Clean Cooking in Displacement Settings: An Imperative to Act

Author: Dr Iwona Bisaga (GPA/NORCAP)

Peer Reviewers: Carine Buma and Mark Gibson (GPA); Camilla Fulland and Dr Hajar Al-Kaddo (NORCAP)

Introduction

ECOCA E-cooking stove in Bidibidi Refugee Camp, Uganda. © GPA/UNITAR

Lack of access to clean cooking solutions in humanitarian and displacement settings remains a critical yet under-addressed issue within global energy access and development agendas. Refugees and internally displaced persons (IDPs), as well as host communities, overwhelmingly rely on traditional biomass fuels such as firewood, charcoal, and other polluting biomass, exposing women and children to harmful pollutants causing respiratory illnesses (UNITAR-GPA, 2022). Risk of gender-based violence also increases during firewood collection, as deforestation around settlements worsens, depleting resources and heightening tensions with host communities. Time spent gathering fuel limits education and livelihoods, reinforcing cycles of poverty and vulnerability.

As climate change accelerates resource scarcity and extreme weather events, the challenge of ensuring sustainable energy access, including clean cooking, becomes even more pressing (CCA, 2023). Yet, despite the well-documented benefits of clean cooking solutions, displaced populations are often excluded from national and international energy transition plans. The lack of tailored funding mechanisms, inadequate integration of clean cooking in humanitarian responses, and the complexities of providing sustainable energy in humanitarian and displacement settings have resulted in a significant gap in access (UNITAR-GPA, 2023).

Based on a UNITAR-GPA and NORCAP mapping (June–Dec 2024) of clean cooking initiatives in displacement settings, supported by literature, this Clean Cooking Brief outlines some of the most critical barriers to implementation of clean cooking solutions in these settings and provides recommendations on how to address them.

Barriers to clean cooking access scale up in displacement settings

Infrastructure and legal challenges

A key constraint is lack of infrastructure. Many displacement settings are remote or conflict-affected, without electricity grids (Baldi et al., 2022), liquefied petroleum gas (LPG) distribution networks (e.g., U-Learn & Save the Children, 2024; EnDev & SNV, 2022), or established fuel supply chains. For instance, the World Bank (2023) highlights that cooking programmes in refugee settlements have typically provided substandard stoves and firewood rather than

clean, modern fuels, underscoring the need for better infrastructure and sufficient funding. However, this can be both costly and logistically challenging in temporary (or seemingly temporary) environments with high perceived levels of risk, such as impermanence of targeted populations, theft and vandalism, complex operating environments, lack of (or low) ability to pay, lack of or unclear regulations concerning displaced populations, among others.

Even where clean cooking technologies are introduced, weak supply chains and limited market access impede sustained adoption. The remote locations of many settlements complicate transportation and logistics, making it difficult to ensure a consistent supply of LPG, ethanol, or improved biomass fuels, such as pellets or briquettes. Other solutions, such as solar photovoltaic (PV) electric cookstoves or biodigesters, also suffer from supply chain challenges, as stock cannot be easily transported to the displaced and host communities due to infrastructure challenges. Additionally, inadequate maintenance and repair services can lead to equipment breakdowns, discouraging long-term use among refugees (e.g., Fodio Todd & Giese, 2024).

Water scarcity is another major challenge (Pearce et al., 2023), especially for biogas systems that need stable inputs like organic waste or animal dung, plus water for slurry. While biogas solutions (for energy generation or waste management) have been implemented or piloted in some refugee settlements, for example in Zaatari, Jordan (FAO, 2024), in six schools in Kyangwali refugee settlement in Uganda (CARE Uganda, 2024), and in Malakal, South Sudan (IOM, 2021), in many settings, water is scarce and waste systems inadequate, making biogas impractical for scale-up. This limitation calls for exploring clean cooking technologies less reliant on water. Additionally, insufficient feed stock (whether from human, animal or food waste) can pose a significant challenge for sustained production of biogas. Levels of acceptance of using the generated biogas for cooking can also vary due to cultural beliefs (e.g., hesitation towards using biogas from human or animal waste for cooking).

Furthermore, the lack of proper storage and distribution facilities for fuels such as LPG, ethanol, or compressed biogas raises safety concerns, including fire hazards and fuel theft. This discourages the large-scale adoption and distribution of cleaner fuels in displacement settings. Ensuring safe storage and handling of these fuels is crucial for the successful implementation of clean cooking interventions (Haselip et al., 2022). Where provision is done on a market basis (rather than as free distribution). the initial investment needed to acquire LPG kits (cylinders, cookstoves, and regulators) can also be a barrier for vulnerable populations (UNHCR, 2022). It can be overcome through tailored subsidies, results-based financing (RBF) schemes or other innovative financing models (GPA et al., 2022; Stritzke et al., 2021).

Legal and regulatory barriers also hinder clean cooking efforts. In many host countries, refugees face legal restrictions on employment, entrepreneurship, and financial inclusion, making it difficult for them to participate in energy markets as consumers, business owners, or employees in clean cooking initiatives (Tran, To & Bisaga, 2021). As a result, potential supply chain solutions, such as refugee-run LPG distribution businesses, remain underdeveloped. Providing clean and reliable cooking fuels and stoves is a major challenge for humanitarian agencies and host countries alike, indicating the need for supportive and

inclusive legal frameworks and more effective and meaningful engagement with private sector partners who can help fill in these gaps.

Another challenge relates to permanence. Even though some of the largest refugee and IDP settlements in Africa (e.g., Kakuma and Dadaab in Kenya, and Mahama in Rwanda) have been around for over 10 years, they are often perceived as temporary structures with little to no land tenure security. This, in turn, makes governments and humanitarian organisations hesitant to invest in permanent infrastructure, including energy services for the delivery of clean cooking. Consequently, there is a reliance on short-term solutions, such as firewood and inefficient improved cookstoves (ICS) distribution, rather than sustainable energy access programmes. Integration of clean and sustainable cooking solutions into basic service packages provided to displaced populations and the development of sustainable delivery models through improved coordinated planning with governments, civil society organisations, development agencies, and the private sector, can help partners serving these communities move beyond short-term approaches while still acknowledging the perceived temporary status of settlements hosting the displaced.

Funding and private sector incentives

Traditional clean cooking investments are often structured around cost-efficiency metrics, such as the number of people provided with access per dollar spent or the reduction in carbon emissions per dollar invested (e.g., EIB, 2024). While useful in many contexts, these metrics tend to favour projects that are easier to implement—typically in stable, urban, or middle-income areas—rather than complex humanitarian settings where logistics, infrastructure and security concerns make interventions more challenging.

As a result, displacement settings are often deprioritised in funding decisions, leaving displaced communities with limited access to clean and sustainable cooking solutions. Additionally, humanitarian funding typically focuses on short-term aid over long-term sustainable solutions, so even when clean cooking programmes are introduced in displacement settings, they often lack financial sustainability to ensure continued impact.

Import restrictions and high tariffs on clean cooking technologies further increase the cost of deploying these solutions in displacement settings, making them less attractive for humanitarian organisations and private-sector actors. Certain clean cooking fuels, such as ethanol or biogas, often face strict regulatory requirements that complicate their distribution within a country—let alone in refugee settlements. For example, ethanol fuel may be regulated due to concerns over its misuse for alcohol production. Another example is LPG distribution which often requires adherence to safety regulations that may not be feasible in humanitarian and displacement settings without significant infrastructure investments. Yet another is the case of solar PV cooking: while solar PV solutions have penetrated many African countries over the last decade (Lighting Global et al., 2024), certain solar PV cooking system components do not always benefit from the same tax exemptions as, for example, solar home systems do, hindering their widespread availability and adoption.

To address these challenges, donors and financial institutions should design funding models that explicitly account for the complexities of displacement settings. Innovative financing

mechanisms, such as pay-as-you-go (PAYGO) schemes, microfinance, and results-based financing (RBF), can help make clean cooking solutions more accessible and affordable to displaced populations while ensuring financial sustainability. Climate financing should also support clean cooking programmes, given its contribute to deforestation reduction, carbon emissions mitigation, and climate adaptation in vulnerable environments (UNITAR-GPA, 2025).

Economic benefits also arise from improved clean cooking access, creating a virtuous cycle. Establishing local supply chains for clean cooking technologies, including cookstove production, maintenance, and fuel distribution, can create jobs and economic opportunities for both refugees and host communities. Additionally, reduced firewood consumption lowers household expenditures, freeing up financial resources and time for other essential needs. By investing in clean cooking infrastructure and market-based solutions, humanitarian and development actors can drive long-term economic resilience in displacement settings.

However, governments and humanitarian agencies must offer stronger incentives for private-sector engagement in clean cooking interventions to realise these benefits. By introducing financial de-risking measures, such as subsidies, guarantees, or tax incentives, policymakers can encourage energy companies to invest in displacement settings, improving supply chain resilience and ensuring greater affordability of clean cooking technologies (UNEP CCC et al., 2024). Aligning humanitarian and long-term development funding is also key to bridging the clean cooking access gap, especially considering recent global funding shocks that will have lasting impacts.

Need for inclusive approaches

As global clean energy transition efforts gain momentum, displaced populations remain largely excluded from policy discussions and investment plans. For these transitions to be just and aligned with Sustainable Development Goal 7 (SDG 7) calling for leaving no one behind, they must ensure equitable access to sustainable energy and include all displaced populations. They must also reflect the diversity of cooking contexts—households, institutions (e.g., schools, hospitals), and businesses (MECS & WFP, 2022).

Energy access, including clean cooking, is frequently treated as a secondary priority compared to immediate humanitarian needs like food, shelter, and water. However, the long-term reliance on unsustainable cooking fuels has severe repercussions on the health, safety, and economic opportunities of displaced populations, making it imperative that clean cooking be recognised as a fundamental component of humanitarian aid and recovery strategies. This requires better coordinated, long-term approaches that fully address energy needs (Thomas et al., 2021). Humanitarian agencies and donors should work with host governments to integrate clean cooking into broader energy and development programmes, shifting from short-term relief to sustainable access.

In addition, refugee and IDP settlements—especially the former—are often excluded from national electrification and energy transition plans. In many countries, refugees lack legal access to national energy infrastructure, such as grid electricity or subsidised clean cooking

programmes, as they are not considered part of the formal economy or do not fulfil the legal status requirements. In some cases, refugees and IDPs are not legally permitted to build semi-permanent structures, including clean cooking infrastructure, as they do not own the land on which they reside. This legal ambiguity discourages investments in sustainable cooking solutions and reinforces reliance on makeshift, polluting, and unsustainable methods. Without explicit policies that integrate displaced populations into national energy planning —as seen in Uganda (OPM, 2025; MEMD, 2022), humanitarian actors are left to fill gaps with short-term, underfunded interventions. In recent years, multiple actors have called for the inclusion of clean cooking in national energy policies, and for displaced populations to be part of those planning processes (World Bank, 2023; SEforALL, 2024; AFREC, 2024). Additionally, providing clean energy access to populations affected by displacement can help accelerate national low-carbon development efforts that support climate commitments (e.g., the achievement of Nationally Determined Contributions (NDCs) (Grafham et al., 2022).

Recommendations

Providing clean cooking in displacement settings is both a humanitarian need and a development opportunity. Despite implementation complexities, integrating displacement settings into clean energy transitions, reforming funding to include displaced populations, and recognising the broad health, environmental, social, and economic benefits of clean cooking can drive meaningful progress. This will require:

- Forming multi-stakeholder partnerships cross national governments, humanitarian and development agencies, the private sector, and displaced communities, while aligning stakeholders on shared objectives
- Ensuring coordinated and comprehensive long-term responses that address energy needs of displaced populations
- Integrating displaced populations into national and sub-national energy access strategies and planning, and aligning with national climate and development goals
- Investing in energy infrastructure in protracted displacement settings to meet ongoing energy access needs
- Promoting market-based approaches and lifting trade restrictions to enable private sector participation.
- Developing innovative financing and delivery models to help displaced populations afford cleaner cooking solutions
- Strengthening collaboration in the sector and learning from past successes and challenges in clean cooking access initiatives in humanitarian and displacement settings; the Clean Cooking Mapping Dashboard offers a valuable overview to support this effort.

Governments, donors, humanitarian agencies, and the private sector must work together to prioritise clean cooking in displacement settings, ensuring that displaced communities are not left behind in global energy access initiatives. By taking a holistic and collaborative approach, clean cooking interventions can improve the lives of millions of displaced people while contributing to broader climate, health, and development goals.