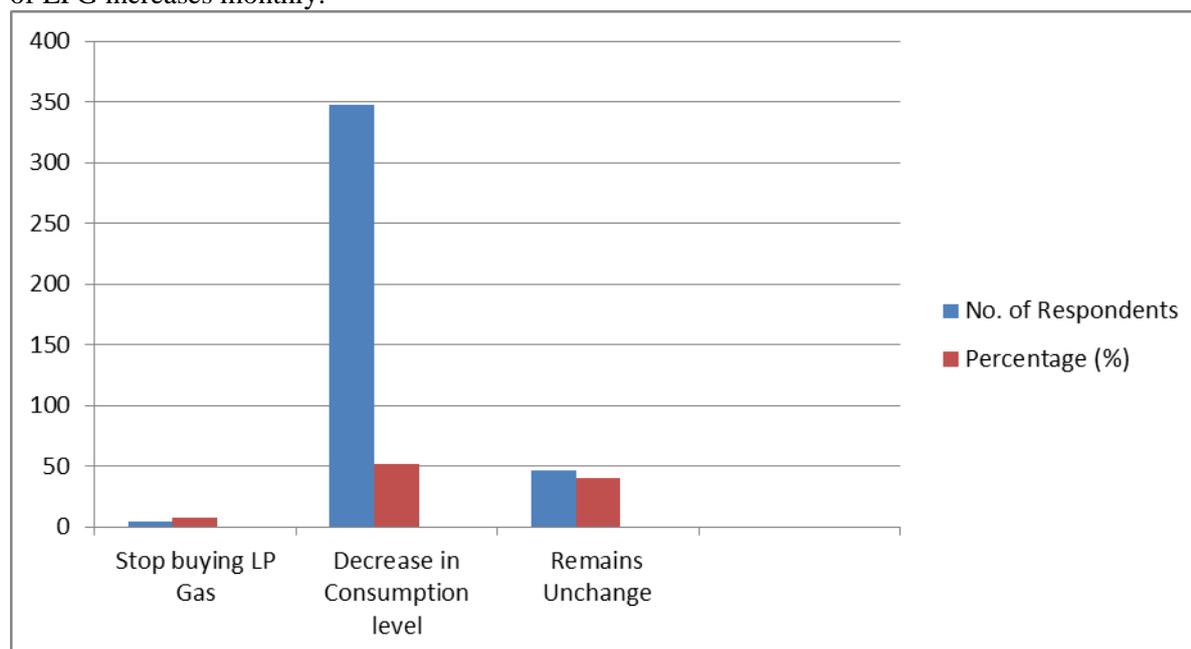
Respondents were asked questions to gauge their understanding of the changes in the price structure of LPG and how it affects LPG prices. The table below shows the increase in price of LPG in the New Juaben Municipality.

Table 3: Perceived Price increases on LPG

Duration	No. of Respondents	Percentage (%)
Weekly	54	13.60
Fortnightly	203	51.14
Monthly	140	35.26
Total	397	100

Source: Field survey, 2015

From the table 3 above, fifty four (54) respondents constituting 13.60% of the total number of respondents said that price of LPG increases weekly, whilst two hundred and three (203) respondents constituting 51.14% of the total respondents said that, the price of LPG increases fortnightly, and one hundred and forty (140) respondents also representing 35.26% of the total respondents said the price of LPG increases monthly.

**Figure 3: The Effects of Price increase of LPG on Women Decision**

Source: field survey, 2015

Respondents were asked to state their decisions regarding LPG price increases and how it could affect their purchases of LPG.

From the above figure 3, it has shown that, four (4) respondents representing 1.01% of the total respondents will stop consuming of LPG when the price increases, three hundred and forty seven (347) respondents constituting 87.41% of the total respondents will decrease their purchases. This is a basic law of demand as higher prices reduce consumption by respondents and lower prices attract increase purchases. However, the higher could serve to increase the dependence on the environment for other sources of fuel, which raise environmental concerns. And the forty six (46) respondents confirmed that no matter what the increase price of LPG their level of consumption will remain unchanged.

Table 4: Challenges Associated with usage of LPG by Women

Challenges	Frequency	Percentage (%)
High Cylinder Costs	50	12.59
Unreliable Supply	32	8.06
High Price of LPG	285	71.79
Fear of Accidents	30	7.56
Total	397	100

Source: field survey, 2015

Table 4 above depicts some perceived challenges faced by the respondents in usage of LPG by women in the NJM. The cost of a cylinder was noted to have accounted 50 (12.59%) of the many associated challenges in LPG usage by the respondents, whereas the least among their challenges was fear of accidents. The respondents viewed high price of LPG as the highest challenges they were faced with 285 (71.79), unreliable supply of LPG was 32 (8.06%), which depicted a form stabilization as far as the supply of LPG was concern.

Opportunities Associated with LPG Usage: The study revealed that, many of the respondents believed that, the usage of LPG has many benefits and these benefits serve as opportunities that made the usage of LPG a good option. The study revealed that, the usage of LPG brings to bear on women, a reduction in work and time burn, improvement in health, and decrease in deaths and also increase in leisure as time will be available to do other things. This is as a result of reduced time in cooking. These particular findings are further supported by WLPGA (2014).

Effects of LPG price increases on Women home management budget: Women usage of LPG is one surest way of meeting the UN Sustainable Energy for All Initiative and also a reduction in vulnerability from the usage of unclean energy. At times past, wider acceptance of LPG usage had been blamed on availability.

From regulatory point of view in Ghana, availability of LPG has not been a major bottleneck. The main issue from the view point of this research was that, price increments reflecting world market prices of LPG has always been the issue of domestic price increment.

The results from the study showed that, 90% (307) of the women believed that, price increases on LPG has brought about reduction in expenditure of other household items. This was due to the reason been, lack of cooperation from men who are bread winners to refusing to adjust for increases in price of LPG. The effect becomes more pronounced when the women involved are not gainfully employed and has no other source of income to make up for the increase price of LPG. The resulting decision is always to reduce expenditure on other items, and perhaps this could contribute to the nutritious level of the food cooked.

Table 5: Model for LPG Usage

Variables	Coefficient	Standard Error	t - Value
Constant	71.856	79.940	5.421
Income	43.906	28.912	4.023
Education	27.534	27.928	4.006
Age	19.102	16.462	2.687
No. of Immed. Dependents	21.872	15.309	3.517
Substitute Energy	-8.391	-6.213	3.604
R² = 97%			
Adjusted R² = 95%			
DW = 1.923			

Dependent Variable: Demand for LPG

Source: Field Survey, 2015

LPG Demand= $\beta_0 + \beta_1$ Income+ β_2 Education+ β_3 Age+ β_4 Immediate Dependents+ β_5 Substitute Energy+ Error

LPG Demand= 71.856 + 43.906I+27.534E+19.102A+21.872ID-8.391S

The above econometric model has variables that influence the demand for LPG, the expectation is that, income, education, immediate dependents, and age should have a positive relationship with demand for LPG whereas substitute energy has a negative relationship with demand for LPG.

From the table 5 above, the study sought understanding of the influence of the independent variables on the demand for LPG. The result demonstrated that all the a prior expectations were met and the model was able to provide adequate fitness and explanation for the study. The predictive power of the was further upheld considering R²= 97% and adjusted R² = 95% with DW=2. The null hypothesis (**H₀**): Price increases on LPG does not affect women home management budget, has been rejected and the alternative hypothesis, (**H_a**): Price increases on LPG does affect women home

management budget is accepted by this study. The result of this study further supported by the work of WLPGA (2014) that, LPG is often been branded as a fuel for the middle and upper class in the society, from the point of view of financial constraints.

Conclusions and Recommendations: The study has provided interesting findings which could shape policy issues in the world and Ghana. The main objective of this study was to assess Price Increases on Liquefied Petroleum Gas (LPG) in the New Juaben Municipality: an implication for Women Home Management Budget Constraints.

The specific objectives of the study are as follows:

- To identify the challenges and opportunities associated with the usage of LPG by women in the New Juaben Municipality.
- To examine the effects or impacts of price increases of LPG on women home management budget in the New Juaben Municipality.

Energy is considered to be the life blood of every household world over and therefore making it available to every segment of the population must not be negotiable but must be a deliberate policy if nations are to meet the UN sustainable energy for all initiative.

The bane of reducing challenges with women home management budget will be elusive if affordability of LPG is not considered a deliberate policy by the government of Ghana but rather depending on the market forces to provide a fair price.

Major findings of this study revealed that, majority of the women 90% (307) believed that, price increases on LPG has brought about reduction in expenditure of other household items. The study also showed other constraints and opportunities in the use LPG by women in the New Juaben Municipality.

The study therefore provided the following recommendations to reduce the burden women go through when price of LPG increases. In the first place, government could reduce taxes on cylinders and LPG to make them more affordability to the poor household. In addition, the government could find an efficient way of billing the commercial users separate from domestic users of LPG, this could in a long way increase LPG usage and reduce demand on the natural environment.

Also, women must communicate and dialogue with male counter parts in terms of home management budget and general education on the importance of complementarity must be provided to enable couple understand the role they play in home management.

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