At the Crossroads: The Impacts of Power Cuts in MKOBA, GWERU, Zimbabwe

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ABSTRACT

The significance of electricity in maintaining the quality of household lives cannot be overemphasised. As an important ingredient of any economy, a continuous supply of electricity is essential for human development and poverty alleviation. This paper explores the impacts of power cuts in Mkoba Gweru and attempts to unravel the challenges experienced by ordinary Zimbabweans in the face of inconsistencies in supply of electricity. Using an exploratory case study approach, findings indicate that power cuts in Gweru have knock on effects and have led to some kind of ruralisation of urban centres. Households have been forced to resort to traditional and primitive methods of food preservation and seeking alternative power strategies as electricity is no longer reliable. The majority of urban dwellers in Mkoba Gweru have turned to wood fuel as the cheap and relatively available source of fuel. This has resulted in the proliferation of wood markets in urban suburbs and has also attracted a parallel market of illegal wood vendors. As a result of the booming wood fuel business, surrounding communal areas and farms that serve as the sources of wood have witnessed massive environmental damage. Urgent and stringent measures to curb environmental degradation, soaring poverty and boosting investor confidence are needed through increasing power generation capacity of the country and utilisation of alternative sources such as liquid petroleum gas.

Keywords---- Fuel, household, impacts, power cuts, vending.

I. INTRODUCTION

With increasing reliance on technology in nearly all human facets, the significance of electricity in households in urban areas cannot be overemphasised. Electricity is an essential amenity in households and its uses permeate practically all areas of human life; entertainment, cooking, lighting, refrigeration, heating and water heating. Interruptions in the availability of electricity in households therefore affect not only family life but have a huge impact of their budgets as well. Electricity is used in homes for domestic purposes and to maintain the quality of life (Doe and Asamoah, 2014). Securing an uninterrupted electrical supply is therefore essential for a country to function economically, socially and politically (Schmidthaler, Reichl and Cohen 2014). This paper restricts itself to discussing the impacts of power cuts on households in Mkoba suburb in Gweru and attempts to unravel the challenges experienced by ordinary Zimbabweans in the face of the inconsistent supply of electricity.

The erratic supply of electricity in Mkoba, Gweru due to load shedding for the past decade has witnessed unprecedented impacts on households. These power cuts are largely felt by the poor who bear the brunt of seeking alternative backup survival strategies in cases of power outages. The rich on the other hand can afford power generators, solar kits and gas power. Studies have shown that load shedding is not only exclusive to Gweru’s Mkoba suburbs but has also become widespread in other urban centres of Zimbabwe. In their study of Chinhoyi, (Musademba et al. 2012) found out that load shedding has extended the dimension of energy poverty in the urban areas with the end result being the further thinning of the living standards of urban residents. The survey carried out by Dube et al. (2014) revealed that firewood is the most used energy source by Bulawayo residents in the face of power cuts. Mapira and Munthali’s (2011) energy demand study in Masvingo revealed that household energy demand has led to massive deforestation on the outskirts of the urban centre.
Overview of electrical energy in Zimbabwe

Zimbabwe’s energy demand is estimated at 1730MW in summer and 2200MW in winter but generation locally cannot meet demand as only about 1300 MW are being produced and imports cover the deficit (Mtomba 2013). Currently, the power utility company’s generation capacity is at its lowest ebb. For instance, Mapakame (2016) reports that as at 10 January 2016, the Zimbabwe Power Company had a combined staggering output of 1321MW with Munyati generating 12MW, Bulawayo 16MW, Kariba 709MW and Hwange 558MW. Harare was not generating any power but had a current generating capacity of 30MW. The remaining power is imported from Cabora Basa Hydropower Station in Mozambique, ESCOM of South Africa and the Democratic Republic of Congo.

Zimbabwe has been experiencing power supply deficit of between 400MW -563MW as generating capacity has been cut since 2007 due to maintenance of obsolete equipment which is not able to generate optimally for a sustainable period (Mtomba 2013; Mwando 2014). Had the priority of power generation been on the agenda list of the country, the power crises could have been averted by harnessing the fuels of coal, wind, ethanol as well as solar and hydropower stations at numerous suitable gorges and dams.

With regards to hydro power generation, Zimbabwe has the potential to establish hydroelectric power stations at Victoria Falls, Devils Gorge, Batoka and Mupata on the Zimbabwean side of the Zambezi River. If these sites are developed, they could supply a total capacity of 4200MW (Klunne, 2013). In addition, the country’s power crisis has been worsened by its failure to refurbish and upgrade the existing small power stations that had been complementing the main grid. The Zimbabwe Electricity Transmission and Distribution Company (ZETDC), Zimbabwe’s sole electricity utility company enjoys monopoly of supply and distribution of electricity throughout the country as it has no other competitor. Only three independent power producers (IPPs) Duru, Nyamhingura and Pungwe are feeding 6MW into the national grid (Eaton and Stanic, 2013; Klunne, 2013). This monopoly implies that if there are difficulties along the supply chain of electricity then the interests of the general public will be put to risk through degradation of quality of supply and customer service (Chau 2009, Doe and Asamoah 2014).

Table 1 below shows existing and projected power schemes in Zimbabwe.

<table>
<thead>
<tr>
<th>Name</th>
<th>Year commissioned</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current schemes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kariba South Hydropower</td>
<td>1959</td>
<td>750 (*709)</td>
</tr>
<tr>
<td>Hwange thermal power</td>
<td>1983-1987-in stages</td>
<td>1000 (*558)</td>
</tr>
<tr>
<td>Harare thermal power</td>
<td>1942-1970- in stages</td>
<td>135 (*30)</td>
</tr>
<tr>
<td>Bulawayo thermal power</td>
<td>1947-1957- in stages</td>
<td>120 (*16)</td>
</tr>
<tr>
<td>Munyati thermal power</td>
<td>1946-1957 – in stages</td>
<td>120 (*12)</td>
</tr>
<tr>
<td><strong>Projected power stations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Batoka</td>
<td>—</td>
<td>1600</td>
</tr>
<tr>
<td>Devils Gorge</td>
<td>—</td>
<td>1600</td>
</tr>
<tr>
<td>Mupata</td>
<td>—</td>
<td>1200</td>
</tr>
<tr>
<td>Victoria falls</td>
<td>—</td>
<td>300</td>
</tr>
<tr>
<td>Tokwe Mokosi</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td>Dema Diesel Plant</td>
<td>On course</td>
<td>200</td>
</tr>
<tr>
<td>Mutare Power Plant</td>
<td>On course</td>
<td>120</td>
</tr>
</tbody>
</table>

*Dependable current capacity: Source: MacRae, 1991, Campbell 1997, Mapakame 2016 and authors’ compilation.

II. MATERIALS AND METHODS

2.1 Study area

This paper focuses on Gweru’s Mkoba Suburb in Zimbabwe. Gweru is located at the heart of the country and is the capital of the Midlands Province. The town has a population of 158 233 residents (Zimstat 2012). The area was selected, because it is an urban centre whose daily life is driven mostly by the availability of grid electrical power. Gweru lies near the Great Dyke which is endowed with a variety of minerals. As such, it is surrounded by numerous mining activities that rely heavily on availability of electricity. In addition, it is host to a number of manufacturing companies employing thousands of workers. The economic meltdown that bedevilled the country since 2000 led to the copious closure of companies leaving many people out of employment. Street vending therefore characterise many residents of Mkoba as a way of earning a living. Almost anythingspanning from clothes, food and cook ware and electrical gadgets are displayed outside houses, shop verandas and roads across the residential areas. Mkoba Suburb is divided into sections and these are 20 in total. The suburb is divided into Mkoba North and Mkoba South.
2.2 Sample size

This study employed an exploratory case study approach in which qualitative research method was used. Interviewer administered and structured questionnaires were used to collect data. This was then complemented with data obtained from observations, key informant interviews and Focus Group Discussions (FGDs). High density suburbs of Mkoba respondents were drawn for the target population. A systematic sampling method for selecting respondents was done to come up with a sample of 74 participants who were gender balanced. The selection of this site was purposely done to explore the impact of power cuts on lives on low income earners largely residing in these suburbs. Key informants consisted of district heads of the Forestry Commission, Environmental Management Agency (EMA), Zimbabwe Electricity Distribution and Transmission Company (ZEDTC), The Gweru City Council officials and the District Administrator. Daily observations were carried out to better understand the rate of power cuts and their effects on people’s lives.

III. RESULTS AND DISCUSSION

Fifty eight percent (58%) of the respondents interviewed were adult women while 42% of the respondents were adult men. The average age and family size was 38 years and 4 respectively. The study found out that 47% of the respondents were employed, 30% were self-employed while 23% were unemployed.

3.1 Power cuts patterns in Mkoba

Daily observations have witnessed a dichotomy of power outages in Mkoba. The areas close to the industrial site of Bristol Road experienced relatively shorter periods of power outages ranging between 6-9 hours. These include Mkoba South Villages of 1, 2, 3, 7, 9, 10 and 11. These areas enjoyed a relatively better advantage due to the fact of sharing the same electrical grid with the industrial sites of Bristol road where power cuts were rarely done. The rest of other suburbs of Mkoba North; Villages 4, 5, 6, 12, 13, 14, 15, 16, 17, 18, 19 and 20 experienced longer periods of power cuts of an average of 17 hours daily. These observations revealed that if power cuts in the later suburbs started early in the morning usually between 4am and 6am, then the residents expected the power to be back between 8pm and 11pm in the evening. However, if power cuts began at any time of the day after 6am, then there were bigger chances of power coming back earlier normally before 8pm. In addition, power cuts for Mkoba North were scheduled for Monday, Wednesdays, Fridays and Sundays. The other week days were for Mkoba South suburbs. However, these schedule suddenly changed and there was no known pattern for power cuts. Such inconsistencies badly affected students’ studies, planning in households, living standards as well as cooking styles of the residents.

3.2 Alternative energy use in response to Power cuts

Irregularity in supply of electricity in Mkoba has initiated a series of alternative energy use and survival strategies as a response to power cuts. This has pushed a number of people to resort to traditional ways of survival such as drying food as a form of food preservation. Focus group discussions revealed that electrical refrigerators were almost redundant as perishables like meat were often thrown away after turning bad. Respondents also pointed out that the most upsetting thing was that after recharging their electricity meters, they were not spared from load shedding and power outages. They were therefore forced to find alternative power sources. Alternative sources of energy impact negatively on residents who cannot afford to pump out more money on energy. Figure 1 shows the different types of energy the participants in this study resorted to whenever there were power cuts.

![Energy use in response to power cuts (cooking)](image)

3.2.1 Cooking and energy use

The study established that wood fuel was often used as an alternative source of energy more than any
other energy form. This was because Mkoba residents considered it cheap and readily available compared to other forms. Fifty seven percent (57%) of the respondents used wood fuel, while 20% used liquefied petroleum gas, 17% used charcoal and only a meagre 3% used diesel generators.

3.2.1.1 Gas use

The study established that there was an upsurge in the use of gas since the beginning of irregular supply of electricity and increasing power cuts. This is however against the backdrop of perceived phobia of gas since they are associated with explosions. At the time the study was conducted five gas refilling stations had already been established in Mkoba to cater for the increasing demand of gas use. Information obtained through questionnaires showed there was a positive correlation between use of gas and education. People with tertiary education adopted the use of gas more readily than the less educated. Interviews showed that the educated appreciated the fears associated with the use of gas were over exaggerated. They revealed that what was important was the ability to operate gas stoves and to always observe precautionary measures when using gas stoves. Although there was an upsurge in the number of households using gas for cooking the numbers remained insignificant considering the challenges posed by grid electricity power cuts. They felt it was expensive to use gas. They also explained that most households could only afford single plate stoves. Such stoves could not accommodate more pots at the same time. During interviews traditionally African families cook up to three pots at a ny given time which is not possible with the single plate gas stoves. Gas stoves tend to cook food very quickly, yet most of food consumed in most African homes require slow heating energy. This combination of factors has caused a low uptake of liquefied petroleum gas.

3.2.1.2 Wood use and their impacts

The results show that in the absence of grid electricity, urban dwellers in Mkoba turned to wood fuel. They considered it as a relatively cheap and easily available source of fuel. They never factored other variables such time taken to look for wood fuel and the distances in search of wood fuel. The study established that low earners, big families and the unemployed tend to use wood more than any other fuel. There is therefore a proliferation of wood vending in Mkoba suburbs with knock on effects on high rates of deforestation on the peripheral areas marking the urban centre boundaries. This booming wood fuel business has again attracted another parallel market of illegal wood vendors. Dozens of donkey drawn scotch carts with wood from nearby rural areas such as Silobela ply the streets of Mkoba daily with buyers ready to negotiate lower prices. Interviews with donkey drawn scotch carts wood vendors revealed that on average a full cart load costs $20-$30 and could be lower as they are ready to settle for lower prices. As such, it is only on rare occasions that these vendors return with their wood fuel. Other participants remarked that they made an average of two trips a day making illegal wood vending a lucrative business.

Although, the Forestry Commission through the Forestry Act Chapter 19.05 had a mandate to conserve all the forests in the country, their regulation and enforcement, efforts were hampered by poor financial and human resources. In addition, the Forestry Commission’s fines in particular the statutory instrument 116 of 2012 that controlled the movement and trade in both wood and timber in the country was not punitive enough to deter wood traffickers. The level of fines ranged from level 1 to level 3 which corresponded to $5 and $20. Interviews with illegal wood vendors indicated that the fines were not deterrent at all since wood vending had become a viable business. They further mentioned that they were aware that their business was illegal but there was no formal employment in the country to absorb them and could not simply sit and watch their families suffer from poverty.

3.2.4 Paraffin use and impacts

The results show that paraffin was used by 17% of the respondents in Mkoba in response to power cuts. Most people revealed that they used paraffin more for lighting purpose than cooking. Paraffin use in Mkoba, was associated with a lot of side effects of burns and poisoning. Interviews revealed that three young children of Mkoba drank paraffin mistaking it for water while two suffered severe burns. Some respondents indicated that the smoke and smell that come from paraffin stoves were a health hazard especially in poorly ventilated houses. the smoke affected clothes and blankets. They indicated experiencing respiratory problems as a result of paraffin smoke.

3.2.5 Generator use

Use of generators in Mkoba was seen to be very low and registered 3% of the respondents. This was attributed to the high cost of both purchase and maintenance. The results show that residents who are gainfully employed with incomes above $400 and had a back up of a small business afforded generators. Some respondents indicated that generator use was low due to two reasons. Firstly, generators produced a lot of noise which at times affected neighbours. They caused some localised air pollution as they emitted a lot of smoke. Secondly, they were a social challenge amongst households in the high density suburb. Some participants mentioned that owning a generator signified that a household belonged to a better social class. They felt that jealousy neighbours without generators thought that with generators showed off and could therefore be bewitched.

3.2.6 Charcoal use

The results show that 3% of the respondents in Mkoba used charcoal. These were mainly the cross boarder traders who imported charcoal from Zambia. Some participants revealed that they bought charcoal along the Zambia Chirundu highway at very low prices. The study established that they connived with bus and long distance
truck drivers to smuggle the charcoal to Zimbabwe. Although charcoal was found in supermarkets and service stations it was very exorbitant; hence Mkoba residents preferred the smuggled charcoal.

3.2.7 Lighting and power cuts
The study established that 40% of the respondents in Mkoba as shown in Figure 2 resorted to candles for lighting when there was load shedding or there were power cuts. A positive correlation between candle use and the unemployed was noted in this study. The entire unemployed category indicated using candles during absence of electricity. During interviews participants said that candles were cheap and affordable especially when the country was experiencing an economic crunch due to closure of industries in Gweru.

![Figure 2 Types of fuels used for lighting during periods of power cuts](image)

Use of candles however has been associated with dangers in Mkoba. Four houses were reported burnt with goods worth thousands of dollars destroyed when candles were left close to wardrobes, sofas and beds and caught fire.

The study also established that 37% of the respondents used solar power mainly in the form of lantern lights. These were popular because they were generally affordable as they cost around US$30. In all cases households that used solar had a backup of candles which they used in cases of solar failure. Twenty percent of the respondents used generators and all these people were employed. During interviews participants said generators were not sustainable as they required refuelling on a regular basis. They could be used for a limited period. As already mentioned they produced some noise and smoke that could irritate neighbours. Only 3% of the respondents as shown in Figure 2 indicated that they used gas during power cuts. A lot of residents had phobia and regarded gas as dangerous.

3.3 Income levels and financial impacts of power cuts
Thirty three percent (33%) of the respondents were employed and indicated getting on average a monthly income of $300, 38% were self employed with monthly earnings on average of $450 and 29% were unemployed heavily depending on part time jobs. Due to the unreliability of their casual labour, the unemployed group indicated that they hardly got $100 a month. While the employed and the self employed indicated having relatively less challenges in seeking alternative fuels, the study found out that the unemployed category was the worst affected by power cuts. Their income of less than $100 a month was shared between several family needs such food, education, health and clothing. They complained that they felt short-changed by the power utility since they did enjoy the services after recharging their electricity meters. Instead, power cuts pushed them to seek for extra funds to meet their energy needs. This has a huge bearing on their livelihoods and standards of living on Mkoba residents since the funds that could be set aside for investment was channelled back to the already budgeted energy sector.

3.4 Gender and power cuts
The results show that in most unemployed families, it is the duty of women to fetch wood fuel from nearby farms in cases of power cuts. Early morning observations witnessed a number of women carrying huge bundles of wood fuel on their heads from surrounding farms of Anchor Yeast, Ngamo and Lower Gweru Communal areas. Interviews with these women revealed that fire wood fetching was a daunting task that took much of women’s daily time. A lot of their time was spent on walking long distances to the forests as well as gathering the wood in the forests. The women reported that they took an average of 3-5 hours to bring wood fuel back home. This trying exercise ultimately places heavy demands on women’s labour and time since other household chores of family care; cooking, washing and cleaning await them. Such heavy demands on women’s time imply that they rarely have spare time to rest or engage in other development activities.

Although women also raised income through selling firewood, a number of risks were mentioned by women during and after wood fuel collection. First, they indicated that the exercise affected their health particularly their backs and necks. They walked long distances of between 5 and 10 kilometres carrying up to 30 kilograms of wood. Secondly, although no case was reported by respondents on sexual harassment, they however confessed that they put their lives in danger each time they went to
fetch fire wood. The forests were isolated exposing women to dangers such as rape, robbery or even murder.  

3.5 Socio-economic effects of power cuts

The inconsistent supplies of electricity in Gweru have not only impoverished Mkoba residents but have led to some kind of ruralisation of the urban area. First the quality of life was affected as the residents were no longer capable of enjoying the luxury of their homes such as watching movies, playing music and listening to news and their favourite channels and radio stations. Secondly, children’s studies as well as adult education classes were badly affected by power cuts in Mkoba. Some respondents reported suffering damage to property that included fridges, radios, cell phones and television sets due to power surges. A lot of money was required to have these gadgets repaired. Some residents revealed that some gadgets were damaged permanently.

IV. CONCLUSION AND RECOMMENDATIONS

This study concluded that households suffered immensely from power cuts. Their quality of life was negatively affected while their property was damaged. Their cost of living went up as they had to seek alternative power sources. The most affected were the low income earners who formed the majority of people who turned to wood fuel use as an alternative source of energy. This was seen to have knock-on effects on the environment. It caused deforestation and ultimately soil erosion. In addition, power cuts were seen to impose additional burdens on women in Mkoba. They had to work more and had little time for rest as they were already laden by other household chores of family care, cooking and washing. This study recommends that urgent measures need to be put in place to save the environment and the deteriorating quality of life of people in Mkoba, Gweru. Given the fact that Zimbabwe’s only power utility company is struggling to meet the local energy demand, the need for the government to enter into partnerships with private companies in providing electricity to the country cannot be overemphasised. The study also recommends that the upgrading and rehabilitation of present power stations as well as the establishment of new power stations be given urgent attention. In addition, instead of relying on thermal and hydroelectric power, Zimbabwe can benefit immensely by going deeper into green fuels through tapping into the abundance of ethanol, solar and wind power. This study further recommends that its time to stem out the perceived gas phobia among Zimbabweans and encourage its use as a safe and environmental friendly fuel.

REFERENCES


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