

What are the impacts of providing cooking fuel in refugee camps?

Refugees often harvest firewood to meet their needs for cooking fuel. This study in Cox's Bazar, Bangladesh found a range of social, health, and environmental benefits were achieved by providing cooking fuel to refugees.

Provision of free, clean, cooking fuel benefits health, well-being, and environment

This mixed-methods study showed that provision of free liquified petroleum gas (LPG) to Rohingya refugees, to replace firewood for cooking, was associated with reduced deaths and disease due to indoor air pollution, increased carbon storage, improved food security and mental health, and reduced inter-group and domestic conflict.

Long-term provision of LPG could be a feasible and cost-effective strategy to support the food security, nutrition, health, and safety of refugees while protecting the environment, reducing tension with host communities, and advancing sustainable development goals on clean energy.



Prior to LPG distribution, a Rohingya boy walks home from the forest with firewood. Image credit: Laura H Kwong

Background

Unlike lifesaving support such as shelter and food, cooking fuel has historically not been provided by humanitarian organisations. To reduce the reliance on locally harvested firewood for cooking in the Rohingya refugee camp, the Government of Bangladesh, together with UN agencies and NGOs, freely provided each of the 195,000 refugee households with one LPG stove and cylinder starting in 2018. Households were provided with free LPG refills about once a month, depending on family size.

How the research was conducted

The study enrolled 600 households that had been using LPG for 12 months (comparison group) and 600 households that had not yet started using LPG (intervention group). Stove use and particulate matter were monitored in 202 households. Rohingya community members were interviewed about domestic and inter-group harassment and violence related to cooking fuel collection and use. Data were collected at 0, 12, and 22 months after baseline.

Key findings

The LPG distribution program was associated with high exclusive use of LPG and...

- replacing 4.3 kg of firewood/day with 0.34 kg of LPG/day, preventing 330,600 tons of firewood extraction and 407,000 tons of CO₂ emissions;
- increased spending on food (from \$7.19/month to \$8.55/month);
- reduced air pollution, preventing 2,309 adult deaths and 385 child death over 5 years;
- lower prevalence of female caregivers at risk for depression by 10.0%;
- reduced the prevalence of burning of plastic as a cooking fuel from 40% burning 5+ days/week to 0%; and
- reduced inter-group and domestic violence.

The program cost \$0.34-\$0.47 per day per family. Since refugees needed to bring their cylinders to the depot to collect the LPG refill, targeting of resource appeared effective: very few LPG tanks were "lost" and needed to be replaced.

Implications for humanitarian practitioners and policymakers

Humanitarians can use the results of this study to help donors understand the multi-sectoral impact of their funding: not only does funding the provision of clean-cooking reduce respiratory illness and save lives, but it also improves food security and reduces refugee-host conflict and domestic violence. Humanitarians could advance clean cooking for refugees by:

- assessing sustainable clean fuel options for other humanitarian settings;
- continuing to develop technologies and processes that increase the efficient use of cooking fuel;
- developing international financing mechanisms; based on carbon credits or results-based tools to offset the cost of fuel provision, and;
- considering incorporation of fuel provision into the mandate of the World Food Program (WFP).

Donors can draw on these study results to be reassured that their contributions to a clean cooking fuel program provides a range of benefits well-targeted to refugee beneficiaries.

Recommendations for future research

As well as collaborating with humanitarian actors on the above, researchers could also:

- Determine how much refugees could sustainably contribute to the cost of a clean fuel program (considering refugees' varying ability to legally earn money and the time costs and risks they face collecting free biomass fuel)
- Explore the potential for carbon credits, results-based financing, or other mechanisms to sustainably fund clean cooking programs
- Explore the relationship between cooking fuel and domestic violence in other settings, with other fuel types
- Assess the natural capital impacts of reduced deforestation due to cooking fuel provision

Keywords

Clean cooking, LPG, health, deforestation, refugee-host community tension, cost-effectiveness, SDG 7



Left: Plastic in a three-stone fire pit, ready for burning. Right: LPG used for cooking. Image credit: Laura H Kwong

About the study team

The research team was led by Dr. Laura H Kwong (University of California, Berkeley; formerly Stanford University), Dr. Stephen P. Luby (Stanford University), and Dr. Mahbubur Rahman, Dr. Ruchira Naved, and Dr. Nuhu Amin (icddr,b). The Government of Bangladesh and the Safe Access to Fuel and Energy (SAFE+) group (particularly UNHCR, IOM, WFP, and FAO) were pivotal partners.

Further reading and contacts

- [Research documentary in English, Bengali, Arabic, French, and Spanish](#)
- [Policy brief](#)
- [Elrha Project Page](#)



To donate or learn more about LPG distribution in the Rohingya refugee camp: Energy & Environment Technical Working Group

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