HELP REACH AFRICA

# TECHNICAL FINAL REPORT

26th January 2026

**Study Title:** *Exploring the Potential of Energy as a Service (EaaS) to Provide Sustainable and Cost-Effective Solution for Electrification in Private Primary Healthcare Facilities in Kenya.*

**Project Name:** Energy as a Service (EaaS)

**Reporting Period:** December 2024 – January 2026

**Prepared by:** Help REACH Africa (HERA)

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## LIST OF ACCRONYMS/ABBREVIATIONS

| Acronyms | |
|---|---|
| **EaaS** | Energy as a Service |
| **HERA** | Help REACH Africa |
| **IRB** | Institutional Review Board |
| **KPLC** | Kenya Power & Lighting Company |
| **LFIs** | Local Financial Institutions |
| **NACOSTI** | National Commission for Science, Technology and Innovation |
| **PAYGO** | Pay as you go |
| **PPHFs** | Private Primary Healthcare Facilities |
| **SACCO** | Savings and Credit Cooperative |

## EXECUTIVE SUMMARY

Over the course of the reporting period, Help REACH Africa (HERA) provided technical and implementation support to the Energy as a Service (EaaS) study, with a primary focus on engagement with Private Primary Healthcare Facilities (PPHFs), Local Financial Institutions (LFIs), and Energy as a Service providers. HERA's contributions spanned research design support, coordination of ethical approvals, development and review of qualitative and quantitative tools, and active participation in data collection. This included leading and supporting interviews with selected EaaS providers, initial identification and mapping of relevant PPHF, EaaS, and LFI actors, including their contacts to support interview recruitment, and facilitation of stakeholder engagement across study sites. HERA also provided analytical inputs to both qualitative and quantitative phases of the study.

During the qualitative phase, HERA supported proposal development, coordinated Institutional Review Board (IRB) and NACOSTI approvals, developed and validated data collection tools, trained and deployed research assistants, and conducted in-depth qualitative interviews across three counties: Kajiado, Makueni, and Siaya. In total, 24 PPHFs (against a target of 25) and 9 LFIs (exceeding the target of 8) were interviewed. HERA also supported transcription, data management, and contributed analytical inputs to the long-form qualitative report, which examined energy access challenges, financial constraints, and preferred financing models among PPHFs and LFIs.

Following submission of the progress report, HERA provided additional technical support during the transition from the qualitative to quantitative phase. This included preparation for and participation in a validation process, attendance and technical engagement in a validation workshop convened with key stakeholders, and inputs into the refinement of qualitative findings. HERA further supported the development of quantitative survey instruments targeting EaaS providers, PPHFs, LFIs and Funders, reviewed and provided inputs into the final quantitative tools before roll-out.

HERA led quantitative data collection among PPHFs and LFIs through virtual surveys. As of the close of the reporting period, quantitative responses had been received from 7 out of 9 LFIs and 17 out of 24 PPHFs, distributed across Siaya (8), Makueni (5), and Kajiado (4). These data complement the qualitative findings and provide additional insights into revenue patterns, financing availability, patient volumes, service scope, and energy demand profiles across private primary healthcare facilities.

Overall, HERA successfully completed all assigned activities, met or exceeded key targets within its scope, and provided substantive technical and analytical contributions to the EaaS study. The findings generated through HERA's engagement with PPHFs and LFIs contribute critical evidence to inform the design of context-appropriate EaaS models and financing mechanisms for private healthcare facilities in Kenya.

## BACKGROUND

Access to reliable, affordable, and sustainable energy remains a persistent challenge for private primary healthcare facilities (PPHFs) in Kenya, particularly in peri-urban and rural settings. Frequent power outages, high electricity costs, and reliance on diesel generators undermine service delivery, increase operational expenses, and negatively affect the quality and continuity of health care. These challenges are especially pronounced for smaller private and faith-based health facilities that operate with constrained cash flows and limited access to financing for energy investments.

The Energy as a Service (EaaS) study was designed to explore the potential of innovative, service-based energy models to address these challenges by reducing upfront capital costs, improving energy reliability and affordability , and enabling healthcare facilities to focus resources on service provision. The study focused on three counties, Kajiado, Makueni, and Siaya, selected to reflect diverse geographic, operational, demographic and economic contexts. The target sample included 25 PPHFs across facility levels 2, 3A, 3B, and 4; at least 8 Local Financial Institutions (LFIs); 7 EaaS providers; and 10 funders. Within this broader scope, particular emphasis was placed on understanding the energy needs, financing constraints, and market readiness of PPHFs and LFIs as critical actors in the adoption and scaling of EaaS solutions.

HERA's participation in the study leveraged its extensive experience and established networks within Kenya's healthcare, energy and financial sector to support effective engagement with PPHFs and LFIs. The HERA team has a strong track record of conducting health-related research and implementation activities with private healthcare providers across multiple counties, including Siaya, Kisumu, Mombasa, Nairobi, Kajiado, Kiambu, Machakos, and Makueni. This experience enabled efficient identification of relevant facilities and facilitated high levels of participation and data sharing. The team is led by a member of both the Kenya Pediatric Association and the Kenya Medical Association, which strengthened trust and rapport with healthcare providers through professional peer networks. In addition, HERA's institutional leadership brings deep expertise at the intersection of energy and finance. The organization's chairman has decades of experience in the energy and finance sectors, including prior service as Finance and Commercial Director at the Kenya Electricity Generation Company (KenGen) and leadership of a financial advisory firm. This combination of healthcare-sector credibility, geographic reach, and energy and finance expertise strengthened access to relevant LFIs and Energy as a Service Providers and informed analysis of financing models applicable to EaaS in the healthcare context.

## SCOPE OF WORK

HERA provided technical and implementation support for the Energy as a Service (EaaS) study, with a focus on research design, data collection, and synthesis related to PPHFs, LFIs, and EaaS providers, implemented across both qualitative and quantitative phases in line with the approved workplan.

### Phase 1: Research Design and Qualitative Data Collection

During the initial phase of the study, HERA contributed to research design and qualitative data generation across healthcare, finance, and energy stakeholder groups. Specific responsibilities included:

- Contributions to study design and development of research protocols up to submission for Institutional Review Board (IRB) approval, participation in stakeholder alignment discussions, and drafting and support of the inception report and work plan.
- Reviewing and synthesizing secondary insights, including case studies, industry reports, and prior research relevant to energy access and financing in private healthcare
- Conducting qualitative interviews with PPHFs to assess energy use, willingness to pay, operational constraints, and adoption considerations for EaaS models
- Conducting qualitative interviews with LFIs to assess their willingness to finance PPHFs, risk perceptions, financing constraints, and considerations for supporting Energy-as-a-Service (EaaS) models
- Supporting qualitative interviews with EaaS providers and facilitating access to relevant institutional contacts

Qualitative data collection was implemented using semi-structured interview tools.

### Phase 2: Quantitative Tool Development and Data Collection

Building on insights from the qualitative phase, HERA supported the design and deployment of targeted quantitative micro-surveys to validate and quantify emerging findings. HERA's responsibilities included:

- Supporting the development, review, and refinement of quantitative survey instruments for PPHFs, LFIs, and EaaS providers
- Reviewing and providing inputs into the final quantitative tools before roll-out
- Leading quantitative data collection among PPHFs and LFIs, leveraging existing networks and contacts

Quantitative data collection progressed alongside agreed timeline.

### Cross-Cutting Responsibilities

Across both phases, HERA contributed to the consolidation and synthesis of insights generated through qualitative and quantitative research streams. This included providing analytical inputs to reporting outputs, supporting validation processes, and participating in technical discussions aimed at refining findings and informing subsequent phases of the study.

## METHODOLOGY

The study used a mixed-methods approach, combining qualitative and quantitative data to generate contextual and validated insights on energy access, financing constraints, and the feasibility of Energy as a Service (EaaS) models for private primary healthcare facilities in Kenya, with data collected across Kajiado, Makueni, and Siaya counties to reflect diverse contexts.

### Qualitative Data Collection

Qualitative data were collected through semi-structured virtual interviews with key stakeholders, primarily PPHFs and LFIs. Interview guides were iteratively refined to examine energy use, reliability challenges, willingness to pay, financing options, and decision-making processes, with participation from PPHFs across facility levels 2, 3A, 3B and 4 and relevant financial institutions.

Qualitative data collection followed a concurrent and iterative approach, allowing emerging findings from one stakeholder group to inform subsequent engagements with others. All interviews were conducted virtually in accordance with approved ethical protocols and with informed consent, recorded, transcribed, and securely stored for analysis.

### Quantitative Data Collection

Building on qualitative findings, quantitative micro-surveys were developed to validate and quantify emerging themes related to revenue patterns, financing availability, patient volumes, service scope, and energy demand profiles. Survey instruments targeting PPHFs and LFIs were reviewed and finalized before being administered virtually using Google Forms to maximize reach.

Quantitative data collection focused on PPHFs and LFIs previously engaged during the qualitative phase. Responses were monitored periodically to assess progress and inform follow-up.

### Ethical Considerations

The study received ethical approval from the relevant Institutional Review Board (IRB) and a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). HERA coordinated the IRB approval process and supported the preparation and submission of documentation required for the NACOSTI research license. Participation in the study was voluntary, and informed consent was obtained from all respondents prior to data collection.

### Data Analysis

Qualitative data were analyzed thematically to identify key patterns related to energy access, financing constraints, and EaaS preferences among PPHFs and LFIs. HERA supported the analysis through technical review and inputs and developed anecdotal analytical outputs on the energy and financial needs of PPHFs. Overall consolidation and synthesis of qualitative and quantitative findings were led by Busara, with quantitative data analyzed descriptively to validate qualitative insights and inform validation discussions and reporting.

## ACTIVITIES IMPLEMENTED

| Activities Implemented | | | | |
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| **Activity/Tasks** | **Targets/Deliverables** | **Progress to Date** | **Completion Status** | **Notes/Remarks** |
| Support proposal development (research methodology, county/PPHF selection) | Finalize proposal with clear sampling criteria | Proposal submitted with HERA's inputs | Completed | |
| Obtain IRB approvals (USIU-Africa) and research license (NACOSTI) | IRB approvals and NACOSTI permit | IRB approval obtained from USIU-Africa<br>NACOSTI permit obtained | Completed | Some delays, but approvals secured<br>Conducted jointly with Busara |
| Development of survey instruments | Qualitative & quantitative tools, consent forms | Tools developed and validated | Completed | |
| Provide technical input for the inception report | Inception report | Supported the preparation and writing of the inception report | Completed | |
| Training of Research Assistants on study instruments/ terminologies | Capacity building for data collection | RAs trained and deployed | Completed | |
| Stakeholder outreach | Engagement with PPHFs, LFIs, EaaS providers | Contacts obtained and interviews scheduled | Completed | Some contacts were not available on the internet |
| Qualitative interviews with PPHFs and LFIs | 25 PPHFs, 8 LFIs, 7 EaaS provider | 24 PPHFs, 9 LFIs, 1 EaaS provider | Completed | LFI target exceeded |
| Quantitative data collection with PPHFs and LFIs | Quantitative responses from 25 PPHFs, 8 LFIs, and 7 EaaS providers | 17 PPHFs and 7 LFIs responses received | Completed | Virtual data collection; response rates affected by |

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| | | | | facility availability. Follow ups done frequently |
| Transcription & data management | Interview audio and transcriptions uploaded | 24 PPHFs interviews transcribed with audio files uploaded | Completed | |
| Analysis & narrative report | Summary report on PPHFs' energy and financial needs | Developed anecdotal analytical outputs on the energy and financial needs | Completed | |
| Final report preparation, consolidation, and workshopping | Consolidated and synthesized findings; participation in report workshopping | Inputs provided to consolidation and synthesis of qualitative and quantitative insights; participated in workshopping of the final report | Completed | Final report developed jointly with partners |

## RESULTS & FINDINGS

### Findings from Private Primary Healthcare Facilities

Across Kajiado, Siaya, and Makueni counties, Private Primary Healthcare Facilities (PPHFs) consistently identified energy reliability as a critical operational challenge. Most facilities rely primarily on grid electricity (KPLC), supplemented by generators or solar systems, with frequent outages disrupting service delivery and increasing operational costs, particularly for facilities offering maternity, theatre, laboratory, and inpatient services.

High upfront costs emerged as the primary barrier to solar adoption across all counties. While interest in renewable energy solutions was strong, most facilities expressed preference for flexible financing arrangements such as pay-as-you-go (PAYGO), lease-to-own, or hire-purchase models rather than lump-sum

investments. Facilities emphasized the importance of system reliability, adequate capacity to meet service demands, and strong after-sales support.

County-level differences were evident. In Kajiado, facilities highlighted high energy demand and the operational risks associated with outages, especially in larger hospitals, making flexible repayment models particularly attractive. In Siaya, faith-based facilities faced bureaucratic approval processes and limited financing options, often relying on donor support or SACCOs, while individually owned facilities struggled with weak cash flows and collateral requirements. In Makueni, solar adoption was more common, with mixed performance outcomes; while some facilities reported systems that did not fully meet expectations, others, such as larger hospitals using hire-purchase arrangements, demonstrated successful and sustainable integration of solar energy.

Quantitative responses from PPHFs reinforced these findings, showing variability in patient volumes, service scope, and energy demand profiles. Facilities with higher service intensity reported greater sensitivity to power interruptions and a stronger interest in alternative energy solutions where financing constraints could be addressed.

### Findings from Local Financial Institutions

Local Financial Institutions generally acknowledged the importance of reliable energy for PPHFs. and recognized renewable energy e.g solar and Energy as a Service (EaaS) solutions as a potential investment opportunity. However, lending appetite remains constrained by perceived risks associated with the healthcare sector. A key concern relates to reputational and ethical considerations around loan recovery, as enforcing repayment through asset seizure or service disruption is viewed as socially and ethically problematic when facilities provide essential healthcare services.

Additional constraints include concerns about repayment reliability, governance structures, and the overall cost profile of energy investments. While PPHFs were often viewed as more bankable than public facilities, irregular cash flows linked to patient fees and delayed insurance reimbursements reduce credit confidence. High upfront costs, foreign exchange exposure, and weak financial governance in some facilities further limit conventional lending. As a result, LFIs emphasized the importance of risk-sharing mechanisms such as guarantees, blended finance, or partnerships with EaaS providers and development actors, to improve the viability of financing healthcare electrification.

## CHALLENGES & LESSONS LEARNED

### Challenges

Several implementation challenges were encountered during the study period. Regulatory approval processes, including Institutional Review Board (IRB) review and the NACOSTI research permit, took longer than anticipated and affected the timing of early activities. While approvals were ultimately secured, these delays required adjustments to the workplan. Accessing some PPHFs also proved challenging due to operational constraints, competing priorities, and limited availability of facility managers.

Quantitative data collection, conducted virtually, was affected by the absence of participant airtime reimbursement or other participation incentives, which reduced response rates among some targeted respondents. In addition, the nature of the survey questions, particularly those related to financial performance, revenue, and costs, required information that was not always readily available to respondents at the time of completion. This limited the ability of some PPHFs to fully complete the survey.

### Lessons Learned

The study highlighted the importance of designing data collection approaches that are well aligned with the operational realities of private healthcare facilities. Virtual surveys can support a wider reach, but response rates are influenced by practical considerations such as respondent time, access to airtime or data, and competing clinical responsibilities. Incorporating modest participation incentives and allowing flexible completion windows can improve engagement, particularly for facility managers with limited availability.

The findings also underscore the need to carefully calibrate financial data requirements when engaging PPHFs. While financial information is critical to assessing the viability of Energy as a Service (EaaS) models, some respondents did not have immediate access to detailed financial records during data collection. Future studies may benefit from simplified financial modules, advance notice of required information, or phased data collection approaches that allow respondents time to prepare. Overall, iterative engagement and clear communication of data needs strengthen participation and data quality.

## CONCLUSION & IMPLICATIONS

The study confirms that unreliable and costly energy supply continues to affect service delivery in Private Primary Healthcare Facilities (PPHFs), while interest in renewable energy solutions remains high where affordability and reliability can be assured. Flexible Energy as a Service (EaaS) financing models, such as pay-as-you-go and lease-to-own, emerged as the most viable options for supporting adoption.

Findings from Local Financial Institutions (LFIs) indicate that, despite recognizing the opportunity in healthcare electrification, lending is constrained by repayment, governance, and reputational risks. Risk mitigation mechanisms, e.g., partial risk guarantees, first loss guarantee came out as attractive to LFI

These insights highlight the need for risk-sharing mechanisms and blended finance approaches to unlock investment and support scalable healthcare energy solutions.

## FINANCIAL SUMMARY

Expenditures under this sub-award were incurred in line with the approved budget and agreed workplan adjustments. Any timeline extensions remained within the original contractual period, and costs are reported in accordance with sub-award financial reporting requirements. A detailed financial breakdown is provided separately as per Busara's reporting guidelines.

## STATEMENT OF COMPLETION

Help REACH Africa (HERA) confirms the completion of all activities assigned under the sub-contract in line with the approved scope of work and agreed timeline adjustments, and the submission of all required technical inputs and deliverables.