Photo Credit: Ben Butele/GIZ

INNOVATIVE, INCLUSIVE, AND MARKET-DRIVEN APPROACHES TO IMPROVED COOKING IN DISPLACEMENT SETTINGS

About SUN-ESDS

Energy Solutions for Displacement Settings (SUN-SUN-ESDS) is a component of the Global Programme with UNHCR (SUN), which is commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The Global Programme supports UNHCR in facilitating the operationalisation of the Global Compact on Refugees (GCR) in the Humanitarian-Development-Peace (HDP) Nexus. Its core mission is to address pressing energy challenges faced by populations affected by displacement. By focusing on the integration and deployment of reliable, clean, and sustainable energy solutions, SUN-ESDS aims to enhance the quality of life, well-being, and environmental conditions of affected communities. The project is instrumental in supporting the wider humanitarian, development and peace community in meeting the objectives of the Global Compact on Refugees (GCR).

Importance of Cooking Energy Solutions

Access to clean, modern cooking energy is a critical issue in both displacement settings and host communities. **Sustainable Development Goal (SDG) #7.1** seeks universal access to affordable, reliable, and modern energy services by 2030, aligning closely with the Global Compact on Refugees (GCR), which prioritizes improving refugees' living conditions and fostering their inclusion. Clean cooking solutions are essential for enhancing health outcomes and reducing environmental impacts related to firewood and charcoal usage. Where complete access to clean energy is not immediately feasible, enhancing biomass efficiency by moving away from traditional three-stone fires supports both SDG 7 and SDG 13 on climate action. Biomass-fired improved cookstoves (ICS), which burn fuels more efficiently, offer a practical, interim solution to pressing humanitarian energy challenges while bridging the gap toward cleaner energy access. Additional approaches, like sustainably sourced biomass (woodlots, waste to fuel) and clean fuel value chains, further support these goals.

UNHCR's Global Sustainable Energy Strategy (2019–2025) aims to enable refugees to meet their energy needs in a safe, affordable and sustainable manner, and to ensure that UNHCR's response is environmentally sustainable. This strategy promotes collaboration with development and private sector actors through market-based solutions to improve cooking energy options for refugees and host communities. Uganda's National Energy Policy (2023) targets universal clean cooking access by 2040, and together with the Sustainable Energy Response Plan for Refugees and Host Communities, aim to reduce biomass dependence. Ethiopia's 2021 National Clean Cooking Strategy also focuses on reducing emissions from biomass use through efficient cookstove adoption. SUN-ESDS's recent support to developing the Multi-Actor Cooking Energy Strategy for Refugees and Host Communities in Ethiopia integrates refugees into clean cooking initiatives, using people-centred approaches to boost quality of life, gender equality, climate resilience, and peaceful coexistence between refugees and host communities.

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by:
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

In cooperation with:
UNHCR The UN Refugee Agency

Description of the Intervention

The SUN-ESDS project employs an innovative approach to expand access to clean cooking energy in displacement settings by fostering commercially viable models for sustainable biomass fuel production and clean cookstove adoption, through activities concentrated in Ethiopia and Uganda. Through its activities, SUN-ESDS aims to build a self-sustaining market for essential cooking energy products and, where possible, support job creation. To achieve this, the project implemented capacity-building programmes, invested in necessary equipment, and introduced incentives for producers and distributors, creating pathways to scale improved, cleaner cooking solutions.

Working with technical experts, local communities, government entities, and private-sector organizations, SUN-ESDS collaborated on designing and producing both domestic and institutional cookstoves that are cost-effective and tailored to user needs. Locally driven production ensures that cookstoves meet the specific requirements of displaced populations, providing immediate relief and promoting long-term sustainability in affordable, cleaner cooking solutions.

Additionally, SUN-ESDS supported targeted interventions to introduce institutional cookstoves and wood fuel management processes in social institutions, particularly schools. These initiatives address the dual challenge of reducing biomass demand and associated environmental impacts while promoting efficiency in the use of biomass-based cooking fuels. This approach aimed to strengthen school feeding programmes, reduce operational costs, and free up budgets for other essential needs.

Furthermore, SUN-ESDS piloted new incentives to encourage cookstove producers and distributors to retail suitable products in refugee settlements and host communities through an innovative, supply-sided results-based financing (RBF) mechanism. This approach strengthens the cooking energy value chain and supports the establishment of markets, services, and infrastructure in these settings.

These initiatives highlight the SUN-ESDS project's commitment to innovative people-centred and market-based solutions to enhance cooking energy solutions in displacement settings.

ICS Stove (RBF). Photo Credit: Sandra Haskamp

Locations:	Ethiopia, Gambella Region Uganda (multiple locations)
Target group:	Refugees and host communities, Private Sector, Development Partners and NGOs
Timeframe:	2019 – 2024

Methodology of the Intervention

The SUN-ESDS project implemented various cooking energy-related interventions:

Cooking Fuel Production in Ethiopia:

SUN-ESDS commissioned a regional study on the Potentials of Biomass Cooking Fuel Production in Displacement Settings which incorporated a multi-fuel screening process and led to focus being placed on charcoal briquettes and char briquette production as viable options to increase access to safe, reliable and sustainable biomass cooking fuel for refugees and host communities. This was followed by a comprehensive biomass resource assessment, integrated cost analysis and business case development in the Gambella region of Ethiopia which identified the Pugnido and Ngueny-yiel camp areas as rich in biomass resources such as grasses and agricultural residues.

The study informed the design and installation of a pilot charcoal briquette production centre in Gambela Town to scale-up local production of briquettes. The intervention focused on local job creation, by engaging youth groups (ca. 5-50 members) in the sourcing of raw materials for briquette production by a newly formed cooperative. A women led group was also identified to sell briquettes in local refugee and host community markets. These activities aimed at developing a local briquette production value chain.

User-Centred Design (UCD) of Improved Cookstoves (ICS) in Ethiopia:

The UCD activity followed a five-step creative learning journey. First, 25 end-users from the refugee and host communities in Gambela joined a three-day workshop to discuss cooking energy needs, share traditional practices, and conclude with a meal prepared alongside two UCD experts. Next, the group identified key cooking challenges and created a shared problem statement: to reduce or eliminate the need for refugees to collect fuelwood. Participants then brainstormed self-led actions (e.g., behaviour change) and external support needs, envisioning a clay “dream stove” that could reduce firewood use by 30-40%, saving a weekly collection trip.

In step four, stove designers, local producers, and technical experts collaborated to bring the “dream stove” concept to life by assessing its production feasibility and pricing. Equipped with materials, they developed 14 prototypes over two days, following two main design principles: a pure firewood stove and a dual-fuel stove for firewood and charcoal. Finally, experts and the original user group tested the prototypes, ranking them based on performance, resulting in three winning designs. This was followed by training sessions for local producers in Gambela town and refugee camps in 2023-24 to support cookstove production, which included 15-member women-led cooperative.

ESDS supported women-led ICS producers to incorporate UCD approach. Photo Credit: GIZ/ESDS Ethiopia

The initiative was also connected to UNHCR’s programme to distribute UCD cookstoves to selected households in collaboration with the Ethiopia Refugee and Returnees Services (RRS).

Wood storage in Ocea Reception Centre in Uganda. Photo Credit: Ben Butele, GIZ

Improved Institutional Cookstove Adoption in Uganda:

SUN-ESDS supported the installation of improved institutional cookstoves (IICS) powered by wood fuel in four schools and three UNHCR reception centres. These cookstoves were aimed at increasing wood fuel efficiency, an important factor as some schools were involved in feeding programmes at the time, and reception centres provide meals for newly arriving refugees. This intervention was based on previous GIZ pilot projects in Uganda and aligned with needs identified in global UNHCR consultations. The design of the intervention drew on GIZ's expertise in improved cooking technologies and UNHCR's tree-planting initiatives, which mitigate climate change impacts and enhance fuel availability. Beyond installing IICS, SUN-ESDS supported tree-growing and established woodlots in four schools and in one community to ensure sustainable fuel sources. Observing that improper wood storage led to wet wood, reducing combustion efficiency, SUN-ESDS also piloted wood storage facilities at two reception centres and one school, along with training on wood drying, stacking, and processing. This support was essential, as ICS require properly sized and dried wood for optimal performance.

5
woodlots established

27,200
wood fuel trees were planted

To realise IICS installations, SUN-ESDS launched a call to attract qualified companies in designing and constructing these large, fixed installations. Bidders had to prove that their IICS prototypes met high standards of safety, durability, and efficiency, including a minimum efficiency rating of 45%. Selected companies were also required to provide post-installation test results. SUN-ESDS engaged a supervisor to oversee construction, and payment was contingent upon quality assurance and user feedback. Each IICS unit cost approximately 1,000 EUR and the total commissioning cost of 20,000 EUR (ca. 21,000 USD) included 19 IICS and cooking kits with saucepans utensils, as well as user training and a manual. SUN-ESDS also facilitated the design and installation of new mobile IICS to offer flexible, cooking solutions in one institution.

At Rhino Camp High School, a woodlot was established with the assistance of the school's environment club. Students received training in managing seedlings and tree cultivation, and the school prepared 15 acres of land, with 8 acres dedicated to a wood fuel lot in the first phase. In a second phase more wood fuel trees were planted and some land was allocated to fruit trees, adding species for shade and wind protection. Tree-growing activities were also expanded to three additional schools and one community group. In total, 27,200 wood fuel trees (such as calliandra, teak, giant lira, and acacia) and 4,700 fruit trees (mango, soursop, jackfruit) were planted, further supporting environmental sustainability and food security within the school community.

RBF Scheme for Cookstove Sales in Uganda:

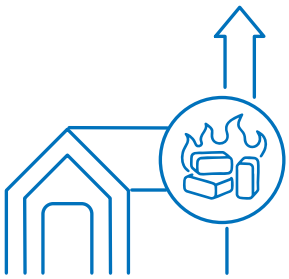
In October 2020, SUN-ESDS partnered with Energising Development (EnDev), an international flagship programme for providing energy access, to launch a call for organizations interested in participating in a new pilot RBF scheme. This initiative aimed to stimulate market entry and sales of Tier 2 ICS that met rigorous performance and quality criteria. Standards were aligned with benchmarks from Lighting Global, Verasol, and the Uganda National Bureau of Standards, focusing on key attributes such as thermal efficiency, safety, durability, and warranty coverage.

The initial RBF call resulted in the selection of three entities experienced in cooking energy solutions, particularly within displacement settings. They were incentivized to promote ICS sales in several refugee settlements and host communities – locations often considered high-risk or commercially unattractive. The scheme was designed as a hybrid supply-sided RBF model combining performance-based incentive payouts tied to ICS sales and up-front financing (ca. 40% of contract value) to reduce financial risk and cover initial operational expenses which were necessary to either scale-up their existing distribution systems or establish regional hubs, especially in Arua. To ensure market integrity, ICS were sold at full market price, and a third-party verification process was implemented post-sale to confirm compliance with sales targets and eligibility criteria.

During the first RBF window (2020-2022), suppliers were tasked with achieving up to 6,500 eligible ICS sales under ESDS, evenly distributed between refugee and host communities. However, post-sales verification revealed that 18% of reported sales were ineligible primarily due to gaps in proper documentation of the sales. In addition, sales to refugees were very few. For the second window (2022-2024), the target was set at max. 4,600 eligible units, maintaining the same 50-50 distribution between refugees and host communities. This reduction was due to budgetary constraint, related to the costs of the demand side subsidy and not a lack of interest in scaling. Based on lessons from the first window, SUN-ESDS revised the hybrid RBF model to increase incentives for eligible sales in refugee settlements, addressing the challenges of operating in these areas. This helped suppliers to improve their cashflow and enable stronger focus on reaching refugee customers. In the second window, two non-profit organizations participated, one of which had also been involved in the first window. This continuity highlighted an increased focus on social impact and leveraging prior experience to enhance the effectiveness of the hybrid-RBF scheme.

Achievements and Initial Impacts

SUN-ESDS's cooking and biomass interventions have effectively fostered the development and adoption of new skills, technologies, products, and facilities that meet the needs of both households, schools and reception centres. These efforts are closely aligned with UNHCR's Energy Strategy, which prioritises enabling sufficient, safe, sustainable, and clean cooking energy to refugees and host communities, and the GCR objectives. Early impacts indicate strong potential for scaling up market-based approaches in displacement settings, offering immediate cooking solutions while paving the way for a long-term shift toward cleaner and more sustainable cooking energy options.



Development of a Charcoal Briquette Production Centre in Ethiopia:
Following set-up and operationalisation of the pilot charcoal briquette production centre in the Pukumu area of Itang District, a local cooperative consisting of host community members successfully produced their first batch of charcoal briquettes. These were tested and found to be of decent quality, giving confidence to the potential to scale-up their production.

Successful and Innovative UCD Approach in Ethiopia:
Following participation in the UCD workshops, refugee and host community members received their preferred stoves for home use, primarily opting for the firewood model over the multi-fuel option. One year later, a second evaluation confirmed that all UCD cookstoves were still in use, achieving a remarkable 100% adoption rate. A recent household survey reveals that UCD ICS users typically save one fuel wood collection trip per week, confirming it reduces demand for wood fuel. Recent tests (May 2024) have shown that the UCD ICS perform at 21–25% thermal efficiency depending on the model, placing them on par with Tier 2 stoves (ISO 19867-1:2018), which typically reduces fuel consumption by at least 30% compared to a three-stone-fire. Additionally, a third-party verification certified that the stoves meet government standards. Recent exchange with key informants indicates strong governmental support for adopting UCD stoves as a national standard. Leaning on the unique "J"-shaped clay moulds used to produce them, these new UCD stoves have been nicknamed the "Big J".

Following further capacity-building activities aimed at UCD cookstove production, a local women's cooperative supported by SUN-ESDS, was formally contracted by UNHCR to produce and supply 868 UCD cookstoves. With SUN-ESDS covering the logistical costs, the new UCD stoves were successfully distributed to targeted refugee households selected by RSS and UNHCR. The stoves currently have a retail price of ca. 150-300 ETB (1.20-2.40 USD).

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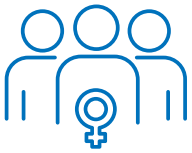

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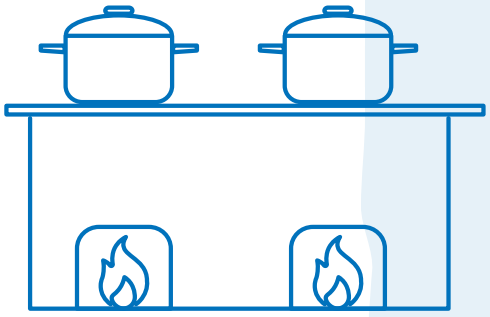
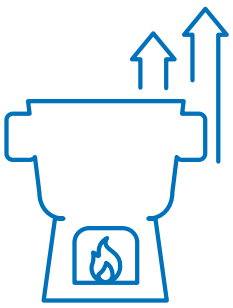


Adoption of ICS significantly reducing wood fuel consumption and cutting costs by an

estimated 30-60%

Adoption of ICS in Schools:
Selected schools and reception centres in Uganda have transitioned from traditional three-stone fires to ICS, significantly reducing wood fuel consumption and cutting costs by an estimated 30-60%. This shift not only generates savings that can be redirected to other essential needs but also enhances working conditions for kitchen staff by reducing their exposure to harmful emissions.

Impactful Hybrid-RBF Scheme for ICS Adoption:
In total, 23,107 cookstoves were verified as sold to refugee and host community households via the four RBF recipients engaged through the two RBF windows jointly funded by SUN-ESDS and EnDev, with 11,554 ICS sales attributed to ESDS. Cookstove sales performed significantly better under the adapted hybrid RBF model compared to the initial RBF approach. SUN-ESDS demonstrated best practices in agile and adaptive management by promptly transitioning to the customized hybrid-RBF model. This success can be attributed to both its provision of upfront payments to companies and higher incentives for eligible sales to refugee customers, enabling them to invest in essential distribution resources and infrastructure - an important prerequisite for reaching targeted customers. New markets require both infrastructure development and focused sales efforts. Since free distribution of cookstoves by HDP actors is common in displacement settings, and cookstove sales are often pursued by younger, less professional organisations, substantial initial support is essential to stimulate demand. The hybrid-RBF model effectively fosters both market growth and organic demand.



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Best Practices and Sustainability Aspects

The cooking energy interventions implemented by SUN-ESDS in Ethiopia and Uganda have yielded valuable best practices, highlighting the importance of collaborative, inclusive approaches to cooking energy solutions in displacement settings. Indeed, SUN-ESDS engaged with a broad HDP actor ecosystem, consisting of social institutions, international organisations, government agencies, private-sector businesses, NGOs and community groups. Through a mix of technical and financial-support activities, SUN-ESDS has effectively established avenues for improving technology options and the adoption of ICS benefiting both refugees and host communities. Significant progress was made in piloting RBF models for cookstove sales in partnership with four organisations, which strongly supports local job creation and employment potential. Through these initiatives, SUN-ESDS demonstrates a commitment to people-centred, market-based solutions.

Innovative UCD Process:

The UCD implemented by SUN-ESDS represents a pioneering approach that has successfully led to the development of user-approved, culturally appropriate, and affordable ICS designs in Ethiopia's Gambela region. A recent household survey in Gambela revealed that families with ICS frequently use them as their primary cooking stoves. The survey also highlighted that the "Big J" model surpasses the widely used Tikikil ICS in all key user satisfaction areas, including durability, ease of use, value for money, suitability for household needs and fuel efficiency. The "Big J" has proven highly successful, with significant potential for wider adoption. The ICS producers also received technical support from experts to integrate UCD aspects and create an efficient production process (kiln investment) and storage infrastructure (storage sheds). The UCD process in Ethiopia was implemented inclusively, involving collaboration between both refugee and host community members. This approach has been documented as a learning resource, providing a step-by-step guide to assist other stakeholders interested in pursuing similar local design initiatives.

The "Big J" ICS in Gambella region in Ethiopia. Photo Credit: Egzieryalew Ayele

Holistic approach to IICS interventions:

SUN-ESDS has initiated efforts to integrate IICS cooking with sustainable wood fuel supply, wood management, and proper storage processes. Additionally, by promoting **woodlot diversification** through the planting of fruit trees requested by targeted schools, SUN-ESDS enables them to address child nutrition in the long term. The inclusion of diverse tree species for shade, wind protection, and timber further strengthens these interventions, providing environmental benefits and enhancing resource resilience for the communities involved. Emerging evidence suggests that the transition to IICS in schools has led to a 50% reduction in both fuel consumption and associated cooking fuel costs.

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Woodlot in Rhino Camp High school in Uganda. Photo Credit: Helen Consult

Organic Adoption of ICS via RBFs:

Recipients of RBF for ICS sales have observed **strong customer adoption.** This success is largely due to the intentional decision by consumers to purchase the stoves at market price, which is reinforced by the training and support provided to end users. In particular, RBF recipients, especially non-profit entities, are guided by missions focused on environmental sustainability and societal wellbeing, which drive their sales and user education strategies. They regard the hybrid-RBF model as an effective tool for achieving their goals of increased cookstove accessibility, adoption, and environmental sustainability. A recent household survey conducted by the project confirms that ICS users appreciate the quality and fuel efficiency of the new cookstoves compared to traditional models, as well as their portability.

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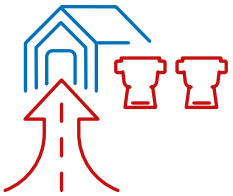
These best practices underscore the importance and effectiveness of SUN-ESDS's cooking energy interventions, which stem from a collaborative, ecosystem-based approach. This inclusive strategy not only ensures diverse perspective but also creates a supportive network that is essential for delivering impactful solutions in displacement settings. Surveys and feedback show that ICS users appreciate the quality, efficiency and convenient handling of the new technologies. These can provide evidence to advocate for the expansion of financially and environmentally viable clean cooking adoption programmes.

Challenges and Lessons Learnt

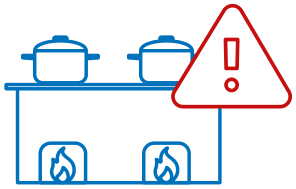
The effectiveness and impact of SUN-ESDS's support processes across the two countries are likely shaped by existing sectoral developments, stakeholder relationships, capacities and the distinct socio-cultural, political, and environmental contexts and priorities of each nation. For instance, Uganda's unique refugee policies, which allow freedom of movement and the right to work, appear to provide a conducive environment for market-based interventions by fostering robust market activity. Whereas activities in Ethiopia tend to favour cooperative-run models that may need stronger support to scale-up production and impact. Nevertheless, examining the contrasting experiences in Uganda and Ethiopia offers valuable insights, helping to identify lessons learnt that can inform potential intervention improvements and/or replicability potential.

Drawing on project documents, interviews, a household survey and stakeholder discussions, the following challenges and lessons, complementary to the best practices identified above, offer critical insights for guiding the design of future cooking energy interventions in displacement settings. They provide stakeholders with valuable ideas on how to scale-up market-based cooking solutions already found to highly meet user expectations and needs.

Damage to the Charcoal Briquette Production Centre in Ethiopia: Following completion of the production centre, emerging local conflict between the host and refugee communities led to its delayed operationalisation. In 2023, a new spike in conflict led to theft of essential materials and equipment. Peace between the communities has now been restored – these efforts involved discussions and agreements with local community and religious leaders, and rehabilitation works on the production facility are now ongoing. Unfortunately, the recurrent conflict episodes impacted on the production learning journey of the women's cooperative, and left SUN-ESDS and partners unable to test the viability of the technical and long-term market-based solution sought. An assessment of the first production batch suggests that the new charcoal briquettes could be sold for 10 ETB (8 USD Cents) per KG.



Bottlenecks to scaling-up UCD stove production: Despite a successful UCD process and resulting investments in training and production capacity, several bottlenecks are hindering the scale-up of UCD cookstove production and distribution. This is due to limited resources and capital available to the cooperative and a lack of affordable transport for both sourcing materials and distributing final products – despite growing demand for the products. This highlights the need for additional support to increase production and expand market reach. Scaling up will require more cooperatives to produce and distribute stoves at an affordable price, as the current cost of production limits profitability. A new realistic price is likely to be 500 ETB. Additionally, the combustion process used to burn clay products is often performed at roadside locations and require more efficient alternative solutions in locations away from residential buildings.



Improper Use and Sustainability of IICS: Schools frequently face staff retention issues, particularly with cooks, creating a need for ongoing user training in the operation of IICS. In addition, frequent use in school feeding programmes leads to regular wear and tear on saucepans, which require replacement based on usage intensity. There is also increased wear on IICS platforms due to improperly sized wood logs being fed into the system. Furthermore, limited space has led some schools to repurpose wood storage areas, reducing fuel management efficiency. Many schools also lack the proper tools to process fuel for the IICS, even though these tools were meant to be provided as an in-kind contribution from the schools themselves. In at least two schools and one reception centre supported with IICS, activities are no longer operational or the IICS is no longer in use: one school has closed operations, another is not currently implementing school feeding activities and Imvepi Reception Centre has been receiving less new arrivals and the IICS are too big.

Operationalization Challenges for Some RBF Recipients: Several RBF recipients encountered initial barriers when implementing cookstove sales activities in refugee settlements. One key barrier was faced in working with targeted refugee communities due to language and communication barriers, which hindered efforts to educate users on proper cookstove handling. Improper handling led to the failure of ICS stands, increasing warranty claims and straining sellers' cash flow. Additionally, many RBF companies relied on commission-based local sales agents who often preferred selling stoves in Arua, where pay was more consistent, creating a challenge for recipients trying to maintain sales efforts within the settlements.
To address these issues, some RBF recipients adapted their personnel strategies to integrate more sales agents from the targeted refugee communities. Others also adapted their management and oversight processes by implementing digital customer relationship management (CRM) tools that included GPS tracking at the point of sale. These changes added a burden to RBF recipients in their first few months of operation and impacted them in their ability to meet the RBF accountability and sales eligibility requirements. Another barrier was the high and unforeseen upfront costs during the set-up phase to facilitate distribution within settlements, including expenses for setting up offices, local storage facilities and investing in tricycles for distribution.

These challenges underline the importance of a multi-layered approach combining financial, educational, technological and infrastructural aspects to drive the successful adoption of sustainable cooking technologies in displacement settings.

Recommendations

Based on the implementation experiences across the various SUN-ESDS countries, it can be noted that while several successes have been achieved, there remain a number of opportunities to improving the impact and scalability of interventions. This would also necessitate remedying the existing bottlenecks identified. Nonetheless, SUN-ESDS has laid an important foundation for scaling-up cooking energy solutions which appear to also have potential for further job creation in displacement settings. The learning points from these initial experiences could be leveraged to improve future project implementation and coordination efforts e.g. through the following recommendations:

Formalise Pre-Project Agreements between Host and Refugee Communities Prior to Activities: While a formal tripartite agreement had been established between key project partners (RRS, UNHCR and SUN-ESDS) on the charcoal briquette production centre in Ethiopia, RRS who was designated as the key partner representing the host/local communities, carried responsibility for local stakeholder coordination. This was largely achieved through consultation workshops, but no formal agreement was established between refugee and host community members in the initial stages of the intervention.

UCD stove (Big J) in use.
Photo Credit: Egzieryalew Ayele

Scale-up UCD cookstove design and production approaches: The UCD cookstove design and development process has resulted in a low-cost, highly user-accepted product, creating favourable conditions for replication and scale-up. Expanding production of the "Big J" is recommended in the Gambela Region of Ethiopia. This could benefit from a value-chain approach with distinct actors assigned specific responsibilities (vertical disaggregation), such as material sourcing, manufacturing, marketing and distribution – such disaggregation could allow for more cooperation between refugees and host communities with a common objective thereby fostering peaceful coexistence and more social cohesion. Linking UCD cookstove production and the rehabilitated charcoal briquette production facility could further enhance sustainability while creating new economic opportunities for host and refugee communities.

Support Multi-sectoral Efforts to Improve Cooking Solutions in Schools: For schools involved in child feeding programmes, comprehensive guidelines should be developed for establishing and maintaining sustainable cooking facilities, with clear standards for cookstove usage and fuel storage. Aligning these efforts with Uganda's Comprehensive Refugee Response Framework (CRRF) through coordinated educational and energy response plans can support sustainable infrastructure development across schools. Alternatively, NGOs and development partners involved in school feeding initiatives should be further sensitized to incorporate holistic, sustainable practices in their support efforts.

Continue Supporting Holistic Value Chain Interventions for ICS: In the case of both domestic and institutional ICS, critical components are often worn down due to improper usage and handling, and replacements are often not available in local markets. In the case of IICS, there is a need to emphasize more activities in proper wood processing and sizing which necessitates the provision and use of appropriate tools e.g. saw, axe and moisture meters, which could be a critical value chain activity in itself i.e. approached from the perspective of a new, market-based solution.

Consider Additional Support for Young RBF Recipients: Given the high startup costs for RBF recipients in displacement settings, development partners could offer additional support, such as loans or grants within a hybrid RBF scheme. Other helpful supports could include setting up local storage or tricycle-sharing services to simplify distribution. Additionally, many RBF recipients could not partner with newly established energy kiosks, as these kiosks are not yet registered as legal entities, preventing formal stocking agreements. Young RBF recipients could also benefit from having more budget made available for marketing and end-user education in the use of ICS.

ICS in Ocea Reception Centre in Uganda
Photo Credit: Anja Rohde, GIZ

Conclusion

In conclusion, SUN-ESDS's hybrid-RBF and UCD approaches indicate that market-driven strategies can effectively support the adoption of clean cooking solutions which create economic opportunities for local communities. Expanding and scaling-up such models can help ensure both sustainability, broader access to clean cooking technologies for refugees and host communities and strengthened livelihoods. However, this requires further investment in building a strong enabling environment for clean cooking value chains and further regulation on disabling activities, such as freely distributed cookstoves. Such risks could be mitigated by ensuring that there is more awareness of the quality and robustness of retailed ICS compared to cookstoves distributed for free and by engaging with those organisations engaged in the free distributed of cookstoves. By incorporating the recommendations, future initiatives can enhance the impact and sustainability of improved cooking solutions, ensuring that sustainable energy access remains a key driver of resilience and development in displacement settings.

Alpha ICT Energy Kiosk. Photo Credit: Bettina Baesch Ssemwaka/GIZ

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