

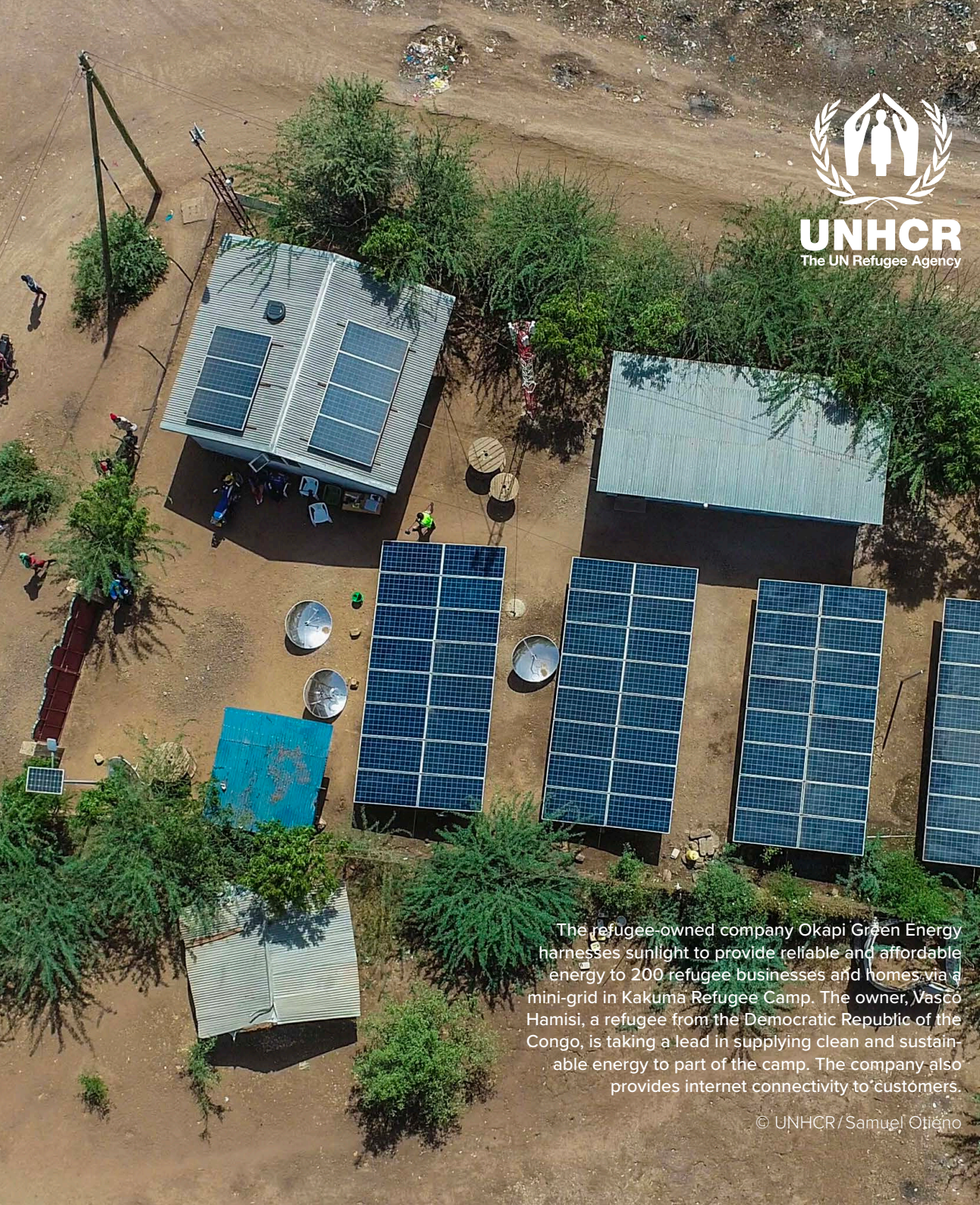


Access to Clean Energy in Displacement Settings Kenya

The Republic of Kenya is an East African country of 580,367 km², nestled on the Indian Ocean and with an ethnically diverse population of circa 55 million. It is the largest economy in East Africa, with a Gross Domestic Product (GDP) of USD110 billion in 2021.

In August 2022, there were 561,836 displaced people in Kenya, with 89% being refugees, and 11% asylum seekers. More than half (287,931 persons or 53%) fled Somalia, followed by 25% from South Sudan (148,377 persons). Other countries of origin include Burundi, Democratic Republic of the Congo, Ethiopia, and Sudan. Most refugees live in camps in Dadaab (43%) and Kakuma (42%), followed by several settled in urban areas (16%). The surrounding host communities are poor and do not have access to many basic services, further endangering the peaceful coexistence with refugees. Programmes that target both communities have proven very successful.

Under Kenya's previous Refugee Act (2006), refugees were unable to obtain work permits and required to live only in camps. The amended Refugee Act (2022) enhances the rights of refugees and asylum seekers in the country, moving away from 'closed camp' models, enabling refugees to become more self-reliant. It seeks to improve refu-



The refugee-owned company Okapi Green Energy harnesses sunlight to provide reliable and affordable energy to 200 refugee businesses and homes via a mini-grid in Kakuma Refugee Camp. The owner, Vasco Hamisi, a refugee from the Democratic Republic of the Congo, is taking a lead in supplying clean and sustainable energy to part of the camp. The company also provides internet connectivity to customers.

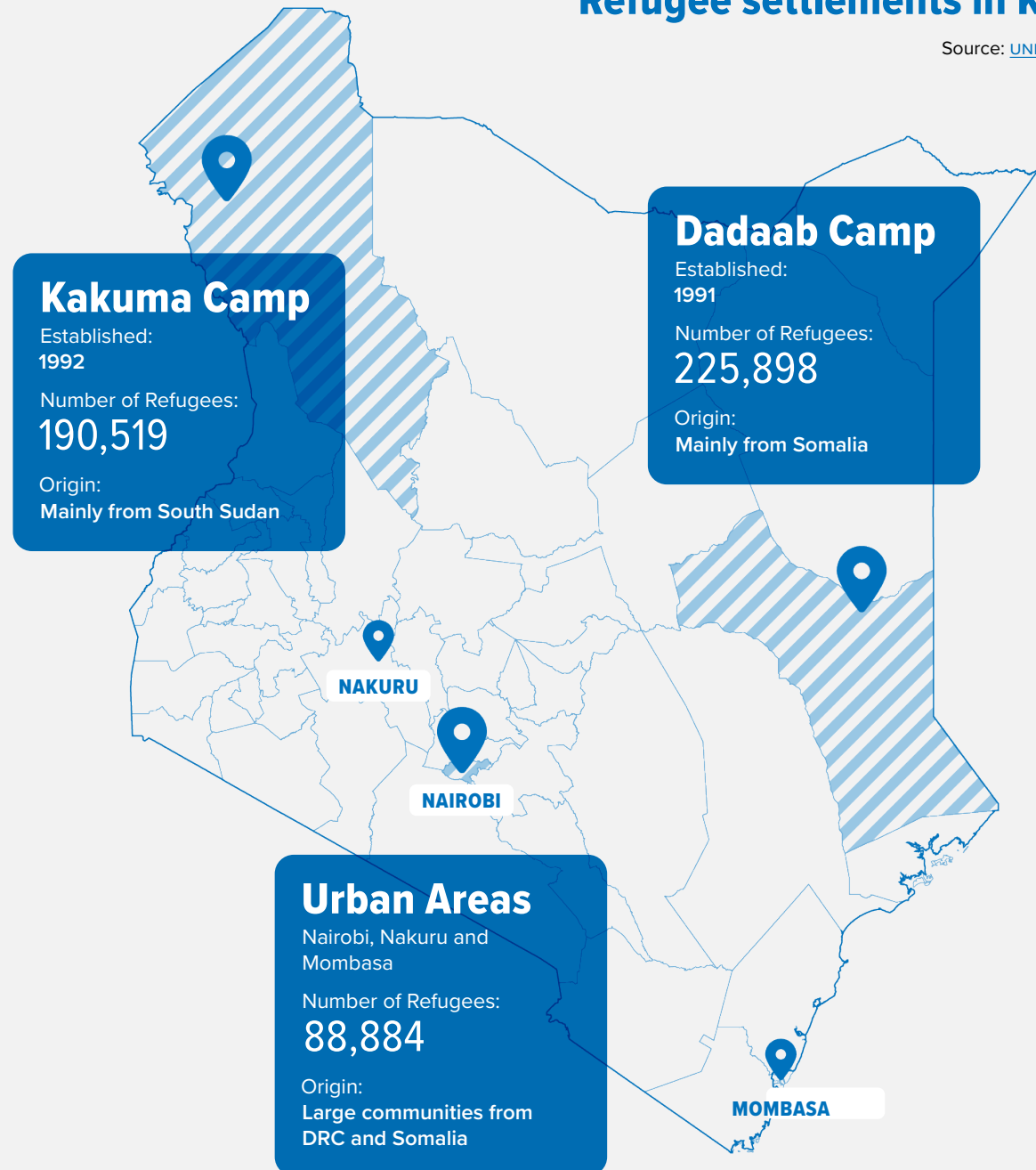
gees' freedom of movement; offers the right to work and earn a living when their qualifications are recognized; provides better access to documentation and education and gives refugees the right to start a business.

Kenya ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994, signed the Kyoto Protocol in 2005 and signed and ratified the Paris Agreement in 2016. The most recent Energy Act (2019) and the National Energy Efficiency and Conservation Strategy (2020) strengthen renewable energy. The government supports the transition towards clean cooking energy by offering tax exemptions. The country aspires for universal access to electricity for the entire population.

Electricity access in Kenya has increased significantly over the past two decades, reaching 100% of the urban and almost 65% of the rural population in 2022. Nonetheless, in counties like Turkana - where Kakuma and Kalobeyei refugee camps are located - electricity access is much lower at 15%. Most electricity is generated by renewable sources, namely geothermal (42%), hydropower (34%), and wind (14%). That said, 75% of Kenyan households (increasing to 90% in rural areas) still use firewood and charcoal as the primary fuel for cooking. In refugee camps, firewood remains the primary fuel, with 92% of households in Kakuma camp and Kalobeyei settlement, and 98% in Dadaab relying on it. Refugees' energy expenditures are high, with the average household in Kakuma and Kalobeyei spending USD 15, or 17% of their monthly income, for energy provision.

Refugee settlements in Kenya

Source: [UNHCR, 2022c](#)





Ethanol for cooking access

Between 2015 and 2018, UNHCR and its local partners supplied refugees in Dadaab camp with ethanol cooking stoves and fuel, as well as training on their usage. The ethanol was produced from biomass (molasses) and allowed the refugees to cook faster, safer, and cleaner. While demand was high, supply-side constraints by the private sector to operate in the humanitarian sector have resulted in the end of the project. In recent years, UNHCR and other humanitarian actors have investigated market-based mechanisms for ethanol-based cooking in Kenya.

- 100 household pilot study, in 2015, confirmed viability, followed by additional 2,182 households supplied with ethanol stoves
- More than 135,000 litres of ethanol fuel distributed on an ad hoc basis
- USD 0.70 retail price per litre of ethanol
- USD 0.14 estimated production cost per litre
- Ethanol cooking was well received by the community being faster, cleaner and more energy-efficient than firewood



Cash-based interventions for cooking energy

Since 2021, UNHCR has implemented Cash-Based Interventions (CBIs) to support energy needs in refugee settlements in Kenya. The unrestricted CBIs gave refugees the freedom to spend the money according to their preferences, strengthening the local market economy as well as the self-sufficiency of refugees. A follow up survey confirmed the general acceptance of the intervention but highlighted that CBIs alone cannot fully cover energy costs.

- CBIs targets 41,000 families (200,000 individuals)
- Households spend 30% of total CBI on hygiene items, 27% on energy and 19% on food
- USD 0.41 per person expenditure for energy needs, with 82% of households spent the energy-CBI on firewood or cooking fuels
- On average households can meet between 20-26% of total energy needs through CBIs
- 94% of households reported improved living conditions and 92% reported reduced stress over household costs thanks to CBI





Mini-grid for household electrification

A solar mini-grid supplies households, businesses, and institutions in Kalobeyei settlement with reliable and clean energy. It was first set up in 2019 and expanded in 2022 to meet the increasing demand. A private company owns and operates the mini-grid. A Result-Based Financing (RBF) component supports the scheme and allows the company to charge affordable prices. The stable electricity supply has opened many business opportunities, created jobs for the community and enabled a pilot project on electric cooking in the settlement.

- 2,276 households, 404 enterprises, and 36 institutions (30% of camp population) connected
- 60 kW initial solar PV capacity, expanded to 541 kW allowing for 24 hours of electricity per day for lighting, appliances, and business activities
- 80% grant and subsidy support allow for tariffs at national utility rate: USD 0.24 per kWh for households and USD 0.28 for businesses, USD 5 one-off connection fee
- USD 3.60 average monthly power bill for connected households, compared to USD 10 camp average
- 10 refugees employed as technicians, sales agents, and support staff



Solarization of schools

Since 2021, UNHCR has solarized 53 institutional facilities in Kenyan camps, including 37 schools. Some of these schools are part of the Vodafone-funded Instant Network Schools (INS) programme, which supplies schools with photovoltaic energy for electricity generation, multi-media equipment, and internet connectivity to enable digital learning. Access to electricity in schools heightens educational outcomes and improves teacher retention, among many other benefits for the community.

- 84 INS reached 86,000 students and 1,000 teachers
- 15 kWp solar PV and 25 kWp / 88 kWh lithium-ion storage systems for solarization of institutions for lighting, digital learning, printing, and teacher accommodations
- 25% of lessons supported by digital resources resulting in 125% increase in digital literacy for teachers, 61% for students
- 75% increase of learners and teachers' digital confidence and competencies
- 35% increase of teachers' confidence in lesson planning.