

ANNUAL REPORT 2022

on Sustainable Energy



KEY HIGHLIGHTS

Long-term renewable energy power supply agreements



signed with country operations, Kenya and Uganda as part of the [Green Financing Facility](#) initiative, becoming the first UN agency to do this with a guarantor modality



More than
900

thousand solar lanterns

to cover refugees basic lighting needs were procured and distributed in **51 countries**

Access to clean and sustainable electricity



for lighting has been enhanced in 3 countries (Afghanistan, Kenya, and Pakistan).

38,404 households supported with **cash assistance** to meet their energy needs or utility bills through multipurpose cash

15 %

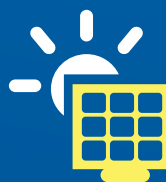
of refugees have access to clean cooking



Pre-feasibility assessment in Rwanda, South Sudan, Sudan and Uganda as part of the [Refugee Environmental Protection \(REP\) Fund](#)

46 %

of all **water pumps** and 44% of all **health facilities** supported by UNHCR are **powered with solar energy**



Feasibility assessments conducted in 6 countries (Ethiopia, Mauritania, Rwanda, South Sudan, Sudan and Zambia) to **solarize boreholes**

KEY ACHIEVEMENTS AGAINST

THE STRATEGIC OUTCOMES OF THE UNHCR GLOBAL STRATEGY FOR SUSTAINABLE ENERGY 2019-2025

1

Addressing energy needs during refugees' emergency response

Energy access for cooking, heating, and lighting was key in the emergency responses. Solar lanterns offer essential services to improve protection as part of the core relief items. More than 900'000 solar lanterns to cover basic refugees lighting needs were procured and distributed in 51 countries.

UNHCR and GIZ developed an action plan and technical procurement guidelines to improve e-waste management of solar lanterns. Start-up projects for e-waste management commenced in Bangladesh and Uganda. In Bidi-bidi Refugee Settlement in Uganda UNHCR and IOM joint hands to enhance environmental sustainability by minimizing uncontrolled disposal of solar and electronic products.

THE GREEN INNOVATION HUB IN BANGLADESH

Funding from the [Innovation, Environment and Resilience Fund](#), led to the establishment of the 'Green Innovation Hub' in Kutupalong and Nayapara refugee camps in Bangladesh. This multi-stakeholder initiative was supported by the private sector, NGO, and academia, to set up e-waste repair and recycling processes as well as to provide vocational training opportunities on energy systems for Rohingya refugees and Bangladeshi hosting community members. The project takes an innovative approach to integrate circular economy principles to reduce (through proper use, maintenance, and repair of solar products) and responsibly manage e-waste within the refugee hosting areas in Cox's Bazar.



2

Improving access to sustainable, safe, affordable, and clean¹ household energy

Some 85 percent of displaced populations in camps use unsustainably harvested biomass, such as firewood, for cooking. This presents a variety of risks to human life and health including indoor air pollution and conflict with local communities, while women, girls and boys are exposed to the risk of SGBV when out gathering wood.

In line with the targets set in the UNHCR Global Strategy for Sustainable Energy, Liquefied Petroleum Gas (LPG) is used as clean cooking fuel in [Rwanda](#)'s largest refugee settlements, Mahama and Mugombwa, reaching around 18'000 households. This programme enabled 68% of refugees in Rwanda to access clean cooking and increase of 50% compared to the year before. In [Uganda](#), where 98% of refugees use biomass energy for cooking, UNHCR has supported the production and use of biomass briquettes as transitional fuel to decrease the use of firewood towards more sustainable energy sources. Briquettes are produced locally in refugee settlements at the household or community level, thus reducing the reliance on firewood, increasing cooking efficiency and generating income for the community. The data on the Standardized Expanded Nutrition Survey (SENS) database reports that approximately 5,700 households are using briquettes mainly in the southwest region of Rwamwanja and Oruchinga settlements.

Cash assistance has been a crucial safety net for refugees and IDPs, allowing them to meet their immediate basic needs. In 2022, food, rent, hygiene items, and health were the largest expenditure categories in most operations: 22% of the cash assistance recipients used cash for utilities and bills, and 21% reported having used cash for energy access, including for cooking, lighting and heating.

THE USE OF CASH ASSISTANCE TO MEET ENERGY NEEDS

Cash assistance was used to reach some 41,000 households for refugees in Kakuma and Kalobeyei refugee camp sites. The need assessment showed that on average, refugees spend KES 1,878 (18.2 USD) per month on primary cooking fuels. The multipurpose cash assistance included an amount of 42 KES for energy, which equals around 10kg of firewood or 4kg of charcoal. As a result people can access roughly double the amount of cooking fuels as compared to the previous in-kind assistance. Furthermore refugee women and children do not need to collect firewood that increases GBV incidents ([UNHCR, 2022](#)).

UNHCR REFUGEE ENVIRONMENTAL PROTECTION FUND

The Refugee Environmental Protection (REP) Fund launched at the High-Level Official meeting at the end of 2021 will provide sustainable, scalable, long-term funding for reforestation and clean cooking programs through linking their environmental benefits to global carbon markets. These benefits will be verified and monetized to create the first large-scale refugee-generated carbon credits. The Fund will in addition generate green jobs for refugees and host communities supporting reforestation and clean cooking supply chains. UNHCR is working with a European development bank partner to design and formalize the legal and financial structure of the initiative. In 2022, feasibility studies started in Rwanda, South Sudan, Sudan and Uganda.



3

Expanding sustainable household access to lighting and connectivity

Access to clean and sustainable electricity for lighting and connectivity has been enhanced in 3 countries (Afghanistan, Kenya, and Pakistan). In Pakistan, UNHCR commissioned Solar Home Systems in flood affected areas to approximately 5'000 households. In Afghanistan, UNHCR has been distributing stand-alone solar solutions, allowing almost 6'000 people in remote areas to have access to clean electricity for lighting as well as to power small appliances. In Kenya, the existing solar mini grid was upgraded in 2022 to provide clean and reliable electricity to over 14,000 individuals, thus covering 30% of the total population living in the Kalobeyei settlement.

KENYA SOLAR MINIGRID FOR CAMP ELECTRIFICATION

In 2019 GIZ, UNHCR and other donors, set up a 60kWp [solar-based mini-grid in the Kalobeyei Settlement](#) (Kenya), providing affordable, safe, and reliable energy to 500 households, businesses, and institutions. The mini-grid was enhanced in 2022 with a further 541kWp generation capacity, now reaching around 30% of the population of Kalobeyei Settlement providing electricity to more than 14,000 people. Both refugee and host communities were involved in the project, including in the installation of the system. The mini grid is managed by community members responsible for operation and maintenance as well as addressing power supply issues as reported by the mini grid customers. Customers are charged according to their consumption, and tariffs vary for households and businesses.

4

Expanding sustainable electrification of community facilities

In 2022 an additional 37 boreholes have been solarized. Since each borehole uses some 40,000 litres of diesel per year, the environmental benefits are significant, equivalent to 110 tons of CO2 per borehole per year. Beyond the positive environmental effects, diesel-powered water pumps also have higher operating cost compared to solar solutions. Furthermore, remote field locations that are dependent on fuel deliveries have been affected by shortages and severe price increase due to the global fuel crisis.

Furthermore, feasibility studies have begun for 40 water systems in six countries including Ethiopia, Mauritania, Rwanda, South Sudan, Sudan and Zambia to develop the optimal designs for solarization which will commence in 2023.

Based on results from the health balance score card, the energy data collection of 399 health facilities in 21 country operations worldwide showed that 44% of health facilities are accessing solar energy, 14% is dependent on diesel generator and 14% have currently no access to electricity. Plans are developed to improve access in health facilities.



CASE STUDY:

SOLARIZATION OF HEALTH CARE FACILITIES IN UGANDA

As part of the [Energy Solutions for Displacement Settings \(ESDS\)](#) programme, UNHCR and GIZ support the provision of solar photovoltaic systems for 6 health care facilities in [Uganda](#). These systems of typically 10 kVA supply six health care facilities in Imvepi and Rhino camps with electricity for lighting and medical equipment such as refrigerators, microscopes and baby warmers, as well as for ICT equipment.

The quality of health care services is significantly improved and available to serve an estimated 60,000 refugees and more than 10,000 host community members. A solar photovoltaic system generates reliable electricity for a health facility compared to small lighting devices allowing the use of various medical appliances that are common in health care centres and general activities like patient examinations, medical procedures, sterilizations, pharmaceutical cold chain and examination of biologic samples.



CHAD SOLAR PROGRAMME

UNHCR and Swiss Development Cooperation (SDC) conducted the first ever large comprehensive campaign in Chad, diagnosing the 217 boreholes and wells in refugee camps and host villages, supported by UNHCR, to allow for an accurate selection of boreholes to be solarized that will ensure a sustainable utilization of all water resources.

Three solar parks feeding 10 submersible pumps supplying both Refugee camp of Djabal and the town of Goz Beida and 7 reticular solar systems providing water in N'Djamena, and 13 hand pumps are already in the implementation phase and will be finalised in 2023 reaching some 100,000 refugees and hosting communities.

5

Transitioning UNHCR global office infrastructure to renewable energy sources²

UNHCR has an institutional priority under the [Strategic Framework for Climate Action](#) Pillar 3 to reduce its CO2 emissions by at least 45% by 2030. The [2022 Greening the Blue Report](#) provides details on the UN's environmental footprint – UNHCR falls into the average among our fellow UN agencies incorporating the following initiatives:

Green Boxes :

Smart energy metering systems installed in UNHCR's offices allow to consistently measure global energy consumption. UNHCR has installed Green Boxes in around 390 offices globally so far, making us the frontrunners in the UN system Information from the Green Boxes that is displayed in a [PowerBI dashboard](#). The Green Boxes have improved data accuracy through real time monitoring, data collection and visualization of emissions, energy, waste, and water across UNHCR.

Greening the Blue (GtB) and Green Data:

UNHCR participates in the annual UN-wide Environmental inventory which measures greenhouse gas emissions, water consumption and waste production. Participation has increased from 100 offices in 2018 (GtB report, 2019) to 464 offices in 2021 (GtB Report 2022). CO2 emissions have reduced from 97,136 tonnes in 2018 (as reported in the GtB report 2019) to 54,944 tonnes in 2021 (as reported in the GtB Report 2022). Information from the inventory is published annually in the [Greening the Blue Report](#), and in the [Greening the Blue PowerBi Dashboard](#).

Transition to Renewable Energy:

Technical Feasibility Assessments for the transition to clean energy were completed in 48 UNHCR Offices, and another 13 are in progress. 33 UNHCR offices are currently green (i.e. they consume 80% or more energy generated from renewable sources) out of 466 offices surveyed. The UNHCR office in Islamabad installed a 250kW solar system which produces 169,089 kWh of energy. Such upgrade has allowed the office to shift from the use of national grid electricity to solar power, saving 27,054 USD annually. Pakistan has also installed an 80-kW solar power system in Quetta and a 260 kW on-grid solar power system in Peshawar; these systems will supply part of the offices' electricity needs using renewable solar energy, reducing the use of diesel generators and grid electricity hence lowering overall operating costs. The UNHCR offices in Kananga and Gbadolite in the Democratic Republic of Congo (DRC) have installed solar systems which provide 35% of total energy needs in Kananga and 45% in Gbadolite. The two offices save 33.33 liters of fuel daily and USD 50,000 in annual energy expenses.

Nepal, Jordan and HQ are driving electric cars:

UNHCR is gradually shifting to Electric Vehicles where possible. Nepal is one of our three UNHCR offices to introduce electric vehicles to their fleet, in addition to Jordan, and HQ Geneva. See [here](#) for a story from our operation in Nepal about their experiences with electric vehicles.

CASE STUDY: GREEN FINANCING FACILITY

In 2022, UNHCR has signed long-term renewable energy power supply agreements, becoming the first UN agency to do this with a guarantor modality. This means that a private company will install solar panels and batteries in a UNHCR office, and we will pay the company “utility bills” for the energy consumed from the solar panels. Three sites, two in Uganda and one in Kenya, are covered by these first agreements, reducing the operations’ carbon footprint by between 80 and 90%.

The agreements are a pilot of the [Green Financing Facility](#) (GFF), an innovative financing model designed to ensure the sustainable and efficient use of donor funds in transitioning UNHCR to renewable energy sources and reducing our carbon footprint. The Green Financing Facility will ensure that energy bills after solar installation will be the same as before or lower, never higher. As infrastructure is the main contributor to UNHCR’s environmental footprint, GFF focuses in converting offices run on diesel generators and fossil fuel to solar energy.



KEY ACHIEVEMENTS AGAINST

THE STRATEGIC APPROACHES OF UNHCR GLOBAL STRATEGY FOR SUSTAINABLE ENERGY

PARTNERSHIP AND COORDINATION

- UNHCR and GIZ are partners in the [Energy Solutions for Displacement Settings \(ESDS\)](#) programme, providing access to sustainable energy for refugees. In 2022, ESDS has received additional funds for extending the programme for other 2 years.
- In 2022, NORCAP deployed 6 Energy Experts in 6 UNHCR country operations (Kenya, Mauritania, Niger, Tanzania, Uganda, Zambia) providing technical capacity and complementing UNHCR resources in the support of sustainable energy program development and implementation.
- The [Geneva Technical Hub](#) provided technical support on Energy, Environment, Shelter, Settlement and WASH issues to 17 Country Offices and 1 Regional Bureau in 2022. Support included technical design of solarization of shelters and health care facilities in Bangladesh and of a biomass processing facility in Lebanon, Rapid Environmental Assessments (REA) in Malawi, Zambia and Zimbabwe to identify the main environmental concerns and possible mitigation measures to decrease environmental impacts in refugee settings, as well as the alternative cooking technologies such as locally produced pellet stoves to decrease the reliance on firewood and its related environmental impacts.
- UNHCR and the World Bank have been collaborating with Homer® in developing the HOMER Enabled Tool to Electrify Displacement Settings. The tool provides techno-economic optimization to sustainably electrify displacement settings via renewable energy systems. A hybrid workshop with energy humanitarian practitioners was hosted in 2022 to review the tool which may be piloted in few country operations in 2023.

- With support of the Ikea Foundation, detailed country assessments on energy access were published for [Uganda](#) and [Rwanda](#).
- UNHCR DRS in collaboration with the University of Utrecht, in the Netherlands, conducted an extensive [study on electricity access](#) for some 300 refugee sites in sub-Saharan Africa in 3 countries. While a second phase to tackle electricity access in refugee settlements, mainly focusing on lighting via solar based mini grids is undertaken in Malawi, Uganda, and Zambia.
- SUN-ESDS programme has enhanced access to energy through a variety of market-based approaches in Ethiopia, Kenya, Uganda. The programme has benefitted 160,614 refugees and host communities, avoiding 1,711 tons equivalent of CO2 emissions by improving energy services, increased efficient energy access and improved knowledge through energy-related trainings and the programme will be extended until 2024. ESDS programme milestones up to 2022 are summarised [here](#).

CAPACITY DEVELOPMENT

- GIZ and UNHCR conducted three workshops on “[Cooking Access in Displacement Setting](#)” to promote clean cooking access and humanitarian-development-peace nexus, and two workshops on [Understanding E-waste Value Chain in Humanitarian Settings](#). Additionally one training in Role of [Energy Policies in Shaping Energy Access Dialogue in Displacement Contexts](#), [Energy Efficiency in Humanitarian Organization Infrastructure](#) and a workshop on [Participatory Design Processes for Energy Projects Planning and Implementation](#) were organized in 2022. Additionally, GTH has complemented online internal trainings to 58 UNHCR staff from 19 country operations on clean cooking project implementation and on energy assessment for households and communal facilities.
- With support from “[Safe from the Start Initiative](#)” UNHCR launched the [Compendium on Protection-Sensitive Access to Lighting](#).
- Nine UNHCR communities of practice, knowledge sharing sessions and technical trainings on renewable energy systems, including operation and maintenance best practices of off-grid solar systems, were provided to 225 participants from 23 country operations.