



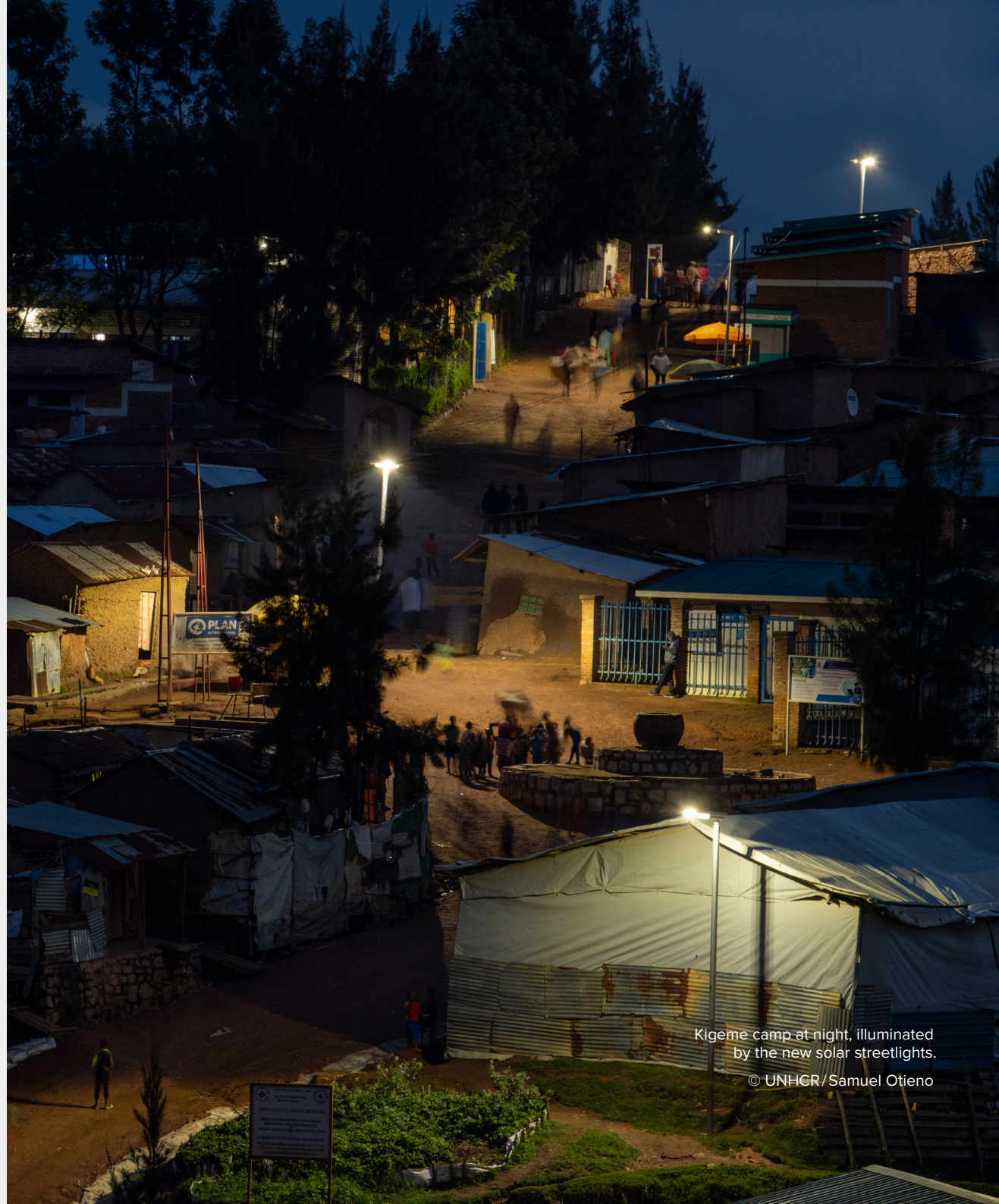
**UNHCR**  
The UN Refugee Agency

# Access to Clean Energy for Refugees

## Rwanda Case Studies

Provision of clean and affordable energy is a catalyst for sustainable development in all countries of the world. Safety, improved health services, access to education, and economic opportunities, among others. [UNHCR's Global Strategy for Sustainable Energy 2019-2025](#) aims to enable refugees, hosts communities and other persons of concern to meet their energy needs in a safe and sustainable manner, while also addressing health, protection and environmental concerns rising from access to energy. In line with existing frameworks and definitions, UNHCR has adopted the World Health Organization (WHO) definition of clean fuels, which defines fuels as clean based on their impact on health. Fuels and technologies are considered clean only if they achieve WHO targets for particulate matter (PM) and carbon monoxide (CO) emissions. In addition, since using fuel efficient technologies is a necessary step towards more sustainable and cleaner practices, UNHCR defines as transitional the use of biomass if used in combination with improved technologies.

This report presents a country case study of Rwanda and aims to document experiences of clean energy interventions in refugee communities implemented by UNHCR and partners.



Kigeme camp at night, illuminated by the new solar streetlights.

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## MAP 1: REFUGEE CAMPS IN RWANDA

as of 31 December 2021

# 127,112

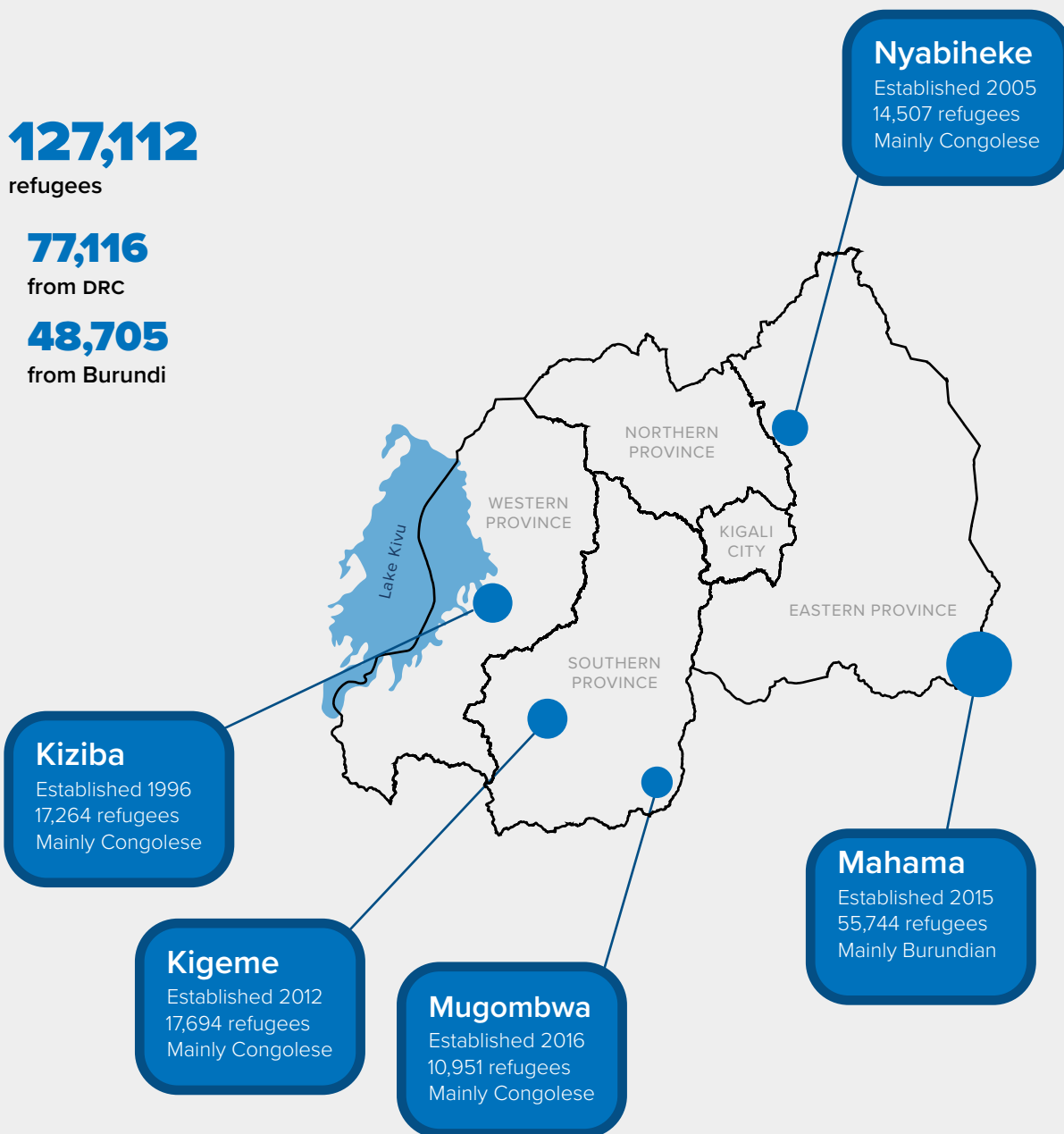
refugees

## 77,116

from DRC

## 48,705

from Burundi



## REFUGEE SITUATION POLICIES

The National Asylum Law provides a protective environment for refugees in line with international standards. Rwanda has adhered to major international conventions and human rights instruments, leading to refugees being included in the national birth registration system, reducing the risk of statelessness. In addition, the efforts taken to implement the Comprehensive Refugee Response Framework led to some key achievements in relation to social and economic inclusion and integration into the national system, especially in the areas of health and education. Since 2018, the government has taken significant steps to allow refugees access to the national identity card, jobs and services, right to work, open bank accounts, and move within the region.

## ENERGY REGULATION POLICIES

Rwanda ratified the United Nations Framework Convention on Climate Change in 1995, signed the Kyoto Protocol in 2004 and the Paris Agreement in 2016. To promote sustainability in all sectors and to achieve the goals as set out in these agreements, the country formulated a National Green Growth and Climate Change Strategy. A ban of firewood was introduced by the Government of Rwanda and led to a stop of firewood distribution in refugee camps in January 2019.

## COUNTRY ENERGY OVERVIEW

In 2018, the primary use of fuel for cooking in Rwanda was firewood, used by 81% of refugee households, with 17% of families using charcoal. These figures are similar in the host community. Most refugee households in Kigeme, Nyabiheke and Gihembe report little or no access to energy for lighting: 58% either have no lighting at night or use only basic sources such as candles and torches. Small minorities primarily rely on either solar lanterns (21%) or solar home systems (16%), and mobile phone torches are commonly used to move around the camps. In comparison, 24% of the host country population have access to the national grid network and a further 5% have off-grid electricity access.





## Solar streetlights with community ownership

Solar streetlights improve mobility for residents after dark, reduce crime and violence and provide business opportunities by extending the duration of lighting after dark. The solar streetlights automatically turn on and off by a light sensor, and they can remain lit for more than one night, even when the sun is covered for an extended period. Financial mechanisms were undertaken to allow camp residents to take over the monitoring and maintenance.



**91%**

**of residents feel safer after dark, compared to just 12% previously**

**185**

**additional solar streetlights installed**



60 in Kigeme  
62 in Gihembe  
63 in Nyabiheke

**62%**

**of refugees report they are able to do business or productive activities after dark**

**10–20 year lifespan**

+

**seven years warranty**



**Shops stay open, children continue to play, intimidation and theft decrease after dark**

**99%**

**of solar street lights functioning one year after installation**

Single light cost of €1.159  
and double light cost of €1.595



## Improved cookstoves with pellets through a market-based approach

Two local suppliers manufactured the cookstoves and pressed the pellets from biomass residues in the country and sold them to camp residents through a market-based approach. Sales representatives and technical support staff were recruited and trained within the refugee community, enabling targeted and efficient delivery.



**83%**

**less occurrences of burns and respiratory problems**

**6,951**

**households purchased improved cookstoves through a market-based approach**

**Cookstoves with 32.7% efficiency and one year warranty**

**26 kg** of monthly pellets consumption per household for **\$8.39**

**75 refugees**

**trained and hired as sales agents, technicians and construction workers in the camp**

**50%**

**camp-wide access to cleaner cooking after the intervention**

Pellets made from sawdust and forest residues

**Stove cost of \$30 / \$12–13 with subsidy**

**91%**

**of beneficiaries report being satisfied with the service provision**



## Solar Home Systems through a market-based approach

Solar Home Systems (SHS) were purchased by remote and off-grid refugee households for lighting and basic connectivity, as well as powering electronic devices such as radios and small TVs. The purchase model included a monthly payment instalment for three years after which the household owns the SHS, and continued monthly payments in the same amount for up to seven years to ensure maintenance and repair by the supplier.



**6–8h**  
hours electricity per day for lighting, mobile phone charging and small electronics such as radios

**4,279** households (58% of the targeted populations) purchased SHS through a market-based approach



**99%** of community members feeling safer at night

**70 refugees** trained by suppliers and hired as sales agents and technicians in the camp

**87%** report they are able to study after dark

SHS cost (50W) of 5.05 \$/month and 3.05 \$/month with subsidy | SHS cost (20W) of 2.74 \$/month

**95%** are satisfied with the quality of lighting

**75%** of households were satisfied with SHS services

## Distribution of LPG cooking fuel

Liquefied petroleum gas (LPG) is used as clean cooking fuel in Rwanda's largest refugee settlements, Mahama and Mugombwa, bridging the gap until renewable cooking solutions are introduced. The provision of gas cylinders and cookers as in-kind contributions has broken down the barrier of the initial high investment costs. LPG cylinders are refilled and maintained by a private company in collaboration with camp residents. Reports indicate environmental benefits compared to the use of firewood and higher user acceptance due to convenience over the monitoring and maintenance.



**50x** less household pollution compared to biomass stoves

LPG cookstove with quick initiation and heat up times leading to acceptance



LPG delivered by supplier to refugee workers who organize the collection, refilling and distribution of gas cylinders

**100%** coverage in Mahama and Mugombwa camps (18,500 households)



**\$2** monthly LPG refilling cost per person

**>200,000** LPG cylinder fillings/year donated by UNHCR

Stove costs of \$18-20 with one burner and \$27-45 with two burners