

FID Series

"Key impact results"

Promoting clean cooking to combat deforestation in the Virunga National Park (DRC)

How can we accelerate the transition to clean cooking in countries where charcoal is the primary energy source for households? This is the challenge taken up by the eCooking Virunga project, designed by the Center for Environmental Economics (CEE-M) in Montpellier and the University of Antwerp, in partnership with Virunga Energies. This project promotes the use of electric cookers by households connected to the grid, as a credible alternative to charcoal, in order to limit deforestation. The initiative combines free distribution of energy-efficient electric pressure cookers with various support strategies promoting the sustainable transition to clean cooking. An impact evaluation was conducted to compare these different approaches, identify the most effective solutions and provide insights for the project's future scale-up.

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Key impact results

The findings have demonstrated that electric cooking is a credible alternative to charcoal for urban households connected to the grid. Distributing electric pressure cookers leads to long-term use and significantly reduces charcoal consumption. The economic and environmental benefits far outweigh the cost of the initiative, making it a socially profitable and cost-effective strategy suitable for large-scale rollout.

-34%

decrease in charcoal consumed by beneficiary households.

85

electric cookers can protect up to one hectare of forest in the Virunga National Park.

$9

in social and environmental benefits for every $1 spent on the initiative.

20 meals per month

are entirely prepared with an electric cooker.

Impact study methodology

The study is based on an experimental evaluation conducted among 1,594 customer households of Virunga Energies in Goma. Households were randomly assigned to four intervention groups, with each group offered a different combination of measures, from an electric pressure cooker, a temporary electricity subsidy and an awareness campaign, as well as a control group. The researchers kept track of the households for twelve months based on field surveys and administrative data on electricity consumption provided by Virunga Energies.

The impact evaluation addressed four research questions

01	Do households adopt electric cooking over the long term?
02	What key drivers encourage the take-up of electric cookers by households?
03	Does this initiative benefit some households more than others?
04	Is the distribution of electric cookers an effective and cost-effective investment for the community?

1. Do households adopt electric cooking over the long term?

The free distribution of electric cookers alone is enough to encourage long-term use by households.

Twelve months after the initiative, **91%** of households were still using the electric pressure cookers regularly: **20 meals a month** are now cooked using these appliances. At the same time, charcoal consumption has decreased **by 34%** (based on a 34% decrease in the amount of ash produced) and expenditure on charcoal has dropped by **30%.** The results show that once households are provided with an electric cooker, they continue to use it regularly.

2. What key drivers encourage the take-up of electric cookers by households?

Additional measures (energy credits and awareness-raising) increase take-up, but their impact is limited compared with the free distribution of electric cookers.

Offering households a free 20 kWh electricity credit temporarily increases electricity consumption (**8.3 kWh increase** in the month the credit is granted), but has no long-term impact on electricity spending or charcoal consumption. In contrast, the awareness campaign on the environmental and safety impact of charcoal led to a more sustained increase in electricity spending (**5 to 6 kWh increase** per month up to the seventh month) and also helped reduce charcoal consumption. These findings confirm that the main driver of take-up is covering the initial cost of the electric pressure cooker, with complementary measures helping to promote continued use.



3. Does this initiative benefit some households more than others?

The initiative benefits the vast majority of households, irrespective of their socioeconomic profile.

The researchers examined whether take-up varied by household depending on their baseline electricity consumption, economic status, concerns about environmental issues and attitudes toward the charcoal trade. They found that households that used less electricity prior to the initiative tended to use their electric cooker more frequently. However, none of the other characteristics assessed accounted for the variations in take-up observed. Electricity consumption increased by **around 10 kWh per month** across all beneficiary groups, indicating widespread adoption.

4. Is the distribution of electric cookers an effective and cost-effective investment for the community?

The economic and environmental benefits far outweigh the cost of the initiative.

The estimated cost of the initiative is **$94 per beneficiary** household. In turn, households are expected to save approximately **$288 in energy costs** over five years, while the reduction in charcoal use delivers significant climate benefits and helps prevent deforestation in the Virunga National Park. Within three years, higher electricity sales will also improve the distributor's financial viability. In total, the social benefits are estimated at **nearly nine times** the initial cost of the initiative.

Perspectives

The results of this initial phase have demonstrated the model's effectiveness. FID is now supporting the next phase of the project which aims to scale up electric cooking in Goma, with support from the European Union and Virunga Energies' own funds. This phase involves support for the wider distribution of electric pressure cookers by Virunga Energies, with continued evaluation of the initiative over the longer-term. New cooking appliances will also be tested while assessing their impact on health, the charcoal trade and the model's economic viability.

Find out more

Research

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