

# Title: Electricity Outages in Uganda: Trends and Disparities

Stakeholder: Electricity Regulatory Authority (ERA)

## Theory of change:

Uganda grapples with a persistent challenge of power outages, which significantly impacts business revenues and operations. Understanding the progress made in addressing this issue and identifying the root causes fueling its persistence are imperative.

This study delves into the patterns of electricity outages across Uganda, analyzing daily medium-level outage data from 2015 to 2022. Additionally, it explores the correlation between rainfall and electricity outages, highlighting the grid's vulnerability to both regular and extreme rainfall events.

Our collaboration with the Electricity Regulatory Authority in Uganda proved instrumental for this study. They granted us access to outage data and provided technical guidance, shaping the direction of our research.

## Technical Abstract:

Utilizing data from the national electricity regulator, the study focuses on Umeme, the utility that supplies electricity to over 90% of Uganda. Findings reveal that while power outages are now shorter in duration, they occur just as frequently, primarily during daytime hours. This indicates that maintenance challenges, rather than supply constraints, are the primary causes. Failing equipment emerges as the most common cause of outages, with those resulting from vandalism taking the longest to repair. Additionally, the study identifies a positive correlation between rainfall and power outages, with more occurrences during the wet seasons of the year, underscoring the grid's sensitivity to weather conditions.

The figure below illustrates the average outage durations and total outage counts categorized by different power outage causes. Employing a natural language processing model, SetFit, we classify outage descriptions into root cause category labels as depicted in the figure below.

