International Journal of Energy and Environmental Research
Vol.2,No.2,pp.1-8, June 2014
Published by European Centre for Research Training and Development UK(ww.ea-journals.org)

GHANA AND THE LIGUIDIFIED PETROLEUM GAS DILEMMA CRITICAL ANALYSIS OF GHANA'S LPG POLICY

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ABSTRACT: *Ghana adopted LPG policy intervention as a recipe of dealing with the domestic cooking energy crises. Since the 1990s, Ghana has made several efforts to promote the usage of LPG as a domestic source of energy with the intention of curbing the problems posed by fuel wood and charcoal production to the vegetation in the country. Drawing from only secondary sources of data for the paper, it has been realized that, there has been an increased rather in the demand for fuel wood and charcoal. The aim of this paper is to examine the policy and the way forward especially now that Ghana may be extracting her own natural gas.*

KEYWORDS: Fuel Wood; Charcoal; Liquefied Petroleum Gas; Energy

INTRODUCTION

In spite of the benefits of adequate modern energy supply to socioeconomic well-being, Ghana like other developing countries grapples with the problem of improving access to cooking energy for its citizens in both urban and rural areas. In the past as well as in recent time,the provision of electricity, LPG and other safe sources of energy for cooking are not easily assessed by the citizens despite the fact that, the government has put in place various initiatives to help make this possible. For instance, the LPG policy intervention and rural electrification project were among others the government adopted. However, most citizens especially the rural folks still depend on fuel wood and charcoal as their source of energy for cooking. The country continues to witness a high dependence on fuel wood and charcoal.

Over the years, biomass energy, mostly fuel wood and charcoal are the main sources of domestic energy in Africa (Brocard and Lacaux 1998, Bailis et al., 2005). As at 1992, sub Saharan Africa accounted for about 74% of biomass consumption in the world with Asia and Latin America constituting 37% and 25% respectively (Davidson 1992). Wood fuel will continueto be the energy sources for most African and developing countries for the next 40-50 years (Balat and Bozbas,

2006). Biomass currently represents approximately 14% of world's final energy consumption (Parikka, 2004). Ghana is not an exception, wood fuel and charcoal account for most energy consumed in the country. In 1987 for example wood fuel accounted for 80% of the total energy consumed, petroleum products and electricity accounted for 14% and 7% respectively (Abakah, 1989).Thefigure reduced to73% in 1996 (Boon, 2000). However, recent figures still show a higher trend in fuel wood and charcoal consumption irrespective of the policies taken by Ghana government. Gross national wood fuel consumption is estimated at 18 million tonnes per annum and a total of 30 million tonnes of wood fuel was produced in 2000 alone (Derkyi et al., 2011). The country is expected to consume 25 million tones of fuel wood by 2020 if the current trend continues. In Ghana wood fuels (fuel wood and charcoal) accounted for about 66% of the country's total annual energy consumption with imported petroleum and electricity making up the balance for 20% and 14% respectively. Statistics indicate that close to 90% of households in Ghana use either firewood or charcoal for cooking in 2000– 2008, wood fuels (firewood and charcoal), mainly used for household cooking, averaged about 90% (Afrane and Ntiamoah, 2011). However there are problems associated with fuel wood and charcoal. First is the problem of deforestation (Derkyi et al. 2011). More than 90% of the original 8.22 million hectares of natural forest in Ghana is gone due to logging and fuel wood (EPC 1991, cited in Boon, 1999). Second, the emission of green house gasses CO2 from biomass burning constitute (8%) of total emissions globally. Thereby contributing to climate change and affecting the local air quality in the country (Brocard, et al., 1998; Olivier et al, 2000, Bailis et al. 2005 and Inkoom et al. 2010). Akpalu (2011) concludes that the overreliance on biomass energy, such as firewood and charcoal, for cooking in developing countries has contributed to high rates of deforestation and resulted in substantial indoor pollution, which has negatively impacted on the health of many individuals.

METHOD

The study aims to examine the policy intervention adopted by the government of Ghana to tackle domestic energy crises. The country Ghana is chosen as a study site considering the rate at which fuel wood and charcoal production are high despite the policy interventions put in place by the government. The main source of data for this paper is secondary data that is reviewed over a time span. A wide range of secondary sources such as articles, journals, news papers among others that served as literature were thoroughly reviewed beginning from the 1990 till date which was the onset of the fuel wood energy crises.

RESULTS

Combing through the literature we came to the realization that, much attention has been paid to the impacts of fuel wood on health, vegetation and food. For instance, Wiafe and Kwaku (2013) researched on the challenges associated with fuel wood usage such as scent of smoke in food,

issues with supply, inability to use fuel wood during wet season and slow in cooking. Other scholars (see; Derkyi et al. 2011; Brocard, et al., 1998; Olivier et al, 2000, Bailis et al. 2005 and Inkoom et al. 2010; Boon, 1999; Afrane and Ntiamoah, 2011; Abakah, 1989) though gave specific details at length to support the level of fuel wood usage, they focused much on its impact on the vegetation. None gave a comparative analysis of fuel wood vis a vis the government's LPG policy. Nonetheless, a careful search through the literature therefore revealed that there is no or little attention on Ghana's domestic cooking energy policies. Again, a few of the literature that tried to examine Ghana's domestic cooking energy policy (see; Ghana Energy Commission, 2010), did not vigorously tackle the issue of commercial vehicles usage of LPG and to predict the impact it may have on LPG as a cooking energy source no matter the quantity of LPG imported via the West African Gas Pipeline or whether Ghana produced it. Also it failed to give an economic analysis of of the situation.

DISCUSSION

This section of the paper focuses much on the short falls in the secondary data we reviewe above. For instance the LPG policy was given a thorough examination, its economic dimensions, policy implication and the issue of commercial cars running on LPG explicitely tackled to give the the domestic cooking energy picture a clearer view. Also, the West African Gas Pipeline was further disicussed.

LPG Policy intervention

The Ghana government first introduced the Liquefied Petroleum Gas policy in 1992 as a source of domestic energy, partly, to help curb the environmental hazards associated with fuel wood and charcoal (Energy Commission, 2010). This was a specific policy to establish optimum level of forest extraction. Perhaps natural gas/ LPG are environmentally friendly and cost effective (Obanijesu and Macaulay, 2009). LPG according to Totten et al. (2003) is a generic term for ethane (C2) to butane (C4) hydrocarbon mixtures that can exist as liquids under modest pressure at ambient temperature. The ministry of Fuel and Energy embarked on a Nationwide LPG promotion program freely distributing 14.5kg and 5kg cylinders to the public and offered free transportation services. It was extended to the educational, health and prison institutions. The government absorbed most of the cost on LPG and LPG fund was set up (Energy Commission, 2010). All operations, activities, policy and planning with respect to LPG were regulated by the Ministry of Energy, Ministry of transportation and DVLA, and the Energy commission which plans its production and advise government. Whilst the Ministry of Environment Science and Technology and the Environmental Protection Agency are responsible for its environmental aspects (Energy Commission, 2010).

Initial outcomes of the policy

There was a reduction in fuel wood consumption from 80% in the early 1990's to 73% in 1996 (Boon, 2000). And again households using LPG rose from 4% in 1998 to 9.5% in 2006 (Akpalu et al. (2011). Tisha et al. (2005) give a whole range of further possible achievements of Ghana's LPG namely; Liquefied petroleum gas (LPG) filling plant in Ghana provides alternative energy source, reduces use of fuel wood and charcoal, each filling plant could abate 1,500-4,500 tonnes of CO2 equivalent/year, improves air quality and reduction in time spent gathering fuel. Domestic sector consumption currently is 55% , estimates also show that consumption increased from 14,000 tonnes in 2003 to 46,000 tonnes in 2007 representing 35.16 % average growth for the period estimated that (Energy commission 2008). And now the government is committed to increasing the use of LPG from the current 10% to 50% by 2015 (Energy Commission, 2010).

Unexpected implications

Irrespective of these achievements, there has been a similar increase in fuel wood usage. Government policies may result in unexpected outcomes when all possibilities are not exhausted before implementation. Similarly, certain complexities associated with the domestic market led to difficulties. Firstly, cooking fuels have derived demand, and subsidizing a particular fuel (LPG) relative to others (fuel wood and charcoal) could significantly reduce the use of the other fuels. However, if households have strong preferences for or are mentally committed to the use of specific fuels, then the optimum subsidy must be high enough to facilitate the switch to the subsidized fuel (Akpalu et al., 2011). Apparently, in the Ghanaian situation the subsidy could not alter people's preferences for fuel wood and charcoal. Especially with the regular shortages in LPG, people preferred fuel wood and charcoal which were cheap and reliable.

Government subsidies distorted the market as an efficient allocator of LPG. In practice, consumption taxes are needed to raise revenue or correct existing market failures (Coady et al., 2010). As Leach (1992) indicates, subsidies to reduce the price of modern fuels have been used as a transition accelerator by a number of countries but with disappointing or perverse results. Ghana should have learnt from the failures of both Senegal's 'butanization' programme and the large kerosene subsidy programme in Indonesia which both aimed at slowing deforestation.

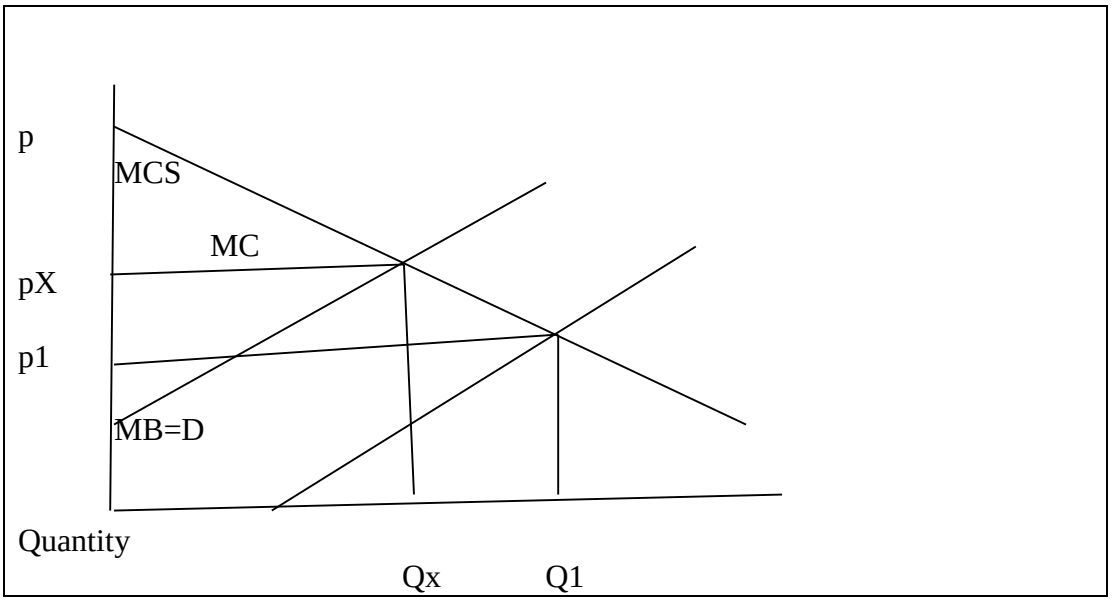

Figure 1. Market allocation of LPG

With the introduction of government subsidy of GHc184.04 ($115) per tonne (Energy Commission, 2010), marginal cost fell from MCS to MC. However, marginal benefit MB=D remained the same whilst price fell from pX to p1 with a corresponding increase in quantity demanded from QX to Q1. Optimal level of LPG allocation by the market is at the point where MCS and MB meet which is not currently achieved. The current price is GHc 62.0 ($39) per tonne which the marketters find inadequate (Energy Commission, 2010). Due to the increase in demand from QX to Q1, Tema Oil Refinery (TOR), which has the responsibility of importing and refining LPG, is under pressure and so private firms have partnered with government in the importation and distribution of LPG (Energy Commission, 2010; Obgubo, 2011). It is these private firms and motorist (taxis) who benefit from these subsidies rather than the domestic users (Energy Commission, 2010). As Coady et al., (2010) caution, universal subsidies are an inefficient and costly approach to protecting poor households because while equity considerations may support some differentiation in tax levels, there is a limit to the extent of differentiation that can be maintained without severely distorting product markets. In fact, several scholars have argued for Optimal Taxation of Petroleum Products (Crawford, Keen, and Smith, 2008). However, these suggestions may have adverse economic implications, so Coady et al., (2010) suggest a cautious approach is preferable under Ghana's situation if she is to maximize net benefits from LPG.

Thirdly, inadequacy in LPG supply and shortage has led to an upsurge in prices of LPG and gas cylinders as compared to fuel wood and charcoal thereby distorting the market. With a reduction

in the prices of LPG due to the subsidy, demand will increase with all other factors being constant. However, there is a shortage due to inadequate refining capacity and technological limitations. As well as vehicles notably taxi cabs and other commercial buses switching to LPG use due to the relatively lower subsidized prices. This has actually defeated the objective of the LPG Policy. Institutions that have initial embraced LPG have reverted to charcoal (Energy Commission, 2010). The prices of charcoal fell making it affordable whilst there are shortages in LPG. Besides, the industry employs the majority of people in Ghana making it difficult to prevent its use by not providing alternative jobs.

Other programmes-the West African Gas Pipeline

In an effort to curb the shortages in the supply of LPG among others, the government of Ghana together with Togo and Benin signed an agreement with Nigeria to build a pipeline to transport natural gas from Nigeria through to Ghana in 2000. It was a trans-boundary transportation of 11.3 billion cubic meters per day (11.3 BCMPD) of natural gas to Benin, Togo and Ghana for thermal and industrial uses through a 1,033 km pipeline network out of which 617 km is a submerged offshore pipeline network (Obanijesu and Macaulay, 2009).

According to Hayfron-Benjamin (2012), Ghana has benefitted a lot from the project by using the supplied gas to generate thermal power and feeding many of her industries like the Aluminum Company, VALCO. He goes further to conclude that though plagued with many challenges the project has delivered on most of the socio and economic benefits for all the four countries. The authors agree that at the national level the West African Gas Pipe line has achieved success, but as a replacement for fuel wood, success is yet to be seen. According Otu-Danquah to (2012), wood fuel and charcoal still form the major source of domestic fuel for most households in Ghana. From 2000 to 2011, wood fuel and charcoal consumption shot up from 8,663kilo tonnes to 13,630 kilo tonnes. According to the Ghana Energy Commission (2010), wood fuel and charcoal account for 40.1% an 33.7% respectively of cooking fuels as compared to LPG consumption of 18.2%. whilst the project may therefore be praised in Nigeria for reducing emission of greenhouse gases (see; Ayodele 2010), its contribution in helping curb deforestation due to fuel wood and charcoal production in Ghana is minimal.

CONCLUSION AND POLICY IMPLICATION

Though fuel wood and charcoal have lost prominence in recent literature, their contribution to deforestation in Ghana is glaring. The government's concerted efforts over the years to restle the problem has not achieved significant success because this is an industry that has existed for many years and has been strongly established. 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 a lower prices than charcoal and fuel wood. Besides, provide 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.

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