

# Research Paper

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# The Energy Situation in Goudoubo Refugee Camp, Burkina Faso



# Preface

The Moving Energy Initiative (MEI) is a collaboration between GVEP International, Chatham House, Practical Action Consulting, the Norwegian Refugee Council (NRC) and the Office of the United Nations High Commissioner for Refugees (UNHCR). The initiative is supported by the UK Department for International Development (DFID).

The MEI seeks to meet the energy needs of the forcibly displaced in a manner that reduces costs; is safe, healthy and respectful; benefits host countries and communities; and, where possible, creates opportunities for income generation and knowledge transfer in order to tackle energy poverty and promote sustainability.

This paper, one of a series developed by the MEI consortium partners, has been written and edited by Practical Action Consulting, with copy-editing and production support from Chatham House. Its purpose is to present the results from a field study carried out in 2015 on the energy situation in the Goudoubo refugee camp in Burkina Faso. The paper is a summary of the survey report, which can be obtained on request from Practical Action Consulting ([Mattia.Vianello@practicalaction.org.uk](mailto:Mattia.Vianello@practicalaction.org.uk)).

# Field Survey

## Background information

Goudoubo refugee camp hosts over 10,000 refugees. It grew out of political and military unrest that began in Mali in January 2012 and led to a mass exodus of civilians into Burkina Faso. It is situated a few kilometres northwest of the town of Dori, the capital of the Sahel Region. The sudden arrival and settlement of a large number of people has put additional pressure on already limited natural resources in the area, with corresponding negative social, economic and cultural impacts on the local population.

## Study methodology

A combination of quantitative and qualitative methods and tools was used to review the energy economies in Goudoubo refugee camp and the host settlements. The quantitative survey reached a sample of 387 households from the refugee community and 39 from the host community. Overall, 75 per cent of survey respondents were male, 25 per cent female. The qualitative research methods included: 'key informant' interviews both with members of organizations working with the refugee community and with members of refugee camp committees (namely the executive committee, elders' committee, women's committee and youth committee); focus group discussions with people living within the camp; and desk research.

## Camp operations and energy management in Goudoubo

Overall, the UNHCR is responsible for all matters of humanitarian aid, including energy, in the refugee camp. However, it works with other partners, such as IEDA Relief, who are responsible for camp management. The energy and environment officer for the UNHCR is mandated as the sole person responsible for the development and oversight of energy activities and initiatives in the camp. Hilfe zur Selbsthilfe (HELP) is the implementation partner charged with energy and environment. In the camp there is currently a three-part fuel crisis strategy: 1) promotion of alternative cooking methods/fuels in order to decrease household demand for wood – these include solar cooking technologies such as the Blazing Tube for households, and liquefied petroleum gas (LPG) for institutional facilities; 2) awareness-raising with households to encourage use of fuel-efficient improved cookstoves; and 3) promotion of reforestation projects. There is no grid connection to the camp, and on-site administrative offices are without power. As a result, implementing partners lack computers and even lights for their offices. Most activities have to be conducted using pen and paper or mobile phones.

## Refugee–community relations in Goudoubo

The UNHCR, its implementing partners and the refugee committees all feel that the current relationship with the host community is good. The camp’s executive committee was very proud to say that initial areas of conflict with the local community have been resolved and that there are now more opportunities for cooperation. Nevertheless, the firewood shortage poses a significant potential challenge to the relationship. Collecting firewood from an area claimed by another community is a common issue encountered by both refugees and host populations, and can lead to conflict. The refugee committees – in particular the executive committee – have made an effort to work with surrounding communities to improve relations, and also to let camp residents know of the possible dangers of collecting wood from areas far from the camp. As a result, most firewood collected by refugees comes from the periphery of the camp. However, implementing partners such as HELP and IEDA and some refugee committees (namely the executive, elders’ and women’s committees) expressed concern that it is only a matter of time before resource scarcity will place strain on the camp’s good relations with neighbouring communities. Until now, the relationship between the UNHCR, local government and civil society actors has also been positive for the most part. CONAREF, the government counterpart that works directly with the UNHCR, has played an important role in managing the peaceful coexistence of the host and refugee communities.

## The refugee energy economy in Goudoubo

The average monthly income per household in the camp is US\$120, which is higher than the average US\$95 monthly income of host community households. The difference is mostly explained by the fact that 40 per cent of refugees’ income consists of handouts from the UNHCR and other sources. Sale of farm produce, especially animals and animal products, contributes 21 per cent of refugees’ income. Other forms of income include remittances and sale of non-food items.

The average monthly expenditure per household is US\$118. Much of the refugees’ expenditure is on clothing (49 per cent) and food (44 per cent); energy accounts for just 6 per cent of spending. Although energy’s share of expenditure may seem low compared to that for clothing and food, it is important to consider the following factors: the majority of households received a free solar lamp in 2014, which means that torches powered by batteries are used only by a minority of refugees; small amounts of firewood are distributed for free; and some indirect costs associated with the collection of firewood have not been recorded in this survey.

Households spend on average between US\$7 and US\$10 per month on energy. This indicates yearly expenditure by refugees of up to US\$366,360 for the whole camp. Cooking accounts for most of this sum, with 65 per cent of all energy spending going on firewood, followed by charcoal (30 per cent) and batteries (4 per cent). The survey results also show that the energy economies of the camp and the host communities are interconnected: this is indicated, for example, by the fact that refugee households spend an average of US\$6 per month buying fuels and energy appliances outside the camp.

## Energy businesses in Goudoubo

Currently there are no formal businesses in the camp that have the explicit purpose of providing energy services to camp residents; refugees mostly rely on businesses outside the camp. Anecdotal evidence, however, suggests that camp households participate in three informal energy-related economic activities: 1) production of improved cookstoves; 2) charging of mobile phones; and 3) sale of second-hand technologies. The idea of creating an ‘economic activity zone’, with access to energy in and around the marketplace, to boost enterprise has been discussed hypothetically among refugees and implementing partners. The camp’s executive committee also feels that the community would probably be ‘very open to hiring someone to set up a cooperative that would allow electricity to be sold’. Additionally, there are many young people in the camp with some college education who are willing and able to work but lack employment opportunities. One idea for a pilot project from the youth committee is an entertainment centre, powered by photovoltaic (PV) cells, where young people and other community members could come to watch news, educational programmes, sport and films. The centre would charge a fee for the screening of some films.

## Energy for community services in Goudoubo

There are three diesel generator sets operating in the camp. Two of these (10 KW and 12 KW) are used for pumping water. The third (60 KW) is used to provide power to the health facility operated by the implementing partner Centre de Support en Santé Internationale (CSSI). Maintenance of the generators is handled by the NGO African Initiatives for Relief & Development (AIRD), which in 2014 spent around US\$31,000 on fuel and maintenance. There is one school in the camp. It is powered by small PV cells donated by the Japan International Cooperation Agency (JICA); the PV cells light one room so that teachers can prepare lessons at night.

The lack of streetlights in Goudoubo creates safety and mobility problems: in 58 per cent of refugee households no one leaves the house after dark; 53 per cent of respondents indicate that if the public lighting situation was addressed, more household members would be allowed out. Of those who do go out at night, very few (only 3 per cent of the entire camp population) are women and girls.

## Household cooking in Goudoubo

The predominant fuel for cooking is firewood, used by 89 per cent of refugee households, followed by charcoal (used by 10 per cent). Each household consumes an average of 177 kilogrammes of firewood per month, which equates to total annual demand of 6,500 tonnes across the whole camp. Firewood is mostly purchased or collected by households. In addition, according to the UNHCR, some 204 tonnes per year are distributed free of charge. Most of this firewood is sourced from regions over 100 kilometres south of Dori and shipped to the camp. Through coordination with Burkina Faso’s Ministry of Energy, the UNHCR has contracted HELP to supply and distribute firewood to the population in the camp, using criteria developed by the UNHCR and based on the number of members per household. The World Food Programme (WFP) also assists in the distribution of firewood as it carries out its core function of distributing food rations. For households using charcoal, the average consumption is 41 kilogrammes per month; annual charcoal



demand in the camp can be estimated at 150 tonnes. For 74 per cent of households, availability is the main criterion for the choice of fuel used. The type of food cooked and the cost of fuel are secondary factors, but are also considered. Refugees alternate between different types of stove and fuel, often using wood to cook rice or starch and then charcoal from the first fire to cook a sauce to go with the rice. More than 60 per cent of the refugee households use more than one stove for cooking. Some 75 per cent of households use an unbranded improved cookstove (metal or clay stove) as their primary appliance; 14 per cent of households cook on a three-stone fire; 11 per cent use a branded manufactured cookstove. During interviews, refugees indicated that they would be happy to switch to LPG and advanced firewood cookstoves, if these were provided for free. More than 70 per cent of the refugees received their primary stove as a donation, and in fact this was the initial reason for their choice of appliance, followed by criteria such as design and cost. Only about 17 per cent purchased their cookstove (at an average cost of US\$4.2), and a small minority constructed their own.

### Household lighting in Goudoubo

Solar lamps are the most popular source of household lighting in the camp, with 59 per cent of households reporting their use. The majority of these households (96 per cent) use solar lamps (mostly D-Light lamps) obtained for free from the UNHRC during the main distribution exercise in 2014. Flashlights are the second most common source of lighting, used by 30 per cent of households. Only a small proportion of the refugee households (2.3 per cent) surveyed have a solar home system (SHS): of these, 25 per cent received their SHS for free, while about 70 per cent bought their SHS on credit, repaid in monthly instalments. In contrast, fewer than 13 per cent of households in the host community have a solar lamp, while 8 per cent have an SHS. Focus group discussions in the refugee camp indicated that while many households were still using solar lamps, others had sold the lanterns or stopped using them because they were broken. Some lanterns had been modified to charge two mobile phones instead of one, but as a result could no longer be used as lanterns. Other solar lanterns, manufactured by Flexiway Solar, were also introduced into the camp as accessories to a new model of UNHCR tent being tested. Solar lanterns are available for purchase in the camp's marketplace. However, many of them are reportedly second-hand D-Light devices that were initially distributed by the Organisation Catholique pour le Développement et la Solidarité (OCADES).

### Energy for mobile communication in Goudoubo

Mobile communication is the third most important household energy service in Goudoubo, with almost 80 per cent of refugee households owning a mobile phone. Some 40 per cent of these households have their phone charged in kiosks outside the camp, while 37 per cent use solar lanterns at home. About 10 per cent charge their phones at their neighbours' houses, while the rest use resources such as motorcycle batteries and solar plates. On average, charging a mobile phone in a solar kiosk costs US\$0.2. These figures demonstrate the existence of a business opportunity for charging services or trade in charging technology within the camp. Assuming that camp residents are charging 10–15 times per month, as shown in the survey, a mobile phone charging business could be worth up to US\$2,586 per month.

## **Refugees' aspirations and willingness to pay for energy services in Goudoubo**

In both the camp and the host community, there is demand for entertainment technologies. While many camp residents have neither a radio nor a television, these rank as the top two appliances that residents would choose to use if they had access to a reliable source of electricity. Interviews with refugees reveal that they would be willing to pay for a reliable source of electricity for lighting (at home and in the marketplace); for charging their phones; and for entertainment. Both the refugee and host communities would be willing to pay a one-off US\$10 charge for connection to a reliable and stable electrical supply; they would also be willing to pay an average monthly fee of US\$3.6 for reliable electricity. All the refugees surveyed were receptive to the idea of a pay-as-you-go scheme. Many feel that electricity for lighting in the home is a priority; however, they also express a desire for portable technology. There is mixed interest in investing in the upfront installation costs of connecting their homes to a mini-grid.

## **Gender-differentiated needs**

The field study report highlights a number of health, economic and social aspects of the energy situation in Goudoubo that particularly affect women. Women have the main responsibility for collecting fuel (mostly firewood), cooking, caring for the home and looking after children. In addition to the time and physical exertion involved in finding fuel, there is the possibility of conflict with the host community over resources. With cooking, in addition to the time and effort spent, women are disproportionately exposed to health hazards from the constant use of wood-burning fires. Lack of lighting limits women's ability to engage in income-generating activities such as knitting and beadwork at home at night. Women's mobility after dark is almost completely inhibited, presumably because of fears of gender-based violence; this limits opportunities to socialize with friends, or to participate in group income-generating or educational activities. Only 61 per cent of women have mobile phones, compared to 85 per cent of men. Children and youth do not have enough light to study at home, reducing their chances of progressing in formal education. Entertainment is lacking at home and in the camp in general, and only a minority of adolescent males go out after dark. The youth committee has ideas for energy powering an entertainment centre, which could serve a variety of purposes for different groups in the camp.

## Conclusion and Recommendations

The survey provides a picture of current energy provision and consumption in Goudoubo camp. The general consensus among the UNHCR, implementing partners and refugees is that cooking and lighting solutions (for both households and community services) are top priorities. However, in order to come to a truly informed understanding of the changes needed, more work should be undertaken to improve energy data collection at the household and management levels. The second phase of the MEI will involve working together with these organizations and stakeholders to further explore the following areas prior to designing specific interventions for the camp:

- **Assessing the energy resources available.** This will be done by mapping existing energy resources for both electrification and cooking needs. It will include a detailed resource-mapping exercise in Goudoubo camp and surrounding communities to assess available resources (sun, wind, wood, charcoal, briquettes, diesel, LPG, etc.) and local costs for fuels and appliances.
- **Mapping the market for fuels and appliances locally and nationally.** This will include an analysis of the supply chain and supporting services, as well as of Burkina Faso's policies and regulations relative to those markets.
- **Comparing the results from the resource assessment and the market-mapping with the results from this survey.** This will provide a picture of potential solutions for improving energy services in Goudoubo camp, and an indication of the interventions needed. Additional targeted studies may be required to better understand potential uptake of technologies that are not currently used or known by the refugee population.
- **Ensuring improvements benefit both refugees and the host community.** Responding to the fact that the energy economies of the Goudoubo camp and the host community are intertwined (in terms of need and opportunity), the second phase of the MEI will investigate ways to have greater collaboration between camp administration and local government to ensure that improvements benefit and are shared by both communities.
- **Conducting specific market analysis of local businesses that supply energy.** The survey has highlighted a business opportunity, especially for mobile charging kiosks. This and other business opportunities for refugees will be assessed prior to the design of market development and business support activities.

Based on the information gathered during this stage, an integrated energy plan and an energy market development plan will be developed as the basis for the design of low-carbon energy projects in Goudoubo.



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## Acronyms and Abbreviations

AIRD	African Initiatives for Relief & Development
CSSI	Centre de Support en Santé Internationale
CONAREF	Commission Nationale Pour les Réfugiés
GVEP	Global Village Energy Partnership
HELP	Hilfe zur Selbsthilfe [Help for Self-Help]
IEDA Relief	International Emergency & Development Aid
JICA	Japan International Cooperation Agency
LPG	liquefied petroleum gas
NGO	non-governmental organization
OCADES	Organisation Catholique pour le Développement et la Solidarité
PV	photovoltaic
SAFE	Safe Access to Fuel and Energy
SHS	solar home system
UNHCR	United Nations High Commissioner for Refugees
WFP	World Food Programme

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Cover: Women collecting firewood at Goudoubo Refugee Camp, Burkina Faso.

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