# 11 Understanding Energy Poverty in South Africa

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## 11.1 Introduction

For centuries, South Africa was plagued by colonialism and racial segregation. In 1948, formal Apartheid was established, cementing the separate and racist trajectory of the country and preventing the majority Black, Coloured, and Indian populations from having almost any human rights. These rights included access to education, basic services, and many other opportunities that contribute to a decent life. After years of struggle, in 1994 South Africa entered a new chapter in its history when the country underwent its first democratic election, which – also for the first time – allowed all citizens over the age of 18 to vote, regardless of race. This marked the official end of Apartheid and was followed by a new and democratic constitution, which pledged to:

> Heal the divisions of the past and establish a society based on democratic values, social justice and fundamental human rights
>
> (Republic of South Africa, 1996, p. 1)

Yet, almost 30 years later, despite having many pro-poor and development policies in place, the country is still beset by extremely high levels of poverty, inequality, unemployment, and energy poverty. In a world where sustainable and clean energy is increasingly a priority in response to the global climate crisis, the need to address energy poverty has also become more acute, despite being on South Africa's agenda since democracy. Not only is the country a high carbon emitter, built around a coal-driven energy-intensive industry sector, but because of apartheid, many poor households were deprived of access to basic services, including electricity. This is a double disadvantage for a country that is desperately trying to find relief from the triple challenge[1] of poverty, unemployment, and inequality (Parliament of South Africa, 2018).

Over the years in South Africa, the definition of household energy poverty has evolved from simply being understood as a lack of access to electricity to including a lack of access to basic energy services (ERC, 2002; Knox et al., 2018; Ledger, 2021; Mohlakoana & Wolpe, 2021; Thom et al., 2001). This consists of factors such as use, affordability, safety, health, gender, and many other elements. It is important to acknowledge that energy poverty is multi-layered, context-dependent and therefore requires context-based interventions.

This chapter takes a granular lens to understand the lived experiences of energy poverty in the South African context from both a municipal and community perspective. In doing so, it looks at the experiences of those living in energy poverty and those trying to find solutions.

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## 11.2 Lived experiences of energy poverty

What is striking about these photographs is that they capture the plight of people living in an unelectrified informal settlement next to one of the 12 coal-fired power stations and the coal-to-liquid fuel plant in Mpumalanga. Coal mining and coal led industries have had an enormously negative impact on the environment and on people's lives and health. There is clear evidence of premature deaths, asthma, and other lung diseases from air pollution. The land and air are coated in coal dust, which can be seen when one drives through the area. Rivers are affected by acid mine drainage, which leads to illness and affects land for agriculture. Many are without work and do not pass health tests in order to work in the mines because of respiratory illness, further compounding unemployment (Annecke et al., 2022; Bega, 2021; groundWork, 2019; Nowicki, 2020) (Figures 11.1 and 11.2).

This highlights the many contradictions present in South African society. In 2016, approximately one in seven households lived in informal dwellings, and in high density urban centres, the numbers were higher. According to a recent report by the Socio-Economic Rights Institute of South Africa (SERI), 79% of households lived in formal dwellings, 13.9% in informal dwellings, and 5.9% in traditional homes (SERI, 2018). In a country where housing and electrification are seen as having high political priority and given significant inroads into resolving the challenges, this is concerning.

A survey of 41 low-income electrified households in KwaGuqa, a small township in Mpumalanga province in the heart of South Africa's coal region, brings to light the lived experiences of

*Figure 11.1* Betty Zulu, a resident of the Big House settlement, with her laundry and a generator. This settlement is situated next to Komati power station in Mpumalanga.

*Source*: Photograph by Daylin Paul.

*Figure 11.2* Klaas Mtsweli sits outside his home in Big House settlement, near Komati power station in Mpumalanga.

*Source*: Photograph by Daylin Paul.

energy-poor people 29 years into democracy. For the purposes of this chapter, quotations have been extracted from the interviews conducted to illustrate the lived experiences. Participants have been anonymised, and each quote is assigned a number based on the household number of the survey. In this case, "HH" represents household, and the number refers to the number given to the questionnaire from 1 to 41.

Whilst the country has a policy of Free Basic Electricity (FBE) for poor or indigent households (discussed in more detail below), only nine of the 41 households in the sample knew that they were receiving this subsidy. This may be because if and when they purchase additional units of electricity, the receipt does not show the initial free units they are entitled to. The households explained to the researchers that they had applied for indigent status but did not know if this was granted as they had not received confirmation from the municipality. This led to their being confused about their indigent status and eligibility for receiving FBE. Registering as indigent is not easy, and often people either do not realise that they were granted the subsidy or simply do not get it because they do not fulfil the criteria. All the households made it clear that even with the FBE allowance, they did not have enough electricity to meet all their energy needs, and most were resorting to "cheaper" alternative energy sources such as coal, kerosene, and wood. Of the sample, 27% said that they opt for multiple sources of alternative energy based on affordability, and 73% relied on a single alternative source. Many indicated that they mainly use electricity for lighting and boiling water. People are only able to buy small amounts of fuel, such as a one-litre bottle size of paraffin or a few candles. Ultimately this is not only unsafe but a more expensive

option as a result of lack of disposable income, which leaves most households with little choice (Mohlakoana & Wolpe, 2023).

*HH1: "Electricity is expensive because we have to use all our money on energy and food."*
*HH10: "It is expensive and sometimes it's difficult to get paraffin (kerosene) as it is not always available in the area. This means you can't cook, and you end up eating bread only."*
*HH7: "High electricity costs leave us no option but to use the energy that is harmful for our lives."*

Most households indicated that whilst these alternative energy sources are also expensive, they are more affordable than electricity. The sample showed that households were spending between 18% and 37% of their income on energy costs, and many were using food money to service their energy needs. An impossible choice to have to make.

As with many informal settlements across the country, such as Imizamo Yethu in Cape Town, every winter season, there are fires caused by unsafe types of energy sources. Given the high density of informal dwellings present, an outbreak of fire in one shack leads to a domino effect with many others also going up in flames. In September 2022, up to 500 people were displaced in Imizano Yethu due to the fire. These fires not only lead to loss of irreplaceable belongings, they also lead to losses of life and the knock-on associated consequences for families and the local community (Flores Quiroz et al., 2021; Viljoen, 2022).

The majority of respondents in the KwaGuqa sample were clear that lower electricity prices would make their lives much easier. They could afford to use more electricity and reduce the use of unsafe fuels, and most importantly, they would have more money for food.

*HH10: "It will be better because I will be able to save my pension money and cook as I wish."*
*HH9: "It will help me to pay the rent and be able to cook healthy food as I am suffering from high blood pressure."*
*HH11: "It will give us a chance to afford it and maybe it will last a month."*
*HH38: "I would be able to save and bake cookies instead of buying them."*
*HH3: "It will help a lot because there will be no need for alternative fuels? maybe I will be able to heat my house and cook whatever I want."*
*HH5: "It will help a lot because I can be able to use my electric stove to do what I cannot do right now."*

From these statements, it is obvious that households would benefit in many ways from reduced electricity costs and/or higher subsidies and the ability to prepare healthier food without worrying about the high costs of energy. This would significantly improve their livelihoods.

All the sampled households were clear that the current electricity prices are too expensive, which impacts how much electricity they can realistically afford and results in them buying other less safe energy fuels such as wood, coal, and liquid petroleum gas (LPG). This corresponds with the literature on energy poverty, which indicates that electricity connections do not necessarily lead to the use of the supply to satisfy all household energy needs (Ledger, 2021; Thom et al., 2001; Wolpe & Reddy, 2014). The free basic allowance for those who receive it is inadequate for all their requirements, and buying electricity is too expensive for these households.

The following statements are some of the responses from households that were asked how they would be impacted by higher electricity prices.

*HH3: "As for me, I will go back to the coal stove even though it is hard to get that coal. It is expensive, 50kg of coal is R200 (≈USD 11) and cannot last for a month, it will be hard."*
*HH12: "I will not be able to use electricity, I will have to look for other alternatives."*

*HH22: "It is going to kill us, and I will not be able to buy it. I will be done."*
*HH15: "It will be too expensive. Things will go from better to worse."*

This small snapshot of life for people living in energy poverty illustrates how hard their lives are and how they are making choices between energy and food. These impossible choices continue to face poor households despite the numerous political efforts and policies that have been developed over the years to directly tackle this problem.

## 11.3 South African policies to alleviate energy poverty

In 1994, the newly elected government was faced with the enormous need and obligation to redress the many negative legacies of the apartheid regime. This meant giving priority to development; by providing housing, health care, education, and other basic services such as electricity to the majority of the population who had previously been denied these rights. Almost all policy development in the democratic era has concentrated on addressing these challenges whilst at the same time trying to grow the economy, reduce inequality, and increase employment.

The first of such policies was the Reconstruction and Development Programme (RDP) White Paper (White Paper on Reconstruction and Development, 1994). It was heralded as a key vehicle for the transformation process away from apartheid. The policy outlined a national electrification programme, the building of homes, job creation, and land redistribution, as well as other reforms. It was successful in providing basic services to many poor people (Baker & Phillips, 2019; Baker, 2017; Wolpe & Reddy, 2014). Today, more than 85% of the population now has access to electricity, and over 3 million low-cost formal houses have been built. Even though many were built on the periphery of cities far from work and opportunities and without ceilings, they did provide low-cost formal housing to those who previously lived in shacks.

The 1996 Constitution of South Africa set out the functions of the three-tier system of government for the country. Local government (municipal level) was given a clear role and mandate to provide the delivery of basic services to the communities in their areas of jurisdiction in "a sustainable and equitable manner" (Republic of South Africa, 1996; SALGA, 2014; SEA, 2017). Whilst it is the developmental arm of the system of government and does receive grants from the national government, it must also generate revenue to deliver on its mandate. It does this largely through property rates and the sale of electricity to households and businesses, amongst other mechanisms.

The South African White Paper on Energy Policy (1998) also had several important objectives, which included goals of increased energy access and security, improved governance, and economic growth (DME, 1998). Of critical importance, the aim of this policy was to increase access to affordable energy services for as many households as possible, especially those that were previously disadvantaged by apartheid government policies.

Access to basic energy services is the first step in overcoming energy poverty, but access on its own is not sufficient as it does not translate to the full use of that service. This is because poor households generally do not have the means to afford the full range of services on offer (Pye et al., 2015), making affordability a huge issue. Further, decisions on which energy source and what appliances to use are often influenced by household dynamics such as power and gender relations and remain an understudied area (Abbas et al., 2020; Beshilas, 2019; Johnson et al., 2020). Measuring access to affordable and clean energy as per the Sustainable Development Goal (UN, 2015) is achieved through the number of households with an electricity connection. These figures can be misleading, as they do not indicate the extent of energy being used by those connections. The case of South Africa illustrates this point well. As noted above, the statistics indicate high household electricity connections at 85% in 2018 (StatsSA, 2018) compared to

36% in 1994 (Wolpe & Reddy, 2014). But this still leaves more than a million households without grid connected electricity (Taylor, 2023). South Africa may be seen as being on track to achieving the SDG 7 goal, but in reality, the rate of energy poverty was shown to be at 58% in 2015 (Ye & Koch, 2021). Given the rising unemployment (32.9% in the third quarter of 2022), poverty, and inequality rates in the country, it is without doubt that household energy poverty numbers have increased (StatsSA, 2022). It is therefore clear that electricity connections do not translate to electricity use or a reduction in energy poverty.

One of the main challenges faced by the government was that even with the rapid electrification of low-income households, many could not afford to use this electricity supply. In the late 1990s, the electricity utility Eskom undertook research to determine the minimum amount of electricity required by low-income households and deemed that 50 kWh per month (the equivalent of R125 or USD 9) was sufficient. This resulted in the government's energy department publishing and initiating the implementation of Free Basic Electricity (FBE) to alleviate the challenges of electricity affordability in 2003 (DME, 2003). Most municipalities provide an electricity subsidy of 50 kWh monthly – although some give slightly higher amounts depending on their budgets and subsidy allocations for basic services. As much as this subsidy brings relief to many low-income households in the country, it is not enough to cover all their household energy needs. In fact, recent research (Ledger, 2021; Ledger & Rampedi, 2022) contends that this amount is grossly insufficient to meet even the basic energy needs of most households, and this view is supported by many municipalities and civil society groups. The subsidy is rolled out by local municipalities, and they are expected to provide the subsidy even in Eskom-distributed areas, which has created some challenges. Eskom shares the distribution of electricity with 165 licenced municipalities (Calitz & Wright, 2021; Mohlakoana & Wolpe, 2023).

Generally, low-income households supplement this electricity subsidy by buying extra electricity units and/or using a mix of energy sources such as wood, coal, kerosene, LPG, and other unsafe fuels as described in the fieldwork study above. The FBE allocation comes from the Equitable Share Grant and is for all basic services. However, to receive the benefit, households must be registered as indigent, and the registration process is onerous and often means that those who should be getting the benefit are not. In addition, because local governments are struggling to meet all their mandated operations and must contend with financial constraints, the grant – which is not ringfenced – does not reach all beneficiaries and is sometimes used for other municipal expenses. Further, many households are using the money and grants they receive for food to supplement or simply provide for their energy needs (Ledger & Rampedi, 2022).

## 11.4 Deepening energy poverty and informal electricity connections

In South Africa, many municipalities and Eskom lose revenue due to informal or illegal electricity connections. These are connections made by households either directly from the electricity supply source, such as the distribution sub-station, or from another household that has a formal electricity connection. These informal connections are regarded as illegal by Eskom and the municipalities because they do not comply with the electricity connection regulations. These illegal connections lead to their inability to recoup revenue for the cost of supplying electricity and pose serious safety risks. This not only results in technical losses for the municipality or Eskom, but it also overloads the electricity distribution grid due to having to supply more households than it is capable of.

There are several reasons why households end up with informal or illegal electricity connections (Mbandlwa & Geyevu, 2022). The most obvious is the lack of affordability, which leads to the inability to use electricity. Most of the households with informal connections are

in low-income areas where unemployment and poverty levels are high. Their inability to pay for the formal electricity supply leads to households using alternative sources of energy. These alternatives also come at a cost that is still too high for some. Another reason for informal connections is the income generation aspect, whereby those with formal connections "sell" electricity informally and at a higher cost. Such informal connections are usually to people with informal homes living across those with formally connected housing.

Over the years, as people flock to cities from rural areas, there has been a growth in informal settlements. This situation worsened during the COVID-19 pandemic, which led some people to give up their formal dwellings for informal settlements due to loss of income and unaffordable rental rates. This informal land occupation occurs on land not deemed suitable for the provision of basic services such as water, electricity, and sanitation by local municipalities. Therefore, households that are living in informal dwellings end up using dangerous fuels such as kerosene because they are not able to access and use modern energy services, such as formal electricity connections.

Reliance on biomass and unhealthy fuels such as kerosene due to both a lack of access and the ability to afford modern energy services such as electricity also contributes towards energy poverty. It is a known fact (Simcock et al., 2018; Thom et al., 2001) that households experiencing poverty lack sufficient income to cater for their household needs, such as food, energy, and suitable housing, and are often classified as living below the poverty line. The most common benchmark to determine the affordability of energy for households is if they spend 10% or more of their income on their energy needs (Bouzarovski et al., 2021; Wolpe & Reddy, 2014). This percentage is considered unaffordable, especially when compared to mid- and high-income households, which spend 2-3% of their income on energy. For low-income households, spending such high amounts of their income on energy often means less available income for other household priorities, such as food.

The informal connections are indicative of deepening poverty and energy poverty levels in the country (Mbandlwa & Geyevu, 2022). With high unemployment, many households cannot afford basic household needs, which include access to energy, including electricity. Similar to other countries, the South African inflation rate has risen due to several factors, including the COVID-19 pandemic and the loss of employment for many as the economy dipped. The ongoing Russian invasion of Ukraine has also led to an increase in food and energy prices. For South African low-income households, high inflation has made it much more difficult to afford basic services such as food, housing, medical care, and now increasingly energy.

## 11.5 Delivery of energy services

The cost of supplying a household with electricity is high and difficult for a distributing municipality to recoup, particularly if the customer is not using sufficient electricity for them to generate income (Creamer, 2022; Eskom, 2022). This has to be managed by electricity departments, which are under constant pressure to work within a budget whilst providing the service. The sale of electricity is one of the main mechanisms for municipalities to generate revenue as they can add a levy to their tariffs. Electricity tariffs are not uniform throughout the country and the implementation of electricity subsidies is also dependent on whether the distributor is Eskom or the municipality. There is a lack of awareness on the part of customers in terms of how the system operates and why there are different tariffs. This lack of awareness leads to a lack of understanding, which heightens the strain on distributors and customers (Eberhard, 2006). For instance, in conversations with households and municipal officials, communities want to know why their neighbours pay less than they do. Officials know that communities do not understand

the tariffs in place or how the subsidies work, but there are not enough staff and interventions to remedy this situation. They recognise that there is not adequate communication to raise awareness, and yet they do not have the resources to change this situation.

Local government officials and civil society groups are calling for an increase in the FBE grant. It is well documented that 50 kWh of free electricity per month is simply not enough to keep poor households out of poverty. Recent research suggests a minimum of 250 kWh is more appropriate, which is equivalent to R625 or USD 34 (City of Cape Town, 2022; Ledger, 2021). However, the national grant they receive to roll out FBE will not enable them to implement such an increase. More recently, the national government has developed a Just Energy Transition Investment Plan (JET-IP) in response to the USD 8.5 billion pledged at the 2021 Glasgow Conference of Parties (COP) 26. The funds were pledged by the European Union, the United Kingdom, France, Germany, and the United States as the Climate Investment Fund to accelerate the coal transition for developing countries (Presidential Climate Commission, 2022). The plan includes a focus on local government and a small increase in the FBE allowance to 100 kWh (Republic of South Africa, 2022).

The City of Cape Town municipality has been striving to address energy poverty for many years. They have a 98% electrification rate. However, despite this high rate, they continue to experience electricity theft and energy poverty. The municipality has rolled out a ceiling retrofit programme as many of the RDP houses built in the early phase (national programme) were without ceilings to keep costs down and keep numbers high (City of Cape Town, 2022). However, a home with no ceiling and no insulation makes no sense from an energy perspective (Phillips et al., 2011). Even though the programme was regarded as helpful for low-income households, it could not go further due to a lack of further funding (Halsey & Wolpe, 2020). The municipality has a long-standing low-income energy services programme to reduce energy poverty, but it has not been able to move sufficiently beyond research and implement at scale. The City of Cape Town municipality recognised that they are understaffed and need to drive a more collaborative approach with other departments. The City of Cape Town was one of the first municipalities to electrify an informal settlement using what is known as the "maypole method" whereby several households are connected to an electricity supply via a transformer that is placed on a pole. An area that this municipality is focusing on is increasing information and communication about energy use and efficiency, not only across departments but also with communities. Communication channels do not always work well, and this is another area of work that needs to be developed. Conversations with municipal officials reveal that a lack of understanding of the issues and challenges both within a municipality and with communities hinders the work that is happening on the ground.

There is no clear constitutional mandate on energy poverty, and the fiscal framework under which municipalities operate further hinders what they can do. As one official has said, they are hamstrung not by a lack of will but by a lack of money and a lack of legislation to enable them to do what needs to be done. The municipal official went on to say that they have to deal with this emotional trauma and have no power to resolve the problem of illegal connections and growing informal settlements. No sooner have they disconnected an illegal connection and it is reconnected. Many municipalities have teams in place to deal with illegal connections and non-technical losses often caused by metre tampering.

A survey of a formal settlement in Joe Slovo, Cape Town, which has had a number of sustainable interventions such as solar water heaters, ceilings, roof overhangs, LED lights, and street lighting installed in houses, demonstrates how a holistic approach has helped the community (City of Cape Town, 2013). Key results from respondents included how living in an energy-efficient home as opposed to a shack was so much better and safer and that life is more dignified.

The solar water heaters were great in the summer but had no electrical backup for the winter and so were less effective. People liked having hot water on tap rather than having to use a kettle or stove. However, over time, it has become clear that maintenance of solar water heaters was not included in the budget, and many are no longer functioning. The addition of ceilings made a huge difference to people in terms of less dust, less noise, and better ambient temperatures.

## 11.6 Conclusion

This chapter has given a brief overview of what energy poverty means in the South African context, both for communities and for municipalities. Managing this enormous challenge requires understanding context and multi-dimensional interventions. This is not always easy where there are both financial and capacity constraints and people are fighting to simply survive.

Why has the national government failed to shift the energy poverty trajectory despite numerous policies and political intent? The answer to this question is highly complex and this chapter has only been able to touch the surface. In part, it is because municipalities must both generate revenue and operate in a developmental manner without sufficient resources to support such a pathway and, therefore, poverty reduction. The economic policies in place since democracy that should have supported and upheld the development agenda have in fact slowed down or even blocked a redistributive transformation of the energy system. The very nature of driving a free market approach, particularly at the local government level, has put a strain on their ability to deliver on their service delivery mandates. It is also evident that, at the very least, the FBE allowance should be increased to a minimum of 250 kWh per month with greater checks to ensure that those entitled to this benefit actually receive it. This chapter has highlighted the importance and need to make a distinction between (energy) access and (energy) use as these do not necessarily lead to alleviation of energy poverty. In South Africa, as the levels of poverty and unemployment rise, so do other societal inequalities, which make it more difficult for low-income households to comfortably meet their household energy needs without compromising other needs such as food. There is some hope that the newly launched Just Energy Investment Plan (JET-IP) by national government of how the USD 8.5 billion should be allocated which includes a review of local government's fiscal framework and an increase in the FBE allowance, could help strengthen and support a reduction in energy poverty in the country.

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## Note

1 The term "triple challenge" is widely used by the South African government after the South African High Level Parliamentary Committee assessing key legislation and acceleration of fundamental change, refers to the high levels of unemployment, poverty and inequality as the triple challenge currently faced by the country (Parliament of South Africa: 2018).

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