

**When the Power is Out: Strategizing for Electricity Disruptions in
Lilongwe**

by

Wilfred Jana
JNXWIL001

SUBMITTED TO THE UNIVERSITY OF CAPE TOWN
In partial fulfilment of the requirements for the degree of
Master of Philosophy in Urban Studies

Faculty of Science
UNIVERSITY OF CAPE TOWN

Date of submission: March 2021
Supervisor: Professor Sophie Oldfield

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

DECLARATION

I, WILFRED JANA, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

Signature:

Date: 12th March 2021

ACKNOWLEDGEMENTS

I wish to express my deepest gratitude to my supervisor, Professor Sophie Oldfield, for providing guidance and feedback throughout this project. Your enthusiasm for the project, patience, support, and encouragement even during the covid-19 pandemic is highly appreciated. I could not have come this far if you had not held my hand right from the start.

I am also very thankful to all members of the African Centre for Cities and the Environmental and Geographical Sciences department for their physical and technical contribution to this project. Without their support during my studies, and invaluable feedback during proposal presentations, this project could not have reached its goal. In a special way, I would like to thank Dr. Anna Semelczi and the entire MPhil class of 2019 for being very valuable friends of the project. Your contributions and encouragement during our weekly 'sharing and writing' sessions on zoom were very helpful.

Finally, I wish to acknowledge the support and love of my family and friends. They kept me going on and this work would not have been possible without their support.

ABSTRACT

Electricity disruptions are a common feature of cities of the global south. However, not much is known of how households cope, and strategize around these electricity disruptions. In this thesis, I focus on middle-class households in Lilongwe, who are connected to the formal electricity grid but experience frequent power cuts. I examine this space of disrupted electricity, paying attention to household's experiences. I explore the varied ways in which households cope with and navigate around disruptions, by piecing together an array of technologies and infrastructures. Drawing on in-depth interviews and observation, I argue that households build assemblages of infrastructures, bringing into their energy sources a mix of older technologies, as well as new ones, to ensure an uninterrupted flow of energy even during an electricity disruption. Households find alternative ways to link to power, by reorganising themselves, their energy choices and food choices. In this piecing together, households themselves constitute a critical infrastructure that makes the alternative technologies work. It takes their agency, knowledge, and creativity to piece the multiple technologies together, bridge them, and make them work. In short, I demonstrate that in the event of a power disruption, households do not sit back and wait passively for electricity to come back on. They plan and strategize, making do using any resources within their capacities. A form of infrastructural citizenship, making do around electricity disruptions has the potential to reconfigure citizenship.

Contents

DECLARATION	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
LIST OF FIGURES	vii
ACRONYMS	viii
Chapter 1: Introduction	1
Chapter 2: Infrastructure disruption, and the everyday experience of disruption in perspective	3
2.1 Understanding the infrastructure crisis in the global south: Failure, Breakdown, and the Presence of Heterogeneous Delivery Systems	3
2.2 Infrastructure and disruption as an analytical terrain	4
2.3 Everyday life in conditions of uncertainty, and infrastructure breakdown	5
2.3.1 Electricity disruptions and everyday household realities	6
2.4 Urban Citizenship through the lens of electricity disruption	7
2.5 Conclusion	8
Chapter 3: Understanding Electricity Disruptions in Lilongwe City	10
3.1 Everyday experience of disruptions through the household lens	13
Chapter 4: Electricity Blackouts: Disruption to Everyday Life in Lilongwe	16
4.1 Introduction	16
4.2 Persistent Experience of Blackouts: The New Normal	16
4.3 Expectation of Blackouts	18
4.4 Chaotic Nature of Blackouts	19
4.5 Accessing load shedding schedules	20
Newspapers	20
Community support: Neighbourhood WhatsApp Groups	21
4.6 Materiality of blackouts at household level	22
4.6.1 Mrs M: My chickens need light and heat	24
4.6.2 Unplanned for trips to access electricity: Dave’s journeys to the barber	26
4.6.3 I can tell when the next blackout will happen: Hopes prediction technique	28
4.7 Coping with Darkness	29
4.8 Frustration: Damage to Household Appliances	30
4.9 Conclusion	33
Chapter 5: Juggling Between Modern and Traditional Energies: Strategizing Around Electricity Supply Disruptions	35
5.1 Introduction	35
5.2 Choices households make around household appliances	35

5.3 From electricity to charcoal to electricity.....	49
5.4 Conclusion	50
Chapter 6: Navigating Blackouts: Household Agency and Multiple Energy Infrastructures	51
6.1 Navigating blackouts through the assemblage of old and new technologies	52
The Importance of Multiple Infrastructures to Access Energy	52
Appliance choices: What works?	55
6.2 Energy against all odds: Household agency in the context of blackouts	56
6.3 The importance of people in making energy infrastructures work.....	58
Heterogeneous yet fragmented infrastructures: The strain of piecing them together.....	58
6.4 Citizenship in the space of disruptions	59
6.5 Conclusion: The Politics of Navigating around Blackouts	60
References	62

LIST OF FIGURES

Figure 1: A section of Gulliver Street, Area 49.....	11
Figure 2: A section of Chilumba Street, Area 24.....	11
Figure 3: Study area (Area 49) showing Gulliver Street where interviews were conducted.....	12
Figure 4: Study area (Area 24) showing Chilumba street where interviews were conducted.	12
Figure 5: Neighbourhood WhatsApp communication about blackouts.....	22
Figure 6: A light bulb in Mrs M's chicken pen.....	26
Figure 7: A local barbershop where people charge phones.	28
Figure 8: Lucy's damaged refrigerator stored in a storeroom.....	31
Figure 9: Mr Ndlovu's damaged stove.....	32
Figure 10: Charcoal stove waiting for a power cut.	36
Figure 11: Household charcoal stoves as alternatives to electric stoves.....	38
Figure 12: Gas stoves used by households as alternatives to the grid.....	40
Figure 13: Charcoal irons used by households as alternatives to electric irons.....	41
Figure 14: Isaac's car batteries connected and linked to electrical appliances.....	43
Figure 15: A solar panel being energized on the sun.....	45
Figure 16: Mrs M's lounge connected to solar.....	46
Figure 17: Diesel generator in use behind the main house.....	49

ACRONYMS

ESCOM – Electricity Supply Corporation of Malawi

HIC – Heterogeneous Infrastructure Configurations

NEP – National Energy Policy

Chapter 1: Introduction

On the 23rd of February 2020, Electricity Supply Corporation of Malawi (ESCOM) released a statement on its Facebook page, notifying its customers of the implementation of a six-hour rolling power rationing due to decreasing water levels on Lake Malawi and failure of two of its hydro-electric power plants. Customers comments towards the notification clearly indicated that the power cuts have negatively affected household activities. A tour of the Facebook page reveals numerous other apologies for electricity supply disruptions by ESCOM, pointing to the fact that electricity disruptions are common in Malawian cities, a failure of energy infrastructure common across many cities of the global south (Mensah, 2016; Oyuke, Penar, & Howard, 2016; Silver, 2015). In the Malawian case, the disruptions are uncertain, and irregular, placing people in precarious conditions where they must navigate through long and uncertain waiting periods for power to come back on. To cope with these frequent blackouts, in this research I explore the ways in which households plan and strategize to find alternatives means to source electricity and to maintain household functions. The research examines the everyday experience of electricity disruption in Lilongwe, analysing the strategies households draw on to cope with and navigate around blackouts pragmatically and creatively.

The thesis builds on a rich body of literature that illustrates the nature of cities and infrastructure in the global south characterised by breakdown and failure (Gandy, 2016; Hyman & Pieterse, 2017; Pieterse, 2008, 2011). In some cities, this breakdown and failure can be seen in poor housing infrastructure, transport networks, and inadequate water supply systems. In the context of my study, the face of these breakdowns are the frequent blackouts that people living in cities of the global south must endure on an everyday basis. A parallel body of literature documents everyday lives in conditions of infrastructure breakdown, recognising the importance of understanding how urban residents make do in conditions of uncertainty and infrastructure breakdown. In particular I draw on Alda-Vidal, Kooy, and Rusca (2018) work, which documents the everyday practices that make the piped water infrastructure system work in Lilongwe, Malawi, as well as McFarlane and Silver (2017) research on the making of everyday life in the absence of formal infrastructure systems in Kampala. Lastly, I draw inspiration from literature that explores infrastructure disruptions as ground for understanding the politics of urban life (Amin, 2014; Anand, 2011; Graham, 2010; Graham & McFarlane, 2015; Silver, 2015). In sum, I build on this research as a foundation to examine the everyday navigations and tactics households deploy to access electricity in the context of its disrupted supply in Lilongwe. Under conditions of infrastructure breakdown, I examine this space of disrupted electricity, demonstrating that households do not sit back and wait passively for electricity to come back on. They plan and strategize to make do using any resources within their capacities.

The study was undertaken in Lilongwe, Malawi, among middle-class households from Area 22 and Area 49, who are connected to the formal electricity grid, but experience power cuts. Despite being the country's administrative capital, Lilongwe is not free from uncertain and unpredictable power cuts. Households continue to experience frequent and uncertain power cuts that sometimes last for up to 16 hours each day, disrupting the household space and household activities. In-depth interviews and observation revealed that households respond by switching to alternative sources of energy such as charcoal, generators and solar, and by mixing older and newer technologies. Households also find alternative ways to link to power, by reorganising themselves, their energy choices and food choices. Through this piecing together, in this thesis I explore the ways households themselves constitute a critical part of the infrastructure system that makes the alternative technologies work. I argue that strategizing in the context of disruptions shapes a politics of making do, a form of infrastructural citizenship (Lemanski, 2019) that has the potential to reconfigure not only the electricity supply landscape, but also households' relationships to power and authority.

This thesis proceeds as follows. Chapter two presents a review of relevant literature on infrastructure disruptions and their everyday experience to discuss the growing recognition of disruption and the everyday as space where we can learn about contemporary urban life. It also presents past studies on electricity disruption and peoples experiences of it. This will be followed by a detailed description of the case in chapter three, where I introduce Areas 49 and 22 as the study areas and in-depth interviews and observation that methodologically shape the thesis. Chapters four and five empirically share the everyday responses to frequent blackouts. Here, I discuss the overall experience of blackouts, complemented by all the strategies and responses that households employ to navigate around blackouts. In the final chapter, chapter six, I draw on this material to argue that households build assemblages of infrastructures. In doing so, households play a critical role in creating ways to make infrastructure and the varied energy sources link together to work for household daily needs. I conclude the thesis by arguing that the experience of disruptions can be understood as a form of infrastructural citizenship that shapes the way households negotiate authority and visibility.

Chapter 2: Infrastructure disruption, and the everyday experience of disruption in perspective

This study is anchored by bodies of work around infrastructure breakdown and everyday lives in conditions of breakdown and uncertainty. This chapter thus positions the study within debates on infrastructure breakdown which explore the space of disruption as an analytical terrain where theory can be produced and reproduced (Graham, 2010; Lemanski, 2019). I bring together literature that discusses infrastructure disruptions (Graham, 2010; McFarlane, 2010) and everyday household realities (Silver, 2015) to reflect on the space of electricity disruption, its lived experience and potential to reconfigure both the electricity supply landscape and household's relation to authority. My inspiration to study electricity infrastructure is drawn from Star (1999) who calls for the study of seemingly boring stuff, like infrastructure and Amin (2014) who argues that infrastructures play a vital role in the making and unmaking of individual lives as well as in the struggle for recognition. The chapter begins by providing an overview of literature on the infrastructure crisis in the global south, discussing the nature of the crisis, and alternative systems on the ground. This is followed by a discussion on the potential of the disrupted as analytical terrain. It then goes on to discuss everyday lived realities in conditions of breakdown and concludes with a section on the call to link infrastructure and citizenship.

2.1 Understanding the infrastructure crisis in the global south: Failure, Breakdown, and the Presence of Heterogeneous Delivery Systems

There is rich literature on cities of the global south that illustrates infrastructure in the cities as characterised by breakdown, inadequacy and failure (Gandy, 2016; Pieterse, 2008; Silver, 2015). Pieterse (2011) articulates that African cities are crisis, and this can be seen in the growing number of shanty towns, and the burden of self-help. Pieterse goes on to argue that the bulk of development in the city can be attributed to players outside of the state apparatus, that is, the private sector and the informal economy. In his paper, 'Planning, anti-planning and the infrastructure crisis facing metropolitan Lagos', Gandy (2016) discusses how Lagos has experienced a decline in infrastructure quality over the past couple of years. Among other things, the city has lost much of its street lighting, the road system is dilapidated and extremely congested, and the city's sewerage network is now non-existent (p. 372). According to Gandhi, structural factors operating through both the colonial and post-colonial periods have played a major role in the cities worsening infrastructural crisis. This is echoed by Hyman and Pieterse (2017) who attribute the infrastructure deficit in the global south to rapid urbanisation in inadequately resourced cities and under-investment in infrastructure, among other things.

The infrastructure crisis in the global south has been attributed, in part, to rapid urbanisation coupled with inadequate resources in the cities (Hyman & Pieterse, 2017; Lufumpa, 2017). Other scholars (Jaglin, 2014, 2016), however, have attributed this infrastructure crisis to the failed conventional network model which is referred to as the 'modern infrastructure ideal' (Graham & Marvin, 2001). The network, according to Gandy (2016); Graham and Marvin (2001); Jaglin (2014), was a widely accepted system for the delivery of services in the global north, whose logics were, overtime, adopted in the global south. However, the network model has been characterised by distortions and failures in the global south (Gandy, 2016; Jaglin, 2014, 2016), prompting researchers to investigate other ways of delivering services in the global south. Recent studies on urban infrastructure have found out that services like electricity, water, and waste management are not delivered within the logics of the network (Jaglin, 2014, 2016; Lawhon, Nilsson, Silver, Ernstson, & Lwasa, 2017). Jaglin (2014) for example, finds that cities in the global south have got a diversity of infrastructures, all complementing each other to provide services in the city. In her paper, 'Regulating Service Delivery in Southern Cities: Rethinking urban heterogeneity', Jaglin (2014) notes that drinking water can be supplied via a network with taps, or standpipes, by pumps, or water carriers; energy can be accessed through connection to the grid, by rechargeable batteries, generator, or gas bottle (p. 436). Similarly, Lawhon et al. (2017) share a story of an individual who experiences multiple and diverse infrastructures in Kampala, Uganda, that defy the logics of the network ideal. The term I intend to adopt, to explain this mode of service delivery in the global south is 'heterogeneous infrastructure configurations' (HICs) (Lawhon et al., 2017). Lawhon et al. (2017) proposed the term 'heterogeneous infrastructure configurations' to be complimentary to the plurality or multiplicity of service delivery infrastructures in the global south. The term refers to the diversity of infrastructures, all complementing each other to achieve the goal of delivering a service such as electricity or water to the people.

This literature gives a picture of the state of infrastructure in cities of the global south, demonstrating that it is characterised by breakdown, failure, and inadequacy. Having laid the groundwork on the infrastructure crisis in the global south, it is important to highlight here that the focus of this study is not on infrastructure inadequacy or lack of access, but rather on failure and breakdown as illustrated by Graham (2010). The study aims to explore the situation where electricity infrastructure exists but constantly fails. This is manifested through frequent and irregular blackouts that disrupt people's spaces and everyday lives. In the following section, I will discuss the idea of disruption as an analytical space through which we can reflect on contemporary urban issues.

2.2 Infrastructure and disruption as an analytical terrain

My intention in this study is to extend the work on infrastructure crisis and failure by focusing on what happens during the break down. How do people experience electricity supply disruptions? How do

they cope? What can people's experiences of the disruption tell us about the contemporary city? I draw my inspiration from Graham (2010) who argues that *"infrastructural disruptions provide good learning opportunities through which critical social science can excavate the politics of urban life, technology, or infrastructure in ways that are rarely possible when such systems are functioning normally"*. According to Graham, it is in the moments of stasis and disrupted flow that the usually hidden politics of urban life can be revealed. This is also echoed by Gupta (2015) who noted that *"so much of the lives of people around the world is shaped by infrastructure and its absence or partial presence... our accounts of the everyday lives of people in the global south are incomplete because they do not pay attention to the different ways in which people encounter the partial presence of modern infrastructure"* (p. 563).

There is a rich literature on infrastructure disruptions that discusses the ways in which disruptions have reshaped and reconfigured cities. Graham (2010) for examples, illustrates the crucial role played by infrastructures (usually invisible) in sustaining everyday life in the city. Examples include energy networks that connect the heating, cooling and energize urban life, water systems quenching the city's thirst, and wastewater and sewerage systems clearing the city of human and organic waste. According to Graham (2010), in a world where infrastructure is so critical in sustaining urban life, occasions of stasis or failure can help us rethink and retheorize urban life. He goes on to call for further research on what happens when these infrastructures, that are fundamental to modern life, cease to work normally. McFarlane (2010) also examines moments of infrastructure interruption, arguing that moments of interruption reflect and reproduce urban inequality. He does this by analysing the way authorities (local governments and infrastructure managers) respond to crises. He also argues that the crises themselves lay bare already existing but hidden forms of inequality in the city.

The bodies of work on the potential of infrastructure as an analytical terrain demonstrate the importance of paying attention to moments of disruption in the quest to understand city life. In the same way, drawing from these bodies of work, I would like to explore the space of electricity disruption in Lilongwe, paying attention to how households cope and navigate around the disruptions. I argue that this space of disrupted electricity can tell us more about city life in Lilongwe. The major focus of studies on infrastructure disruption is on how citizens make do. I will now turn to discuss existing bodies of work on everyday life in the context of disruptions.

2.3 Everyday life in conditions of uncertainty, and infrastructure breakdown

Despite infrastructure failure and disruption being a norm in African cities and across the global south, there has been inadequate research on the everyday experience of the disruptions. Work done by the scholars discussed above largely focuses on the technicalities of the breakdown itself, the cause, and

the effect. One key aspect of this study is its focus on the everyday; the everyday experience of electricity disruptions, the everyday tactics, and strategies to navigate around electricity disruptions. This has been inspired by an increasing recognition that the everyday can be a good terrain for urban theory generation. There is growing literature that is focusing on the everyday practices that marginalised citizens draw on to make do in the city (Alda-Vidal, Kooy, & Rusca, 2018; Kihato, 2011; Lawhon, Ernstson, & Silver, 2014; McFarlane & Silver, 2017; Zeiderman, Kaker, Silver, & Wood, 2015). In their paper, Alda-Vidal et al. (2018) document the everyday practices that make the piped water infrastructure system work in Lilongwe, Malawi. Their focus was on the everyday decisions and routines of water supply staff, and their role in the production of inequalities. Kihato (2011) also uses the everyday lives of migrant women, their navigations, and interactions with other urban actors to rethink the notion of urban governance.

I also draw from McFarlane and Silver (2017) who examine the making of everyday life in a neighbourhood in Kampala, Uganda in the absence of formal infrastructure systems. McFarlane and Silver (2017) use the dialectical approach which examines how marginalised urban dwellers navigate the city in the absence of formal infrastructure systems, service provision and welfare. They argue that 'a focus on how residents navigate the city can extend our understanding of urban life'. In their essay, Zeiderman et al. (2015) also use the everyday to understand how uncertainty is lived, negotiated, and mobilised by different urban actors in the four cities of Karachi, Accra, Bogota, and Johannesburg.

These works illustrate the growing recognition of the everyday as good territory for the understanding of the making of city life. As McFarlane and Silver (2017) put it, focusing on how residents navigate the city, especially in conditions of infrastructure inadequacy and breakdown can help us understand urban life better. My research builds on this foundation to explore how households in Lilongwe navigate around frequent power disruptions. In the next section, I explore everyday household realities, tactics, and navigations around electricity disruptions in the global south and Lilongwe.

2.3.1 Electricity disruptions and everyday household realities

Disruptions to electricity result into a disruption to household space and everyday life. Households fail to do their day-to-day activities and are forced to find alternative means. These everyday experiences and navigations around blackouts are what I am turning to in this section. In the previous section, I demonstrated the importance of focusing on the everyday to understand urban life. Here, I engage with literature that discusses everyday household realities in the context of disruption. What are the realities of electricity disruptions and their everyday experience?

In the article 'Disrupted Infrastructures: An Urban Political Ecology of Interrupted Electricity in Accra', Silver (2015) partially examines the everyday activities and responses of urban dwellers in Accra, Ghana, when power goes out. Silver found out that the interruption of electricity because of load-shedding prompted several responses including storing of candles, forming neighbourhood groups to protect property, and purchasing shared generators for businesses. According to Silver (2015) the urban poor are forced to mobilise themselves and make use of alternative strategies to navigate the disruption or sometimes suffer the effects of darkness on household activities (p.996).

Research on electricity in Malawi has mainly focused on the technical and governance aspect of energy supply in the country (Kaunda, 2013; Mpoola, 2011; Taulo, Gondwe, & Sebitosi, 2017). Mpoola (2011) for example, concludes that failure of ESCOM to supply electricity to the whole of Lilongwe has affected local economic development. Taulo et al. (2017) review the status of energy supply and demand in Malawi and propose strategies to help tackle the energy supply crisis in the country. They go on to discuss the issues facing the energy sector in the country which include deforestation, inadequate and unreliable supply, and high transmission and distribution losses among other things. Kaunda (2013) analyses the energy situation and small-scale hydro power potential and application status in Malawi.

Even though these studies discuss the electricity supply crisis and power disruptions in Malawi at length, they do not analyse the everyday practices and lived experiences of these uncertain and disruptions. I am interested in filling that gap in the literature by departing from where the past studies left off on electricity supply disruptions to further explore how people experience the disruptions on a day-to-day basis. I particularly draw from Silver (2015) who partially examines the everyday activities and responses of urban dwellers in Accra when power goes out. Even though the core focus of Silver (2015) was to reveal the power relations between various actors across the electricity infrastructure system in Ghana, one of his objectives was to find out how disruption is responded to across Accra. To achieve this, he conducted a survey among households to understand how electricity and power dynamics play out at household level. In this study, I adopt a similar approach, by surveying households in Lilongwe to find out more about everyday household realities in relation to electricity disruptions.

2.4 Urban Citizenship through the lens of electricity disruption

Electricity disruptions do not only shape everyday life, forcing households to reorganise their spaces, and draw on multiple energy infrastructures, they also impact on the relationship between the citizen and the state. There is relatively new body of work that explores infrastructure and the experience of infrastructure as key sites for the contestation and negotiation of citizenship. Holston (2008), for

example, investigates the formulation of citizenship in the ways in which grassroots in Brazil mobilize around housing and infrastructure. He came up with the concept of 'insurgent citizenship', to refer homeowners on the peripheries of Sao Paulo who organise against threats of eviction. Similarly, Anand (2017) uses the term 'hydraulic citizenship' to discuss the politics around Mumbai's water distribution regime. Anand (2017) demonstrates how citizenship emerges through continuous efforts to control, maintain, and manage the city's water. He found that water in Mumbai does not only flow through a static collection of pipes fitted by engineers, but instead residents are also constantly negotiating access to water by striking deals with plumbers to redirect pipes and connect their households to water without the permission of authorities. This then acts as a means through which residents make claims on the state. Elsewhere, Oldfield and Greyling (2015) reflect on the micro-politics of waiting for state-provided housing in South Africa. They argue that waiting for homes shapes a politics of finding shelter in the meanwhile, navigating in the grey spaces between formality and informality. Even though they do not explicitly use the term 'citizenship', they argue that the micro-politics of waiting and the practices of quiet encroachment around housing in South Africa generate a politics of encounter between citizens and the state, consequently destabilising the concept of governance. This body of work on the relationship between infrastructure and citizenship helps offer a set of ideas for thinking about the impact of disruptions not just on the reshaping of the electricity access landscape, but also on the bigger impact of configuring and reconfiguring citizenship.

This study therefore draws on the aforementioned works to think about citizenship through the experience of disrupted electricity. By looking at the nature of agency around strategies for electricity disruption, I argue that making do around electricity disruptions has the potential to reconfigure citizenship. I also draw inspiration from Lemanski (2019) who calls for the adoption of an infrastructural perspective to understanding citizenship. Lemanski (2019) argues that 'while citizenship is inherently a political relationship, that relationship is frequently mediated through the materiality of public infrastructure'. (p.1)

2.5 Conclusion

This research builds on works around infrastructure disruptions (Anand, 2011; Graham, 2010) and the everyday tactics and navigations around disruptions (McFarlane & Silver, 2017; Silver, 2015) to explore the everyday household experience of electricity disruptions in Lilongwe. It uses Graham (2010) to engage with the space of disruption, to find out what peoples experience of it an tell us about urban life in Lilongwe. By focusing on the everyday experience of electricity disruption among households in Lilongwe, I take up the invitation to take the 'richness of the everyday activities of urban dwellers as the basis for urban theory' (Alda-Vidal et al., 2018; McFarlane & Silver, 2017). Most importantly, the research draws from (Holston (2008); Lemanski (2019); Oldfield and Greyling (2015)) to understand

citizenship through the lens of electricity disruptions, arguing that the experience of electricity disruptions does not only shape electricity access, but can also shape citizenship. In the chapter that follows, I discuss the case, middle class households from Lilongwe who are on the grid but are habitually facing blackouts.

Chapter 3: Understanding Electricity Disruptions in Lilongwe City

Malawi is faced with inadequate and unreliable power supply systems, a situation which has resulted into frequent power disruptions. Energy delivery in the country uses the logics of the network, with ESCOM as the only supplier of energy to the people. As is the case with other countries that adopted the network, electricity in Malawi is unreliable, characterised by frequent blackouts. The National Energy Policy (NEP) (2018) identifies inadequate electricity generation as the main cause of the electricity supply problem in Malawi (Malawi, 2018). This is also echoed by a study conducted by the World Bank (2019) which attributes these power disruptions to insufficient generation capacity and severe drought in the near past. In the context of such disruptions, households are forced to plan, find alternatives, and navigate around the disruptions. This aim of this study is to understand the everyday household experience of blackouts in Lilongwe, to find out how households cope and strategize. I also go on to discuss what the experience of blackouts in Lilongwe can tell us about city making.

Lilongwe was convenient for this study for two main reasons. Firstly, because I have some background knowledge of Lilongwe, having lived there for the past five years. Secondly, Lilongwe is one of the cities in Malawi that are heavily affected by frequent power cuts. Located in the central region of Malawi, Lilongwe is not only the capital city but also the biggest city, population wise, with a total population of 989, 318 (National Statistics Office, 2018). Despite being the country's administrative hub, Lilongwe is not free from uncertain and unpredictable power cuts, impacting negatively on the households and the economy. Residents, firms, and businesses in the city have turned to alternative sources of power such as generators and solar energy. In 2018, small-scale businesses across the city, including carpentry, barbershops, and welders, were forced to change their schedules and workplans to suit ESCOMS load-shedding schedule. Some resorted to working overnight just so they could get something done before power goes out at 6am the following day. Households in Lilongwe have normalised working with multiple energy infrastructures and appliances. The average household has got at least two different energy infrastructures, for the sake of alternating when power goes out.

Two mixed-income residential neighbourhoods were randomly selected from all mixed residential areas that are affected by power cuts. The reason behind this was to have a holistic understanding of the experience of electricity disruptions across all income classes for the purposes of the study, Area 49, and Area 24. Area 49 is a mixed-income residential area in the north-western part of Lilongwe, whereas Area 24 is a mixed-income residential area in the southern part of Lilongwe. Both residential areas are on the grid but are faced with frequent blackouts. The two areas were randomly selected mainly for my convenience. Gulliver was easily accessible from my home, and Area 24 and Gulliver were the areas where I got early clearance to do my research.



Figure 1: A section of Gulliver Street, Area 49

Source: Primary Survey, Author, 2020



Figure 2: A section of Chilumba Street, Area 24

Source: Primary Survey, Author, 2020

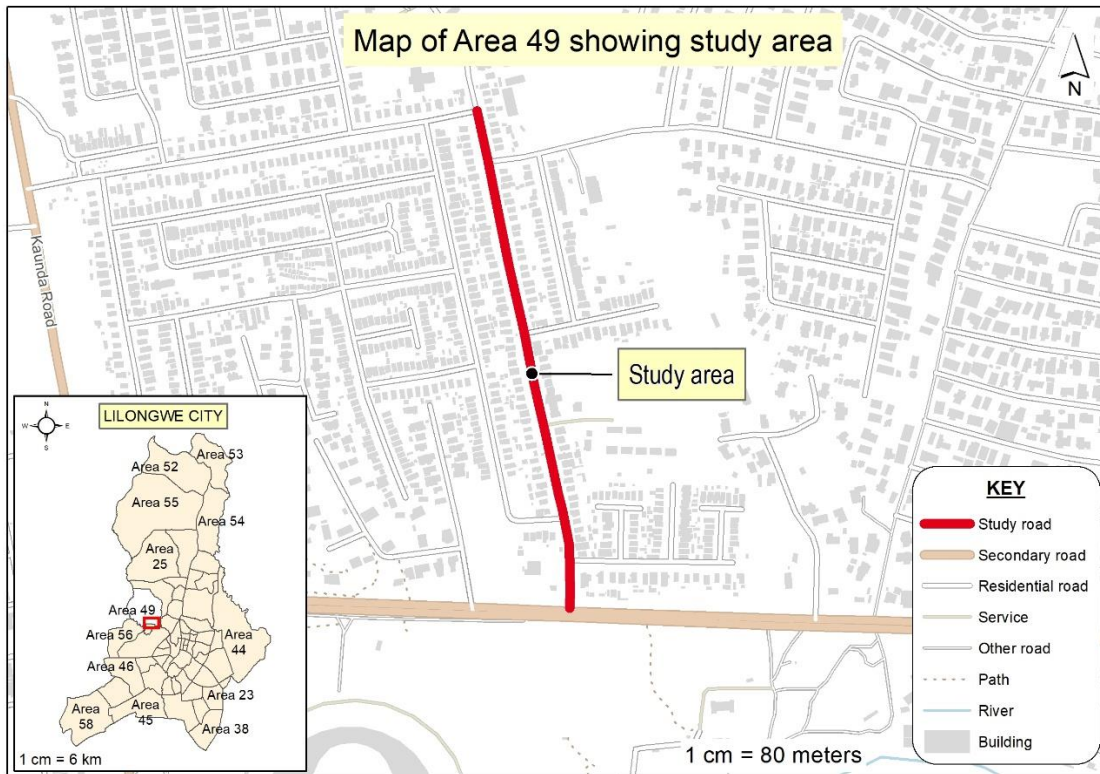


Figure 3: Study area (Area 49) showing Gulliver Street where interviews were conducted

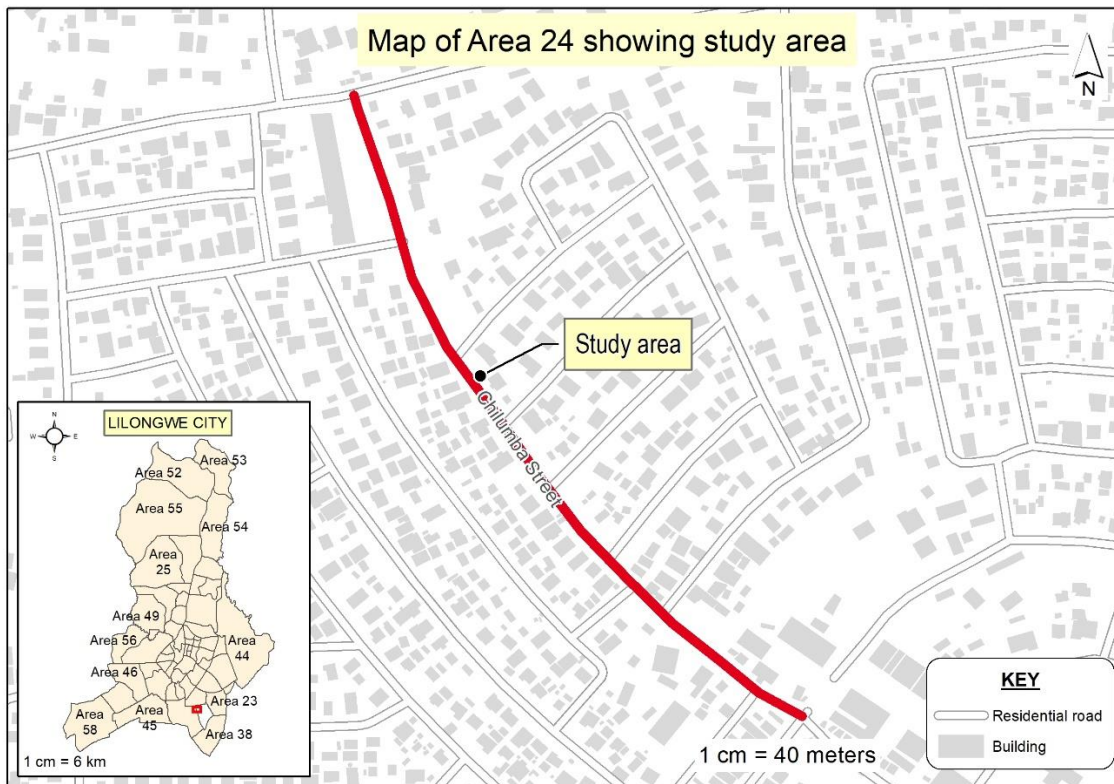


Figure 4: Study area (Area 24) showing Chilumba street where interviews were conducted.

Source: Primary Survey, Author, 2020

3.1 Everyday experience of disruptions through the household lens

The study had two main objectives. The first was to find out how households are affected by frequent and uncertain blackouts. The second was to find out how households cope and strategize around frequent blackouts. To achieve this, I selected two blocks from each neighbourhood where I talked to households that are affected by these disruptions to find out more about their experience of the disruptions and the strategies they employ to navigate around disruptions.

The study was a qualitative study whose main aim was to examine the everyday experience of electricity disruption in Lilongwe, how people cope and make do. For the purposes of digging deeper into people's lived experience, I adopted ethnographic methodology to collect data. Wolcott (2008) states that among other things, ethnographic methods allow one to get an insider's view of reality and can provide deep insightful data on any given topic. Rodgers and O'Neill (2012) argue that infrastructure is an ideal ethnographic site for theorizing how abstract social orderings play out concretely at the level of everyday practice.

My fascination with the 'everyday' as a study terrain was inspired by a growing recognition by urban researchers (Alda-Vidal et al., 2018; Kihato, 2011; Lawhon et al., 2014; McFarlane & Silver, 2017; Zeiderman et al., 2015) of the everyday as good terrain for the generation of urban theory. I particularly draw from McFarlane & Silver (2017) who argue that a focus on how urban residents navigate the city can help us understand urban life better. Inspired by this turn in urban research, I set out to understand the household everyday realities, and navigations in conditions of frequent blackouts. My aim was to find out how blackouts are experienced and manifested on a day-to-day basis in Lilongwe.

The primary data collection methods I employed were in-depth interviews, and non-participative observation where I simply observed the household environment in the context of blackouts. Apart from giving the respondents an opportunity to express how they experience electricity supply disruption; in-depth interviews also give me an opportunity to gain further clarity and dig deeper into responses with an aim of extracting some meaning from the responses. Data was collected from sixteen households in two phases over a period of four months. In the first phase, I interviewed all sixteen households, with the help of block leaders from Area 49 and Area 24. The second interview was more like a follow up interview, a deep immersion into the household's experience of blackouts. The aim was to understand the household's energy choices in the context of blackouts and the logic behind these choices. Deep immersion into the stories of these households ensured the collection of rich, meaningful data and a greater understanding of their household energy choices in the context of

blackouts. This second phase, however, was a mix of face-to-face interviews and phone interviews due to corona virus prevention measures that were implemented in the country during the interviews.

To complement the primary data collection methods, I used non-participative observation, auto ethnography, and online ethnography. Non-participant observation was mostly used together with in-depth interviews and deep immersion to get a deep understanding of the way people experience electricity disruptions. I went to see the households and observe how their spaces have been configured and reconfigured in response to blackouts; how people prepare for and navigate around electricity supply disruptions. Auto-ethnography was used as way of putting my personal experience of disruptions into conversation with the study. Denzin and Lincoln (1998) refer to autoethnographic research as research that is done by the recollection of important events in a person's life through the process of account making. As someone who has experienced blackouts before, I used some highlights of my experiences of blackouts to compliment and clarify my study findings. Online ethnography was mainly used to understand the nature and extent of blackouts in Lilongwe. I used ESCOM's Facebook page as this is one of the platforms where information concerning blackouts is relayed to the blackouts. Drawing from Kai Khiun and Natalie (2015) who used online ethnography as a method to study the use of social media to pursue citizen aspirations, I also used ESCOM's Facebook page to track some of the comments that people made about electricity disruptions in their area. Kai Khiun and Natalie (2015) acknowledge that the internet has become an everyday platform for communication. Wherever possible, and with permission from the households, photographs were taken to compliment the in-depth interviews.

Data was collected from households in Areas 49 and 24 about their experience of frequent and uncertain blackouts. What happens when electricity supply is disrupted irregularly? How does it affect their livelihoods? How do they cope? Here, I was also interested in finding out how households know about disruptions. What is their experience of ESCOM's load shedding schedule or electricity management plan and the reality? If electricity disruptions are not in tandem with the electricity management plan, how do they navigate around the disruption? Through this interrogation, I learnt that electricity disruptions have disrupted the everyday household space, and everyday life in numerous ways. Among other things, households find it difficult to cook, to iron, or to entertain themselves on the television. Those households with small scale business operating on their premises have also been disrupted.

I also went out to find out how people strategize to access electricity and how they navigate around the disruptions. I investigated both individual and collective strategies here. How do they cope when electricity supply is disrupted? Do they use alternative sources of energy? What are the alternative

sources they use? What is their experience of the alternative sources? How and where do they access these alternative sources? Here, I found out that households do not just sit back and wait for power to come back on. They plan, and they strategize around the blackouts. Some households adopted multiple energy infrastructures, patching them together, or switching between them to what works best in the context of blackouts. Other households have had to reconfigure themselves and their spaces to accommodate the power cuts.

Management and analysis of the data was done manually through transcription, translation and categorizing into themes. This was useful in getting to really know the data. It also helped me streamline the analysis process because I was able to pick out and only work with the important data. Research data was transcribed and, where need be, translated. This process involved transcribing and translating all interviews to English. I then read through the interviews and summarised them while looking for major themes across all data. These major themes were then written down and discussed as sub-chapters in the thesis. Thick description was used to uncover and discuss the realities in as far as people's experiences of electricity supply disruption is concerned. Thick description was particularly important for this research as I expected to get different narratives from research participants.

Chapter 4: Electricity Blackouts: Disruption to Everyday Life in Lilongwe

“Power outage is quite common in Malawi. On Tuesday night, I have experienced the longest period without electricity; power went off from 2PM until 10PM (8 hours!)... If you happen to have a full day with electricity, expect the next day to be bad. Surprisingly, I have come up with tips to not be out of battery for my devices; whenever I have the chance, I leave my laptop connected and when power is out, this is where I will be relying on the battery; same for my cell phone and iPad... But then, what do you do with the groceries that you buy when the fridge isn’t working? Well... I freeze everything! So, when the power is out, because it’s frozen, it won’t go bad as quickly as it would when store between 2-8°C and usually, the power comes back in time and the ingredients are safe. I also try to not buy too many ingredients at the same time as I never know when the next power outage will be...” (Yourk, 2018)

4.1 Introduction

The above quote is an excerpt from a blog written by Julia Sokunthea Yourk about her experience of frequent and irregular blackouts in Lilongwe. Though it is a mouthful, what comes clearly from this snippet is that these blackouts are prolonged, sometimes unpredictable, and extremely disruptive in nature. It is from this point that I begin my exploration of the experience of blackouts in Lilongwe using stories from research participants. The aim of this chapter is to bring to light the under-explored disruptive nature of blackouts at household level in Lilongwe city. I achieve this by focusing on and sharing the stories and experiences of nine households in Lilongwe. Covered under the umbrella of ‘the experience of blackouts in Lilongwe’, the stories encompass the experience of waiting for power to come back on, and the experience of living in constant expectation of power to go out. The chapter basically answers the questions, how are households affected by blackouts? What do people do when lights go out? How do they keep their household activities going? How do they cope? The sections that follow explore the experience of blackouts by looking into stories of how blackouts have been normalised in Lilongwe; how people spend their days in constant expectation of blackouts; the chaotic nature of blackouts and its manifestation at household level through chores, and household businesses.

4.2 Persistent Experience of Blackouts: The New Normal

I started each interview with general questions on household demographic information and housing histories. One of the questions on this section was about the respondent’s perception of their house, and their residential area in general; why they moved to the residential area, what they like about the place, and the challenges of living in the residential area. I was not surprised to learn that the common challenge across the board was constant electricity disruptions. Sitting on her veranda, Rhoda, a

business lady with one child, recalled the days of her youth in Rumphu district where there were no electricity supply disruptions.

“We did not have these problems in Rumphu. I was born there; I have lived there all my life. I don’t recall any blackouts. I found this problem here. It’s very bad. I wouldn’t mind going back to Rumphu. That place is a wonderful place” reminisced Rhoda, slowly, gazing to the skies in the process

Rhoda moved to Lilongwe in 2017 after she got married to Michael who was already residing in Lilongwe at the time. They now share a plot with two other houses in Area 24. Constructed using burnt bricks and iron sheets, Rhoda and Michael’s house is the first house you see once you walk into the plot. She has a 1-year-old son and runs a cloth selling business which operates from her home. With a baby and a business operating from home, Rhoda spends most of her time in her house. As such, Rhoda and her baby have had a full experience of electricity supply disruptions at household level. She told me a story of the time when the household had no food for two days because maize mills in the area were not operational because of prolonged power cuts.

“... that week, we had no electricity during the day. We only had electricity at night between 11pm and 4am. We did not have food. After two days of waiting, I decided to go to Area 23. I heard there was a maize mill that runs on diesel there... My husband came with his bus and escorted me to Area 23” said Rhoda

I, and many other Malawians I believe, could easily relate to Rhoda’s experience, knowing how much Malawians love and value nsima, a staple porridge made using maize flour. It must have been a very depressing experience to not have maize flour in the house. Rhoda went on to share with me how her husband is also affected by the electricity disruptions.

“He leaves the house without drinking tea sometimes. He usually leaves at 5am, and if there is no electricity, it becomes a problem. That means we need to use a charcoal stove, which takes time” explained Rhoda, as she recalled her husband’s experience of electricity supply disruptions.

The nature of Michael’s job requires him to get up very early in the morning, between 4am and 5am. For one who gets up at this time, using an electric kettle or stove to prepare something to eat would be ideal as it saves a lot of time and energy as compared to charcoal or wood. But if there is no electricity, one is forced to use alternative methods, as is the case with Rhoda’s household. This can be very inconvenient at times. A charcoal stove requires more time as compared to an electric or gas stove.

Throughout the interviews, I got the sense that people are used to electricity supply disruptions now. One of the signs is people's willingness to permanently go off grid, like one Mrs Mwamlima who is willing to switch to solar electricity. This is not out of a desire to use clean energy sources as is the case among other people, but primarily out of a feeling of hopelessness and a lack of belief that things will be okay again due to the persistence of blackouts in Lilongwe. Rhoda also explained to me how she now makes sure her house does not run out of candles and charcoal.

"We are used. We just make sure there are candles and charcoal in the house all the time" said Rhoda after she was asked how she feels about the disruptions.

This is now the case with a lot of people in the country. Stocking up of candles and charcoal, keeping torches, generators, and turning to the old ways of charcoal irons and charcoal stoves has now become the order of the day. In line with this, I had an interesting chat with Phillip during one of my interviews. Sitting on his couch, Phillip said at 27 years of age, this is the only life he has known. He recalled the days of his youth when he would go out to play at night under the moonlight with children from neighbouring houses after an electricity cut off. The children on the block would then shout and dance *'ayakaa! ayakaa! ayakaa!'* (Its back on! its back on! Its back on!) when electricity comes back on. So, to Phillip, though he is affected by the electricity disruptions in so many ways, this is not new to him. This has been the case for as far as he can remember. Phillip is now 27 years old, working with Old Mutual, and blackouts have now become a part of his life. He has learnt to live, survive, and get his work done in such conditions.

This normalisation can also be seen in people's reluctance to engage ESCOM on the matter. None of the people I interviewed have engaged ESCOM in the past or are willing to engage ESCOM in future. The reasons they give vary and range from them not having any hope that things can change, to them not seeing the need to engage ESCOM.

4.3 Expectation of Blackouts

Blackouts have been normalised in Lilongwe city and beyond. Throughout the year, ESCOM manages electricity supply using a load shedding programme that ranges from 2 hours per day during some months and 16 hours per day in some months, disrupting businesses and livelihoods in the process. People are so used to blackouts that a day without one brings a sense of uncertainty and surprise as much as a day with frequent and irregular blackouts. They go about their day-to-day activities while expecting a blackout at any moment.

I conducted most of my interviews at a time when there were no blackouts in the city, as, experience tells me, is always the case in the months leading to a general election. To lay the foundation, the

country was preparing for a fresh election exactly a year after the 2019 presidential election was nullified by the courts. But despite having a constant and reliable supply of electricity for over a month, people still had a feeling of uncertainty, of not being sure if what they were experiencing was real, and not sure how long it would last or what tomorrow would bring. A feeling which I call the 'expectation of blackouts. The state of expecting or looking forward to a blackout. This was a common feeling throughout my interviews with residents of Lilongwe city. A couple of weeks before, people were experiencing frequent blackouts daily.

The constant expectation of blackouts has put people's lives on the edge. People are forced to prepare their households for a blackout at any moment throughout the year. Depending on financial capability, household composition, and household activities, these preparation strategies are different among different households. For some, this means stocking up on candles for lighting, charcoal for cooking and heating. For others, this means twitching their daily schedules to reduce the impact of electricity disruptions. This involves ironing as much as you can while you still can, buying fewer fresh foods, or making sure their electric gadgets are fully charged at work.

4.4 Chaotic Nature of Blackouts

Unlike other countries, blackouts in Lilongwe can be unpredictable, and irregular. On some days, electricity disruptions are regular, and households, who have access to newspapers, the internet and radio can work with and use an ESCOM load shedding schedule to plan. But other times, the load shedding schedule, assuming there is one, says something else while the reality of blackouts on the ground is something else. This nature of blackouts was first brought to my attention by Lucy as she tried to explain to me how she prepares for a blackout. Lucy used the word 'chaotic' to describe this kind of load shedding.

"They put it in the newspapers sometimes, 6 hour rolling power cuts, it is orderly. But then it becomes chaotic. 11 am, you do not have electricity, 2pm you have electricity, then 4pm you do not have electricity" said Lucy

When load shedding is this chaotic, it becomes very difficult to plan because you are not sure about the time you will have electricity or how long you will have or not have electricity. This has been one of the biggest challenges to Lucy in as far as electricity disruptions are concerned. Alexander Chigalu also expressed his concerns on the issue.

"At least now they communicate through newspapers, radio, Facebook, and WhatsApp, so we know exactly when it is going to happen and for how long. Planning becomes simple... when

we don't know, it's a challenge. If we have alternatives like charcoal, we are lucky, if not, it's a challenge", said Alexander

Alexander narrated this experience as a working-class individual who has also been affected by this chaotic nature of blackouts. He is an internal auditor at Farmers World. He lives with his young brother, Mzati, who is a primary school student. Apart from using electricity for cooking, heating and lighting, there are times when Alexander works at home in the evening, and he needs electricity to power his laptop and cell phone. He also loves to play video games or watch football matches when he is free.

This chaotic nature of blackouts has also had an impact on the decision's households make around the foods they buy and keep in their homes. Earlier in this chapter, I introduced a snippet from a blog where the author talks about their food choices as impacted by electricity supply disruptions in Lilongwe. In that text, we see the author highlighting that they avoided buying a lot of food at once in fear that it may go bad as a result of the blackouts. Respondents from my research also talked about how they do not keep a lot of food in the house because it goes bad with the prolonged blackouts.

"I buy food daily now. I don't want my food to go bad in the refrigerator" said Mr Ndlovu who use to buy food in bulk but changed his strategy because of prolonged blackouts.

As for Dave and his household, most of the foods they buy do not need to be refrigerated. This is the strategy that they have adopted to ensure that their food does not go bad due to the prolonged blackouts.

"We would rather keep more beans, groundnuts, eggs, and tinned foods. They do not need to be refrigerated" said Dave.

Other respondents make sure they freeze all their fresh foods such as meat and fish. According to Lucy, food can last for a couple of hours in the refrigerator during the blackout so long as it was well frozen before the blackout.

4.5 Accessing load shedding schedules

Newspapers

One of the ways through which ESCOM shares load shedding schedules is through the local newspapers. Respondents who can afford and have got access to local newspapers are able to see load shedding updates in the papers. Some people, however, do not see the point of buying newspapers when they can access the news on their phones.

“I rarely buy newspapers. I see everything on the internet” said Isaac when asked whether he follows ESCOMs load shedding schedules in the newspapers. Others do not buy newspapers because they simply cannot afford to buy newspapers. One local paper now costs around MWK700.00. One example is Taonga who, during our chat, clearly expressed that he does not buy newspapers because he cannot afford them. Taonga has got his own strategy of knowing when the next disruption will happen. This strategy will be explored in a later section.

Community support: Neighbourhood WhatsApp Groups

Social media platforms have become one of the key media of interaction, communication, and mobilisation in this internet age. With the number of internet users growing by the day, people and organisations can reach out to a lot of people via social media. ESCOM, for example, uses Facebook and Instagram as communication channels to reach out to its customers across the country. In addition, one of the contacts on its Customer Help Desk is a WhatsApp contact.

At neighbourhood level, social media platforms such as WhatsApp and Facebook are used to convey information to households and to promote and maintain a sense of community. WhatsApp or Facebook groups are created for households within one residential area, block, or street, and are used for purposes ranging from social interaction, to creating and maintaining a sense of community.

Research participants emphasized the importance of these groups even with regards to blackouts. During my interview with Lucy, we had to break for 5 minutes because she had to respond to a message on the neighbourhood WhatsApp group about a security issue that was being discussed. Households in her neighbourhood also access load shedding schedules in a similar manner.

“There is a neighbourhood WhatsApp group where we get all load shedding information. It is also through this same group that we get to know if a blackout is due to load shedding or just a mere fault” said Lucy

According to Lucy, one of the residents in the neighbourhood posts a simplified version of the load shedding schedule on the WhatsApp group. This enables people who cannot buy newspapers or listen to the radio to access load shedding schedules on the group. My efforts to meet this individual proved to be futile.

Phillip, who also benefits from similar initiatives spoke highly of his neighbourhoods WhatsApp group. In his explanation, Phillip highlighted the point that households in his neighbourhood rely on one another, sharing load shedding updates and any other information relating to blackouts.

“As a neighbourhood, we rely upon one another. We have a WhatsApp group where we update each other on load shedding schedules... It helps, it is a very good initiative” said Phillip while scrolling down his WhatsApp, looking for the group.

On the downside, load shedding updates on WhatsApp can only be effective if actual power cuts are in tandem with the schedule. They become useless when disruptions are irregular, uncertain and chaotic. When it's chaotic, people simply live in the now. They go by whatever the situation is like at that moment. The pictures below are screenshots that were taken from one residential area's WhatsApp group. Residents can be seen sharing load shedding times for the week in one of the screenshots. The other is a bit different, but still around the same problem. In that one, residents are enquiring from people in neighbouring streets to find out whether they are also experiencing a blackout. It seems this was one of the blackouts that come while residents are not expecting.

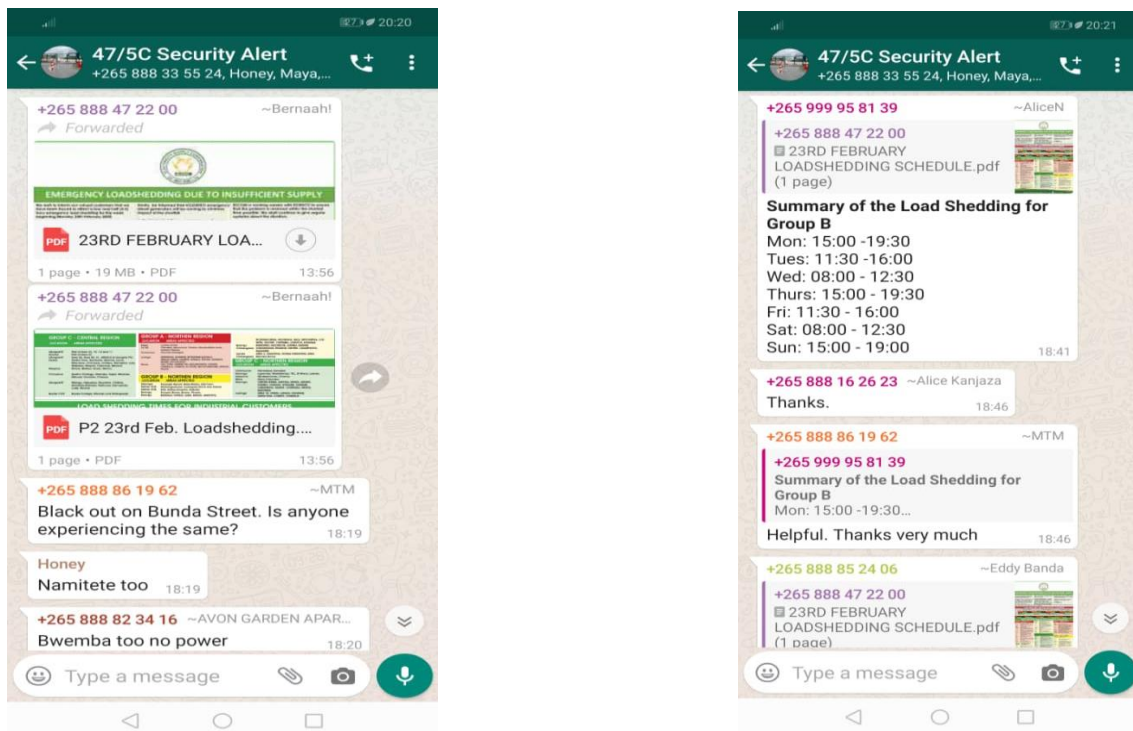


Figure 5: Neighbourhood WhatsApp communication about blackouts

Source: Primary Survey, Author, 2020

4.6 Materiality of blackouts at household level

One key objective of this study was to learn how blackouts manifested and experienced at household level. How chores are affected, and how the general living conditions are configured and reconfigured by frequent blackouts. Here, I will start by narrating Lucy's story. To immerse myself deeply in Lucy's stories and experience of disruption, I visited her twice in that week. On the second occasion, Lucy

was a little bit calm and relaxed. Turning away from her frustrating experience of having a refrigerator damaged, Lucy talked more about how other members of the household are affected by electricity supply disruptions and how household activities and chores are affected. She shared with me stories of how her children have worn wrinkled clothes to school before because they had forgotten to iron their uniforms the previous day and they woke up to a power-less house that morning. She also talked about how her families love for entertainment and television led them to buy a generator.

“We bought a generator so we could keep the family tradition of watching TV together each day after supper” said Lucy as she walked me to go see her generator.

Many households can relate with the entertainment deprivations that come with electricity supply disruptions. When there is no electricity, households cannot watch TV or listen to the radio, unless if they have alternative sources of power. Lucy wrapped up her experience of disruption by sharing a story of a time when her house almost caught fire after a candle burnt a part of a curtain box it was standing on. The incident happened in 2019 when they we had load shedding in the evening, between 5pm and 10pm. Lucy and her husband had to go to a home cell church meeting, and their daughter stayed at home. They were using candles for room lighting, and one of the candles was placed on the curtain box in the lounge. After a couple of hours of sitting in lounge, waiting and bored, the daughter went to her room and subconsciously fell asleep. The candle burnt part of the curtain box. Lucy and her husband got home and found the lounge filled with smoke. They were very lucky on that day. They got home just in time. It could have been worse.

Proceeding with my interviews, I was lucky to meet Mr Ndlovu who gave me a different dimension of the household experience of electricity supply disruptions. Mr Ndlovu talked about electricity disruptions through the lens of his 4-year-old granddaughter.

“Load shedding sometimes lasts for 12 to 16 hours. I live with a very young child and that is not conducive for the development of the child” said Mr Ndlovu

Mr Ndlovu was speaking from a 21st century technological era, 4th Industrial Revolution perspective where television and the internet are a basic need. With constant electricity supply disruptions, children do not have access to the much-needed exposure to the digital world. Children end up missing out on important educational programs on television and instead turn to the old primitive ways of life without technology. This line of thinking brings me to a chat I had with Dave Tambala whom I met at his brothers’ home in Area 49. Dave has just completed his undergraduate studies and is usually on his laptop searching for jobs opportunities online. This is the case with many youths today who need

the internet to search for jobs and career opportunities. With load shedding, Dave finds it difficult to go about his business.

“If I want to use my computer, I usually go to the National Library at City Centre” said Dave while sitting in his bac garden

To travel to Lilongwe City Centre from area 49, you either use two minibus taxis or take a 30-minute to 40-minute walk to Area 18 and get into a minibus taxi that goes to the city centre. This is a journey that costs, on average, MWK2, 000.00 to and from. I cannot generalise to say this is what most youths go through. My task here is simply to tell a story of one of the people who are affected by the constant electricity supply disruptions in Malawi.

The sections that follow are stories of the experiences of blackouts of different individuals and households. The stories show that each household has got a different and unique experience of blackouts, depending on the demographics of the household, and the livelihoods of the households. Nevertheless, despite the differences in experience, the stories show that blackouts have had a profound impact on households in Lilongwe.

4.6.1 Mrs M: My chickens need light and heat

One of the major impacts of electricity disruption is that it negatively affects people’s livelihoods. Small scale home-based businesses are a prominent feature among Malawians households, especially in the middle- and low-income areas. For reasons such as high unemployment levels, home-based small-scale business activities are common in Malawi. People are involved in various business activities including fresh vegetable production, chicken farming, egg production, and fast-food outlets just to mention a few. Of late, some professionals such as carpenters and welders are also operating from their homes, possibly to reduce production costs.

To expound on this further, I will horn in on Mrs M’s household as it has such a business running at home. I met Mrs M at her home in Area 49 during the second week of my interviews. Her house is the first on the street, with a small placard by the gate notifying visitors that the place has got eggs and chickens for sale.

Mrs M is a retired typist, currently doing a chicken rearing business at her home in Area 49, mainly for egg production. She is married to a civil engineer who spends most of his time supervising projects across the country. At the time of the interview, her husband was in Chikhwawa district, where he is part of a team of engineers that are constructing/maintaining some bridges on Shire river. Her husband usually comes home every weekend or every second weekend depending on the workload. The entire household comprises of 5 members, her husband, her two nephews who are both in

secondary school, and her 27-year-old daughter who had visited her father at the time of the interview.

Mrs M ventured into the chicken rearing business both as an activity to keep herself active in her retirement years and a strategy to boost her household's income through the selling of eggs and manure. She has got a big backyard where she constructed two chicken pens and a small vegetable garden.

We walked to the chicken pens in her backyard where I saw two big structures that were constructed using burnt bricks for the walls and iron sheets for the roof. The two structures lie side by side, with chicks on the left and the egg laying chickens on the right. The faces of the structures have got huge windows for ventilation and doors that are used by the chickens to access the yard for food, and space. *"The chickens need enough light during the day and some light at night for both light and heat"* said Mrs M, as we walked around the pens trying to get a better view of the chickens.

Chatting about the chickens, Mrs M explained how her business is affected by the constant electricity disruptions. During load shedding, she struggles to keep the chickens warm and healthy. The open design of the pens

she gets her solar bulbs and puts them in the chicken pens. There have been times when she has had to go out at night, into the dark scary backyard to take care of her chickens need for light and heat.

"I also have some chicks; they need some light and heat. So, we are forced into coming up with measures to take care of our chicks in the event of a blackout. I have lost several chicks as a result of these blackouts... Sometimes I use my charcoal stove to keep the chicks warm when there is no electricity" said Mrs M while walking me to her chicken pens.

At some point during the chat, Mrs M recalled a time when the health of the chickens was rapidly deteriorating, resulting into low egg production and sometimes death because the neighbourhood had no electricity for up to 16 hours per day. Normally, she collects at least 200 eggs per week. But during this period, egg production went down to as low as 80 per week. A reduction in the production of eggs meant a reduction in household income. Mrs M's chicken pens are now equipped with solar light bulbs, that are mainly used when there is a blackout. The picture below shows some of the chickens in a pen behind Mrs M's house.

This is an example of how electricity supply disruptions have impacted on people's livelihoods across the country. Disruptions to electricity supply result into disruptions to these important income generating activities which consequently affects the household in numerous ways. The picture below shows some of the chickens in a pen behind Mrs M's house.



Figure 6: A light bulb in Mrs M's chicken pen
Source: Primary Survey, Author, 2020

She wrapped it all up with a funny story that summarised her experience of electricity supply disruptions. There was a day when they had a blackout in the house. They thought it was one of ESCOMs load shedding programs, so they proceeded with their business. They cooked using charcoal that day. Her husband came home 9 hours later and was surprised because he saw lights in all the houses along their street on his way back from work. Upon enquiry, he found out that they had run out of units. So, they spent that whole day without electricity. It had to take her husband to help them realise that it was not load shedding.

4.6.2 Unplanned for trips to access electricity: Dave's journeys to the barber

With blackouts comes the inability to use electronic devices such as computers, and phones. People with the financial muscle navigate around this by purchasing alternative power sources like power banks, or extra batteries for such emergencies. But how does one deal with this problem in the absence of the alternatives? To address this question, I will narrate the experiences of Dave, one of the research respondents who has also been affected by blackouts.

Dave is a 32-year-old living in Area 49, Lilongwe. He has just completed a bachelor's degree at Lilongwe University of Agriculture and Natural Resources (LUANAR) and is searching for a job. He lives with his brother, Felix, who was away on a business trip at the time the interview was conducted. Since he spends most of his days at home, on his phone and computer, job-hunting, Dave expressed how crucial

it is for him to have an uninterrupted electricity connection in the house. He uses electricity to charge his phone and power his computer, which he uses to surf the net for job and other opportunities.

In the event of a power disruption, Dave travels to the National Library at Lilongwe City Centre where he can access a computer or connect his laptop to a power source. This is a journey that costs him money more than K2,000 including the library internet access fee. *“It is hectic and costly, but I do not have any other choice”* said Dave, lamenting about the trips to town. In 2018, when the city had blackouts that lasted for over 16 hours, Dave made these trips to town almost daily. *“I had just completed my bachelor’s degree then, and I was very desperate for a job... I travelled to town almost every day... My brother gave me lifts sometimes if he is going the same direction. But most times, I used public transport”*. The bus stop Dave uses is not very far from his place of residence as his house is just behind the Kaunda main road to town. We were able to hear motor vehicles on the road from his veranda.

On days when he did not need to use the laptop, Dave would simply sit and wait for power to come back on. In explaining his experience of waiting, Dave said he usually reads a newspaper, or sleeps, if he is not out chatting with the neighbours. His brother is also affected by the electricity disruptions. According to Dave, there are times when Felix, his brother, must change plans because power went out unexpectedly. On other occasions, Felix leaves the house unwillingly just so he can access electricity somewhere and finish up a task he was working on.

One other interesting story that Dave shared with me was how he gets his phone battery charged during load shedding. Dave walks to a nearby barbershop whose barber charges people’s phones at a fee of MWK100.00 per phone. The barbershop is located some two streets away from Dave’s street. We managed to pay the barber a short visit just to see how he does his phone charging business. I saw an extension that was filled with different kinds of cell phone chargers. He was not charging any phone at that moment, as there was no load shedding during this period. The number of phone chargers and charging cables that I found in the barbershop, however, made me appreciate how big a business cell phone charging has become, and the subsequent cost on the citizen as a result of the constant electricity disruptions.



Figure 7: A local barbershop where people charge phones.

Source: Primary Survey, Author, 2020

The barber uses car batteries as a source of energy during an electricity disruption. One of the batteries can be seen under the table. He connected his cables in such a way that the batteries are charged using ESCOM electricity when there is power. According to the barber, phone charging generates a considerable amount of income as many people go to him to charge their phones during load shedding.

“People come with their phone, and Bluetooth speakers during load shedding... I make a good amount of money from this” said the barber as he explained to me about his phone charging business.

4.6.3 I can tell when the next blackout will happen: Hopkins prediction technique

“I can tell when a blackout is going to happen tomorrow or any other day... I know that if power went out in the morning the day before yesterday, in the afternoon yesterday, then chances are, it will go out in the evening today... it always happens like that” said Hopkins.

The main medium through which ESCOM shares load shedding schedules with the public is through the newspapers. However, for financial reasons, not everyone has got access to newspapers. During one of the interviews, Hopkins, a secondary school teacher by profession, said he cannot afford to buy newspapers daily. Instead, he relies on the papers the school purchases each day for the headmaster’s office and the library. His sister, who works as a cashier at Shoprite also pointed out that newspapers are expensive, hence her unwillingness to buy. The cost of one newspaper is equivalent to the amount of money she spends on transport to and from work each day.

It is easy for people who can purchase newspapers to access information about load shedding in their area. Interestingly, people have devised strategies to figure out a load shedding schedule even in the absence of newspapers. One of such ways is to determine exactly when power will go out, depending on the time power went out in the past two or three days. One of the respondents who uses such a technique is Hopkins. Hopkins keeps mental records of electricity cut off times in his neighbourhood for a couple of days. He later deduces a pattern from those mental records that he then uses to predict future cut-offs. *“There is always a pattern”* said Hopkins. *“If we had a blackout in the morning yesterday, and in the afternoon today, chances are that lights will go out in the evening tomorrow”*, explained Hopkins.

In similar fashion, Taonga enquires from neighbouring areas to come up with a load shedding schedule for his area. Taonga has lived in area 49 all his life, experiencing blackouts since childhood. Having been a victim of electricity supply disruptions for a very long time, he has come to understand that electricity disruptions alternate between different residential areas across the city. So, if there is a blackout in the neighbouring area in the morning, he knows that his area will have a blackout in the afternoon, and so on.

“People who buy newspapers can check the load shedding schedule. But we don’t buy newspapers. So, we just work on assumptions and calculations. Sometimes we ask our friends from other areas like area 18. We know that if there is a blackout at Area 18, then we won’t have a blackout.”, said Taonga.

Judging from Taonga’s statement above, people want to know about load shedding and inability to access newspapers is not a barrier. These are some of the skills that residents have developed in order to navigate around constant electricity disruptions without access to ESCOM communication.

4.7 Coping with Darkness

For those who can afford, buying torches, solar units, or generators can help with lighting during blackouts. But not everyone can afford. How do the people who cannot afford these alternatives deal with a blackout? One individual who helped me understand the experience of living in the dark was Mrs Mwamlima. She welcomed me into her spacious lounge where we had a chat about her experience of electricity supply disruptions over a bottle of Fanta that she had offered me. Mrs Mwamlima has not lived in Lilongwe her entire life. She moved in the year 2000, to follow her husband who was working with an engineering firm in Lilongwe. She also took some time to talk about how her previous place of residence was free from electricity supply disruptions.

“This never happened in Mzuzu. I was shocked when I came here, and it gets worse by the year” said Mrs M with a soft and calm tone.

Mrs Mwamlima talked passionately about how electricity supply disruptions have affected her household; how they are forced to cook using charcoal and how they resorted to buying solar light bulbs. Her major concern was on security. She usually spends most of her days in the house with her nephew as her husband now works out of town. She becomes very afraid when there is no electricity at night. Mrs M has got some solar powered light bulbs in her lounge and kitchen. But they only last for a short period of time, usually 3 to 4 hours. When a blackout is prolonged, she stays in the dark up until lights come back on.

“It becomes very dark out there. I usually just lock up and go to bed...” said Mrs M while pointing to her tress covered backyard.

According to her, thieves find opportunity in darkness. This was also a hot issue during my chat with Lucy, a resident of Area 49 and mother of three children. Lucy brought to my attention, two cases where houses were broken into during load shedding at night. Lucy was very bitter as she said this, constantly pointing out that these house break-ins could not have taken place if there was no blackout on the day.

“Security in the neighbourhood has been compromised. Recently, 2 houses were broken into during load shedding” said Lucy.

As she was saying this, she was searching through her WhatsApp neighbourhood group chats to find out the exact dates when these robberies took place. Unfortunately, she was not able to find the details she was looking for on WhatsApp. Efforts to meet and chat to the households whose houses were broken into also proved to be futile. Similar concerns were also raised by other respondents during the interviews. Dave, despite not being a victim of a break in himself, raised the issue as one of his fears in the event of an electricity disruption. He is worried that during load shedding, they cannot use security lights, and thieves may see an opportunity in that.

4.8 Frustration: Damage to Household Appliances

Despite have a constant expectation of blackouts and striving to always be ready for a blackout, people have had their fair share of frustration because of blackouts. Here, I will use stories of two residents who had their household appliances damaged because of blackouts. I will then wrap it up with a story of one other respondent, Phillip, who has his own frustrations with blackouts.

I was very unfortunate that, due to good rains we were told, there was no load shedding at the time I was conducting my interviews. But memories of past experiences of electricity disruptions were still

fresh and respondents were still bitter. This came out clearly in the chat I had with Lucy who had no kind words for ESCOM as she lost a brand-new refrigerator because of blackouts.

“They are not serious. They are very incompetent. One reason after the other. All year round” said Lucy who constantly raised her voice in anger.

Lucy, a wife, and a mother of three, is currently residing in Area 49. She moved to Lilongwe from Blantyre in 2015 after husband, Steven, found a job in Lilongwe. Lucy is a banker and Steven works with Auction Holdings Limited at Kanengo Industrial site. Together they have 3 children, Zizwa and Tadala who are in high school, and Thembi who is in primary school. They live in a 4 bedroomed house that they have recently purchased. It has got a lot of outdoor space, which has a 2 bedroomed flat which they let out and a lockable garage which is used as storage space. We were sitting in the lounge at the start of our discussion but later walked to the kitchen and storeroom where she showed me a refrigerator that was damaged by irregular electricity supply disruptions. Lucy was very furious as she walked me to a storeroom, behind her house, where the refrigerator was kept. She has tried to get it fixed but to no avail. She keeps it with hope that she shall get it repaired one day.

“We lost a refrigerator in this house. One day, the refrigerator just changed its sound... I know it was because of the power cuts... These things need to be connected to power all the time you know... They have gas, I do not know what happens, but I know a refrigerator shouldn’t become warm. It gets damaged” said a clearly agitated Lucy who was pointing towards the spot where her refrigerator used to stand.



Figure 8: Lucy's damaged refrigerator stored in a storeroom.
Source: Primary Survey, Author, 2020

In line with Lucy's story is a chat I had with Mr Ndlovu about his damaged stove. Mr Ndlovu is a retired civil servant who has worked under the ministry of labour for over 20 years. Together with his wife, they are now into commercial farming. They have a farm in Mchinji. Their household is comprised of the two of them, their lastborn son, and their grandchild. They have lived in area 49 since 1998, switching houses two times within the same residential area.

Mr Ndlovu has also been a victim of frustration because of damaged household appliances. At one point during the interview, he took me to his kitchen where he showed me a stove with two plates that do not work. According to Mr Ndlovu, there was an irregular electricity disruption on the day the plates stopped working. Though he cannot prove it, he is very sure that the damage was caused by the electricity disruption.

"My stove is brand new. 2 plates do not work now. They just stopped working after an irregular power cut one day" said Mr Ndlovu pointing to his cooker.



Figure 9: Mr Ndlovu's damaged stove
Source: Primary Survey, Author, 2020

I could understand the bitterness and anger in Lucy and Mr Ndlovu as I come from a household that has had electrical appliances damaged after a series of irregular power cuts. In 2009, our television set got burnt after an electricity supply disruption in our neighbourhood. On this day, electricity went on and off multiple times in a space of two minutes. It was later discovered that 4 other houses on our street also lost some of their appliances. The households lodged a complaint with ESCOM and had to

attend a series of meetings with ESCOM and the courts. Three years later, ESCOM denied responsibility, after the households failed to prove that the damage was a result of electricity disruptions that were beyond their control.

Let me finalise this section by bringing in Phillip who has a different kind of frustration than that of Lucy and Mr Ndlovu. Phillip's frustration is to do with his inability to plan, and his inability to work from home. An Infrastructural analyst by profession, Phillip's work sometimes requires him to work from home, send documents to different people and coordinate with international partners at odd hours due to time differences. I met Phillip at 6pm as he spends his whole day at work. He only gets home in the evening. He lives in a 2 bedroomed house with a friend. His lounge is equipped with a television set, a sound system, and couch. Across the room, an area designed as dining space, is computer desk where he does his work if he is working from home. On the desk is a laptop computer, a small printer and a lot of papers and files.

Initially, Phillip could not clearly express his experience of electricity supply disruption. I guess the reason is that he spends most of his time at work or he simply could not understand my questioning. But he later recalled a few occasions when he could not work from home because of load shedding.

"I remember a day, last year, when my boss asked me to send him some documents I had been working on via email. The documents were in my laptop, and I could not use it because it had no battery power and there was no electricity... There are also occasions when I get some work from the office to finalise at home, but I fail to do it because of load shedding," said Phillip

This was quite interesting to me as it presented me with a different perspective of frustrations with blackouts. When he gets home to a blackout, Phillip usually goes to bed early, hoping to wake up very early the following morning to complete the task he wanted to do the night before. Many other people can share in Phillip's frustration. Getting home excited and eager to get something done, only to find a blackout. Alexander, an internal auditor by profession also concurred with Phillip on this experience. Alexander also said that an electricity disruption that happens at night usually sends him to bed early, leaving incomplete work on his table. If it happens during the day, Alexander then goes out in search of electricity so he can work.

4.9 Conclusion

Summing up, a discussion of the everyday experience of electricity disruptions in Lilongwe has brought to light important stories and experiences that are often overlooked when thinking about the urban experience in Lilongwe. For some residents, living in Lilongwe means living in constant expectation of blackouts. For others, it is about living with the chaos and uncertainty of irregular blackouts. In this

chapter, I have also established that the everyday experiences of electricity disruptions differ depending on household demographics, hence it is important to understand the household context in the quest to understand the experience of disruptions. Through the different experiences, households have forged different strategies to navigate around blackouts. In the next chapter, I discuss the different strategies that households employ to navigate around blackouts, showing that they are different depending on household context, and that the strategies have been normalised.

Chapter 5: Juggling Between Modern and Traditional Energies: Strategizing Around Electricity Supply Disruptions

5.1 Introduction

To minimise the impact of electricity supply disruptions, households have adopted different strategies that they employ to navigate around the disruptions. These strategies differ depending on household income, and level of dependence on electricity. The scope of this study does not allow me to interrogate who affords what, but rather to simply explore the various strategies that households have employed to keep the negative impacts of electricity supply disruptions to a minimal. Through this section, I am not only going to show that households have adopted multiple strategies to ensure uninterrupted access to electricity, I am also going to illustrate that these strategies have been used for so long that they are now a norm in most households.

5.2 Choices households make around household appliances

Electricity supply disruptions have had an impact on the choices people make around household appliances. Households tend to purchase appliances that rely less and less on ESCOM supplied electricity, as opposed to those that primarily depend on electricity to function. For some, this means going back to the old traditional ways, and disengaging from ESCOM all together. The type of appliance that households go for is, among other things, influenced by the household's financial capacity and the extent to which the household utilises the appliance. This section outlines some of the household appliances I found in people's homes, that are being used as a cushion to the impacts of electricity supply disruptions.

Charcoal Stoves/Mbaula

Popularly known as '*mbaula*' in Malawi, the charcoal stove has become a popular household appliance amidst the frequent power cuts. It is usually made from pottery clay soil, though the last couple of years has seen a surge in the use of steel to make these charcoal stoves. Telling from the name, charcoal stoves usually use charcoal as a source of heat. Other households, however, use wood, all depending on availability and affordability of either wood or charcoal.

Charcoal stoves are, arguably, the most common alternative source of energy during a blackout mainly due to their affordability and accessibility, as compared to other alternatives such as gas stoves. On average, a charcoal stove costs less than MWK10,000 to purchase, whereas a gas stove costs MWK30,000. With charcoal stoves, household activities like cooking are not disrupted by power cuts. The only drawback is the fact that users must purchase charcoal or wood for these charcoal burners. This is an extra cost on household expenses, that could be avoided by ensuring a reliable supply of electricity.

I started each interview with questions around household appliances, their energy sources, what they are used for, how they are used, and the pros and cons of the energies. One observation I made at this point was how respondents talked about all their modern appliances (refrigerators, stoves, irons, microwaves, TV sets), leaving out the traditional energies like charcoal stoves, charcoal irons. Probing further, I realised that some respondents completely stopped using these traditional energies because they do not experience blackouts now. The others use charcoal only for certain kinds of foods.

“Can you prepare a good chigumu (traditional cake) on an electric stove? No. It needs a charcoal stove” said Lucy

“We use a charcoal stove if there is a blackout. Now... mmm never. Maybe just for beans. But we cook a lot of beans at once and store them in the refrigerator... deep freezer. So, we rarely use charcoal” said Grace

Alex added that the only reason why he uses charcoal sometimes is because he has it. *“I do not use it often just because I have the charcoal. I buy charcoal when I travel out of town. It is something I have always done”* said Alex who now uses an electric stove for cooking, wall panel heater for warmth, and refrigerator for the preservation of his food.

One thing that I found interesting was a photo Grace sent, of a charcoal stove that has been seemingly dumped on top of some old tyres, with other items stacked on top of the stove. This is a clear indication that the charcoal stove is rarely used in the house.



Figure 10: Charcoal stove waiting for a power cut.
Source: Primary Survey, Author, 2020

Follow up questions were asked to find out why respondents are not using charcoal as their primary source of energy. The responses were two-fold. Some said charcoal is expensive as compared to electricity.

“We once used charcoal only for a month and the cost was a little bit higher than the cost when we use electricity” said Naomi who only uses a charcoal stove when there is a blackout.

With a family of six, Naomi uses at least three bags of charcoal per month. Charcoal costs K9,000 per bag, bringing the total monthly cost to K27,000. This, according to Naomi, is higher when compared to the cost of using electricity, which is also less than K30,000 per month.

Phillip also had a similar opinion to Naomi’s, claiming that charcoal is more expensive. Phillip’s family of three uses two bags of charcoal each month, one small bag and 1 big bag which cost them an average of K14,000. When it comes to electricity, the family an average of K20,000 per month, but this includes other uses like television, and lights. Phillip, therefore, concludes that charcoal is expensive because, at that cost, it is only used for cooking and (sometimes) heating, unlike electricity which has many more uses.

“When I budget for electricity and charcoal, charcoal is expensive”, said Phillip.

The others said using charcoal is a lot more involving as compared to electricity. Charcoal requires one to start working earlier, to cater for the time needed to start a fire. Apart from that, the charcoal stove needs to be outdoors as it needs a lot of air to keep the fire burning. As Naomi put it, *“The advantage of having these electric appliances is that they are easy to use, I can cook/iron/bath whenever I want with no effort like when I use charcoal”*. Naomi went on to explain that she is bothered by the idea of using match sticks to start a charcoal fire.

Here, I found a narration Lucy sent, about how she uses a charcoal stove especially when there is a blackout, very useful in helping me understand all that is involved when it comes to the use of charcoal.

“I wake up as early as 5am to get myself ready for work and my children ready for school. The first thing I do is to start a fire on the charcoal stove. I get some charcoal from the storeroom, put it in the stove and start the fire with a matchstick. I then leave the stove outside on the veranda for the air while I do other things... Even after the fire starts, I must add fresh charcoal constantly, to keep the fire burning” said Lucy, explaining what it means to use charcoal.

I also asked about appliances that are critical to them if there is a blackout. This is where all respondents made mention of the charcoal stove that they seemed to have forgotten about earlier. Other appliances that were mentioned here included generators, gas stoves, solar, rechargeable light bulbs.

Mrs M explained how her stove, which uses both gas and electricity comes in handy if there is a blackout. Blackouts were the motivation behind her decision to buy a stove that uses both gas and electricity. *“The severity of blackouts was depressing. I got this stove so I can use gas if there is no electricity”* said Mrs M. The only challenge she has now is the addition of gas onto her household budget. Grace bought rechargeable light bulbs some 3 years ago to minimise the impact of blackouts. She replaces them every year as they slowly lose their energy overtime. *“We use charcoal for cooking, and we have those bulbs that still light up when there is no electricity...”* said Grace.

As for Mr. Banda, charcoal is a standby resource that must be available in the house in case power goes out unexpectedly. *“We always try to get ourselves ready for a power cut, at any moment by making sure there is enough charcoal in the storeroom”* said Mr Banda, a member of staff at exploits university during one of my chats on his veranda. Mr Banda is a single parent raising one son. He also lives with his young sister who is studying at Exploits University. Electricity supply disruptions mostly affect his household when it comes to cooking. To reduce the effects, he uses charcoal for cooking. With enough charcoal in the storeroom, Mr Banda does not worry about blackouts. He knows that at least cooking and heating will not be disrupted.



Figure 11: Household charcoal stoves as alternatives to electric stoves



Source: Primary Survey, Author, 2020

Gas Stoves

Two respondents indicated that they use gas stoves as alternatives to electric stoves. One respondent, Phillip, said that he uses a gas stove only when there is a power cut.

"I have got a gas burner that I use for cooking when we have no electricity. It is easy to use and very convenient" said Phillip

The other respondent, Lucy, indicated that she has permanently switched to gas because she is fed up with the unreliable nature of electricity supplied by ESCOM. Lucy said she came to this decision after irregular power disruptions damaged two plates on her electric stove.

"... it became so bad and chaotic after the elections. That is when we decided to buy a generator. We also have a gas stove now. That's what we use whether there is electricity or not... gas is expensive, but it's worth it, we don't have a choice", said Lucy

Just like charcoal, gas also comes with an extra cost. Phillip, for example, purchased his gas stove a couple of months ago, and purchases gas regularly at a price of MWK12,960 per every 6kgs of gas. This amount of gas lasts him for up to a month or two depending on the frequency of use. Lucy was not sure about the cost of gas as it is her husband who buys gas. But Lucy did elaborate on how electricity supply disruptions forced them into buying a gas stove. She understands that gas is expensive, but it is totally worth it.

Lucy was happy to show me her gas stove. She took me to her kitchen where I found her young sister cooking using the gas stove. We were welcomed into the kitchen by a sweet aroma of some meat in one pot and tomato soup in another pot. *"This is how we cook now, with or without electricity. We are not affected"* said Lucy as she pointed towards the gas stove that was on one of the kitchen counters. According to Lucy, apart from the fact that gas is expensive, she enjoys the experience of cooking using a gas stove. She no longer worries about power disruptions. She can cook at any time.



Figure 12: Gas stoves used by households as alternatives to the grid
Source: Primary Survey, Author, 2020

Charcoal Irons

“I bought this iron in town last year... It even works better than the electric iron. All you need is to keep the charcoal burning... You can never burn your clothes” said Hopekins as he showed me an iron, he bought to use in the event of a power cut.

Hope is a high school teacher who shares a house with his sister, a cashier at Shoprite. They are renting a 3 bedroomed house that has a combined lounge and dining, and a kitchen with a veranda. There is not a lot of outdoor space in their compound. We had a short chat with Hope outside his house about his experience of electricity supply disruptions.

As a high school teacher, Hope feels very uncomfortable wearing wrinkled clothes to work. He wants to be a good example to his students and his colleagues. After a series of irregular and frequent power disruptions in 2018, Hope purchased an iron that uses charcoal. According to Hope, this iron is very affordable and easy to use. *“All you need is 4 or 5 pieces of charcoal... keep them burning and you can iron 3 to 4 shirts”*, said Hope.

The charcoal iron, a predecessor to the modern electric iron, was popular in the 18th and 19th century. It is shaped like the modern electric iron, with wooden handle to prevent heat from flowing to the body. I cannot say these irons are becoming popular again because of the irregular power disruptions as I only found this iron with one respondent. But judging from what Hope had to say about this iron, it is a viable alternative to the electric iron which can only be powered by electricity.



Figure 13: Charcoal irons used by households as alternatives to electric irons

Source: Primary Survey, Author, 2020

Candles

“Get you candles ready, prolonged blackouts are back”- (Nzangaya, 2018)

The above sentence was a headline from a newspaper article informing readers to prepare for prolonged blackouts due to dropping water levels in Lake Malawi and Shire river. What fascinates me about this article is the fact that the author already brings forth a solution to the blackouts, candles. Candles are the most common source of light during blackouts in Malawi. They are affordable and easily accessible through small neighbourhood convenience stores. Respondents in the study also highlighted candles as the most common and viable alternative to ESCOM electricity.

“We also have solar powered light bulbs now that we use together with candles” said Mrs Mwamlima. Mrs Mwamlima uses candles to cater for all other rooms in her house as the solar bulbs are only used in the lounge, dining, and kitchen.

Other respondents also highlighted their use of candles to navigate around electricity supply disruptions. Compared to other sources of light like solar, candles are very cheap, hence the widespread use.

Isaac’s Car Battery System

Its day 4 of the interviews. I am in Isaac’s house. The lounge is equipped with a plasma TV, one sofa set and a coffee table. Some music videos are playing on TV as I chat to Isaac. During our chat, Isaac decides to show me a strategy he employed to navigate electricity supply disruptions. He walks me into the kitchen and then the kitchen storeroom where I see 2 huge car batteries sitting on a steel palate. The batteries are connected to some wires that go up to the roof and disappear behind the ceiling boards. *“This is what I use to light my house and power my television during a blackout”* said Isaac while letting me appreciate the artistry that was before my eyes.

Sitting side by side on wooden pallets in Isaac's storeroom, the old car batteries are carefully connected to wires that then disappear into the ceiling. The system looks very complicated and dangerous at first glance, but it works. The system is comprised of two car batteries that are placed on a pallet in one of the corners of the room. The batteries are connected to red and black cables, that then pass through a mini-inverter and proceed up the wall into the ceiling above. *"The red wire is the positive, it goes there... the black one is the negative and it goes there. Just follow the colours"* said Isaac as he tried to educate me on how the system works. Isaac uses the batteries mainly for the lights when there is a blackout. But sometimes, he also uses the system to charge his phone.

Isaac is a truck driver by profession, living with his wife and children. As a side business, he co-manages a carpentry workshop with his father. Just like all the other respondents, Isaac has been a victim of blackouts. The most painful time, however, was the year 2018 when blackouts lasted for up to 16 hours each day. During this period, Isaac's schedule could coincide with blackouts at home, to the extent that, at some point, he went for three days without seeing a light bulb on before. *"I used to come back home in the evening to a blackout, and leave for work early in the morning, still without electricity... This happened for three days"* explained Isaac. This was the event that was the main influence in Isaac's decision to get the batteries. He used the help of friend who connected the car batteries for him. All Isaac had to do was to buy the batteries and cables. He bought the car batteries from the company he works for, and had his friend do all the connections for him. Isaac charges the batteries using electricity occasionally.

Isaac went for this alternative because it was affordable to purchase and maintain. for him compared to other options like generators or solar panels. He got the batteries, free of charge, from a company where he works as a truck driver. The only costs he incurred were on the purchase of the cables and the pallet on which the batteries are sitting.

Another interesting thread that came up was on issues to do with safety. Isaac did acknowledge that the batteries are dangerous; exposed cables are dangerous, especially with children in the house. To minimise the chances of an accident, Isaac keeps the storeroom always locked. His children are not allowed to get into that space.

We then went on to discuss if and how he is using the batteries now that there are no blackouts. Isaac responded to say he is not using the batteries. However, he keeps them just in case load shedding starts again. *"You never know. I just have to be ready..."* responded Isaac. When it comes to cooking, and heating, Isaac uses charcoal because it easily accessible, and because it is affordable as compared to other alternatives like generators or solar.



*Figure 14: Isaac's car batteries connected and linked to electrical appliances.
Source: Primary Survey, Author, 2020*

Solar

Apart from charcoal, solar emerged as the one of the most common strategies that people employ to disengage from electricity and avoid the effects of irregular and frequent power disruptions. Households use solar mainly for lighting, and entertainment, depending on need and financial capacity. One of the respondents who has embraced solar technology as an alternative to ESCOM supplied electricity is Taonga who uses solar for lighting in his house.

Taonga purchased his solar system in 2018 after a series of blackouts made life very uncomfortable. Taonga is a graphics designer living with his wife and a four-year-old daughter. His wife works as a primary school teacher and his daughter has just started nursery school. Being a graphics designer, Taonga spends most his time at home, on his computer, designing, creating visual concepts and job hunting. During a blackout, Taonga's work is disrupted. He either waits it out or carries his laptop to town, or a friend's place where he can access electricity. The very last time he did something like this, Taonga used a minibus taxi to a restaurant in town where he had access to electricity. Thus, however, came at a cost. Apart from spending on transport, Taonga was forced to buy a drink and a snack as a ticket to get a seat and a socket.

Accessing load shedding schedules is also a challenge for Taonga. Sitting on his veranda, Taonga explained how hard it is for him to access load shedding schedules as he does not buy newspapers for

financial reasons. *"I only buy the Saturday paper because it covers all issues for the entire week. But I don't buy every Saturday..."* said Taonga. However, Taonga has got a unique technique through which he establishes a pattern for load shedding. He studies the electricity disruption patterns in the residential areas that surround his. He knows that if there is no electricity in a neighbouring area in the morning, then chances are, his area will get load shedding later in the afternoon.

"People who buy newspapers everyday can access the schedule in the papers. But we do not buy newspapers every day. So, we just work on assumptions and calculations. Sometimes we ask our friends from other areas like Area 18. We know that if there is a blackout at Area 18, then we won't have a blackout... We alternate like that.", said Taonga

The solar system is composed of a solar panel, a battery, and some light bulbs. To use the solar light bulbs, Taonga recharges his battery by putting the solar panel out in the sun every day. Taonga puts his solar panel on a heap of stones at one of the backyard corners of his plot. He or whoever is around changes its orientation throughout the day, following the position of the sun. This is just to ensure that the panel gets as much sunlight as possible. When asked why he did not place the panel on the roof, Taonga explained that his solar panel is small and temporary. He is happy to move it around every day. Going forward, he is hoping for a bigger panel that will be permanently mounted on the roof. *"If I had a bigger solar panel, I was going to mount it on my roof. But I use small panels"* said Taonga

"I have to take the panel out every day... that's how I charge my battery... The energy goes from the panels to the charger controller then to batteries. We do not have an inverter, so we are using D.C. We have a separate line for solar isolated from the main" said Taonga.



Figure 15: A solar panel being energized on the sun
Source: Primary Survey, Author, 2020

The other respondent who turned to solar as an alternative source of energy is Mrs M who uses solar powered light bulbs in her kitchen, lounge, dining area, and chicken pens in the backyard. Mrs M connected the solar bulbs to a control unit that she placed on a shelf in the lounge. The lounge itself has 2 of these bulbs hanging on one of the walls. Together with the normal electric bulbs, the lounge has got 4 bulbs in total. The only difference is that the solar bulbs have got visible cables running down wall, behind a couch to the control unit sitting on a shelf. On the shelf with the control unit was a spare solar panel, a spare light bulb and so many cables that came with the set. To use the bulbs, Mrs M mounted a small solar panel on the roof, which sends energy to the control unit and then to the bulbs from there. *“When this light turns green, it means you have enough energy, you can use the lights. If it turns orange, it means you are running low on energy”* said Mrs M as she explained to me how her solar unit works. The installation and all connections were done by the dealer they bought the solar system from. However, Mrs M has slowly been learning how to use the lights and read the control unit from her children.



Figure 16: Mrs M's lounge connected to solar
Source: Primary Survey, Author, 2020

Motivation to turn to solar was twofold. On one hand, she was concerned about her chicken selling business. *“The chickens need lights in the evening. The lights keep them warm and healthy”* said Mrs M.

A retired typist, Mrs M ventured into the chicken rearing business as both a hobby and a strategy to boost her household’s income through the selling of eggs and manure. She has got a big backyard where she constructed two chicken pens and a small vegetable garden. Chatting about the chickens, Mrs M explained how her business is affected by the constant electricity disruptions.

“I also have some chickens; they need some light and heat. So, we are forced into coming up with measures to take care of our chickens in the event of a blackout. I have lost several chicks as a result of these blackouts... Sometimes I use my charcoal stove to keep the chicks warm when there is no electricity” said Mrs M while walking me to her chicken pens.

We walked to the chicken pens in her backyard where we saw two big structures that were constructed using burnt bricks for the walls and iron sheets for the roof. The two structures lie side by side, with chicks on the left and the egg laying chickens on the right. The faces of the structures have got huge windows for ventilation and doors that are used by the chickens to access the yard for food, and space. The chickens need enough light during the day and some light at night for both light and heat. During load shedding, Mrs M gets her solar bulbs and puts them in the chicken pens. There have been times when she has had to go out at night, into the dark scary backyard to take care of her chickens need for light and heat.

During our chat, Mrs M recalled a time when the health of the chickens was rapidly deteriorating, resulting into low egg production and sometimes death because the neighbourhood had no electricity

for up to 16 hours per day. A reduction in the production of eggs meant a reduction in household income. Mrs M's chicken pens are now equipped with solar light bulbs, that are mainly used when there is a blackout. The picture below shows some of the chickens in a pen behind Mrs M's house.

The other reason why Mrs M migrated to solar was security related. Mrs M is usually alone with her 11-year-old nephew as her husband and children work out of town. *"It becomes very dark outside. I used to just lock up and sleep"*. Even though Mrs M has never been a victim of theft during load shedding, she strongly believes thieves find opportunity in darkness. *"They know that it's hard to notice them when its dark, that is the time they do their business"*, said Mrs M.

Security was also a hot topic during my chats with Lucy, a resident of Area 49 and mother of three children. Lucy brought to my attention, two cases where houses were broken into during load shedding at night. Lucy was very bitter as she said this, constantly pointing out that these house break-ins could not have taken place if there was no blackout on the day.

"Security in the neighbourhood has been compromised. Recently, 2 houses were broken into during load shedding... They were well calculated moves" said Lucy.

As she was saying this, she was searching through her WhatsApp neighbourhood group chats to find out the exact dates when these robberies took place. Unfortunately, she was not able to find the details she was looking for on WhatsApp. Efforts to meet and chat to the households whose houses were broken into also proved to be futile. Similar concerns were also raised by other respondents during the interviews. Dave, despite not being a victim of a break in himself, raised the issue as one of his fears in the event of an electricity disruption. He is worried that during load shedding, they cannot use security lights, and thieves may see an opportunity in that.

In the long run, Mrs M is considering a permanent switch to solar as the primary source of energy in her household. She believes it would be more convenient and reliable as compared to the current unreliable electricity.

Diesel Generators

Writing on the terrible toll of Malawi's power cuts, John Vidal explains:

Prices have risen sharply, and daily rationing and lengthy 'outages' lasting from a few hours to several weeks, depending on where people live, are now the norm. A familiar sound in Lilongwe, Blantyre and Mzuzu, the country's three urban centres, is of diesel generators kicking in as the lights flicker and go out. (Vidal, 2017)

I could not agree more with John Vidal's observation of the sound of generators being common in Malawi's three urban centres. Being a resident of Lilongwe myself, one of the cues for load shedding for me is the sound of generators. Even when you are not sure whether an unexpected power cut is due to load shedding or not, the sound of generators from neighbouring houses comes as a sound of assurance that the power cut is load shedding and not a problem with your house connection. "*Ssshhh... Listen*", "*Quiet*", "*Go stand outside*", are some of the common phrases used when looking out for the sound of a generator when power goes out.

During my research, I came across two research participants who turned to generators as an alternative during prolonged or uncertain blackouts, Lucy and Mr B.

Lucy bought her generator in August 2019 from a dealer in town in response to prolonged and uncertain power cuts that rocked the country between 2018 and 2019. "*... it became so bad and chaotic after the elections. Load shedding went up to 16 hours each day... that's when we decided to buy a generator*" said Lucy as she explained the reason why her family decided to purchase a generator.

Lucy recalled the months after the May 2019 presidential elections when load shedding was upgraded to at least 16 hours every day. It got to a point where Lucy and her family were not able to watch television, something they like to do after supper each day as a family. Lucy was also worried that her children were not getting the entertainment and education she believes they get from watching TV. For these reasons, the family purchased a generator so that if everything else is disrupted, they will at least be able to watch TV for an hour or two in the evening and get some work and household chores done using energy from the generator. The generator is now used for lights, television, and refrigeration.

One interesting thread here was when Lucy shared all the work that is involved to get a generator up and running. "*I do not have a proper place for my generator. I keep it in the storeroom... so if we want to use it, we carry it and place it outside*" said Lucy. The generator is kept in the quarters outside. It is taken out whenever it is needed. Being a small nuclear family, Lucy mainly relies on her two children, 17-year-old Zi and 21-year-old Tada to do the lifting and shifting of the genset between the quarters in the backyard and the small space between the main house and the quarters. In their absence, Lucy does it with her husband. During the rainy season, the generator is placed on the garage, which is located on the face of the house, facing the main gate. This is, however, a slightly longer distance to the main switch as compared to the usual space between the quarters and main house. As such, Lucy had to buy a longer cable to cater for this distance. Apart from the distance, placing the genset on the garage forces Lucy and her husband to park their car elsewhere in the yard, for safety purposes. The

generator has helped Lucy and her family watch TV, cook, and work during load shedding. She is very happy she managed to purchase a generator for the family.



*Figure 17: Diesel generator in use behind the main house
Source: Primary Survey, Author, 2020*

Just like Lucy, Mr B purchased his generator in 2018 as a response to prolonged and uncertain power cuts. Mr B is a single parent living with his younger sister, who is currently studying at Exploits University, and a 5-year-old son.

5.3 From electricity to charcoal to electricity

Frequent disruptions to electricity supply pushed residents into adopting different types of strategies and energies to minimise the impact of electricity disruptions on their lives and livelihoods. Important to note here, is the fact that most residents must juggle between modern and traditional energy sources, deploying either energy source, depending on the current electricity supply situation and future expectation of blackouts. This can be seen through resident's decision to keep charcoal stoves and charcoal irons as alternatives to electric stoves and electric irons in the event of a blackout.

In talking about this juggle, I am also mindful of the fact that there are other factors like cultural factors, or just preferences that have influenced some households to hold on to traditional fuels like charcoal. Here, I am drawing from households like Lucy's and Grace which prefer charcoal for certain kinds of foods like beans. My focus, however, is primarily on the idea of switching between fuels as a

strategy to navigate around blackouts, as is done by Rhoda who makes sure that her house does not run out of charcoal in case a blackout occurs.

The switch between modern and traditional energies, which I refer to as a juggle, speaks directly to the energy transition theories (Ateba, Prinsloo, & Fourie, 2018; Van der Kroon, Brouwer, & Van Beukering, 2011) which seek to explain fuel use dynamics in sub-Saharan Africa and beyond. Specifically, juggling between modern and traditional energies conforms with the energy stacking theory, which says that as households become more urbanised, they diversify their energy sources while continuing to use traditional sources. A livelihood strategy through which households cope with external shocks and hold on to cultural practices.

5.4 Conclusion

Strategies to navigate around electricity supply disruption vary depending on the demographics of the household, degree of dependence on electricity, and financial capacity of the household. Households with members that do not need to work from home are happy to sit and wait for electricity to come back on. Households that can afford to purchase and maintain an alternative source of power such as a generator, a solar system, or gas stoves have moved to purchase those alternatives, as the rest rely on more affordable strategies such as candles and charcoal stoves. But more importantly, one common thread across the board is the fact that households have had to change their routines and day to day household activities. That is perhaps the most important strategy. Starting their days earlier to do most of the chores before the blackout, or to cater for the time needed to start a fire on a charcoal burner; buying fewer fresh foods that do not need electricity to be preserved.

Chapter 6: Navigating Blackouts: Household Agency and Multiple Energy Infrastructures

The main aim of this study was to explore the everyday experience of electricity disruption in Lilongwe. Although household formal electricity infrastructure exists for households in Area 49 and Area 22, Lilongwe, it frequently fails, which disrupts everyday life, forcing households to find innovative alternative sources of energy that draw on multiple infrastructures, from the past but also modern ones. Electricity black outs in Lilongwe are not a new phenomenon. To cope with this long history of frequent and uncertain blackouts, residents employ various strategies, including reconfiguring their daily routines to link to power, altering their food choices, reconfiguring their daily routines, and reorganising their spaces to link to power. Residents also draw on different sorts of appliances and energy sources, some from the past, and some from modern times, linking them together to ensure an uninterrupted flow of energy in the house. Households have not only learnt to live with the blackouts, but have also developed the capacity to make do, drawing on multiple infrastructures and piecing them together to navigate around disrupted electricity. The wait for electricity is not a passive one. Households do not sit back and wait for power to come back on. Some households have an assemblage of appliances and technologies, merging them and piecing them together to act as a cushion for when blackouts strike. Households also bring into their energy sources a mix of older technologies as well as new ones, reflecting the importance of multiplicity of technologies in the quest to cope with frequent blackouts. Other households find alternative ways to link to power, reconfiguring their daily routines, food choices, and reorganising their spaces, which both reflects this bridging of infrastructures and shapes its dimensions. These strategies differ depending on factors such as household context, and income. My aim in this study is not to compare the responses of different households, but rather to understand the overall experience of blackouts and the myriad of coping strategies that are being adopted in Lilongwe.

As Jaglin (2014) suggests, infrastructure delivery in the global south is characterised by multiplicity, a phenomenon she refers to as a combination of heterogeneous factors required to produce collective goods (p. 436). Like Van der Kroon et al. (2011) and Ateba et al. (2018), here I demonstrate that the ways in which households combine and mix of multiple infrastructures and energy sources is a strategy through which households cope with external shock. I substantiate the mix of infrastructures, both old and modern, that shapes strategies households draw on to work around electricity disruptions. I argue that the assemblage of multiple infrastructures is a key strategy in the quest to cope with blackouts. I will also discuss the agency that households exert to access energy in the event of frequent and uncertain blackouts, the desire to make do with makeshift forms of access to electricity, piecing together different infrastructures and technologies. I argue that coping with and strategizing around blackouts is a matter of household agency. By drawing on multiple infrastructures, piecing them

together, and making them work, households exert their agency to cope with and respond to frequent power cuts to minimise the impacts of blackouts on everyday household activities. I will also discuss the importance of people as an infrastructure that makes the various multiple infrastructures work, patching them together to make them work. Households do not only lend together food, and energy choices, but they are also flexible enough to organise and reorganise their spaces to make energy infrastructures work, reflecting the key role they play in the bridging of infrastructures. Drawing on Simone's (2004) framing of people as infrastructure and Charlton's (2005) illustration of how people make infrastructures work, I argue that it takes know how and creativity, experimenting with different appliances, and different space configurations. I will conclude this chapter by reflecting on citizenship using the experience of blackouts in Lilongwe as a lens. I seek to use the space of disruption and people's experience of it to complicate further the question of citizen making.

6.1 Navigating blackouts through the assemblage of old and new technologies

Disrupted electricity results into disruption to the household space and household activities. The visible part of this disruption to the household space is where households fail to cook, iron, or connect their electrical appliances to the charger. This disruption to the household space and everyday household activities has become normal and is a space in which households plan and strategize. Households do not just sit back and wait for electricity to come back on. Instead, they draw on different energy infrastructures, strategies, and all the work that it takes to make them work, in-order to minimise the impact of electricity disruptions on their household activities and livelihoods. In this section, I demonstrate that the main strategy that households have employed to navigate around blackouts is through the adoption of multiple infrastructure and technologies to use as alternatives to the grid in the event of a power cut. They build assemblages of technologies, some from the past and some from modern times, piece them together as a coping mechanism for the duration of the disruption. I will also go on to discuss the reasons behind the different choices of technologies among different household, arguing that it is dependent on household needs and contexts.

The Importance of Multiple Infrastructures to Access Energy

In their quest to cope with and navigate around frequent disruptions, households draw on different kinds of technologies, older technologies as well as new ones. Some households resort back to traditional energies, such as charcoal, which are cheaper and easily accessible. Other households, dependent on financial capacity, purchase, and access newer technologies such as solar, gas and diesel generators. In some cases, households juggle between modern and traditional energies, switching between charcoal stoves and electric stoves to minimise the impact of blackouts on the household. One household in Area 49 Lilongwe, for example, purchased a gas stove, to compliment electricity and charcoal when power goes out. Residents like Isaac and Lucy generated their own electricity using car

batteries and diesel generators respectively, as alternatives to the constantly failing grid. With this multiplicity of energy infrastructures in focus, I argue that heterogeneity of energy infrastructures is critical in the everyday experience of blackouts at household level. When the formal electricity infrastructure fails, households turn to other energies and appliances. As a result, most households in Lilongwe have got multiple energy infrastructures that they draw on a day-to-day basis to minimise the impacts of electricity disruption on the household.

There is rich literature that argues that urban service delivery in the global south is characterised by diversity, multiplicity, and heterogeneity. Writing on the deficiencies and failures of service delivery mechanisms in southern cities, Jaglin (2014) calls for a radical change in perspective, by taking the presence and importance of multiple delivery systems as a starting point in exploring delivery systems in southern cities. According to Jaglin (2014) services are not delivered within the framework of a uniform integrated system. Instead, services are delivered in different ways and through a range of provisions, operating alongside the conventional utilities. Lawhon et al. (2017) also use examples from research on sanitation in Kampala to illustrate that service delivery is characterised by multiplicity and overlap. Lawhon et al. (2017) call for empirical research on the heterogeneous infrastructures already in operation to understand how they work, for whom they work, and what it means for the infrastructures to work. Their call to think through heterogeneous infrastructure configurations is a call to think about infrastructure from the perspective of residents.

Drawing from Jaglin (2014) who calls for the taking of the vitality and multiplicity of actual delivery systems in southern cities as a starting point in analysing infrastructure systems, I am highlighting the presence and importance of the multiple infrastructure strategy that households have adopted to navigate around blackouts. This is the nature of electricity service delivery that is prevalent among households in Lilongwe city. Even though the conventional network, planned and managed by a government entity, ESCOM, is the primary method through which electricity is delivered to households in Lilongwe, it is not efficient as it is characterised by frequent blackouts. These blackouts have left households dissatisfied with the service. It is this dissatisfaction, combined with a need for energy, creativity, and capacity to make do in conditions of deprivation that makes them turn to other energies, appliances, and infrastructures such as charcoal, generators, batteries and solar. Some households have got charcoal in stock, ready to be used as an emergency plan in the event of a blackout to ensure uninterrupted of chores and activities in the house. They even went as far as purchasing irons that use charcoal as their primary source of energy. Other households turn to solar, batteries, or diesel generators as a back-up to the grid. Interestingly, the use of these alternative energies has been so normalised that households make sure they have the alternative energies in stock even when there are no power cuts. Put simply, households in Lilongwe work with multiple

sources of energy, constantly switching between two or more energy sources and appliances to what works best with the intended use, financial and labour capacities, and household contexts, something I have referring to in this study as 'juggling' with multiple energy sources.

The other thing worth noting here, is how households have turned to the use of multiple appliances and energies just to give themselves a ready alternative when the grid fails. Some of these appliances are traditional, some are modern, but they all serve the same purpose of being an alternative to and complimenting the conventional grid.

Moving from Lawhon et al. (2017) and Jaglin (2014) assertion that infrastructure in cities of the global south is characterised by multiplicity, literature on energy use in the global south discusses the practice of combining or stacking multiple energy sources in the global south both as a strategy to through which households cope with external shock, and as a common feature of infrastructure deficient cities of the global south. Van der Kroon et al. (2011) while studying energy transitions in a developing country context asserts that multiple fuel use is a livelihood strategy through which households cope with external shock. Drawing from Van der Kroon (2011), I argue that the assemblage and use of multiple energies is a livelihood strategy which households adopt to cope with frequent blackouts. My findings in this study also align with Ateba et al. (2018) argument that the erratic nature of electricity supply in South Africa has resulted into an increasing reliance on other fuels. My findings do not imply that the use of other fuels by households elsewhere in the country is a response to frequent electricity disruptions. I am also aware of other factors such as cultural practices (Van der Kroon et al., 2011). My argument here is that the use of alternative energies, both old and new, is critical in the everyday experience of blackouts at household level.

At this juncture, I would also like to bring into the conversation, as another strategy, the ways in which some households have worked to reconfigure and repurpose their household spaces to accommodate the various appliances and infrastructures. Isaac, for example, had to convert a kitchen storeroom into a power generation room, storing the old car batteries. This was followed by locking the door every day to make sure the children do not have access to the room, for their own safety. Households that use generators like Lucy's household had to prepare safe space for use and secure space for storage of their diesel generators. Lucy identified her garage as the best place for the generator when in use, safe from both thieves and extreme weather conditions like heavy rains. But this entails a lot of shifting and re-ordering of property and space in the house. First, the generator is moved between the storeroom and the garage every time its needed. But this also means that she must move her car to a different spot every time she wants to use the generator.

Having discussed the presence and importance of multiple infrastructures and technologies in the quest to cope with frequent blackouts, I will now discuss the factors influencing the choice of appliances and energies. I have illustrated that households draw on different infrastructures, some from the past, but also modern infrastructures. It is important to understand the reasons behind the choices of infrastructures and appliances.

Appliance choices: What works?

One of the things this study sought out to understand was the logic behind the use of the various appliances and energies. Having established that households in Lilongwe respond to electricity disruptions by drawing on various infrastructures, some old some new, some traditional and some modern, I saw it important to dig deeper and understand people's logics in the choice and use of the various strategies and appliances. I do this with the understanding that choices around energies and appliances fit different household needs, preferences, and contexts. Some of the logics that will be discussed in this section include the cost factor, household characteristics, and the labour involved in making the appliances work. An evaluation of household appliance choices helps me understand the logics behind the different responses to electricity disruptions. Gupta (2015) argues that 'our accounts of the everyday lives of people in the global south are incomplete because they do not pay attention to the different ways in which people encounter the partial presence of modern infrastructure'. According to Gupta (2015) there is need to understand the sources of energy households use in their daily activities, when they use them, why they switch from one source to the other. I would like to add to this by analysing the influencing factors behind appliance and energy choices among Lilongwe households in the context of blackouts. Silver (2015) while studying the electricity network of Accra, Ghana, found that income class was a major determining factor in the way different households respond to blackouts. He found that the poor are unable to afford costly technologies and they resort to incremental and improvised strategies. The upper-middle class, on the other hand have got access to costly technologies such as generators. In their analysis of household responses to power cuts induced by a storm in the UK, (Ghanem, Mander, & Gough, 2016) find that the ways in which households responded had very little to do with demographics, income and education background. The main determining factors were elements of their normal everyday practices.

This study has found that cost was a huge influencing factor when it came to their choice of appliances and energies. Naomi's household which uses charcoal as an alternative to the grid argued that, on average, a 50kg bag of charcoal costs MWK6,000, which is cheaper when compared to gas or diesel. For that reason, they prefer to use charcoal as their alternative source of energy when power goes off. It must also be noted that the cost of charcoal varies depending on the area where the charcoal is purchased. For some households, charcoal is more expensive as compared to gas, as such, they would

rather use gas as an alternative to the grid. Still on cost as a huge influencing factor on the choice of household appliances and energies, Isaac settled for used car batteries because they do not have any operational costs. Using the batteries seems affordable as he does not have to purchase diesel or gas to power the batteries.

Choices Lilongwe residents have made on appliances and energies have also been influenced by household characteristics. Different appliances fit different household needs and contexts. Households must carefully analyse what works for their household and what does not. For some households, charcoal was the better option because, without electricity, the foods they love cook best on charcoal, and not gas. In some cases, the choice of energy infrastructure and appliances is also influenced by the number of people living in the house. Some energies and appliances are labour intensive and time consuming. They require the presence of people who can sacrifice their time and energy to make the appliances work. An example here is the one household which relies on their children to carry a heavy diesel generator around the house. In a nutshell, there are different logics behind the choices Lilongwe households make around energy appliances. Coming to understanding of these logics is essential in the quest to understand how Lilongwe households cope and navigate around frequent blackouts.

To this point, I have illustrated that households draw on assemblages of infrastructures, bringing into their energy sources a mix of older technologies as well as new technologies, depending on household needs and context. I will now turn my discussion to household agency to make do in the context of frequent blackouts. I argue that sourcing these multiple energies and making them work is an expression of household agency. The section that follows discusses this notion of household agency, illustrating in the process that accessing energy in the event of a blackouts is all about the households' desire, creativity, and know how.

6.2 Energy against all odds: Household agency in the context of blackouts

Stories of household experiences of blackouts in Lilongwe show a constant desire, among households, to plan, to improvise and to make do without electricity. It is a given that the formal electricity infrastructure has failed. But hidden in this disruption are households that go out of their way to access electricity through any means within their reach. Some households purchased diesel generators to use for cooking, and lighting when blackouts strike. Other households purchased solar-powered light bulbs, gas stoves, charcoal to use as alternatives to the grid during a blackout. Some of these energy alternatives are expensive. One resident, for example, buys gas at a price of MWK12,960 every month. Nonetheless, the desire to access electricity forced residents to find a way.

This desire to access electricity can also be seen in the way some residents re-jig themselves to access electricity. Some residents who have got work to do on their computers respond by heading out to access electricity elsewhere, a friend's house, or somewhere in town. This is also costly and inconveniencing as it requires money, time, and a lot of adjusting of schedules and routines. One resident, for example is forced to buy a drink and snack at a nearby restaurant just to access a seat and power socket. Here, I am also drawn to one resident who uses a car battery as a secondary source of energy when power goes out. Since the battery is a dangerous item, the resident locks it in his storeroom, where children cannot easily access. This willingness to reconfigure one's routine and household space for the purpose of accessing electricity is what I am interested in this section.

Silver (2015) finds also that households in Ghana exert their agency by being forced to respond to on-going electricity supply disruptions. These responses range from low-cost responses such as paraffin and candles among the urban poor to secondary infrastructures such as diesel generators in the elite spaces. Silver (2015) makes this conclusion while examining the series of socio-natural processes that produce on-going disruptions in Ghana and exploring the power relations of networked systems in the city. In the even of power disruptions, households in Ghana respond, actively, by adopting alternative energies. Similarly, Ghanem et al. (2016) find that households adopt different strategies to avoid compromising their well-being, safety and security as they coped with power cuts. Among other responses, households responded by using makeshift cooking appliances, and adapted by preparing simple meals, something Ghanem et al. (2016) refer to as resilience. This is the sort of agency that I am interested in in this section, where households plan, make-do, and come up responses in the meanwhile. Studies have shown that in certain contexts, marginalized people are not just passive victims of the processes that have created and shaped their marginalization (Ballard, 2015). Instead, they are active and creative (Ballard, 2015; Honwana, 2013; Jeffrey, 2010), influencing and shaping their own lives. In this section, I have demonstrated that households are active, flexible, and creative, constantly thinking of strategies to navigate around blackouts. They exert their agency by going for alternative energies and piecing them together, reconfiguring household spaces and connecting all necessary cables just to make them work. When it comes to the experience of blackouts, one factor at the core of all households is this desire to access electricity, to generate own energy using alternative means, and to use any possible way to navigate around blackouts. This visible aspect of this is the presence of solar panels on rooftops and open gardens, the sound of diesel generators when power goes out, and the traces of light bulbs burning bright even when the formal electricity infrastructure fails.

In this section, I have established that coping with and strategizing around blackouts is a matter of household agency. By drawing on multiple infrastructures, piecing them together, and making them

work, households exert their agency to cope with and respond to frequent power cuts. However, notions of agency are just an illustration of people's aspirations to make the infrastructures work by linking them together in different ways, arranging their spaces, and shifting their household activity schedules. The batteries, for example, cannot work on their own. They require someone to connect them together and link them to other appliances. The diesel generator needs to be moved to a safe spot for use, and a secure spot for storage when not in use. The people, in this case, become part of the energy infrastructure, linking different appliances and technologies together. This is my focus in the next section.

6.3 The importance of people in making energy infrastructures work

Heterogeneous yet fragmented infrastructures: The strain of piecing them together

Building on the assertion that households plan and adopt different kinds of alternative energies to navigate around blackouts, the study has demonstrated that it is not enough to have an assemblage of energy infrastructures and appliances. The people themselves play a very critical role in making these infrastructures work. Here, I draw from Simone (2004) who calls for the extension of the word 'infrastructure' to encompass people's activities in the city. Using ethnographic material from the city of Johannesburg, Simone illustrates how the combined activities of various individual players make the city work, especially in situations where the city simply does not offer enough to sustain their well-being. I also draw from Charlton (2018) who, using the experience of South Africa's state housing programme, demonstrates that people's adaptations and actions are necessary to sustain infrastructure. Among other things, Charlton illustrates how households adapted by making changes to their properties and reorganising their families to make the state housing programme work for them. I add onto this literature by illustrating that the people themselves, through the activities, the work, and effort that they put together access electricity, are an important infrastructure. I argue that having multiple energies and infrastructures is not enough to navigate around blackouts. The infrastructures and appliances are fragmented and cannot work on their own. There is need for households to organise and reorganise themselves and their spaces, and to connect all the necessary cables to make the infrastructures relevant.

The know-how and creativity behind the various infrastructures and energies employed by households to navigate around frequent blackouts is key as they cope with frequent power cuts. I do not want to fall into the trap of paying much attention to the physical appliances and assemblage of infrastructures and technologies, with less attention given to the people behind the appliances, putting these technologies together, in their right places, connecting them with the right cables and other appliances to ensure a smooth flow of energy in the house. I argue that, without the creativity and knowledge of the households, the appliances and energies cannot work well. In this section, I draw

my inspiration from one resident who pieced an old car battery together with the electricity circuit in his house to ensure an uninterrupted flow of energy in their house. The battery cannot work on its own. It required to be connected to the main circuit so it can be charged when the electricity is on and be used when the electricity is interrupted. Some households also piece together mini solar systems and the main circuit in their houses. My attention here is drawn to one household which decided to put the solar bulbs in permanent positions in the lounge and kitchen, so they just have the solar unit and panel to move around, charging it on the sun and taking it back into the house at night.

6.4 Citizenship in the space of disruptions

In this chapter, I have discussed the politics of experiencing frequent blackouts in Lilongwe. I have illustrated that households do not just sit and wait for electricity to come back on. Instead, they plan, they strategize and navigate their way around the blackouts. While doing this, I have also illustrated that the people themselves are an important infrastructure. The various strategies and infrastructures that are used to navigate around blackouts cannot work without the people's effort, aspirations, and knowledge. Building on this, I would like to end my analysis with a discussion on whether this politics in the space of disruptions can help us think about citizenship. I argue that what happens in the space of electricity disruption- making do by drawing on multiple technologies, their agency to access energy using any means possible, their creativity around food choices, and the way they link the technologies and appliances to make them work- can help us think about citizenship.

Lemanski (2019) demonstrates how citizens everyday access to infrastructure in the city affects and is affected by their citizenship identity and practice. Lemanski (2019) starts by claiming that the relationship between infrastructure and citizenship has been under-theorised, despite connections between the two being obvious. According to Lemanski (2019) even though citizenship is a political relationship (state-society), the relationship is often mediated through the materiality of public infrastructure. She uses the phrase 'infrastructural citizenship' to refer to how citizens everyday access to, and use of, public infrastructure in the city affects and are affected by their citizenship identity and practice. Diouf and Fredericks (2014) use the term 'arts of citizenship' to refer to the different forms of experimentation, adaptation, and negotiation surrounding claims to rights in cities of the global south. They specifically consider the role that the built form- housing and architecture, public services, transportation networks- plays as a key site where claims to citizenship are made.

Building on the various practices, and strategies around electricity disruption that I have explored in this study, I would like to contribute to the broader scholarship on infrastructure and citizenship, by arguing that these practices and strategies are a demonstration of citizenship. There has already been research elsewhere illustrating the ways in which citizens demonstrate their citizenship through co-

constructing the staples of life such as electricity, water, shelter and sanitation (Amin, 2014); violent clashes based on citizens claims to have a right in the city (Holston, 2008); and the ways in which practices of citizenship are highlighted by an exploration of water infrastructure in Mumbai (Anand, 2011). I take this forward by analysing the concept of citizenship in a situation where the infrastructure is available but does not work to the people's satisfaction and as a result, households are pushed into finding alternative means, and strategize that can work for them temporarily as they wait for electricity to come back on. I argue that this terrain of infrastructural disruption, or failure and households experience has the potential to affect people's identity and practices in the city.

6.5 Conclusion: The Politics of Navigating around Blackouts

Power outages are a common occurrence in cities of the global south. However, very little is known of the everyday experience of blackouts at the household. Research on blackouts has largely focused on the governance side, reasons for the power outages, economic implications, and solution proposals. My research has focused on the everyday lived experience of the blackouts at household level. My aim was to provide an insight into household coping strategies, capacities, and strategies around the power outages. One key feature of this study is its focus on the everyday. This was inspired by a growing recognition of the everyday as a rich and complex realm through which urban theory can be generated (McFarlane & Silver, 2017)

To cope with frequent power outages, households draw on an assemblage of multiple infrastructures and energies, some from the past as well as modern one, piece them together to ensure uninterrupted household access to energy. Depending on household needs and context, some households use charcoal as an alternative source of energy when the grid fails. Other households combine solar and charcoal, whereas others use diesel generators to complement the grid. As illustrated in literature, the combination of multiple sources of energy is common in cities of the global south as it is a strategy through which households cope with external shock.

The adoption of multiple sources of energy and all it takes to make them work is a demonstration of agency among the households. Hidden in the space of disruption are households that go out of their way to access energy through any means within their capacity. Households have demonstrated that they have got the desire, know how, and creativity to make do and come up with both temporary and permanent solutions to cope with frequent blackouts.

Building on the notion of agency, I have illustrated that the people themselves should be regarded as an infrastructure that facilitate the workings of all the other physical appliances and technologies. Having multiple sources of energy is not enough, people must link the energies in different ways. The battery, for example does not work on its own. The generator cannot be of any use on its own. It

takes people to link these appliances together, shift the generator to a safe spot for use, connect the batteries to the right cables, and put the solar panels out in the sun when necessary. Households also adapt by changing their cooking practices, and food choices to align with different energy sources, which also reflects the bridging of these infrastructures.

Finally, I have used the space of electricity disruption and its experience as a lens to think about everyday city making. Responding to Lemanski's (2019) call to reflect on opportunities presented by adopting an infrastructural perspective to understanding citizenship, and Diouf & Fredericks (2014) proposal to consider the role of physical infrastructure in citizen making, I have complicated the notion of infrastructural citizenship further by arguing that the space of electricity disruption can also help us think about citizenship. There is need for further research on the relationship between electricity disruption and citizenship to understand the nature of citizens and the city that is being configured in the space of disruption.

References

- Alda-Vidal, C., Kooy, M., & Rusca, M. (2018). Mapping operation and maintenance: an everyday urbanism analysis of inequalities within piped water supply in Lilongwe, Malawi. *Urban Geography*, 39(1), 104-121. doi:10.1080/02723638.2017.1292664
- Amin, A. (2014). Lively Infrastructure. *Theory, culture & society*, 31(7-8), 137-161. doi:10.1177/0263276414548490
- Anand, N. (2011). PRESSURE: The PoliTechnics of Water Supply in Mumbai. *Cultural anthropology*, 26(4), 542-564. doi:10.1111/j.1548-1360.2011.01111.x
- Anand, N. (2017). *Hydraulic city : water and the infrastructures of citizenship in Mumbai*. Durham: Duke University Press.
- Ateba, B. B., Prinsloo, J. J., & Fourie, E. (2018). The impact of energy fuel choice determinants on sustainable energy consumption of selected South African households. *Journal of energy in Southern Africa*, 29(3), 51-65. doi:10.17159/2413-3051/2018/v29i3a4714
- Ballard, R. (2015). Geographies of development III: Militancy, insurgency, encroachment and development by the poor. *Progress in human geography*, 39(2), 214-224. doi:10.1177/0309132514527031
- Charlton, S. (2018). Spanning the spectrum: infrastructural experiences in South Africa's state housing programme. <https://doi.org/10.3828/idpr.2018.6>. doi:10.3828/idpr.2018.6
- Denzin, N. K., & Lincoln, Y. S. (1998). *The landscape of qualitative research : theories and issues*. Thousand Oaks, Calif: Sage Publications.
- Diouf, M., & Fredericks, R. (2014). *The arts of citizenship in African cities : infrastructures and spaces of belonging*. New York, NY: Palgrave Macmillan.
- Gandy, M. (2016). Planning, Anti-planning and the Infrastructure Crisis Facing Metropolitan Lagos. *Urban studies (Edinburgh, Scotland)*, 43(2), 371-396. doi:10.1080/00420980500406751
- Ghanem, D. A., Mander, S., & Gough, C. (2016). "I think we need to get a better generator": Household resilience to disruption to power supply during storm events. *Energy Policy*, 92, 171-180. doi:10.1016/j.enpol.2016.02.003
- Graham, S. (2010). *Disrupted Cities: When Infrastructure Fails*. Florence: Routledge.
- Graham, S., & Marvin, S. (2001). *Splintering urbanism : networked infrastructures, technological mobilities and the urban condition*. London: Routledge.
- Graham, S., & McFarlane, C. (2015). *Infrastructural Lives: Urban Infrastructure in Context*.
- Gupta, A. (2015). An Anthropology of Electricity from the Global South. *Cultural anthropology*, 30(4), 555-568. doi:10.14506/ca30.4.04
- Holston, J. (2008). *Insurgent citizenship : disjunctions of democracy and modernity in Brazil*. Princeton: Princeton University Press.
- Honwana, A. M. (2013). *Youth, waithood and protest movements in Africa*. London: International African Institute.
- Hyman, K., & Pieterse, E. (2017). Infrastructure Deficits and Potential in African Cities. In S. Hall & R. Burdett (Eds.), *The Sage Handbook of the 21st Century City* (pp. 429-452). London: Sage.

- Jaglin, S. (2014). Regulating service delivery in southern cities: rethinking urban heterogeneity. In S. Parnell & S. Oldfield (Eds.), *The Routledge Handbook on Cities of the Global South* (pp. 434-448). London and New York: Routledge.
- Jaglin, S. (2016). Is the Network Challenged by the Pragmatic Turn in African Cities? Urban Transition and Hybrid Delivery Configurations. . In J. Rutherford & O. Coutard (Eds.), *Beyond the Networked City: Infrastructure reconfigurations and urban change in the North and South*. London: Routledge.
- Jeffrey, C. (2010). *Timepass : youth, class, and the politics of waiting in India*. Stanford, Calif: Stanford University Press.
- Kai Khiun, L., & Natalie, P. (2015). Neoliberal visions, post-capitalist memories: Heritage politics and the counter-mapping of Singapore's cityscape. *Ethnography*, 16(3), 331-351. doi:10.1177/1466138114552939
- Kaunda, C. S. (2013). Energy situation, potential and application status of small-scale hydropower systems in Malawi. *Renewable and Sustainable Energy Reviews*, 26, 1-19. doi:10.1016/j.rser.2013.05.034
- Kihato, C. W. (2011). The city from its margins: rethinking urban governance through the everyday lives of migrant women in Johannesburg. *Social dynamics*, 37(3), 349-362. doi:10.1080/02533952.2011.656432
- Lawhon, M., Ernstson, H., & Silver, J. (2014). Provincializing Urban Political Ecology: Towards a Situated UPE Through African Urbanism. *Antipode*, 46(2), 497-516. doi:10.1111/anti.12051
- Lawhon, M., Nilsson, D., Silver, J., Ernstson, H., & Lwasa, S. (2017). Thinking through heterogeneous infrastructure configurations. *Urban studies (Edinburgh, Scotland)*, 55(4), 720-732. doi:10.1177/0042098017720149
- Lemanski, C. (2019). *Citizenship and Infrastructure: Practices and Identities of Citizens and the State* (1 ed.): Routledge.
- Lufumpa, C. L. (2017). *Infrastructure in Africa: Lessons for future development* (C. L. Lufumpa Ed. 1 ed. Vol. 56766): Policy Press.
- Malawi, G. o. (2018). *National Energy Policy*.
- McFarlane, C. (2010). Infrastructure, Interruption, and Inequality: Urban Life in the Global South. In S. Graham (Ed.), *Disrupted Cities: When Infrastructure Fails* (pp. 131-144). Florence: Routledge.
- McFarlane, C., & Silver, J. (2017). Navigating the city: dialectics of everyday urbanism. *Transactions - Institute of British Geographers (1965)*, 42(3), 458-471. doi:10.1111/tran.12175
- Mensah, J. T. (2016). Bring Back our Light: Power Outages and Industrial Performance in Sub-Saharan Africa. In.
- Mpoola, D. (2011). *Malawi : Lilongwe urban profile* (9789211323771). Retrieved from Nairobi: Nzangaya, A. (2018, 30 October). Get your candles ready, prolonged blackouts are back. *Malawi 24*. Retrieved from <https://malawi24.com/2018/10/30/get-your-candles-ready-prolonged-blackouts-are-back/>
- Oldfield, S., & Greyling, S. (2015). Waiting for the state: a politics of housing in South Africa. *Environment and planning. A*, 47(5), 1100-1112. doi:10.1177/0308518X15592309

- Oyuke, A., Penar, P. H., & Howard, B. (2016). Off-Grid or 'off-on':Lack of Access, Unreliable Electricity Supply Still Plague Majority of Africans. Retrieved from https://www.africaportal.org/documents/14734/ab_r6_dispatchno75_electricity_in_africa_eng1.pdf
- Pieterse, E. (2008). *City futures : confronting the crisis of urban development*. London: Zed Books.
- Pieterse, E. (2011). Grasping the unknowable: coming to grips with African urbanisms. *Social dynamics*, 37(1), 5-23. doi:10.1080/02533952.2011.569994
- Rodgers, D., & O'Neill, B. (2012). Infrastructural violence: Introduction to the special issue. *Ethnography*, 13(4), 401-412. doi:10.1177/1466138111435738
- Silver, J. (2015). Disrupted Infrastructures: An Urban Political Ecology of Interrupted Electricity in Accra. *International Journal of Urban and Regional Research*, 39(5), 984-1003. doi:10.1111/1468-2427.12317
- Simone, A. (2004). People as Infrastructure: Intersecting Fragments in Johannesburg. *Public Culture*, 16(3), 407-429. doi:10.1215/08992363-16-3-407
- Star, S. L. (1999). The Ethnography of Infrastructure. *The American behavioral scientist (Beverly Hills)*, 43(3), 377-391. doi:10.1177/00027649921955326
- Taulo, J., Gondwe, K. J., & Sebitosi, A. B. (2017). Energy supply in Malawi: Options and issues. *Journal of energy in Southern Africa*, 26(2), 19-32. doi:10.17159/2413-3051/2015/v26i2a2192
- Van der Kroon, B., Brouwer, R., & Van Beukering, P. J. H. (2011). The energy ladder: Theoretical myth or empirical truth? Results from a meta-analysis. *Renewable and Sustainable Energy Reviews*, 20, 504.
- Vidal, J. (2017, 13 December). The day the lights went out: the terrible toll of Malawi's power cuts. *The Guardian*. Retrieved from <https://www.theguardian.com/global-development/2017/dec/13/malawi-power-cuts-national-blackouts-poor-hungry>
- Von Schnitzler, A. (2013). TRAVELING TECHNOLOGIES: Infrastructure, Ethical Regimes, and the Materiality of Politics in South Africa. *Cultural anthropology*, 28(4), 670-693. doi:10.1111/cuan.12032
- Wolcott, H. F. (2008). *Ethnography : a way of seeing* (2nd ed. ed.). Lanham, MD: Altamira Press.
- Yourk, J. S. (2018). How to Cope Without Power When You're Living in Malawi Retrieved from <http://volunteer-blog.ca/how-to-cope-without-power-when-youre-living-in-malawi->
- Zeiderman, A., Kaker, S. A., Silver, J., & Wood, A. (2015). Uncertainty and Urban Life. *Public Culture*, 27(2), 281-304. doi:10.1215/08992363-2841868