

Energy & Environment

Rwanda – Facilitating market-based access to clean cooking fuels in refugee camps



Sale of biomass pellets and pellets stoves in the Mahama refugee camp in Rwanda (photo: Manuel Krähenbühl)

Access to clean cooking is a challenge in refugee camps in Rwanda: Market-available fuels such as firewood and charcoal are scarce, not clean and not environmentally sustainable. To bridge this gap, UNHCR provides energy assistance, which is costly and does not foster a clean cooking market. In 2024, a review of the access to clean cooking helped to explore alternative, context-adapted and affordable solutions for refugees.

Background and context

Without assistance, forcibly displaced in Rwanda likely cover cooking needs with firewood collection or charcoal purchases. Both fuels **are not considered clean** and likely cause environmental degradation if not acquired from sustainable sources. The gathering of biomass can also **pose a risk for gender-based violence**. UNHCR tackles this protection and energy challenge with in-kind distribution of liquefied petroleum gas (LPG) and cash for energy (CfE) assistance. While these solutions help to largely cover cooking needs, it is a fragile and costly approach, and does not foster a local clean cooking market: Reduced LPG distributions likely lead again to biomass usage, and even with CfE there is no alternative to charcoal.

Mission objectives

The field mission of the [Geneva Technical Hub \(GTH\)](#) was tasked to support ongoing efforts of UNHCR in Rwanda in the provision of clean energy for cooking. The mission included cooking energy needs assessments at household level and market assessment for cooking solutions in and around refugee camps. To have a comprehensive overview of the varying settings in the country and the different types of energy assistance of UNHCR, detailed assessments were conducted in the Mahama refugee camp (where LPG is provided) and Kigeme refugee camp (where CfE is provided). In addition, consultations were made with organizations involved in clean cooking and private-sector energy suppliers.

Clean cooking

Market-based
access to
clean cooking

Biomass
pellets

Affordable and
locally
produced fuel

Renewable
energy

Findings

The **GTH** mission proposed to facilitate and advance **market-based access to clean cooking**. This means that refugee households themselves procure fuels on local markets, if need be with cash assistance. For now, **biomass pellets** are the only option for a market-based approach: pellets are affordable, clean, renewable and locally produced. With a daily expenditure for an average household of 250-375 RWF (ca. 0.2-0.3 USD), the cost for pellets is similar or even lower compared to charcoal (depending on location).

Apart from the affordability of pellets, the fast cooking without smoke generation can further enhance uptake in refugee camps. Pellets are produced from sawdust and agricultural residues. Although a finite commodity, it is estimated that **biomass pellets could cover up to 32%** of the Rwandan clean cooking target.

In camps with current LPG distributions, establishing a pellet market can create a second energy pillar: If LPG provision is reduced, pellets can serve as backup option as households could procure pellets themselves. In the medium and long-term, a shift away from LPG in-kind distribution towards cash assistance (for pellet purchase) is conceivable.

In camps with CfE assistance, pellets could become an affordable and cleaner alternative to the predominantly used charcoal.

Measures and way forward

Biomass pellets are a rather new and emerging technology in Rwanda. Quality and cost of stoves still need to be improved, and stove affordability needs to be enhanced. For now, existing interventions in refugee camps in Rwanda mainly favour the use of natural draft stoves (NDS). However, it needs to be assumed that user experiences with NDS are not satisfactory, and can lead to an abandoning of pellets by households over time. The current prioritization of NDS by organizations is mainly due to their lower cost compared to forced draft stoves (FDS). FDS use small electric computer fans to enforce an airflow into the combustion chamber. Compared to FDS, the commonly used NDS

- create more smoke,
- are more difficult to light,
- use more pellets per meal,
- slow down the cooking process,

In order to enhance and ensure the success of pellet interventions, **it is imperative to use FDS**. With the current deficiencies related to stove cost, stove selection and stove quality, it is not recommend that UNHCR immediately joins ongoing pellet initiatives.

In order to join forces and not to compromise existing efforts, it essential to coordinate with pellet project stakeholders (such as GIZ, Practical Action and SIDA).



From left to right: 1) Example of natural draft stove (NDS) from Rwanda - difficult to differentiate from forced draft stoves (FDS) for non-experts. 2) Example of FDS from Rwanda, with electric fan located at the bottom of the stove. 3) FDS from another Sub-Saharan country: higher quality with significantly lower unit cost. 4) Biomass pellet produced in Rwanda (photos except (3): Manuel Krähenbühl)