

# **Global Electricity Access Dashboard (2006–2022)**

## A Data-Driven Analysis of Development Indicators by Sedra Baian

# Project Overview & Objective

- Analyze electricity access trends using World Bank indicators
- Explore progress across countries between 2006 and 2022
- Identify top performers, low-access regions, and improvement rates
- Build an interactive dashboard for insight and decision-making





# Data Sources & Tools

- Data Source: World Development Indicators (World Bank)
- Years Covered: 2006 to 2022
- Indicators Used:
  - Rural electricity access
  - Clean fuel access
  - Financial inclusion (available but not visualized yet)
- Tools:
  - Python (data cleaning & KPI calculation)
  - Tableau (data visualization)

# Data Cleaning & Preparation

- Removed missing/null & duplicate values
- Standardized column names
- Converted year and value columns to correct formats
- Reshaped data from wide to long using pd.melt()
- Exported clean CSV for dashboard

## Step 2: Load the Dataset

```
import pandas as pd

# Imports
import pandas as pd
import os

# Config - Define data file path
DATA_DIR = "world_bank_data"
DATA_FILE = "ed35928c-f2c5-48a4-b96d-b6e37064a0db_Data.csv"
data_path = os.path.join(DATA_DIR, DATA_FILE)

# Load dataset
df = pd.read_csv(data_path)

# Confirm successful load
print("Data loaded. Shape:", df.shape)
```

✓ Data loaded. Shape: (1601, 11)

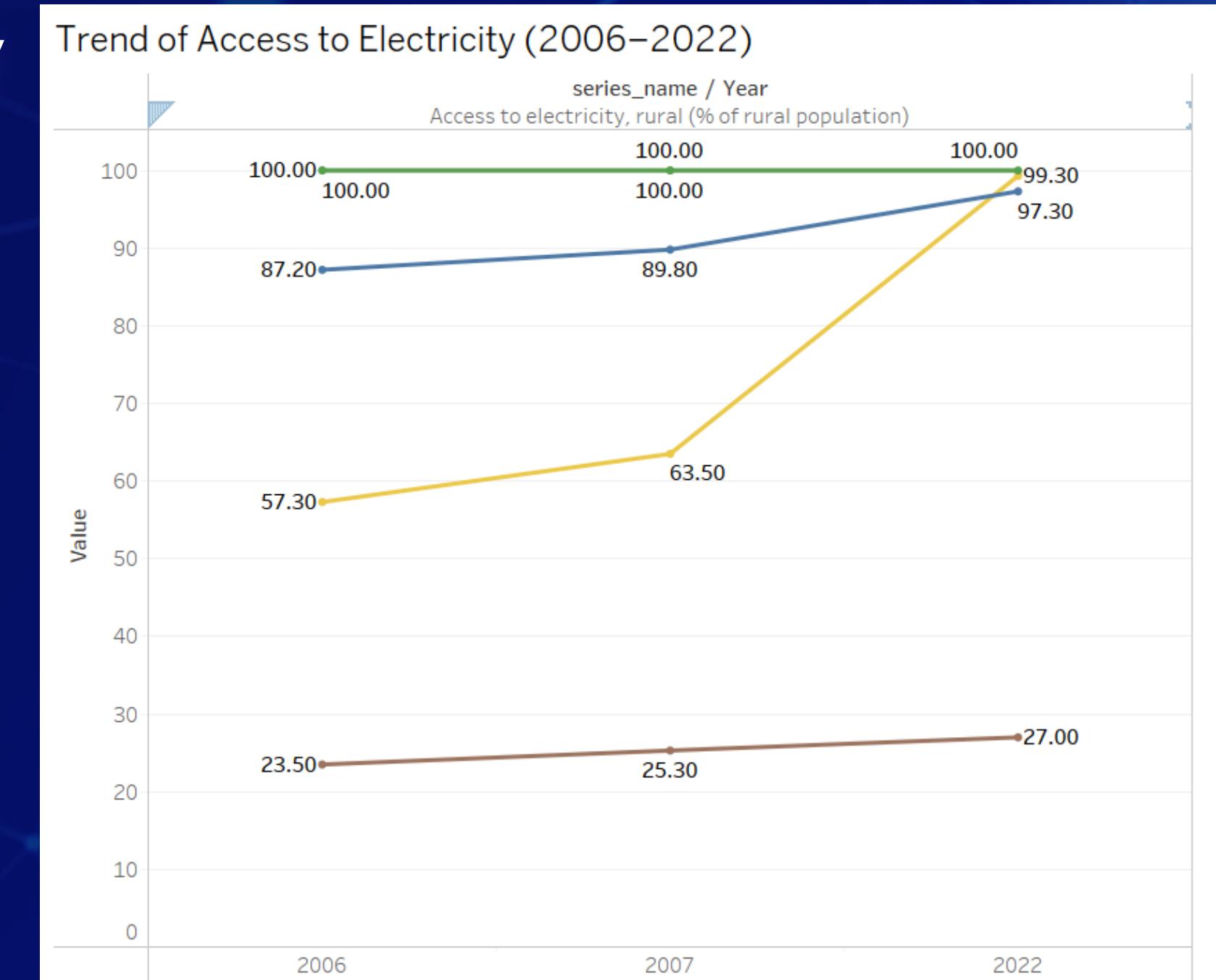
## Step 3: Clean Column Names

```
df.columns = (
    df.columns
    .str.strip()
    .str.lower()
    .str.replace(' ', '_')
    .str.replace('(', ')', regex=False)
    .str.replace("'", "", regex=False)
)
df.columns.tolist()
```

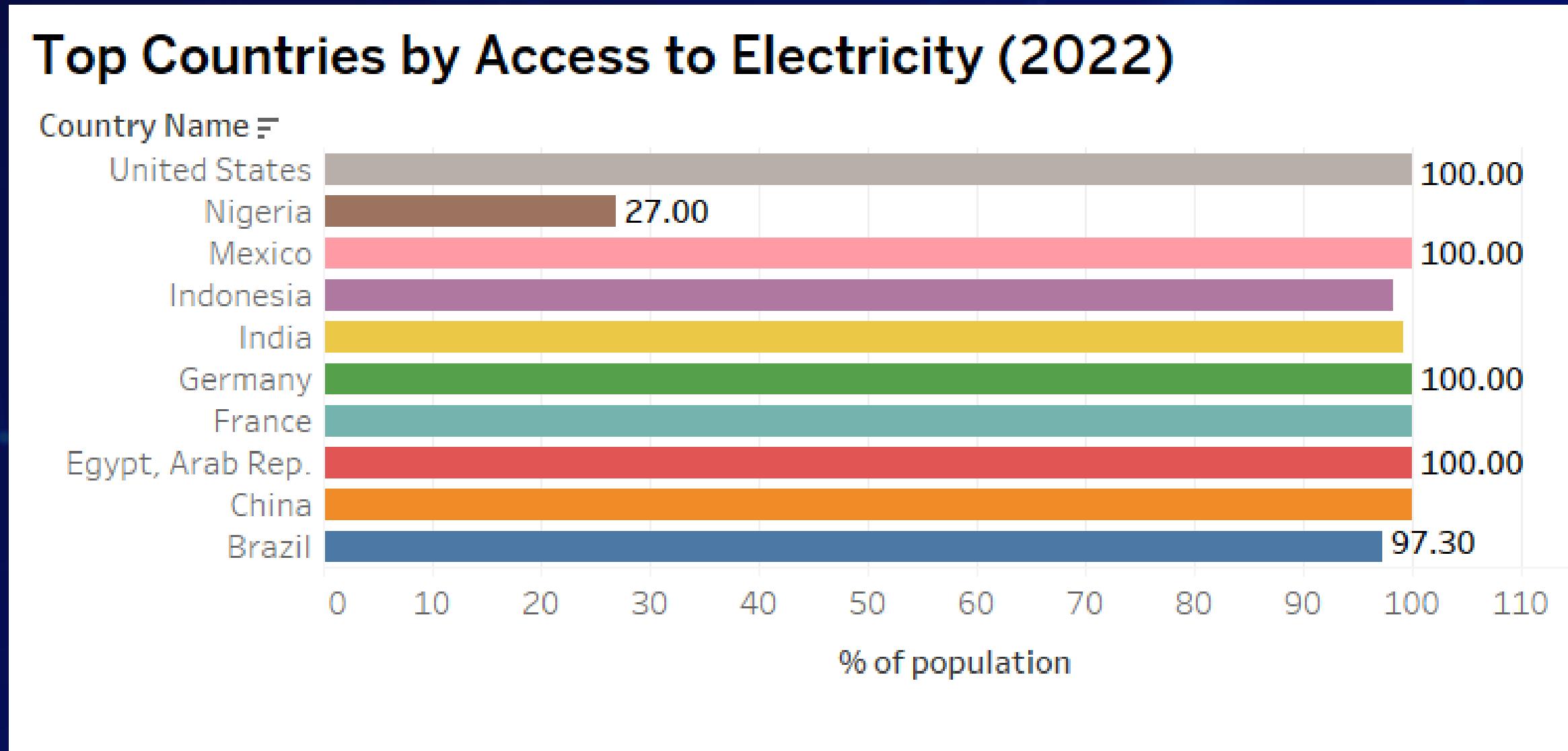
“Imported and cleaned the dataset using Python (pandas), standardizing column names for smooth analysis in Tableau.”

# Global Average Electricity Access (2006–2022)

- Global Average (Rural): 84.3%
- Shows progress in infrastructure development globally
- Rural areas saw large improvements over time

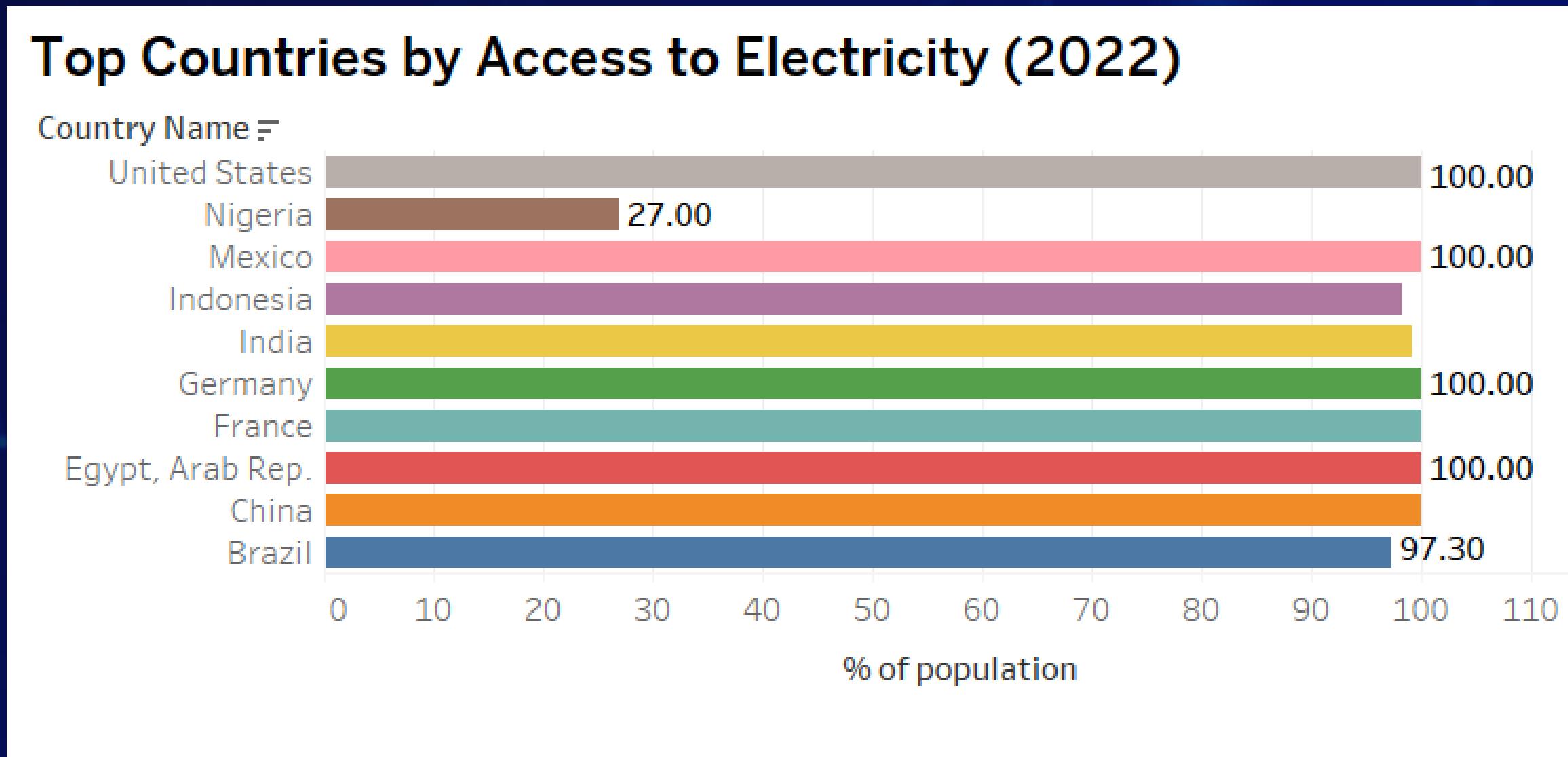


# Top 10 Countries by Rural Electricity Access (2022)



- “Several countries have achieved near 100% rural electricity access, including the U.S., Germany, and Brazil.”
- “This highlights global best practices and progress in infrastructure access.”

# Rural Electricity Access Trend (2006–2022)



- “Nigeria showed the highest improvement: from 57.3% in 2006 to 99.3% in 2022 – a remarkable 42% increase.”
- “India and Brazil also improved steadily, closing the rural electricity gap.”
- “This trend reflects the global push for energy equity and SDG 7 progress.”

# Business Insights from the Data

- ◆ **Rural Electricity Access Is Increasing Globally**

Many countries, especially developing ones, have shown significant progress in rural electrification between 2006 and 2022.

- ◆ **Nigeria Had the Largest Improvement**

Improved from 57.3% to 99.3% in just 16 years – showcasing successful infrastructure development.

- ◆ **Top-Performing Countries Reached Universal Access**

U.S., Germany, and Brazil maintained near 100% access throughout the time range.

- ◆ **Some Countries Still Lag Behind**

A few countries remained below 50% access in 2022, indicating the need for continued investment and development focus.



# Strategic Recommendations

## 1. Invest in Countries Below 80% Access

Target development programs and funding in countries still lacking widespread rural electrification.

## 2. Expand Off-Grid Renewable Energy Solutions

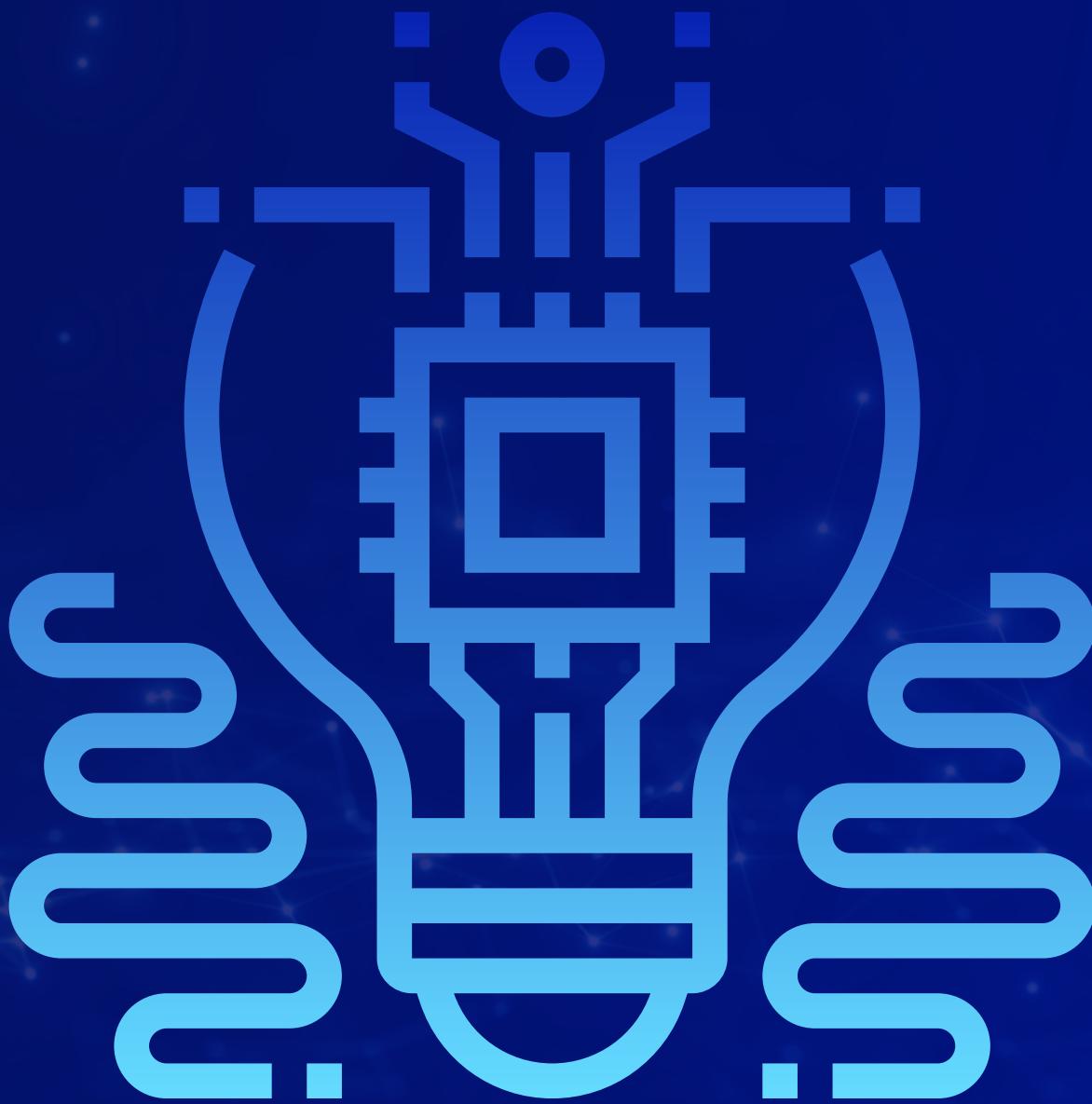
In remote or underserved areas, solar and mini-grid tech can rapidly improve access.

## 3. Support Public-Private Partnerships

Encourage collaboration between governments, NGOs, and private companies for sustainable infrastructure.

## 4. Use Dashboards to Track SDG 7 Progress

Interactive tools like Tableau help visualize development trends and inform policy decisions.



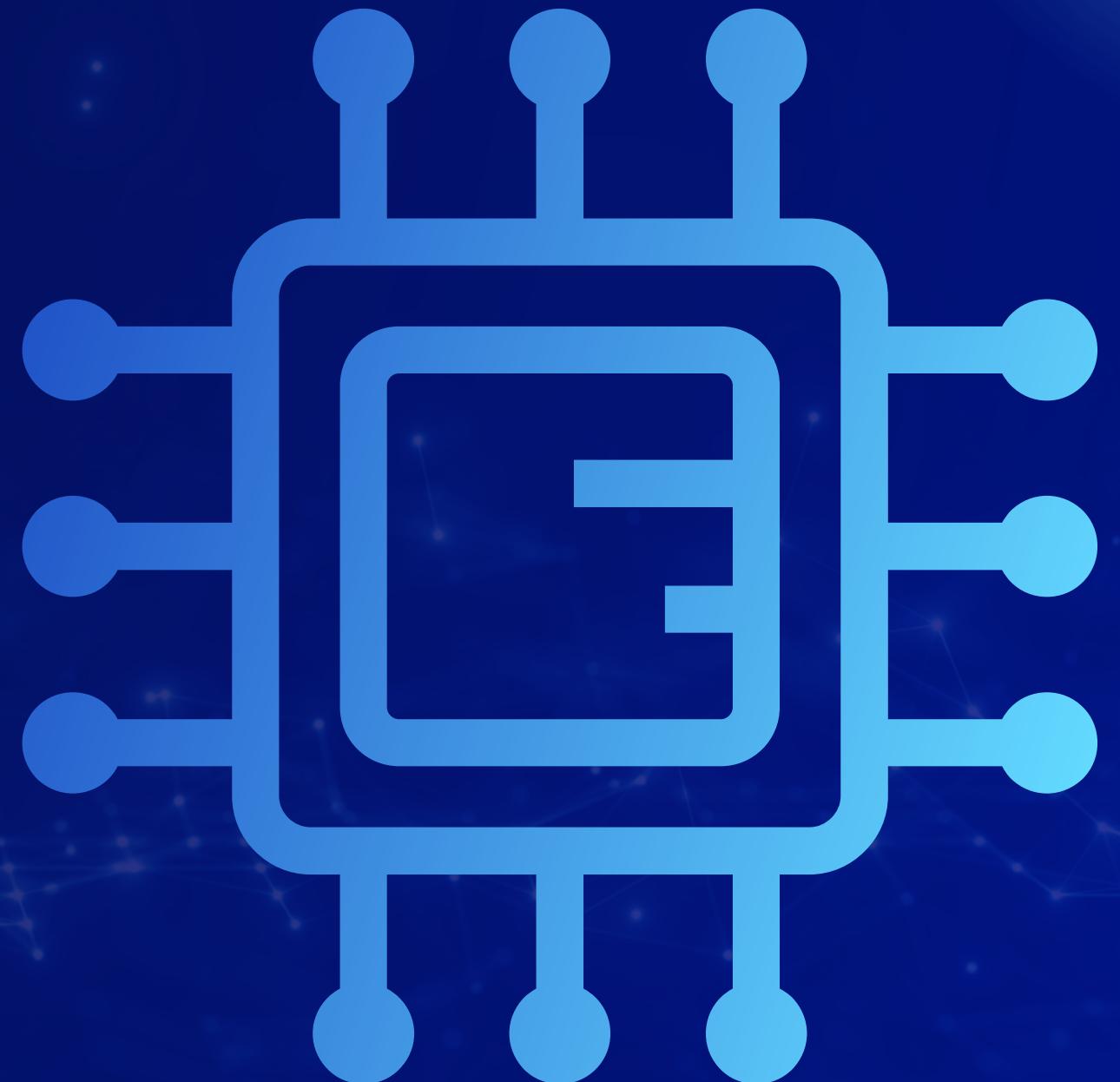
# Explore the Live Dashboard & Source Code



Tableau dashboard



GitHub repo





thank you