



Empowering Organizations,
Enriching Lives



CLOUDGREEN

2025

BRIEF

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Acronyms

NGOs Non-Governmental Organizations

TVET Technical and Vocational Education and Training

UNHCR United Nations High Commissioner for Refugees

EXECUTIVE SUMMARY



THE CONTEXT:

Refugee women entrepreneurs in Uganda face multiple barriers that limit the growth of their businesses and livelihoods. Reliance on traditional energy sources, limited access to markets, high transportation costs, and inadequate financial services constrain productivity and value addition. These challenges are further compounded by energy poverty, limited digital inclusion, and social and financial barriers, reducing opportunities for sustainable economic participation and resilience.

WHY IT MATTERS:

To address these challenges, thinkIT implemented the CloudGreen project, an integrated clean energy and market access initiative that combined solar-powered food dryers, electric mobility solutions, digital marketplaces, entrepreneurship training, and access to finance. The project equipped refugee and host community women with the skills, technologies, and financial mechanisms needed to improve product quality, expand market access, adopt clean energy solutions, and strengthen their enterprises through a collaborative hub model.

WHAT WE DID:

CloudGreen demonstrated that combining clean energy innovation with digital tools and financial inclusion can significantly improve livelihoods while promoting environmental sustainability. The initiative enabled women to increase incomes, adopt cleaner production practices, access wider markets, and build stronger businesses. Beyond economic benefits, the project fostered women's empowerment, strengthened social cohesion between refugee and host communities, and provided a scalable model for advancing inclusive, climate-smart entrepreneurship in humanitarian settings.



INTRODUCTION



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**PILOT SITES:
KIRYANDONGO
SETTLEMENT &
KAMPALA**

5

**INTEGRATED HUB
COMPONENTS:
TECH TO
FINANCE**

Dozens

**OF WOMEN-LED
BUSINESSES
ONBOARDED TO
THE PLATFORM**

In Uganda's refugee settlements, women running small businesses face a tangle of intertwined challenges: costly and harmful energy sources, rudimentary drying methods that lose produce to pests and weather, long distances to market, and little connection to buyers beyond the local settlement. thinkIT's CloudGreen project set out to answer a simple

question, how might settlement-level businesses, institutions, and humanitarian stakeholders be supported in a transition to clean energy that serves community needs and preserves the environment? The result was an integrated energy and market "hub" model piloted with refugee women entrepreneurs in Kiryandongo and Kampala.

PROBLEM STATEMENT

Women in Uganda's refugee settlements often rely on inefficient energy sources like firewood or charcoal for processing goods costly, and harmful to both health and environment. Many, engaged in farming and selling dried produce, struggle with rudimentary drying techniques such as sun-drying on bare ground, which leads to losses from pests and weather.

Transportation compounds the problem: settlements sit far from urban centers, and affordable transport is scarce, while limited linkage to formal markets or digital platforms confines women to local markets with low prices. Underlying all of this is energy poverty, without reliable clean energy, value addition stays minimal and productivity stays low. Addressing it required more than technology alone; it meant breaking cultural and financial barriers, including aid dependency and gender norms that limit women's access to resources, while preserving social cohesion with host communities who face similar challenges.

Energy Poverty & Product Loss

Reliance on firewood and bare-ground sun-drying drives up costs and causes real losses to pests, weather, and poor product quality.

Market & Financial Exclusion

Long distances, weak digital market links, and limited access to credit keep women locked into low-price local markets only.

The challenge, in short, was to empower refugee women entrepreneurs by introducing clean energy solutions, improving their products, and connecting them to markets while creating a sustainable model that fosters social cohesion with host communities rather than competition.



OUR APPROACH

CloudGreen took a holistic, innovation-driven approach, combining technology, capacity building, and financial inclusion into one integrated "hub" model recognizing that no single intervention would be enough on its own.



Figure 1. The CloudGreen hub model: six reinforcing components spanning clean energy, digital markets, and community engagement.

Clean Energy Technology

The project partnered with local innovators to provide solar-powered food dryers and electric cargo bikes to women's cooperatives. Sparky Dryer, a Ugandan social enterprise, supplied robust solar dryers that dry fruits and vegetables more quickly and hygienically than traditional methods, while a fleet of e-bikes helped women transport produce without relying on expensive fuel.

Digital Market Platform

A locally relevant digital marketplace a simple mobile app paired with WhatsApp integration connected refugee women's products to buyers. Because smartphone use is limited, the hybrid approach let some customers use the dedicated app while others placed orders over familiar WhatsApp channels.

Capacity Building and Finance

Training and workshops built skills in operating and maintaining solar dryers, producing organic briquettes as a backup fuel, financial management, quality control, and safe e-bike use. A micro-credit scheme with FynixWave let women's groups save collectively and access loans or lease arrangements, lowering the barrier to acquiring dryers or e-bikes.

Host Community Engagement

The project engaged women from nearby host communities through mixed training sessions and joint market events, breaking down mistrust and building solidarity around a shared goal.



Figure 2. Three reinforcing interventions solar drying, green transport, and alternative fuel behind the CloudGreen hub.

The project stayed adaptive throughout. When it emerged that many refugees lacked the ID cards required to legally ride e-bikes on public roads, CloudGreen shifted strategy to involve host-community youth as designated drivers for a small fee, solving the ID issue while creating new income opportunities. Similarly, when some refugees expected free services from what they assumed was an NGO handout, the team doubled down on community dialogue about shifting from an aid mindset to an enterprise mindset.

IMPACT AND RESULTS

Women in both Kiryandongo and the Kampala pilot groups found that solar dryers significantly improved product quality and boosted revenues dried fruits and vegetables were cleaner, lasted longer, and fetched higher prices than sun-dried counterparts. Several women's groups reported increased earnings in their very first season of use.

A particularly exciting outcome was the shift in energy habits: participants learned to produce organic briquettes from farm waste as backup fuel for the dryers, then discovered these briquettes could replace charcoal for household cooking too saving money and reducing reliance on woodfuel, a win for both budgets and the environment.

"Using the solar dryer, I not only make more money, I also learned we can make our own cooking fuel from waste! I feel like a businesswoman and an innovator now." CloudGreen Participant, Kiryandongo Settlement

E-mobility saw a more mixed but ultimately positive impact. Enthusiasm was high, but adoption was initially slowed by cost and ID requirements the project's adaptive shift to host-community youth drivers turned this into a cooperative service model that reduced transport costs for women while creating income for local youth. On the market side, dozens of women-managed businesses have been onboarded to the CloudGreen platform or its WhatsApp channels, reaching buyers in towns who now regularly order dried produce moving women from subsistence to market-oriented production, and building digital literacy along the way.

Perhaps most significant were the social impacts: stronger refugee-host ties built through shared training and infrastructure, and a visible increase in women's empowerment as participants took on leadership roles managing cooperative assets and negotiating with buyers. The shift from expecting free handouts to proactively investing in their own businesses as when one group pooled savings to purchase a dryer rather than wait for one to be given reflects a mindset change CloudGreen was designed to spur.



NEXT STEPS

Building on these successes, thinkIT and partners are charting next steps to expand and sustain CloudGreen responsibly – broadening clean energy adoption, deepening community buy-in, and strengthening the infrastructure and policy environment around the model.

Adopt a more inclusive clean energy strategy

1. Involve local young men who operate fuel tuk-tuks in transitioning to electric tuk-tuks for produce transport, upgrading rather than disrupting the existing transport economy and turning potential competitors into clean energy champions.

Invest in infrastructure and training

2. Establish decentralized solar charging stations in and around the settlements, addressing the charging-infrastructure bottleneck exposed during the pilot.

3. Engage vocational training colleges (TVETs) to run these stations as micro-enterprises and training centers, building local capacity to maintain solar panels, batteries, and e-vehicles.

Double down on briquettes

4. Continue workshops on briquette production for more women's groups as a quick win in reducing charcoal dependency, laying the groundwork for complementary renewables like biogas or solar cookstoves.

Scale the digital platform

5. Incorporate feedback into the next platform iteration, more local-language support and ultra-light usage for low-end phones and integrate mobile money payments to increase financial inclusion.

6. Forge links with urban organic food stores and export aggregators, positioning products as "sustainably produced" to unlock premium pricing and larger orders.

Formalize women's businesses

7. Work with policymakers and NGOs to simplify cooperative and business registration for refugee women, unlocking bank accounts, larger microfinance loans, product certifications, and eligibility for supply contracts.

Document and replicate the model

8. Share documentation and lessons learned through forums such as the Response Innovation Lab and UNHCR livelihood clusters, and explore scaling to other settlements such as Rhino Camp or Bidi Bidi, and to other countries facing similar refugee energy challenges.

CONCLUSION

CloudGreen shows that the right blend of clean technology, training, and market linkage can unlock the economic potential of refugee women-led enterprises — improving livelihoods while yielding real co-benefits for the environment and social cohesion. Women are earning more, learning new skills, and adopting greener practices, laying a foundation for long-term resilience and self-reliance. As the model scales toward electric tuk-tuks, decentralized charging infrastructure, and formal business registration, CloudGreen offers a template for how clean energy and digital innovation can transform livelihoods in refugee settings across the region.

Ready to bring clean energy innovation to your community? Contact thinkIT's Our Team at we@thinkit.africa to discuss how the CloudGreen hub model can be adapted to your organization's livelihoods and clean energy programs.



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