

# Electricity Policy and Structural Reforms: Implications for Informal Settlements in Kampala, Uganda

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## Abstract

*This study focuses on the experience of the electricity reforms from the perspective of household consumers in the informal sector in the urban and peri-urban informal settlements of Kampala, Capital City of Uganda. The purpose of this study was to assess the implications of electricity policy and structural reforms on the socio-economic welfare of informal settlement dwellers in Uganda. This was guided by three specific objectives, to examine the linkage between electricity structural reforms and electricity reform theoretical benefits; to analyze the effect of electricity reforms on household consumers in the informal sector; and to analyze challenges associated with the implementation of electricity reforms in light of the existing policies. The study reveals a poor link between theoretical benefits of reforms and structural reforms in Uganda owing to the size of the electricity power sector in relation to liberalization. Electricity sector reforms are not a panacea for improvement in the welfare of households in informal settlements. There is need for institutional and financial reforms, and deliberate policy implementation aimed at welfare improvement. The electricity sector in Uganda faces challenges in policy implementation due to insufficient funding and lack of proper coordination with government institutions for policy implementation. This mixed methods study inquired accessibility, affordability, usability, and reliability of the electricity services through semi-structured interviews in focus group discussions. The study found that usage of electricity is still low at 42%. The study recommended alignment of reforms to other planning departments in the government to help in the implementation process; rolling out a special program for increasing access and usage of electricity in informal settlements; and selective adoption of elements of the electricity reform agenda.*

**Keywords:** Electricity reforms, electricity access and usage, informal settlements, Uganda

## Introduction

Development partners have become more proactive in advocating for electricity reforms in developing countries, which some scholars have since named, the Washington Consensus (Gadiga et al., 2018; Helle et al., 2017; Kehew, 2015; Vogelsang-Coombs & Cummins, 2018; World Bank, 2004). Ideally, the overriding objectives of electricity reforms were to improve economic efficiency and attract private sector investment.

Reforms in Electricity began in Chile in 1982, and spread to Argentina, Norway, Britain and eventually to the rest of the world. The reforms have moved in the form of enacting the electricity law, unbundling, restructuring, private sector participation, and competition (International Energy Agency, 2017). Not all countries that have embarked on reforms have followed the same format leading to different results for different countries (Mastrucci et al., 2019). In the course of implementing reforms, other themes have emerged such as concerns of de-carbonization by focusing on renewable energy, and energy efficiency as a way of using

effectively the scarce energy resources (Wierzbowski et al., 2017).

In this study, electricity reforms are addressed in the context of Uganda, a country in the global south challenged by institutional and economic problems braving the winds of the new economic world order (Adengo, 2016). Some of the challenges faced in Uganda are low access to electricity services where the penetration levels are below 50 %, wide spread use of biomass fuel (90%) to meet their energy needs for households, poverty levels where 87.8 live under \$ 5 per day (Mayallah, 2016). This drastically affects the outcome of electricity reforms where the reforming government expected increased electricity access to those not connected to the national grid, whereas in actual fact this is highly dependent on the market forces (Sen et al., 2016). Service is given to those who can afford, and this leaves out a section of the population (Wakiyama & Kuriyama, 2018). The study navigated through the existing policies and their accompanying laws to identify the challenges related to the implementation process and found a disparity between the policies in place and the implementation strategy. For instance, the renewable energy policy was passed in 2007 but implementation has been slowed down by institutional and economic factors (Gore et al., 2019b). There are new ideas which have been discovered as a result of the study as follows; electricity sector reforms are applicable contingent upon economic, social, and political factors (ESMAP, 2018).

### **Statement of the problem**

Electricity reforms stand high chances of improving economic performance, bringing about efficiency, and welfare (Hogan, 2002; Nepal & Jamasb, 2012). The reforms are also expected to improve the commercial and technical efficiency of electricity companies and eventually contribute towards improved lives for consumers. Electricity reforms therefore may lead invariably to improvement in efficiency, service delivery, reliable supply devoid of interruptions, reduce prices, lead to cost reflective tariffs and increase on investments (Kessides, 2012).

However, going by the electricity reform literature accessed, information regarding energy supply, prices, quality, utility performance, economic growth, social welfare, poverty reduction is scanty. Although the textbook model for electricity reforms has been followed to a greater extent by unbundling electricity utility companies, giving a concession for 20 years, there are indications that the sector is still having challenges with electricity reliability, stability, affordability, commercial and technical losses and dependency on subsidies (Mawejje et al., 2012).

The study was therefore conducted to identify avenues for effective allocation of resources to nurture Uganda's potential to achieve global standards in this area (Hales, 1999; Muratori et al., 2017). Currently new dams are being constructed, with a hope that the price per kilowatt hours will be reduced (Karekezi & Majoro, 2002; Mawejje et al., 2012, 2013). The study will add to the currently minimal literature on the implications of electricity reforms on households in informal settlements (Meyer et al., 2018).

## Study objectives

In general, the study aimed at assessing the influence of electricity policy and structural reforms on informal settlement households in Uganda.

Specifically, the study sought to:

- a) To layout the electricity structural reforms and electricity reform theoretical benefits
- b) To analyze the implications of electricity reforms for household consumers in the informal sector
- c) To analyze challenges associated with the implementation of electricity reforms in light of the existing policies

## Literature review

Reforms registered in the energy sub-sector in the recent past have been done under a model of state ownership, regulation by the public, and the market economy (Byrne et al., 2007). The discussion to this end has generated consensus that traditional enterprises have performed below the expected standard and have to be improved so that they stop being a burden on the taxpayer (Jiang et al., 2014). In addition, doubts were increasingly rising about the reasons for supporting state-controlled power utilities, levels of competition and regulating through incentives of the existing monopolistic organization (Newbery, 1990).

There is a huge grey area on the relationship between electricity reforms and people's social-economic welfare in global south countries (Rashid et al., 2017) and literature on political and economic factors in relation to electricity reforms is scanty.

### *Electricity structural reforms and theoretical benefits*

The 1990s model of reforms follow a pattern containing some or all of these elements (World bank, 2019). There is passing the necessary legal laws to pave way for the process of electricity reforms, while putting in place an independent regulator charged with protecting the consumer from capitalistic exploitation and promoting healthy competition (Muratori et al., 2017).

The 1990s model of reforms is analyzed very closely by various scholars focusing on whether there is a particular pattern these reforms follow, or whether they are iterative (Joskow, 2008).

Schiera et al., (2019) while looking at reforming the energy sector in Africa, argues for deregulation of electricity utilities to allow the market economy to dictate the prices according to the forces of demand and supply. This has left the areas that are unprofitable underserved and opened the way for monopolistic tendencies of the company that takes the lion's share of the market (Joskow, 2005) and necessitated the presence of an independent regulator to ensure that tariffs are kept reasonable. The process of electricity reform process includes deregulation, restructuring, private sector participation, and Independent Power Producers (Byrne & Mun, 2003). Uganda has gone through this process, although there is inadequate information on the impact on social-economic welfare (Gore et al., 2019a).

The challenges of electricity reforms lie in political difficulties regarding the shifting of tariffs from being debt burdens to have them as profitable, leading to financial recovery. There are also other underlying problems of corruption, polarization from political heavyweights, opposition from labor organizations, inadequate collection, other problems of financial leakage (Charron et al., 2013). Judging from the aforementioned literature, it is very clear that before countries go into reforms, there is a need to look at those challenges that happened prior and how they were managed. In the case of Uganda, the experience of Chile in 1999, Italy, in 2003, California, in 2001 and New Zealand, in 1998 would suffice. (Aldy, 2007; Campbell et al., 2016; IEA, 2017; Littlechild, 2009a; O'Sullivan & Barnes, 2006; Rashid et al., 2017)

A few countries which have managed electricity reforms have also taken a long duration to complete the process. About 35 % have failed to progress and others have even regressed. About 40% of the countries from the Global South, have not even taken a step towards electricity reform (Ramírez-Villegas et al., 2016). In terms of percentage, only 70% of the countries have implemented electricity reforms in both developed and global south countries (Uyigue & Archibong, 2010). It is noteworthy that private sector participation is mostly common in OECD countries, although a significant 17% have introduced the sale of electricity at wholesale, leaving aside vertical unbundling of their electric utilities.

#### *Implications for household consumers in informal settlements*

The rapidly growing urban cities have given birth to informal settlements where the urban poor find easy abode and survival (Ugwoke et al., 2020). The Enel Foundation reveals that over 830 million people live in informal settlements worldwide, challenged on how to access clean energy (Adkins et al., 2012). This study is interested in how people living in informal settlements access electricity as a clean energy, the challenges they find in accessing it, and opportunities available to alleviate their challenges. Literature on informal settlements (AlSayyad, 2004; Fishbein et al., 2003; Habitat, 2013; Michelutti & Smith, 2014; Perlman, 2017; Pilo', 2017a) shows that electricity reform systems are concerned with macro systems and technical restructuring (Hogan, 2002).

The literature on electricity reforms puts across mixed findings regarding policy and structural reforms. Studies on electricity done show that market reforms by themselves may not bring about reliability of electricity, and stability of prices for economic welfare (Borenstein, 2017). There is also a possibility of intentions for benefitting some favored groups especially those close to the ruling families and this may be inconsistent in promoting efficiency. (Joskow, 1997). When this happens, it is imperative that the institutions responsible for sector governance get strengthened. Although the literature reveals some information about policy and structural reforms, there is an information gap regarding the economic and social benefits of structural reforms, especially in Sub-Saharan Africa.

## **Methodology**

This study used a case study research design, the case being of households in informal settlements surrounding Kampala city namely Namuwongo, Makerere-Kivulu and Kamwokya coupled with peri-urban residential areas in Wakiso and Kampala city. These places were chosen because the settlements and businesses conducted there are largely informal (Mukwaya, 2016). Environmental scanning took the form of literature review of peer-reviewed articles,

analysis of the available statistics, official publications and correspondence, newspaper surveys, pamphlets and newsletters, dissertations, and theses as well as on-line journals and resources. This generated some new knowledge on informal settlements and access to electricity as a result of electricity reforms in a transition economy. Primary data was obtained through observation, interviews, direct communication with respondents filling self-administered questionnaires (Fallis, 2013) that helped compile a sizeable amount of information about the characteristics of electricity access and electricity reforms. Interview guides were adopted to collect qualitative data mainly because they are able to reveal eclectic realities derived from the different subjective experiential knowledge of interviewees.

A combination of quantitative and qualitative research methods was therefore employed (Saunders et al., 2018) with the assumption that a single set of qualitative or quantitative data shall not suffice to bring out all the nuances (Burchett, 2014). In this case, electricity has a myriad of factors influencing it that necessitated the researcher to mix numbers and textual information while using a variety of research instruments for statistical and analytical conclusions (Ridder, 2012).

At the time of study, Umeme has a population of 1,200,000 consumers including government officials in the energy sector (ERA, 2017), 70% of whom were pre-paid customers. This population is relevant because it directly reveals those who are connected to the grid and benefiting from electricity services. The researcher used the non-statistical estimations where the sample size was decided by looking at several factors in the study (Creswell et al., 2003b). According to this method, smaller groups were represented by 30-50, while bigger groups by 100-350 people. Following this method, a sample of 300 respondents was derived from the population (UBOS, 2018).

The respondents were stratified according to the nature of their occupations; retail trade, kiosks, shops, tailoring, mobile money, food processing, tailoring, stationery, and hairdressing. This is a characteristic of informal settlements in Sub-Saharan Africa where people reside and also do their income-generating activities around their homes.

Quantitative data processing and analysis were done using the Statistical Package for Social Scientists (SPSS) software version 20 for quantitative data while qualitative data was analyzed by content analysis which informed identification of emerging themes, data coding and eventual selection of extracts to illustrate key arguments.

The research process for this study was guided by ethical considerations which entailed confidentiality for study participants, seeking permissions from study population and password protection of stored data (Fuchs, 2011).

## Findings

### Electricity reforms and theoretical benefits

The study dealt with examining the linkage between electricity reforms and the electricity sector reform theoretical benefits. Electricity utility companies that were formed after unbundling to separate the generation, from transmission and distribution, while scrutinizing

the role of the regulator. It was discovered that electricity generation capacity greatly improved alongside the increase in population growth, which implied higher consumption. Additionally, the 2002 energy policy is under review to incorporate emerging concerns like generation of atomic energy, oil and efforts to increase access levels to 98 % by the year 2030. However, these policies suffer from implementation challenges due to institutional weaknesses, limited financing, corruption tendencies, and unpredictable environmental and political conditions.

One of the theoretical benefits of electricity sector reforms is to have cost reflective tariffs which help the electricity utilities to remain financially afloat and able to improve capital investments and network infrastructure. This has implications on households in the informal sector as prices for electricity consumed will be higher than what they can easily afford.

### **Implications for household consumers in informal settlements**

The respondents who participated in the research were 300 people both men and women. They were examined using different questions aimed at generating information about accessibility, affordability, and reliability of electricity in informal household settlements. The results have revealed that the majority of the respondents above 87% have access to electricity supplied by UMEME. This is commendable for the electricity utility companies which is a noticeable increase from the rate of access which was there 20 years ago before the electricity reforms began. Contrary to electricity reform literature, access to electricity does not necessarily espouse the health conditions of the economic poor who continue to use biomass and get exposed to soot which makes them vulnerable to respiratory infections. The other discovery from the data is that the 87% who have access to electricity do not utilize all the uses of electricity because they cannot afford the electrical appliances. They end up using the basics of electricity like charging the phones, powering a radio, and TV watching. Among the respondents interviewed only a tiny fraction of 13% could connect labor-saving devices like the vacuum cleaner. The majority go about their business normally using manual devices instead of using electrical ones which pales the claim of social-economic welfare. In order for economic welfare to be realized, there is a need to improve the other factors which affect welfare like accessibility and affordability of health, education, housing, and food security.

### **Electricity reforms and policy challenges**

This study has been looking at electricity reforms in the context of existing policies addressing some of the challenges faced by global south countries in the implementation of the electricity reforms. The biggest challenge is financial because the finances to implement policies are always inadequate, leading to policy failures and reversals. Interviews with technocrats indicate that inadequate political support hinders the progression of reforms. A number of factors which cause these unforeseen contingent factors like fluctuating climatic conditions, inflation rates, international fuel prices, new technologies, regional and international treaties must be observed consistently if policies are to be funded. There are four major themes that developed out of the data available: security of supply, access and affordability, efficiency and financial viability, tariffs, and cost-recovery. Data indicated that immense efforts have been directed towards the security of electricity supply evidenced by the electricity generation projects that have been commissioned. The supply of electricity in Uganda has quadrupled in the last 20 years from 60 MW in 1986 to 1,167 MW in 2019 (World Bank, 2019). Notably, some policies have been documented but the implementation has met some challenges such as inadequate financing, corruption and institutional weaknesses. In urban areas, the study found that 70.8% of the population accessed electricity services



although there are challenges of affordability because of the incidence of poverty among some urban residents.

The findings about the social-economic benefits of electricity regarding reliability, affordability, stability, legality, quality, convenience, and health in Uganda reveal that these benefits are minimal. This necessitates further research to identify how these factors are prevalent in electricity reforms especially in Kampala, Capital City of Uganda.

The electricity sector reforms recommend restructuring, regulation, private sector participation, and competition. Although regulation and restructuring have been implemented in some global south countries in Sub-Saharan Africa like Uganda, the level of implementation varies across countries, depending on contingent factors like political will, institutional framework, and level of economic development.

The other areas of reform of competition and private sector are not fully operationalized. The situation on the ground is almost like an oligopoly where there is one dominant electricity company and the others occupy a tiny percentage of the energy mix. The study findings indicate absence of deliberate effort to establish alternative sources of energy to ensure security of electricity supply away from the conventional source. A case in point are investments in solar electricity where the initial costs are huge to have sufficient power to run industrial plants. Water sources can also be unreliable since they depend on the vagaries of nature. The countries in the global south which have security of supply of electricity use fossil fuels to power the electricity generators. The study therefore recommends a hybrid approach to electricity reforms to address the different concerns like security of electricity supply, electricity access, reliability, costs, affordability and health concerns.

## Conclusion

Access to electricity and other forms of clean energy does not necessarily bring in health benefits because poor households may not afford it considering that usage does not only require subscription but also involves purchase of expensive cooking and other domestic appliances. Actors outside the electricity technocrats are not adequately involved in improving electricity access that may require social projects, awareness engagement, security, finance experts and local populations in informal settlements.

## Recommendations

In order to achieve access to sustainable, affordable, and reliable electricity for all by the year 2030, Government of Uganda has to support sustainable access to reliable and affordable energy for all members of the population. Specifically, Government of Uganda should prioritize the following;

Sensitization and facilitation of communities to access and effectively utilize electricity across informal settlements.

Introduce automated electricity meters (YAKA) to prevent loss of revenue by electricity companies and ease payment processes for the users.

Improve incomes at grassroots level to provide resources for potential clients to pay their bills which in turn translate into company income and taxes.

Install synchro phasors and other fault monitoring devices to detect abnormalities in the electricity system to enable timely mitigation.

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