



ENACTUS

Enabling African Cities for
Transformative Energy Access
UGANDA SCALE-UP

Policy Roadmap for Enhancing Availability of Electricity Suitable for Sustained Use of eCooking In Informal Settlements in Uganda

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The views and recommendations presented in this document are intended to support ongoing dialogue, planning and implementation related to the MEMD eCooking Scaleup Programme. They do not necessarily represent the formal position of all partners or stakeholders unless explicitly stated.

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Executive Summary

This Policy Roadmap has been developed by the Ministry of Energy and Mineral Development (MEMD), with support from ICLEI Africa, under the Enabling African Cities for Transformative Energy Access -Uganda Scale-Up (ENACTUS) programme.

It responds to the need for an evidence-based and coordinated policy framework to enhance access to reliable and affordable electricity to support the sustained use of electric cooking in informal settlements within the Greater Kampala Metropolitan Area (GKMA). The roadmap also provides a foundation for the Technical Working Group (TWG) on informal settlement electricity access for eCooking, aimed at strengthening coordination across government institutions and key stakeholders.

The roadmap builds on three analytical processes: First, a situational analysis of electricity access in informal settlements, reviewing existing literature, policy frameworks, and available data to establish an evidence-based understanding of infrastructure conditions, governance arrangements, electricity service delivery systems, and last-mile access challenges. Second, a barrier analysis using the PESTEL-A framework, resulting in a structured barriers matrix identifying the political, economic, social, technological, environmental, legal, and awareness-related constraints limiting access to reliable and affordable electricity in these communities. Third, stakeholder consultations to validate findings and identify feasible policy recommendations and priority interventions to improve electricity access and support eCooking adoption in informal settlements.

In response, the policy recommendations are organized around five strategic focus areas:

- Strengthening network readiness for eCooking adoption
- Supporting internal wiring readiness and access to electricity connections
- Improving household independence and decision-making in electricity use
- Integrating GKMA local government authorities into electricity access planning
- Strengthening awareness of electricity access opportunities

Across these focus areas, priority actions are proposed for relevant lead actors over short-, medium-, and long-term timeframes.

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LIST OF ACROYNMS

CCU	Clean Cooking Unit
EPC	Electric Pressure Cooker
ERA	Electricity Regulatory Authority
GKMA	Greater Kampala Metropolitan Area
KCCA	Kampala Capital City Authority
KII	Key Informant Interview
LC	Local Council
LG	Local Government
MEMD	Ministry of Energy and Mineral Development
MECS	Modern Energy Cooking Services
MLG	Multi-Level Governance
MLHUD	Ministry of Lands, Housing and Urban Development
NDP IV	Fourth National Development Plan
NREP	National Renewable Energy Platform
PESTEL-A	Political, Economic, Social, Technological, Environmental, Legal, and Awareness
TWG	Technical Working Group
UEDCL	Uganda Electricity Distribution Company Limited
UNBS	Uganda National Bureau of Standards

1. Introduction

This policy roadmap has been developed by the Ministry of Energy and Mineral Development (MEMD) with support from ICLEI Africa. It forms part of the *Enabling Electricity Gains for Informal Settlements* work package under the ENACT-US programme, which seeks to strengthen electricity access as a foundation for sustained electric cooking (eCooking) adoption in informal settlements across the Greater Kampala Metropolitan Area.

The roadmap provides a situational analysis and barriers assessment towards reliable, affordable, and safe electricity for sustained eCooking in informal settlements. Drawing on existing evidence and stakeholder consultations, it identifies key constraints affecting electricity access and use within these communities and proposes targeted policy and programmatic interventions to address them.

The roadmap organises these interventions around five strategic focus areas addressing electricity network readiness, household electricity access conditions, governance coordination, electricity service arrangements in rental housing, and awareness of electricity services and eCooking options.

1.1 Background

Uganda has made significant progress in expanding electricity generation and grid connectivity over the past decade through national electrification programmes. At the same time, as part of its broader energy, climate, and health objectives, the Government of Uganda has prioritised the transition to modern cooking solutions, including electric cooking (eCooking). Electricity is increasingly recognised as an important pathway for clean cooking, particularly in urban areas where grid access is expanding and charcoal remains the dominant cooking fuel.

Uganda's national policy frameworks place increasing emphasis on the transition to modern cooking solutions as part of broader development, health, and climate objectives. The country aims to increase the share of clean energy used for cooking to around 50% by 2030, while expanding electricity consumption from 218 kWh to 500 kWh per capita (1). Electricity is also expected to play a growing role in the clean cooking transition, with national strategies targeting an increase adoption from around 1% to 18% by 2040 (2).

At the same time, the Greater Kampala Metropolitan Area (GKMA), Uganda's major urban and economic region continues to experience rapid population growth and spatial expansion. A significant share of this growth has occurred through the development of informal settlements characterised by high population density, limited infrastructure planning, and complex housing and service delivery arrangements. While over 97% of households within the GKMA have access to electricity, it is mostly used for basic services such as lighting, phone charging, and ironing clothes, with only 17% using electricity for boiling water and 11% for cooking (3).

In informal settlements, access to affordable and reliable electricity for cooking remains constrained due to a complex mix of barriers. These include affordability, poor electricity reliability, inadequate or substandard internal wiring, limited access to individual electricity meters, and low awareness of available electricity access and clean cooking support programmes. In addition, electricity access conditions within informal settlements are shaped by complex housing arrangements and informal electricity practices that affect how electricity is connected, shared, and used within households. The resulting policy roadmap provides

short-, medium-, and long-term policy recommendations and actions to improve electricity access and support the use of electricity for cooking in informal settlements across the GKMA.

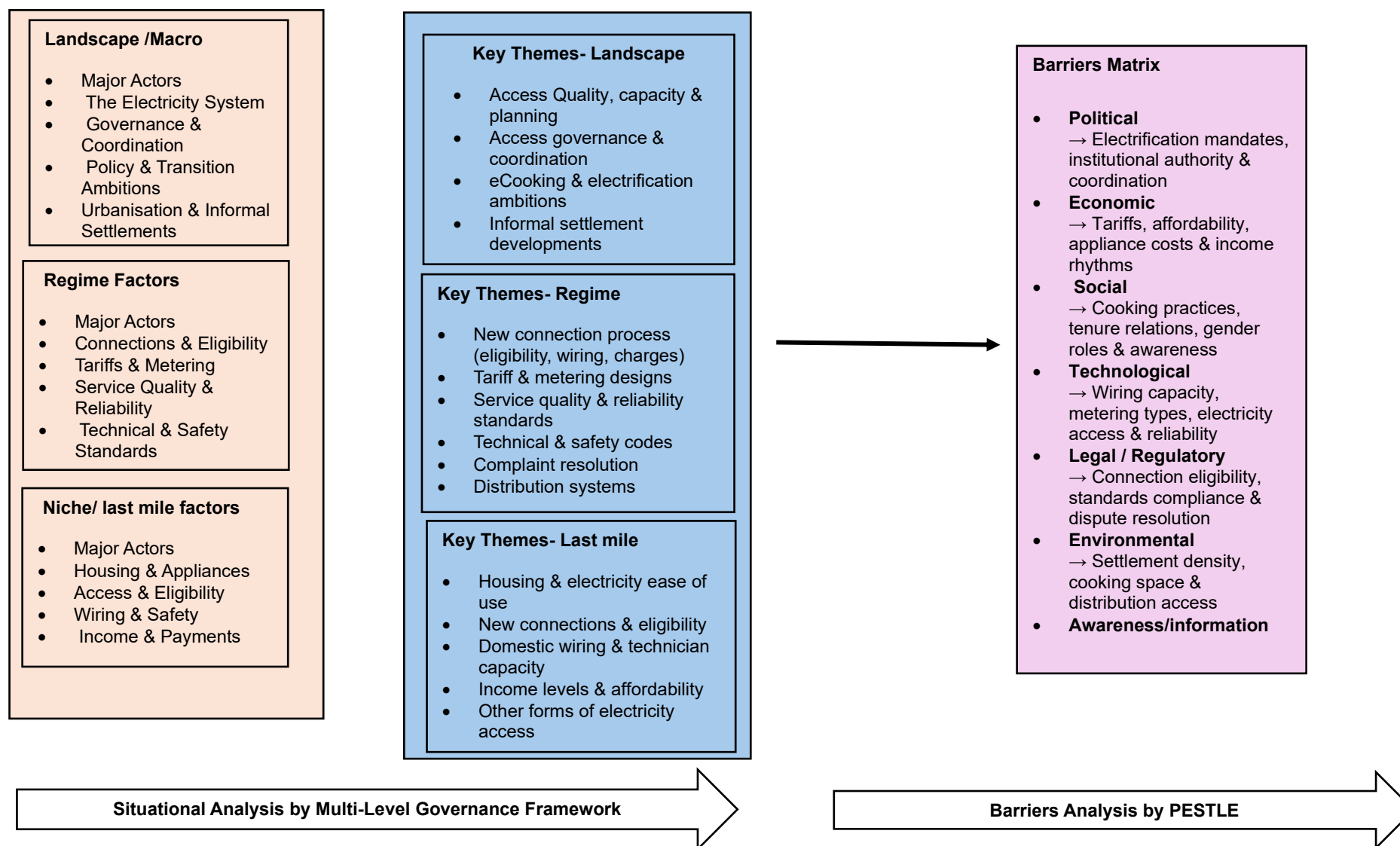
2. The Situation Analysis

This section examines the current electricity access and usage conditions shaping the potential for eCooking adoption in informal settlements across the GKMA. The analysis highlights key characteristics of the GKMA electricity ecosystem, including governance, electricity services, housing and tenure dynamics, and informal electricity practices and these shape the feasibility of using electricity for cooking in informal settlements. These insights provide the foundation for the barrier assessment and the policy recommendations presented in the subsequent sections.

For the situational analysis, a Multi-Level Governance (MLG) Perceptive, presented in **Figure 1** below, is used to analyse the governance interactions shaping electricity access in informal settlements across three levels: the landscape level (national policy ambitions), the regime level (utility structures, regulation, tariffs, and service delivery), and the niche or last-mile level (household conditions, informal electricity practices, and settlement realities). Together, these layers explain how system-level conditions and local adaptations influence the feasibility of electricity use for cooking in these communities.

In Section 3.0, the resulting insights from the MLG analysis, alongside Key Informant Interviews, are used to develop a barriers matrix for access to affordable and reliable electricity to support cooking with electricity in informal settlements in the GKMA.

Figure 1: Framing the Situational Analysis using a Multi-Level Governance Framework for Electricity Access in GKMA's informal settlements



2.1 The GKMA Metropolitan System

The Greater Kampala Metropolitan Area (GKMA) is Uganda's largest metropolitan region. It concentrates most national industrial, commercial and service-sector activity and contributes an estimated one-third to two-thirds of national GDP (1,4,5). Over the past two decades, Kampala, as Uganda's capital city, has experienced rapid urbanisation, driving spatial expansion into the neighbouring districts of Wakiso, Mukono, and Mpigi, as well as into key municipalities including Nansana, Kira, Entebbe, and Mukono, which together form the Greater Kampala Metropolitan Area (GKMA)

Rapid population growth and urbanisation have driven the expansion of informal settlements beyond formal planning processes, increasing pressure on infrastructure and service delivery. While Kampala is administered by Kampala Capital City Authority (KCCA) and surrounding districts operate under decentralised local government structures, the Ministry of Kampala Capital City and Metropolitan Affairs has been established to strengthen metropolitan-wide coordination, particularly in integrated spatial planning, infrastructure development, service delivery, and urban management across the GKMA. However, governance across the GKMA remains fragmented, and coordination gaps in integrated planning and service delivery across the metropolitan area persist (4,5).

This fragmentation complicates land-use and electricity access processes. It results in weak coordination across the GKMA in land-use and infrastructure planning, as well as fragmented governance across jurisdictions, which constrains integrated energy system planning. Local governments' spatial planning, permitting, and regulatory functions shape rights of way, settlement upgrading, conflict resolution, and electrical safety compliance, all of which are critical components of the electricity access process (4,5). Consequently, GKMA concentrates demand for modern energy services while operating an energy-constrained economy characterised by low per-capita electricity consumption and high reliance on biomass (2).

Informal settlements have resulted from rapid urban population growth, limited supply for affordable housing, and insecure and fragmented land tenure systems, that have outpaced formal planning systems (1,6). They are typically high-density, rental-dominated, informally serviced, and mostly located along infrastructure and planning margins such as drainage systems, wetlands, rail corridors and utility rights-of-way (6) .

For the informal settlements in the GKMA, 92% of the 4 million people living who reside in these hard to reach communities still depend on biomass for cooking, and over 50% of their disposable income is devoted to meeting cooking energy needs (7). Given that charcoal and firewood are commercially accessed, this reflects a high latent demand for electricity. The adoption of eCooking is affected by existing housing and tenure characteristics. Rental units are typically small, lack dedicated kitchen space, and depend on shared outdoor cooking areas, limiting the safe storage and operation of eCooking appliances (3). In parallel, eligibility requirements linked to permanent structures, compliant wiring, and formal identification exclude kiosks, night food vendors, and many refugee households from formal electricity connections, encouraging dependence on shared or informal supply arrangements (8).

These unique conditions directly shape electricity access planning and use in GKMA informal settlements. Existing studies show that these social economic conditions restrict household investment in household wiring, structure appliance ownership and electricity tariff exposure, and enable the spread of informal, shared or unmetered connections (3,6,9). As such, grid

access does not usually translate into effective access to modern energy services, creating a utilisation gap for electricity services such as cooking.

Alongside national ambitions to raise per-capita electricity consumption from 218 kWh to 500 kWh by 2030 (1) and to achieve 50% access to clean cooking solutions by 2040 (10), Uganda has expanded her electricity generation capacity. National electrification programmes implemented include the Electricity Connections Policy, aimed at increasing household connectivity and stimulating electricity consumption (11). Despite these efforts, and an increased access to the grid, electricity use for cooking remains limited in Kampala—around 11% (3) and significantly lower in informal settlements (6,9) with biomass continuing to dominate household cooking energy consumption (3).

2.2 Electricity Access & Usage in the GKMA

Electricity connectivity within the GKMA is relatively high compared to national averages, with household use largely concentrated in basic energy services such as lighting, phone charging and refrigeration. However, electricity is not widely utilised for higher-load household services, particularly eCooking. As a result, despite widespread grid access, there is still a limited transition to higher level household energy use, entrenching continued reliance on biomass for everyday cooking needs.

Urban transitions towards modern household energy services, such as eCooking, require planning tools that; track electricity access, reliability, consumption, appliance penetration and modelling of end-use demand implications for distribution networks at granular spatial scales (MECS, 2021). International experience highlights the growing role of the above planning, modelling and data platforms in urban electricity planning, appliance distribution and subsidy targeting when such systems are accessible beyond utility operations (14).

In the GKMA, while utilities and other actors hold relevant operational data, publicly accessible energy information platforms, as well as metropolitan-scale, multi-actor models estimating the system-wide electricity demand implications of large-scale adoption of modern electric cooking services are limited. This restricts coordinated planning, policy design and targeted interventions, particularly in informal settlements in the GKMA where utilisation, more than access remains a critical binding constraint (3,6,9,15).

While within the GKMA local government authorities including the KCCA—do not hold regulatory authority over electricity generation, distribution or tariff-setting, they exercise mandates that directly shape electricity access and utilisation outcomes. For example, KCCA is responsible for spatial planning, building approvals, informal settlement upgrading and infrastructure coordination (16), while equivalent planning and coordination functions are exercised across the metropolitan area through decentralised local government structures (1). These mandates influence land-use decisions, rights-of-way for electricity distribution infrastructure, compliance with electrical installation standards and the feasibility of distributed or embedded generation systems in such dense urban environments (17). In informal settlement settings, this particularly positions local government authorities as a key determinant

2.3 Electricity Services at the Regime and Last Mile Levels

At the household level, access to grid electricity in informal settlements reflects adaptations created by the interaction between formal utility, regulatory processes and the socio-technical and economic realities of these areas. In practice, communities in informal settlements have devised ways to access electricity that respond to the conditions they face. In Uganda, electricity connections, regulated through national policy, and implemented by the National Electricity Utility company (UEDCL), require several processes including certified wiring, inspection, utility approval of the wiring and payment of ERA-approved connection charges where subsidies are unavailable (11) (18). However, multiple studies show that given the social economic realities in informal settlements, these formal processes coexist with multiple non-standard configurations, with at least nine documented adaptations for access. These include single-household meters, landlord-controlled compound meters, sub-metering, shared meters and different versions of unmetered extensions (6,9,19). These access adaptations directly condition how electricity is accessed, allocated, paid for and managed at the household level, with important implications for its sustained use for cooking.

As such, in these communities households interface with the electricity system through an informal utility layer (**Figure 2 below**), comprising landlords, compound managers and informal technicians (*kamyufus*) who provide connection, metering, repair, payment and fault-response services and mediate access to the formal utility (20,21). This layer operates alongside the formal utility, performing last-mile functions such as; meter ownership, electricity cost allocation, access to unmetered supply, approval of household electric appliances, dispute resolution, and facilitating meter acquisition (6,21). In doing so, this *Informal Utility* enables residents to navigate the electricity access process under their unique socio-economic conditions (20). And while this supports access to electricity services, it restricts supply conditions for eCooking in cost/price sensitive communities (3,21).

Informal Electricity Utility Ecosystem

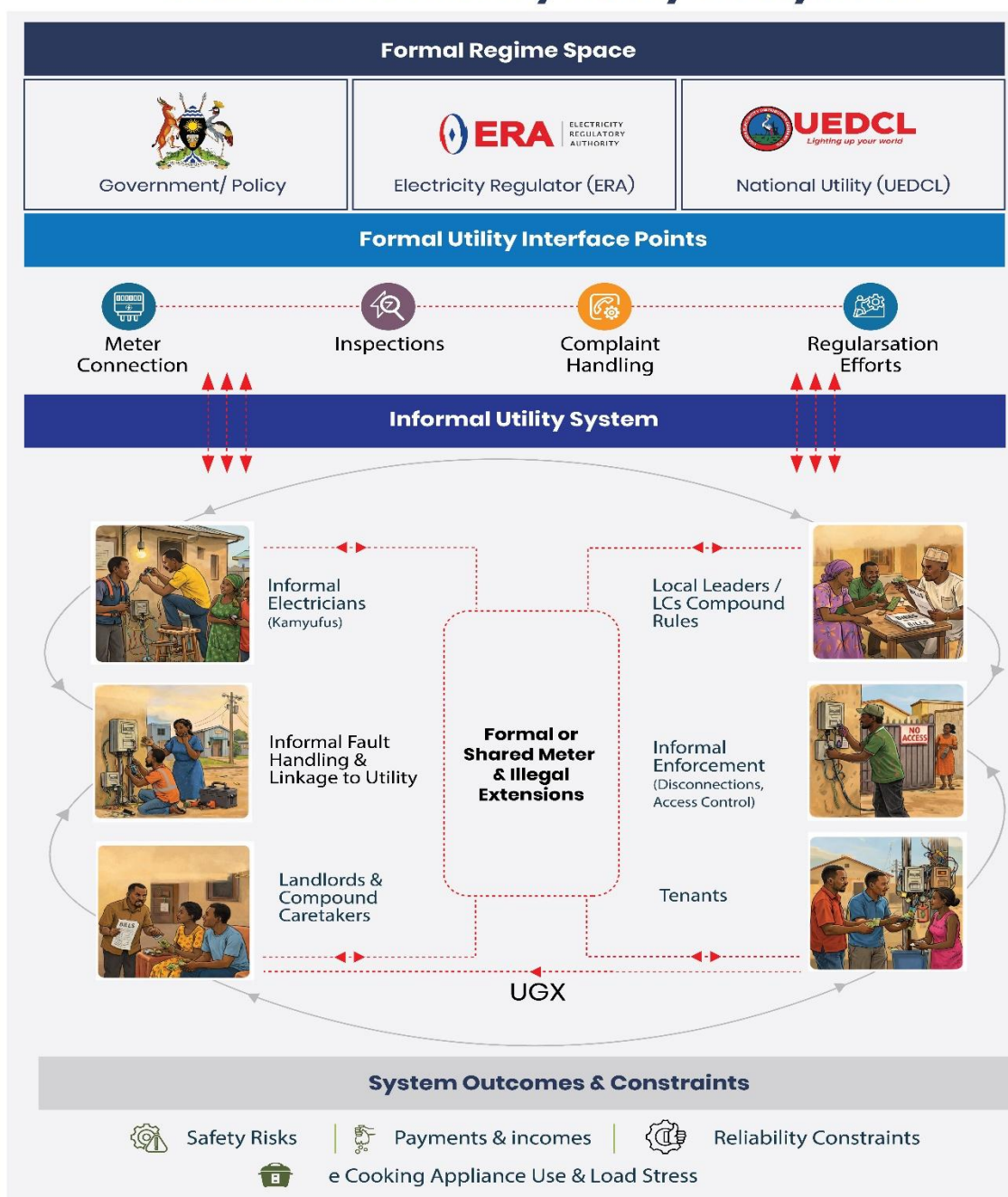


Figure 2: The Informal Utility System- Illustration by Author

The Figure 2 above illustrates how electricity access in urban informal settlements operates through an informal utility system beneath the formal regulatory regime. In these communities, day-to-day electricity distribution, fault response, payment collection, and enforcement are mediated through informal actors, shared infrastructure, with implications for both electricity access and eCooking.

As such, electricity use in GKMA's informal settlements is shaped less by the tariff schedule set by the Electricity Regulatory Authority (ERA) than by prevailing informal metering and tariff setting shaped by rental arrangements. Most households do not purchase electricity directly but access it through landlord-controlled meters, shared tenant metering, flat fees on rent or through informal extensions (20–22). Under these metering arrangements, aggregate meter/account consumption typically exceeds the 15-kWh lifeline threshold, effectively neutralising the subsidy for downstream individual tenants, while bundled rent–electricity payments often include mark-ups that make electricity costly and discourage higher-use applications such as cooking. Also, monthly household consumption rarely reaches 80 kWh, effectively excluding most households from the Cooking Tariff which is applied between 80–150 kWh/month (23). As a result, electricity use remains reserved for basic electricity uses, such as lighting, phone charging and entertainment, including television use.

The above conditions are compounded by unreliable electricity, where frequent outages, voltage fluctuations resulting from overloaded networks, and informal network interferences persistently undermine the reliability of electricity for cooking. Studies indicate that in such communities experiencing voltage fluctuations, household-level voltages which are often already low, drop further when higher-load appliances such as eCooking devices are used, resulting in extended cooking times, disrupted cooking cycles, and an increased risk of appliance malfunction or damage(21,24).

2.4 Stakeholder Roles in electricity access for informal settlements

Electricity access in informal settlements in the GKMA involves a range of stakeholders, spanning national ministries, the city authority, local governments, community leaders, and access gatekeepers such as landlords, as summarised in Table 1 below.

Table 1: Stakeholder Roles in Electricity Access in Informal Settlements

No	Institution	Role towards electricity Access and eCooking in informal settlements
	Ministry of Lands, Housing and Urban Development	Integrates electricity access into informal settlement upgrading programmes; develops guidelines for safe housing and wiring; facilitates legal recognition of informal settlements to enable formal service provision.
	Ministry of Energy and Mineral Development (MEMD)	Provides overall policy direction for electricity access and clean cooking; coordinates sector actors; integrates eCooking into national energy planning and targets.
	MEMD- Clean Cooking Unit	Leads coordination of clean cooking initiatives; supports integration of eCooking into electrification strategies; convenes stakeholders.
	ERA	Develops and enforces regulatory frameworks, guides on connection standards, safety compliance, and tariff structures.
	Uganda Electricity Distribution Company Limited (UEDCL)	Manages the electricity distribution infrastructure; ensures reliable supply; implements connection programmes; addresses metering.

	Uganda National Bureau of Standards (UNBS)	Quality assurance and compliance with National Standards of electricity equipment including meters, conductors
	GKMA Local Governments (LGs) including KCCA	Integrate electricity access into urban planning; support settlement-level coordination; facilitate engagement with landlords and communities; enable local enforcement of standards, electricity access for public facilities.
	Civil Society Organizations (eg Slum Dwellers Association Uganda)	Advocate for electricity mainstreaming in slum upgradation projects and programs.
	Development Partners (e.g., ICLEI, MECS, EnDev,)	Provide technical assistance, funding, and programme support.
	Private Sector – Certified Electricians	Provide formal domestic wiring; compliance with safety standards; support upgrading of household electrical systems and initiate digital connection application processes with the Utility on behalf of customers
	Local Leaders	Act as primary community governance structures; facilitate mobilisation and trust-building within communities; support identification and validation of households for electrification programmes; mediate disputes; and support infrastructure access processes, including wayleave management.
	Informal technicians (“Kamyufus”)	Provide low-cost, flexible wiring and connection services within informal settlements; informal extensions/connections, enable access where formal services fail to be accessed.
	Landlords	Make decisions on electrical connections, wiring upgrades, and meter installation; and pay for electricity on shared meters, determine time of use
	Tenants / End-Users	Drive demand for electricity and eCooking; make day-to-day energy decisions; influence uptake based on affordability, awareness, and convenience.

The next section builds on these governance interactions, together with the conditions highlighted above, to develop a barriers matrix for electricity access in informal settlements to support eCooking adoption.

3. Barriers Analysis

This section synthesises insights from Key Informant Interviews (KIIs) with key stakeholders and findings from the situational analysis to develop a structured barriers matrix using a PESTEL-A framework.

While the situational analysis was based on a structured desk review of existing studies and field reports on electricity access in informal settlements, the KIIs supplemented and contextualised these findings with insights from stakeholders on the ground for both barriers analysis and development of policy recommendations.

Within the PESTEL-A framework, barriers are organised across three levels; Level 1 reflects strategic barriers, Level 2 highlights systemic and institutional barriers, and Level 3 reflects operational barriers. They are further analysed across a range of transition dynamics, including political, economic, social, technological, legal, environmental, and awareness dimensions, as summarised in Table 1, which follows Section 3.1 below.

3.1 Key Informant Interviews (KIIs)

The Key Informant Interviews (KIIs) formed a core component of the study methodology, providing additional context to the constraints identified in the situational analysis and helping to surface new and emerging barriers. They also supported the refinement, prioritisation, and sequencing of policy recommendations and strategic interventions linked to the key barriers presented in Section 4.0, following the barriers matrix, ensuring alignment with stakeholders' respective mandates and spheres of influence.

The KIIs were conducted using semi-structured interview guides, with stakeholders grouped into five categories based on their level of influence over access to reliable and affordable electricity in informal settlements, as summarised in the table below.

Table 2: Key Informant Interviews on electricity access in informal settlements in the GKMA

Stakeholder Group	Stakeholders	No of KIIs
National Energy Policy and Regulatory	MEMD, ERA	2
Electricity Distribution	UEDCL	2
Civil Society	ACTogether	2
Electricity Access Community Actors	Domestic Wiremen	2
Local Leaders	LC1 Chairpersons	4
Total		12

3.2 PESTEL-A Analysis and the Barriers Matrix

To further analyse barriers to accessing affordable and reliable electricity for eCooking adoption in informal settlements and support the development of appropriate policy recommendations and interventions, a PESTEL-A framework is applied, examining political, economic, social, technological, environmental, legal, and awareness-related dynamics as distinct but interrelated constraint categories. These dimensions capture the factors shaping electricity access, usage, and eCooking readiness across informal settlements in the GKMA, as summarised in Table 1 below.

The L1–L3 hierarchy further structures this analysis by enabling progression from broad system-level (strategic) conditions to more specific operational constraints. This provides analytical continuity from the MLG-based situational analysis to a structured barrier assessment.

The barriers have been organised across three analytical levels:

- Level 1 (L1) groups barriers under broad thematic categories using the PESTEL-A framework, to reflect the main domains within which challenges related to electricity access and eCooking in informal settlements across the GKMA arise.
- Level 2 (L2) disaggregates each category into specific barrier themes observed in this assessment, including coordination of electricity access across different governance levels, tariff and affordability conditions, electricity reliability and quality, tenancy-related service arrangements, network and wiring readiness, household decision-making dynamics, and gaps in awareness relevant to electricity use and eCooking.
- Level 3 (L3) articulates the most specific barriers identified, describing how these conditions manifest in practice and affect electricity access, usage, and eCooking readiness in informal settlements. Together, the three levels provide a structured progression from overarching system conditions to specific barriers affecting electricity access, usage, and eCooking readiness, informing the development of policy alternatives and a roadmap in the next section of this report.

Table 3: PESTEL-A Analysis for Electricity Access for eCooking in Informal Settlements in the GKMA

Level 1 Barriers	Level 2 Barriers	Level 3 Barriers	Actors
1. Political	1.1 Ambitions, strategies and plans	Absence of distinct informal-settlement-specific electricity and eCooking targets constrains programme design, resource allocation and eligibility criteria, limiting the ability to design interventions that enable sustained eCooking uptake in these communities.	MEMD / ERA/ KCCA/Development partners
	1.2 Governance & coordination	Given their unique conditions, for informal settlements, the absence of a dedicated coordination framework linking national energy planning processes with metropolitan and municipal authorities constrains integrated access planning ¹ for informal settlements across the GKMA.	MEMD, ERA / KCCA, Districts, Utilities
	1.3 Stakeholder roles & inclusion	The political economy surrounding informal utility ecosystem actors that act as access gatekeepers, such as landlords, compound caretakers, local leaders and informal electricians (Kamyufus), creates a parallel informal utility system, constraining equitable electricity access and usage, and resultantly eCooking in informal settlements.	UEDCL / MEMD, ERA/ Local Governments

¹ For this report, Integrated access planning refers to the coordinated alignment of electricity supply, service delivery, governance, and end-use needs across system levels to ensure access translates into reliable, affordable, and usable energy services, including eCooking.

	1.4 Competing fuel ecosystems	Entrenched charcoal supply chains and associated political economy within informal settlements reinforce continued biomass use and reduce the appeal of electricity for cooking.	MEMD, KCCA, Local Leaders
2. Economic and financial	2.1 Bundled Rents & electricity, shared metering	Bundled rent and electricity payments and shared meters which are key features of informal settlements, constrain equitable access to tariff-based subsidies for low usage households (e.g. lifeline tariff) as well as incentives for household eCooking uptake.	ERA, UEDCL, Landlords
	2.2 Connection Costs	Households find the high internal wiring and new connection related costs unaffordable, constraining safe wiring and formal connections.	ERA, MEMD, UEDCL
3. Social and cultural	3.1 Cooking practices & norms	Strong preference for charcoal for staple meals and continued use of multiple fuels leads households to selectively use electricity rather than adopt it for core cooking tasks. This reduces the incentive for households to advocate for their own electricity supply regularisation.	KCCA, CCU, Civil Society
	3.2 Risk, safety & trust	Perceptions around safety risks and cost uncertainty associated with eCooking and poorly understood tariffs within informal settlements constrain household trust in electricity as a reliable cooking energy source.	MEDM, ERA, UEDCL
	3.3 Electricity Payment control	Limited tenant household control over metering, time of electricity use and payment decisions constrains	UEDCL, MEMD, KCCA, Landlords

		household decision-independence and the ability to adopt and operate eCooking appliances.	
	3.4 Gender, care & time	Women prioritise reliable and predictable cooking energy—currently provided by biomass options—over marginal cost savings from eCooking, shaping household fuel choices.	KCCA, CCU, Civil Society
	3.5 Gender and electricity roles	Gendered separation between cooking responsibility and electricity decision-making where women cook but men control new connection processes, appliance acquisition, and payment decisions constrains household prioritisation and adoption of eCooking under tariff uncertainty and perceived cost risk.	KCCA, CCU, Civil Society
	3.6 Grid Connection processes	Residents find official new connection processes lengthy and complicated, forcing them to contend with an informal layer of access gatekeepers to access electricity. This restricts the use of electricity for higher level services such as eCooking	
4. Technological	4.1 System Capacity and planning	The electricity network capacity in informal settlements is not adequate to support full scale adoption to eCooking, and experiences voltage and reliability challenges. Users thus lack confidence in electricity reliability to support reliance on electricity as the major cooking option.	MEMD, ERA, UEDCL

	4.2 Network interference & informal extensions	Widespread informal extensions, network interference, network vandalism and load transfers impact reliability, losses, safety, and undermine technological readiness for eCooking in informal settlements.	MEMD, ERA, UEDCL, Local Leaders
	4.3 Data, modelling & public visibility	Lack of granular data, modelling, and public visibility on electricity network capacity, reliability, demand, and planned upgrades in GKMA informal settlements constrains coordinated planning, resourcing, and targeting of eCooking interventions.	MEMD, ERA, UEDCL,
	4.4 Internal wiring quality	Poor-quality internal wiring constrains the safe operation of sustained eCooking loads at household level.	ERA, UEDCL
	4.5 Rental Arrangements shared metering	Shared meter arrangements under tenant or shared compound housing restricts transition to eCooking in informal settlements	ERA, UEDCL, MEMD, Landlords
5. Legal / Regulatory	5.1 Meter Transfer Rules	Non-transferable meters and high upfront connection costs discourage tenant investment in formal electricity connections under conditions of high household mobility.	ERA, UEDCL
	5.2 Connections & eligibility	New Connection and subsidy requirements structured around formal housing and tenure type constrain access to formal electricity connections in rental-dominated informal settlements.	MEMD, UEDCL ERA
	5.3 Tenant Recognition gaps	Limited recognition of non-account holder users in utility electricity service arrangements where service contracts, communications,	UEDCL

		and complaint mechanisms are majorly structured around the named account holder restrict tenant visibility, voice, and direct access to utilities.	
6. Environmental	6.1 Settlement location & exposure	Location of informal settlements in wetlands and unplanned zones constrains the feasibility of durable electricity infrastructure upgrades and extensions required for eCooking transition.	UEDCL, Local Governments
	6.2 Flooding & climate stress	Seasonal flooding and drainage failures damage internal wiring and service lines, increasing faults and undermining electricity reliability.	UEDCL, KCCA
	6.3 Density & access constraints	High population density, unplanned housing development, restricted physical access and wayleaves limit network upgrades and extensions, and safe wiring improvements needed for eCooking.	MLHUD, MEMD, Local Governments,
7. Awareness / Information	7.1 Tariffs & entitlements	Limited residents' awareness of electricity tariffs, government funded connection opportunities and lifeline provisions reduces effective uptake of incentives relevant to eCooking in informal settlements.	ERA, MEMD, UEDCL
	7.2 Service processes & rights	Limited understanding of utility processes, consumer rights, and complaint channels—especially among tenants—reduces accountability and recourse.	UEDCL

	7.3 Network readiness visibility	Lack of publicly accessible information on where networks are suitable for eCooking, and where upgrades are planned, constrains informed household and market decisions.	UEDCL, ERA
	7.4 eCooking options & benefits	Limited awareness among residents of efficient and modern eCooking options and their practical benefits reinforces misperceptions about the cost, performance, and suitability of electricity cooking in informal settlements.	MEMD, UEDCL
	7.5 Wiring standards and Safety	Limited awareness on safe use of eCooking appliances, maintenance, appropriate wiring standards limits, appliance quality and energy efficiency constrains the use of electricity for cooking.	

4. Strategic Focus Areas and Policy Recommendations

The PESTEL-A barrier analysis presented in the previous section highlights a wide range of interrelated barriers affecting electricity access and utilisation in informal settlements.

To support the development of policy actions capable of addressing the barriers identified in section 3, barriers were grouped into a smaller number of cross-cutting system constraints. These constraints are assessed to represent the most binding limitations affecting the ability of households to access and use electricity for higher-load applications, including cooking.

Table 3 presents the five key constraint areas and associated barriers. These constraints are assessed to reflect the major systemic issues emerging from the analysis and form the basis for the strategic focus areas and policy recommendations presented in this section.

Table 4: The five key constraint areas and associated barriers

Constraint Area	Level 2 Barriers	Level 3 Barriers	Interpretation
1. Network Readiness² <i>Informal communities experience electricity reliability and voltage issues impacting current and scaled transition to eCooking.</i>	System Capacity and planning	The electricity network capacity in informal settlements is not adequate to support full scale adoption to eCooking. Residents experience voltage and reliability challenges even with very limited eCooking. Users thus lack confidence in electricity reliability to support reliance on electricity as the major cooking option.	These barriers collectively constrain the ability of the grid to support higher-load uses, both in reality and in planning confidence.
	Evidential data and modelling	Lack of granular evidential data, and modelling on the network and investment needs to support scaled adoption of eCooking constrains coordinated planning, resourcing, and targeting of eCooking interventions.	
	Network interference & informal extensions	Widespread informal network extensions, network interference, vandalism and informal unauthorised load transfers impact reliability, increase losses, hinder safety, and undermine technological readiness for eCooking in informal settlements.	
	Density & Physical access constraints	High population density, unplanned housing development, restricted physical access and wayleaves limit network upgrades and extensions, and safe wiring	

² For this report, network readiness refers to the extent to which the electricity distribution system can deliver reliable, and sufficient power to meet current and projected end-use needs, including high-load services such as eCooking within the informal settlements across the GKMA.

		improvements needed for eCooking.	
2. Internal Wiring & Grid Connection <i>High cost of wiring and complexity of connection processes.</i>	Internal wiring quality	Poor-quality internal house wiring constrains the safe operation of sustained eCooking loads at household level.	These barriers affect the physical and financial pathway to formal, safe, and usable electricity access at the household level.
	Connection Costs	Households often find the costs of internal wiring and new electricity connections unaffordable. As a result, many resort to substandard wiring and informal, unmetered—and unsafe—connections. These installations frequently fail utility inspection requirements, further increasing the cost and time required to secure a safe, formal connection.	
	Grid connection processes	Residents in informal settlements often find official new connection processes lengthy, inaccessible, and complex, forcing them to rely on an informal layer of access gatekeepers to obtain electricity.	
	Meter Transfer Rules	High upfront connection costs, combined with non-transferable utility meter rules, discourage tenants from investing in formal electricity connections—particularly in informal settlements characterised by high household mobility.	
3. Household Agency & Decision-Making <i>Limited control over electricity uses due to shared access and gatekeepers.</i>	Bundled Monthly Rent & electricity Payments	Bundled rent and electricity payments common in informal settlements across the GKMA limit equitable access to tariff-based subsidies for low-usage households (e.g., the lifeline tariff), as well as the benefits of energy-efficient eCooking options such as EPCs.	These barriers constrain who controls electricity, how it is used, and whether households can adopt higher-load appliances like EPCs.
	Shared meters and	Limited tenant control over how their electricity use is metered,	

	electricity payment control	the timing of use, allowable appliances, and payment decisions, due to shared meters constrains decision-making independence and the ability to adopt and use eCooking appliances.	
4. Institutional Coordination & Planning <i>Limited integration into planning and coordination systems.</i>	Governance & coordination	Given the unique conditions of informal settlements, the absence of a dedicated coordination framework linking national energy planning with metropolitan and municipal authorities constrains integrated access planning across the GKMA.	These barriers reflect system-level governance failures, especially around coordination, mandates, and integration into local planning systems.
	Stakeholder roles & inclusion	Given the unique conditions of informal settlements, the absence of a dedicated coordination framework linking national energy planning with metropolitan and municipal authorities constrains integrated access planning that responds to the specific needs of these settlements across the GKMA.	
	Ambitions, strategies and plans	Absence of distinct informal-settlement-specific electricity and eCooking targets constrains programme design, resource allocation, and eligibility criteria across levels, limiting the design of interventions that enable sustained eCooking uptake in these settlements.	
5. Consumer Awareness & Demand <i>Low awareness of processes, rights, and eCooking opportunities.</i>	Tariffs & entitlements	Limited resident's awareness of electricity tariffs, government-funded connection opportunities, and lifeline provisions reduces the effective uptake of incentives relevant to eCooking in informal settlements.	These barriers limit informed demand, uptake of programmes, and confidence in electricity as a cooking solution.

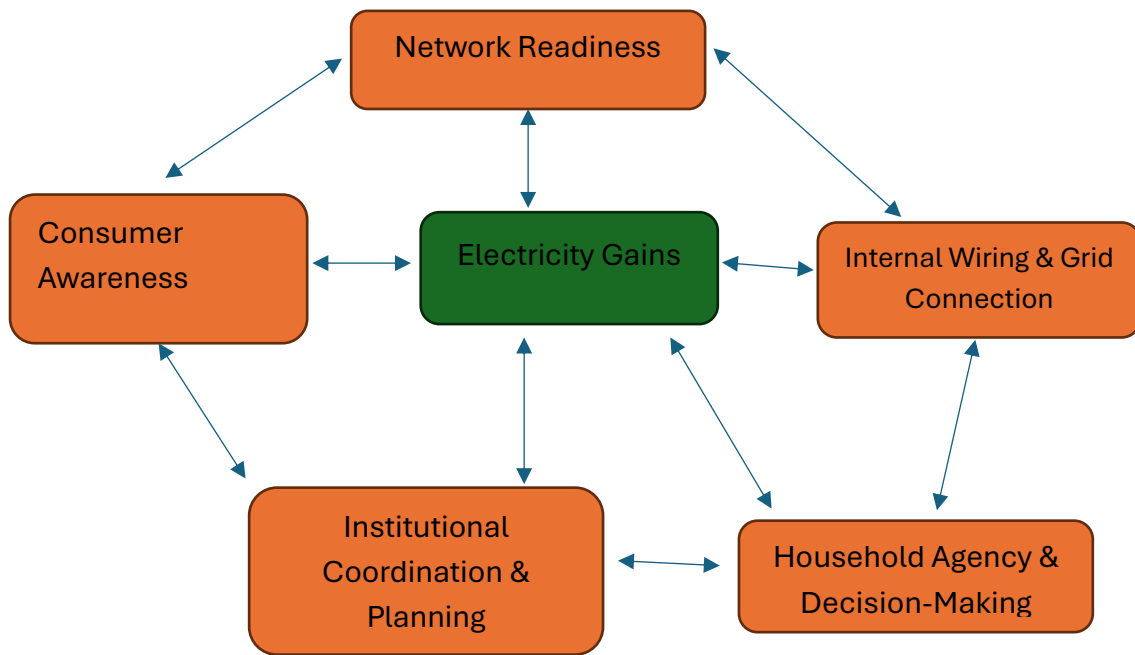
	Service processes & rights	Limited understanding of utility processes, consumer rights, and complaint channels—especially among tenants—reduces accountability and recourse.	
	eCooking options & benefits	Limited awareness of efficient and modern eCooking options and their practical benefits reinforces misperceptions about the cost, performance, and suitability of electricity cooking in informal settlements.	
	Wiring standards and Safety	Limited awareness on safe use of eCooking appliances, their maintenance, appropriate wiring standards limits the use of electricity for cooking.	

4.1 Key Barrier Categories

The key barrier groups include:

1. **Network Readiness:** As a result of the current state of electricity distribution infrastructure capacity and network interference within informal settlements, communities already connected to the grid experience fluctuating voltages and frequent outages, constraining both current use and the scaled transition to eCooking from biomass fuels.
2. **Internal Wiring & Grid Connection:** The high cost of internal wiring, and the complexity and length of electricity connection processes for households in informal settlements remains a critical barrier.
3. **Household Agency & Decision-Making:** The limited control households have over electricity use, arising from shared access arrangements and the presence of multiple electricity access gatekeepers.
4. **Institutional Coordination & Planning:** The limited integration of electricity access and eCooking considerations into local government planning and coordination systems.
5. **Consumer Awareness & Demand:** The low levels of awareness around electricity access processes, available government funded connection programmes, consumer rights, and eCooking opportunities within informal settlement communities.

Figure 3: Five (5) Core Barrier Categories for Electricity Gains in Informal Settlements



4.2 Policy Recommendations

This section therefore presents policy and strategic intervention recommendations addressing the five core constraint categories above to support electricity access gains for eCooking adoption in informal settlements across the GKMA.

1. Enhancing electricity network readiness to support eCooking adoption
2. Supporting internal wiring readiness and access to electricity connections
3. Improving household decision-making in electricity use within shared access arrangements
4. Integrating GKMA local government authorities into electricity access planning
5. Strengthening awareness of electricity access services and eCooking

Enhancing electricity network readiness in informal settlements to support eCooking adoption

Electricity network readiness is a critical enabling driver for the transition to eCooking in informal settlements across the Greater Kampala Metropolitan Area (GKMA). Informal settlements experience persistent and extended voltage fluctuations and outages, which influences the trust in electricity's ability to reliably support such transitions from existing fuel options. In addition, while the scale of investments required to support different levels of transition for informal settlements is yet to be established, state of the network in these settlements is compromised by informal network extensions, load transfers, line vandalism and other forms of unauthorised interferences.

In addition, stakeholders such as policy makers, civil society, market actors (such as the private sector) invested in the improvement of electricity gains for eCooking informal settlements have limited visibility in the form of evidential data and periodic developments on network capacity, and reliability conditions which constrain planning and investment at national, institutional, local government and household levels. Improving the evidence base

and visibility of network readiness will support coordinated planning, targeted investments, and confidence in the reliability of electricity for cooking.

Strategic interventions

- Undertake a comprehensive baseline study to assess electricity network capacity and technical readiness to support the eCooking transition, informing network planning and investment across the GKMA, including informal settlements.
- Design and implement a coordinated network infrastructure development programme across the GKMA in alignment with the findings of the baseline study.
- Set distinct informal settlement electricity access and eCooking adoption targets, reflecting their unique needs and contributions to national eCooking targets.
- Develop an integrated, publicly accessible platform providing visibility on network capacity, reliability conditions, and planned infrastructure upgrades.
- Undertake feeder or settlement level pilot intervention combining network capacity assessments, technical and community actions towards electricity access and eCooking to generate learnings before wider scale-up.
- Undertake targeted interventions to integrate local community actors that form the informal utility ecosystem in the electricity gains process to improve ownership and reduce network interference risks.

Supporting internal wiring readiness and access to electricity connections

Electricity connection processes and wiring requirements present practical barriers for many residents in informal settlements. Access to electricity services is often navigated through multiple actors within the informal electricity ecosystem including informal technicians (kamyufus), landlords, compound caretakers, and local leaders, creating additional process layers and costs. And most households find themselves unable to afford the cost of complaint internal wiring, yet meeting the required wiring standards set by the utility are a requirement for connection requests being granted. To address prevailing, practices government and partners could support internal wiring readiness and improve access to electricity connections in informal settlements.

Strategic interventions

- Review, redesign, and promote scalable, safe, and standardised internal wiring solutions—such as ready boards—suitable for informal settlement conditions and capable of supporting eCooking loads.
- Provide access to approved scalable wiring solutions in informal settlements through government programmes or regulated market supply mechanisms.
- Establish a programme for retraining and certification of local wiremen, alongside co-financed support to help households prepare compliant wiring and navigate electricity connection processes.
- Undertake impact assessments of previous electricity access interventions in informal settlements—such as the Pamoja project and ready board initiatives—with attention to customer experiences and outcomes.

- Pilot regulated service agency models operating below the main utility within informal settlements to bring electricity services closer to residents and reduce reliance on informal electricity intermediaries.

Strengthening household control within electricity access arrangements

Electricity access arrangements in informal settlements are mostly structured around shared meter and landlord-controlled arrangements, or bundled rent–electricity payments. Under these arrangements, most households have limited control over their electricity consumption and payments, appliance use, or complaint resolution processes. Improving household decision independence and control can improve electricity use decision-making and use of electricity for cooking.

Strategic interventions

- Review the Landlord and Tenant Act (2022) and other related regulations to clarify and strengthen landlord–tenant electricity rights and obligations under shared metering arrangements.
- Develop technical standards and guidelines for approved sub-metering solutions suitable for rental housing arrangements.
- Support awareness and market availability of regulated sub-meters in informal settlements to improve household level electricity decision independence.
- Facilitate access to separate household utility meters in shared meter arrangements by easing connection navigation processes and leveraging existing government-funded connection programmes.

Integrating GKMA local government authorities into electricity access planning

Electricity access and eCooking transition systems in informal settlements involve multiple actors across national, metropolitan, and local levels. However, GKMA local government authorities are often only engaged in electricity service issues within the public facilities they directly manage such as markets, hospitals, and street lighting. Electricity access in informal settlements is also constrained by vandalism and interference of the network infrastructure, meter thefts, and unauthorised load transfers and extensions that would be reduced by improved coordination, and involvement KCCA and other local governments, local leaders, and enforcement agencies with the electricity gains process. Strengthening the integration of local governments into electricity access planning will support better coordination with utilities and improve programme implementation in informal settlements.

Strategic interventions

- Establish a structured coordination platform linking the different local government authorities forming the GKMA, electricity utilities and government departments for integrated planning.
- Review local authority mandates on electricity access in informal settlements into local planning processes, including building review and approval processes.
- Integrate local government and community actors into electricity access processes including access planning and extensions, asset management and protection, as well as other community engagements to reduce network interference and vandalism risks.

Strengthening awareness on electricity access services and eCooking

Limited awareness of new connection processes, tariffs, available government electricity access programmes, consumer rights, and modern eCooking options constrains informed decision-making among residents in informal settlements. As a result, households frequently rely on informal advice or prevailing perceptions within the informal electricity ecosystem when making electricity use decisions.

Improving awareness and communication on electricity services, tariffs, access programmes, and eCooking options can support more informed household energy decisions in informal settlements.

Strategic interventions

- Strengthen awareness and communication on government electricity access programmes within informal settlements.
- Undertake community level awareness initiatives on electricity tariffs, consumer rights, and electricity service processes.
- Engage local actors—including local leaders, resident organisations, electricians, and religious and cultural leaders—as community change agents to support electricity access and eCooking adoption.

Table 5: Strategic Intervention Alternatives

This activity plan provides a list of activities to be undertaken to realise suggested recommendations. The activity plan includes the recommended actions, timelines and the responsible entity.

	Intervention	Timeframe (Term)	Lead Entity	Partner	Expected Outcome
Strengthening network readiness for eCooking adoption	Set clear eCooking adoption targets and ambitions for informal settlements aligned with national electrification and clean cooking goals.	Short	MEMD	Development partners	Distinct planning benchmarks for electricity access and eCooking adoption in informal settlements in the GKMA
	Implement targeted interventions to integrate local community actors within the informal utility ecosystem into electricity access processes, strengthening local ownership and reducing risks of network interference and vandalism.	Medium	MEMD	UEDCL, KCCA	Sense of asset ownership and stewardship with local authorities and actors
	Undertake a comprehensive baseline study to assess electricity network capacity and technical readiness to support eCooking adoption across the GKMA, including informal settlements.	Medium	MEMD	ERA, UEDCL, Development Partners	Evidence base for network readiness and upgrade planning
	Following the Insights from the above study, undertake a feeder/settlement-level pilot intervention combining network and community targeted eCooking readiness measures for learnings before a scaled intervention.	Medium	UEDCL	ERA, MEMD, Development Partners	Demonstrated pathways and learnings for scale

	Design and implement a coordinated network infrastructure development programme across the GKMA in alignment with the findings of the baseline study.	Long	MEMD	UEDCL/ERA	Improved network capacity and resilience
	Develop an integrated public platform providing visibility on network capacity, reliability conditions, and planned upgrades to support planning by eCooking actors.	Long	MEMD	UEDCL, ERA	Improved planning information for ecosystem actors
Integrating GKMA local government authorities into electricity access planning	Establish a structured coordination platform linking different local government authorities forming the GKMA, electricity utilities and government departments for integrated electricity access planning.	Short	MEMD, KCCA	Local GKMA Authorities	Coordinated planning for electricity access
	Review local authority mandates on electricity access in informal settlements into local planning processes, including building review and approval processes.	Medium	MLHUD, KCCA,	MEMD, UEDCL	Electricity access integrated into urban planning
	Integrate KCCA, other local government actors, and community actors into electricity access processes including access planning and extensions, asset management and protection, as well as other community engagements to reduce network interference and vandalism risks.	Long	ERA	UEDCL, MEMD	Active involvement in planning and asset protection at local levels, alongside the utility
Improving household decision-making in electricity use	Work with local actors to create awareness and availability of sub-meter tenant meter options in informal settlements.	Short	MEMD	ERA, KCCA, UEDCL	Increased household decision independence

within shared access arrangements	Facilitate access to independent household utility meters in shared compounds via existing government-funded connection programme for residents in informal settlements	Short	MEMD/ UEDCL	UEDCL, ERA, local actors, Development Partners	Increased access to independent meters by tenant households
	Develop technical standards and regulatory guidelines for approved sub-metering solutions suitable for rental housing arrangements.	Medium	ERA	MEMD	Approved sub-metering guidelines for shared housing environments.
	Review the Landlord and Tenant Act and other related regulations to clarify landlord–tenant electricity rights and obligations under shared metering arrangements.	Medium	MEMD	KCCA, ERA, UEDCL	Streamlined policy guidance on electricity use under shared meter rental arrangements
Supporting internal wiring readiness and access to electricity connections	Review, redesign and promote scalable and standardised internal wiring solutions (e.g. ready boards) suitable for access and eCooking informal settlements	Short	MEMD	ERA, UEDCL	Safe and affordable wiring options available
	Undertake impact assessments of previous electricity access interventions targeting informal settlements (e.g. Pamoja and ready board programmes).	Short	MEMD	UEDCL, ERA	Lessons learned and evidence to improve future electrification programmes in informal communities
	Establish a programme for retraining and certification of settlement-based domestic wiremen and provide co-financed support for households wiring and new connection process easement.	Medium	MEMD	UEDCL, ERA, Training Partners	Eased navigation of the connection process for the residents of informal settlements
	Pilot a regulated Last Mile Agency service model: (Last-mile electricity service providers operating below the main utility to bridge service gaps	Medium-Long	ERA, MEMD	UEDCL	Improved electricity service access in informal areas.

	currently met by the informal utility actors) to bring services closer to informal settlement communities.				
Strengthening awareness of electricity access opportunities, services and eCooking	Establish an appropriate awareness and communication programme on existing and planned electricity access government funded programmes within informal settlements.	Short	MEMD	UEDCL, ERA, Local Actors, Development partners	Increased awareness of access opportunities
	Undertake community-level awareness initiatives on tariffs, consumer rights and electricity service processes.	Short	ERA	UEDCL	Improved understanding of approved tariffs
	Engage local actors (community leaders, electricians, resident organisations, religious and cultural leaders) as change agents for electricity access and eCooking adoption.	Medium	MEMD	UEDCL, Development Partners	Recruitment of local actors into the formal electricity access process

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