



Using Climate Finance to Scale Electric Cooking among Urban Refugee and dwellers of Informal Settlements in Kampala, Uganda: Opportunities, Challenges, and Policy support

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Overview

In 2023, the Government of Uganda banned the commercial charcoal trade from the Northern region—a major supply source—after leaders raised concerns over deforestation and climate change. This drove up charcoal prices in cities such as Kampala, disproportionately affecting urban refugees and informal settlement dwellers who rely on it for cooking. Although the benefits of clean cooking are clear, these groups face barriers including affordability, cultural practices, weak supply chains, and irregular incomes, limiting access to alternatives such as electric cooking. Uganda has positioned electric cooking at the centre of its clean cooking strategy, targeting adoption progress from a current 1.4% to 18% by 2030.

This study explores the place of climate finance to scale-up electric cooking in Kampala's informal settlements. Conducted through a placement with the MECS programme at Loughborough University, it applied a Multilevel Perspective and Socio-Technical frameworks, combining expert interviews with secondary data to examine opportunities, challenges, and policy support.

Summary of study findings

Findings show that access to both eCooking and climate finance is constrained by barriers across niche, regime, and macro levels, with settlement's informality further compounding these challenges.

The study highlights important opportunities for using climate finance to scale electric cooking among urban refugees and residents of informal settlements in Kampala, Uganda. However, these opportunities can only be realised if the major barriers are addressed. The study proposes three alternative policy pathways to leverage the opportunities while reducing the challenges, as summarised below and expanded in the main report.

Key Opportunities Identified.

1. **Climate finance as an enabler:** Climate and carbon finance can lower appliance costs, improve affordability through revenue sharing, and provide stable income for developers.
2. **Available funding facilities:** Uganda can tap into major funds such as the World Bank's \$400M EASP, AfDB's SEFA/BEEP, and FCDO's MECS to support market development, infrastructure, and aggregation.
3. **Institutional capacity:** Key government entities such as the Clean Cooking Unit, UECCC, and Climate Change Department can mobilise funds, run awareness campaigns, and strengthen training and distribution.

4. **Niche-level innovations:** Local firms and partners are piloting PAYGO financing, IoT-enabled appliances, landlord-linked models, and carbon revenue sharing to expand access.
5. **Community-based solutions:** Savings groups, SACCOs, and landlord partnerships show potential to spread appliance access and reduce risks, especially when linked with carbon revenue-sharing schemes.

Key Challenges identified include.

1. **High costs and complexity:** Registration and verification costs above \$100,000, long approval times, and large project-size requirements restrict carbon finance in informal settlements focused projects.
2. **Limited local expertise:** Shortages of accredited carbon project designers, auditors, and technical specialists force reliance on costly international expertise, deterring smaller actors.
3. **Policy and governance gaps:** Unclear carbon-finance rules, lack of inclusion of refugees and residents of informal settlements, fragmented standards, and subsidies that benefit wealthier households create systemic obstacles.
4. **Financial exclusion:** Low incomes, poor banking access, and weak distribution networks limit uptake, limited documentation, with banks viewing settlements as high-risk.
5. **Energy and social barriers:** Landlord electricity process control, poor wiring and electricity infrastructure, unreliable supply, and cultural perceptions of charcoal as cheaper and safer constrain adoption.

Alternative Policy Pathways

1. **Government-Led Pathway:** Government agencies lead in mobilising climate finance and regulating standards, with a phased shift to private sector leadership.
2. **Market Aggregator Pathway:** Shared hubs bundle projects and manage compliance, lowering costs and enabling smaller actors to access climate finance.
3. **Community Hubs Pathway:** Leveraging existing or creating local organisations where need be in the settlements to anchor awareness and adoption, building trust and ensuring household-level benefits, supported by donors and government.

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Glossary

Acronym	Full Name
MECS	Modern Energy Cooking Services
LPG	Liquefied Petroleum Gas
WHO	World Health Organization
PM2.5	Particulate Matter (2.5 micrometers or less)
CO	Carbon Monoxide
ESMAP	Energy Sector Management Assistance Programme
SDG	Sustainable Development Goal
EPC	Electric Pressure Cooker
PAYG	Pay-As-You-Go
GCF	Green Climate Fund
CDM	Clean Development Mechanism
PoA	Programme of Activities
Ci-Dev	Carbon Initiative for Development
CCF	Clean Cooking Fund
UNCDF	United Nations Capital Development Fund
FCDO	Foreign, Commonwealth & Development Office (UK)
GEAPP	Global Energy Alliance for People and Planet
UECCC	Uganda Energy Credit Capitalisation Company
PPP	Public-Private Partnership
VSLA	Village Savings and Loan Association
KCCA	Kampala Capital City Authority
UNACC	Uganda National Alliance on Clean Cooking
ICLEI	Local Governments for Sustainability
A2EI	Access to Energy Institute
MRV	Monitoring, Reporting, and Verification
SE4ALL	Sustainable Energy for All
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
SOLCO	Solar-Electric Cooking Partnership
NDC	Nationally Determined Contribution
CCU	Clean Cooking Unit
SACCO	Savings and Credit Cooperative Organization
CBO	Community-Based Organization
GEF	Global Environment Facility

1. Introduction

Around 60% of Kampala's population lives in informal settlements, and the city hosts approximately 300,000 of Uganda's 1.5 million refugees, primarily from neighbouring countries such as South Sudan, the Democratic Republic of Congo, Burundi, and others. (1,2). Even in areas already covered by the electricity grid, many residents remain excluded from accessing electricity and adopting electric cooking technologies due to high tariffs, unfavourable policies, costly connection procedures, expensive appliances, and unsafe wiring (2–5).

On 24th May 2023, citing accelerated deforestation due to the charcoal trade (6,7), the President of Uganda signed an executive order banning commercial charcoal trade in the Northern part of the country, a major source of charcoal used in Kampala (Uganda's Capital) and in other urban areas. At the same time, only around 1.4% of Ugandans have access to Modern Energy Cooking technologies such as electricity and Liquefied Petroleum Gas (LPG), with 21% still dependent on charcoal and 73% on firewood, as cooking fuels. Overall, in Uganda's urban areas, only 4% of the people use electricity for cooking, raising to 6% in Kampala, Uganda's capital city (8). This ban resulted in charcoal price hikes in these major cities, further increasing vulnerabilities among the urban poor (9,10).

For the vulnerable urban populations including refugees, internally displaced people, and the residents of informal settlements—multiple factors make it especially difficult to access electricity and electric cooking technologies. For example, among the urban refugees, who also constitute part of the informal settlement communities, and struggle with self-awareness and low confidence (11), the competition for fuel resources creates further conflict with the host communities, forcing them at times to exchange food rations for fuels (12), further increasing their vulnerabilities. For the urban hosts in informal settlements, the fuel increments worsen their energy poverty.

The government of Uganda aims to scale eCooking adoption from 1.4% to 18% by 2030 (13). As such, development partners, including the UK government, have committed \$5 million to support this national program and catalyse climate financing for clean cooking. Refugee and informal settlements are key targets of this initiative (14,15). At Cop29, the UN led International Carbon Market Standards were agreed (16), creating more hope for the increased influence of climate financing in climate adaptation, mitigation and development initiatives like clean cooking.

However, even with these major strides, the special circumstances around urban refugees and informal settlement dwellers mean that they will be left behind, unless a specifically tailored approach that considers these circumstances is undertaken.

1.1 Linking Climate Finance to Electric Cooking in Informal Settlements

Recognising the need for a comprehensive assessment of the above challenge, this study sought to establish whether climate financing can support in closing the

financing obstacles and scale access to electric cooking, for urban refugees and informal settlement dwellers in Kampala city, Uganda. The report undertakes this task, guided by the following objectives.

- To identify climate finance opportunities for scaling electric cooking in Kampala's refugee and informal settlements.
- To examine barriers to scaling electric cooking in these communities using climate finance.
- To explore policy instruments that can support electric cooking adoption with climate finance.

The report therefore focuses on how climate finance can help scale electric cooking solutions for urban refugees and residents of informal settlements in Kampala City, Uganda. It specifically considers nationals living in informal settlements, as well as urban refugees residing within those areas.

Key Scope definitions.

The following definitions were adopted for purposes of this report

- **Climate finance** encompasses financial resources—such as grants, green bonds, concessional loans, and guarantees—from public and private, bilateral and multilateral sources, aimed at climate action under the UNFCCC framework (17,18). It includes carbon finance.
- **Carbon finance** denotes funding approaches that monetize carbon emissions through instruments such as carbon credits, pricing systems, or trading schemes, to channel funds into emission reduction activities.
- **e-cooking, electric cooking, cooking with electricity** have been used interchangeably to mean using electricity as cooking fuel.

2. Methods Used

2.1 Framing the study and Report

The study employed a mixed-methods approach, drawing on both secondary and primary data to address the research questions. It included a review of academic and grey literature, alongside online interviews with subject matter experts, professionals, and stakeholders in the fields of clean cooking, e-cooking, climate and carbon finance, and energy delivery systems targeting urban refugees and dwellers in informal settlements. The research was conducted through the Modern Energy Cooking Services (MECS) programme at Loughborough University.

The study employed a dual-framework rooted in the Multi-Level Perspective (MLP) and socio-technical pathways. Given the complex interplay of technological, behavioural, institutional, and policy dynamics across formal and informal systems, the MLP was particularly helpful in unpacking the influences and forces operating at different governance levels (macro/landscape, regime/regime, and micro/niche levels) for both climate finance and electric cooking ecosystems (19–21).

The socio-technical pathways framework complemented the MLP to study interactions, feedback processes across different levels, governance frameworks by actors and institutions across to **propose possible alternative transition pathways** that can support the use of climate finance to scale cooking with electricity in informal settlements.

As eCooking transition in informal settlements involves interconnected changes in technology, behaviour, infrastructure, cultural norms, and institutional arrangements—marking it as a sociotechnical transition. Informal settlements are particularly complex environments, where innovations confront persistent barriers including poverty, informality, energy access gaps, and weak governance (22–24). Socio-technical pathways provide an analytical lens to chart transition pathways by linking technological, institutional, and cultural dynamics across niches, regimes, and landscapes.

The uptake of electric cooking technologies hinges on interactions across three levels: niche innovations, such as electric pressure cookers and pay-as-you-go (PAYGO) models; entrenched regimes, including biomass fuels like charcoal, unreliable electricity infrastructure, and deeply rooted cultural practices; and landscape-level pressures, such as climate change imperatives, fuel price volatility, and shifting global climate finance flows.

This dual framework enabled systematic mapping of actors, opportunities, challenges for using climate finance to scale cooking with electricity in informal settlements. This tiered design illuminated critical interactions between institutional systems and local innovations, identifying the conditions necessary for an inclusive and equitable transition, as summarised in the diagram below.

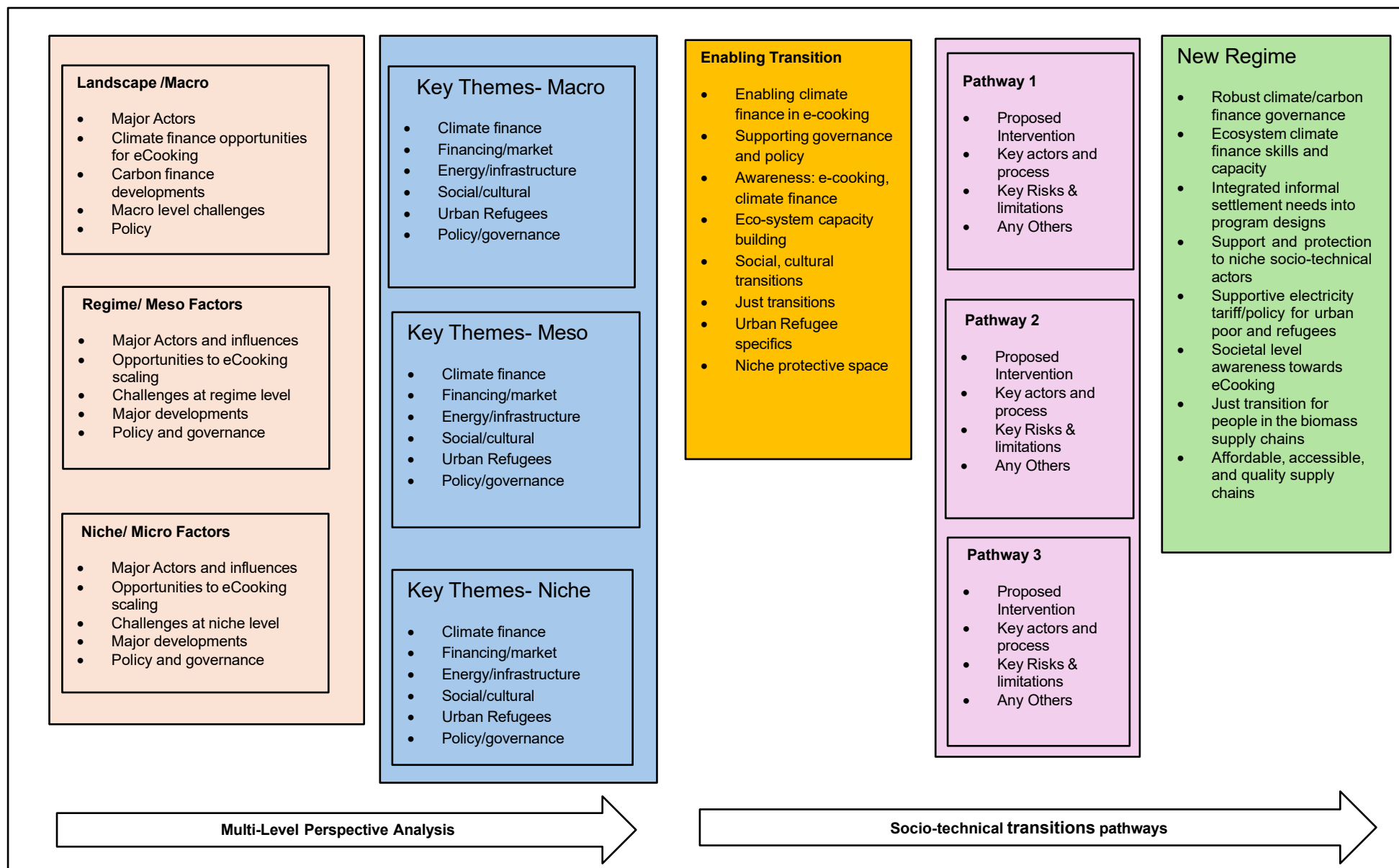


Figure 1: Conceptual Framework- Author's own design

First, the study used the MLP to analyse key themes, actors and influences at different levels in relation to climate finance and electric cooking in informal settlements in Kampala. It then applied socio-technical transitions pathways to explore three alternative transition pathways, each defined by specific interventions, actor arrangements, and risk considerations as will be revealed in the next chapter about Findings and their discussion. The study was conducted under a study placement, with the Modern Energy Cooking Services Programme (MECS) as summarised below.

2.2 Review of Literature

The study undertook a structured review of both academic and grey literature. This review focused on clean cooking and climate finance, with particular emphasis on electric cooking adoption among urban refugees and informal settlement dwellers in Uganda and Sub-Saharan Africa.

Keywords: ***climate financing, carbon credits, carbon finance, energy access, clean cooking, electric cooking, socio-technical transitions, informal settlements, urban refugees***

2.3 Semi-structured Interviews

As part of the study, twenty semi-structured online expert interviews were conducted with stakeholders driving electric cooking transitions in Sub-Saharan Africa, with a particular focus on informal settlements and refugee-hosting contexts in Kampala, as summarised in the table below.

International (Macro)	Government (Regime)	Community-Level Actors
Modern Energy Cooking Services (MECS) programme	Uganda's Ministry of Energy and Mineral Development	UNACC
ICLEI Africa	Kampala Capital City Authority (KCCA)	Energrow Ltd
GeCCO	The Clean Cooking Unit	WANA Energy Solutions
A2EI	Uganda Electricity Distribution Company Ltd (UEDCL)	Power Up Ltd
UN Climate Copenhagen		Spotlight Kampala
Last Mile Connections / SOLCO		BURN Manufacturing Co.

2.4 Research Ethics and Governance

The study received ethical approval under C-REC Ref no: ER/PM510/1 of the University of Sussex and was conducted in accordance with the provisions of this application. Where signed consent was not feasible due to participants' circumstances, verbal consent was obtained, and interviews were recorded via the University's Microsoft Teams platform. Participants were informed of their rights, the intended use and storage of data, and how findings would be disseminated. Personal details were anonymised, and contributions were used solely to inform the report's processed findings.

3. What the literature says.

This section critically reviews existing academic literature and reports from actors in the field, on electric cooking (eCooking) transitions, with a specific focus on urban refugees and informal settlements in Uganda. It draws insights from both sources to examine interconnected barriers such as infrastructure limitations, affordability constraints, socio-cultural dynamics, and fragmented governance. It also analyses the strategic potential of climate and carbon finance to enable scale, while assessing the structural limitations of current funding mechanisms and delivery models. It highlights thematic gaps, institutional patterns, and emerging entry points for climate finance in advancing clean and electric cooking, shaping the study's conceptual and analytical approach.

3.1 The need of eCooking among Urban refugees and informal settlements

While the case for energy access and clean cooking for people in refugee camps in Sub Saharan Africa has received a lot of research, the case for clean cooking for urban refugees and residents in informal settlements needs to be studied more. And while humanitarian agencies put a lot of focus on availing support in form of shelter, food and water, they still need fuel to cook and preserve this food, the lack of which leaves them dependent on unsustainable wood biomass (3), and this specifically exposes refugees to conflicts with host communities over resources (4).

The WHO defines clean cooking as the use of fuels and technologies that meet pollutant thresholds for PM2.5 and carbon monoxide (CO) to safeguard health and the environment (28). This aligns with the Energy Sector Management Assistance Programme's (ESMAP) Multi-Tier Framework, which defines access to modern energy cooking services (MECS) as achieving Tier 4 or higher across six dimensions: air pollutant exposure, efficiency, convenience, safety, affordability, and fuel availability. Eligible Tier 4 technologies include electric cooking, LPG, ethanol, biogas, and advanced biomass, while Tiers 2–4 are considered transitional and below Tier 2 as traditional or lacking access (29,30). Although this study focuses on e-cooking, Tier 4 solutions face common financing, infrastructural, and cultural barriers, with lessons transferable across technologies, including hybrid stoves that combine fuels such as electricity and LPG.

The adoption of clean cooking technologies delivers wide-ranging impacts across health, safety, environmental, educational, and social dimensions in informal settlements and among refugees. Cleaner stoves drastically reduce indoor air pollutants such as Particulate matter (PM) and carbon, cutting the risk of respiratory illnesses and premature deaths (31). By reducing open flames and hot surfaces, electric cooking technologies significantly lower the risk of burns and accidental fires. Additionally, the decreased reliance on firewood collection enhances safety by reducing exposure to violence and attacks, particularly for women and children (3).

Clean cooking also eases pressure on forests by decreasing wood and charcoal use, while contributing to climate change mitigation through reduced carbon emissions.

Socially, they save time and money, as households spend less on fuel and gain more hours for education, economic activity, and family responsibilities (4). Clean cooking also promotes local livelihoods by enabling training and income generation in stove production. Educational outcomes improve, as children can attend school more consistently and schools themselves become hubs for clean energy awareness. Furthermore, efficient cooking enhances food quality, reducing undercooking and improving nutrition (3,31). This makes it important to draw a light on the clean cooking needs for urban refugees and the urban poor in informal settlements, who for the case of Uganda, are left without humanitarian assistance, once they leave internally displaced people's camps (IDPs), and are naturally vulnerable due to the informal circumstances they live in.

3.2 Electricity access, cultural perceptions and eCooking

The adoption of eCooking technologies in informal settlements faces multifaceted barriers, including perception, safety concerns, gender norms, cultural practices, and behavioural adaptation. Misconceptions about electric cooking—such as beliefs that it worsens food taste or causes illnesses like cancer—are widespread. These challenges are further exacerbated by misinformation and limited awareness of the health and environmental benefits of clean cooking (5,23,32). These perceptions are further compounded by fears of electrical shocks, appliance failures, and fire hazards, which erode trust in the reliability of electricity. In turn, households adopt energy stacking strategies—alternating between charcoal, firewood, and kerosene depending on cost and availability—to manage uncertainty (32,33). Despite bearing the primary responsibility for household cooking, women often lack authority over purchasing decisions—particularly regarding new appliances—limiting their agency in the transition to electric cooking (23). Traditional norms, limited peer support, and incompatible appliance designs further diminish interest in e-cooking. Effective policy and financing mechanisms must address these barriers to facilitate the adoption of eCooking technologies.

Adoption of eCooking in informal settlements is constrained by intertwined barriers of perception, safety, gender norms, and cultural practices. Misconceptions—such as fears that eCooking worsens food taste or causes illnesses like cancer—are widespread, reinforced by misinformation and limited awareness of its health and environmental benefits (5,23,32). Concerns about electrical shocks, appliance failures, and fire hazards further erode trust, prompting households to rely on energy stacking—shifting between charcoal, firewood, and kerosene depending on cost and availability ((32,33)). Women, though primarily responsible for cooking, often lack decision-making power over appliance purchases, limiting their influence in transitions to eCooking (23). Traditional norms, weak peer support, and poorly

adapted appliance designs compound resistance, underscoring the need for targeted policy and financing measures to overcome these barriers.

3.3 Climate Finance and Scaling eCooking

The scale of the financing gap for clean cooking is stark and poses a major obstacle to achieving universal access by 2030. The World Bank's Energy Sector Management Assistance Program (ESMAP) suggests that, under current policies, the actual cost could be much higher—ranging between USD 148–156 billion per year. Despite these projections, actual investments remain far below what is required (34). In 2023, only USD 2.5 billion was committed globally to clean cooking, and in 2022, enterprise-level investment tracked by the Clean Cooking Alliance reached just USD 215 million (35). Clean cooking enterprises can access both conventional (equity, debt) and impact-driven funding, notably via carbon credits and results-based grants. Given its alignment with climate and development priorities, the sector is strategically positioned within emerging climate finance frameworks (30,36).

Clean cooking in developing countries is supported by a diverse and expanding ecosystem of financing mechanisms across public, private, and cross-sectoral domains. Flagship instruments like the World Bank's \$500 million Clean Cooking Fund (CCF) offer results-based grants to governments to catalyse private sector delivery of modern energy cooking services (MECS). Between 2015 and 2022, the World Bank committed \$562 million across 30 countries, targeting clean cooking access for 43 million people. Facilities such as the Carbon Initiative for Development (Ci-Dev) and the Netherlands Enterprise Agency's SDG 7 Results Facility contribute through carbon finance and concessional funding. The UK's MECS Challenge Fund by the FCDO, supports innovation in ecosystem, product, and policy development, while the Clean Cooking Alliance's Cooking Industry Catalyst builds a pipeline of investment-ready enterprises. Clean cooking is increasingly integrated into climate, health, gender, and social agendas—broadening opportunities for coordinated, multisectoral investment (29,37).

It should however be noted that while climate finance mechanisms like the Green Climate Fund (GCF) and Adaptation Fund are in place, governance issues, reported politicization of project approvals, and inequitable access persist. The fragmentation across 500+ funding channels creates inefficiencies and high transaction costs. Climate finance increasingly focuses on private investment, marginalizing public responsibility and distributive justice. (38–41). For vulnerable and small actors such as enterprises dealing with urban refugees and informal settlements, these issues exacerbate financing isolation.

Carbon finance, through voluntary markets, offers alternatives to the other multiple forms of climate finance available. Yet Sub-Saharan Africa was initially marginalized by the CDM due to weak financial infrastructure, limited expertise, regulatory gaps, and the prevalence of small, diffuse emission sources that made standalone projects

unattractive to investors given lengthy approval procedures. From the late 2000s, most African participation occurred via Programmes of Activities (PoAs), which bundled small-scale projects under one framework (42,43). Similar barriers, including governance gaps, have constrained climate finance in Uganda, though recent reforms such as the Climate Change Act and a dedicated finance mechanism aim to streamline governance and improve access to carbon finance (44,45).

The growing value of carbon markets is opening new financing avenues to accelerate electric cooking adoption, with strong implications for climate mitigation. Burning traditional biomass for cooking emits roughly 1 gigaton of CO₂ equivalent annually, yet electric cooking remains one of the most cost-effective interventions to cut emissions (46). Carbon finance leverages this mitigation potential by offering results-based payments tied to verified reductions, giving especially suppliers and end users a secure income stream critical for scaling production and distribution, while also supporting deforestation prevention and public health goals (46,47). Therefore, carbon finance can be an important enabler of climate mitigation, adaptation, and health by enabling the scaling of electric cooking.

Governance of carbon credits remains challenging, with studies showing cookstove projects sometimes over-credited by up to 13 times, raising doubts about their climate mitigation value and undermining credibility and long-term market sustainability (48,49). These credibility issues have weakened carbon markets for clean cooking. In contrast, the shift to modern energy cooking services, particularly eCooking, can reduce monitoring risks by integrating cost-effective metering devices into appliances. Digitalisation not only ensures more accurate data for carbon crediting but also embeds eCooking within broader clean energy transitions, supported by utilities and solar providers alongside electric mobility and infrastructure growth (50). Consequently, eCooking holds the potential to generate higher-value carbon credits by linking them to metered, digital systems that provide verifiable consumption data, while at the same time easing the measurement of the impact of eCooking areas such as health and gender.

Energy and eCooking financing and implementation is delivered through a fragmented multi-level governance (MLG) system, where coordination failures across international, national, and local levels hinder effective financing and implementation. At the international level, key landscape actors—such as the World Bank, SE4ALL, and the Clean Cooking Alliance—support eCooking through grants and programs, but often operate in silos, resulting in duplicated efforts and competition for resources. Nationally, intra-governmental dynamics obstruct cohesive planning: ministries operate in silos, regulators and utilities clash, and large infrastructure projects are favoured over grassroots solutions (51). This makes finance access difficult and complicated for national level electric cooking actors, and alliances such as the Global Energy Alliance for People Planet (GEAPP) are being created to reduce this complexity by playing a coordinating role for governments, development partners and other actors in clean energy development.

At national and local levels, clean cooking expansion, especially electric cooking—is supported by a mix of private, public, and community-based finance. Private equity and debt from actors like InfraCo Africa, Factor-E Ventures, ResponsAbility, and AfricaGoGreen provide flexible capital for Energy Service Providers (ESPs) and end-users (52). In Uganda, public institutions such as the Uganda Energy Credit Capitalisation Company (UECCC) strengthen market infrastructure through subsidies, guarantees, and technical support, while PPPs foster cross-sector collaboration. Carbon finance initiatives, such as the Improved Cook Stoves for East Africa (ICSEA), further lower user costs by enabling ESPs to sell credits under the UN’s Clean Development Mechanism. At the grassroots, savings groups and Village Savings and Loan Associations (VSLAs) pool resources for clean cooking, while Pay-As-You-Go (PAYG) models from companies like MKOPA and crowdfunding platforms like Kiva and Bettervest expand access to finance (23,52,53,53).

Although the above mechanisms can improve financial inclusion for eCooking among urban poor and refugee populations, significant barriers limit their impact. End-users face steep affordability challenges due to low incomes, the relatively high cost of eCooking devices versus other basic needs, and restricted access to affordable credit. Without collateral or formal credit histories—and with informal loans carrying high interest—many remain unable to invest (33,54). Energy Service Providers (ESPs) in such settlements also struggle to secure capital, as investors are discouraged by market volatility, weak track records, and currency risks. Results-based financing further delays early-stage capital by tying disbursements to post-verification, while financial service providers avoid eCooking loans, viewing them as low-value and non-income generating (52).

Informality significantly amplifies risk, deterring mainstream financial engagement and limiting access to market-based funding. Firms operating in informal settlements face compounded challenges—from socio-economic instability and irregular income patterns to the lack of formal infrastructure—all of which elevate their risk profile. These conditions discourage private investors, banks, and venture capitalists, who are often unfamiliar with the context and reluctant to engage. As a result, energy companies working with informality often rely on grant-based funding that, while vital in early stages, cannot sustain long-term operations (33). The limited experience of mainstream finance actors in such environments further isolates these communities. Addressing this disconnect requires innovative financing models that reflect the realities of informality, while also de-risking investment to attract broader financial participation (24).

Financing energy access in informal settlements spans multiple levels—household, community, firm, and industry—each shaped by distinct challenges. At the household level, affordability is a persistent barrier, as many residents earn low or irregular incomes that limit their ability to pay for energy services upfront. People in informal settlements spend as much as 25% on energy services (21,33), exceeding 10%

for energy poverty. At the firm level, sectors such as energy access and eCooking face constrained access to capital, necessitating a mix of venture capital, donor funding, and debt finance. While grants play a critical role in piloting new technologies, they are not viable for scaling. At the industry level, energy initiatives frequently rely on time-bound development grants and private equity, underscoring the need for financing mechanisms capable of supporting long-term growth and affordability (55).

Finance, innovation, and informality are intricately linked in shaping energy transitions within underserved urban areas. In informal settlements, innovation frequently arises through micro-entrepreneurship and adaptive business models tailored to local needs, infrastructural limitations, and affordability constraints (24). These grassroots approaches depend heavily on flexible financial instruments—ranging from end-user mechanisms such as PAYG and targeted subsidies to enterprise-level tools including grants, debt, and blended finance. Yet, the prevailing financing landscape remains fragmented and often poorly aligned with the socio-economic conditions of these contexts. Realizing the full potential of eCooking in informal and refugee settings demands integrated financial mechanisms that reduce entry barriers for users and enterprises, while enabling iterative innovation, long-term viability, and inclusive development (33,56), as highlighted in Figure 1 below.

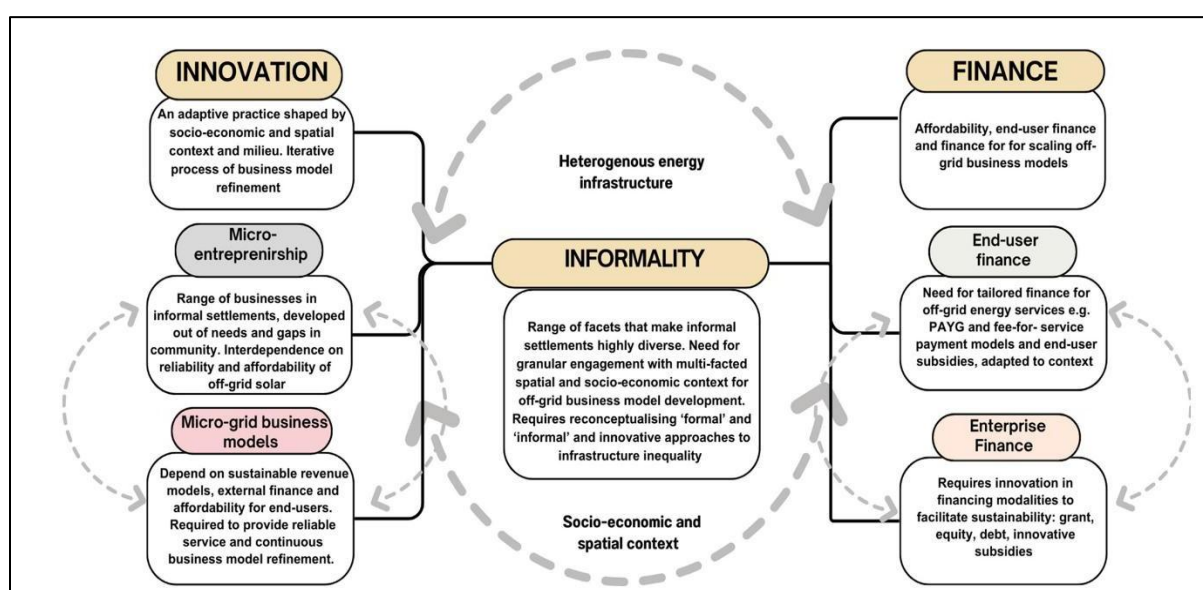


Figure 2: The Energy Financing and Innovation nexus In Informal Settlements (33)

The figure above highlights the unique intersectionality between energy innovations, informality and finance in informal settings. While it focuses on off grid services such as home solar systems for informal settlements, the unique conditions are the same for eCooking technology adoption and finance in these systems (33).

Structurally, informal settlements remain excluded from formal development frameworks due to fragmented and multi-scalar governance arrangements. Climate finance remains largely inaccessible to most energy service providers (ESPs) and community-based organizations, constrained by stringent eligibility criteria such as

verified accounting systems, impact measurement protocols, and sustained institutional backing (53,57). These requirements systematically marginalize informal actors from participating in mainstream carbon markets and climate finance mechanisms. Additionally, the absence of granular data on energy consumption, infrastructure conditions, and user behavior in informal contexts impedes financiers' ability to conduct robust risk assessments and valuations, resulting in chronic underfunding and limited development of eCooking initiatives (53).

Additionally, at the national level, tensions between utilities and price regulators can undermine efforts to ensure affordable electricity, which is critical for scaling e-cooking. At the community level, informal barriers such as insecure land tenure in informal settlements can prevent households from accessing electricity, while cultural norms and gender dynamics shape cooking practices and influence technology uptake (51). Climate finance however offers a transformative pathway to address persistent energy poverty in urban refugee and informal settlements, where conventional infrastructure and funding models have repeatedly proven inadequate. The nexus of informality, energy innovation, and finance highlights the potential of context-responsive, user-centric business models to deliver energy services in densely populated, underserved areas (33). These models are most effective when supported by blended climate finance approaches that combine grants, private investment, and results-based instruments (53). In Uganda and comparable Sub-Saharan African contexts, the value of climate finance extends beyond appliance affordability to encompass ecosystem strengthening through targeted support for last-mile distributors, community energy hubs, and supply chain actors.

The next chapter outlines the study's methodology, grounded in the Multi-Level Perspective (MLP) and a socio-technical pathways framework. Building on the literature review's identification of opportunities, and systemic barriers, the chapter operationalizes these insights further through expert interviews and reports to explore how targeted interventions, and relationships can accelerate electric cooking transitions among urban refugees and dwellers of informal settlements.

4. Findings

This chapter presents and discusses the study's findings, guided by its key objectives: to examine the opportunities, barriers, and policies to understand how climate finance can scale electric cooking among urban refugees and informal settlement dwellers in Kampala. The first section presents the findings by the study, followed by a discussion of how these themes address the research objectives. The final section presents policy options, structured as alternative pathways through which climate finance can support the adoption of electric cooking in informal settlements.

4.1 Presentation of the study Findings

While both climate finance and its carbon-finance component were identified as potential critical enablers for scaling electric cooking for urban refugees and dwellers in informal settlements in Kampala, the analysis revealed that the existing carbon-finance infrastructure presents a critical challenge for this process. Participants described carbon revenues as instrumental in lowering appliance upfront costs, enhancing household affordability through revenue-sharing models, and mitigating financial risks for project developers via stable, performance-based income streams. Accounting for approximately 63 references (18% of all coded segments), the barriers to accessing climate finance emerged as the most prominent constraint.

The key barriers identified included high project registration and verification costs (often exceeding \$100,000), lengthy approval processes, and a shortage of qualified local carbon market expertise. Other obstacles include limited working capital, a distrust of intermediaries, fragmented and the still evolving market standards, that create uncertainties. Stakeholders noted that carbon-credit projects for electric cookstoves typically require deployment of 10,000–50,000 units to be financially viable—a scale difficult to achieve in informal settlement contexts. Consider below the observations from one business leader for the leading distribution companies in these communities.

“We have been working at having our projects registered for the last 3 years, and the process is still not yet complete. It requires adequate equity financing to navigate the registration process and survive enough to be able to complete the process itself to absorb the required stock financing and registration processes”.

Another business leader also shared about the difficulty of setting up and working with the carbon credits to scale clean cooking.

“Carbon financing processes are complicated, most people don't understand them, require high capital. Given the lag between investment, supply of appliances and credit claims, they also require high working capital. Developers are also put off by unscrupulous brokers and middlemen due to the need to find buyers of the carbon certificates”.

Issues with affordability and access to electricity and finance were also a key theme with 43 references (17% of all coded segments), evident at both the regime and micro levels. In addition to the low and irregular household incomes, the analysis highlighted that access to affordable finance for appliances remains severely limiting. Formal banking services are often inaccessible for both actors and community members, while alternative finance mechanisms such as savings and credit cooperatives (SACCOs) are still either absent, poorly adapted, or restricted in reach within informal settlements, which are frequently deemed high-risk. And even when residents can afford payments, weak local appliance distribution networks and limited availability constrain uptake. A Managing Director of one of the eCooking appliance distribution companies for example thus remarked.

“Most traditional commercial banks are not yet interested in working with projects in informal settlements as they consider projects in these communities not bankable, most residents have no bank accounts and are considered risky”

As for energy access, landlord gatekeeping further compounds these challenges, with landlords often controlling tenants’ access to electricity, usage patterns, permitted appliances, billing arrangements. Also, low levels of awareness on usage and benefits, risk perceptions, unmetered connections, sub-standard wiring, safety risks, and unreliable power supply also featured highly. At the regime level, these constraints reinforce dependence on biomass-based cooking, while at the niche level, they directly hinder the adoption and sustained use of electric cooking technologies. One key participant shared her experience while in one of the informal settlements with community members vowing never to use the EPC again.

“In Owino Market, one community member brought back an electric pressure cooker that had blown up and asked if her money could be returned, vowing never to use the pressure cooker again”.

The study found that regime-level governance and policy frameworks often lack the clarity and targeting needed to support large-scale transitions to electric cooking in informal settlements. Stakeholders called for provision of more clarity and predictability in the carbon-financing mechanisms, including clearer rules on project bundling, applicable fees and taxes. One business leader reflecting on this remarked:

“The process can be made less risky where Uganda (government) is the buyer- as the broker, selling the credits to other national or corporate buyers. At the moment, most of the carbon credit supported projects are set up by foreigners, financiers are foreigners and the buyers also foreigners”.

For refugees, it was noted that national documentation requirement processes exclude them when seeking services such as electricity access, with their specific circumstances often not factored in program and project designs. Participants also highlighted that often national programme designs rarely include targeted provisions

for informal settlements, leaving their specific circumstances unincluded. Participants noted that current electricity tariffs and subsidy structures make eCooking financially unviable for many low-income households living in informal settlements and only benefit richer households. A participant working with refugees observed:

“The refugees are also not properly seen in informal settlements, and their needs are not identified in formal processes. For-example the need for a National Identity Card as a requirement for applying for an electricity connection creates a structure barrier since refugees only carry refugee IDs.”

The study also found that certain barriers and opportunities manifest at the niche, regime, and landscape levels, collectively shaping the prospects for scaling electric cooking in informal settlements. For instance, limited local technical capacity for designing and managing carbon projects, lengthy approval and verification timelines, and evolving governance frameworks create uncertainty for investors and niche implementers. Social and cultural dynamics influence eCooking adoption. Cramped housing, safety concerns, and low awareness combine with entrenched perceptions of electric cooking being costly or risky, entrenching charcoal use.

4.2 Discussion of study findings

This section discusses the findings in line with the study objectives, which focus on three areas—opportunities, challenges, and policy supporting scaling electric cooking through climate finance in Kampala’s informal settlements. Supported by previous research, field practitioner reports and expert interviews conducted, each area is examined across the macro, regime, and niche levels to provide a structured interpretation of the results.

4.3 Opportunities for Scaling Electric Cooking through Climate Finance

At the macro level, the study identifies substantial opportunities to leverage multilateral and bilateral climate finance—alongside carbon finance—to scale electric cooking among urban refugees and residents of informal settlements in Uganda. Key facilities in Uganda include FDCO’s MECS programme (\$6M), the African Development Bank’s SEFA/BEEP facility (\$18.8M), and the World Bank’s \$400M Electricity Access Scale-Up Project (EASP). These funds could also catalyse carbon finance by supporting early-stage market development, robust data and monitoring systems, infrastructure upgrades, supply chain strengthening and project aggregation models. Emerging mechanisms under Articles 6.2 and 6.4 of the Paris Agreement further expand this potential. Strategic alignment with Uganda’s Nationally Determined Contributions (NDCs), eCooking strategy targets, and clean cooking commitments reinforces the enabling environment.

At the regime level, Uganda’s institutional landscape shows strong potential to harness climate finance for scaling electric cooking among urban refugees and informal

settlement dwellers in Kampala. Public mechanisms such as the UECCC can channel funds into clean energy initiatives, while the Clean Cooking Unit in the Ministry of Energy and Mineral Development and the Climate Change Department now support coordination and finance mobilisation. National carbon frameworks and utility-led eCooking programmes also provide platforms for integrating carbon finance into large-scale delivery. For example, the study found through the Clean Cooking Unit, government is working with development partners to implement a nationwide eCooking awareness campaign, training 600 appliance technicians, with key activities in informal settlements. Partnerships with manufacturers and distributors can enable bulk procurement and cost reductions, while utility-led programmes have the potential to pair carbon, and appliance financing with tariff-based incentives suited to low-income users. MFIs can deploy climate finance through tailored credit products, reducing lending risk.

At the niche level, opportunities include innovations by actors such as Power Up Ltd, Energrow Ltd, and Wana Solutions Ltd, which provide tailored end-user financing and awareness programmes in informal settlements. Development partners like Last Mile Climate and ICLEI have also introduced eCooking programmes that foster collaborations for underserved communities. Community saving schemes and models such as embedding appliance instalments into rent contracts through landlord partnerships can expand access for low-income households and reduce landlord-level barriers. Metered or IoT-enabled appliances, PAYGO systems, and carbon credit revenue-sharing schemes ease project verification by supporting monitoring, reporting, and verification (MRV) for carbon finance, while also sharing revenue with end users to improve affordability. Collaborations with local SMEs as stable entities, alongside community change agents, strengthen promotion, after-sales support, and uptake among urban refugees and informal settlement residents.

4.4 Challenges to climate finance and scaling eCooking

While the potential for leveraging climate finance to scale electric cooking in informal settlements is evident, structural barriers persist at the landscape level. For example, the design and governance of global climate and carbon finance mechanisms such as the Green Climate Fund (GCF) and Global Environment Facility (GEF) create strategic access barriers for actors at all levels. Access to climate finance processes from such sources remain slow, complex, and resource intensive. Approval processes often span years, requiring extensive technical documentation, while high transaction costs including legal, audit, and verification fees—deter smaller implementers.

The limited availability of accredited carbon credit project auditors and project designers within Uganda further compounds the challenge, necessitating reliance on costly international expertise. The carbon market frameworks are still evolving, with bilateral agreement templates, registry systems, and double-counting safeguards not yet fully operationalised within the country. Even with collaborative platforms like GEAPP, climate financing streams remain highly fragmented and difficult to navigate.

These conditions limit Uganda's ability to fully leverage climate finance and carbon market opportunities to scale electric cooking.

Regulatory uncertainties—such as unclear rules for carbon revenue sharing, complex bundling procedures for small-scale project feasibility, and repeated tests, compliance standards, and data harmonisation—add significant risk for implementers, deterring investment and adoption of eCooking in informal settlements. These risks intersect with other regime-level barriers, including limited appliance availability, weak distribution systems, unreliable electricity, substandard wiring, and landlord control over time of use, load, and permitted appliances, all of which restrict household choices. Shared meters and unmetered connections further fuel conflicts over consumption and degrade supply quality for both legal and illegal users, reinforcing dependence on biomass. Social and cultural perceptions—that charcoal and firewood are cheaper, more accessible, and produce better-tasting food—together with low awareness of electric cooking benefits, entrench these systemic constraints

At the micro level, the study finds that eCooking market actors including distributors, last-mile providers, and community-based financing schemes face persistent barriers to scale. Local credit systems view informal settlement markets as high risk, making capital costly, while project developers consider commercial finance too risky without guarantees or concessional funds. Distributors face chronic working-capital shortages, with delays in results-based financing (RBF) disbursements tying up scarce resources and threatening sustainability. Appliance distribution is also seen as low margin, yet prices in informal settlements are often benchmarked against those of larger players. Combined with low household incomes and long instalment periods, this results in slow cash-flow turnovers, constraining capital even when appliances are supplied on a cash basis. At the household level, irregular incomes, lack of collateral, and frequent movement under tenancy arrangements heighten lender risk and restrict finance access, while the high upfront cost of appliances further limits uptake.

The study finds that realising the opportunities posed by climate finance to scale eCooking in informal settlements therefore requires addressing a web of interconnected challenges that cut across all three system levels. It therefore proposes three alternative policy pathways that can be explored as highlighted in the next section.

4.5 Policy instruments: Climate finance and eCooking in informal settlements

The study finds that coordinated action—linking governance, market and ecosystem capacity, financial innovation, and community engagement—is essential for climate finance to effectively scale eCooking in Kampala's informal settlements.

It therefore develops three alternative transition policy pathways (Figure 3 below), informed by the socio-technical pathways approach as outlined in the methods in section 2. Each pathway is tailored to address specific leverage points, actor

dynamics, risks and process combinations across multiple levels of governance and politics.

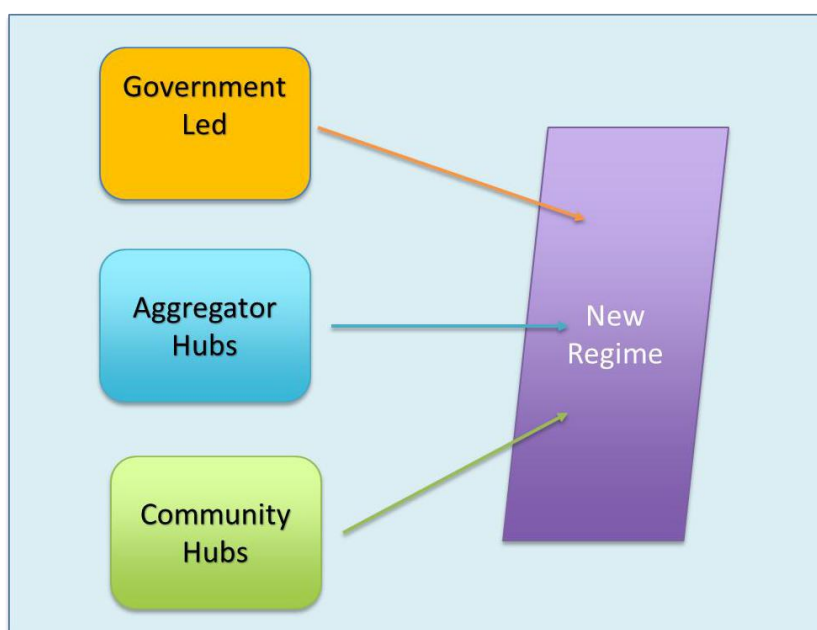


Figure 3: Alternative Pathways to the New Regime for using climate finance - Author's own diagram

Figure 3 shows the resulting pathways; the Government-Led Pathway, the Market Aggregator Pathway, and the Community Hubs Pathway. Each pathway considers a combination of how different processes, actor roles, and power dynamics could strengthen ecosystem capacity, improve finance flows, coordinate governance, and protect niche innovations while enabling scale of eCooking in these urban contexts.

Each pathway also factors in opportunity/risks trade-offs, the need for a just transition for biomass-dependent livelihoods, and the structural design needed to ensure sustainability. Finally, the household dimension remains central—ensuring affordability, raising awareness, and fostering active involvement and engagement—so that benefits from the transition are both accessible and lasting. The next section reviews each pathway in turn.

Government led pathway

In the Government-Led Pathway, the Clean Cooking Unit (CCU) leads in collaboration with the Climate Change Department and the Uganda Energy Credit Capitalisation Company (UECCC) to mobilise climate finance and build the eCooking ecosystem's capacity to access carbon markets. The CCU ensures eCooking projects are registered on Uganda's national carbon registry and, through a government consortium, initially acts as the buyer for generated credits and securing off taker via government partnerships until market linkages mature.

Early priorities include ecosystem capacity development for distributors, financial institutions, and third-party service providers, as well as public awareness on eCooking benefits and carbon finance opportunities. Policy adjustments are reviewed to mitigate barriers such as tenant meter separation, appliance quality standards, and restrictive tariffs incentives, while actors in the biomass are retrained and incorporated into eCooking roles. Over time, private buyers take over with local actors—distributors, project developers, and community groups—registering and managing their own projects, as the CCU and partners retain oversight, enforce standards, and sustain policy and results-based finance (RBF) support.

Proposed Key Actors:

- **Lead:** Clean Cooking Unit (CCU) at MEMD
- **Core collaborators:** Climate Change Department, Uganda Energy Credit Capitalisation Company (UECCC, Ministry of Finance, Planning and economic development.
- **Supporting actors:** Appliance Companies, UEDCL (electricity Utility), Electricity Regulatory Authority (ERA), Kampala Capital City Authority (KCCA), Development Partners (e.g., MECS, GEAPP, World Bank), MFIs, and Carbon market standards bodies.

Potential Key Risks and mitigation:

- **Risk:** Heavy government off-take could discourage private competition; risks process captures by powerful stakeholders.
Mitigation: *Define clear exit strategy with phased milestones and triggers to gradually shift demand to private buyers*
- **Risk:** Multiple approval layers and reliance on government to finalize transactions can slow project registration, credit issuance, and investment flows.
- **Mitigation:** *Streamlined procedures, service standards, and digital process systems.*

Market Aggregator Pathway

In the Market Aggregator pathway, multi-functional Aggregator Hubs—such as SOLCO, Special purpose hubs, and UNACC—serve as shared platforms for bundling eCooking carbon projects from multiple distributors, CBOs, and refugee programmes. Instead of each actor navigating costly and complex registration independently, hubs handle MRV, audits, and registry compliance centrally, enabling smaller market players from informal settlements and refugee-hosting areas to access climate finance at viable scales. These hubs act as ecosystem builders, allocating part of climate finance to distributor and financial-institution training, community awareness

campaigns, EPC quality assurance, and pilots such as meter separation to ensure tenant benefits.

The hubs also support carbon revenue sharing throughout the value chains they support. By attracting blended finance from donors, concessional lenders, and results-based financing schemes, hubs strengthen market resilience and inclusivity. Government entities play a supportive role by ensuring policy alignment, providing regulatory oversight, and linking projects to the national carbon registry, helping to maintain transparency, compliance, and targeting of intended beneficiaries.

Key Actors

- **Lead:** SOLCO, Special Purpose hubs, UNACC
- **Core Collaborators:** Appliance Companies such as Burn, Wana Solutions, UpEnergy, refugee programs,
- **Supporting Actors:** GCF, AfDB, FCDO/MECS, World Bank, auditors, certifiers, buyers, MEMD/CCU, MECS, CCA

Potential Key Risks and mitigation:

- **Risk:** Any challenges on one project can undermine hub credibility, and unclear revenue flows may limit household benefits.
- **Mitigation:** Enforce standards, transparent reporting, and fair sharing rules.
- **Risk:** Limited government oversight may reduce accountability and buyer confidence.
- **Mitigation:** Maintain light but clear oversight through registry linkage and periodic audits.

Community Hubs pathway

In the **Community Hubs pathway**, government and development partners spearhead the creation of community eCooking hubs in informal settlements, anchored by distributors such as Wana Solutions, UpEnergy, and Energrow. These hubs serve as local engines of the transition—driving public awareness, fostering cultural change, and retraining biomass-dependent actors into new roles within the eCooking value chain. Distributors retain responsibility for carbon market functions—project registration, MRV, and credit sales—while hubs concentrate on trusted, community-level engagement and service delivery.

Government partners coordinate targeted capacity-building for banks, MFIs, SACCOs, insurers, and carbon service providers, thereby strengthening the backbone of a sustainable market. Carbon revenues are shared among distributors, hubs, and households. By establishing hubs where none currently exist, this model decentralises decision-making and finance flows while anchoring them in the community. Government partners retain oversight, ensuring coherence and equity, and the leveraged local trust networks enhance market penetration for a more inclusive, resilient, and scalable transition to eCooking in informal settlements.

Key Actors

- **Lead:** Community-based organisations (CBOs), refugee associations, women's groups
- **Core Collaborators:** Distributors (Burn, Wana Solutions, UpEnergy, Energrow)
- **Supporting collaborators:** Government Agencies, Development Partners, Finance Ecosystem (MFIs, SACCOs, insurers), Project Managers & Consultants.

Key Risk and Mitigation

- **Risk:** community Hubs may struggle with financial and organisational management, and coordination
- **Mitigation:** *Ongoing support from government and development partners until maturity.*

Each pathway offers distinct strengths and weaknesses in exploiting opportunities and addressing challenges for using climate finance to scale eCooking in informal settlements. For instance, a government-led pathway is well suited to streamline governance issues and attract international climate finance, but it is less effective at building trust and enabling transitions within informal settlements—roles better suited to community hubs.

A potential solution is a hybrid pathway that leverages the strongest elements of each pathway. In the absence of such a hybrid approach, a phased government-led pathway appears most viable at present, with government gradually shifting into a more supportive role as the broader ecosystem matures to assume responsibilities envisioned in the other pathways.

5. Conclusions

This study explored the potential of climate finance to scale electric cooking among urban refugees and informal settlement residents in Kampala, Uganda. The findings show that carbon finance, in particular, offers a transformative pathway by lowering appliance costs, incentivising households through revenue-sharing, and creating predictable revenues for market actors—reducing dependence on short-term donor funding. Yet, high transaction costs, complex compliance, limited technical capacity, and governance gaps currently constrain impact and inclusivity. Unlocking this potential will require coordinated action to align governance frameworks, strengthen market ecosystems, and tailor solutions to the needs of vulnerable urban communities.

The study finds that opportunities to leverage climate finance for scaling eCooking span multiple system levels. At the macro level, facilities such as AfDB's SEFA, the World Bank's EASP, and FCDO's MECS programme—together with national initiatives like the Clean Cooking Unit, newly launched carbon finance frameworks, and utility-led eCooking programmes—provide a strong enabling backdrop. At regime and micro levels, utility-led pilots, emerging distributor financing schemes, and community-based savings models can enhance affordability, distribution, and adoption, particularly when underpinned by carbon finance. Active developers in informal settlements, combined with prospects for metered or IoT-enabled appliances, can strengthen the value and credibility of carbon credits while improving inclusion, affordability, revenue sharing, and compliance.

Yet barriers also cut across all three levels. Climate and carbon finance remain slow, complex, and costly to access, with high transaction fees and lengthy approvals. Local technical capacity for MRV, auditing, and project design is limited. Weak appliance distribution networks, unreliable electricity, poor wiring, cultural norms, and landlord control further constrain transitions and entrench biomass use. At the micro level, distributors and last-mile providers face high financing costs, working-capital shortages, and thin margins, while serving households with irregular incomes, little collateral, and high mobility. Refugees encounter additional barriers such as ID/KYC requirements that exclude them from both energy and finance access. Addressing these challenges will require coordinated transitions across multiple levels and centres of influence.

Building on these opportunities and challenges, the study identifies three alternative but complementary pathways for using climate finance to scale eCooking among urban refugees and informal settlement residents, each with distinct policy implications.

- **Government-Led Pathway:** Operates through entities such as the Clean Cooking Unit to mobilise finance, register projects in the national carbon registry, link to carbon markets as the buyer of credits, and strengthen ecosystem capacity through coordination and streamlined local processes.

- **Market Aggregator Pathway:** Uses hubs to bundle projects, manage MRV and compliance, channel blended finance into ecosystem development, and distribute carbon revenues across the value chain, including households.
- **Community Hubs Pathway:** Anchors eCooking infrastructure within informal settlements through locally managed hubs supported by distributors, government, and development partners. These hubs drive awareness, appliance distribution, and equitable sharing of carbon revenues, while fostering just transitions and overcoming entrenched resistance.

A hybrid policy approach that combines elements of these pathways is both possible and desirable, given the complementary adjustments required to align evolving climate finance mechanisms with the practical realities of eCooking transitions in vulnerable urban communities.

This study could not fully capture the specific realities of urban refugees in informal settlements in their efforts to access eCooking and finance, as existing literature focuses largely on internally displaced camps and expert interviews cannot fully substitute for direct engagement. Deeper research with this group could provide the insights needed to design more inclusive and effective solutions.

5.1 Future Research Directions

This study identified several important areas it could not adequately cover, which merit follow-up research to advance understanding of climate finance and eCooking in urban refugee and informal settlement contexts:

- **Urban refugees and eCooking transitions:** Existing studies often treat informal settlements as a whole or focus on camp settings. Targeted research is needed to capture the specific energy and cooking realities of urban refugees through direct engagement.
- **Political economy of hubs:** Further study of the political economy and operational models of hubs—whether as carbon-finance aggregators or community eCooking hubs—is required to understand how governance and power dynamics shape transitions through hubs.
- **Revenue-sharing models:** Research should assess how revenue-sharing models at different levels influence adoption, affordability, and inclusion, and identify which approaches best balance equity with financial sustainability.

Looking ahead, realising any of the above pathways will require sustained political will, coordinated financing, and inclusive engagement, but their adoption offers a clear route to harnessing short- and long-term climate finance for scaling eCooking among urban refugees and informal settlement residents.

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Appendix

Semi- structured interview guides used

A study on how Climate Finance can be Used to scale eCooking among the urban refugees and residents of Informal Settlements – Kampala, Uganda

Main Research Questions.

Major question:

"How can climate finance be leveraged to scale the adoption of electric cooking among Kampala's urban refugees and informal settlement dwellers?"

Sub research questions

- i. Which climate finance opportunities can support scaling electric cooking in Kampala's refugee and informal settlements?
- ii. What barriers need to be overcome to support the scale up of electric cooking in refugee and informal settlements in Kampala, leveraging climate finance?
- iii. Which policy instruments can be used to support the scale up of electric cooking among refugee and informal settlement dwellers in Kampala, with climate financing?

A. Community Actors Working in Informal Settlements

(e.g., Local government, NGOs, CBOs, community-based initiatives working in Kampala informal settlements-Such as the Slum Dwellers Association, ACTogether, KCCA etc.

1. Role

Please describe your role in the organization and your work related to informal settlements in Kampala.

2. Cooking Fuels

What are the major cooking fuels used in informal settlements?

3. Drivers for Fuel Choice

What do you think are the main reasons these cooking fuels or technologies are dominant?

4. Adoption of Electric Cooking

How are people in informal settlements adopting cooking with electricity, and what major appliances do they prefer?

5. Barriers to Electric Cooking

What major barriers hinder the transition to cooking with electricity?

6. Overcoming Barriers

How are these barriers being addressed or overcome?

7. Financing for Electric Cooking

How are people in informal settlements financing their adoption of cooking with electricity?

8. Available Financing Options

What financing options are available to support the adoption of cooking with electricity?

9. Institutional Support for Financing

Is there a way your organization supports the residents to access these financing options?

10. Refugee Adoption

How are refugees in the informal settlements you support adopting cooking with electricity? Are there special conditions limiting their adoption?

11. Additional Contacts

Are there other individuals or institutions you recommend we speak to as part of this study?

Thank you for taking the time to participate in this study.

B. Finance Institutions & Energy Service Providers

(e.g., Equity Bank, KCCA SACCO, Wana Energy, Up Energy, Energrow, Burn Manufacturing, etc.)

1. Role

What is your role at [Institution Name]?

2. Organizational Work

What work is your organization doing in clean or electric cooking (e-cooking)?

3. Presence in Informal Settlements

Are you active in informal settlements or refugee communities in Kampala? If yes, how?

4. Financing Products

What financing products do you offer to support clean or electric cooking for urban poor or refugees?

(e.g., loans, PAYGO, SACCO schemes, microfinance)

5. Barriers to Support

What barriers limit your financing support to the people and institutions working with clean cooking/e-cooking in informal settlements?

(e.g., credit risk, affordability, infrastructure)

6. Addressing Barriers

How are you addressing these barriers?

(e.g., partnerships, digital tools, subsidies)

7. Access to Climate Finance

Does your institution have access to climate or carbon finance for this work?

8. Use of Climate Finance

If yes, how are you using it to support e-cooking in informal settlements?

(e.g., appliance subsidies, distribution, awareness programs)

9. Challenges with Climate Finance

What challenges do you face in accessing or using climate finance to support the people and institutions working in clean cooking/e-cooking in informal settlements?

(e.g., complexity, verification, policy gaps)

10. Policy Support

According to your experience, what policies could help scale climate finance for e-cooking in these areas?

(e.g., tax breaks, carbon markets, public-private support)

11. Additional Contacts

Are there other individuals or institutions you recommend we speak to as part of this study?

Thank you for taking the time to participate in this study.

C. Policy Makers and Shapers

(e.g., MEMD, Ministry of Finance, Ministry of Water & Environment, MECS, Uganda Carbon Bureau, ICLEI etc)

1. Role and Involvement

Can you briefly describe your role at [Institution Name] and your involvement in electric cooking (e-cooking)?

2. Institutional Support

How is your institution supporting the adoption of e-cooking in informal settlements (in Kampala, Uganda)?

(e.g., programs, partnerships, policy frameworks)

3. Climate Finance Options and Use

What climate finance options are available to support clean or electric cooking in Uganda, and how are they currently being used?

(e.g., carbon markets, donor funds, green bonds; appliance subsidies, infrastructure investment, capacity building)

4. Challenges with Climate Finance

What specific challenges limit the use of these climate finance options to scale e-cooking among urban refugees and informal settlements?

5. Targeted Programs or Policies

Are there specific programs or policies focused on supporting the urban poor and refugees in informal settlements with access to clean or electric cooking?

6. Effective Use of Climate Finance

In your view, how can climate finance be effectively used to scale e-cooking in informal settlements?

7. Barriers to Climate Finance Use

What key barriers currently limit the use of climate finance to support e-cooking adoption in informal settlements?

8. Addressing Barriers

What is being done—or should be done—to address these barriers?

9. Policy Recommendations

What specific policies or reforms would help scale the use of climate finance for e-cooking in informal settlements?

10. Additional Contacts

Are there other individuals or institutions you recommend we speak to as part of this study?

Thank you for taking the time to participate in this study.