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The Significance of Culture as a Household Energy Determinant: The Case of Chiwundura Communal Area, Zimbabwe

Mangizvo V. Remigios

Fort Hare Institute of Social and Economic Research, University of Fort Hare, Private Bag X1314, Alice South Africa 5700
E-mail: rvmangizvo@gmail.com

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ABSTRACT Household energy choices have always been associated with, household income, size education and accessibility and affordability. Little attention has been paid to behavioural and cultural factors regarding the determinants of households' energy choices. This study attempts to show the significance of culture as a household energy determinant in Chiwundura Communal Area in Zimbabwe. The study employed interviews and observations in data collection. In analysing the data, the research looked at the trends of the responses from the interviewees. Themes were then developed and these were then analysed. It was established that behavioural and cultural practices, lifestyles and food preferences were important in the continued reliance on fuelwood as a cooking energy form. Respondents from households mentioned that food prepared over a traditional cooking stove was tastier than food that was prepared on an electrical stove. The traditional fire had multiple uses that included space heating, preservation of food and seed, flavouring meat and fish as well as acting as a social focus. Traditional fires remain an important aspect in the lives of Chiwundura Communal Area households. Therefore it is recommended that further research on the importance of culture and behavioural factors as energy determinants should be conducted. It is important for development agencies and other stakeholders such as the government to develop sustainable ways of utilising fuelwood as households will continue to rely on it.

INTRODUCTION

Access to use of a cleaner energy remains the major issue in discussions about sustainable economic development and environment (Abebaw 2007). About 2.5 billion people (37% of the world's population) rely on biomass as their primary fuel for cooking, with over half of those people living in either India or sub-Saharan Africa (Mekonnen and Kohlin 2008; IEA 2009). Over 1.6 billion people, or one quarter of the world population, are living without access to electricity, (Hasan 2010; Kowsari and Zerriffi 2011). In sub-Saharan Africa where 68% of the population live in the rural areas (World Bank 2000; Karakezi and Kithyoma 2002), 76% of the population relies on traditional biomass for cooking (IEA 2006). Rural areas are characterised by low incomes and lack of access to alternative modern fuels and this is usually used to explain their choice of traditional energy supply. Biomass fuels consist of wood, dung and agricultural residues (Mapako and Mbewe 2004; Howells et al. 2005; Sagar 2005; Birol 2007; Prasad 2008; Schlag and Zuzarte 2008).

Although development agencies are quick to explain that rural households depend on biomass fuels because they have low incomes and that modern fuels are unavailable (Dovie et al. 2004); it is important to appreciate that fuels are encoded with a multiplicity of social meanings and social associations (Bank 2010). These meanings and associations which may be culturally-defined may determine the contexts in which a particular fuel type is used as well as contexts in which ideally it should not be used. For instance, traditional cooking techniques and preferences and habits such as food tastes have been known to determine the choice of energy system in rural households (Kevin B. Fitzgerald, Douglas F. Barnes and Gordon McGranahan, Interfuel Substitution and Changes in the way Households Use Energy: the Case of Cooking and Lighting Behavior in Urban Java, World Bank, Washington, DC (1990). Heltberg 2004, 2005; IEA 2006; Chandrani 2013; Ogwumike et al. 2014). In rural Jaracuaro in Mexico, households continue to use traditional biofuels even when they can afford to use modern fuels because tortillas are hard to cook using Liquid Petroleum Gas (LPG) and need to be cooked over a direct flame (Masera et al. 2000). Moreover, the rural communities prefer eating tortillas cooked on a traditional stove that uses wood fuel, as they regard tortillas prepared over a gas flame distasteful (Masera et al. 2000). They regard LPG as suitable for fried meals and heating water (Masera and Navia 1997). Similarly, Indian

households such as those in Haryana village prefer to use the traditional wood stoves *(chulah)* for baking traditional bread *(Chapatti)* because it makes the bread crispier and tastier (Budds et al. 2001; Heltberg 2005; IEA 2006; Joon et al. 2009). Modern energy services such as the liquefied petroleum gas are instead used for preparing tea and for cooking vegetables. It is therefore realised that rural communities in Haryana, India, continue to use the traditional stoves to prepare certain traditional foods while at the same time utilising modern stoves to cook western type of dishes. This practice can be described as multiple fuels use or energy stacking. Maconachie et al. (2009) contend that traditional Hausa households in northern Nigeria are reluctant to use kerosene stoves as they believe they affect the taste of the food, and in some villages, old men will not eat food cooked on kerosene.

Bank (2010) observes that the type of fuel used in the preparation of a particular meal is frequently determined by the content and nature of the meal itself. For instance among wood users in Botswana, 68% use fuelwood mainly for cooking traditional foods such as "hard beans", *"stamp"* and *"seswaa"* (Hiemstra-van der Horst and Hovorka 2008). *"Stamp"* is a form of traditional "porridge" cooked from rough-ground millet or maize, and is cooked by slow boiling while *"seswaa"* is a traditional manner of cooking large pieces of meat by repeated boiling until they are dry. The pieces of meat are cooked for long periods of time and this requires prolonged heat inputs. In Burkina Faso, many families prefer *"tô"* a meal that is that is well rooted in their cooking culture that uses the firewood hearth (Ouedraogo 2006). It is prepared from local cereals mainly sorghum, millet and corn. In Nigeria the Hausa women have a tradition of cooking large quantities of food (*tuwo*) every day which they share at a moment's notice with the extended family as well as those in need (Maconachie et al. 2009). The preparation of such substantial portions of the staple food (*tuwo*) requires use of large pots on wood fires as modern fuels and stoves cannot hold the large pots. Similarly in Jaracuaro, traditional foods that are prepared for village and family parties are cooked with fuelwood because LPG stoves are inadequate for these purposes (Masera et al. 2000). Rugumayo (2010) observes that in Uganda rural homes that have been either electrified or those that own LPG stoves continue to use wood and charcoal to cook traditional food such as *matooke* or beans because such foods require slow burning fires that allow simmering. Rural communities argue that when these foods are cooked on fire they test better than if they were cooked on electric stoves.

In the rural areas of the developing world, traditional stoves have an edge over modern stoves. The traditional stove and fire as well as the smoke it produces, fulfil multiple functions in the households. Heat from the fire can be used for cooking food, water and space heating, drying, lighting, brewing beer, and acting as a social focus in the evenings (Gill 1985; Johnsen 1999; Makonese 2011). Space heat from the traditional fireplace has considerable importance in rural areas in Fiji, where fires are kept burning all night in the sleeping quarters of old people, and in parts where it is cold (Gill 1987). Rural communities in several developing countries strongly believe that the smoke from fuelwood has multiple uses. Studies conducted in Guinea Bissau and Papua New Guinea for instance confirm that smoke from specific plants can indeed have insect-repelling properties (Barnes et al. 1993; Paru 1995; Palsson and Jaenson 1999; Budds et al. 2001). In large parts of rural Asia and Africa, where malaria is still a real threat, many poor households who cannot afford mosquito nets and mosquito repellents such as sticks/coils, ointments or sprays rely on smoke from biomass fuel to repel mosquitoes together with other poisonous insects (Chomcharn 1991). Rural communities in most countries of Asia and Africa use smoke extensively to preserve and dry food since they cannot afford refrigerators (Chomcharn 1991). It is also believed that smoke protects the food from insects from being attacked by insects and rodents. In wet seasons many households use kitchen smoke to prevent moulds and fungi attacking many of their foods (Chomcharn 1991). As such, it is common practice to leave a smouldering fire in the stove after cooking. This practice concomitantly improves the quality and flavour of the food while prolonging its shelf-life. There is also a strong belief that smoke can also preserve thatched roofs and wooden upper structures through the indirect deposition of tar from cooking smoke (Barnes et al. 1993; Budds et al. 2001). This is of great value to rural communities as they cannot afford commercial wood preservatives which

may be beyond their means. The traditional fire also has symbolic values. In most rural areas in Africa and Asia, traditional beliefs, customs and ritual practices have also contributed immensely in the consumption of fuelwood. In Ghana, the 3-stone fireplace symbolises a united family (Gill 1985) whilst in parts of Nepal, villagers believe that a spirit dwells in their traditional hearth. In Nigeria the Hausa cultural practice (*wankanjego*) requires newly delivered mothers to bathe twice daily for 40 days using hot water, and this tradition requires a large volume of fuelwood to heat the water; hence new mothers are often identified by the large piles of fuelwood outside their houses (Maconachie et al. 2009). In Kenyan villages, women still gather in one kitchen in the evenings to prepare a cornmeal to be served to members of their families (Garner and Donohoe 2008). This meal which is cooked over a fire from logs is the only substantial meal that their families will eat all day. Women take advantage of this nightly cooking to be closer together and exchange stories with one another, complain about their spouses, and tease the younger girls about their adolescent worries (Garner and Donohoe 2008). It is apparent that this practice makes use of the fire and cannot have it using other energy forms such as liquefied petroleum gas and electricity. In Mexico for example, the traditional kitchen with a 3 stone fire place, which uses biomass fuels continues to play an important role in the family's daily social interactions (Masera et al. 2000). Although many families have adopted modern LPG stoves, they are mainly used as status symbols, which are rarely used for their actual purposes. The preceding discussion shows that the traditional kitchen remains an important entity in most rural home in the developing countries. This situation is characteristic of many rural areas in the developing world.

Although fuelwood remains a preferred cooking energy because of the cultural connotations associated with it, there are a number of serious environmental challenges which will result from this practice. According to FAO (2007), the poorer developing countries which are highly dependent on woodfuels, could experience negative environmental impacts as a result of the unsustainable harvesting and use of wood. In Zimbabwe where fuelwood provides 61% of the total energy supply, more than six million tonnes of fuelwood are consumed every year against a sustainable output natural forest of about 4.6 million tonnes (Newsday-Zimbabwe). This will result in negative impacts on the environment, such as soil erosion, desertification, loss of biodiversity, micro-climatic change and flooding (Nnaji et al. 2012). Furthermore, the use of fuelwood causes indoor air pollution and this will expose household members to ailments such as acute respiratory infections (ARI), as well as eye problems (WHO 2000). It is therefore important for households to be proactive and think of energy sources that safeguard the environment and people's health.

The purpose of this paper is to show the role of certain 'marginalised' or traditional socio-cultural practices in determining individual households' energy choices and practices in Zimbabwe. The Zimbabwe National Energy Policy states that household energy use in the country is a function of income, settlement type, available energy infrastructure and energy price (MoEPD 2012). The policy does not mention the role played by tradition and culture in energy choice determination at household level *per se* yet these are critical attributes.

Area of Study

This study was conducted in Chiwundura Communal Area in the Midlands Province of Zimbabwe between May and June in 2011. Chiwundura Communal Area is located approximately 40 kilometres North East of Gweru City, the provincial capital of the Midlands Province. It is also located about 45 kilometres South East of Kwekwe City within the said province. Chiwundura communal area is located in agro-ecological regions three and four which are mainly dominated by subsistence farming. The area, like most rural areas in Zimbabwe is typically dependent on fuelwood as the principal energy form. This communal area was selected for study because it has a number of households that were recently connected to the national electricity grid notably the Muchakata and Gunde areas. Secondly, households in the area use both traditional and modern fuels. The area has also been devastated by rampant deforestation. In the light of these factors/issues, the study was premised on the following questions: Why do households in continue to rely on fuelwood even after they have adopted modern energy forms? How do cultural and traditional factors affect household

energy choices? What are the functions of the traditional fire place?

METHODOLOGY

The study was qualitative in nature, and it adopted observations, interviews and focus group discussions as data gathering techniques. The study sample was determined through the purposive sampling technique. Gray et al. (2007) postulate that certain groups or individuals are purposely selected as respondents as they are deemed relevant to the issue being studied. The use of purposive sampling ensures that researchers obtain critical information from respondents that are crucial to the study who were drawn from both electrified and non-electrified households. Interviews were held with three village headmen, ten women representing households in Chiwundura Communal Area, and ten elderly members in the community. It was necessary to interview village headmen because they are the custodians of tradition and culture. These people have a long association with the use of traditional energy. Women have the experience of using the fuelwood and the meanings the traditional energy systems have on Chiwundura Communal Area communities. Interviews therefore proved handy as they enabled the researcher to gain an understanding of the culture of Chiwundura Communal Area communities from the inside, which are the points of view of participants. Punch (2005) contends that the interview method is a good way of understanding interviewees in their context. The respondents in Chiwundura Communal Area were able to explain the cultural and traditional relevancy of using fuelwood. Observations were utilised and they allowed for the transmission of first-hand information as it studied people in their natural situations.

FINDINGS AND DISCUSSION

In Chiwundura Communal Area, interviews and observations showed that behavioural and cultural characteristics, preferences, practices, lifestyles and social status were critical in household energy choices. The entire sampled participants revealed that a round kitchen was the most important hut in any home. It was of great significance to a married woman since it was a place where she had control and authority. Once a newly married woman joins her husband a ceremony is held a few months when she is given her own kitchen and this practice is referred to as *"kutegeswa"* by the Shona speaking people of Zimbabwe. Women in the study area said they revered the traditional kitchen because it gave them some dignity and status; hence they always wanted to use it to show its importance. It was observed that a number of households had built modern kitchens that were connected to electricity but rarely used them. They explained that these were only status symbols; otherwise most of the cooking was done in the traditional kitchen. Moreover, a traditional kitchen in Chiwundura Communal Area just as in most Shona areas of Zimbabwe has other significant cultural uses. When the umbilical cord falls off from a new born baby, it is buried in the kitchen, near the fire place. This is to tie the new born baby with the ancestors so that he or she remembers his or her home. During a funeral wake, the body of the deceased lies in state in the kitchen. Several traditional ceremonies are also held in the kitchen. When asked for comment three headmen mentioned that the kitchen was the nerve centre of the home and a symbol of life and this symbolism is shown by the fire that burns in the kitchen.

The traditional three stone stoves are also very important from a cultural perspective. The village elders said they symbolically represented the mother of the home. In the olden days, a newly married woman brought a three stone stove from her home to signify her arrival at her husband's home. When a husband divorced his wife he threw one of the stones out of the kitchen. So, women cherish the stove and want to use them to show their presence in the home. If anyone tampers with them one can pay compensation in form of a cow. In modern day Chiwundura Communal Area the three stone stoves have been replaced by metal grates, which still have the same cultural relevance and importance. All the ten households that were sampled for this study had metal grates, a reflection of their importance in the households in Chiwundura Communal Area. Grates were said to be better than the three stone stoves as they could hold more than one pot at a time. They were also said to improve the presentation of the kitchen. The women respondents revealed that grates were also safer than the three stone stoves as modern pots that have flat bases could sit on them.

This is a form of transition. Metal grates are affordable and durable.

The issue of practice was critical in energy technology choice. The use of the traditional stoves or the metal grate was compliant to the expected cooking position. The headmen said most hot plates were made in such a way that one would cook while standing and this was considered taboo amongst both the Shona and Ndebele people residing in Chiwundura Communal Area. The headmen said women were expected to cook while either kneeling or seated. Most women said they were comfortable cooking while kneeling or seated.

It emerged from the study that food taste was a major energy choice determinant in Chiwundura Communal Area. The elderly people said there was a marked difference in the taste and quality of food that was cooked over fire and food prepared on an electric stove for instance. They argued that food prepared on an open fire was tastier than that cooked on an electric stove. It was also revealed that *sadza,* (thick maize meal porridge) (a staple food for most households in Chiwundura Communal Area) when prepared on traditional fire took long before it got cold and was well cooked than that prepared on an electric stove. The use of slow burning fuelwood allowed certain foods such as *mutakura* (mixture of maize and round nuts or cow peas) to simmer to a degree that is impossible to reach when using electric stoves. The same applies to the traditional rice dish which cooks well on glowing charcoal. The researcher observed that some meat dishes such as cow/cattle trotters were preferred when prepared over traditional fires. During a focus group discussion some women expressed their distaste for tea that was prepared over an electric stove saying it was not hot enough.

The open fire has multi-purposes in Chiwundura Communal Area.Women respondents mentioned that open fires performed social functions that were difficult to perform using an electric stove. In most households the family gathered in the kitchen in the evening. As the women prepared the evening meals, the rest of the family members benefited from the warmth provided by the fire. At the same time this time this was a valuable opportunity for the family to get together and share their experiences and it was argued during the study that this period of the day was important for family bonding. Social teachings were also conducted during this time. This cannot be achieved by sitting around an electric stove. The researcher noted that some households believed that smoke could be used to repel insects such as mosquitoes. Although this could not be ascertained during the time of the study most of the villagers concurred that insects could not be found in kitchens. Fires are used for ritual purposes. It was revealed that when the family suspected that some evil spirits were hovering around the home they would burn some smelly herbs on smouldering charcoal. It was also revealed that smoke that came from fuelwood could be used to preserve seeds that would be used for cropping in the following agricultural season. Respondents from householders said that they preferred using fires and smoke in the preservation of foods like meat and fish since refrigerators were expensive and unavailable. Elderly members of the Chiwundura Communal Area community said that during the summer season they utilised smoke to stop moulds from developing on certain foods. This could not be done on a hot plate unless one is using a stove with an oven.

The researcher observed a practice whereby a tin with boiling water was kept on the fire at all times. This practice was reportedly fading because of the fuelwood shortages. When quizzed for an explanation women in Chiwundura Communal Area said this was a sign of benevolence. Water was kept hot on the fire so that in case visitors came to the home unannounced, it would not take long to prepare food for them. It was also disclosed that such practice signified that no hunger existed in that particular homestead. However it was concluded that this practice was wasteful to the meagre resources hence most households had abandoned it.

CONCLUSION

This study does not in any way dispute the importance of variables such as education, income and household size as important determinants of energy choice in Chiwundura Communal Area households. This study was a deliberate effort to show that behavioural and cultural attributes tend to be neglected by most energy planners, governments and non-governmental organisations when disseminating new technology systems to rural communities. They ignore some of the critical issues that rural households

consider important. As a result, rural communities do not accept these technologies since they fail to address their concerns. There are several cases where the introduction of improved stoves in rural areas of the developing countries was a complete failure.

Behavioural and cultural aspects are inextricably linked with how rural communities in the developing world live. They constitute part of the system that makes up their lives. The traditional cuisine is significant in the household energy choice. Household members prefer certain foods that are prepared with fuelwood. As already discussed above they have a certain flavour which lacks from food prepared using an electrical stove.

From a cultural perspective traditional stoves are versatile and can be used for cooking, space heating, and preserving food since there are no refrigerators. The smoke is also used to preserve seed. The traditional fire and smoke are part and parcel of the livelihoods of the households in Chiwundura Communal Area.

RECOMMENDATIONS

It is pertinent for governments, non-governmental organisations and other interested parties involved with energy transition to initially understand how rural communities behave and appreciate why they do that before they introduce energy technologies which may be foreign to these communities. This will help in the development of energy technologies that may be compliant to the communities' way of life and these may be readily accepted.

More research needs to be done on the significance of tradition and culture on energy choices and determinants and how these impact on energy transition.

Households in Chiwundura Communal Area will continue to depend on fuelwood as an important energy source since it meets their cultural needs. It is important therefore to develop woodlots that could make the supply of woodfuel more accessible.

It is necessary to ensure that even though households in Chiwundura Communal Area continue to depend on fuelwood they should do so in a sustainable manner. They should be mindful of the fact that future generations need to enjoy the use of fuelwood in the same manner the current generations are doing. They need to achieve their social, economic and environmental benefits through the use of fuelwood.

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