



AFRICA REGIONAL STUDY  
**ELECTRICITY ACCESS  
IN SUB-SAHARAN AFRICA**

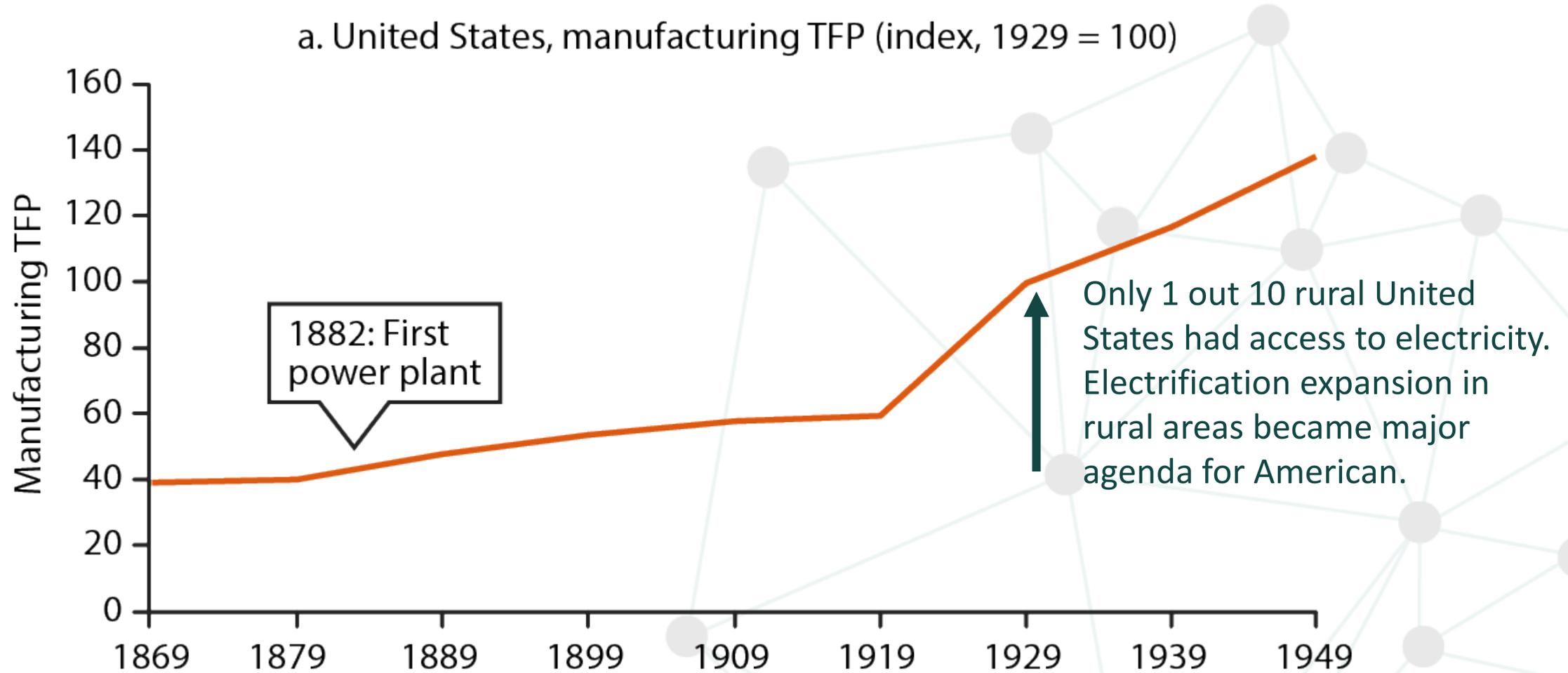
**Uptake, Reliability, and Complementary  
Factors for Economic Impact**

Moussa P. Blimpo and Malcolm Cosgrove-Davies

**WASHINGTON DC  
MAY 2019**

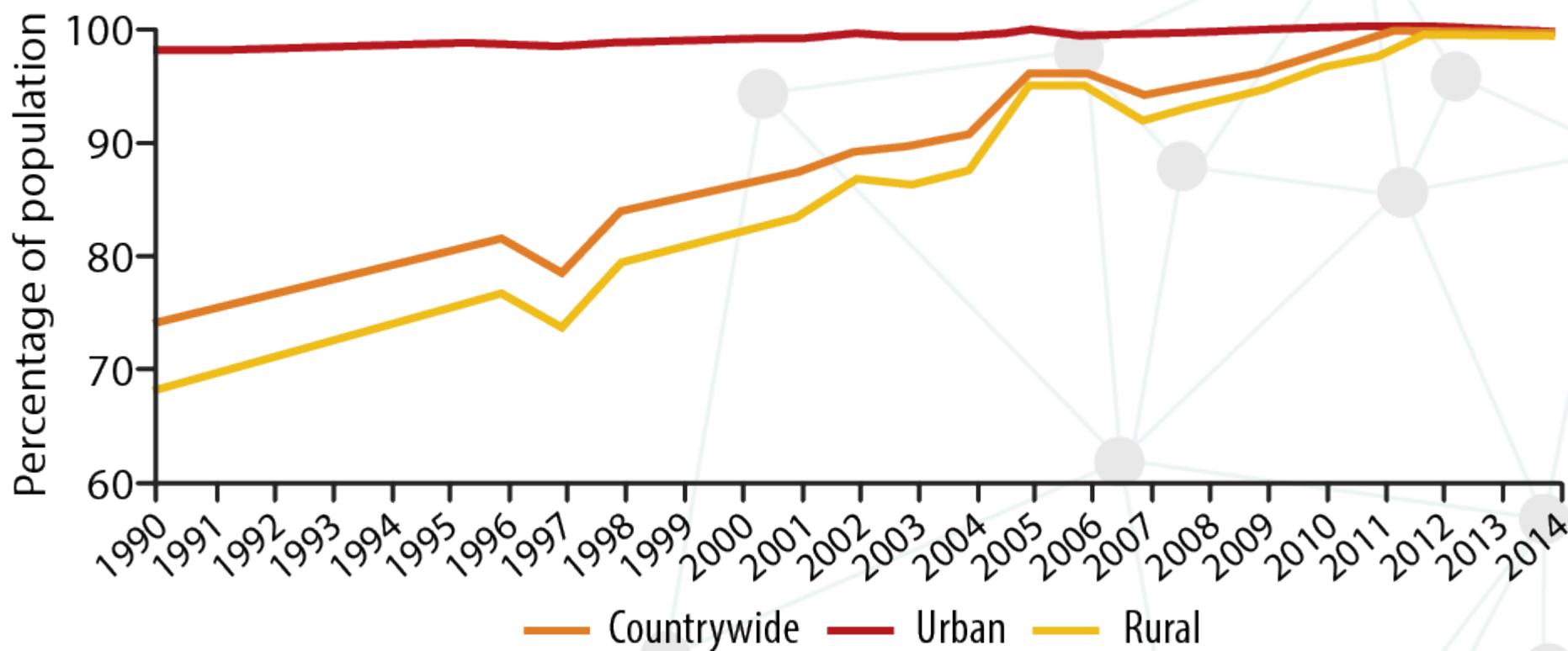


# Electrification: A long term foundational investment



# Success often came from governments arbitrage

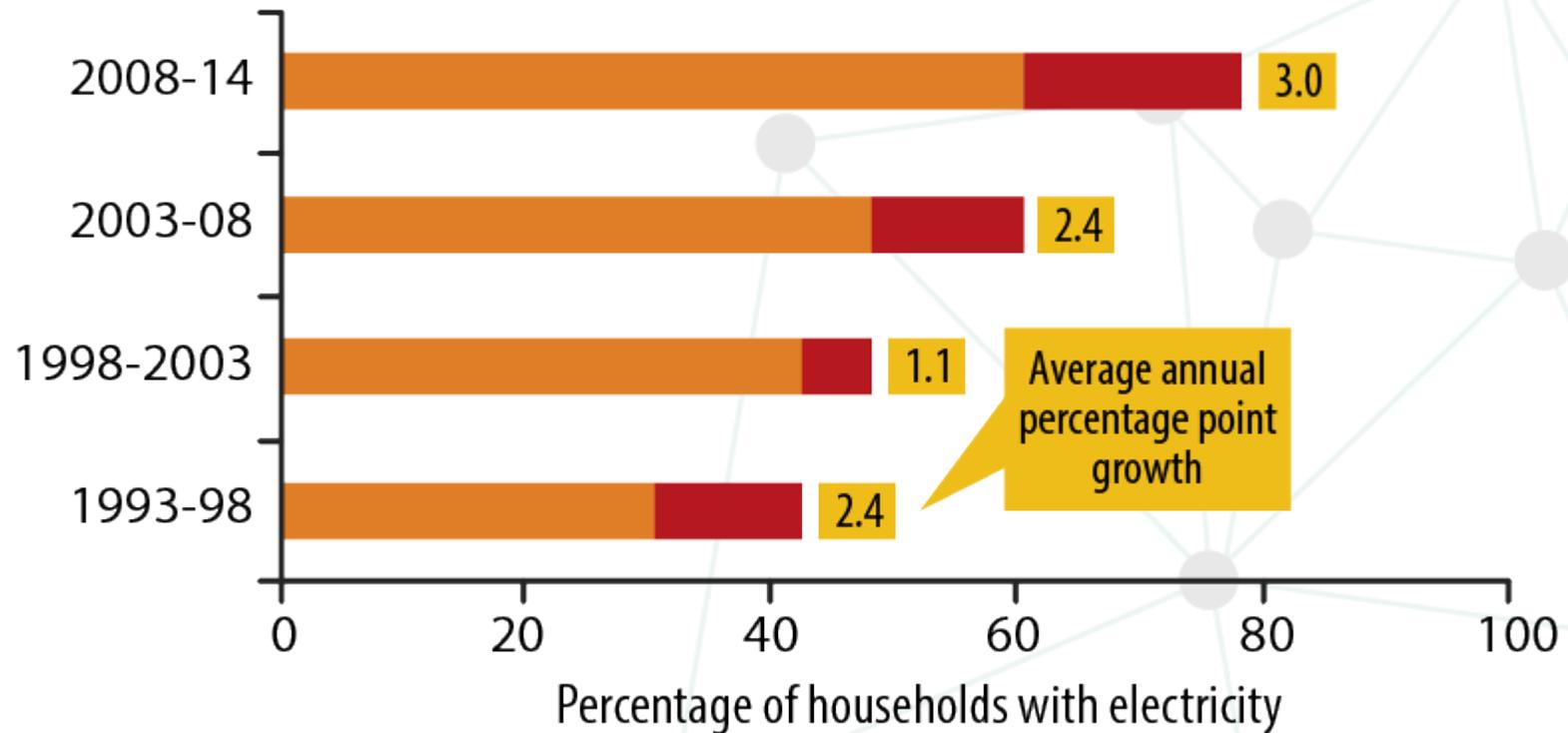
**Figure B1.1.1** Vietnam: Access to Electricity



Source: World Bank, World Development Indicators.

# But most African countries are facing financial constraints

**Figure 1.3** Ghana, growth in households with electricity (%)



Source: Demographic and Health Surveys



what is the  
to

# Read the Book!

way





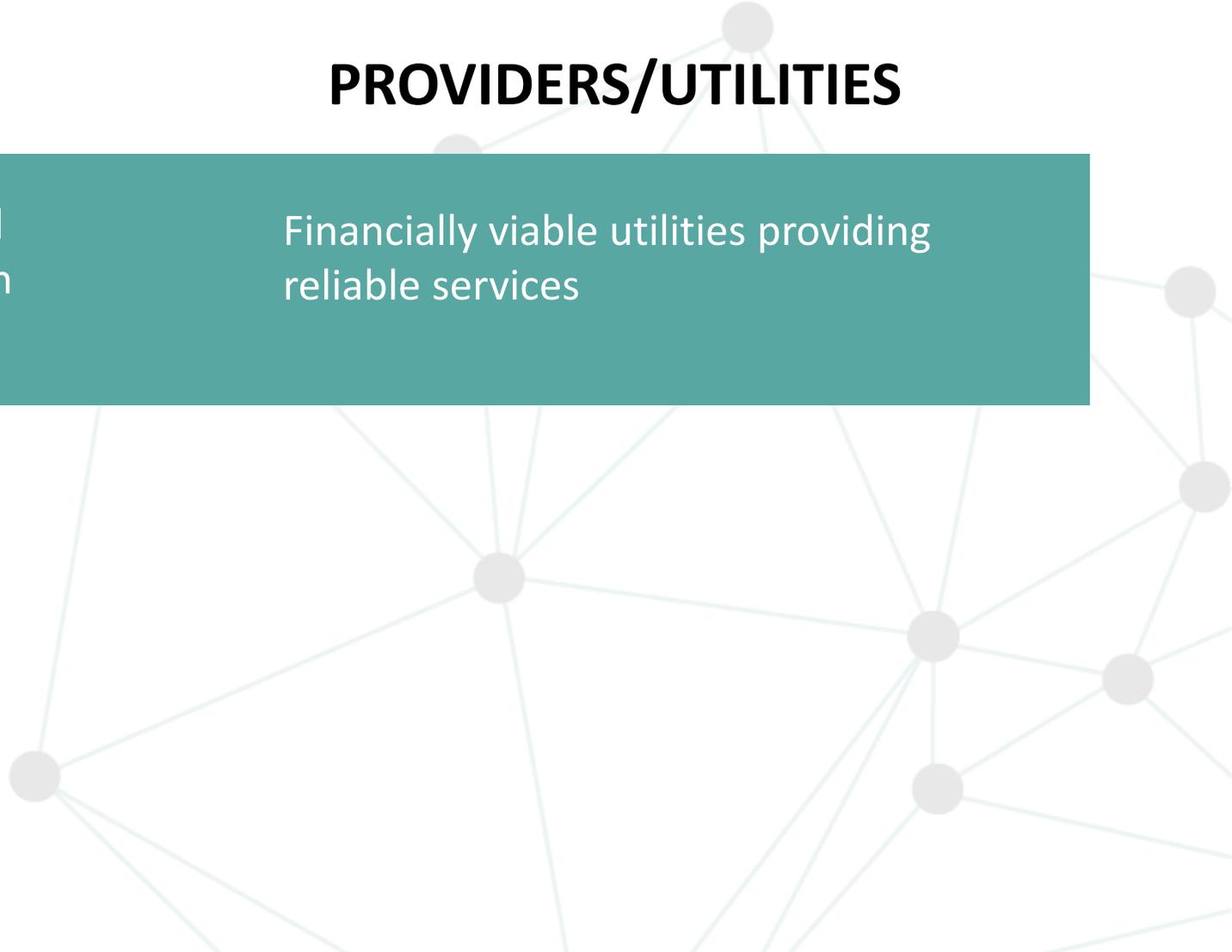
## HOUSEHOLDS

## PROVIDERS/UTILITIES

### GOAL

Greater household access and meaningful consumption at an affordable prices

Financially viable utilities providing reliable services



# State of electrifications in the region

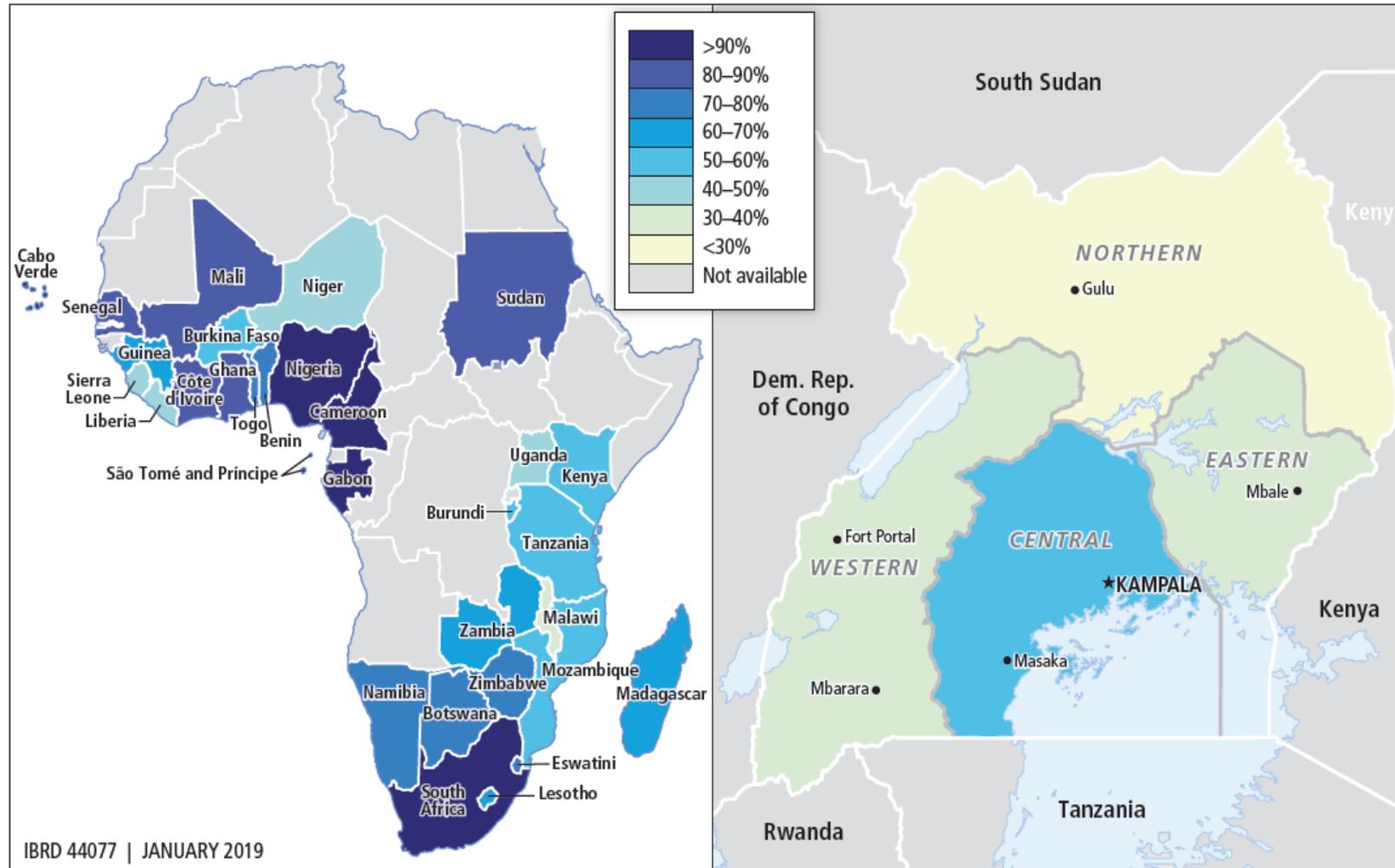
	HOUSEHOLDS	PROVIDERS/UTILITIES
GOAL	Greater household access and meaningful consumption at an affordable prices	Financially viable utilities providing reliable services
REALITY	<ul style="list-style-type: none"><li>• Uptake deficit</li><li>• Affordability problems</li><li>• Low consumption levels</li></ul>	<ul style="list-style-type: none"><li>• Financially strained</li><li>• Highest cost of generation</li><li>• Reliability issues</li></ul>

# Low Uptake Across the Region

## Electricity Uptake for Household Under the Grid

a. Sub-Saharan Africa

b. Uganda



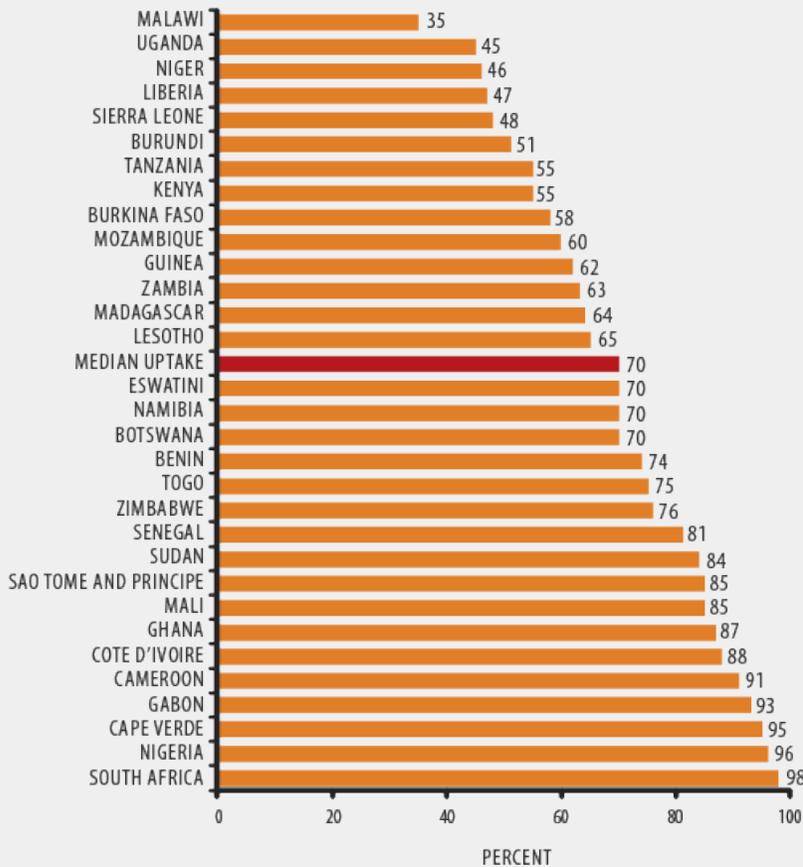
IBRD 44077 | JANUARY 2019

Source:  
Afrobarometer  
Round VI 2014/15.

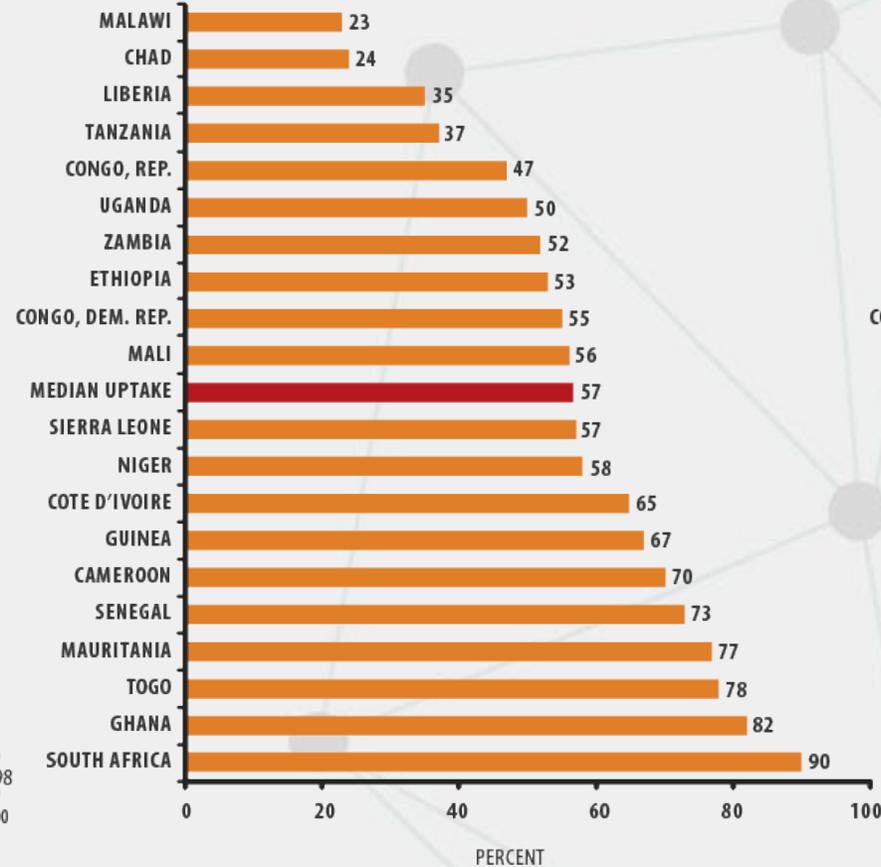
# Uptake Is the Key to Addressing Access Deficits

## Electricity Uptake According to Different Sources

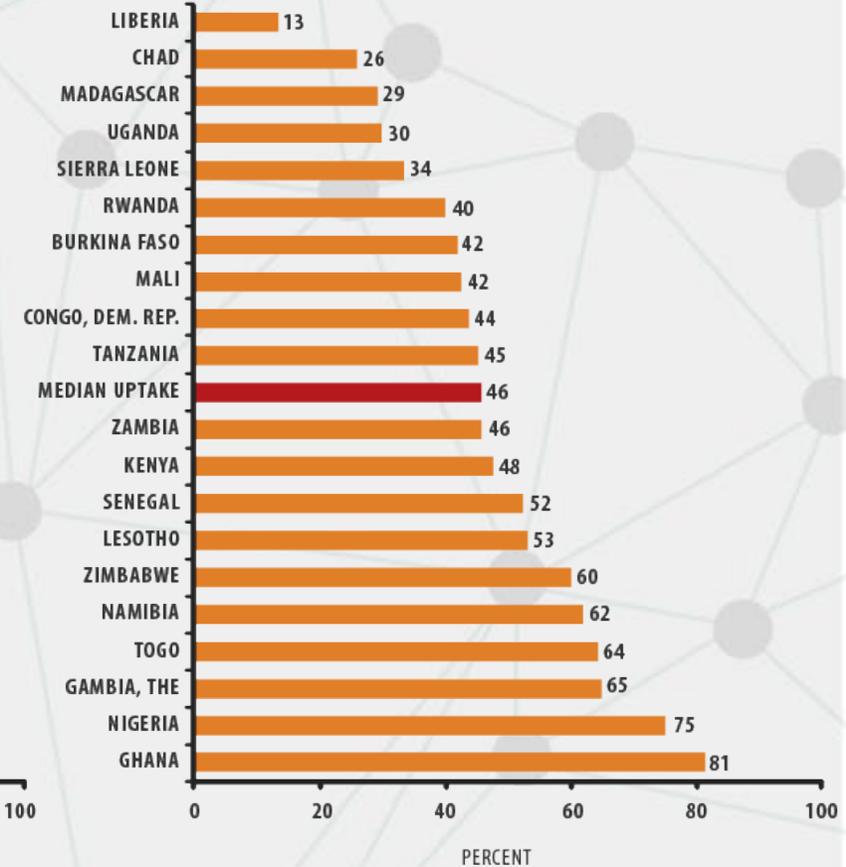
AFROBAROMETER



LSMS

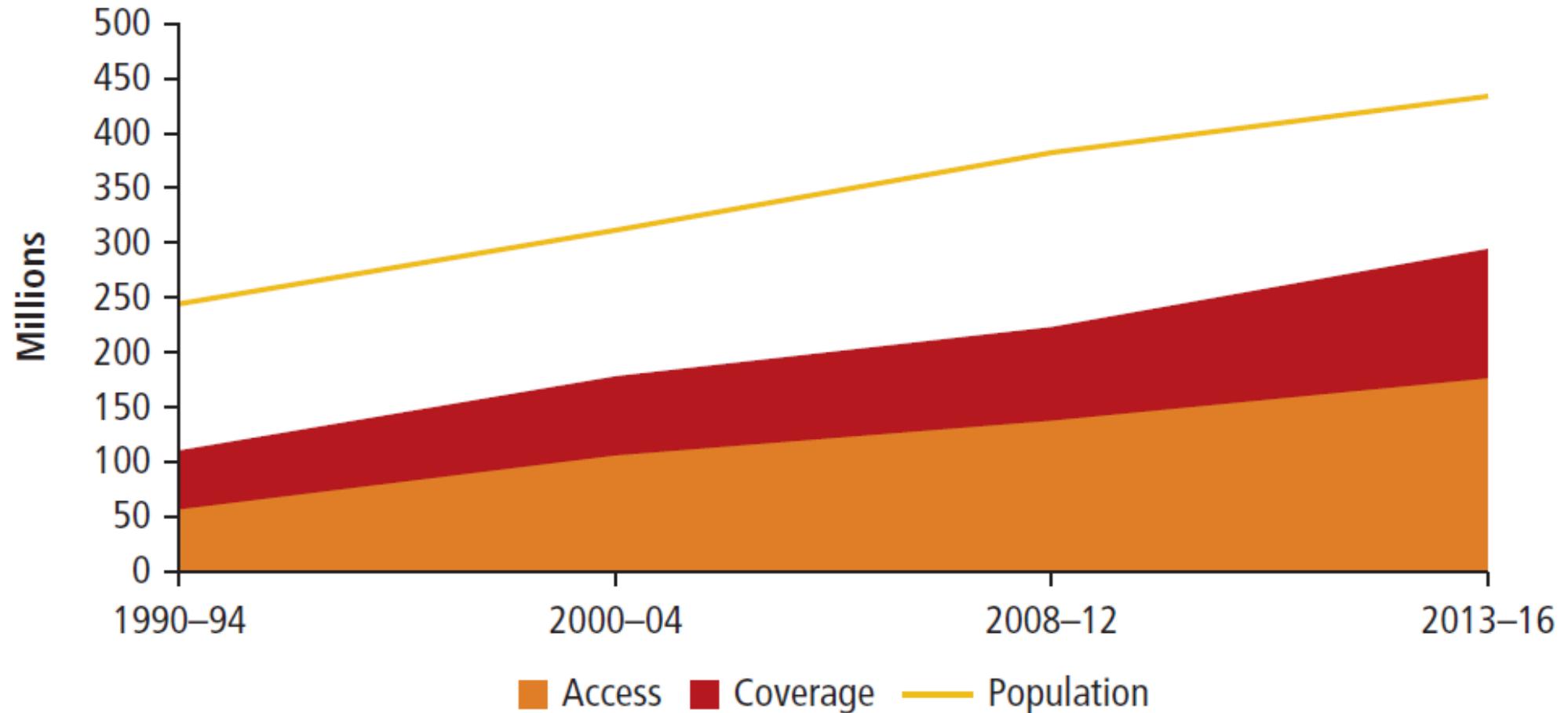


DHS



# Uptake Deficit is Likely to Grow over Time

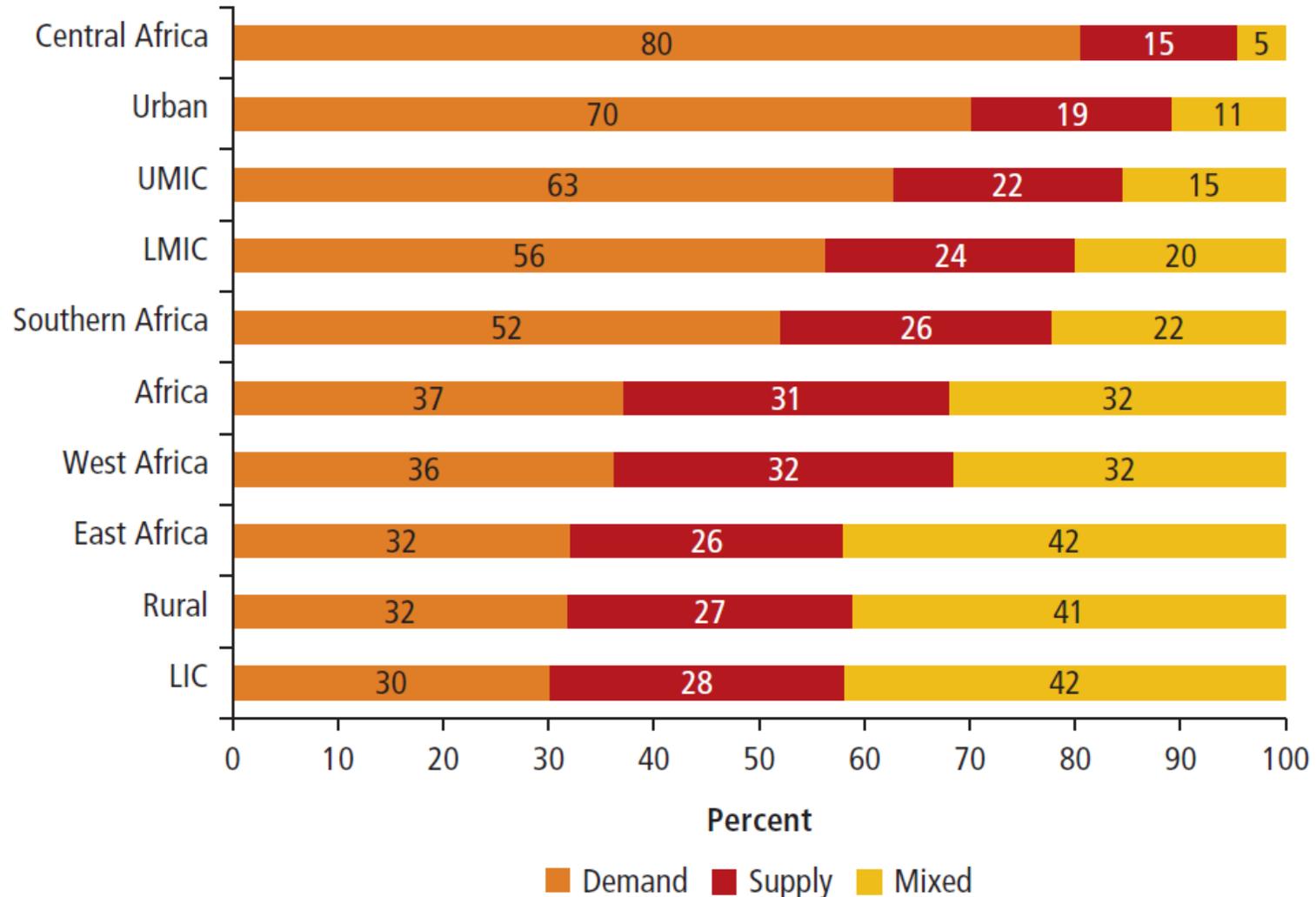
Evolution of Coverage, Population, and Access over Time



Source: Adapted from Demographic and Health Surveys.

# Demand-side Issues as Important in Addressing Access Deficits

## Decomposition of the Access Gap, by Region

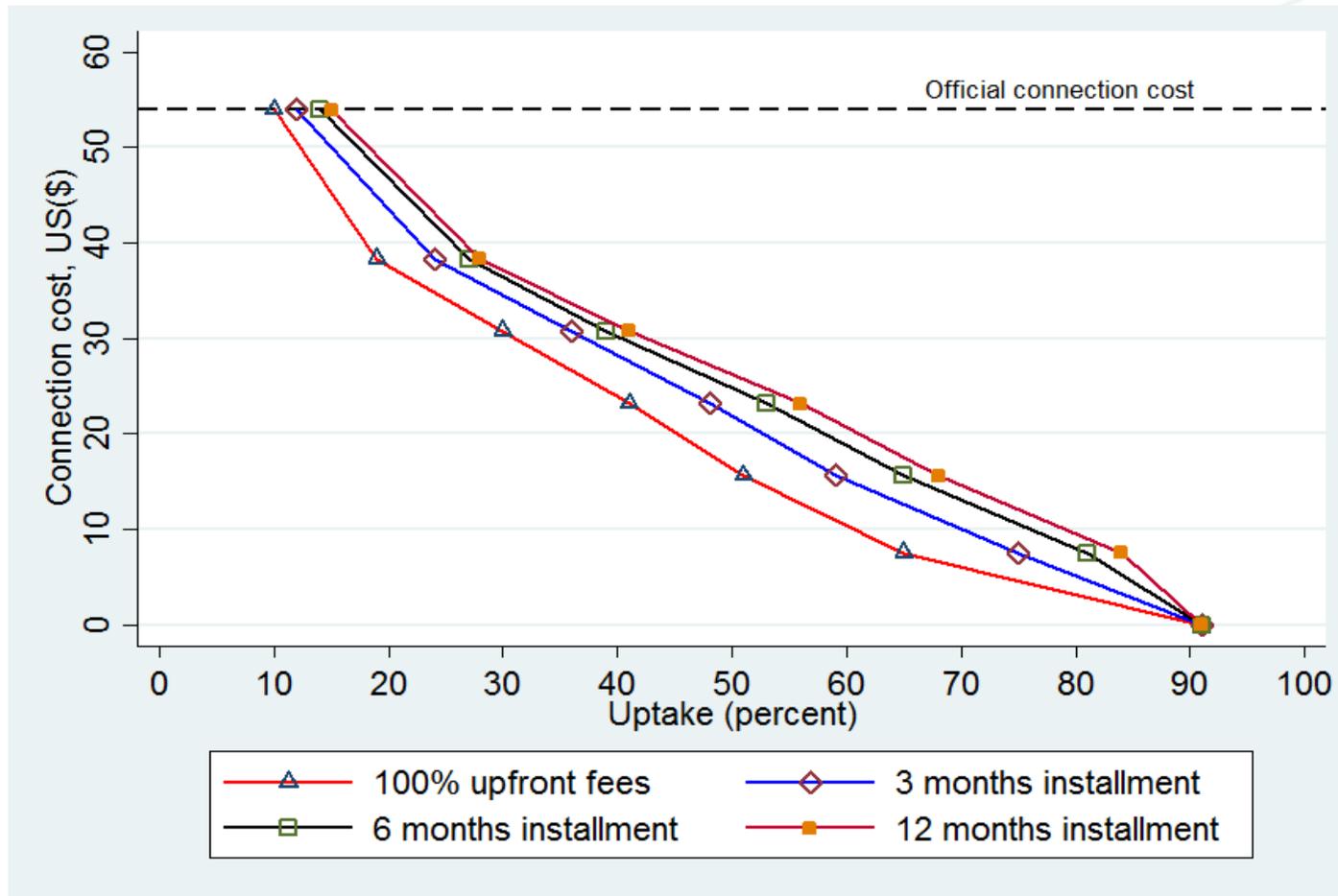


Source:  
Calculations using Afrobarometer data  
and adapted from Blimpo, Postepska,  
and Xu 2018.

# Two Routes to Address the Electricity Access Gap

## Route 1: Targeting the Symptoms

Stated Willingness to Pay for Grid Electricity in Liberia

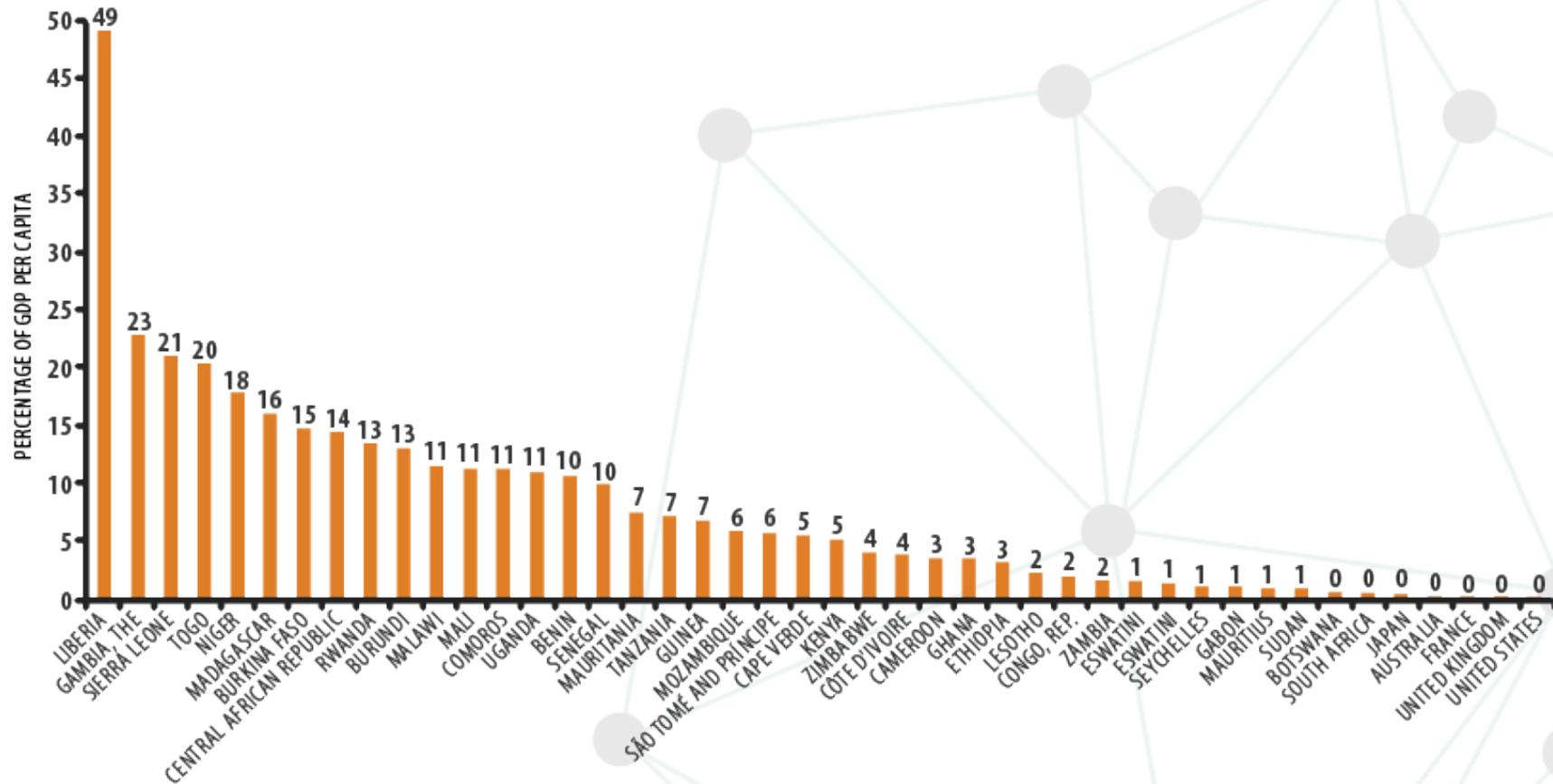


Source: Calculated by authors using World Bank Multi-Tier Framework data for Liberia, 2017.

# Two Routes to Address the Electricity Access Gap

## Route 1: Targeting the Symptoms

Price of Powering a Refrigerator for a Year as a Percentage of GDP per Capita



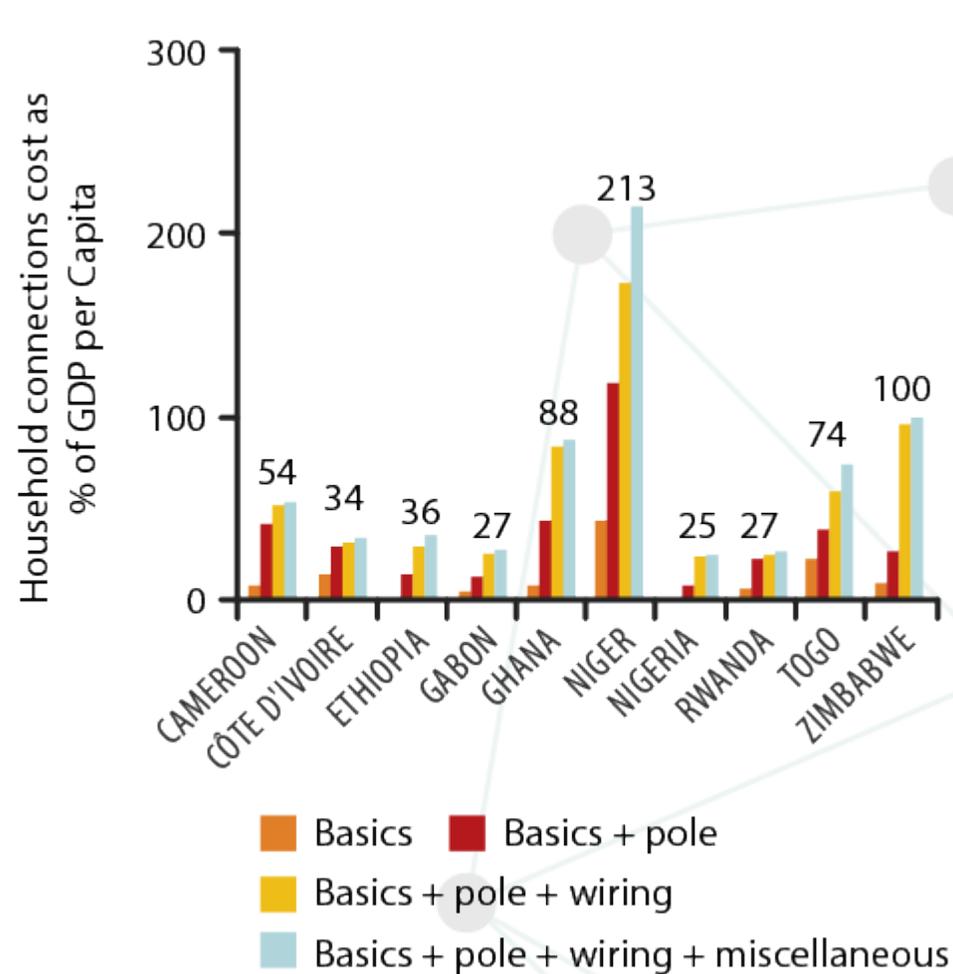
Source: Trimble, Kojima, and Perez Arroyo 2016.

Note: A refrigerator consumes roughly 459 kilowatt hours per year. GDP = gross domestic product.

# Two Routes to Address the Electricity Access Gap

## Route 1: Targeting the Symptoms

### High Connection Cost

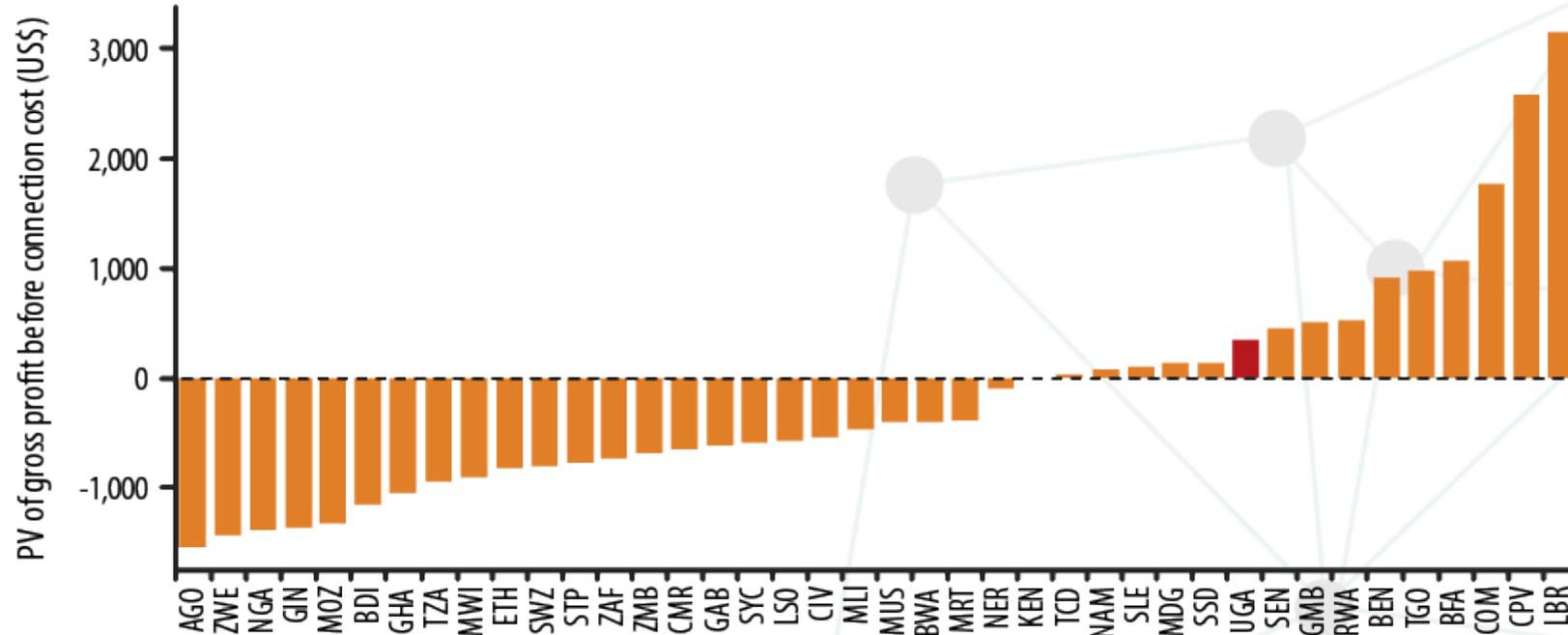


Source: Blimpo et al., 2018.

# Two Routes to Address the Electricity Access Gap

## Route 1: Targeting the Symptoms

Present Value of Gross Profit from an Additional User, before Connection Costs



Source: Blimpo, McRae, and Steinbuks 2018.

Targeting symptomatic barriers



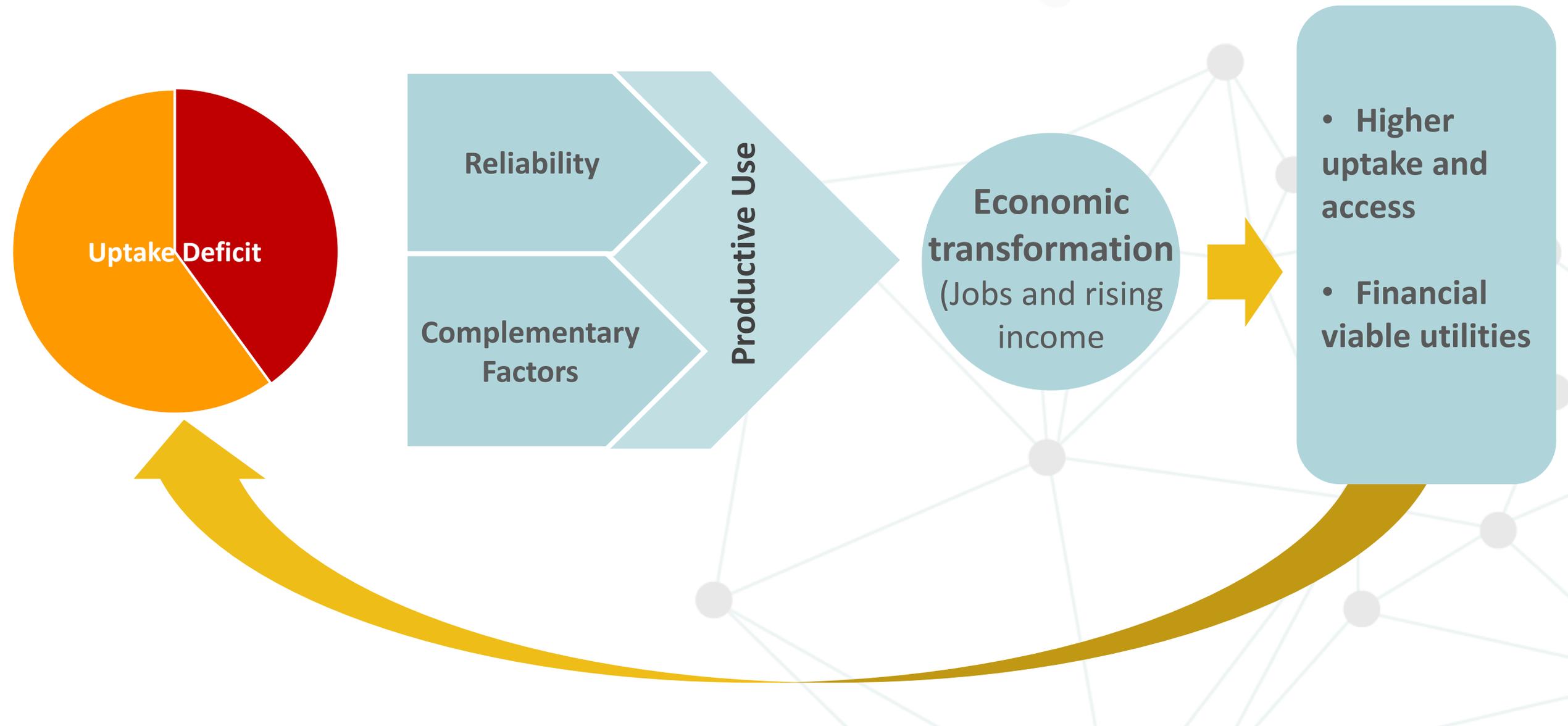
Increase in access



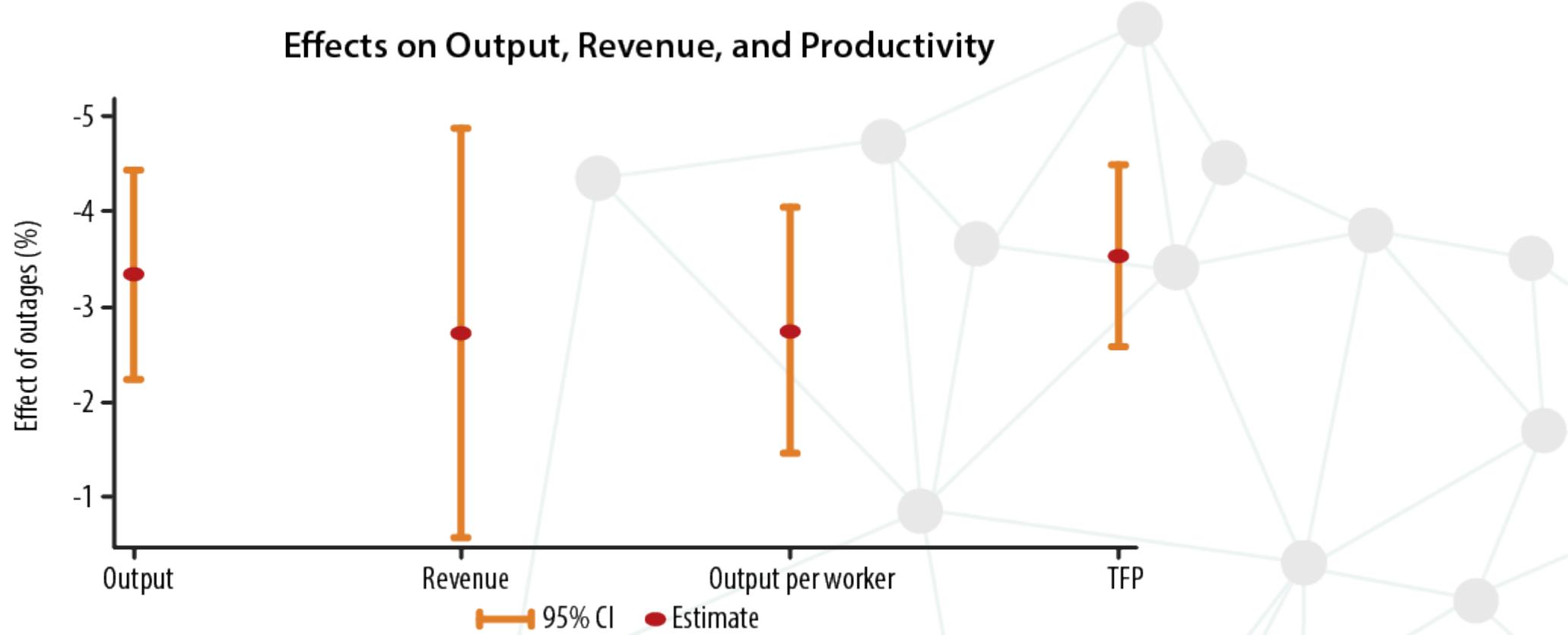
Financial Sustainability

# Two Routes to Address the Electricity Access Gap

Route 2: Targeting productive use/economic growth



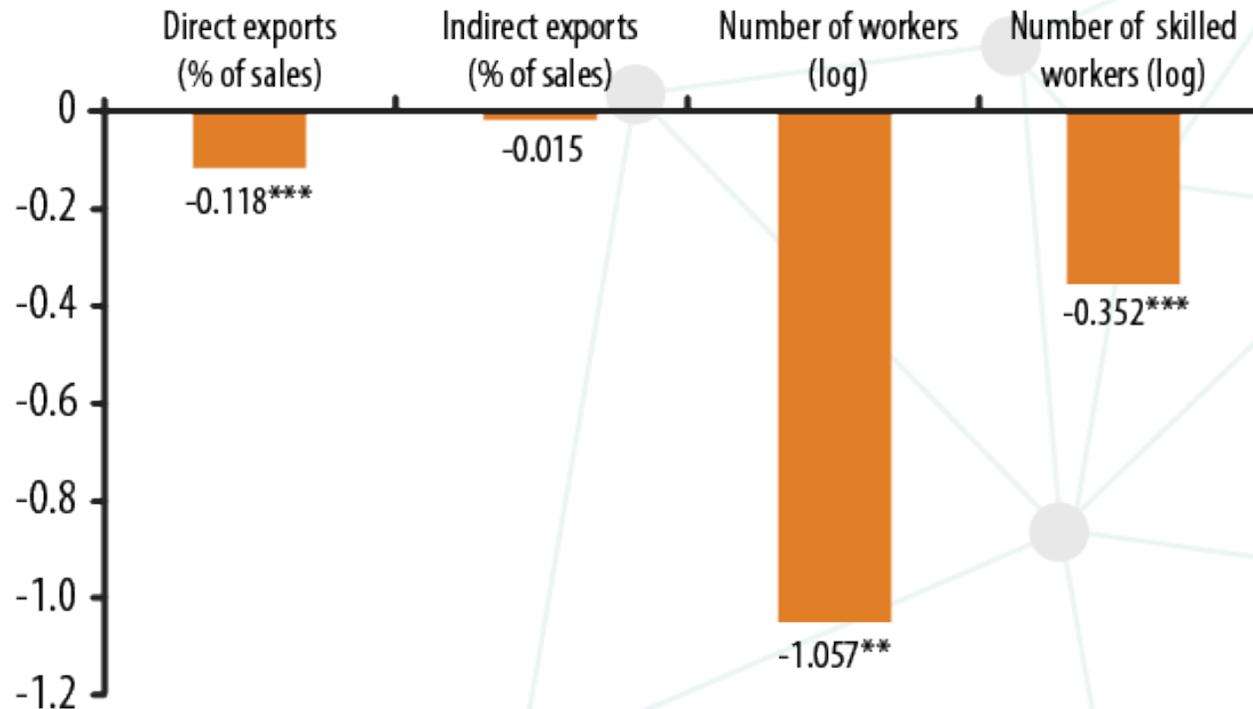
# Large Negative Impacts if Unreliable



Source: Mensah (2018)

# Large Negative Impacts if Unreliable

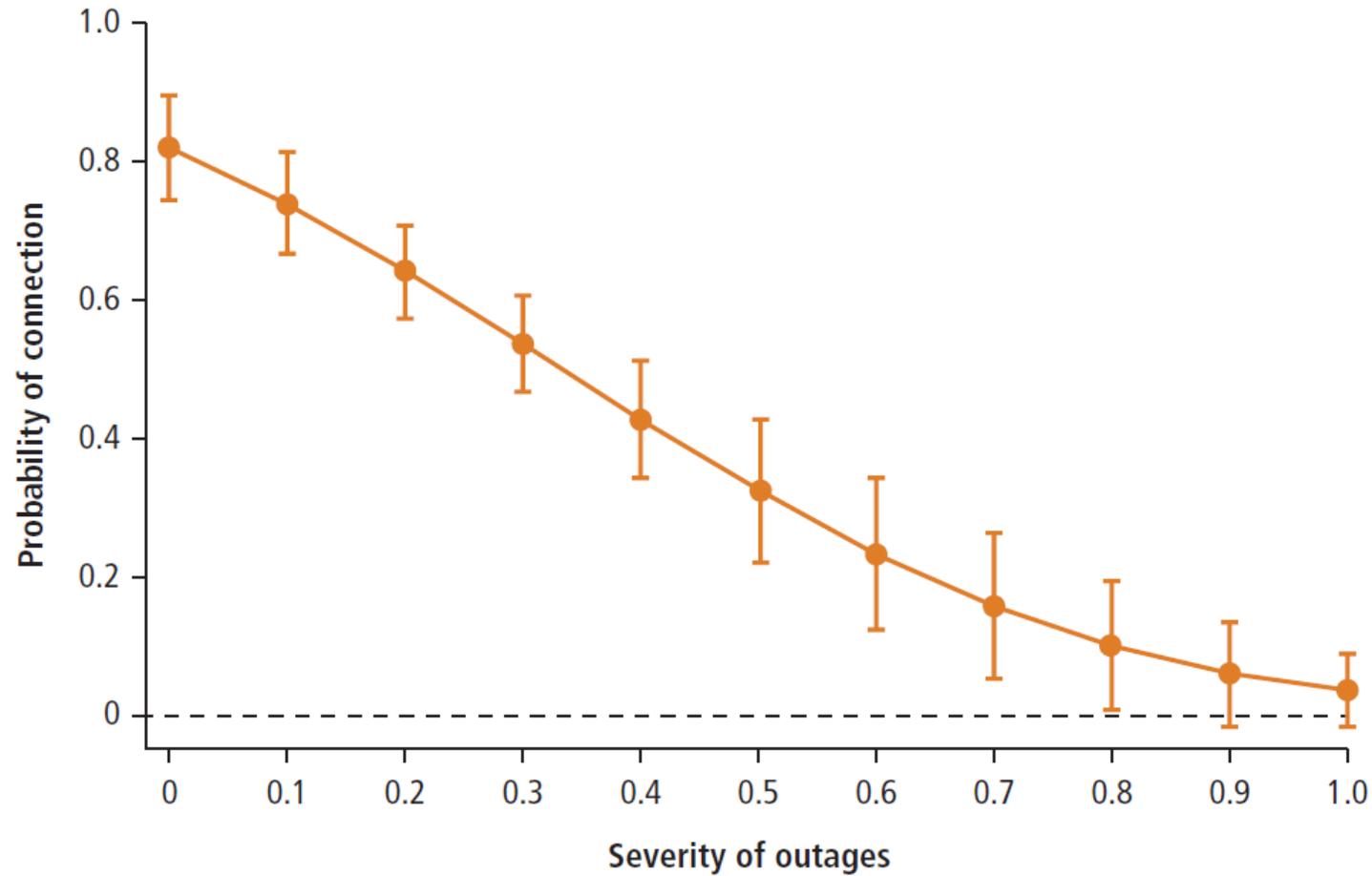
## Effects on Trade Competitiveness, and Labor Demand



Source: Estimates using Enterprise Survey 2006-16.

# Larger Uptake if Reliable

## Reliability and the Probability of Connection

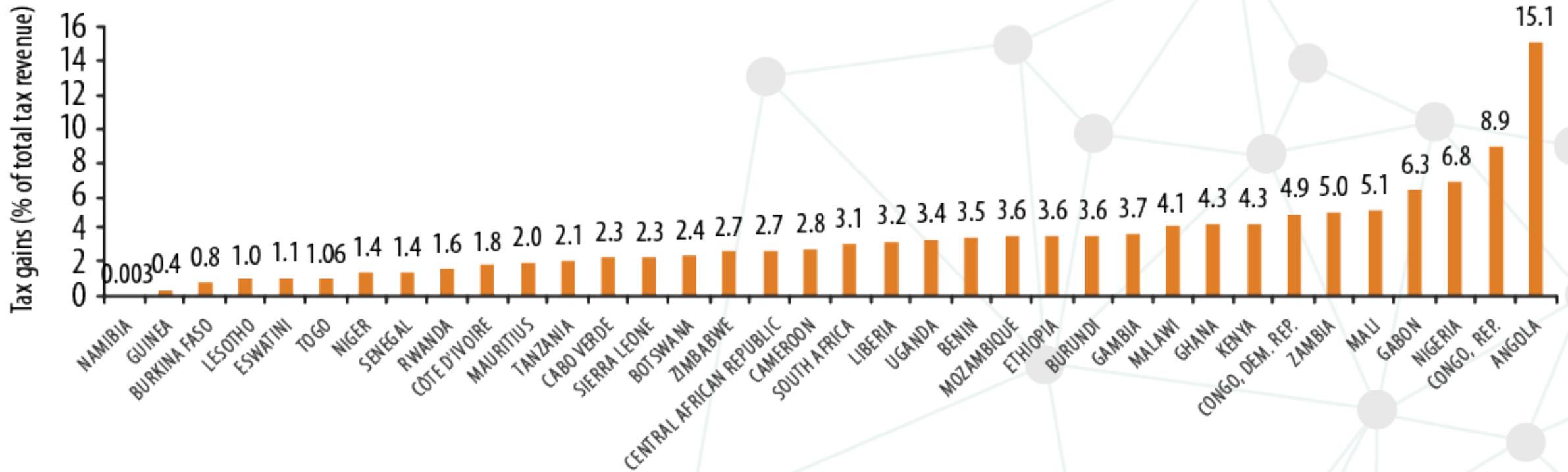


Source: Adapted from Millien 2017.



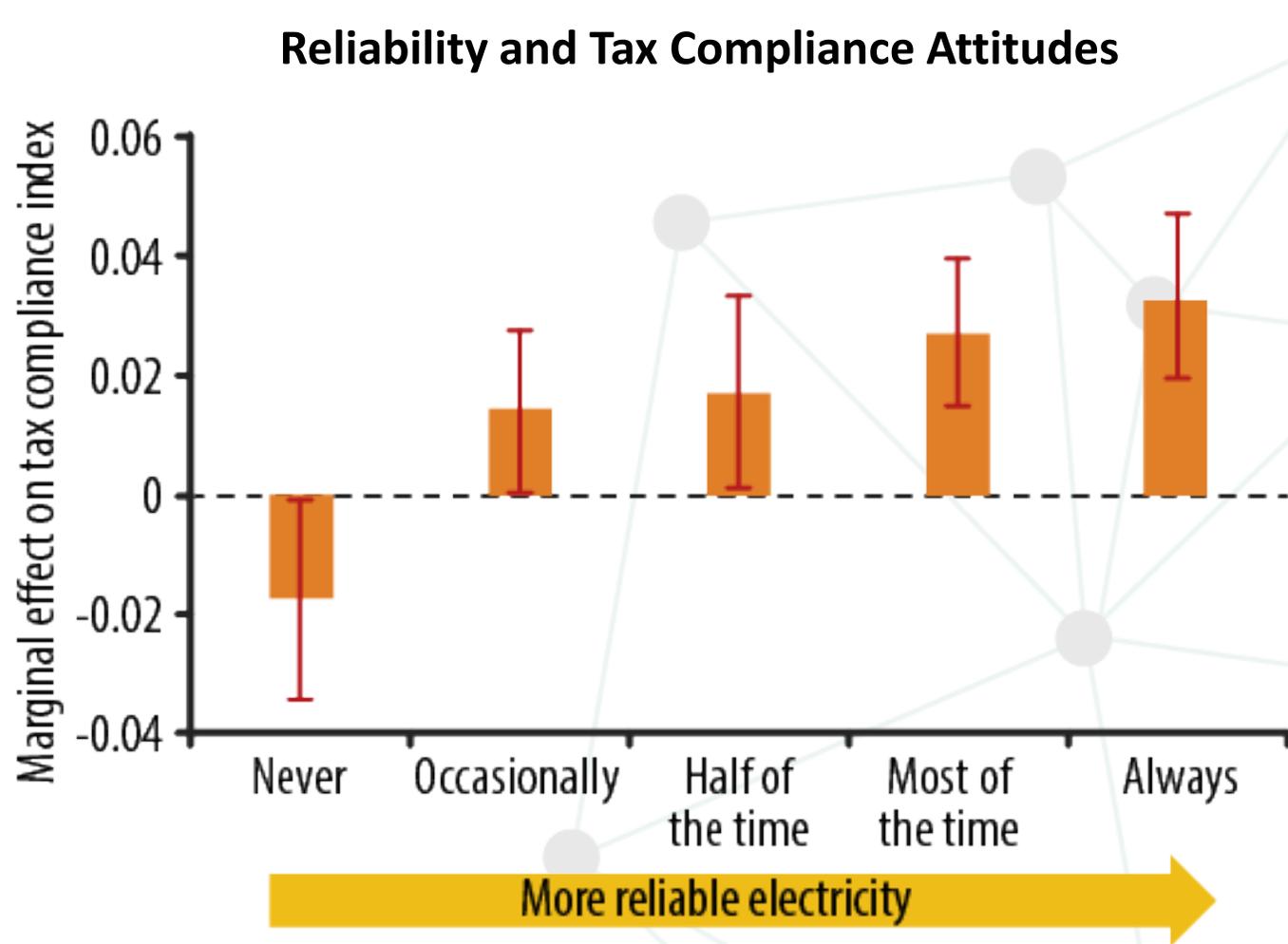
# Large Positive Impacts if Reliable

## Simulated Tax Revenue Gains from Providing Reliable Electricity



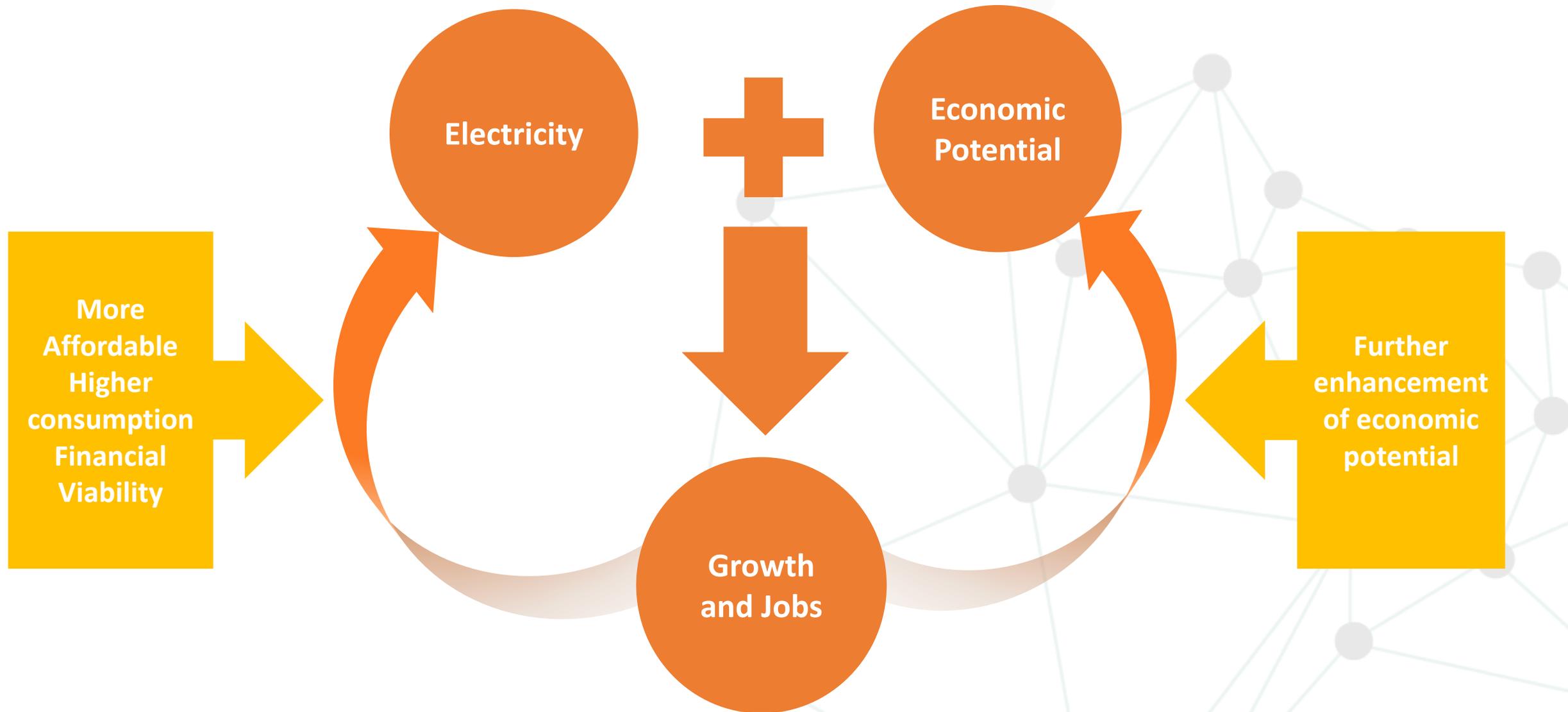
Source: Blimpo et al. 2018.

# Large Positive Impacts if Reliable



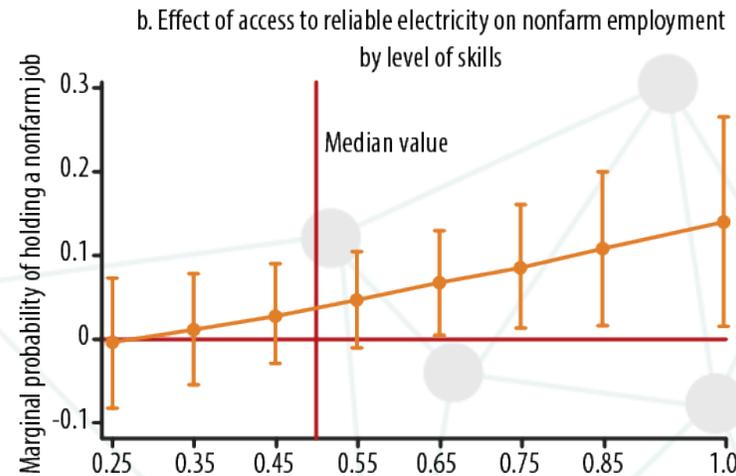
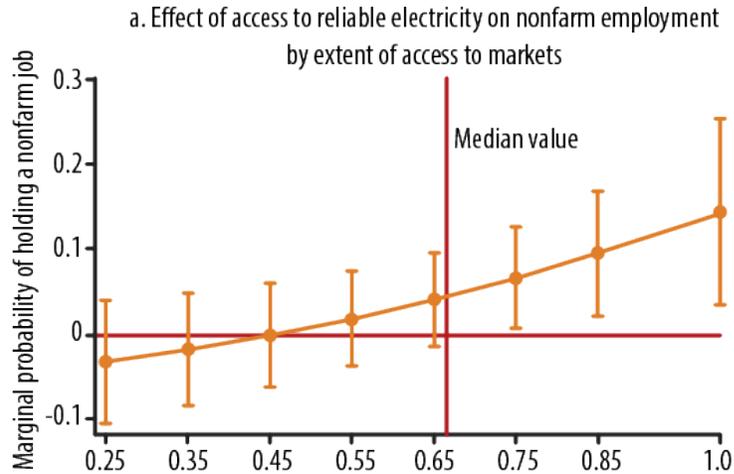
Source: Blimpo et al. 2018

# Complementary Investments are necessary



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Market

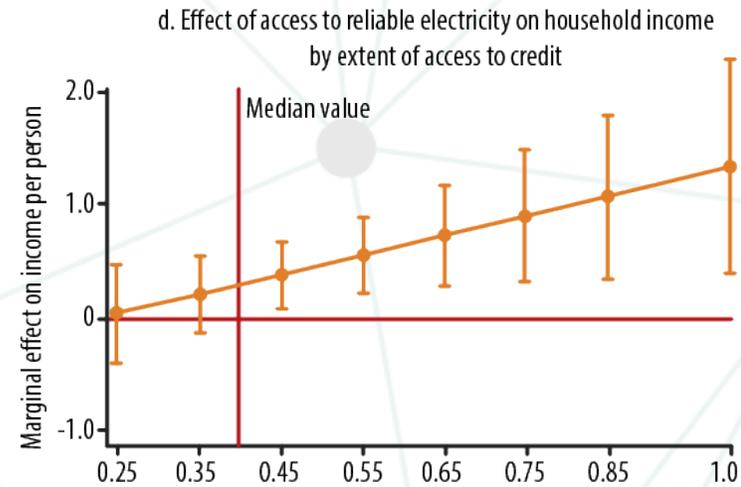
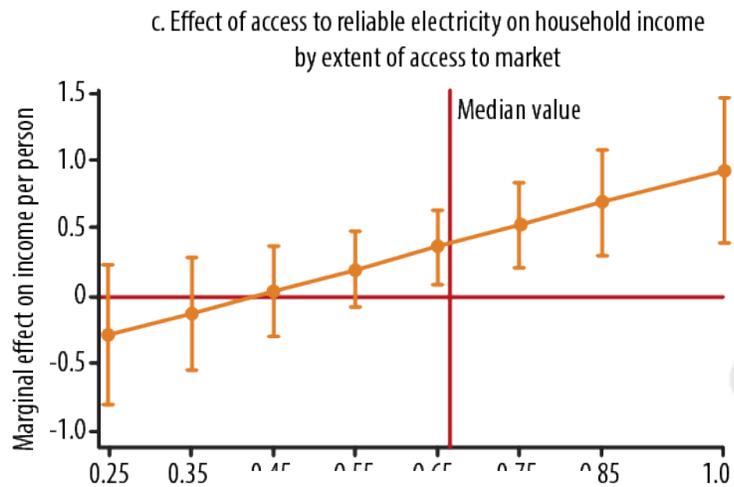


Skills

Non-farm Employment

Income

Market



Credit

# Two Routes to Address the Electricity Access Gap

