

# Title: The role of grid reliability in appliance ownership in Rwanda

Stakeholder: National Institute of Statistics Rwanda (NISR), Rwanda Energy Group (REG)

## Theory of change:

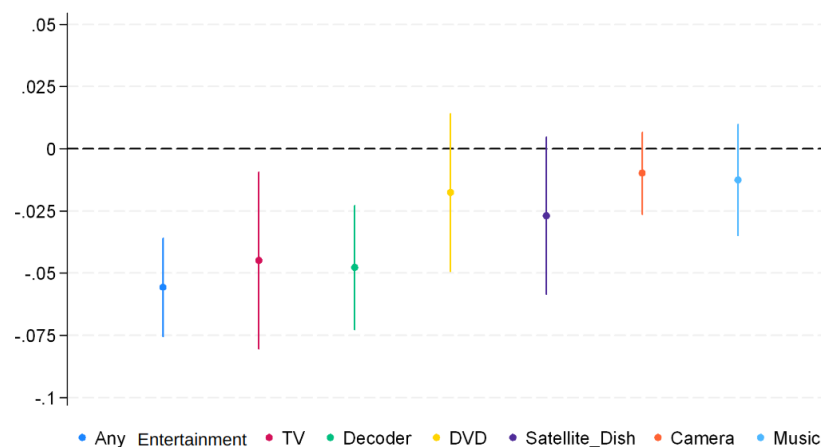
In low-income settings, understanding the factors that influence electricity consumption for recently connected customers remains limited. With significant investments by governments and partner agencies in nationwide electrification drives, it's crucial to grasp the obstacles that may hinder households from benefiting from an electricity connection. Beyond income limitations, our study focuses on investigating additional constraints that impede households' full utilization of electricity, particularly power outages. We delve into whether the persistent electricity outages experienced by many African utilities impact household electricity appliance ownership and consumption. Additionally, it examines how various household non-income characteristics influence electricity usage.

We collaborated with two key partners for this project. The National Institute of Statistics Rwanda (NISR) provided us access to sensitive household survey data at their premises. We also received support from the Rwanda Energy Group (REG), which provided us with power outage datasets.

## Technical Abstract:

This study looks at how reliable electricity is in Rwanda and how it affects what appliances households own and use. Using our unique dataset and an approach utilizing lightning as an instrumental variable, the study shows that the reliability of electricity influences the types of appliances people choose to buy. Interestingly, the study found that the reliability of electricity doesn't change how much electricity is used by households who already own appliances. The study also looks at how household non-income factors influence appliance ownership and use.

This figure below shows that households have a small but significant decrease in ownership of entertainment appliances as a result of having an unreliable electricity connection.



[Link to paper.](#)