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The use of LPG helps to move the world towards lower carbon pathways. Replacing high emissions fuels like diesel with LPG in automobiles and solid fuels burned in traditional stoves for cooking and heating helps to lower emissions of climate active pollutants, and provide for a healthier living environment.

Reducing CO_2 emissions alone is not enough to address climate change. The Inter-Governmental Panel on Climate Change (IPCC) has noted that although CO_2 is the main component responsible for long-term warming, the reduction of Short-Lived Climate Forcers such as methane (CH4) and black carbon (BC), that operate in the short term, can contribute significantly to limiting warming to 1.5°C.[16]

BC is the second top global warming agent after CO_2.[17] The IPCC recognises the role of gas, and specifically includes LPG as a climate mitigation measure to tackle BC emissions from residential cooking. Household air pollution contributes significantly to ambient (outdoor) air pollution; globally, up to 25% of BC emissions and 15% of fine particulate ($PM_{2.5}$) emissions come from burning solid fuels for household energy needs.[18]

In India, researchers found that eliminating emissions from household fuel sources — without changes to industrial or vehicle emissions — would lower ambient air pollution levels to meet the country's air quality standard.[19]

LPG has an overall climate protective role when used at scale for cooking. It burns more efficiently with a lower emissions profile than firewood, charcoal and kerosene burnt in open fires or rudimentary technologies in low and middle-income settings.

In Ghana, GLPGP has projected that between 2020 and 2030, increased LPG access for cooking could result in up to 221 million trees saved, up to 9.30 million MT CO_2eq emissions and 16.6 million MT of BC equivalent emissions averted. The economic value of averted CO_2eq emissions, in terms of carbon financing, was projected to be € 29.6 – € 40.6 million cumulatively, using the 2018 prevailing price of carbon.[20]

In Europe, LPG offers 15% lower greenhouse gas emissions than heating with fuel oil.

SCALING UP LPG USE FOR EVERYDAY COOKING PROTECTS THE CLIMATE

A study by the University of Liverpool, UK and the Centre for International Climate and Environmental Research (CICERO), Norway, sponsored by the African Development Bank was conducted in 2017. The study modeled the health and climate impacts of scaling LPG adoption for clean cooking to 58% of Cameroon's population by 2030 from less than 20% through the country's national LPG Master Plan, developed in 2016 with GLPGP. A key driver of the Cameroon government's desire to expand LPG access was concern about the severe forest loss, and related climate consequences, from the widespread use of fuelwood for cooking.

Study results show that implementation of the Master Plan is expected to reduce the emissions of short-lived climate pollutants like BC by more than a third, and ultimately avert 4.5-7.6 million tons of CO_2-equivalent over a 100-year time horizon. This will have a net cooling effect of -0.10 millidegree centigrade (milli °C) in 2030. By 2100, assuming LPG continues to be the fuel used by at least 70% of the population, a global cooling effect of -0.70 milli °C to -0.93 milli °C is forecast.

LPG for cooking reduces charcoal use and fuelwood gathering, protecting forests which help capture CO_2

The IPCC's *Special Report: Global Warming Of 1.5 ºC* states that "reductions of black carbon (BC) and methane (CH4) would have substantial co-benefits, including improved health due to reduced air pollution."

CARBON CREDITS FROM LOW SMOKE STOVES PROJECT IN SUDAN

Over 90% of households in North Darfur, Sudan, depend on firewood and charcoal for cooking. The country is experiencing many negative effects of climate change, including drought and desertification, exacerbated by forest degradation from woodfuel gathering.

In the Low Smoke Stoves project in North Darfur, LPG fuel and stoves are used as a substitute for wood and charcoal in household cooking.

Practical Action and Carbon Clear launched the project in 2008. The objective was to promote widespread use of LPG for cooking in El Fashir. Poor households gained access to LPG for cooking through a microfinance credit revolving fund. Participants were trained on the efficient use and safety of LPG, and educated on the negative environmental impacts of excessive fuelwood use. As of 2017, more than 11,000 LPG "start-up" equipment sets have been distributed by the project, and a 95% reduction in key pollutants has been observed when the households switch from solid fuels to LPG, according to Practical Action. Almost 100% of households acknowledge that air quality has drastically improved with LPG use.


(Image: Practical Action/Carbon Clear)

The project also reduced regional deforestation by saving approximately 80 kilograms of wood, or 30 kilograms of charcoal, per household each month. LPG has reduced overall fuel consumption by up to 70%. The LPG cookstoves cut more than 48,000 tonnes of CO_2 emissions between 2013 and 2017, and the estimated greenhouse gas emissions reduction over ten years is approximately 300,000 tonnes. This is the first Gold Standard certified project to use LPG, as well as Sudan's first carbon credit project.

By delivering access to LPG for cooking, the Low Smoke Stoves project continues to improve the air quality, and reduce pressure on dwindling forest resources in Darfur.

"I spent 3-4 hours cooking before. Now, in one hour I can do everything. I recommend LPG to my friends. I tell them it has been a benefit and they should go and get it. With LPG, my husband is now willing to help me."

Fatima Suliman Ahmed,
23 from Darfur, Sudan