

Zero-emission kitchens in the Global South: implementing behaviour change in national clean cooking strategies

By Aine Petruleityte



Background

Cooking with electricity (eCooking) in the Global South is expected to grow as access to clean and affordable electricity improves. However, the daily cost of eCooking depends not just on appliance efficiency, but also on user behaviour. Thus, switching to eCooking requires behaviour change, especially for low-income users sensitive to energy costs (4). Unlike familiar fuels like charcoal or firewood, electricity is intangible, making it harder for users to understand and manage its consumption (5). Though eCooking is typically more efficient than traditional fuels (6), inefficient practices, such as using high power unnecessarily, can triple energy use (7), leading to higher bills and discouraging sustained use.

Approach and objectives

The studies were conducted by locally-based research organisations. Each country used a consistent mixed-method approach:

- 1. Semi-structured entry interviews with participating cooks.**
Used to gather baseline data on eCooking appliances and other household cooking fuels and cooks' perception of eCooking.
- 2. Participant observations through rapid ethnographic fieldwork.** Pre-designed data collection templates were used to record notable energy-consuming behaviours and the cooking environment.
- 3. Energy monitoring and self-reporting via WhatsApp.**
Energy meters were used to quantify observed behaviours, with participants asked to document their usage before and after cooking each meal.
- 4. Semi-structured exit interviews with participating cooks.**
The studies were concluded by collecting feedback from participants on how energy monitoring affected their cooking practices.

Conclusions

Over 2 billion people in the Global South still rely on polluting fuels for cooking, making it unlikely that SDG 7 will be achieved by 2030. While countries like Kenya, Uganda and Tanzania are integrating clean cooking into national strategies, user behaviour remains poorly addressed. Most policies focus on awareness campaigns, overlooking the full range of behaviour change techniques. As access to electricity grows, eCooking is becoming more viable and desirable, but its success also depends on user behaviour. Inefficient cooking practices can significantly increase energy use and costs, especially for low-income households. Ethnographic studies in Ghana, Kenya, Nepal and Uganda examined cooking behaviours in 103 households, using interviews, observations and energy monitoring. Findings revealed five key behavioural determinants, related to infrastructure, economics, culture, psychology and technology, that shape how and whether households adopt and sustain eCooking. These insights highlight the need for behaviourally informed policies to support the transition to zero-emission kitchens in the Global South.

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Over 2 billion people globally still depend on polluting fuels such as firewood, charcoal and kerosene for everyday cooking. Projections indicate that Sustainable Development Goal 7 (SDG 7: universal access to modern energy) is unlikely to be achieved by 2030 (1). Despite this, momentum for clean cooking is building, with countries like Kenya, Uganda and Tanzania incorporating clean cooking targets into national energy strategies. However, user perspectives are still not well integrated into these efforts.

Most clean cooking strategies rely on public awareness campaigns and community sensitisation, just two of 93 recognised behaviour change techniques (2). Studies and policy frameworks stress the importance of understanding household cooking behaviours to design effective interventions. This includes identifying key behavioural determinants – the factors that influence whether and how households adopt and consistently use clean cooking technologies and fuels (3).

Aim

Four ethnographic studies conducted in Ghana, Kenya, Nepal and Uganda focused on observing cooking-related electricity consumption behaviours in 103 households. The aim was to shed light on the conditions under which households use electricity for cooking and to summarise the key behavioural determinants for policy interventions.

Findings

The data collected from the four kitchen behaviour studies gave many insights into how people cook. Eventually, it helped identify and detail five determinants of existing cooking with electricity behaviours.

1 Infrastructural and environmental conditions

- Availability and reliability of grid electricity
- Access to and cost of other fuels
- Layout of household cooking spaces
- Household wiring and socket placement
- Residual heat desired in cooler weather

2 Economic factors

- Cost of high-quality eCooking appliances
- Access to financing options
- Cost and its perception of cooking with electricity
- Cost of maintenance and repair

3 Technological factors

- Availability of eCooking appliances
- Choice of types and brands
- Automated features: preset cooking modes
- Quality: energy efficiency, durability
- Compatibility with local cooking needs

4 Psychological factors and awareness

- Perception of the cost of eCooking
- Perception of appliance safety and ease of use
- Trust in appliance performance and reliability
- Awareness of appliance lifecycle
- Previous experience with technology

5 Social and cultural factors

- Traditional means for certain dishes
- Traditional and changing gender roles
- Desire for modernity
- Community influence

Photo by Vikas Yatra, Nepal, 2025

1. IEA, IRENA, UNSD, World Bank and WHO, Tracking SDG 7: The Energy Progress Report, Washington DC: World Bank, 2023. © World Bank. License: Creative Commons Attribution—NonCommercial 3.0 IGO [CC BY-NC 3.0 IGO].
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