CASE STUDY

# BANGLADESH 2018-2024 / ROHINGYA CRISIS

CONTEXT / SETTLEMENT | SUPPORT METHODS NFI

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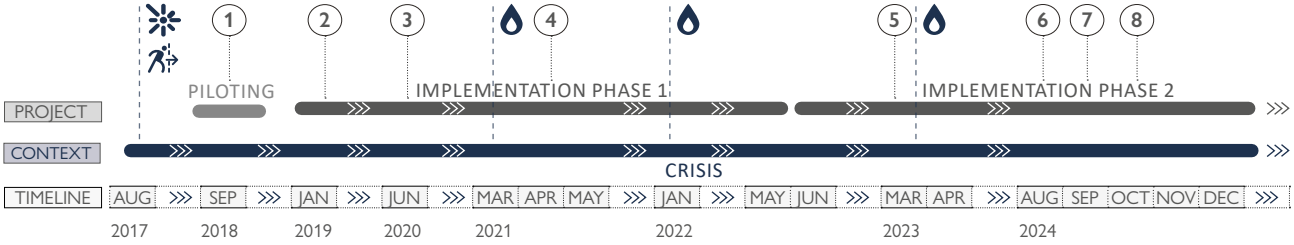
|---|---|
| CRISIS | **Rohingya Refugee Crisis (Aug 2017 onwards)** |
| PEOPLE IN NEED | **1,006,670 people** (as of Nov 2024)* |
| PROJECT LOCATION | Cox's Bazar, Bangladesh |
| PEOPLE SUPPORTED BY THE PROJECT | **509,375 individuals**<br>(51% female, 49% male; 53% children)* |
| PROJECT OUTPUTS | **128,752 new packages of LPG**<br>(including 27,875 HH from the host community)<br>**5,406,467 LPG refills** (5% host community)<br>**134,610 HH supported with porters** (4% HC)<br>**86,861 stoves** distributed to refugee households |
| DIRECT COST | **USD 140** per household annually<br>(for LPG refill, canister, stove, accessories and training) |
| PROJECT COST | **USD 162** per household annually |


** Joint Government of Bangladesh - UNHCR Population Factsheet – November 2024.*

## PROJECT SUMMARY

Since 2018, this programme provided clean, safe cooking fuel to Rohingya refugees, reducing reliance on firewood and mitigating associated protection, health and environmental risks. Implemented under the Safe Access to Fuel and Energy Plus framework established in coordination with the Government of Bangladesh, the programme combined fuel provision with community training, safety measures and operational systems across all the Rohingya camps. Experience over multiple years underscored that sustained access to Liquefied Petroleum Gas (LPG) is essential to avoid negative coping strategies and to protect the natural environment and social cohesion around the camps.




**Aug 2017 onwards:** Rohingya influx and establishment of the Cox's Bazar camps in protected forest land, leading to deforestation to cover basic needs for fuel and shelter.

1. **Sep 2018:** Programme start in Cox's Bazar camps (initial blanket coverage with new LPG packages and refills, following a pilot).
2. **Jan 2019:** SAFE+ framework operationalized to coordinate fuel, environment and related actions. Launch of joint LPG program.
3. **Jun 2020:** Introduction of a porter support service to assist elderly, disabled, widowed, and child-headed households during distributions.
4. **Apr 2021:** Shelter design incorporates a plastered wall for the cooking area, to increase fire safety.

**Mar 2021, Jan 2022, Mar 2023:** Massive fires in camps, triggering the distribution of emergency LPG kits.

5. **Mar 2023:** Community-led stove repair programme launched in a pilot location to enhance local capacity and ownership.
6. **Aug 2024:** Initial discussions began across agencies to harmonize LPG tender processes and standardize cylinder and stove specifications; the joint tender approach was revisited one year later.
7. **Sep 2024:** A tracing system was introduced in the LPG distributions program to prevent the resale of canisters.
8. **Oct 2024:** Adaptation of the distribution tools for LPG distribution, in coordination with other agencies, to ensure better targeting and preventing duplication through biometric verification.


*The project distributed LPG canisters to a large refugee population. To assist the most vulnerable households who were unable to transport the heavy cylinders to their shelters by themselves, porters from the refugee community were engaged.*

## BACKGROUND

Bangladesh has hosted successive waves of Rohingya refugees from Myanmar for decades, but the largest forced displacement began in August 2017, when hundreds of thousands fled violence in Rakhine State and sought refuge in Cox's Bazar. For more information, see overview A.13 in Shelter Projects 2017-2018. By late 2024, more than one million Rohingya refugees were recorded in Bangladesh, making this one of the world's largest and most protracted refugee situations. Most refugees live in highly congested camps in Cox's Bazar and remain heavily dependent on humanitarian assistance for basic services and daily survival. Household cooking fuel quickly emerged as a major humanitarian and protection concern.

Before the introduction of LPG, many refugee households relied on collecting firewood or using biomass, which contributed to rapid deforestation around the camps, increased exposure to protection risks, particularly for women and girls while collecting firewood, and worsened indoor air pollution. The environmental degradation associated with firewood use also compounds erosion, flooding, and landslide risks in an area already highly vulnerable to extreme weather. National energy conditions also informed response choices: despite near-universal electrification, grid unreliability and the negligible uptake of electric cooking made large-scale e-cooking impractical in camps during this period.

Against this backdrop, the LPG programme in Cox's Bazar was established not only as an energy intervention, but also as a protection, environmental, and social cohesion measure, reducing tensions with host communities over natural resources and aligning with Bangladesh's broader clean-cooking pathway.

## PROGRAM DESIGN

The assistance modality was predominantly in-kind, through the provision of 12 kg LPG cylinders, refills, stoves, and accessories, to ensure reliable access to a safe fuel and allow close technical oversight of safety standards. This choice was reinforced by the national system constraints. Over time, allocations were refined to match household size and consumption data, promoting both equity and stewardship of resources. The programme paired distributions with practical training, demonstrations on safe usage of LPG and storage, and clear messaging on kitchen layout, ventilation, and fire safety in the shelter context.

Strengthening energy efficiency was an explicit design choice. Pressure cookers were introduced and accompanied by training to reduce gas consumption and cooking time. Given that most Rohingya households had used firewood before displacement, training and demonstrations covered the basics of LPG use, safe ignition, and cylinder handling, and promoted safety practices at cooking areas. Behaviour-change messaging reinforced safe kitchen practices, and programme monitoring was used to assess adoption and optimize household LPG requirements over time.


*LPG distributions were organized in large facilities built for the project.*

## PROJECT IMPLEMENTATION

Implementation proceeded as a coordinated, camp based operation aligned with Shelter/NFI and site management structures. Key steps included:

- **Needs identification and allocation rules:** Household energy and fuel use studies under the SAFE+ framework were used to determine initial refill frequencies and quantities, adjusted over time using PDM findings. Allocations were tied to household size bands (2+, 4+, 6+, 8+, 10+, 12+), with larger households receiving refills more frequently. Pressure cooker distribution enabled longer refill intervals without compromising cooking needs.
- **Procurement and stock management:** Procurement followed competitive procedures and quality requirements. Agreements with suppliers supported safe transport and handling, while the programme maintained a buffer stock outside distribution points equivalent to about one to two weeks of anticipated demand to minimize disruption. LPG was not stored overnight inside camps for safety; vendors retained contingency stocks off site. Price volatility and exchange rate fluctuations were managed through regular supplier engagement and long term agreements for accessories; fuel prices followed market indices at the time of procurement.
- **Safety and storage:** Cylinders were stored in well ventilated areas away from ignition sources, with spacing between stacks and clear access corridors. Regular checks for leaks and damage were combined with on site emergency equipment, staff training, and defined response procedures.
- **Community mobilization and distribution organization:** Periodic distributions were organized, and the day before, tokens were distributed to the households. On distribution day, tokens and time slots were used to smooth the flow and reduce crowding. Households returned empty cylinders to trigger the refill process. If a cylinder still contained more than 250 grams of gas when weighed, the household was advised to continue using it and return later; otherwise, verification and voucher transactions were completed, and the full cylinder was weighed in front of the beneficiary prior to handover.
- **Inclusive and dignified access:** Distribution points were equipped with separate queues for women and men; shading, seating, and breastfeeding corners were provided; and female staff were present at verification desks. Extremely Vulnerable Individuals, such as older persons, persons with disabilities, and other extreme vulnerabilities, received porter support to transport cylinders safely to their shelters, and children were not allowed to carry cylinders. Entry and exit routes were separated to reduce congestion, and basic services (water, toilets, handwashing) and fire safety equipment were in place.


*At first-time distributions, the team provided demonstration on the safe use of LPG cylinders and stoves.*

- **Complaint and feedback mechanisms:** A dedicated desk was available at distribution sites, complemented by site management, CWC (communication with communities), and protection partners. Feedback from PDMs informed action, such as the decision to continue porter support to the extremely vulnerable people so that beneficiaries did not have to return cylinders themselves.
- **Repair and replacement**: While initial phases provided full kits, stove life cycles created a replacement need. Donor contributions enabled replacement where necessary. In 2023, a community led stove repair center was opened: trained Rohingya participants, engaged on a rotating cash-for-work basis, repaired thousands of stoves, strengthening local ownership.
- **Staff composition and roles:** The operation was overseen by a dedicated lead, with 18 field staff coordinating roughly 80 third party personnel, a comparable number of Rohingya volunteers, and suppliers. Teams handled warehousing, cylinder handling and distributions in coordination with vendor staff; supervisors and IM personnel supported data and technical quality. Volunteers and community mobilizers disseminated information, helped with distribution-related messaging, and monitored fire safety in cooking areas.
- **Camp Infrastructure:** Through the set-up of the programme, a whole network of related infrastructure was established across the camps, with strategic plots specifically allocated for distribution sites which soon became constantly busy with the daily LPG deliveries and have further served for any other distribution. Roads were also paved with cooked bricks to allow LPG trucks access across.


*In addition to LPG distributions, the project also included a community-led stove repair component.*


*The project had a concrete environmental impact, since the main cooking fuel source prior to its implementation was firewood, which had led to deforestation in and around the camp, as shown on the left (photo from 2019). The comparison (right-hand photo) after seven years of LPG distribution and reforestation efforts.*

## TARGETING AND COMMUNITY ENGAGEMENT

The programme applied blanket coverage within more than 50% of the Rohingya camps, with refill frequencies calibrated to family size and verified through digital registration and community validation.

Regular meetings, door-to-door visits, and training ensured that households understood the distribution cycle, safe handling, and kitchen practices. Focus Group Discussions, Key Informant Interviews, and the complaint and feedback system enabled data-informed adjustments, such as refining refill schedules, strengthening safety messaging, and identifying additional support needs for extremely vulnerable individuals. Refugee volunteers and cash-for-work participants assisted with mobilization, follow-up, and support to vulnerable individuals, reinforcing programme effectiveness and safety.

## COORDINATION

The programme aligned with the SAFE+ mechanism and engaged through the Energy and Environment Technical Working Group, alongside shelter and camp coordination structures and authorities. Multi-stakeholder coordination enabled shared technical standards, operational coherence, and advocacy on safety, efficiency, and market harmonization. More broadly, energy coordination in the camps helped reinforce LPG as the core household cooking fuel, while ensuring that related guidance on safety, efficiency, refills, stove use, and complementary household energy needs was addressed within an integrated camp-energy approach.

## DISASTER RISK REDUCTION

Fire is a major camp hazard (see case study A.15 from Shelter Projects 9th Edition). The programme's DRR approach combined:

- Training and mobilization on LPG and stove safety, cooking area layout, and ventilation, with assistance from community leaders to address initial misconceptions and build acceptance.
- Fire safety rings for walls behind stoves, produced locally from recycled drums via cash for work, to reduce wall ignition and spread.
- Successful advocacy for at least one plastered wall in shelters where cooking areas were located, incorporated in the shelter designs approved by the local authorities from 2021 onwards, and the construction/retrofit of Lime Stabilized Soil shelters to reduce the spread of fire.

By reducing firewood collection and pressure on surrounding forests, the programme complemented slope stabilization and plantation works that helped reduce erosion and landslide risk.

## ENVIRONMENTAL IMPACT

Deforestation and environmental degradation around the camps—driven by firewood collection—had increased siltation, flash flood, and landslide risks, while straining relations with host communities. Replacing firewood with LPG in parallel with plantation programmes allowed the surrounding environment to recover gradually and helped ease tensions, contributing to improved social cohesion alongside environmental benefits such as reduced indoor smoke and soot.

## MATERIALS AND SUPPLIES

The LPG supply chain, involving multiple intermediaries and transport stages, faced price volatility linked to energy markets and currency movements. The programme responded by:

- Establishing long term agreements for accessories (stoves, hoses, regulators, energy efficient equipment) while purchasing fuel at current indexed prices; maintaining quality through inspections and compliance checks.
- Working with national and international suppliers under safety and performance requirements; ensuring vendors transported LPG to distribution points and maintained off site contingency stocks.
- Contributing with partners to harmonize tender processes and standardize cylinder and stove specifications to increase efficiency and prevent monopolistic behaviours.

## MAIN CHALLENGES

Securing predictable funding to maintain the "LPG pipeline" remained a central challenge. An estimated USD 21.3 million per year (based on the JRP 2024) was needed to cover more than 100,000 households in the targeted camps, amid signs of donor fatigue in a protracted crisis. Additionally, space constraints limited the number and location of distribution points: unable to construct a facility in every camp, the operation sometimes served multiple camps from a single site, obliging beneficiaries to travel longer distances with cylinders.

## LINKS WITH RECOVERY

By reducing time spent on firewood collection and smoke exposure, LPG increased time for caregiving and other daily tasks and supported improvements to household well being. The programme's local engagement, including volunteer participation, community led repairs and safety production (e.g., fire rings), reinforced ownership and capacity, elements that are foundational for recovery in a protracted displacement setting.

## EXIT/HANDOVER

Given restrictions on refugee livelihoods, identifying a full exit strategy for LPG was difficult. Partners therefore prioritized measures to reduce consumption through efficiency, lower management costs by sharing capacity with local actors, and explore alternative fuels and technologies that could complement LPG over time. Assessments of options such as briquettes, biogas, and e-cooking suggested that, in the short to medium term, these were more viable as complements than replacements at the camp scale, while alternative financing mechanisms such as carbon credits were also explored to support longer-term sustainability.


*LPG cylinders were stored at the distribution point warehouse with adequate spacing between stacks prior to distribution. Vendor staff regularly inspected the cylinders to ensure safe storage.*

## OUTCOMES AND WIDER IMPACTS

The programme played a vital role in addressing urgent household energy needs in the camps. Households reported shorter cooking times, cleaner cooking fuel, lower out-of-pocket costs, improved safety, and fewer health issues associated with indoor smoke. By reducing reliance on firewood, the intervention lowered tensions with host communities over natural resources and supported environmental rehabilitation around the sites. Technical exchanges among partners also prompted work to harmonize CO2 offset methodologies by standardizing assumptions on baseline firewood use, incorporating the fraction of non-renewable biomass, and accounting for LPG emissions. Without continued LPG provision in this context, households would likely revert to firewood, with negative protection, health, environmental, and social cohesion consequences.


*Safety awareness sessions were organized on the use of LPG and stoves.*


*The use of LPG as fuel had positive impacts on health, dignity and safety.*

## STRENGTHS, WEAKNESSES AND LESSONS LEARNED

### *STRENGTHS*

√ **Integration:** Strong coordination with camp coordination/site management, protection actors and camp authorities enabled timely implementation, tailored support to extremely vulnerable households, and a do no harm approach that addressed the risk of child labour around distributions.

√ **Systems:** Robust procurement and supply systems, a broad operational presence across camps, and dedicated distribution points underpinned the scale and consistency of the operation. Human resources (staff, third party contracted staff, and refugee volunteers) and clear SOPs sustained year on year continuity.

√ **Community engagement:** Continuous engagement through FGDs, trainings, door to door mobilization, and inclusion of Rohingya volunteers enabled the programme to function during adverse conditions and adapt to feedback rapidly.

### *WEAKNESSES*

× **Space constraints:** Insufficient land for dedicated distribution facilities in every camp forced multi camp operations from single sites, increasing the distances some beneficiaries had to travel.

× **Limited alternative technologies:** Despite active exploration, there were no readily deployable alternative cooking technologies that could complement LPG for a mixed fuel strategy, lowering the dependency on LPG and the costs of the programme.

× **Difficult exit strategy:** Identifying a viable exit or handover pathway remained challenging in a no livelihoods context; adjustments to accommodate reduced funding were constrained by ongoing needs and limited household purchasing power.


*Despite having designed and built dedicated facilities for this project, which were then used for other kinds of distributions in the camp, the lack of space sometimes meant that beneficiaries had to travel long distances to access fuel.*

**FURTHER READING ON SHELTER PROJECTS**

**On the Rohingya crisis:** SP 17-18 / A.13-A.15

**On fire response projects:** SP 9TH ED. / A.15 / BANGLADESH; SP 2009 / A.15 / SOMALIA

**On cooking stoves:** SP 17-18 / A.7 / SOUTH SUDAN

### LESSONS LEARNED

- **LPG distribution as the optimal near term solution:** In the specific conditions of Cox's Bazar, considering the scale and density, LPG proved the most feasible cleaner cooking solution at scale, addressing environmental degradation, protection concerns, and time poverty linked to firewood collection.
- **Efficiency, safety, and time savings matter:** Reductions in cooking time and cleaner operations improved safety and released time for other essential activities, especially for women. Simple, repeated safety messaging and visible precautions (e.g., weighing, separation of queues, fire rings) built trust and practical safety outcomes.
- **Inclusive delivery improved access:** Consistent porter assistance, female staffing at verification points, and tailored facilities made distributions more accessible and dignified for vulnerable individuals and women-led households.
- **Community engagement in operations and maintenance strengthened ownership:** Recruiting refugee volunteers and establishing community-led stove repairs strengthened ownership, lowered downtime, and cushioned the impact of procurement and replacement delays.
- **System calibration reduced diversion risks:** Cylinder tracing and periodic review of per-household allocations aligned supply with real needs and reduced resale risks. Continual monitoring and beneficiary feedback were critical to calibrating volumes and schedules.
- **Early planning for sustainability pathways was important:** Even when a full exit was not feasible, parallel workstreams helped reduce long-term costs and dependence on humanitarian funding.
- **Evidence-informed calibration sustained performance:** Routine monitoring, combined with structured qualitative engagement, supported iterative adjustments to refill intervals, safety messaging, and efficiency measures, and proved essential to sustaining performance in a dynamic context.