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THE LOCAL GOVERNANCE OF MUNICIPAL ELECTRIFICATION IN TOWNSHIP INFORMAL SETTLEMENTS

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ABSTRACT

The main role of local government is to help safeguard communities from social and economic problems by providing develop-orientated public services. While this is the anticipated standard, in practice, local government frequently faces difficulties in providing services such as electricity, particularly in impoverished and informal township regions. Tis paper explored how municipal electrification is managed in informal settlements within the Nelson Mandela Bay Municipality (NMBM). The authors used a qualitative research methodology that relied on secondary data collected from online sources, and municipal documents to address the objectives of the paper. This data was analysed using thematic content analysis to identify themes. The study found that community members residing in informal settlements use other forms of energy because municipal electricity is too often unavailable. The NMBM mainly uses grid extensions to supply electricity to these areas. While the municipality provides electricity to many different types of settlements, the system faces challenges such as poor coordination, limited community participation, a lack of funds and technical skills, and the growth of new informal areas. The paper concluded that the main problems in providing electricity come from rapid urbanisation in townships and the long history of informal settlement development. It is recommended that stronger community participation, better interdepartmental coordination, and innovative financing be used to expand affordable electricity access.

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Introduction

The socioeconomic issues confronting informal settlements are a complex issue that local governments must resolve through various mechanisms of service delivery. Local governments are equipped with policy powers and legislation that enable municipal institutions to provide services as part of the democratization ethos of the South African socio-political landscape. Since the dawn of democracy in 1994, local governments have made strides in delivering basic services inclusively. However, the sphere has been marred with criticism over major shortfalls in meeting its development obligations, particularly in previously marginalised communities including townships and informal settlements. Studies show that these deficiencies are driven by the challenge to construct and maintain infrastructure that enables municipalities to deliver basic services such as water and sanitation (Cardon & Fonseca, 2006), electricity reticulation (Emily & Muyengwa, 2021), storm water (Emily & Muyengwa, 2021; Palmer et al., 2016) and formal housing (Mhlongo et al., 2022), among others. Notably, in urban municipalities, energy infrastructure remains one of the major challenges embattling service delivery obligations in marginalised township informal settlements (NMBM, 2023; Monyai et al., 2019). This implies that urban municipalities face governance issues related to the infrastructure of marginalised communities.

Informal settlements are key urban spatial attributes of urban townships nationally. According to Williams-Bruinders (2020), informal settlements in townships house thousands of migrants who live in households without formal and clean electricity for basic living. The expansion and permanence of township informal settlements can be attributed to the rapid urbanising nature of townships which is unable to cope with the growing housing needs of migrants. This results in migrants being compelled to resort to informal housing alternatives to meet their housing needs (Gcabashe, 2025). Primarily, informal settlements, particularly in rapidly urbanising regions in developing countries, emerge outside municipal formal planning and regulations, rendering the electrification of these settlements through conventional infrastructure difficult.

This has, among others, restricted the integration of informal settlement occupants (mainly migrants) into the social and economic landscape of municipalities. In the Nelson Mandela Bay Municipality, authorities have focused on advancing the infrastructure of township informal settlements, with emphasis being placed on developing energy reticulation and housing infrastructure (NMBM, 2024). With these developments, the municipality has sought to alleviate the socioeconomic plights of informal settlement dwellers, boost and integrate economic activities, and increase the levels of cohesive socioeconomic resilience of informal settlement dwellers. Despite these efforts, energy poverty in the township's informal settlements has persisted as many informal settlement dwellers remain without access to affordable, safe, and legal energy (Williams-Bruinders, 2020). Against this backdrop, this paper examines the governance of informal settlement municipal electrification in townships located in the NMBM.

Development: A Municipal Guide for Service Provision

The idea of development is wide and used in many different ways, depending on various beliefs and theories. However, these ideas share the same main goal which is to improve people's lives and make society better. According to Myrdal (1974) as cited in Rist (2014), the term was conceived in the 1800s, where it was viewed as the evolution of society and aligned with human progress and social systems. In this context, social systems refer to an amalgamation of critical human factors that link education, health and other areas that define the social and economic conditions humans live under. This implies that development is premised on the idea that the improvement of human conditions leads to a better life (Sen 1988). Cameron and Schell (2021) support this assertion by arguing that an improvement of conditions can be measured using various metrics that quantify the living standards of people, such as life expectancy, levels of poverty, literacy levels, inequality and unemployment, among others.

The notion of development in South Africa encompasses the role of the local sphere of government which functions in consideration of South Africa's racially divided past and systematically marginalised non-white inhabitants through colonialism and apartheid. Gumede (2015) posits that these governance systems led to a racially divided country where development was promoted along racial lines. Gumede further states that in this arrangement, whites were afforded

social, economic and physical infrastructure as well as a favourable policy environment to live quality lives while the rest of the population lived in precarious conditions underpinned by poverty and inequality. Mosala and Nxumalo (2023) add that through the Native (Prohibition of Interdicts) Act 64 of 1956 and Group Areas Act 41 of 1950, the apartheid government structured development according to geography through spatial and urban planning that isolated each racial group to a particular demarcation. As a result, the government dedicated the bulk of its budget towards developing the infrastructure of 'whites only' communities. Cloete (1982) as cited in Ramokgoba (2018) framed this as the policy of separate development.

Following the political dispensation in 1994, the post-apartheid government adopted a transformative agenda for local government that intended to propel the sphere into playing an important developmental role through service delivery. The legislative imprint of the Constitution of the Republic of South Africa, Local Government: Municipal Systems Act 32 of 2000 and the White Paper on Local Government of 1999 accentuates the social transformation purpose of local government by empowering the sphere to promote social and economic development. This central tenet is explicitly borne out of Section 152(1) (c) of the Constitution which outlines the core objects and aims of local government. In this regard, the sphere's mandate in "…infrastructure development, water supply, transportation, road construction and maintenance, waste management, and sanitation … provides for citizens' needs such as education, a healthy environment, housing, and primary health care" (Mosala & Nxumalo 2023:1068). Moreover, the sphere's role of promoting local economic development (LED) means that it plays a critical role in addressing unemployment and poverty. Evidently, the properties of local government tie the sphere to the realization of development, particularly in vulnerable societies such as township informal settlements.

Development and Energy Access

Energy access is widely acknowledged as a conduit to development in society. Scholars, policy and legislative prescriptions have noted that energy advances the living standards of people and triggers sustainable economic growth. For instance, the International Energy Agency (IEA) cited in Selokela and Langerman (2021), stated that "the provision of secure, affordable and modern energy for all citizens is central to poverty reduction and economic growth". Importantly, the

adoption of the Sustainable Development Goals (SDGs) in 2015 entrenched this view and placed global impetus on the provision of sustainable and equitable energy access to people (Selokela & Langerman, 2021). Specifically, SDG 7 calls for the "universal access to affordable, reliable, sustainable and modern energy for all" (Smit et al., n.d). In addition, energy access is one of the main proponents in realising the other 16 goals (World Bank, 2018, as cited in Conway et al., 2019).

In South Africa, the provision of energy is a basic right guaranteed to all South Africans by the Constitution of the Republic of South Africa (Dube & Moyo, 2022). While the Constitution does not explicitly guarantee this right to people, a ruling by the Constitutional Court in 2010 classified electricity as a basic service (see Joseph v City of Johannesburg, 2010, as cited in Conway et al., 2019). This case set a legal precedent that obligated the government to deliver energy to all South Africans. According to Eberhard (2007), the Constitution specifically imposes the responsibility for the infrastructure and reticulation of electricity on the local government. As part of this responsibility, municipalities must provide the infrastructure and tariff framework to provide stakeholders within their jurisdiction safe and affordable electricity supply (in line with the Constitution and section 3 of the National Energy Regulator Act 40 of 2004).

This legal footing suggests that the provision of electricity at a broad societal scale is recognized in South Africa as fundamental, particularly in consideration of the Constitutional court's recognition of the service. This positions South Africa ahead of its Global South counterparts. However, scholars have progressively warned that a comprehensive and advanced legislative prescriptive framework may not reflect institutional willingness to implement policies, particularly in vulnerable segments of society (see Gcabashe et al. 2022). It is therefore necessary to examine the challenges associated with the electrification of urban informal settlements.

Service Delivery in Local Government

According to the South African Local Government Association (SALGA) (2006), local government is the sphere of government that is closest to the people. As such, municipalities are at the coalface of delivering services and deepening democracy in the country. This characterisation allows municipalities to be the first to understand and respond to local needs (Kobashi et al., 2022) as empowered by

Sections 152 and 153 of the Constitution. In addition, the Local Government: Municipal Systems Act 32 of 2000 enables municipalities to actively develop the social and economic conditions of local communities and safeguard the universal access to essential services (Republic of South Africa, 2000). The services provided to communities by municipalities serve to build resilience and reduce vulnerability. In this regard, infrastructure for electricity reticulation is crucial. Critically, this service is informed by developmental-oriented planning that aligns with the unique context and needs of the affected municipality.

Through development planning engineered by the Integrated Development Plan (IDP), local governments outline their strategic service delivery priorities and plans that are formulated to tackle vulnerability (Biyela et al., 2018). In this manner, the provision of municipal services is envisioned to directly and indirectly reduce vulnerability in communities (Masuku & Njili, 2019; Mofokeng, Ramolobe & Bogopa, 2025). In addition, the administrative and political position of local government in terms of its accessibility to citizens and the nature of its functions is integral to the implementation of development measures. As such, municipalities must strengthen institutional capacities to align themselves with development initiatives that produce sustainable, positive outcomes in the municipality (SALGA, 2006). In other words, development initiatives must be integrated into the daily operations of primary governance areas, including development planning, land use control, and provision of public facilities and services (UNISDR, 2010 in Malagoda et al., 2010).

The scale of local government also allows municipalities to formulate and implement pioneering tools and techniques to integrate into the policy priorities of municipalities (Cvetković et al., 2021). Characteristics of the administrative and political structures of municipalities can contribute to the development of vulnerable communities. Notably, municipal institutions have local knowledge that is generated from municipal public participation pathways (Gcabashe, 2025). In this manner, municipal institutions have the mechanisms to facilitate inclusive participation with citizens, external stakeholders, and government departments from different spheres through public participation and intergovernmental mechanisms. This enables the sphere to organise contingencies for funding to propel development initiatives (Mazele & Amoah, 2022). This ability provides municipalities with a framework to develop and refine

service delivery systems to suit their unique hazard socioeconomic context. Furthermore, it enables municipalities to adapt national and provincial programmes comprehensively into local resilience-building objectives (Banda et al., 2022; Nkhabu, 2021).

Methodology

The authors used a qualitative research approach to examine the governance of municipal electrification in township informal settlements located in the NMBM. Since the paper was mainly focused on the NMBM, the authors used secondary data, documents, and reports from the NMBM. In addition to these, academic sources were sourced from digital database repositories accessed through the Nelson Mandela University digital library. Through the digital library, data were retrieved from credible databases including Google Scholar, Web of Science, South-Eastern Association Library System (SEALS), and Scopus. To search for the sources relevant to the objectives of the paper, the following keywords were used:

- Informal settlement electrification.
- Electricity in informal settlements.
- Informal settlements in the NMBM.
- Informal settlement electrification in the NMBM.

The selection process for the sources involved a manual review of the collected materials. This screening was conducted based on the titles, abstracts, and conclusions. Only studies focusing on electrification in informal settlements within the NMBM townships were selected for further examination. The paper's emphasis on municipal services and governance led authors to investigate the municipality's policy on providing electricity to informal settlements. Relevant sources were gathered from the municipality's website, which contains crucial documents such as by-laws, IDPs, and annual reports, offering quantitative and qualitative insights into the electrification status of township informal settlements. The paper employed thematic analysis to integrate the recognized themes and trends as outlined by Riger and Sigurvinsdottir (2016). The authors adopted this data analysis method by manually coding the data using Microsoft Excel. The codes focused on the energy sources that residents of township informal settlements used, the delivery and expansion of grid electricity to these areas, and the associated challenges.

Results and Discussion

As a Category A (Metropolitan) municipality, the NMBM holds exclusive rights to supply electricity to all consumers within its jurisdiction (NMBM, 2023). The municipality's delivery of electricity services, particularly in townships, is challenged by service backlogs that are caused by rapid urbanisation and the mushrooming of overpopulated and clustered informal settlements in areas not serviced with municipal electricity (NMBM, 2024). The municipality has acknowledged this shortcoming in consecutive IDPs, citing that informal settlements expand the municipality's stretched resources. Moreover, the construction of new informal settlements challenges the spatial and urban planning of the municipality. As a result, the municipality fails to provide electricity services inclusively throughout its jurisdiction. Consequently, informal settlement dwellers adopt unsafe energy alternatives that render these settlements susceptible to widespread fires (Williams-Bruinders & De Wit, 2020).

Some of the energy alternatives in informal settlements located in townships include illegal electrical connections, paraffin, candles, and firewood fires (Housing Development Agency, 2012; Mgidi & Koen, 2020; Monyai et al., 2023). Firewood fires are used for cooking, while paraffin is used for kerosene and cooking (Monyai & Chavenga, 2020; Monyai et al., 2023). On the other hand, illegal connections – colloquially termed as 'izinyoka' – are mainly used to power lights and appliances across settlements (Sizani, 2021) and represent one of the municipality's main service delivery challenges (NMBM, 2023). While informal settlements dwellers utilise paraffin, candles, and open fires, the use of illegal electricity is preferred because of its affordability and convenience. For instance, people pay a once-off fee for connection and a monthly fee (Hako 2022) for unlimited power. On the other hand, paraffin faces fluctuating prices, and firewood fires are limited to cooking and heating purposes.

Regrettably, these energy alternatives are highly flammable and expose settlements to fires that can engulf informal settlements across townships in the municipality, particularly when factoring in the municipality's strong winds (see Algoa FM, 2023; Mabuza, 2019; Nel, 2024). The damage caused by the fires has led to major destruction of property, loss of life, and obliteration of entire informal settlements for two structural reasons. Firstly, informal settlements are overpopulated and clustered. Secondly, the settlements are constructed using highly flammable building materials (Mgidi & Koen,

2020). These physical properties subject settlements to rapid fires that can spread quicker than people and local emergency authorities can respond.

Electrification of informal settlements

Informal settlement energy in townships located in the NMBM reflects the socioeconomic conditions that oblige informal settlement dwellers to utilise hazard-exposing energy alternatives. The effects of rural-urban migration into townships located on the peripheries of the municipality encourage poor people to invade vacant urban township lands that are not serviced with municipal electricity. A study by Monyai et al. (2023) attributed the invasion of urban land to the poverty levels of migrants, which encourage the adoption of these disparate practices. The municipality's electricity provision is quite expensive as it covers households and businesses within its jurisdiction in three sectors, namely formal urban electrification, rural electrification, and the electrification of informal settlements. By the end of the 2022/23, the municipality served 355,922 customers with safe electricity, including a 9.10% allocation towards the Free Basic Electricity (FBE) (NMBM, 2023).

The FBE is the "…amount of electricity determined by a municipal policy provided monthly for free with the aim of assisting poor households to meet their basic needs" (NMBM, 2023:62). Despite this rate of delivery, the municipality continues to face electrification backlogs that disproportionately affect informal settlements (Sizani, 2021). According to Gaunt et al. (2012), informal settlements are the fastest-growing household sector in South Africa, with some cities experiencing growth rates of between 10% and 16%. As such, formal housing programmes have been unable to cope with the demand for government-subsidised housing. Equally, many informal households remain unelectrified (Gaunt et al., 2012). Nonetheless, the municipality has conceptualised various programmes to connect informal settlements to the main electricity supply of the municipality in terms of the Integrated National Electrification Programme (INEP). In this study, the analysis focuses on the Accelerated Electrification of Shack Programme, as this programme is premised on the eradication of illegal connections and the construction of infrastructure that enables the municipality to provide safe and cost-effective electricity to informal settlements (News24, 2022).

Accelerated Electrification of Shack Programme

The Accelerated Electrification of Shack Programme was formulated to fast-track the NMBM's electrification of informal settlements while eradicating illegal connections. Through the programme, the municipality sought to remove nearly 32,000 illegal connections in informal settlements in the municipality in two phases:

- Phase 1 involved the removal of illegal connections in settlements identified for municipality electricity; and
- Phase 2 involved the installation of electrification infrastructure and power subsidised municipal electricity supply to the settlement (Port Elizabeth Express, 2021).

In its eradication of illegal connections, the programme sought to eliminate the primary cause of informal settlements fires. An interesting finding is that the electrification of urban informal households has produced cheaper electricity than the illegal connections. Hako (2022) captured the lived experiences of recipients in the Kliprift Informal Settlements, establishing this:

'To buy a cable and connect illegally cost me R700. Then the monthly fee was between R200 and R300. The municipal electricity is much cheaper. This is a great relief. I want the izinyoka to be removed because it is very dangerous, especially to our children'.
(Respondent in Hako, 2022)

Despite its social significance in terms of providing a safe and affordable electricity supply, the rollout of the programme faced structural and infrastructural challenges that have highlighted critical shortcomings. In the Bayland Informal Settlement, the municipality provided municipal electricity supply to informal settlement households (Sizani, 2021a). However, the rollout incited violent protests over the slow pace of the electrification installations and the uncoordinated installation of electrification infrastructure (Sizani, 2021b). In addition, conflict arose between informal settlement dwellers and their formal settlement residents when informal settlement occupants readopted illegal connections straight off the ABC, consequently affecting the supply of electricity to formal settlements. The municipality attributed the negative perceptions of the rollout to financial constraints (Mgidi & Koen, 2020). Interestingly, the municipality removed illegal connections without providing informal settlement dwellers a timeline of when they would be

afforded municipal electricity. According to reports, dwellers were subjected to days without energy and resorted to violence to vent their frustrations (Sizani, 2021a). In addition, residents in the Kliprand Informal Settlement complained that the municipal electrical boxes damaged their electrical appliances (Sizani, 2021a).

Positioning the Governance of Municipal Electrification in the NMBM

The unsafe energy adopted in township informal settlements in the NMBM is interesting to note. While the use of paraffin, candles, and firewood fires is common and presents fire hazards itself, the reliance on illegal connections is perhaps the major fire hazard concern. This is typical of informal settlements in the country that tend to adopt illegal connections as their preferred energy source owing to their diverse uses (Geyevu & Mbandlwa, 2022; Monyai et al., 2023; Smit et al., 2019). In line with the literature, the findings of this paper have revealed that illegal connections are perceived to be cheaper in some instances and more comprehensive in their uses. The findings further reveal that the absence of municipal electrification infrastructure leaves informal settlement occupants with little alternative but to connect illegally from transformers supplying electricity to formal settlements in order to satisfy their energy needs. Findings in Dave et al. (2019), New Era (2021), and Informante (2021) validate this claim as they highlight that the lack of service delivery in informal settlements fuels the adoption of illegal electricity connections by unelectrified residents. Rather negatively, illegal connections are at the coalface of township informal settlement fires in the NMBM owing to their volatility and uncontrolled current. Similarly, Lemaire and Kerr (2016:8) established that illegal electricity connections “lack access to equipment that has been tested for safety, as well as the potential for misuse in terms of drawing excess current, leading to an increased risk of electrical fires with illegal connections”. In support, Gaunt et al. (2012) argue that the adoption of illegal connections compromises the safety of residents as it leads to frequent fatal accidents and disrupts the supply of electricity to formal customers. According to Antonellis et al. (2016), the provision of formalised electricity is an effective method to reduce the risk of informal settlement fires as it deters (in theory) the use of illegal connections among informal settlement dwellers. However, the provision of electricity infrastructure is an immense challenge for the NMBM owing to several contextual factors that narrow down to the lack of stakeholder engagements and methodological planning, and

funding constraints that have led to the reversion of illegal connections by informal settlement dwellers. These factors surmise the technical, epistemological, and methodological characteristics of informal settlement electrification identified in the literature.

In the current case, criticism is on the municipality's Accelerated Electrification of Shacks application of conventional municipal electrification approaches to electrify township informal settlements. Wynne (1992), cited in Kovacic et al. (2016) framed this as technical uncertainty. Kovacic et al. (2016:218) define technical uncertainty as the management of risk and unknown probabilities of known events that arise when standard solutions have to be applied to unconventional problems. The study has revealed that technical uncertainty is problematic in the NMBM, as highlighted by the contextual factors outlined in the findings. With specific reference to these contextual, the study revealed that the municipality first lacks coordination in its removal of illegal connections. Secondly, the municipality does not engage stakeholders (including informal settlement occupants and neighboring formal residents) in terms of the implementation of the program. Thirdly, the municipality faces funding constraints that limit its capacity to electrify township informal settlements.

The issues affecting the electrification of township informal settlements in the NMBM seem to be common among metropolitan municipalities across the country. For example, the City of Tshwane Metropolitan Municipality (CoT), similarly to the NMBM, faces issues in developing infrastructure for provisioning electricity to informal settlements. Nkhabu (2022) identified that pressure is exerted on the CoT's infrastructure capacities due to the vastness of the municipal area and the urban sprawl caused by the influx of poor migrants and immigrants. Likewise, the current paper identified that the urban sprawl in the NMBM has strained the capacities of the municipality because it compels the municipality to build new infrastructure in order to extend the electric grid to remote areas. In support of this finding Madlener et al. (2011) cited in Kovacic et al. (2016:218) asserted that unplanned urbanisation "may make it difficult to install the infrastructure needed to expand the electric grid". This difficulty is compounded in the NMBM, as these settlements tend to be located in 'stressed areas' (NMBM, 2023). In this regard, the emergence of informal settlements across townships extends the municipality's limited infrastructure capacity to develop the reticulation of municipal

electricity in line with the INEP. Evidently, the unplanned urban growth is a dominant factor in the formation of informal settlements and the unsafe electrification that causes informal settlement fires. In other words, the demand exceeds the capability of local government to proactively implement infrastructure consistent with the rates of population growth and urban migration (Gaunt et al., 2012:2).

It is important to note that the backdrop of limited municipal infrastructure to service informal settlements is against the urban context of informal settlements in low-income townships. Specifically, informal settlements represent the first point of arrival for rural migrants (Misselhorn 2008 as cited in Brown-Luthango et al. 2016). The informal arrangements of these settlements are perceived as disorderly, unsafe, and chaotic (Massey 2013). Nujiten et al. (2012), cited in Brown-Luthango et al. (2016) argue that informal settlements follow a particular logic that supports multiple livelihood strategies and enables residents to survive and live under extremely precarious conditions with very little support from the state. This emphasises that urbanisation, particularly as it pertains to the migration of poor people into the municipality, perpetuates the exposure to informal settlement fires as people are forced to utilise alternative energy sources, which increases their susceptibility to fires. Considering the physical characteristics of informal settlements and the socioeconomic drivers of unsafe energy, it may be argued that the safe reticulation of electricity in informal settlements can reduce the level of susceptibility informal settlements face towards hazards. Therefore, municipal electricity is a critical basic service that the municipality must provide effectively to informal settlements in order to reduce the risk of informal settlement fire disasters.

Conclusion

The governance of infrastructure as it pertains to electricity reticulation in township informal settlements is a crucial proponent of the development in urban geographies. At a time when urban informality is rife, energy access in these settlements requires concerted efforts from municipalities. This paper found that the NMBM has invested in promoting energy access through its infrastructure development of municipal electricity in township informal settlements. However, the successes of the municipality have fallen short given the contextual factors affecting efficient and effective governance. These factors reiterate that the prevailing negative physical, social, economic, and political characteristics of

township informal settlements hamper the provision of municipal electricity. Thus, the continuation of this negative characterisation leads to a perpetuation of volatile alternative energy sources that stifle development and pose socioeconomic threats to dwellers. The reality of the impacts of urbanization incited by rural-urban migration further remains a challenge that defines township informal settlements in the Global South, posing restrictions on conventional infrastructural development. On one end, this highlights the need for innovative solutions from local urban authorities to manage the urban sprawl that strains limited municipal infrastructure. On the other hand, this highlights that resolving municipal electrification challenges cannot be reduced to the governance of municipalities, as this view undermines the complexities of informal settlements, particularly within a South African township context.

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