

SUpporting STRonger Access to INnovative Energy Solutions in Displacement Settings (SUSTAINED)

LEARNING BRIEF: EFFECTIVE STRATEGIES TO PROMOTE CLEAN ENERGY ADOPTION AND ENHANCE WOMEN'S AND GIRLS' ECONOMIC EMPOWERMENT IN BIDI-BIDI SETTLEMENT, YUMBE DISTRICT





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Summary of the Learning Brief

Uganda hosts nearly 1.8 million refugees, with more than 200,000 living in the Bidi-Bidi settlement in Yumbe District. Despite ongoing humanitarian and development efforts, energy poverty remains a critical barrier to sustainable livelihoods and gender equality. Over 95% of refugee households rely on unsafe, polluting fuels—disproportionately impacting women, who are primarily responsible for household energy needs. This contributes to time, poverty, health risks, and heightened vulnerability to gender-based violence.

While the role of renewable energy in enhancing resilience and wellbeing is increasingly acknowledged, systemic barriers—such as high upfront costs, inadequate infrastructure, weak policy enforcement, and limited private sector engagement—continue to restrict access to clean and affordable energy solutions. Many energy interventions remain short-term, donor-driven, and disconnected from national development frameworks.

Women and girls face unique constraints to financial inclusion, market access, and participation in sustainable livelihoods. Social norms limited decision-making power, and financial exclusion further exacerbate their vulnerability. There is a pressing need to understand how economic and energy access interventions influence household resilience, gender dynamics, and long-term empowerment.

Addressing economic empowerment, household resilience, and clean energy adoption in Bidi-Bidi requires bridging key knowledge gaps. While clean energy is a proven enabler of women's productivity and well-being, structural and gender-based barriers continue to limit access in both refugee and host communities. This report presents evidence-based insights and strategic recommendations to inform more gender-responsive, sustainable energy interventions in displacement settings. It highlights promising approaches—including innovative financial models such as pay-as-you-go (PAYGO) systems, targeted subsidies, and community sensitization—demonstrating how integrated, gender-responsive programming can drive more inclusive and sustainable outcomes.

Methodology

This learning brief employs a mixed-methods, participatory approach to examine energy access, gender dynamics, and economic empowerment in refugee and host communities. Data was collected through a desk review of existing literature, seven key informant interviews (with government and NGO stakeholders), and seven focus group discussions with refugee and host populations. The approach prioritized the voices of women and youth and was guided by three core learning questions focusing on;

- Which energy access interventions and stakeholder collaborations best support women's empowerment;
- How clean energy impacts well-being and household resilience;
- What barriers hinder the adoption and use of clean energy; and
- How current policies influence energy access in refugee and host communities.

Key Findings

Access to clean energy is essential for women's economic participation but remains limited due to intersecting social, financial, and structural barriers:

- **Financial Barriers:** Women have limited access to credit and appropriate financing models, restricting their ability to invest in clean energy technologies.
- **Gender Norms:** Male-dominated household decision-making continues to limit women's influence over energy choices—even when they contribute income.
- **Systemic Challenges:** High costs, weak enforcement of policies, poor product quality, and cultural beliefs reduce demand for clean energy.
- **Policy and Market Gaps:** Energy initiatives are often fragmented, underfunded, and poorly integrated into national systems, limiting long-term sustainability and private sector engagement.

Recommendations

To strengthen energy access in refugee and host communities, the report recommends:

- **Expanding flexible financial models**, such as PAYGO, group lending, and targeted subsidies, with a focus on women's access.
- **Linking energy access to livelihoods**—particularly in agriculture and food processing—to boost women's productivity and income.
- **Promoting gender-inclusive decision-making** at the household level through joint planning and community engagement.
- **Supporting public-private partnerships and blended finance mechanisms** to scale clean energy enterprises in refugee settings.
- **Integrating refugees into national energy planning**, ensuring inclusion in electrification and clean cooking strategies.
- **Enforcing product quality standards and consumer protection policies** to increase user trust and ensure reliable energy solutions.

Background

Uganda is home to nearly 1.8 million refugees (UNHCR, 2024), most of whom have been displaced by protracted conflicts in neighboring South Sudan and the Democratic Republic of Congo. According to UNHCR, as of March 4, 2025, Yumbe District hosted 206,320 refugees in the Bidi-Bidi Refugee Settlement, alongside 972,351 host community members (490,674 males and 481,677 females, as of June 2024). Among the refugee population, 82% (168,229) are women and children, 3% (5,791) are elderly, 52% (108,112) are female, and 28% (58,348) are youth aged 15–24. The total number of refugee households is 36,768.

Energy poverty & its impact on refugee households

Refugee-hosting districts (RHDs) experience severe energy poverty, with 80% of households lacking electricity access and 95% of refugee households relying on unsafe, polluted, and inefficient energy sources for daily needs (Stjernquist Desatnik, 2019). This limited access to modern energy perpetuates economic stagnation, restricting educational and income-generating opportunities.

Women are disproportionately affected by energy poverty, as they are primarily responsible for cooking, household energy management, and caregiving. Without access to modern cooking technologies, they spend hours collecting firewood or relying on open fires, exposing them to respiratory diseases, burns, and other health risks (UNHCR & FAO, 2017). Additionally, the long treks to collect firewood increase their vulnerability to gender-based violence (GBV), including physical and sexual assault.

Women-headed households, which make up nearly 50% of refugee families, often struggle with lower productivity due to limited access to economic opportunities, inadequate support systems, and the additional burden of caregiving. Despite Uganda's existing gender equality and GBV policies, the country ranks 138th on the Gender Inequality Index, placing it in the bottom third globally. In both refugee and host communities, men remain the primary decision-makers at household, community, and national levels, affecting women's access to clean energy solutions and financial resources.

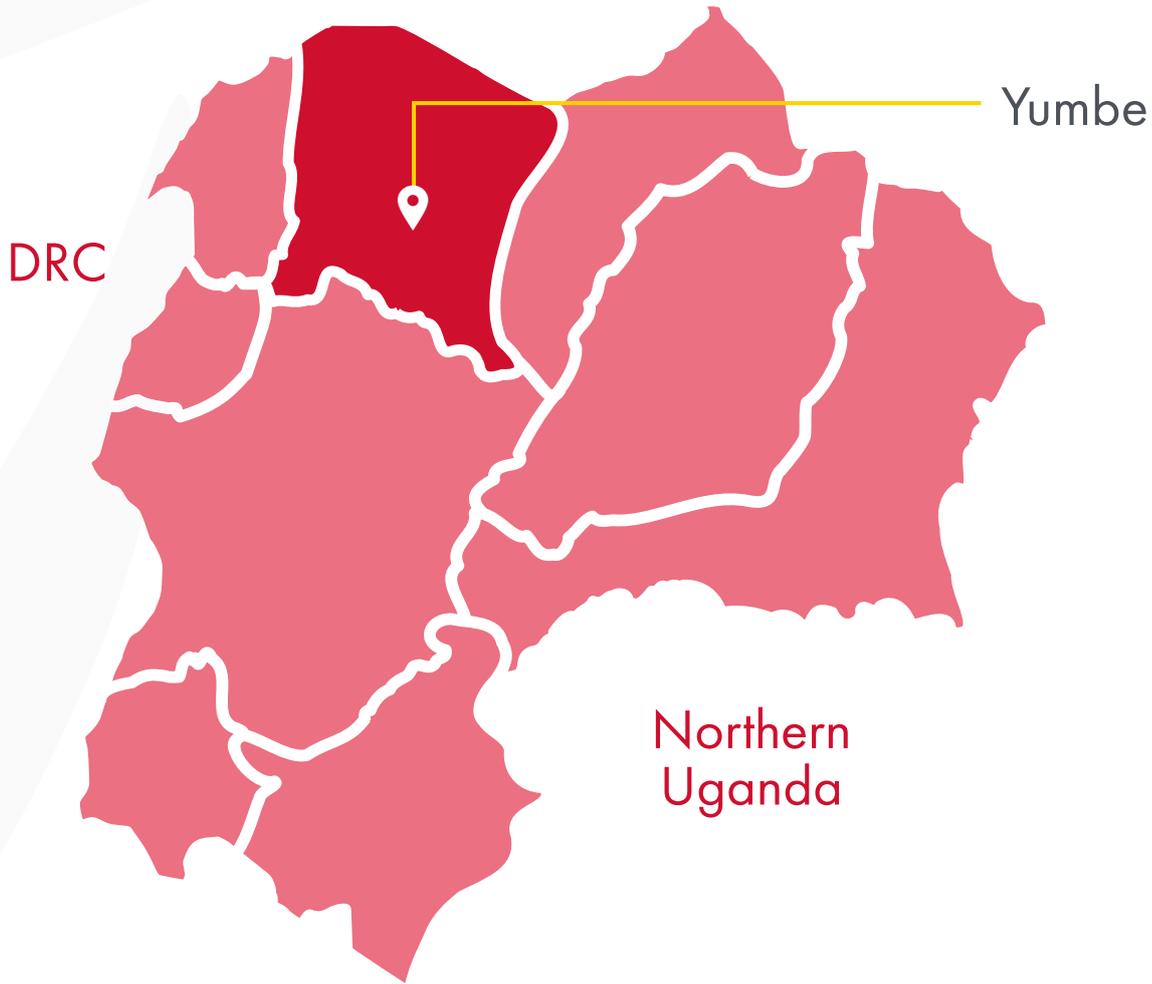
The SUSTAINED programme: A gender-responsive approach to clean energy

The SUSTAINED programme, funded by the Embassy of the Kingdom of the Netherlands, and implemented by Mercy Corps, CARE, and Oxfam aims to increase access to affordable, reliable, and clean energy for refugees and host communities. Adopting a gender-integrated Market Systems Development (MSD) approach, the program seeks to:

- Promote private sector engagement in displacement settings to ensure sustainable energy access.
- Enhance women's and youth economic empowerment by linking them to clean energy solutions and financial services.
- Address demand and supply barriers in the clean energy market.
- Strengthen household resilience by reducing dependence on inefficient cooking methods, improving air quality, and enabling time-saving solutions for women.

To achieve this, SUSTAINED collaborates with other partners in the energy ecosystem such as the Energy Service Companies (ESCOs) (PESITHO, Tulima Solar, and D.Light) Financial Service Providers (FSPs) like Vision Fund, and Refugee-Led Organizations (ICAN South Sudan and CECI). The project is also implemented in close collaboration with the Solar Electric Cooking partnership (SOLCO) which is spearheading a multistakeholder effort to create and shape the market for e-cooking in displacement settings. SOLCO aim is to replace biomass-based cooking methods with solar electric systems for a minimum of 150,000 displaced households in Uganda. By creating an inclusive, supportive environment, the SUSTAINED program aims at increasing clean energy adoption, reducing energy poverty, and promoting gender equality in refugee and host communities.

SOUTH SUDAN



SUSTAINED aims to reach;

5,000
INDIVIDUALS

70%
REFUGEES

30%
HOST COMMUNITY

Introduction

Access to energy is a fundamental enabler of economic participation and empowerment for women and girls. In refugee and host communities like Bidi-Bidi, reliable, affordable, and clean energy can drive significant improvements in individual well-being, household resilience, and economic opportunities. However, gender dynamics play a crucial role in energy access for refugees, with women and girls facing disproportionate challenges due to pre-existing inequalities and limited decision-making power. These challenges further hinder their ability to fully benefit from clean energy solutions. This learning brief explores these gaps and offers structured insights on addressing them. It explores how targeted interventions and policies can enhance women and girls' economic empowerment, strengthen household resilience, and address barriers to clean energy adoption in Bidi-Bidi refugee and host communities. This Learning brief aims to inform programmatic approaches that foster inclusive economic opportunities, improve energy access, and promote sustainable livelihoods for displaced and host populations.

The learning brief addressed these specific learning questions:

1. What sets of energy access interventions, and with which stakeholders, enable women and girls' meaningful economic participation and empowerment? How does improved energy access contribute to women and girls' economic empowerment, individual well-being, and household resilience?
2. What barriers hinder the adoption and utilization of clean energy solutions within these communities?
3. What impact are the existing energy policies being implemented in Bidi-Bidi having on energy access for refugees and host communities?



Gaps in Energy Access and Women and Girls' Economic Participation

Energy access plays a critical role in enhancing women's economic participation; yet it remains a significant barrier in refugee and host communities. Women play a significant role in energy systems through their subsistence and productive tasks, yet they also bear the greatest burden of energy poverty. Despite legal frameworks supporting gender equality, women face increased vulnerability due to limited awareness of their rights, unequal access to productivity-enhancing resources such as credit facilities, information, and training, and underrepresentation in decision-making processes within the energy sector. A study conducted by CARE International shows that only 43% of women have received loans from financial institutions, highlighting the challenges women face in accessing financial credit. This limited access restricts their ability to invest in clean energy solutions like solar water pumps and solar cookstoves. Despite their interest in these technologies, financial constraints prevent women from making these necessary investments.

“As a woman in this community, I struggle with affordability because I do not have financial autonomy or access to credit because whenever we go the bank to ask for a loan, they want us to present collateral, yet I don’t have control over the assets at home since my husband is the household head. This makes it hard for me to invest in clean energy solutions like clean cooking stoves.”

FGD: BIDIBIDI COMMUNITY MEMBER

Traditional financial institutions often require collateral, which many women in Bidi Bidi do not have and the existing financing models fail to accommodate this specific need. As a result, without affordable energy access, women are unable to fully engage in productive economic activities, limiting their potential for financial independence and business growth. Moreover, limited awareness of clean energy solutions further hinders adoption.

Many women lack awareness of the benefits, functionality, and cost-effectiveness of alternative energy technologies.

“Most of our community members are not aware of some of these technologies, I suggest you set up demo sites for them to come and learn from and also embark on awareness creation for these communities.”

KII: DISTRICT NATURAL RESOURCE OFFICER (DNRO) YUMBE DISTRICT LOCAL GOVERNMENT

Gender disparities in household decision-making continue to hinder women’s ability to benefit from clean energy solutions. In many refugee households in BidiBidi, male household members dominate financial and energy-related decisions, leaving women with limited agency over household energy investments. Even when women generate income, they often have little influence over reinvesting earnings into energy solutions that could improve their economic opportunities.

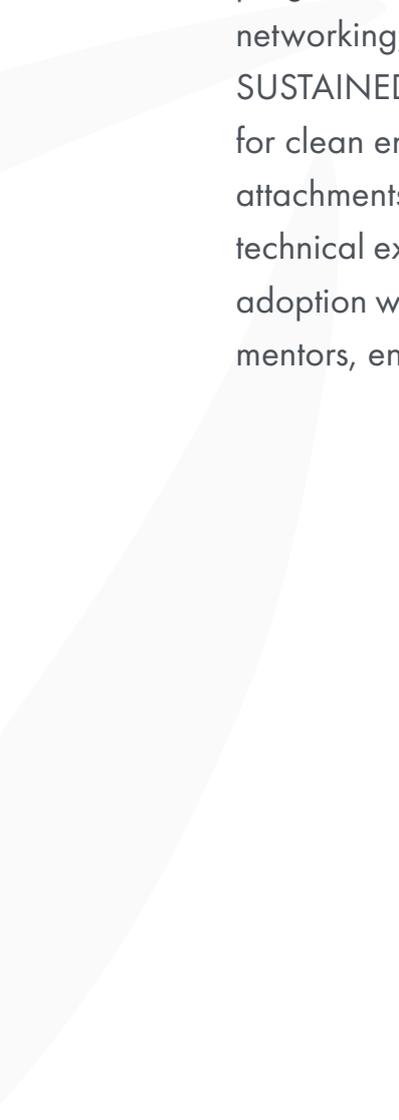
Additionally, energy access programs often operate in isolation from broader economic empowerment initiatives, missing opportunities to integrate clean energy into vocational training, business support, and cooperative-led distribution networks. To address this, SUSTAINED is adopting a holistic approach that breaks gender

barriers and promotes women’s economic empowerment. This includes linking women to financial opportunities, such as access to credit from financial institutions like Vision Fund, and engaging men in gender equality discussions. By promoting awareness and positive masculinity through community dialogues and inclusive decision-making, we can challenge stereotypes and shift norms.



Key learnings and strategies to address gender gaps that limit women participation in economic empowerment:

- 1. There is a need to **shift restrictive gender and social norms as well as encouraging joint household decision-making on energy investments:**** Addressing gender disparities in clean energy adoption requires targeted behavioral and social norm interventions. The SUSTAINED project recognizes the critical role of male household members in decision-making processes and seeks to influence their perceptions to increase household adoption of clean cooking solutions. To achieve this, the project is establishing gender-balanced community champions who advocate for clean energy adoption. Additionally, male role models within Bidi Bidi are being trained and actively involved in sensitization sessions, technology demonstrations, and hands-on training. By equipping men with knowledge about the economic, health, and environmental benefits of clean cooking solutions, the project seeks to foster a more supportive environment for widespread adoption at the household level.
- 2. **Support women in clean energy enterprises:**** There is need to strengthen women's participation in clean energy enterprises by addressing key barriers such as limited access to financing, skills, and market opportunities. One approach is conducting targeted energy needs assessments to match women's specific requirements with appropriate technologies and financial solutions. Insights from CARE International's Gender, Youth, and Social Inclusion (GYSI) assessment will guide the project's implementation, ensuring that interventions are responsive to the realities faced by women entrepreneurs. Additionally, creating tailored financing mechanisms, such as concessional loans and grants, can lower entry barriers and enable women to invest in clean energy businesses. Capacity-building programs in business management, technical skills, and financial literacy will further equip women with the knowledge and confidence to scale their enterprises successfully.
- 3. **Establish women's mentorship and networks and promote women's leadership in energy markets:**** To foster long-term participation and leadership of women in the clean energy sector, there is need for establishing mentorship networks and promoting women's leadership in energy markets. Peer mentorship



programs will provide women entrepreneurs with platforms for knowledge-sharing, networking, and support, strengthening their capacity to thrive in the sector. The SUSTAINED project will recruit and train women as sales agents and technicians for clean energy technologies, offering them hands-on experience through direct attachments with energy service companies. These women will not only gain technical expertise but will also play a crucial role in advocating for clean energy adoption within their communities. Over time, they will become social leaders and mentors, ensuring the sustainability of these efforts beyond the project's lifespan.

Structural and Systemic Barriers

Refugee communities face significant structural and systemic barriers that hinder clean energy adoption and long-term sustainability. **High upfront costs, weak supply chains, and deeply rooted cultural perceptions**—such as the belief that firewood is “free”—discourage households from transitioning to cleaner alternatives. While Uganda has a progressive policy framework, including the National Energy Policy (2023), the Renewable Energy Policy (2007), and the Sustainable Energy Response Plan for Refugees and Host Communities (SERP), weak policy enforcement and regulatory gaps create an unstable environment for scaling energy access. Without stronger enforcement mechanisms, these policies remain largely ineffective in driving meaningful change.

Existing policies require adaptation to enhance affordability, particularly for low-income households, including refugees, who struggle with high upfront costs of appliances. Energy Service Companies (ESCOs) operating under the SUSTAINED project have highlighted that **high import taxes** remain a major bottleneck, inflating the costs of essential clean energy technologies such as solar cooking systems and improved cookstoves. Furthermore, fragmented policy implementation and lack of coordination among government agencies and development partners weaken large-scale adoption efforts.

The refugee market also faces challenges with **substandard energy products**, which distort consumer perceptions and undermine trust in clean energy solutions. Weak enforcement of product standards allows low-quality alternatives to flood the market, limiting the competitiveness of durable solutions. Additionally, market-distorting interventions—such as free distributions by humanitarian actors—often discourage private-sector engagement, preventing the establishment of sustainable commercial energy supply chains.

A critical gap exists in **law enforcement capacity**. For instance, while regulations banning charcoal production exist, enforcement officers often lack the necessary resources to implement these bans effectively. As one district official noted:

“We really don’t have enough money in our sector to facilitate the law enforcement officers to effect the ban on charcoal burning and often times these law enforcement officers require support from police”

KII: DISTRICT NATURAL RESOURCE OFFICER (DNRO) YUMBE DISTRICT LOCAL GOVERNMENT

Private-sector engagement in clean energy remains limited due to logistical constraints, high operational costs, and a lack of incentives for energy service providers to operate in refugee and host communities. Many energy interventions are donor-driven and short-term, with minimal integration into national programs. The lack of long-term infrastructure investment, policy incentives, and targeted community awareness programs further fragments the market, making clean energy access unsustainable. Private-sector actors operating in remote areas face significant challenges in logistics, as illustrated by one energy provider:

“As a private sector, we face logistical constraints and lack the necessary incentives to operate in refugee and host communities. For example, transporting solar panels and equipment to remote areas is often costly and time-consuming due to poor road infrastructure.”

KII: PSA - TULIMA

Key learnings to address the structural and systemic barriers

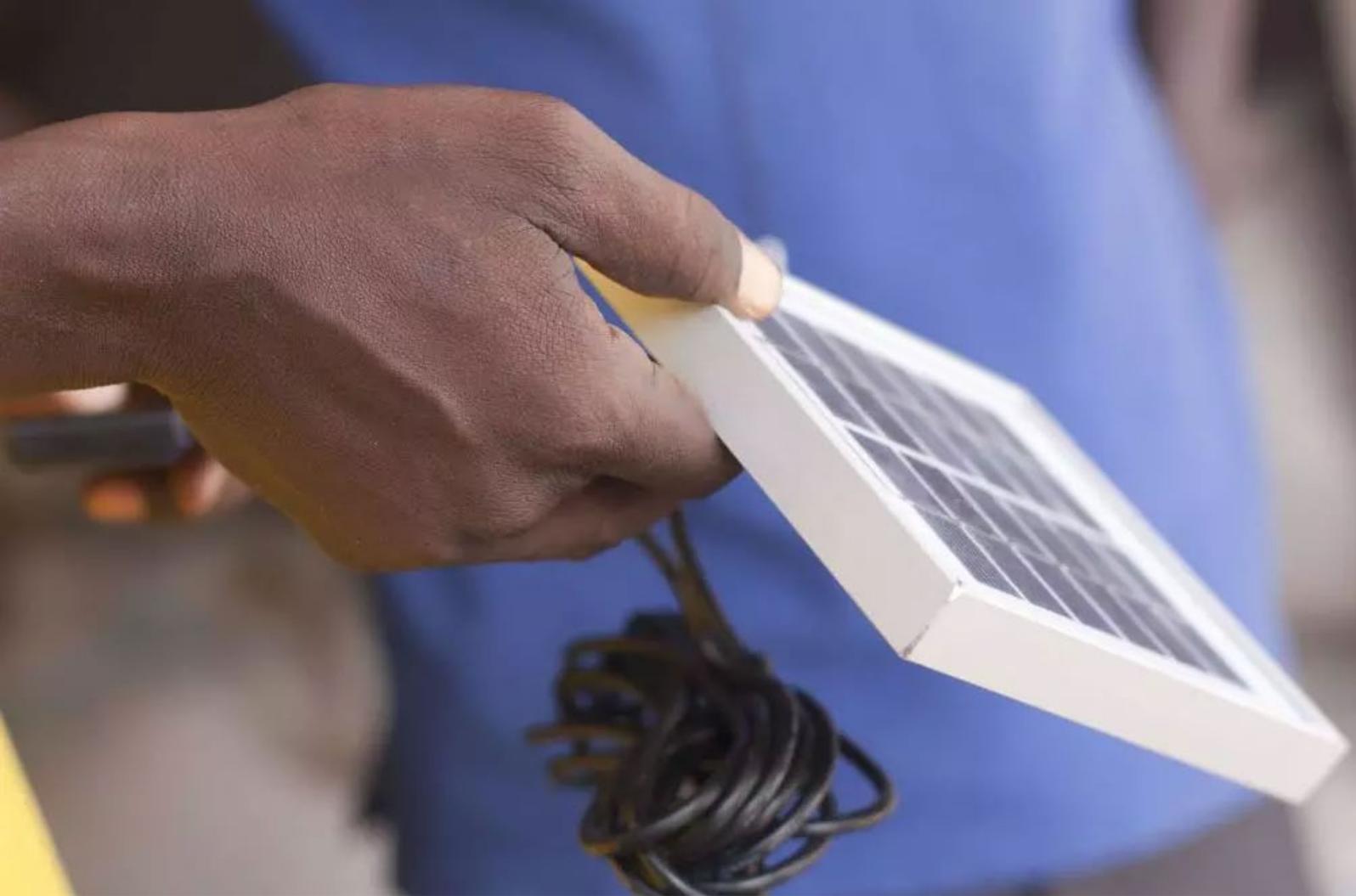
- 1. Addressing affordability barriers through innovative financial models:** To overcome affordability constraints, innovative financing models have proven effective in increasing access to clean energy. Companies such as Tulima Solar and Pesitho, along with financial institutions like Vision Fund, have introduced flexible repayment structures, including pay-as-you-go (PAYGO), group-based lending, and asset financing. Under the DANIDA-funded PUMP-UP project, these models have enabled 191 households (including 54 female-headed households) to acquire solar water pumps for productive use in just one year. Subsidy-based market interventions have also played a crucial role in enhancing affordability. Organizations such as Caritas have implemented market system approaches that integrate subsidies to make clean cooking solutions more accessible. One beneficiary of this initiative shared their experience:

“It was difficult for me to pay for the ECOCA cookstoves since the cookstove costs around two million Uganda shillings which was really very expensive for me, but with subsidy offered by Caritas on these stoves, I was able to buy a set for my family”

KII: ECOCA USER

- 2. Integrating energy access into livelihood programs:** Embedding clean energy solutions—such as solar irrigation pumps, improved cookstoves, and solar home systems—into vocational training and income-generating activities can enhance economic opportunities, particularly for women in agribusiness and food processing. This integration allows women entrepreneurs to benefit from lower production costs, improved product quality, and extended working hours, ultimately leading to greater financial independence.
- 3. Advocating for policies that ensure quality assurance and affordability of the energy products:** The refugee market is flooded with sub-standard products that are significantly cheaper than durable clean energy solutions and are distorting consumers’ perception of energy solutions. Stricter product quality enforcement mechanisms are needed to protect consumers and enhance confidence in reliable energy solutions. Policymakers should also consider reducing or waiving import taxes on essential clean energy appliances, such as solar cooking systems imported as parts and improved cookstoves, to lower costs and improve affordability. Addressing these structural barriers through a combination of policy reforms, private-sector incentives, and targeted financing solutions will accelerate clean energy adoption in refugee and host communities.

SUSTAINED in collaboration with SOLCO partners are currently assessing existing tax policies, and based on the analysis, advocate on relevant policy changes through engagement of national-level policy dialogues and the dissemination of policy briefs.



Strategic Recommendations for Energy Access Interventions

- 1. Expand flexible financial models:** Adopt innovative financing approaches like PAYGO, seasonal repayment models, group-based lending, and asset financing to improve access to clean energy solutions, particularly for women. Governments, financial institutions, and NGOs should collaborate to design targeted subsidies, especially for women-headed households. Engaging private-sector companies (e.g., Vision Fund, Pesitho) in developing affordable repayment plans can accelerate clean energy adoption in refugee and host communities. Additionally, community outreach via radio and digital platforms can raise awareness of available financial options.
- 2. Strengthening livelihood and energy programs linkages:** can significantly boost women's economic opportunities, especially in agribusiness and food processing.

Energy solutions like solar irrigation pumps for agriculture and solar-powered cookstoves for food processing can reduce production costs, improve product quality, and extend working hours, increasing women's productivity and financial independence. Collaboration with organizations like Solar Sister can provide women with energy products while training them to sell solar solutions, enhancing both skills development and economic independence. Integrating clean energy into vocational training and income-generation activities such as food processing or agriculture will build a sustainable, clean energy-driven economy in refugee settlements and host communities. Strategic partnerships with local NGOs and private-sector players are key to creating functional markets that serve both the energy and economic needs of women.

- 3. Promote gender-inclusive financial decision-making** particularly in households where men control finances. Engaging male champions and local leaders can play a pivotal role in shifting social norms that restrict women's participation in energy investments. Programs should facilitate gender-inclusive workshops and provide tools for couples to jointly allocate household incomes, specifically for purchasing clean energy technologies. Encouraging joint decision-making at the household level will empower both men and women to prioritize energy solutions that benefit the family, such as solar irrigation pumps for productive use of energy or improved cookstoves for health and economic gains.
- 4. Leverage public-private partnerships (PPPs)** to develop blended finance mechanisms to support ESCOs in refugee markets. A blended financing mechanism that provides concessional loans, result based financing and subsidy should be implemented to support supply-side and demand side financing to increase adoption of clean energy products in the refugee setting. Governments should provide tax incentives and subsidies to private energy companies, making clean energy solutions more affordable and available to refugee hand vulnerable households in the refugee settings.
- 5. Integrate refugee populations in national energy planning** to ensure they benefit from the same subsidies and energy infrastructure investments as host communities. Advocacy efforts should focus on integrating refugees into national electrification plans to ensure their long-term access to clean energy, even after donor funding is

phased out. Uganda's energy transition plans should explicitly mention how refugee settlements like Bidi-Bidi can benefit from electrification and other clean energy solutions. This integration will not only ensure sustainable energy access but also foster resilience and economic empowerment among refugee and host populations. In addition, it is crucial to advocate for policy shifts that include energy access in the refugee response framework, ensuring long-term sustainability of energy services.

The report published by United Nations Environment Programme – Copenhagen Climate Centre (UNEP-CCC) on market creation strategies for solar e-cooking technologies in off-grid and displaced communities emphasizes the need to align clean cooking strategies with the NDCs directly to incentivise the promotion of modern energy cooking solutions, including e-cooking.

- 6. Enforce product standards and consumer protection** to ensure that all products meet quality benchmarks. Establishing vendor accountability measures, such as regular audits and consumer protection policies, will ensure that only verified and reliable products are sold in refugee and host communities. The influx of various clean energy products has led to concerns about reliability, with some households hesitant to invest due to experiences with substandard or counterfeit items. Community awareness campaigns should educate households on how to identify genuine products and trusted vendors, fostering consumer confidence in clean energy solutions. Financial products such as microloans for verified clean energy solutions will encourage more women to adopt reliable technologies, knowing that the products are safe and effective. Additionally, governments should work with international regulatory bodies to enforce product standards for energy products used in refugee and host communities.

Conclusion

This learning brief has highlighted the critical role that energy access plays in empowering women and girls in refugee and host communities, particularly in Bidi-Bidi. While significant strides have been made through innovative financial models, such as PAYGO, group-based lending, and subsidies, there are still notable barriers hindering the widespread adoption of clean energy solutions. These barriers include affordability issues, limited access to financial credit, gender norms influencing household decision-making, and inadequate policy enforcement.

However, the brief also highlights positive trends in the integration of clean energy into livelihood programs, which has demonstrated tangible benefits for women's economic participation. Programs that combine energy access with income-generating activities, such as solar irrigation pumps and improved cookstoves, are enhancing financial independence and empowering women to fully engage in the local economy.

Strategic recommendations outlined in this brief stress the need for tailored financial mechanisms, gender-inclusive decision-making processes, and strengthened partnerships with the private sector to bridge the affordability gap and accelerate the adoption of clean energy solutions. Moreover, ensuring that refugees are included in national energy policies will provide long-term benefits and guarantee access to sustainable energy solutions beyond short-term donor funding.

Ultimately, continued collaboration among stakeholders—governments, the private sector, and local communities—is essential for creating an energy ecosystem that supports women and girls' meaningful economic participation, enhances household resilience, and drives sustainable development in refugee settings. Addressing the gaps in energy access while actively promoting policy improvements will significantly contribute to building a more inclusive, equitable, and resilient future for these vulnerable populations.



About Mercy Corps

Mercy Corps is a leading global organization powered by the belief that a better world is possible. In disaster, in hardship, in more than 40 countries around the world, we partner to put bold solutions into action — helping people triumph over adversity and build stronger communities from within. Now, and for the future.

About CARE

CARE International is a global humanitarian organization that is dedicated to fighting poverty and social injustice. In Uganda, Since 1969, CARE has been addressing the urgent needs of conflict and disaster-affected populations and providing support to community development in Uganda.

About Oxfam

Oxfam: Is a global movement of people who are fighting injustice for a more equal world. We are working across regions in 79 countries, with thousands of partners and allies, supporting communities to build better lives for themselves, grow resilience and protect lives and livelihoods also in times of crisis.

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