



**Consequences of illegal electricity connections at Quarry  
Road Informal Settlement**

**By**

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## **ABSTRACT**

Crime statistics in South Africa seem to increase every year. Illegal electricity connection is considered a crime and a punishable offence. Crime can be caused by different aspects, e.g. poverty, drug abuse and alcohol abuse. Unemployment seems to be the leading cause of crime which seem may indirectly lead to poverty unemployment rate has gone up and people are looking for alternative solutions to support themselves and their families. Unemployment is one of the reason stated by people who illegally connect electricity. The illegal connection of electricity can be categorized into two groups. The first group is the people that utilize illegally connected electricity because they claim not to afford to pay for it. The second group is the group of people who illegally connect electricity as a form of employment and illegally connect electricity for community members for a specific amount of money as remuneration. This cannot be stopped by the numerous awareness programmes made and the arrest. People are fully aware that what they are doing is wrong and have dire consequences but they keep doing it.

The study investigated illegal electricity connections in Quarry Informal Settlements using the qualitative approach. Qualitative methodology relies on collecting first hand data and live experiences of participants. Qualitative research methodology will be fitting for this research as it will assist in providing insight into the research objective. The researcher applied semi-structure interviews to collect data with a sample size of 15 participants from Quarry Informal Settlements. The main objective of this study was to explore the consequences of illegal electricity connections in informal settlements focusing on Quarry Informal Settlement. Illegal electricity connections are lethal and the residents of Quarry Informal Settlements are aware of these consequences yet they seem to have no other alternatives to connecting electricity and no intervention from the municipality.

Findings of this study also revealed that connecting electricity in Quarry Road Informal Settlement has since become a norm. It has since become an acceptable act to connect electricity illegally. A minority bought their houses with an already installed illegal connection while most have become accustomed to this act.

The researcher has gathered some recommendations that can help in easing up these illegal connections especially in informal settlements as well as strategies municipalities can adopt.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 INTRODUCTION

Crime is a world-wide concern and South Africa is one of the countries with the highest crime rates. Townships and informal settlements relatively take the lead in crime. 70% of South Africa's population is expected to live in cities and towns by 2030, mostly in informal settlements (Department of Cooperative Governance and Traditional Affairs, 2015), necessitating the use of electricity. Yet illegal electricity connections in informal settlements have been a problem for a long time. Illegal electrical connections are linked to South Africa's growing poverty and displacement problem. Out of desperation, people take open places and create makeshift home structures (Sicetsha, 2019).

The Daily News (2018) expounded that electricity and electricity infrastructure theft, vandalism, and unauthorized connections are among the leading causes of unscheduled power outages. Both the economy and society suffer as a result of this. A lot of revenue is lost due to illegal electricity connections, which directly affects the country's economy. Innocent lives are also lost to illegal electricity connections in South Africa. According to Express (2018), the national power utility suffered the most energy and revenue losses as a result of illicit electricity connections and meter manipulation/tampering. Hence, one of Eskom's biggest threats is the rapid increase in illegal electricity connections. These lead to revenue losses, overloading, and the failure of transformers and mini substations (Yelland, 2020).

Eskom, the largest power utility in South Africa, produces about 95 per cent of electricity. The electricity is then sold to the different municipalities across South Africa. These municipalities highly depend on the revenue generated from the sale of electricity and 3040 per cent of this revenue contributes to the total income budget for these various municipalities (Louw, 2019), even though the effects of illegal electricity connections are difficult to quantify. However, Eskom (2019:10) issued its 2019 annual financial results, showing that R2.0 billion in losses attributable to criminal behaviour were reported throughout the year, including R1.7 billion linked to non-technical energy losses, such as energy theft. According to the South African Revenue Protection Association (SARPA),

these losses to the South African economy are in the range of R8-12 billion every year (Louw 2019). So much revenue is lost because of non-technical issues that affect service delivery in South Africa. In 20219/20 South Africa experienced numerous power outages (load shedding) because Eskom did not have enough energy supply to meet the demand of all customers. The cause may be a constellation of factors, which could include losses related to illegal connections.

Illegal electricity connections are among the cause of the economic downturn (Anon.2014). Apparently, they contribute to the energy crisis facing the country. Unplanned power outages have a negative impact on the quality of electricity supply, which in turn has a negative impact on investment and, ultimately, the country's economy (Pule, 2014). Illegal power has tremendous ramifications, and it's a major difficulty to the point where it's putting pressure on the country's energy crisis, since those illegally connecting electricity are depriving the utility of potential money. When you don't have to pay for anything, you're more likely to use it liberally and unsparingly (Pule, 2014). This also applies to illegal connectors; when a person doesn't pay for a service, they misuse it or use it without care. Those that use unauthorized electrical connections are in the same boat. As alluded by Eskom, illegal electricity connections are a major problem affecting power utilities globally (Pule, 2014).

Illegal electricity connections also pose danger to society. For example, overloading of the system causes tripping, which disrupts electricity supply in the area. Several deaths were reportedly caused by illegal electricity connection Boucher (2017). A report by Singh (2020) proved the tragedy caused by illegal connection, a boy who died from being electrocuted by an exposed electrical wire in Durban Canal. The boy had attempted to cross the Umbilo River canal, near the M7 informal settlement and died from an illegal connection. It is also said this wasn't the first time an illegal electricity connection at the M7 informal settlement had ended in tragedy. In South Africa, illegal power connections are one of the primary triggers of electricity-related injuries and fatalities (Shozi, 2018). Eskom workers and law enforcement agencies such as the SAPS have tried to deal with illegal electricity connections (Shozi, 2018). Unfortunately, when Eskom workers or the police remove these illegal connections, the perpetrators simply hook up another one. However, the problem persists as illegal reconnects remain rampant. Permanent solutions and ways to minimize illegal electricity connection need to be explored. For

example, harsher prison sentences other than disconnecting the illegal connections may help mitigate the problem.

Eskom has disclosed that 7% of the country's power is stolen through illicit connections, which the state company can no longer afford given its dire financial situation (Anon.2014). Eskom engaged the Department of Public Enterprises and Treasury about securing funds to keep its gas turbines running on diesel (Business Tech, 2014). Despite efforts such as Eskom's Izinyokanyoka campaign, where electricity thieves are portrayed as snakes, the problem has not subsided. After Eskom started disconnecting non-paying customers, electricity thieves started illegally connecting houses (Anon. 2015).

Access to electricity has improved since 1994. For example, it has improved from 36 per cent to 90 per cent houses that have been electrified in 2020 (Anon. 2018). In 1994, 12% of the 36% population of South African households who had access to electricity got connected through the Rural Electrification Project. Currently, the integrated national electrification program (INEP) has less than 300,000 households left in its supply region without electricity, and this figure does not include expansion or informal settlements. The INEP has electrified 80 percent of households in rural regions (African News Agency, 2018).

eThekwini Municipality continues the fight against illegal electricity connections and have intensified the fight against such connections (Anon.2016). Thousands of illicit power cables were disconnected in the Sitaram and Imona informal settlements, which are located near the uThongathi region, after they were identified as hotspots for illegal connections in the city (EthekwiniNewsflash;2016). The city of Durban vowed to fight the scourge of illegal connections and clean-up operations were scheduled in other areas. To combat unlawful power connections, officials from the eThekwini Municipality's Electricity Unit, Telkom, officers from the South African Police Service (SAPS), Eskom, and other law enforcement agencies collaborated. Illegal electrical hookups have been a persistent problem in eThekwini Municipality. The municipality has repeatedly cautioned citizens about the dangers of cable and energy theft, which frequently ends in terrible and tragic repercussions such as loss of life and infrastructure damage, costing the municipality roughly R230 million each year (Anon. 2016).

## **1.2 BACKGROUND OF THE STUDY**

Transitioning from apartheid to democracy marks one of the most eventful and important journeys in South Africa. This is the day where mostly, Africans gained their voice and broke free from oppression by the apartheid regime. Equality was to be the order of the day. It's regrettable that certain places are still suffering the consequences of apartheid-era disasters. Almost every day, new shacks, which are makeshift structures made of waste materials such as corrugated iron sheets and wood emerge like mushrooms. Quarry Road West had roughly 600 squatter settlements four years ago. Currently, there are already around 1500 shacks, and the settlement is growing every day (Anon. 2019). The M19 and the off-ramp linking to Reservoir Hills and Quarry Road West are now encroached upon by shacks. This has precipitated mass illegal electricity connections, which in turn disrupt electricity supply to the residents of Reservoir Hills.

## **1.3 PROBLEM STATEMENT**

Many individuals continue to connect to electricity unlawfully, despite the eThekweni Electricity Department's warning signs. It is important to identify the measures that the Department has put in place to minimize illegal connections as this is also one of the causes of many deaths in the country. According to Vuk'zenzele (2014), illicit connections are killing many South Africans and creating power outages across the country. For example, "Electricity suppliers' main concerns are that illegal connections are dangerous and often result in serious injury or even deaths. It also causes overloading of the network, which results in unplanned outages, which affect the smooth operating of the traffic lights, as well as sustaining equipment at hospitals" (Pule, 2014:1). Further, it is important to understand the underlying factors that prompt people to connect illegally and how this is affecting the economy of South Africa. It is clear that power theft has a detrimental influence on a variety of socioeconomic activity, and the repercussions may be prevented. Illegal electricity connection in South Africa is a major problem. This problem is growing every year, and it will significantly affect various socio-economic activities that impact on people's livelihoods.

Unlike, the water department in eThekweni, which has peace officers, the Electricity Department is lacking in this area. The peace officers in the Water Department are to deal with illegal water connections as police stations aren't equipped or aware of how to deal

with illegal connections in the city. Likewise, the electricity department could hire peace officers to deal with illegal electricity connections in the city of Durban. Harsher sentences can be introduced by the department in attempt to combat illegal electricity connection. This is a gap that the researcher is looking to bridge. Illegal electricity connection also has a huge negative impact on the economy. Informal settlement dwellers only focus on themselves getting electrified without realizing the impact this may have on service delivery. They tend to ignore the consequences that illegal connections may have on their community as well as the economy of the country. The researcher would propose a Peace Office Department within the electricity department, where illegal electricity connections can be thoroughly dealt with and harsher sentences to be put in place and more aggressive educational programs to be done in informal settlements.

#### **1.4 MOTIVATION**

This research has been prompted by numerous observations. Firstly, as a primary observer and an employee of the department of electricity, one recognizes the alarming rate of deaths caused by illegal electricity connections in eThekweni. The number of deaths in South Africa due to illegal connections is appalling. Secondly, the economy of the country and revenue lost due to illegal electricity connection is another factor motivating the study

The number of deaths caused by illegal connections is not given adequate attention. Furthermore, children are the majority of the victims of electricity theft-related mortality. As postulated by Anon (2018), the inhabitants of Marikina, north of Pretoria, have rendered their hamlet a death trap out of desperation for electricity, with children suffering the ultimate price of electrocution due to illegally connected power. South Africa's economy also suffers due illegal electricity connections. The National Energy Regulator of South Africa (NERSA) announced that tariffs would rise by 9.4% in 2019, 8.1% in 2020, and 5.2% in 2021. One of the factors contributing to the increment of tariffs is illegal electricity connections. Eskom has lost a little under R2 billion to crime in its last financial year (Business Insider, 2019). Much of the losses were from electricity theft and stolen cables, but Eskom also lost several millions to scams and sabotage. Eskom indicated that it recorded 5,150 incidents where its cables or conductors were stolen, at a total cost of R105 million- up 128 per cent on the year before.

## **1.5 AIM**

The purpose of this study is to examine the impact of illegal power connections in the Quarry Road informal communities in Reservoir Hills, Durban.

## **1.6 OBJECTIVES OF THE STUDY**

The objectives of this study are to:

- Identify the causes of illicit electricity connections in Quarry Road informal settlements, Reservoir Hills.
- Explore the approaches used by the eThekweni municipality, Electricity Department to curb or minimize illegal electricity connections
- Describe the effects that illegal electricity connections have on the Economy of the country and the community.
- Explore the impact of illegal connections and the formation of groups like Abahlali baseMjodolo and Izinyokanyoka and the impact they have on society

## **1.7 KEY RESEARCH QUESTIONS**

The questions driving this research are:

- What are the main reasons for illegal connections?
- How does the eThekweni Municipality curb illegal electricity connections in Quarry Road Informal Settlement?
- Why are Quarry Road informal settlement residents prompt to connect illegally?
- What are the policies in place and procedures are in place to limit unlawful connections?
- What are the effects of illegal connections in Quarry Road informal settlements?

## **1.9 SIGNIFICANCE OF THE STUDY**

The research will not only provide the Electricity Department of eThekweni Municipality with data on how to address issues of illegal connections, but it will give insight to problems faced in informal settlements. It also seeks to educate residents on the consequences of illegal electricity connections. It will be beneficial to other stakeholders in understanding the problem of illegal electricity connections. The study will be of great use to the residents of informal settlements on alternative ways to have power, thereby



creating a safer environment and reducing the number of deaths due to illegal connections. The study aims to identify alternative innovative ways to reduce illegal electricity connections.

### **1.10 DEFINITION OF KEY WORDS**

#### *Electricity fraud*

This refers to “a dishonest and illegal use of electricity equipment or service with the intention to avoid billing charge” (Dangar and Joshi, 2015). This type of fraud happens when customers purposefully fool utility providers, and it is most typically accomplished by tampering with the meter to report a lower reading.

#### *Billing irregularities*

Billing anomalies can take a variety of forms, including bribed servicemen taking erroneous meter readings and offices altering bills in exchange for illegal payments from customers (Dike et al., 2015). For example, power utility officials may be incompetent at measuring the quantity of electricity utilized, resulting in a considerably higher or lower number for the amount of electricity used.

#### *Non-technical losses*

Electricity theft may be in form of non-technical losses of electricity. The power outage is caused by users receiving electricity that has not been accounted for.

#### *Unpaid bills*

Unpaid bills relate to a person's failure or omission to pay for a service that has been or is being provided to him or her. The non-payment of power bills is a source of concern in this situation.

### **1.11 LIMITATIONS OF THE STUDY**

The findings of this study may be restricted and not be generalized as it is conducted in a small section of the country. The findings from Quarry Road informal settlements may not be the case of South Africa as a whole. The data of the research may not be applicable to South Africa but will be limited to those of Quarry informal settlements. The sampling of this study is not representative of other informal settlements in South Africa and worldwide.

The study may also be bias to a certain race and social class. The conclusions from this study may not be applicable to all races and social classes. It may speak more to the majority of the race and social class found in Quarry informal settlements. Other races and social classes may not relate or understand the data collected in the study as it talks to different levels of individuals and not everyone.

Research tools may also limit the study. The study is conducted using the qualitative approach, which will utilize interviews. Interviews may yield same results unlike quantitative research, which may have yield different answers. Residents may also fear that the study will be used against them as illegal electricity connection is a crime.

## **1.12 OUTLINE OF THE DISSERTATION**

CHAPTER 1: Introduces the research (Introduction). It walks the reader through the study's aims, objectives, problem statement, and main research questions. It gives the reader a preview of what they might expect from the dissertation.

CHAPTER 2: The Literature Review chapter provides details on issues around illegal electricity connections in South Africa. It provides the definitions of terms used, the dynamics of electrification in informal settlements and other countries, the challenges faced and the causes of illegal electricity connections.

CHAPTER 3: This section explains the academic technicalities which were applied to collect data for the study. The research strategy, research design technique, research paradigm, study site, population, sampling, and data collecting method are all presented. It also covers data gathering tools, data collection methods, and data analysis. In this chapter, the researcher discusses the reliability of the findings as well as the study's limitations.

CHAPTER 4: In this chapter, the researcher presents the findings of the study elicited through in-depth interviews with the participants. These are the responses from residents of Quarry informal settlements. This chapter is supported by narratives which form a logical conversation between the researcher and the participants.

CHAPTER 5: This chapter concludes the study which explores the findings and causes of illegal electricity connections in Quarry informal settlements. It interrogates the socioeconomic factors that could possibly drive the residents of informal settlements to connect electricity illegally.

### **1.13 CONCLUSION**

The chapter introduced the study and reflected on the aims, objectives and background of the study. This chapter also served to illuminate the reader on what to expect in the write-up to follow and highlight the importance of the dissertation.

The key objective of this study is not only to focus on the consequences of illegal electricity connection but to dig deep on the possible causes of illegal electricity connections and address the issue of social inequality and how it could possibly be resolved in the communities. Furthermore, to address how the municipality would regain revenue from curbing illegal electricity in informal settlements and save innocent lives.

## **CHAPTER TWO**

### **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

#### **2.1 INTRODUCTION**

This chapter defines key concepts and reviews the various theories and empirical literature related to the electrification of informal human settlements in South Africa. The theoretical literature and empirical studies are utilised to clarify and discuss challenges related to electrification in the South African government. The reviewed literature summarises the overall challenges that the country has with regard to the electrification of human settlement and the theft of electricity. The chapter is divided into different sections, each with various sub-sections. This chapter comprises the empirical literature related to electrification from a global perspective using the European continent, the African continent, and South Africa (Kirsch, 2007).

This chapter aims to articulate the causes of illegal electricity connections, seek solutions, and bridge the gap in South Africa in combating illicit connection electricity and exploring how illegal electricity connections are curbed in other Countries. Illicit electricity connections, as postulated by Kelly-Detwiler (2013), impact both industrialized and developing countries, and they occur in many countries regardless of their development position. As a result, illicit power is a global matter, not just a South African issue.

## **2.2 ILLEGAL ELECTRICITY IN OTHER COUNTRIES**

Illegal electricity connection is a worldwide issue. South Africa is not the only country battling illicit connections, but many other countries are in the same battle, some in worse situations than South Africa. Although unlawful electricity connections differ from country to country, for example, In Indonesia, illegal connections lack access to electricity. Yet, in India, illegal electricity is political (Kumar, 2004).

### **2.2.1 TURKEY**

Turkey, unlike South Africa, is one of the world's developed countries, according to the CIA's World Factbook (CIA). It is also referred to as one of the world's recently industrialized countries as perceived by economists and scientists. It has the 19th highest nominal Gross Domestic Product (GDP) in the world (GDP) (Database of the World's Economic Outlook, 2019). Turkey's economy is classified as an emerging market economy by the International Monetary Fund (International monetary fund, 2019). The Aegean, Black Sea, Central Anatolia, Marmara, Mediterranean, Eastern Anatolia, and Southeastern Anatolia are the seven areas that make up Turkey. (Source: Marangoz, 2013).

Turkey is a natural gas and oil producer. Still, the state-owned TPAO (Turkey's national petroleum corporation) produces insufficient quantities to make the country self-sufficient, making Turkey a net importer of both oil and gas (Mustafa, 2019). Illegal power consumption is one of Turkey's most serious socioeconomic and ethical issues. In Turkey's regional and provincial areas, illegal electricity consumption, unemployment, income level, illiteracy rate, terror occurrences, and population differ (Marangoz, 2013).

Turkey's government main concern is ensuring that there is enough supply for the growing demand for energy in the country (Marangoz, 2013). According to the International

Energy Agency (IEA), Turkey has the fastest medium to long-term growth in energy demand of all IEA member nations. A study done by Marangoz (2013) on illegal Electricity use in Turkey highlights the deterrents or driving factor of unlawful connections in Turkey.

Firstly, people's income in the country plays a role in the illegal connection of electricity. He claims that income and unlawful power consumption and loss rates are inextricably linked. The second driving factor is unemployment. The Turkish Statistical Institute publishes the overall number of employed and jobless persons at the start of each year. As Nielsen (2012) described on the correlation of illiteracy playing a role to illegal connections, Marangoz (2013) states that the illiteracy rate is another driving factor in Turkey's illegal electricity connection. The number of illiterates and the population of the city are 250 and 1,000, respectively. Another impediment is the country's population, which is calculated annually by the Turkish Statistical Institute using data from the address-based population registration system. A political party is the sixth determinant. The Supreme Board of Elections Institute provided the party statistics. This factor indicates which political party obtained control of each city. The number of terrorist occurrences is the seventh determinant. According to Marangoz (2013), terrorist attacks occurred in 20 of Turkey's cities. This also demonstrates a link between illicit electricity and terrorist attacks. Lastly, regions also contribute to the deterrents of illegal electricity connections. Turkey is divided into seven regions (Marangoz, 2013).

Illegal power use in Turkey was also found to be greater than in other nations such as China, Argentina, and Israel. When looking at the case of Turkey, Smith (2004) argued that the illegal usage of electricity increases significantly every year ranging from 0.5% and 3.5% in a country. Given the amount of income earned from the selling of energy, this proportion of electricity theft is regarded quite high.

### **2.2.2 CANADA**

Canada is the second-largest country globally, which occupies roughly the northern twofifths of the continent of North America (Britannica). It is an independent country and is not part of the United States of America (US).

The primary source of electricity in Canada is hydroelectricity, which generates 55% of total capacity. The rest are from coal, natural gases and nuclear plants. Canada is considered to be amongst the best country in the world in terms of producing electricity and is ranked number five biggest electricity producer worldwide (US News, 2021). Canada has an association known as the Canadian Electricity Association (CEA), which aims at representing the voice of the Canadian electricity industry from province to province. The association is dedicated to providing safe, consistent, maintainable and reasonable electricity to Canadians at work and home. Canada is known to be rich and with plentiful and various natural resources. However, the Canadian electricity supply depends more mainly on hydro, nuclear and wind. The government of Canada priorities electricity price to be at a level where everyone can access and afford, including the destitute (Moshoeu, 2017).

Electricity systems and power markets are tightly integrated across the US-Canadian border. Canada exports electricity to the United States and sometimes imports electricity from the United States to help meet its demand (Vine, 2017). According to Mbanjwa (2017), in 2010, the US and Canada recorded a revenue loss of \$6 billion and \$600 million, respectively, to electricity theft.

### **2.2.3 UGANDA**

Uganda, formally known as the Republic of Uganda, is a developing country. It is one of the poorest developing countries. This was based on a research conducted by the United Nations Economic and Social Council (UNESCO), which took into account a variety of factors, including a three-year average estimate of gross national income per capita (Kulabako, 2009).

Like South Africa, post-apartheid, charcoal and fuelwood were the primary sources of energy in Uganda. Low water levels in Lake Victoria, the country's principal source of power generating potential, caused a generation shortfall and leading to an energy crisis in 2005 and 2006. They were resulting in frequent and prolonged electricity blackouts (Sanya, 2015).

In 2006, Uganda experienced a power supply crisis. Later the same year, at an international trade fair in Uganda, President Museveni announced that it was Uganda's

last year to be faced with such an energy crisis; he promised that in the next three years, the electrical issue would be a thing of the past, and that they would have learned their lesson (Kasyate and Kamau Lugogo, 2006). Bujagali and Karuma hydroelectric dams were to be built and finished privately by 2010, alleviating the country's energy supply shortage in the medium term.

In 2005, just 4-5 percent of Uganda's 27 million inhabitants had access to electricity, and only 1% of them lived in rural areas. Total losses, including technical and non-technical, averaged 41.5 percent in 2002. Uganda's system losses were larger than those of 12 other Sub-Saharan African nations (Karekezi and Kimaani, 2002). According to revised data from 2005, the industry was still losing 28% of the hydro generated each month due to non-technical losses (Luggya, 2005), equating to a loss of 45 megawatts. Low water levels in Lake Victoria, ascribed to drought, inappropriate irrigation, and misuse for energy generation, Uganda's potential to generate electricity fell from an estimated 230MW to 135MW in 2006. Consumer demand has been increasing at a rate of 30MW per year, resulting in continuing blackouts and increased demand for biomass (firewood and charcoal), which has always been the major source of energy for 95% of Ugandans. Due to electric power shortages, projections for economic growth have been cut from 6.5 percent to 4.6 percent (Wakabi, 2006).

An examination done by Gore (2006) on the possible detrimental events that caused Uganda to be in an energy crisis. He states the following detriments:

- Extremely limited home access
- Demand vastly outstripping supply
- Supply reliant on water resources
- Water resource availability frequently constrained
- New generation sources continuously delayed
- Expensive emergency generation sources

Increases in the unit price of energy to cover the costs of emergency power and new generation sources.

## 2.2.4 ETHIOPIA

Ethiopia is Africa's second-most populated country after Nigeria, with the region's fastest growing economy. However, with a per capita income of \$850, this country is also one of the poorest (Kopf, 2020).

In the early 2000s, less than 1% of homes had access to electricity; Ethiopia does have one of the lowest rates of rural electrification in the world (Estache and Fay, 2007). The universal Energy Access Program (UEAP), which began in 2005 with a new energy supply to 1,000 non-electrified communities, has attempted to significantly reshape the landscape. Each family in each chosen hamlet was liable for the expenditures of connecting to the main electrical line, installing a meter, and constructing a drop down the line from the nearby pole.

Ethiopia has abundant renewable energy resources, including vast hydro, wind, geothermal power potential, and solar. It is among the few nations in Sub-Saharan Africa, if not the world, that uses renewable energy to create power. Despite tremendous progress over the last decade, Ethiopia's electrical sector still falls short of the promise of competent service delivery, with the continent's second-highest energy access gap (Ethiopia electrification program, 2018).

The Rural electrification agency is an autonomous institution that will be established either under the minister of infrastructure or the Ministry of rural development in the near future. The Agency will draft a preliminary rural electrification plan and give interested investors with information about prospective project locations (The World Bank, 2018).

Ethiopia is one of the nations that is actively working to improve access to electricity in their own country, in order to meet the United Nations' 2030 Sustainable Development Goal of universal access to electricity (International Energy Agency, 2017). The number of formalised connections in Ethiopia is about 3.1M, but there is a significant difference in the number reported by the EEU to values found in recent household surveys. The households with non-formal connections are about twice as many, and this is possibly explained by extensive meter loading and sharing. Previous growth in the number of connections have been less than 10% per year, but the goal for the coming five years is about 15% per year (International Energy Agency, 2017). The total average cost of a new



connection is 650 USD, but there is a significant variation, explained mainly by distance to the centralised grid. In Ethiopia, electricity prices are low, and evidence suggests that customers do not respond to the marginal increase in the current increasing block tariff structure.

In Ethiopia, electricity prices are low, and evidence suggests that customers do not respond to the marginal increase in the current increasing block tariff structure.

The national electrification program in Ethiopia was launched in 2017 and have a national target of universal electricity access by 2025, with the help of temporary off-grid solutions. The target for universal grid access is set to the year 2030 (International Energy Agency, 2017).

### **2.3 ELECTRIFICATION OF INFORMAL SETTLEMENTS IN SOUTH AFRICA**

According to Gaunt, Salida, Macfarlane, Maboda, Reddy, and Borchers (2012), a few years back, there was a declared aim to abolish informal settlements a few years ago. Nonetheless, they are now recognized as a long-term component of the South African landscape in official papers such as policy recommendations for the electrification of unproclaimed regions. Rural electrification, formal electrification, and electrification of informal urban settlements are the three types of electrification. According to Gaunt et al. (2012), informal settlements confront the most obstacles of the three sectors. This demographic accounts for 14% of the population and is expected to number 4.4 million people and 1.2 million families (Uperlinear, 2017). They go on to argue that it is the fastest-growing population that the government has failed to meet in terms of electrification, housing, and other necessities.

Different municipalities have made attempts to curb illegal electricity connections in Informal settlements. For example, The eThekweni Municipality Electricity department has started working hand in hand with the Human Settlements Department to electrify informal settlements. They have electrified numerous informal settlements in the KwaZulu Natal region, and according to Maluleka (2014), the municipality electrified more than 15000 informal settlements in 2014 through the Integrated National Electrification Programme. The city targeted to electrify more than 20000 informal dwellers in 2015.

According to Yadoo (2012), there are two ways to achieve electrification. The grid model and the non-grid electrification procedure. The non-grid concept is aided by concessionaries and municipalities. For rural families, the non-grid technique is costly since they are claimed to be marked by poverty, low economic activity, weak infrastructure, and so on. An application cost of one hundred rands is required, as well as a monthly maintenance charge of R75. The non-selection grid's criteria are that the community will not be on the Grid's three-year plan and that it is located in a remote region where connection hubs are not readily available. According to Willcox and Cooper (2018), the national electrification program has made significant progress in providing electricity to all households; however, the cost-effectiveness of offering electricity to rural areas and the complexity of providing electricity to preponderantly informal dwellings in principally unplanned and disorganized informal areas will impede future progress.

Urban Informal Settlements are home to at least 10% of South Africa's 4.4 million population. Informal settlements are quickly expanding, and the tight or limited budget cannot keep up with the demand. Every person has a right to vital services, according to the Republic of South Africa's Constitution, Act No. 108 of 1996. This includes power, which is available everywhere. As citizens of the country, it is the government's obligation to guarantee that persons living in informal settlements have access to basic services. Municipalities, as extensions of government, are responsible for ensuring the electrification of all inhabitants within their jurisdictions. This does not, however, imply that energy must be given in locations where the people of the country are at risk.

Traditionally, the Integrated National Electrification Program (INEP) concentrated on powering formal residences in both rural and urban locations. Nonetheless, the department is compelled to supply energy solutions to informal settlements due to the rising trend of informal settlements and the fundamental entitlement of all residents to vital services. Informal settlements have developed at a pace of 4% per year in accordance with urbanisation trends, however the rate of expansion is expected to reduce to 3% from 2010. (Marriah, 2016b). As a result, the Department of Human Settlements has a housing initiative that includes efforts to eliminate informal settlements.

Housing delivery hurdles include:

- A lack of adequate and inexpensive land;
- Lack of viable relocation locations;
- The delayed approval procedure with respect to planning and promotion;
- Availability of funding and growing development costs, and;
- Restraints in terms of satisfactory existing bulk services

Electrifying informal settlements will enhance living conditions while also reducing the amount of accidents caused by unauthorized connections. Furthermore, the poor residents of these villages are denied access to free basic electricity to which they are entitled. In unconnected informal communities, there is a high prevalence of unlawful connections. These settlements cause the network to be overburdened and do not compensate for the power used. Electrifying these locations will solve the problem while also bringing money to the licensed company (Chetty, 2018).

Other problems in powering informal settlements include a lack of capacity in some locations to check illicit connections once they have been electrified. Assume that the eThekweni Municipality Department of Electricity electrifies some regions while leaving other unlit. In that circumstance, the likelihood of unserved families using the closeness of an official electrical connection to get an illegal connection rises, resulting in increased non-technical losses. In informal communities, population growth is also faster. If home growth is not regulated and planned, there is a risk that barriers may arise that make it difficult to connect new families to power (Lemaire and Kerr, 2016).

## **2.4 MEASURES TAKEN TO COMBAT ELECTRICITY THEFT IN SOUTH AFRICA**

Electric utilities may struggle to provide dependable service if they are trapped in a culture of corruption and mismanagement (Smith, 2000). Power theft, according to Lovei and Mckechnie (2000), harms the poor by sustaining a system that rewards the affluent and powerful. On April 25, 1860, the electric telegraph line connecting Cape Town and Simon's Town became the first public usage of electricity in South Africa. Electricity reached more populous regions as the century proceeded, but rural and informal communities remained mostly unconnected. Still, in 1994, only one per cent of rural household had access to electricity (Horvei and Dahl, 1994). Informal settlement residents had to use other charcoal, paraffin, gas and candles as sources of electricity. Eighty per cent of households relied on candles as the main source of lighting and paraffin

as fuel to cook. These energy sources were dangerous if neglected and could cause major fires, which ultimately leads to deaths. Due to the lack of essential services in informal settlements and some people unable to afford electricity, most opt for illegal electricity connection.

#### **2.4.1 FREE BASIC ELECTRICITY (FBE) IN SOUTH AFRICA**

In 2003, the Free Basic Electricity campaign was formed, recognizing electricity as a key energy demand and aiming to make it accessible and inexpensive to all, particularly the poor. Poor households linked to the national electrical grid would get a monthly allocation of 50kWh (Eskom, 2016). Due to restricted grid access in most locations, the Department of Minerals and Energy recognized the necessity to provide free basic alternative energy to poor homes in un-electrified areas (NERSA, 2000). This initiative was also designed to address the socioeconomic challenges that develop as a result of insufficient electricity supply to families. Health is also a concern in informal settlements, and the goal of this initiative was to reduce health risks by encouraging the proper use of energy carriers and ensuring that energy carriers are long-term (Mbanjwa, 2017).

In 2015, there was an electrical installation in the Emhlabeni informal settlements of Umlazi Township in KwaZulu-Natal, after an impressive vast number of illegal electricity connections in the area that were a danger their livelihood. About 868KGs of cables were removed, and an estimation of 350 houses was found to be illegally connected (eThekweni Municipality, 2015). As a result, about 47 million was spent electrifying this township that has since become safer and has reaped the benefits of the free basic electricity.

#### **2.4.2 USE OF THE POLICE**

Illegal electricity connection is also regarded as a criminal offence in South Africa. Following the case of a 61-year-old Johannesburg woman arrested for an unlawful electricity connection (Eskom, 2018). Section 27 of the Criminal Procedure Act 51 of 1997 allows SAPS to search premises and take items using force (illicit electricity connection). If an official believes, on legitimate cause, that any unlawful object (unlawfully electrical connections) may be demolished or disposed of if entrance is vocally asked and the

purpose for which admission is sought is declared, SAPS members may use force to obtain entry to premises (Chetty, 2018). Eskom stated that customers who tamper with electricity would be prosecuted (Ndlendle, 2018).

### **2.4.3 AWARENESS CAMPAIGNS**

Awareness campaigns and education sessions are another way electricity suppliers such as Eskom use to combat illegal electricity connections. The Free State, the Eastern Cape, and Limpopo are the three provinces where Eskom has begun its consumer incentive campaign. It began in October and finished on December 31, 2017. (Viljoen, 2016). Prepaid clients that tampered with and by-passed their electricity meters, connected power in an irregular manner, or used unlawful pre-paid vouchers instead of purchasing genuine electricity vouchers received a 50% discount on the tamper punishment. Customers who clean up their acts before the deadline will not be disconnected, and Eskom would not punish them because they did not pay for the power they unlawfully consumed. Customers will benefit from debt relief, fewer power interruptions, free meters at their houses, decreased safety hazards, and no penalties. Eskom is continuing to implement tactics to address unauthorized energy connections and non - payment (Maphaka, 2015).

### **2.4.4 OPERATION KHANYISA**

The eThekweni Municipality scheduled a clean-up operation in 2016, where thousands of illegal electricity connections were disconnected. The eThekweni Electricity Department, SAPS police, Eskom, Telkom, and other law enforcement agencies collaborated on this operation. Thousands of illegally connected power lines were dismantled in Thongathi's Sitaram and Imona illegal settlement areas. This neighbourhood was recognized as a hotspot for illicit connections in the city, and a syndicate was thought to be operating in the region. EThekweni Electricity has launched a number of steps to help prevent illegal electricity in the area (eThekweni Newsflash, 2016). Among these initiatives are:

- The frequent removal of illegal connections. Security guards will escort illegal services contractors to remove illicit connections regularly.
- Service connections have been converted from underground mains to overhead mains to minimise the interruption of supply to customers
- Circuits are being reconfigured to reduce the interruption of supply
- Awareness programmes are conducted regularly to educate customers and residents on safety, reporting theft of electricity and consequences of connecting electricity illegally
- Short poles have been replaced with long poles to prevent access to overhead cables/connections.

The National electricity week is another effort in combating illegal electricity connection. Eskom launched it to combat unauthorised electricity connections. Every year, from the 11th to the 17th of August, the national electrical safety week takes place. It aims at promoting and educating the public on the safe use of electricity (Sanews, 2014).

In October 2010, Operation Khanyisa was officially initiated. It is a nationwide cooperation initiative aiming at combating energy theft and losses, hence ensuring the quality and reliability of South Africa's electrical supply. It aspires to mobilize South Africans for legal, safe, and efficient electricity to contribute to the country's long term sustainability and economic progress (Kaam, Maphaka, and Sparg, 2013). Operation Khanyisa was launched to combat illegal electricity connections. Khanyisa is a Zulu word meaning "to enlighten or give light" (Sonjica, 2017).

#### **2.4.5 USE OF MOBILE REMOTE CHECKER**

According to Doorduyn, Mouton, Herman and Beukes (2004), mobile remote control meters are another tool to minimise power theft. This tool is used to track low-voltage electricity through meters in a small-scale robbery. The procedure works in such a way that "resolution of detected unauthorised consumers depends on the difference between failure and the time of the search meter." The computer is thus capable of collecting electricity that is unlawfully used and thus of combating it. In reality, smart meters and internet-related applications have provided more complicated theft techniques (Siebel Energy Institute, 2017). Still, most governments' infrastructure (including developing

countries) does not detect these complex problems. In India, where this issue is prevalent, the installation of intelligent meters using algorithms to identify consumption patterns is already underway (The Hindu, 2016).

#### **2.4.6 POWER LINE IMPEDIMENT TECHNIQUE AND SMART GRID**

The use of impedance technology on the power line is another way of fraud eradication in electricity. The importance of this system is its capacity to map the precise location/house where energy is being stolen. The identification is made by comparing legitimate (legal) sources with the electricity robbery source. The illegal link is between two legitimate meters. The illicit load for a consumer is placed directly to the feeder, or the unlawful load of the consumer parallels the lawful customer where the theft uses the additional step before a genuine customer (Shekara, 2010).

A smart grid is an electricity network that makes use of digital communication innovations to enhance the present electrical power grid architecture. The SG includes information and communication technology (ICT) in traditional electricity grids (Farhangi, 2010). The smart grid offers power failure identification and manipulation, auto-healing or self-repair, automatic billing, sensor response during, double-way customer/utility communications, self-monitoring, and the detection of electrical voltage.

The smart grid characteristics mentioned above enable the smart grid to participate intelligently and humanly in the electricity grid service. A smart grid has been introduced to deal with the failures of the traditional power grid scheme. One of the main advantages is electricity theft, which has been afflicted with deploying advanced metering infrastructure by the power industry (Yip, Wong, Hew, Gan, Phan and Tan, 2017). The smart grid is concerned with innovative inventions and innovations to improve the efficiency and security of our traditional power grid. The smart grid principle offers developed countries enormous opportunities to invest in their power sectors.

#### **2.5 CONSEQUENCES OF ILLEGAL ELECTRICITY CONNECTION**

Illegal electricity connections have a negative consequences both socially and financially (Mbanjwa, 2016). The results of illegal electricity connections severely impact the country's economy and the different communities that illegally connect. Electricity suppliers such as Eskom may operate at a loss and may be forced to increase their tariffs

to match the lost electricity due to illegal connections. Some may claim that because huge utilities providing critical services provide bad service, overcharge, and profit handsomely regardless, illegal connections will have little impact on them, while others may contend that illicit power connections are a crime that should not be tolerated (Parker, 2016). Regardless of how one views this problem, illegal electricity connections remain dangerous and have negative consequences.

### **2.5.1 THE COUNTRY AND ECONOMY**

Illegal power connections are an economic concern for electricity companies since they have a negative impact on their bottom line. Electricity sales are the primary source of revenue for power companies, and a portion of that money is lost due to unlawful connections (Peninc, 2008). Because of the energy that is not invoiced, non-technical distribution losses have a substantial influence on corporate revenue (Arango, Deccache, Bonatto, Arango, Ribeiro and Silveira. 2017). Power losses incurred by Eskom and municipalities contribute to increased electricity costs, which in turn leads to a hike or increase in food and necessary commodities prices (Eskom, 2016). Energy theft, according to Arango et al. (2017), causes an increase in electricity consumption owing to the tendency of stealer users increasing their usage since they have "free energy" while finding and imposing legal penalties takes time for utilities and authorities.

Illegal electrical connections lead to power outages in the nation, which may be caused by an increase in electricity demand that exceeds the capacity of existing power plants and the amount of available electricity (Vuk'zenzele, 2014). In 2019/2020, South Africa experienced several power outages (load shedding), and one of the factors contributing to this is the illegal electricity connections. Unexpected power outages also have an impact on the quality of the electrical supply, which affects investment and, eventually, the economy of the country. This is also an inconvenience to businesses, both in the private and public sectors, contributing to the country's economy. Hospitals are also greatly affected by illegal connections as this threatens the livelihood and lives of individuals. This can be lethal for hospital patients (Chetty, 2018).

When these perpetrators illegally connect, the network overloads and trips because they carry more users than its initial design. When these transformers explode, it is dangerous but costly and timely to fix as they take hours or even days to repair. This then affects



and inconvenience legal and paying customers, which directly affects power supplier's revenue. In June 2019, a transformer in Diepsloot exploded due to overload from illegal connections (Fourways Review News, 2020). In August 2012, Eskom's Customer Relations Manager for the Pietermaritzburg area pointed that illegal connections in Richmond, Msunduzi and Howick had gone out of hand, causing severe load shedding emanating from exploding transformers (Ntuli, 2020).

## **2.5.2 THE COMMUNITY**

It is the life of the culprits and innocent citizens that are lost when illicit electrical connections are made (Vuk'zenzele, 2014). Illegal connections have resulted in the deaths of many innocent people. Electrocuting is also a common cause of death. The risk presented not just to those who participate in illegal electrical connections, but also to the community at large, more specifically children and creatures that are part of the environment, is one of Eskom's main concerns in the issue of illegal electricity connections (BizCommunity, 2018).

These connections are hazardous and can cause electrocutions (Lowvelder, 2016). According to Timelive (2020), a case of a 12-year old died in Umbilo, Durban, after being electrocuted by an exposed electrical wire in a canal he was crossing. The boy has attempted to cross the Umbilo River Canal, near the M7 informal settlement. It is also reported that this was not the first incident of illegal electricity connections to have ended in such tragedy in the M7 informal settlement.

Another terrible, memorable incidence of illegal power connection occurred in Verulam, Durban, in 2010, where six individuals, including two children, were slain (Matsolo, 2013). The criminals got away with it while innocent people die. A 5-year-old was electrocuted while bathing in a creek upon which a live wire had dropped, and a 12-year-old died after she touched a live wire while picking mangoes from a tree between November and December 2010. Two guys died in separate occasions after attempting to create an illegal connection during a rainstorm, and two adults died in separate situations (Waterworth, 2010). In 2010, Hon. Arunajallam, a councilor from Verulam, noted that illegal connections are a significant business for middlemen who appear to be making money, and that illegal electricity dealers provide the service for as low as R20 to R50 to individuals who lack the know-how on making these illegal connections.

As warned by Eskom, illegal connections are not hung at a safe height above groundlevel. As a result, children, animals, and even adults frequently come into contact with these exposed wires. They also cautioned that illegally connected wires can make touch with other things such as roofs, gutters, and laundry lines, as well as security gates, causing these items to become active and capable of conducting electricity and shocking people. Eskom further stated that in order to solve these issues, they developed operation khanyisa, a cooperation effort aimed at mobilizing South Africans to unlawfully utilize power (Sonjica, 2017).

Eskom also faces a huge challenge as some of these perpetrators become aggressive. For example, on 17 April 2020, Sowetan live reported an Eskom employee who had been threatened for trying to restore a power outage caused by illegal electricity connection. Following the overloading of a transformer by local residents who illegally hooked themselves to the network and vandalized power equipment, more than 700 authorized connectors were left in the dark. When an Eskom technician arrived on the scene, they were met with opposition from members of the community (Pijoos, 2020). The Eskom CEO was quoted saying that *"It is regrettable that our efforts to provide reliable electricity service are often disrupted and undermined by individuals who do not pay for their services. We should provide services, yet keep our staff safe, run our operations efficiently, collect revenue for services provided and safeguard our infrastructure"* (Ramashi, 2020).



**Figure 2.1 perpetrator being electrocuted while connecting electricity illegally**

Source: Nairaland Forum (2017)

The image above depicts a perpetrator being electrocuted while connecting electricity illegally in Nigeria.



**Figure 2.2 Children sitting near an exposed wire**

Source: TimesLive (2017)

The above Figure 2.2 shows innocent kids sitting across an exposed wire in illegal electricity connected informal settlements in South Africa. The dangers of unlawful connections affecting innocent lives.



**Figure 2.3 Overloaded cables**

Source: News 365 (2020)

The picture depicts an example of an overloaded cable, which can cause power failures and blackouts. The image shows a web of cables connected on two poles going in different directions. However, it can be challenging to locate live and neutral wires, cause illegal connectors being electrocuted.

### **2.5.3 UNPAID ELECTRICITY BILLS AND THEIR EFFECTS**

Eskom points out that the failure to pay for power remains very strong in South Africa. In South Africa, a non-payment tradition is undeniable, according to Mkhwanazi (1999). Utility officials came to the conclusion that non-payers are not always the affluent, prominent poor, who can't afford and hence know their electricity won't be disconnected regardless of whether they pay or not (Smith, 2006). Consequently, South Africa has steadily faced the issue of unpaid energy bills. According to eNCA news (2014), municipalities have been under a lot of stress as a result of unpaid utility bills. "Electricity theft cannot be computed; instead, it is generally determined by a comprehensive examination of power plants or balancing meters (Smith, 2004). Despite their achievements, Cardenas et al. (2012) argue that traditional procedures are insufficient since compromising and reprogramming meters are straightforward for someone who understands a modest machine. Because of the deception, identifying the perpetrators will be difficult for the service provider.

Moreover, graft and corruption continue to be drivers for the spike in unpaid bills in South Africa. Clarke (2016) points out that utility workers frequently get bribes charged as they monitor interest on outstanding debt, including cases where individuals are fined for illicit links and meter interference to receive free energy. In these cases, energy stealing has increased more and more.

### **2.6 CAUSES OF ILLEGAL CONNECTIONS IN SOUTH AFRICA**

According to a research by Smith (2004), unlawful electricity use is common in nations with inadequate governance. The fundamental reason for this is that bad administration leads to cultural corruption and creates a culture of illegal power consumption. According to Smith (2004), there is a negative relationship between income and illicit electricity consumption. Steadman (2010) found that places with higher murder rates and lower family incomes utilize more illicit electricity in his study on the relationship between nontechnical losses and socio-economic factors. According to Marangoz (2018), crime breeds more crime. The political climate can have an impact on the rate of illegal power use, especially if one of the parties is involved in bribery (Steadman, 2010). According to Marangoz (2018), the findings of studies done suggest that per capita income, low literacy rates, unemployment rate, population size, the ruling political party, geographic regions,

and terror events are the major causes of illegal electricity usage across regions, based on a study by Golden and Min (2012). (Marangoz, 2018).

A study was done by Fiil-Flynn (2001) on the theft of electricity crisis in Soweto found that one of the critical issues was unaffordability. Most of the illegal users said they could not afford the electricity they use. According to Smith (2004)'s research, there is a negative relationship between income and unlawful electricity use. Nielsen (2012) also claims that there is a link between the prevalence of illiteracy and the frequency of violent incidents. Assume that the rate of illiteracy and terrorist attacks in an area or city is increased. Illegal energy use is likely to be higher in that circumstance, as high illiteracy and terrorism are typically associated with poverty in that region or city. An Informal dweller, interviewed by the Guardian (2019) complained about the electricity price hikes that make it almost impossible for them to have lights due to affordability. She was raised in the apartheid era and grew up with gas stoves, candles and paraffin heaters. "*Electricity was only for whites*", she states. When the African National Congress (ANC) won power in 1994, she recalls how things changed. The ANC initiated a comprehensive service delivery program. They were legally linked to the grid, but a series of price spikes by the national utility, beset by corruption and inefficiency, have rendered power expensive for many South Africans, relegating millions to energy poverty (The Guardian, 2019).

A study done by Mbanjwa (2018) suggests that the socio-economic status also contributes to the illegal connecting of electricity. According to Gaunt et al. (2012), the factors contributing to illegal electricity connections in informal urban settlements include overpopulation. As propounded by Mbanjwa (2018), electricity costs, poverty, urbanisation, education, Real GDP per capita, total population, urban unemployment rate, infrastructure investment, and structure economy are all socioeconomic aspects to examine while investigating illegal interactions. The degree of power rates directly causes electricity theft, which is proportionate to the socio-economic status of electricity customers (Yurtseven, 2015). All these socio-economic factors are shown in figure 2.4 below.



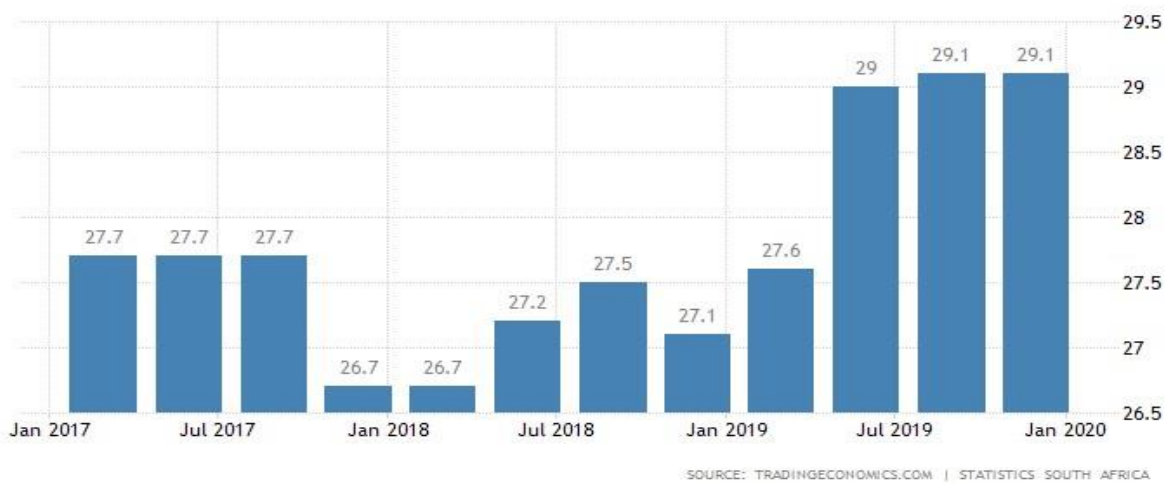
**Figure 2.4 Various socio-economic determinants of electricity theft**

Source: Saini (2017)

### **2.6.1 UNEMPLOYMENT IN SOUTH AFRICA**

The unemployment rate in South Africa seems to be an unsteady one, and it has since gone worse in 2020 (See Attached unemployment chart). According to Trading Economics (2020), the unemployment rate remained stable at 29.1% in the fourth quarter of 2019, although the number of jobless individuals fell by 8,000 to 6.7 million. The number of people employed climbed by 45 thousand to 16.24 million, up from 16.38 million the previous quarter, and this is said to have been affected by the holiday season. It is also said that employment increased in six of the ten industries, with community and social services having the highest number of employees at 113 thousand, followed by finance at 76 thousand, and transportation at 36 thousand. On the other hand, declines are said to have been in the trade, which declined by -159 thousand, manufacturing at -39 thousand and utilities at 14 thousand. These declines were the results of severe power cuts in South Africa (SA statistics, 2020). This shows the importance of electricity in a country and the damage and severity illegal electricity connections can have on employment. Over 180 thousand people lost their jobs due to severe power cuts in the

country. As Fiil-Flynn (2001) described, unaffordability is one reason people are prompt to connect electricity illegally.



**Figure 2.5 Unemployment chart**

## 2.6.2 LITERACY IN SOUTH AFRICA

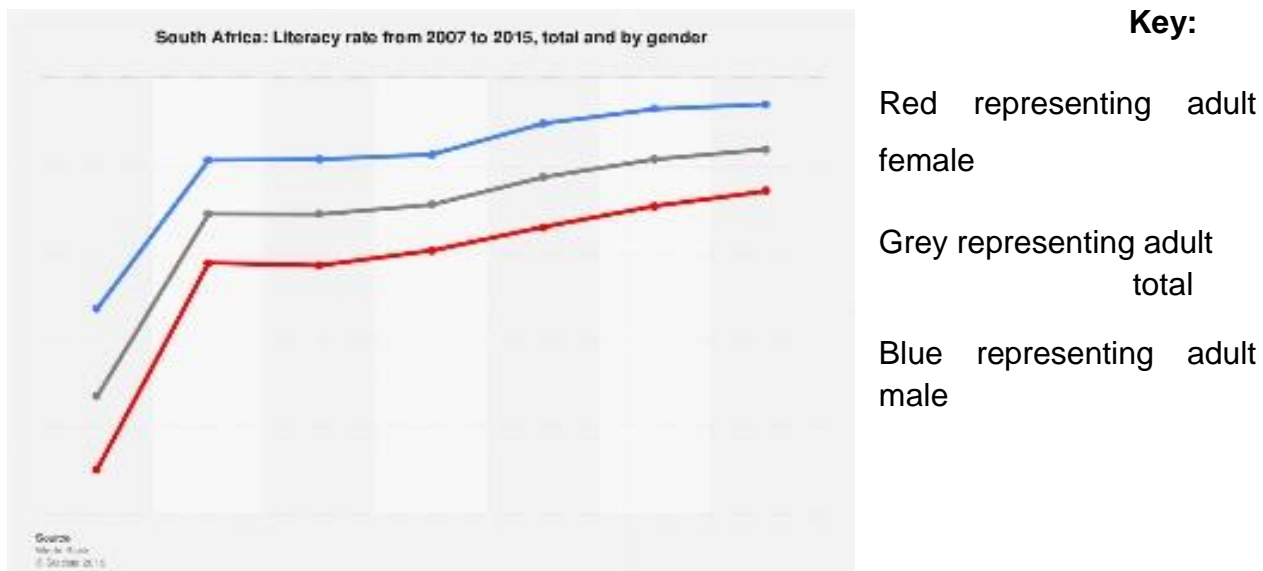
Another critical area identified that makes people illegally connect electricity is the issue of illiteracy. According to Nielsen (2012), due to a country's high illiteracy rate, illicit electricity use is predicted to be greater. According to Sibiya's (2005) research on the strategy for reducing illiteracy in South Africa, illiteracy amongst black adults in the country is a concern for the country's economic growth. It prohibits adults and youths from contributing efficiently and effectively to the new democratic South Africa's social, economic, and political life. In South Africa, it is estimated that over 12 million adults lack a primary education (Department of Education 1999a:69). Political organizations, churches, and non-governmental organizations (NGO's) sponsored night schools and literacy programs for blacks in the 1920s and 1930s. This foundation, however, was shortlived, since the Bantu Education Act, Act No. 47 of 1953, was introduced, laying out the requirements for registration and admittance to night schools (Horrell 1964:115). The emergence of democratic South Africa changed policy, and the constitution guaranteed that everyone had the right to education, including adult basic education (Sibiya, 2005). Constitution of the Republic of South Africa, Act No 108 of 1996, Section 29 (1), states that: *"Everyone has the right to a basic education, including adult basic education; and to further education, which the state, through reasonable measures, must make progressively available and accessible"* (Republic of South Africa 1996:13).



When surveys are done, individuals are asked specific questions to arrive to a conclusion. For example, questions on whether a person can read or write in at least one language are frequently asked in Stats SA's sample-based household surveys to determine the literacy rate in South Africa. The interviewer is instructed to consider the response 'Yes' if the individual can read or write an entire paragraph, and 'No' if the person can just read or write his or her own name (Gustafsson et al. 2009).

The inaccessibility to reading materials and textbooks is cited as one of the key reasons why 78 percent of South African grade 3 students are still unable to read for meaning. Professor Mary Metcalfe, an education specialist, believes that resolving the national literacy deficit will require time and effort (Davids, 2019). KwaZulu-Natal, according to Metcalfe, has been the most impacted, with just 45.4 percent of students having their own reading textbooks and 50.1 percent having their own math textbooks (Davids, 2019).

According to Plecherf (2019), South Africa's literacy level was about 94.37 percent in 2015, and nearly 95% of South Africans were able to read and write. From 2007 to 2015, the literacy rate in South Africa increased, as seen in the graph below from Statistic South Africa (Statsa, 2019).



**Figure 2.6 Literacy rate in South Africa**

Source: O'Neill (2021)



### **2.6.3 INCOME PER CAPITA IN SOUTH AFRICA**

A country's GDP (Gross Domestic Product) is calculated by dividing its GDP (adjusted for inflation) by its entire population. The GDP of South Africa was recently measured at 7432.90 US dollars in 2018 (Trading economics, 2018), and a family income of R48, 753 per month is required to be among the wealthiest 1% of South Africans (after-tax). According to the latest affordability index from the Pietermaritzburg Economic Justice and Dignity Group, more over half of the population (55.5%) lives below the upper-bound poverty threshold, which is presently R1,227 per person per month. Furthermore, the organization claims that a quarter of the population (25.2%) is food insecure (R561 per person per month).

### **2.6.4 ABAHLALI BASEMJODOLO**

*Abahlali basemjodolo* is a South African shack dwellers' movement that fights evictions and public housing. It is South Africa's largest shack dweller's organization, working to improve impoverished people's living situations. This protest began with a traffic blockage in Durban's Kennedy road shanty colony in early 2005, and subsequently spread to Pietermaritzburg and Cape Town (Basemjodolo, 2019). Under the slogan of No Land!, this movement is also renowned for boycotting elections in the past. If you don't have a home, you won't be able to vote. Despite a history of confrontation with the African National Congress (ANC) and the Democratic Alliance (DA), the movement expressed its support for the DA in 2014. By 2019, the organization would be able to fund the Social Revolutionary Workers Party (SRWP) (Basemjodolo, 2019).

Before founding this movement in 2001, the eThekweni municipality began a "slum clearance campaign," in which shack communities were razed and vital utilities such as power and sanitation were rejected. Some shanty inhabitants were left destitute, while others were forcibly evicted and sent to the city's rural outskirts. In 2005, a series of housing demonstrations led to the formation of Abahlali baseMjondolo. For four hours, 750 people from the Kennedy Road shanty colony blocked the N2 motorway with a flaming barricade. A total of 14 people were detained. The formation of the group's original work began there. They have been fighting for decent land and quality homes in the city since 2005, when they pledged to oppose demolitions and forced removals. There was also a need for shack colonies to be improved or for new dwellings to be erected near

existing settlements. They also requested basic utilities such as electricity, water, and toilets (Abahlali baseMjodolo, 2019).

The United Nations (UN) became worried about the treatment of shack residents in Durban in early 2008. Abahlali baseMjodolo and the eThekweni municipality agreed in late 2008 to offer services and tenure security to 14 villages (Matlin and Mogaladi, 2013). This agreement was validated by the municipality in February 2009. Since, they've been embroiled in several confrontations. Several demonstrations and legal actions have taken place. There had been a slew of harassment reports and incidents documented.

Abahlali baseMjodolo has also advocated for shack dwellers to be provided with basic services. On average, 10 hut fires occur each day, with one person dying as a result of illegal power hookups or other circumstances. Abahlali baseMjodolo has campaigned on this problem, calling for the electricity of shacks, among other things. It has also provided electricity to a thousand people. The movement also advocates for disadvantaged children's equitable access to school education. They've also put together a number of mutual help initiatives, including creches, kitchens, and vegetable gardens (COHRE, 2008). These movements persist today and continue to struggle for the poor's rights.

## **2.7 THEORETICAL FRAMEWORKS**

The driving principle for a research analysis is a theoretical paradigm. Grant and Osanloo (2014:13) argue that it "is the framework for defining how the entire doctoral dissertation is approached in a metaphysical, epistemological, empirical and theoretical way." Thus, a theoretical context aims to justify the point of the thesis and explain a specific way of thought that guides the study's interpretation and preparation. Therefore, the atheoretical context is needed to help understand and outline the principles, ideas, and meanings essential in this study to reinforce the validity of any academic argument (Grant and Osanloo, 2014). Therefore, this study utilises crime prevention through environment design theory (CPTED), Social control theory of delinquency, and situational crime prevention theory.

### **2.7.1 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN THEORY (CPTED)**

Offenders, according to theory, commit crimes because of environmental resources. In this respect, it is essential to improve the physical landscape to reduce violence. This leads to a specific type of crime that necessitates managerial and environmental improvements in order to reduce the risk of criminal activity. Here, there is a greater emphasis on the crime scene than on the criminal. It aims to discourage criminals from delinquency. This needs support from organisations that generate the possibility of crime (Clarke, 1997).

In the fight against unauthorised electrical connections, the researcher has implemented this theory. For example, fully serviced site surveillance, alarm systems and remote electronic access to meter booths bolstered by electronic hardware, barbed cable access control, instruction and awareness-raising, closed-circuit (CCTV) surveillance cameras for regions designated as non - authorized electrical connections hotspots, and the use of obstruction to harden targets are all examples (Mbanjwa, 2017).

### **2.7.2 SOCIAL CONTROL THEORY OF DELINQUENCY**

Delinquency's theory for social control points to the influence of the social composition of groups that have a positive impact on their populations and result in non-crime perpetrators. In addition, recreational facilities and jobs are formed when there is control of the masses, family, public opinion, legislation, dogmas, education, schools, customs, and religious organization to encourage individuals to accept these norms of their societies and to behave in concerted manner (Carey and McAnany, 1984). Despite the positive aspects of this hypothesis, the researcher believes that it can only function if it is used over time and its progress is properly monitored.

### **2.7.3 SITUATIONAL CRIME PREVENTION THEORY**

The theory says that criminals have a lower likelihood to commit crimes by introducing specific dissuasive and preventive steps to reflect on the impact of their acts (Tilley, 2009). Tilley (2009) also emphasises that it is challenging and unsafe to commit offences. This hypothesis focuses on the role of the police and neighbourhood members involved in

crime-fighting, the anonymous complaint to police, such as unauthorised electricity connections by an individual.

Consequently, community police services are reliable and efficient, hard to measure tactical police. Communities and the police have a significant role in the protection and visible welfare of the communities. Good cooperation should be part of the re-socialisation of company culture (Stevens and Yach, 2016). Thus the CPFs were formed in South Africa to create local relationships between SAPS, Metropolitan Police Department of eThekweni Municipality and community members in the war against crime. This analysis determined that communities must fight unauthorised electricity connections by acting alertly around activities happening in their community.

In its opinion, the researcher would use this strategic approach to effective crime reduction, such as the SAPS, eThekweni Municipality Metropolitan Police Department of Durban and municipalities. Victims must be mindful of the implications of the community's arrests. This includes community police; restoration of road committees, emergency alarms completely serviced; usage of social and telephone services; neighbourhood, flats and farm guards; neighbourhood monitoring of nearby property; electrical safety infrastructure; company and auto surveillance. In addition, foot and vehicle are patrolling. These tactics improve monitoring and may reduce the concern about violations such as unauthorised electricity connections (Herbig and Van Vuuren, 2008).

## **2.8 CONCLUSION**

More than a scientific topic, the subject of theft of electricity in literature is dealt with. The topic of energy theft is fully investigated from a political, social, and economic standpoint. It is crucial to understand that a global problem with a profound rooting in cultures in developing and industrialised countries is the dilemma of electricity theft. Several steps are being taken to ensure that the stealing of electricity is reduced worldwide, and there are no exceptions for South Africa. As seen in the study, the solutions to the theft of electricity globally are highly scientific. The progress of numerous technological solutions to tackle electricity theft ensures that technical problems often cause this theft to occur with minimal effect. We must recognise that, while this theft is a highly complex topic, nothing much has been done in South Africa to bring to book the perpetrators of this heinous crime. As a result, this chapter has examined the many reasons of power theft in

South Africa, as well as the literature on global variables that contribute to the problem and the issues that contribute to the problem's persistence and impact.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter informs the reader on the methods chosen by the researcher to collect data. The researcher describes the study's methodology, provides an in-depth clarification of the data gathering and analysis procedure, and evaluates the study's long-term viability. This study collected data using the qualitative approach, which involves collecting and analysing non-numerical data. This was utilised to understand the concepts, opinions and live experiences of participants. Qualitative approach can be used to gather in-depth insights into problems. Qualitative research, as defined by ukauskas, Vveinhardt, and Andriukaitien (2018), is primarily conducted to understand human experiences through a humanistic and interpretivist approach. This chapter delves into the study's purpose, setting, sampling, and collection of data, data analysis, ethical considerations, procedures used, informed consent, and the researcher's limitations.

#### **3.2 RESEARCH PARADIGM**

According to Brink (2018), a research paradigm is a "set of assumptions and practices that structure inquiry within a discipline by providing lenses, frames and processes through which investigation is performed". There are four research paradigms: positivism, post-positivism, interpretivism and pragmatism. This study adopted the interpretivist paradigm, which has an ontological perspective that reality is subjective. Therefore, data can only be collected through participant narratives that will reflect 'on the ground' reality. The epistemological perspective of this paradigm is based on how knowledge is subjectively constructed. Thus, this study explored residents' views in informal settlements regarding the motives and effects of illegal electricity connections. Thus, this paradigm is well suited to the qualitative research design as it seeks to solicit views from the participants' perspectives.

#### **3.3 RESEARCH DESIGN**

The qualitative technique was used to acquire data for the investigation. Qualitative research is the most effective way to learn a lot about a topic (Greener and Martelli 2015).

The qualitative technique aids the researcher in capturing the participants' real-life feelings and experiences. Individual interviews were used to obtain data in this study. It's also worth noting that the data was interpreted based on the researcher's observations of written replies and their tone when responding to the questions.

Greener and Martelli (2015) described qualitative research focuses more on words than numbers, depth rather than breadth. This was suitable for this study as numbers do not produce rich and in-depth information. According to Kumar (2014), qualitative research is frequently utilized to inspire new concepts, hypotheses, and products. Additionally, he argued that it also provides a unique depth of information that is impossible to obtain from a restricted or guiding question survey. Respondents in qualitative research are unrestricted in their disclosure of their experiences, opinions, and feelings. While the quantitative research method is also useful, questions like "why" behind the stats would be left unanswered.

### **3.4 DELIMITATIONS/SCOPE**

The study focuses on informal settlements in the eThekweni municipality, focusing on Quarry Heights informal settlements. The eThekweni municipality is situated on the east coast of South Africa in the province of KwaZulu Natal; the electricity department mainly has six regions in Durban operating in different areas to reach out to its customers. The research took place in both Quarry Road informal settlements as well as the electricity department. Participants are residents of Quarry Heights informal settlements in eThekweni, which comprises blacks who are mostly Zulu speakers. It is expected that some might be illiterate, especially when it comes to illegal electricity connections. The gender of participants will try to be equals depending on willing participants.

### **3.5 POPULATION/TARGET POPULATION**

According to Sekaran and Bougie (2013), the population can be viewed as the entire social group the investigator or researcher requires to obtain information. The target population refers to the subgroups of the overall population who make units from numerous subgroups that the investigator or researcher is particularly interested in interacting with. The target population of this study is the residents of Quarry Heights Informal settlements Reservoir Hills, who the eThekweni municipality has identified as

residents who have illegally connected electricity. Those residents are in the eThekweni electricity database as illegal connectors of electricity.

### **3.6 SAMPLING**

Participants of the study play a vital role in research. As described by Mbanjwa (2017), The selection of participants is an important aspect of data collection. A sample, according to Webster (1985), is a subset of a population whose features are researched in order to collect data. In qualitative research, the researcher needs to engage with people who have directly experienced what the researcher is researching (Aggarwal and Ranganathan 2019). Qualitative researchers use sampling to gain a better grasp of the phenomena they're investigating. A researcher can employ different types of sampling that a researcher can employ. The odds of someone being chosen in a sample is uncertain in non - probability sampling technique. Non - probability sampling can also be employed when a researcher is performing exploratory study, undertaking evaluative research, or making a theoretical contribution. Purposive samples, quota samples, snowball sampling, and convenience samples are just a few of the non - probability samples available (Greener and Martelli 2015).

The researcher utilised purposive sampling for collecting data. Purposive sampling, also known as judgemental, selective or subjective sampling, is a type of non-probability sampling technique (Greener & Martelli, 2015) based on the researcher's judgment when selecting the participants that are being studied. Purposive samplings' primary objective is to focus on a particular characteristic of a population of interest, best enabling one to answer their research question. In purposive sampling, the sample that will be studied is also not representative of the whole population (Stockemer 2019).

### **3.7 SAMPLE SIZE**

The researcher opted for a sample size of 15 participants. This will be enough to analyse data and understand why people connect illegally in an informal settlement. The researcher scheduled interviews with participants and did a door-to-door to collect data from willing participants. The researcher also explained the purpose of the research to the participants and what was required of them. The interviews were conducted at the



comfort of their homes or an arranged place by the researcher, depending on participants' convenience.

### **3.8 DATA COLLECTION**

The researcher applied semi-structured interviews to collect the data. According to Yin (2014), a semi-structured interview contains open-ended questions that provide room for the interviewer to probe for more information depending on the responses by the interviewee. This type of data collection allows for rapport between the researcher and the participant through face to face conversations (Yin 2014). The interviews were held one on one with the participant at their places of convenience. The semi-structured interview guide was prepared (see Appendix). Every participant signed an informed consent letter permitting the researcher to proceed and acknowledge participating in the study. With the participants' agreement, the interviews were audio-recorded, and the audio recordings, transcripts, and signed consent forms were given over to the supervisor for safeguarding.

### **3.9 RESEARCH INSTRUMENT**

According to Žukauskas, Vveinhardt and Andriukaitienė (2018), a research tool must be guided by the research objectives. To choose the proper tool, one must answer what they want to find out, how the target population will be observed, and what tool will be used to observe specific indicators (Žukauskas, Vveinhardt and Andriukaitienė 2018). Creswell (2009) states that the most used instruments in research are observations, surveys, and interviews. Interviews and observations are primarily used in qualitative research. For this study, the interviews are semi-structured.

### **3.10 DATA ANALYSIS**

Data analysis, according to Kumar (2014), is the act of giving order, structure, and meaning to large amounts of data. Thematic data analysis was employed in this study. Firstly, the researcher utilised audiotapes and interviews to collect data, transcribe the data and read the transcripts repeatedly to become familiar with the same. Secondly, the data was 'tentatively' coded. The third step was to involve the grouping of these initial codes into emerging themes. At this stage, some codes are designated themes whilst others are subthemes and others are discarded. The fourth stage involved the review of

themes to determine whether they fit into the research objectives. The last step consists of naming and analysing the themes in relation to the research and literature.

### **3.11 LIMITATIONS OF THE STUDY**

Participants who were scared to partake in this study made it difficult for this research, especially those who were fearing being arrested for illegally connecting electricity. Due to the obvious underlying assumptions, several people were hesitant to engage. Illegal electricity connection is a criminal offence that is against the law. Residents of the Quarry Heights Informal Settlement are aware of this, but are frightened to speak out about it. The researcher explained thoroughly the purpose of collecting data from them and took them step by step on what the data will be utilised for. Some participants agreed to partake in the study but not available on the day of the agreed time of the interview.

### **3.12 VALIDITY AND RELIABILITY/TRUSTWORTHINESS (QUALITATIVE RESEARCH)**

Validity refers to the extent to which a research instrument measures; it encompasses both the study design and procedures. Validity also implies that the findings accurately reflect the phenomenon that the researcher claims to study (Bhattacharjee 2012). Validity is essential in research as this confirms the authenticity of the study and ensures the results accurately reflect the dimension undergoing assessment. Validity was ensured by analysing the data collected from different individuals and analysing the pattern of various focus groups' responses. The use of a transcriber was used to analyse and interpret data to provide valid data. Reliability implies consistency. The split-half method was used to assess the internal consistency of the researcher's test. This was done by comparing one-half of the data, which was interview-based and the other half of results done by a different group which was in the form of interview questions.

#### **3.12.1 CREDIBILITY**

The importance of research ethics cannot be overstated. As postulated by Bryman and Bell (2007) who listed 10 important ethical factors, participants should not be exposed to any harm in any way. Participants' dignity should be respected as a top concern. Prior to the study, the participants' full agreement should be obtained. The confidentiality of the

study data should be guaranteed to an adequate level; any misrepresentation or exaggeration of the goals or objectives must be avoided at all costs. Any and all affiliations, funding sources, and potential conflicts of interest must be stated. Any research-related communication ought to be transparent and honest, and any incorrect information, as well as the biased representation of primary data findings, should be avoided.

### **3.13 ETHICAL CONSIDERATIONS**

#### **3.13.1 INFORMED CONSENT**

The researcher obtained authority from the ward councillor of Quarry Informal settlement before conducting the research. Ethical clearance from the institution has been obtained from the Durban University of Technology. These two letters were shown to the participants. These two letters are consent letters for participation as well as for audio recording.

The interviewer obtained the participants' consent, and when they did not want to reveal their identities, hand-notes were used as the primary record tool. To accommodate all participants, interviews were held in both IsiZulu and English. Each participant was given 30 minutes to complete the task.

#### **3.13.2 PRIVACY AND CONFIDENTIALITY**

The researcher maintained the privacy and confidentiality of information given to her. No names, identity, location of participants or any form that could disclose the identity of respondents shall be shared with anyone.

#### **3.13.3 PROTECTION FROM HARM**

The researcher made efforts to minimising the risks against any harm, either physical or psychological. Through this, the researcher complied with any laws that manage the protection of personal information.

### **3.14 CONCLUSION**

The chapter focused on how the research shall be systematically conducted. The chapter presented the research paradigm where the interpretivism paradigm was discovered to

be suitable. The chapter also presented the research design, the delimitations of the study, population and sample size. A qualitative research approach was selected as a research design for this study. The chapter more so encompassed the research instruments to be used in the study, data analysis, and limitations. The validity and reliability of the qualitative research were also discussed in the chapter. The last to be addressed in the chapter were the ethical considerations, including informed consent, privacy and confidentiality, and protection from harm.

## **CHAPTER FOUR**

### **DATA PRESENTATION AND DISCUSSION**

#### **4.1 INTRODUCTION**

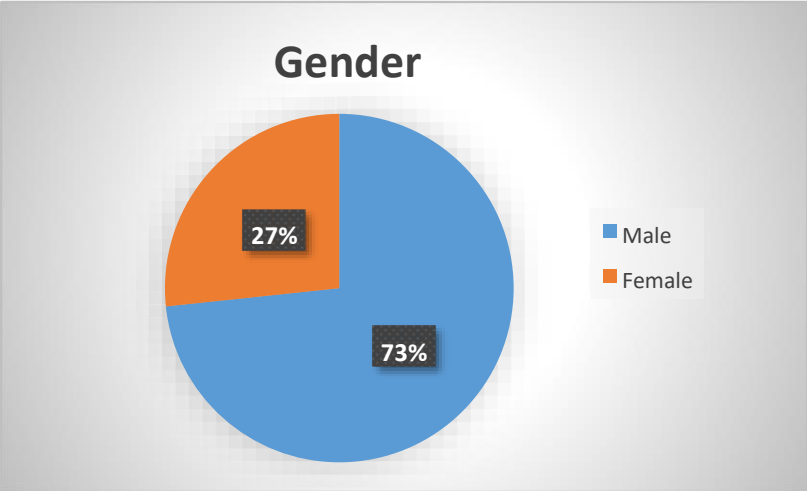
This chapter presents data analyses of data collected from the Quarry Informal settlement in eThekweni Municipality. The researcher was able to learn more about the community with the help of a sample of 15 people. The researcher administered interview questions that were translated from English to IsiZulu, which is their original language. This also allowed for a better understanding of why the data is being collected and assisted in yielding authentic responses from participants. In presenting and analysing qualitative data, the study used the thematic technique, the most recognised presentation method used in qualitative analysis (Braun and Clarke, 2006:79). Thematic analysis is done through coding and is broken down into six stages to help researchers find relevant patterns. These six stages were taken to arrive at the study's conclusions. The findings provided and covered in this chapter are linked to the interview guide's questions.

The opinions of participants were categorised and organised into themes to present the findings logically. Various themes emerged because of the data analysis procedure. Welman and Kruger (2001) point out that coding is a mechanism for ensuring the recovery and organization of information in order to categorize answers according to specified themes. The research questions established to better understand the motivations for electricity theft in Quarry Informal Settlement in eThekweni Municipality were utilized to create the codes used in this study. To protect the identity and confidentiality of the

participants, respondents were not presented by their real names but were given pseudonyms represented by their section, Quarry Road Informal (QRI) and Municipality Official (MO).

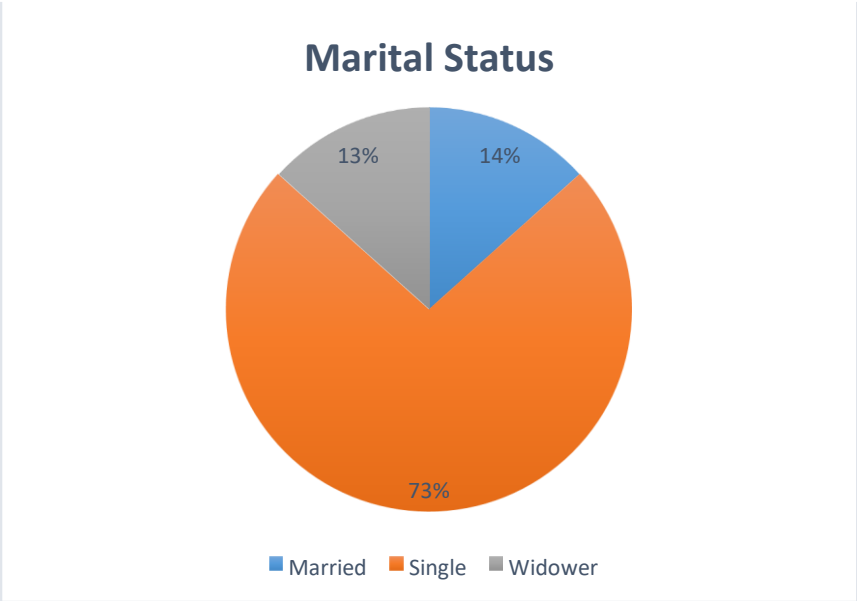
### 4.2 DEMOGRAPHIC CHARACTERISTIC

This section presents the demographic characteristic of respondents who participated in this study. The data is presented according to gender, marital status, level of education, years living in Quarry Informal Settlement (QI) and occupation.



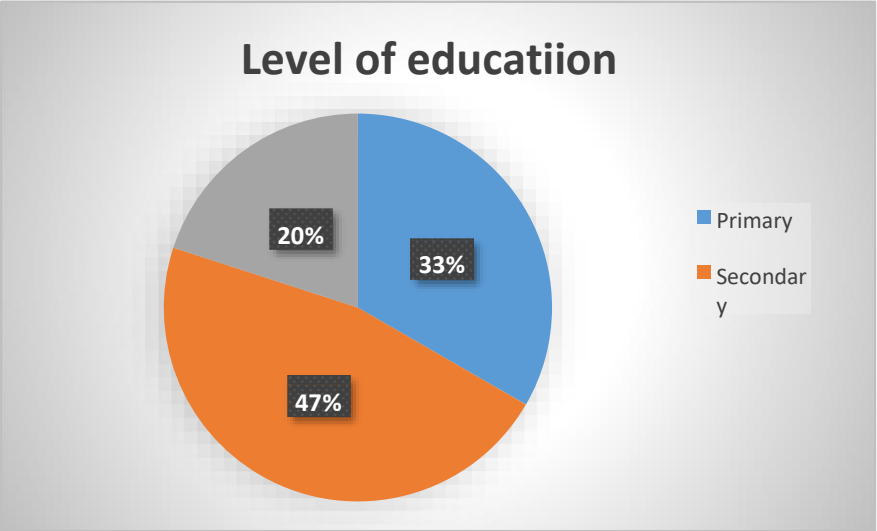
**Figure 4.1: Gender (n=15)**

The above figure shows respondents as per their gender. The study reviewed that most of the participants were males (73%) whilst 27% were females. The study had to collect data from both genders to avoid biasness and to understand if illegal electrification is dominant in all genders. This study includes the understanding and responses that are objective.



**Figure 4.2: Marital Status (N=15)**

The above figure represents the marital status of respondents. From the study, most of the respondents (73%) said they were single whilst 14% said they married and only 13% said they were widowed. The marital status in this research helps identify if a family is single handled and whether it has a combined income. Married people tend to make rational and joint decisions which helps



**Figure 4.3: Level Of Education**

The above figure reviewed that 47% of the respondents had only reached secondary level, whilst 33% had reached only attended primary level education. The last 20% of the employees reached the tertiary level as their highest academic achievement. The level of education in this study was used to determine the depth of knowledge participants had regarding illegal electricity connections and how well the consequences were understood. It also helps the researcher in concluding if their decision is a well thought and informed decision. This was also used to determine the kind of jobs participants had which directly affects their economic status.

### **4.3 OBJECTIVE 1 - THE CAUSES OF ILLEGAL CONNECTION OF ELECTRICITY IN THE QUARRY ROAD INFORMAL SETTLEMENTS**

The respondents gave different reasons as to why they connect electricity illegally. A few cited financial reasons while most complained about poor service delivery in the area, citing that the free basic electricity that other informal settlements had previously benefited from has never reached their area. Most blamed the municipality for not connecting them legally, thus leaving them with no option but to connect illegally. The description in themes below shows some of the causes mentioned by respondents.

#### **4.3.1 THEME 1: INFORMALISATION AS A DRIVING FACTOR**

Several respondents pointed that the issue of informalised setup was a driving factor causing electricity theft. Respondents felt that electricity was necessary and left with no choice but to connect illegally, especially when situated in an urban setup. Respondents went on to say that they couldn't live without electricity, and the following are some quotes from respondents airing their thoughts and feelings.

Respondent 1; *“Here in Africa, many countries have informal settlements and residents are stealing electricity because they do not have legal electricity connections and everyone needs electricity. The problem is with our governments who don’t want to make sure that these people living in shacks get the same privileges being given to those living in brick houses.” (QRI-2)*

Respondent 2; *“The challenge that I have seen is that where there are informal settlements, the chances of people connecting illegally and stealing electricity is very high. So, there is theft where people are living disorderly.”* (QRI-4).

Respondent 3; *“It is my belief that the shortage of power is the root of the problem of this theft, if everybody had access to electricity, there would be very little or no electricity theft in South Africa.”* (QRI-6).

The above responses concur with Trevor (2010), where he stated that local governments confront challenges in providing electricity in informal settlements and the degree of electricity theft thus is particularly high. Also, Nkwanyana (2017) reiterated that, illegal connections of electricity would not end until informal settlements are stopped since they are the key drivers of theft and illegal connections. Respondents also noted that:

*“A lot of people are migrating from their rural places to the city in search of bettering their lives, some go to Johannesburg, some go to Cape Town and some chose eThekweni. These people when they come, they will need shelter, water and electricity thus they do not have any choice rather than being shack dwellers. Such demand of these basic needs pushes them to illegally connect electricity.”* (QRI10).

When people move to the city, they create more informal settlements that aren't part of municipality development plans (Lauren, 2014). This development has made it problematic for towns to immediately make electricity available to new sections of the country. Whilst waiting to be legally connected, residents' resort to illegal tapping of electricity.

#### **4.3.2 THEME 2: POVERTY AND RESIDENT'S ANGER AS A CAUSE OF ELECTRICITY THEFT**

Respondents indicated that poverty in the informal settlement was rife, and this could be witnessed by looking at the living conditions of people residing in the informal settlement. The respondents were enraged by the government's failure to supply them with basic human essentials including power, water, and decent housing. There was outrage among them since they had been promised by the government over the years that they would be provided with such services.



Below show verbatim statements from respondents in view of the above.

*“I am very angry at the government because we lost friends and family members whom we cannot replace because of izinyoka-nyoka, government might complain for loses in electricity but they can recover it. If they were concerned about these loses they could have made plans to address our problems. The revenue is more important to them but we also regard electricity as important for us.” (QRI-11)*

*“The government is sometimes full of empty promises. We were told not to continue erecting shacks because they were saying they wanted to develop the area and build houses for us. That has been said 5 years ago but now we are in 2021 and nothing has happened. This is the reason why we continue connecting illegally. As for me I am bitter because I have been living in this area for over 15 years, I am getting old and I have not yet seen the importance of the municipality and the reason why they should come to disconnect us.” (QRI-8)*

*“The company which was contracted to erect electricity poles and to peg land for us in 2015 just came towards December when everybody was preparing for holiday and when the company closed for the festive season they never came back till now to finish their work. No-one has ever followed up on this issue because we know that these are of the corrupt deals being done by the municipality. Even the counsellor never bothered to follow up because he knows he has electricity at his home.” (QRI – 9).*

*“Some of us are voiceless and we are being treated badly, as result we live with anger. As an old person, live with my grandchildren and life is very difficult for me. Sometimes its hard to get even food to eat yet the municipality want us to pay for electricity. Its better I use that money that was supposed to buy electricity for food and call the boys who connect izinyokanyoka to do for me too. I can't afford to buy gas for cooking and paraffin every week.” (QRI-12)*

An Informal dweller, interviewed by the Guardian (2019) complained about the electricity price hikes that make it almost impossible for them to have lights due to affordability. She was raised in the apartheid era and grew up with gas stoves, candles and paraffin heaters. "Electricity was only for whites" she states. A study done by Mbanjwa (2018) suggests

that the socio-economic status also contributes to the illegal connecting of electricity. According to Gaunt et al. (2012), the factors contributing to illegal electricity connections in informal urban settlements include overpopulation.

#### **4.3.3 THEME 3: GENERAL ELECTRICITY REQUIREMENTS AS A CAUSE OF ELECTRICITY THEFT.**

The study reviewed that it was clear from respondents that electricity illegal connections happen because of several reasons. Respondent's answers pointed to the same direction which is the need for electricity. Some who had legal connections ended up having bills they could not settle and thus resorted to illegal connection. Some realised that their neighbours had illegal connections and had to copy the act to satisfy their need.

Respondents shared the following verbatim statement.

*“Electricity is a basic need and that is the one of the reasons why I have connected izinyokanyoka. I cannot survive without electricity for I need lighting, to cook, entertainment and ironing. I don't need to wait for the government to fulfil its mandate, as an independent person I have to make a plan that benefits me.” (QRI-2).*

*“I was once employed in a restaurant before I had an accident which damaged my spinal code. I cannot be employed again due to my injury, so I need to make sure I save some money from the grant I am getting to set up my small restaurant. All this need electricity, I am therefor forced to pay a R200 to those who connect izinyokanyoka to connect for me. Apart from that I have personal goods like fridge, stove that need electricity to function. I cannot stay with a fridge not connected.” (QRI-2)*

*“Government should know that electricity is a basic need for human beings and the causes for illegal connections is that people here at Quarry need it. Since Eskom, government and municipality people have their own access to electricity, they should also know that we need it too here at Quarry.” (QRI-2).*

*“To be honest with you. We can spend the entire day arguing on why people engage in this act. There are a dozen of reasons that I might know and some might not know on why people end up connecting illegally. One thing that I know is that no one*

*enjoys stealing electricity because at the end of the day it doesn't end well for others. We have lot of people we know who have permanent scars, some are paralysed and others have died after being electrocuted. The whole issue is that people need electricity and they have no choice.” (QRI-2)*

According to Fiil-Flynn (2001), the theft of electricity crisis in Soweto is one of the key issues being caused by unaffordability of connecting legally. Most of the illegal users said they could not afford the electricity they use. There are various reasons as to why communities connect electricity illegally. Socio-economic ills play a role in perpetuating crime in South Africa especially in Informal settlements. Electrification of informal settlements will enhance living conditions while also reducing the amount of accidents caused by unauthorized connections. Furthermore, the poor residents of these villages do not receive the free basic electricity to which they are entitled. In un-electrified informal settlements, there is a high proportion of illegal connections. These communities cause the network to be overburdened and do not pay for the electricity used. This will be addressed by electrifying these locations, which will also create cash for the licensed organization (Chetty, 2018).

#### **4.3.4 THEME 4: GOVERNMENT NEGLIGENCE AS A CAUSE OF ELECTRICITY THEFT**

One of the main issues that respondents reiterated was that they blamed the government as the cause of electricity theft. Participants argued that government was failing to fulfil its mandate of providing basic essential services for its people. This however pushes people to commit crime and connect electricity illegally. The following are some of the verbatim statements shared by respondents:

*“The government should be serious first if they want us not to connect izinyokanyoka. The money they are using to buy and replace transformers that have blown, is equivalent to the money they can use to electrify the whole community. This shows how people are desperate for electricity and it's a basic need to them.” (QRI-2).*

*“As for me I am not happy with our government, it does not think about us and our needs. They come to us during campaigns promising to give us electricity but once they are in office, you will never see them again. They are not concerned about people's*

*lives and their safety because people are being electrocuted day and night.” (QRI-5)*

*“The government should address the issue of employment first. Some of us are not employed and the only way to access power is through izinyokanyoka. If you want to find a job, you cannot get one because you don’t have a formal address to give your employer and no one wants to employ someone living in shacks. If the government gives us employment, we can be able to buy electricity for ourselves or find somewhere good to stay.” (QRI-6)*

Moreso, the researcher discovered that most respondents throughout the study were complaining about corruption among municipal officials. The residents had no power to stop such corrupt activities since complaining did not make any change. Some respondents had this to say:

*“From my understanding, corruption is the reason why these electricity projects are not successful in Quarry Informal Settlement.. Here in Quarry the Eskom people once delivered materials to electrify houses of those who had registered but we don’t know where the material went to. The municipality never took any step to do an investigation into that, this tells you why we say its corruption. On the other hand, Eskom never came to assess the progress of the project they had started. This means someone sold the material to their connected friends or relatives.” (QRI-9)*

*“Our councillors and Eskom must be held responsible for the bad job they did because they supposed to be following on the progress of the projects. People were fully paid to do this contract but they never finished the job.” (QRI-10)*

The rational choice theory also plays a factor when one commits to crime. Human beings logically analyze the danger of committing a crime and measure it against the advantages, according to the rational choice theory (Weshuisen, 2011). This reflects the Quarry informal settlements residents, in terms of connecting electricity illegally. It was a decision reached after assessing the advantages of participating in the act albeit knowing the consequences.

#### **4.4 OBJECTIVE 2 - APPROACHES USED BY THE ETHEKWINI MUNICIPALITY, ELECTRICITY DEPARTMENT TO RECTIFY OR MINIMISE ILLEGAL CONNECTION OF ELECTRICITY.**

The study further investigated the approaches used by the eThekwini Municipality electricity department to rectify or minimise illegal connections around Quarry Informal settlements. The questions from this objective targeted both the residents and 2 municipal authorities. From the inquiry, the researcher noted that respondents from all angles had something to say with regards to the issue. Most respondents noted that the municipality do some operations to disconnect illegal connections. Some confirmed that the municipality would arrest those seen connecting illegally, installation of metres and awareness campaigns.

Below present some verbatim statements given by respondents as per each theme presented:

##### **4.4.1 THEME 5: DISCONNECTIONS BY THE MUNICIPALITY**

*“Many times, the municipality comes in our area to disconnect these izinyokanyoka” (QRI-5)*

*“I have seen the municipality coming with police to cut people’s cables off from poles and houses. When they cut off they make sure they go with the cables and the police will be there to protect and guide municipality guys from being attacked by angry residents.” (QRI -7)*

*“In 2018 Eskom, the police and municipality had an operation around the country disconnecting illegal connections and arresting those who were found reconnecting.” (QRI-9)*

*“Yes! There is some measure in place that the municipality have put in place, like disconnecting izinyokanyoka and fining people.” (QRI-10)*

The participants from the municipality had the same to say:

*“Illegal connectors are a big problem to us as a service provider and to the country as a whole. We are facing huge challenges in trying to minimise this heinous behaviour by our people but we are dealing with hard and tough people. We usually go into*

*the communities to disconnect illegal connections but the moment you leave, within minutes you will hear that they have connected back. We might be disconnecting but still it's not enough as a measure. (MO-1)*

*"The electricity department has people responsible for disconnecting and switching off electricity from those illegally connecting and those not paying for the service. (MO2)*

In line with the above responses, according to eThekweni Newsflash (2016) the eThekweni Municipality scheduled a clean-up operation in 2016, where thousands of illegal electricity connections were disconnected. This was a joint operation by the eThekweni Electricity Department, Eskom, Telkom, officers from SAPS and other law enforcement agencies.

#### **4.4.2 THEME 6: ARRESTS AND PROSECUTION**

*"People are sometimes being arrested for illegally connecting electricity." (QRI-3)*

*"My aunt's son was arrested three years ago for being hired by people to connect electricity. Unfortunately, he was sold out by jealous people because he was making money through the business." (QRI-4)*

*"The police is arresting illegal connectors these days. The municipality has planted its people around to spy on those involved in these illegal connections." (QRI-6)*

*"As municipality we have been making some arrest in these informal settlements with the help of SAPS. Some people have been convicted and sentenced for 2 years in prison whilst some have been fined. We have also found that within our system, there are syndicates conniving with residents and being bribed not disconnect electricity. Some of them have also been dismissed from work and further arrested." (MO-1)*

*"The company usually deploys security guards in informal settlements to monitor how people are connecting electricity. If anyone is found breaking the law, we call the police to assist with arresting that person." (MO-2)*

According to Chetty (2018), SAPS officers may use force to obtain admission to a place if the official believes that any illicit item (unauthorised electrical connections) can be

removed or disposed of if entry is audibly requested and the cause for which entry is sought is indicated. Individuals who tamper with electricity will be prosecuted, according to Eskom (Ndlendle, 2018).

#### **4.4.3 THEME 7: AWARENESS CAMPAIGNS**

*“I have seen the municipality officials coming into our area to address people not to connect electricity illegally, telling us as well the dangers of doing such.” (QRI -14)*

*“Sometime in 2018 the municipality came to us and we had a meeting. In the meeting we were saying our concerns as resident of Quarry and they were saying their concerns as well. We were told that our houses would be electrified and they gave us some blue tickets.” (QRI -12)*

*“Awareness programs are done here and people are being educated on safety issues relating to illegal connections. Even though people really know that its dangerous and illegal, they still continue with the act.” (QRI -10)*

The municipality has made numerous attempts to educate the public about the consequences of illegal power connections and to raise awareness about the issue. Despite the municipality's efforts to educate individuals about the dangers of illegally connecting power, some citizens continue to do so. Eskom (2016) found that people are informed that illegally connecting to electricity is wrong, with 96 percent of South Africans acknowledging this and only 16 percent believing they will be caught in Operation Khanyisa. This is clear evidence that illegally connecting electricity is not only a Quarry Road Informal settlement issue but a problem in most communities around South Africa.

#### **4.5 OBJECTIVE 3 - THE CONSEQUENCES OF ILLEGAL CONNECTION OF ELECTRICITY ON THE COMMUNITY AND THE ELECTRICITY DEPARTMENT OF THE ETHEKWINI MUNICIPALITY**

In investigating this research question, 15 respondents were interviewed where 13 indicated of their awareness regarding the consequences of illegal connection of electricity whilst only 2 said they were not aware. Respondents mentioned a number of issues that they thought are the consequences of illegal connections. The first issue was that it causes injuries or death to those who misconnect or anyone playing around running

cables. The second issue was that excess connectivity due to illegal connections damages transformers due to over load. The third issue was that, respondents new about supply and demand in that excessive load to power lines causes more demand of the product and supply will be limited. Another mentioned consequence was that it causes load shedding. However, the following was reiterated by respondents.

#### **4.5.1 THEME 8: INJURIES AND DEATH**

*“Illegal connections have huge risks, so many times I have witnessed people being electrocuted and dying instantly. My own brother was burnt after he was hired to connect electricity for a certain lady in KwaXimba. Each time when I try to connect I have that vision of my brother but I am left with no option since I will be in need of power.” (QRI -13)*

*“Electricity is very dangerous my sister! These izinyokanyoka you see around can kill and have killed innocent people. People are being burnt alive in their shacks each time somebody connects the wires wrongly. We are living a risky life and our kids are the ones who are exposed to the dangers of these izinyokanyoka because they don't know that the wires are dangerous when they are playing.” (QRI -12)*

*“I know a guy who got paralysed after being electrocuted. Lucky enough the guy did not die. Since that day, I have been making sure that I stay away from these cables. (QRI - 9)*

In support of the above statements, Lowvelder, (2016) reiterated that these connections are hazardous and can cause electrocutions and according to Timelive (2020), a 12-year old died in Umbilo, Durban, after being electrocuted by an exposed electrical wire in a canal he was crossing. The boy is said to have attempted to cross the Umbilo River Canal, near the M7 informal settlement. It is also reported that this was not the first incident of illegal electricity connections to have ended in such tragedy in the M7 informal settlement. Also, Matsolo (2013) said that in 2010 six people, including two children, were killed in Verulam.



#### **4.5.2 THEME 9: POWER CUTS AND LOAD SHEDDING**

*“Many times, we experience power cuts being caused by overloading on transformers and when power goes off, it takes time for the municipality to respond because they will be aware that the cause is due to illegal connectors.” (QRI - 7)*

*“I believe the load shedding we are currently facing today is because of illegal connections because they say we are stealing electricity and its not being paid for. Now Eskom is broke and they have started with load shedding.” (QRI - 8)*

*“When connecting izinyokanyoka you would find out that you don’t just succeed but you might struggle. Sometimes the electricity might go off due to wrong connections inconveniencing those who will be busy watching Pirates vs Chiefs. I remember one guy’s television got burnt after electricity was going on and off.” (QRI - 9)*

Illegal electricity connections contribute to power outages in the country, which could be caused by the increase in the electricity demand, which overpower the existing power stations and the quantity of electricity available (Vuk'zenzele, 2014). In 2019/2020, South Africa experienced several power outages (load shedding), and one of the factors contributing to this is the illegal electricity connections. In August 2020, Eskom's Customer Relations manager for the Pietermaritzburg area pointed that illegal connections in Richmond, Msunduzi and Howick had gone out of hand, causing severe load shedding emanating from exploding transformers (Ntuli, 2020).

#### **4.5.3 THEME 10: LOSS OF REVENUE**

Participants in this study had an idea that stealing electricity causes the service provider to lose revenue and could negatively impact the operations of Eskom. Respondents had the following to say:

*“It is very true that Eskom survives through people paying for electricity and without people paying for it, the company will not be able to give us electricity.” (QRI -12)*

*“Eskom has been reporting that it has been losing huge amount of money through illegal connections happening in the country. So, I believe what we are doing is contributing to the loses being incurred by Eskom.” (QRI - 13)*

Smith (2004) argued that the illegal usage of electricity increases significantly every year ranging from 0.5% and 3.5% in a country. This percentage of electricity theft is considered very high considering the amount of revenue being generated. Mbanjwa (2017) in 2010, the US and Canada recorded a revenue loss of \$6 billion and \$600 million respectively to electricity theft. Electricity sales are the primary source of revenue for power companies, and a portion of this revenue is lost due to illegal electricity connections (Peninc, 2008).

*“We are facing a big loss from illegal connectors of electricity in these informal settlements. We are not getting the revenue we were supposed to be getting and this makes business and service delivery impossible sometimes. Our people complain of poor service delivery but yet they do not see or play their part to make sure they pay for services in order for the municipality to continue working.” (MO1)*

*“Eskom and us are losing revenue day and night from electricity that is not being paid for by our residents. See what is happening today! Load shedding has started and one of the reasons is that Eskom is incapacitated to fund for its operations because people are stealing electricity and not paying for it. For Eskom to operate, they need money from all of us through paying for our bills.” (MO-2)*

Electricity losses incurred by Eskom and municipalities contribute to an increase in electricity costs and income loss, which in turn leads to a hike or increase in food and necessary commodities prices (Eskom, 2016). Energy theft, according to Arango et al. (2017), causes a spike in electricity consumption given the trend of stealer users increasing their consumption since they have "free energy," and because finding and executing legal penalties takes time for utilities and authorities.

#### **4.6 OBJECTIVE 4 - IMPACT OF SOCIAL GROUPS LIKE ABAHLALI BASEMJODOLO IN ADDRESSING ELECTRICITY ISSUES IN THE SOCIETY**

The study went further to investigate the impact of Abahlali baseMjodolo social group in Quarry settlement in representing the concerns of the residents on electricity issues. From the study, it was revealed that the majority of the residents were aware of the Abahlali baseMjodolo group and its purpose. Some acknowledged the group as a security body that protected them from municipality people during disconnections. Others reviewed that

it was political group meant to give pressure to the government in order for it to address our issues.

The following verbatim statements support the above:

#### **4.6.1 THEME 11: ABAHLALI BASEMJODOLO**

*“Abahlali baseMjodolo is there to assist us by sitting down and talking to the Municipal officials. They are like our unions.” (QRI - 2)*

*“There are so many things that Abahlali baseMjodolo are doing for us. I remember they once demonstrated when the municipality wanted to destroy our homes. Our homes were never destroyed again.” (QRI - 3)*

*“It is our security group. They are there to protect us from robbers and from oppression.” (QRI - 4)*

*“I am also part of the Abahlali baseMjodolo. Our focus is to represent our people since they are voiceless. Instead of putting raft decisions. The municipality engages us to hear our thoughts first. We have signed a number of agreements with the municipality for the betterment of our society. They are planning to electrify our areas, to connect water for us and to give us other services being given to those living in formal settlements.” (QRI - 5)*

*“The Abahlali baseMjodolo is a powerful human rights group that is there to defend our rights.” (QRI – 7)*

*“These kids are doing a lot for us grannies who no longer have strength to move around. We did the same for them during apartheid, now it’s the time for our children to fight for injustice being put on their mothers. There is no one who can come to disconnect my electricity because they will be dealt with, by Abahlali baseMjodolo.” (QRI - 8)*

Abahlali Basemjodolo is a shack dwellers' movement in South Africa that protests against evictions and public housing, according to Abahlali Basemjodolo (2019). It is South Africa's largest shack dweller's organization, working to improve poor people's living situations. This campaign is claimed to have begun with a road blockade in Durban's

Kennedy Road shack colony in early 2005, before spreading to Pietermaritzburg and Cape Town.

## **4.7 CONCLUSION**

The preceding chapter presented and analysed the research findings collected from the residents of Quarry informal settlements as well as municipality officials. The chapter was presented in themes using thematic approach guided by Miles and Huberman's (1994) approach on data analysis. Data was presented and analysed in order of the research objectives with 11 themes. The study's results and recommendations are chronicled in the next chapter.

# **CHAPTER FIVE**

## **CONCLUSION AND RECOMMENDATIONS**

### **5.1 INTRODUCTION**

This chapter focuses on the conclusion and recommendations of the study, consequences of illegal connection of electricity in Quarry Road informal settlements. This chapter will discuss recommendations and conclude based on data collected on this study.

The study objectives were to derive whether the community of Quarry Informal Settlements are aware of the consequences of connection electricity illegally, to also find alternative ways to curb the illegal electricity connections and lastly to come up with solutions to help the electricity department in curbing illegal electricity connection.

### **5.2 MAJOR FINDINGS OF THE STUDY**

This section presents the major finding from the study

#### **5.2.1 INFORMAL QUARRY SETTLEMENTS UNDERSTANDING OF ILLEGAL ELECTRICITY CONNECTION**

With reference to studies, the community of Quarry Informal Settlements is aware that they are connected illegally, as well as the implications of connecting power illegally. The

community is aware that connecting illegally doesn't only lead to death but it is also considered a criminal offense which can land them in jail. Even though they are clear on the consequences of this act, most said they are left with no choice but connect illegal since the government doesn't look after them.

The whole of Quarry Informal Settlement is electrified. Even though it is unclear who helps the residents in connecting illegal, when asked someone would sceptical confess to them being the ones to electrify themselves while some would point out that some municipal employees would electrify them at a small charge. This too is deemed as a criminal offense and can lead to employees losing their jobs and being arrested.

### **5.2.2 THE CAUSES OF ILLEGAL CONNECTION OF ELECTRICITY IN THE QUARRY ROAD INFORMAL SETTLEMENTS**

Many reasons have been cited as to why people connect electricity illegally. The study found that informatisation of the settlement area was the first cause of illegal connection of electricity. Quarry Informal settlements is in an unauthorized land which makes it difficult for services to be legally provided. It is a challenge for the government to control informalised settlements since the port of entry for migrants (Local or international) are these informal settlements, thus illegal connections are rife.

The study also found that poor service delivery as well as economic factors were the main reasons for connecting electricity illegally. Some said *"Even if we wanted to buy electricity legally, the municipality isn't willing to connect us legally"*. Some also stated that they bought the houses they stay in with a connection that is already illegal. The community is mainly dominated by people not formally employed, singles and widows. The category of these people finds it hard to find proper housing elsewhere or to connect legally and pay for the services.

Since electricity is seen or recognised a need just like water and air. The study found that residents around Quarry informal settlements regarded electricity as a need and could not survive without it, thus one of the major factors driving the to connect illegally.

Even though connecting electricity has led to many deaths, appliance failure as well as injuries, the community still chooses to connect illegally. Participants would quote past

incidents caused by illegal connections but this hasn't stopped them from connecting illegally.

### **5.2.3 STRATEGIES IMPLEMENTED TO CURB ILLEGAL ELECTRICITY IN QUARRY INFORMAL SETTLEMENT**

The residents of Quarry Informal Settlements complained about poor service delivery and how they had been promised the free basic electricity which no one has delivered up to date. They state that the municipality is aware of the issues they are faced with but no solutions as yet. When briefly asked, one municipal employee cited that they have been working with the department of human settlements to legalize some informal settlements so they can get proper services. They further stated how this has been a challenge as some residents of the neighbourhood complain about crime being high since the erection of informal settlements. Some informal settlements have been legalized but some face different challenges which makes it hard to provided services.

The study found that the municipality usually disconnect all illegal connections, arrested and prosecuted illegal connectors. Also, it was revealed that various awareness campaigns were done by the municipality, Eskom and the policy in trying to curb illegal connections.

When the residents of Quarry Informal Settlements were asked if they would be happy to explore other legal alternatives to connect electricity and pay, more than 90% of the participants answered "yes" to the question. One cited that if the municipality can give them affordable ways to connect electricity legally they would be very happy because sometimes they are scared when the children are out playing, he recalled an incident that once happened where children playing football and his son got chocked. Some said they would be happy to get free electricity which they can monitor themselves if the municipality can give them a few credits. When asked about Solar system, others seemed not to be aware of it and others reluctantly said they would try it out but felt it wouldn't be efficient for them, since it works only when the sun is out. Most of the participants **RECOMMENDED THE FREE BASIC ELECTRICITY AS A SOLUTION.**

## **5.2.4 THE CONSEQUENCES OF ILLEGAL CONNECTION OF ELECTRICITY**

The study revealed a plethora of consequences to illegal connection of electricity. It was quite perplexing why people would connect electricity illegally considering the knowledge they had on the consequences of doing such an act. All respondents had to mention something with regards to consequences. The study found that, connecting electricity illegally could cause injuries and death to connectors or even to children who would be found playing around *izinyokanyoka* (running cables). Some respondents could reference cases of injuries and death.

The study found that some unplanned power cuts and load shedding were caused by bursting of running electricity cables (*izinyokanyoka*), transformers and tripping of main breakers due to overload. These power cuts do not only happen around selected households but could bring the entire community into darkness or flames. Some houses said to have been set ablaze with fire coming from misconnections or bursting transformers.

Loss of revenue was also revealed to be one of the consequences caused by illegally connecting electricity. Due these illegal connections, illegal connectors evade paying for electricity prejudicing the municipality and Eskom of revenue. The municipal officials revealed that their entity was being prejudiced of thousands of Rands that could have been of help to the administration of the entity.

## **5.3 CONCLUSIONS**

The study's major goal was to look into the repercussions of illicit electrical connections in the Quarry Road informal communities in Reservoir Hills, Durban. The following goals were met and addressed in order to attain this key goal: (1) to determine the causes of unauthorized electricity hookups in Reservoir Hills' Quarry Road informal communities. (2) to explore the approaches used by the eThekweni municipality, Electricity Department to curb or minimize illegal electricity connections. (3) to describe the effects that illegal electricity connections have on the Economy of the country and the community. (4) to explore the impact of illegal connections and the formation of groups like Abahlali baseMjodolo and Izinyokanyoka and the impact they have on society.

The above-mentioned objectives were achieved through the use of a qualitative, exploratory research approach. A judgmental sampling technique was used to select respondents from the Quarry Road informal settlements and officials from the Municipality. 15 participants participated in this study, (13 from the Quarry Road informal settlements and 2 Municipal officials).

The study concluded that electricity theft in Quarry Road informal settlements, in Reservoir Hills, Durban was a cause for concern issue which needed to be addressed at national level.

It is quite shocking to learn that illegal electricity is the main source of electricity in Quarry Informal settlements. The community needs intervention from the municipality as this has been ongoing for years now. Many lives have been lost due to illegal electricity connections, it is sad to learn that innocent lives also get affected by illegal electricity connections. Municipalities need to find ways to help the community of Quarry Informal settlements since their economic status is also not an easy one. It is also important to note that the residents of Quarry Informal settlements seem to be uncomfortable by their means of connecting electricity but they seem to have no other means to getting electricity yet being so desperate. Stealing electricity may have no excuse but the level of poverty is high in these informal settlements. Most of the residents seem to make money from a decent living job that do not pay enough to afford utilities while some only rely on government funding, which is to only put food on the table. One wonders how far a R350 grant can one survive since food and other house utilities have increased.

#### **5.4 RECOMMENDATIONS**

- The municipality should work with the Department of Human settlements to find a way of making land legal or alternatively give them a safe infrastructure where shacks can be erected for service to be provided
- The municipal officials need to work hand in hand with counsellors of the community by informing them on any new developments or ways of how the electricity issue in the area can be fixed. This can be done through both parties negotiating terms that would assist in curbing illegal connections and gaining revenue.



- Municipality should aggressively create awareness around illegal electricity connections and formulate programs that would de-normalize illegal electricity connections
- Municipalities can use systems such as Paybilz where customers are able to read their own meters and submit their own meter. Meter readings are provided through the app and confirmed through a customer taking a picture. This system would work both in formal and informal settlements
- The usage of solar systems can be a more convenient alternative for informal settlements. Solar system work being converting sunlight into electricity. Solar energy can be created for free and last for a long time after a solar panel is installed. This is also the safest and cheapest way to have electricity.
- Community watch-dogs can be another alternative. If community hired watch dogs to make sure that once the municipality have been removed, spies will capture the perpetrators who will then face prosecution
- Peace officers that would work hand in hand with municipalities to try and curb these illegal connections.

The above solutions are workable recommendations by the researcher which can be used by the municipality in an attempt to curb illegal electricity connections in Informal settlements.

Illegal electricity connections can be curbed through constant educational programmes by the Departments of electricity. Times are changing and evolving through technology, digital systems should be developed and put in place in future to curb illegal electricity connection.

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## Appendix A : Letter of Information

### LETTER OF INFORMATION

**Title of the Research Study:** Consequences of illegal electricity connection focusing on Quarry Informal settlements

**Principal Investigator/s/researcher:** Mawuena Geyevu, BTech Public Management and Economics

**Co-Investigator/s/supervisor/s:** Dr Z Mbandlwa, PHD

**Brief Introduction and Purpose of the Study:** The study seeks to explore the consequences of illegal electricity connection focusing on Quarry Informal Settlements and to analyse approaches and come up with innovative energy sources that can be utilized in informal settlements and the impact illegal electricity connection has on society and electricity departments.

**Outline of the Procedures:** The researcher will be conducting interviews and questionnaires by going door-to-door to the participant's houses, unless participants suggest otherwise. Should the participant be open to traveling to where the researcher is, transport costs will be covered by the researcher. The research will be conducted through questionnaires and one-on-one interview with participants and will be recorded using a recorder and handwritten as they give responses. Follow – ups will be made based on the participant's responses, for example if a participant is willing to use another source of energy, researcher will take it upon themselves to follow up with electricity department to provide for participant. The respondent is required to be honest and transparent with whatever responses given and one hour will be spent with each participant/household.

**Risks or Discomforts to the Participant:** Participants might fear getting arrested as illegal connection is considered a crime, Participant's might filter their responses or worse not honor their invitation.

**Benefits:** Participants will be made aware of alternative energy sources and the electricity department will benefit from this study as this study aims to reduce illegal connections and increase revenue.

**Reason/s why the Participant May Be Withdrawn from the Study:** Illegal connection is considered a crime in South Africa; Participants may withdraw from this study because they might fear that legal actions might be taken against them.

**Remuneration:** Participants will be getting "Thank you" cards for partaking in the study

**Costs of the Study:** Researcher will cover traveling costs should participant want to meet outside of the planned meeting point.

**Confidentiality:** Respondents will be made to sign a confidentiality form before participating and names will be disclosed. All participants will be anonymous

**Research-related Injury:** Should there be any injury due to the research, participants will be compensated accordingly.

### Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher (0719851148), my supervisor (0829676640) or the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or [dvctip@dut.ac.za](mailto:dvctip@dut.ac.za).

### General:

Potential participants must be assured that participation is voluntary and the approximate number of participants to be included should be disclosed. A copy of the information letter should be issued to participants. The information letter and consent form must be translated and provided in the primary spoken language of the research population e.g. isiZulu.

### Appendix B : Consent Letter



### CONSENT

#### Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, \_\_\_\_\_ (name of researcher), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: \_\_\_\_\_,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

\_\_\_\_\_

<b>Full Name of Participant Thumbprint</b>	<b>Date</b>	<b>Time</b>	<b>Signature / Right</b>
------------------------------------------------	-------------	-------------	--------------------------

I, \_\_\_\_\_ (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____	_____	_____
<b>Full Name of Researcher</b>	<b>Date</b>	<b>Signature</b>

_____	_____	_____
<b>Full Name of Witness (If applicable)</b>	<b>Date</b>	<b>Signature</b>

_____	_____	_____
<b>Full Name of Legal Guardian (If applicable)</b>	<b>Date</b>	<b>Signature</b>

***Please note the following:***

Research details must be provided in a clear, simple and culturally appropriate manner and prospective participants should be helped to arrive at an informed decision by use of appropriate language (grade 10 level - use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counseling (Department of Health, 2004)

If the potential participant is unable to read/illiterate, then a right thumb print is required and an impartial witness, who is literate and knows the participant e.g. parent, sibling, friend, pastor, etc. should verify in writing, duly signed that informed verbal consent was obtained (Department of Health, 2004).

If anyone makes a mistake completing this document e.g. wrong date or spelling mistake a new document has to be completed. The incomplete original document has to be kept in the participant file and not thrown away and copies thereof must be issued to the participant.

**References:**

Department of Health: 2004. *Ethics in Health Research: Principles, Structures and Processes* <http://www.doh.gov.za/docs/factsheets/guidelines/ethnics/>

Department of Health. 2006. *South African Good Clinical Practice Guidelines*. 2nd Ed. Available at: [http://www.nhrec.org.za/?page\\_id=14](http://www.nhrec.org.za/?page_id=14)

## Appendix C : Research Questions



### RESEARCH QUESTIONNAIRE

<b>ILLEGAL ELECTRICITY CONNECTION QUESTIONNAIRE</b>	
<b>QUARRY ROAD INFORMAL SETTLEMENTS : KWAZULU NATAL DURBAN</b>	
NAME OF PARTICIPANT:	
WHO IS THE HEAD OF THE FAMILY?	
HOW MANY PEOPLE LIVE WITH YOU IN THE HOUSEHOLD?	
WHAT APPLIANCES ARE IN THE HOUSEHOLD?	

WHAT ARE THE CONSEQUENCES AND DANGERS OF ILLEGAL ELECTRICITY CONNECTION?	
--------------------------------------------------------------------------	--



<p>ARE YOU AWARE THAT YOU CONNECT ILLEGALLY IN YOUR HOUSEHOLD?</p>	
<p>WHAT IS THE REASON FOR THE ANSWER YOU GAVE ABOVE?</p>	
<p>WHY DO YOU THINK OTHER PEOPLE OPT FOR ILLEGAL ELECTRICITY CONNECTION?</p>	
<p>ARE YOU EMPLOYED?</p>	
<p>IF NOT EMPLOYED, WHAT IS THE MAIN SOURCE OF INCOME IN THE HOUSEHOLD?</p>	
<p>WOULD YOU BE HAPPY TO KNOW OTHER ALTERNATIVE SOURCES OF ENERGY e.g Renewable energy</p>	

**Appendix D : Gatekeepers Letter**



Faculty of Management Sciences

Department of Public Management & Economics

Date June 2020

Dear Participant

I am a student at the Durban University of Technology (D.U.T), and I am conducting a study on the investigation of consequences of illegal electricity connection focusing on Reservoir Hills, Quarry Road Informal Settlements. Illegal electricity connection impacts negatively on the community and the results of this study will hopefully enlighten residents on illegal electricity connections and come up with alternatives ways to keep the community safe.

I am interested in understanding your views and suggestions on this matter, and I have enclosed a questionnaire which asks you to respond to questions. The items in the questionnaire focus on your daily life experiences and the conditions in which you live under and understanding the main factor pushing you into illegal electricity connection. Items also ask you to respond on sources of income which will assist in coming up with cost effective ways to connect legally.

I want to stress that your participation in this study is voluntary and all efforts to protect your identity and keep the information confidential will be undertaken.

I have enclosed a consent form for your review. Please read the form and feel free to contact me if you have any questions about the study. If you choose to participate please sign, initial and date the consent form and return it along with completed questionnaire in the self-addressed envelope, also should you require a face to face interview please let me know. I look forward to learning about your views and knowledge on this matter. Your participation will be greatly appreciated.

Sincerely,

Mawuena Geyevu

0719851148

Supervisor:

Dr Zamokuhle Mbanjwa

0780589810

**Appendix E : Approval Letter**



**MANAGEMENT SCIENCES: FACULTY RESEARCH ETHICS COMMITTEE (FREC)**

3 March 2020

Student Name: Ms M Geyevu  
Student No: 21124723

Dear Ms M Geyevu

**MASTER OF MANAGEMENT SCIENCES: PUBLIC ADMINISTRATION**

**TITLE: Consequences of illegal electricity connections at Quarry Road Informal settlement**

Please be advised that the FREC Committee has reviewed your proposal and the following decision was made: **Approved – Ethics Level 2**

**Date of FRC Approval: 3<sup>rd</sup> March 2020**

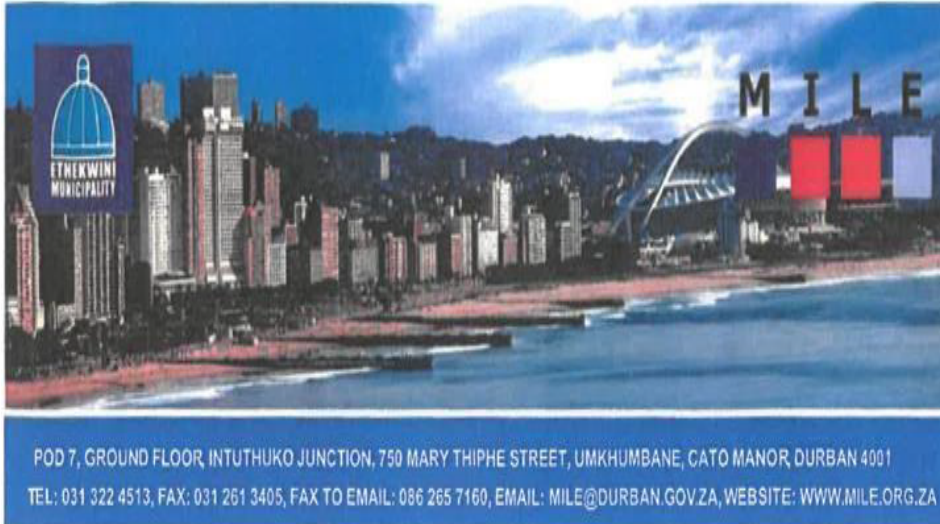
Approval has been granted for a period of two years from the above FRC date, after which you are required to apply for safety monitoring and annual recertification. Please use the form located at the Faculty. This form must be submitted to the FREC at least 3 months before the ethics approval for the study expires.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the FREC according to the FREC SOP's. Please note that ANY amendments in the approved proposal require the approval of the FREC as outlined in the FREC SOP's.

Yours sincerely

---

Prof JP Govender  
Chairperson: Faculty Research Ethics Committee



Chair of Research Ethics Committee  
Faculty of Management Sciences  
Durban University of Technology  
Durban  
4001

24 January 2020

RE: LETTER OF SUPPORT TO M.GEYEVU, STUDENT NUMBER 21124723 • GRANTING PERMISSION TO USE ETHEKWINI MUNICIPALITY AS A STUDY SITE

The Corporate and Human Resources Unit and Municipal Institute of Learning (MILE) in eThekweni Municipality, have considered a request from Mawuena Geyevu to use eThekweni Municipality as a research study site for the purposes of undertaking a - leading in fulfilment of a Master of Management Science degree entitled: " Illegal Electricity Connections In Informal Settlement focusing on Quarry Informal Settlement ."

We wish to inform you of the acceptance of this request and hereby assure the student of our utmost cooperation towards achieving her academic goals; the outcome which we believe will help the municipality improve its services. The student is always reminded of the ethical considerations when conducting the research. In return, we stipulate as conditional that the student, accompanied by her supervisor, presents the results and recommendations of this study to the related units on completion.

Wishing the student all the best in her studies.

Mr M Mthembu  
Head: Electricity

Mr Collin Pijay  
Program Manager; MILE eThekweni Municipality

# Consequences of illegal electricity connections at Quarry Road Informal Settlement

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