



Global Health
Research Group



COP26 and SDG7 goals under threat: 16% VAT on LPG reverses progress made in clean cooking adoption in Kenya

Liquefied petroleum gas (LPG) is a cleaner cooking fuel and rapidly scalable option that is key to achieving Kenya's ambitious target of 100% clean household energy access by 2028

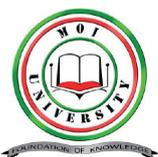
Policy pointers

- The Kenyan government zero-rated LPG in 2016 to promote its adoption and use. In November 2021 at COP26 the government also reaffirmed the national goal of 100% clean cooking access by 2028.
- Since reintroduction of 16% Value Added Tax (VAT) on LPG in July 2021, associated LPG price hikes for the consumer have been exacerbated by increases in international prices for the fuel.
- Research conducted by an independent consortium of Kenyan and UK Universities after the VAT re-introduction highlights a decline in clean cooking with LPG for 50% of the studied urban households, with LPG being substituted by health-damaging fuels such as charcoal and wood.
- Cost increases due to VAT on LPG disproportionately affects resource-poor families highlighting inequalities in how VAT imposition is impacting urban Kenyans.
- The international price of imported LPG is not in the control of government, but taxation is; reintroduction of 16% VAT on LPG is already working against national targets for clean cooking.
- Making LPG more affordable through zero-rating of VAT is critical to scaling LPG uptake for clean cooking if the Kenyan government's commitment to Sustainable Development Goal (SDG) 7 is to be realised.



Main study findings

- Surveys conducted after July 2021 of 815 households in Langas informal settlement and of 32 households in Kisumu found that 43% and 56% of households, respectively, used less LPG for cooking each month than they had previously. This was directly attributed to the price hike occasioned by the imposition VAT on the fuel. Three quarters of these households consequently reported cooking more frequently with polluting biomass alternatives such as charcoal and wood.
- One third of households in Langas and one half in Kisumu reported that the increased price of LPG placed a strain on their household expenditure.
- Households that were resource-poor or those that used LPG as a secondary fuel were more likely to reduce their use of LPG and substitute it for dirty fuels.



Access to clean cooking improves health and protects the environment

Three billion people still rely on polluting fuels (e.g. wood, charcoal and kerosene) for cooking. Household air pollution (HAP) kills more than 2 million people each year from respiratory and cardiovascular diseases, including 23,000 Kenyans.¹ The International Energy Agency and global actors stress the importance of LPG in achieving universal access to clean, modern cooking fuels by 2030 in accordance with SDG7. LPG is the most scalable clean cooking fuel over the next decade, particularly in sub-Saharan Africa, since it requires markedly less infrastructure than electricity.

Although a fossil fuel, LPG for cooking results in environmental gains. Replacing biomass fuels with LPG reduces deforestation. Burning LPG also releases negligible quantities of black carbon, the second most powerful climate warming pollutant, so transitioning populations from cooking with biomass fuels to LPG is recommended by the International Panel of Climate Change as a key climate mitigation measure for the residential sector.²

Cooking with LPG substantially reduces exposure to fine particulate matter (PM2.5) relative to wood, charcoal and kerosene. This is essential in addressing the public health burden from HAP, reinforced by the World Health Organisation's call for the prioritisation of clean cooking fuels like LPG in a universal clean cooking strategy.

State of clean cooking in Kenya

Three-quarters (75%) of Kenyans still cook with polluting fuels. The government is strongly committed to changing this and at COP26 the President reiterated the national aspiration to provide access to clean cooking for all by 2028. A key component of this strategy is rapidly expanding domestic use of LPG, to reach 35% of the population by 2030. Progress has been strong, and LPG use in Kenya has grown from 13% in 2016 to 24% in 2019/20³. But LPG remains unaffordable for many lower-income households. In recent years, the COVID-19 pandemic has also reversed progress in LPG uptake by causing financial difficulties at the household level.⁴

An inquiry into petroleum price increases published in October 2021 recommended that the government should reduce VAT on LPG to 8%. As of January 2022, the request is still awaiting final approval from the Kenyan Parliament, and VAT remains at 16%.

Study settings: VAT impacts on urban communities in Western Kenya

The Kenyan National Treasury zero-rated VAT on LPG in 2016 and on the 1st July 2021 they reinstated it to a 16% standard tax rate. To understand the effect of the VAT on LPG usage patterns, two research studies were conducted in urban areas of Western Kenya between August and October 2021.

In Langas informal settlement in Uasin Gishu county, CLEAN-Air(Africa)¹ used door-to-door sampling to recruit 1,500 households to their study. The final sample consisted of 63% (n=576) using LPG as a primary fuel and 37% (n=346) as a secondary fuel. These households purchased LPG in 6kg or 13kg cylinder refills from local retailers.

Kisumu is the largest city in Western Kenya. The 116 study households were customers of a pay-as-you-go (PAYG) LPG pilot run by Bboxx and researched by University College London. PAYG LPG enables customers to purchase small amounts of LPG using mobile money, through a smart meter.

Both communities were asked to recall changes to their LPG usage since the VAT re-introduction in July 2021, compared to before, when VAT was zero-rated. Approximately half of households in Langas (43%, n=356) and in Kisumu (56%, n=18) reported using less LPG specifically due to the VAT levied. Of these households, three quarters (Langas: 77%; n=276 and Kisumu: 75%; n=12) stated they cooked more frequently with polluting fuels. One third of households using less LPG in Langas (32%; n=262) and half in Kisumu (50%; n=16) reported that the higher LPG price impacted their other household expenditures. These results are consistent with projections by Duke University that the VAT added to LPG in Kenya will cause a net loss of 46.1 billion Kenyan Shillings (USD 409 million) to the economy over the next decade (Figure 1).⁵

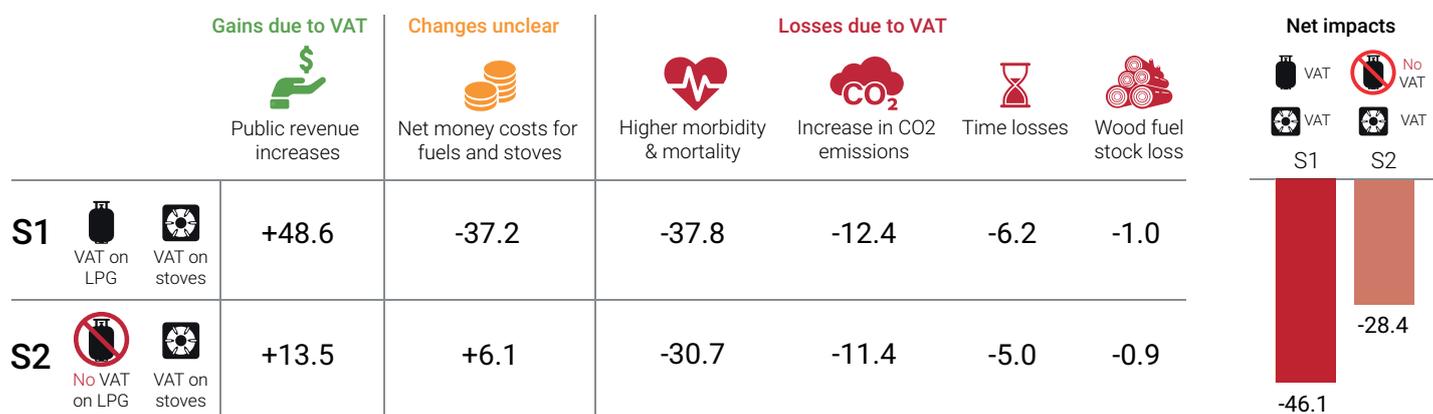


Figure 1. Net effects of theoretical VAT policy scenarios (billions of Kenyan Shillings). S1 = scenario with improved biomass stoves and LPG not exempt from VAT; S2 = scenario with improved biomass stoves not exempt and LPG exempt from VAT.

Figure copied with permission from the Clean Cooking Alliance.

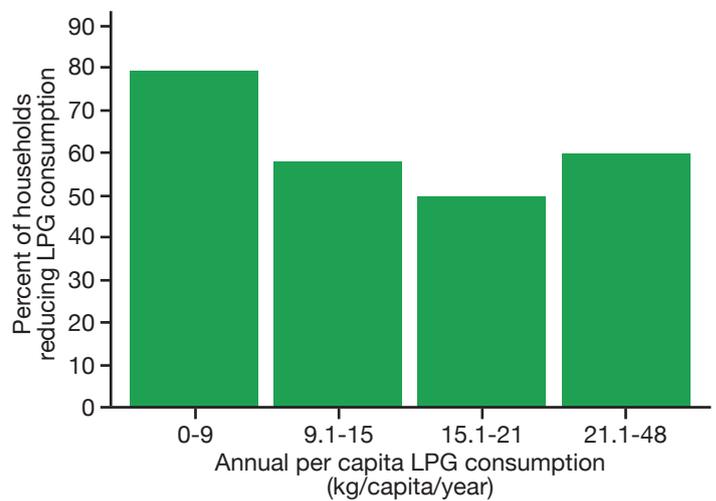
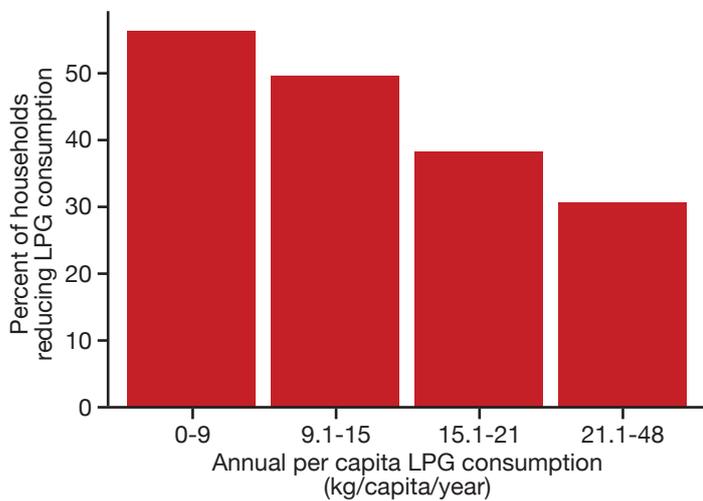


Figure 2. Percent of households reducing their LPG consumption because of the VAT addition by self-reported annual per capita consumption in **Langas informal settlement (left)** and **Kisumu (right)**

VAT is disproportionately impacting poorer households

In Langas, households with the lowest incomes (0-1,499 Kenyan shillings/month/capita, 53%) were disproportionately affected by the VAT levy being more likely to reduce their use of LPG for cooking than those with higher incomes (>4,000 Kenyan shillings/month/capita, 37%). Similarly, both studies found that households who used less LPG were hardest hit by the policy

(Figure 2). Those in the lowest quartile of LPG consumption (0-9kg/capita/year) were 20% more likely to reduce their LPG consumption than those in the highest quartile (21-48kg/capita/year). Thus, the VAT placed on LPG likely exacerbated inequalities in the use of clean cooking fuels.

Policy recommendations to ensure Kenya can meet its COP26 commitments

As a consumer price mitigation measure over which it has control, the Government of Kenya should urgently consider **re-establishing a zero-rating for VAT on LPG**. We are aware that a Government Inquiry into the causes of the increase in prices of petroleum has recommended a reduction of VAT in LPG to 8%. However, we believe this reduction would not be sufficient, and recommend returning to zero-rating of VAT on LPG to best support Kenya's commitment to 100% access to clean cooking by 2028 and the encouraging progress made in adoption of LPG for clean cooking between 2016 and July 2021. This will subsequently reduce deforestation and prevent deaths and disease (with associated healthcare costs), while maintaining tax revenue through the protection of household budgets.

Study funders:

Research funded by UK NIHR (Langas County) and Bboxx and the Royal Academy of Engineering (Kisumu County).

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References:

- Murray et al. (2020). [https://doi.org/10.1016/S0140-6736\(20\)30752-2](https://doi.org/10.1016/S0140-6736(20)30752-2)
- IPCC (2018). Special report on 1.5 - Chapter 4: Strengthening and implementing the global response.
- Kenya Integrated Household Budget Surveys (KIHBS) 2015/16 and 2019/20
- Shupler et al. (2020). <https://doi.org/10.1016/j.rser.2021.111018>
- Clean Cooking Alliance. <https://cleancooking.org/binary-data/RESOURCE/file/000/000/631-1.pdf>