
POWER FOR ALL RESEARCH SUMMARY

Under-the-grid populations represent major business potential for mini-grid and cost-saving potential for DisCos

**POWER
FOR
ALL**

200 million

GLOBAL UNDER-GRID
POPULATION

20%

POTENTIAL ELECTRICITY
EXPENDITURE SAVINGS
FOR UNDER-GRID MINI-
GRID CUSTOMERS

\$1 BN/year

UNDER-GRID MINI-GRID
BUSINESS OPPORTUNITY

In sub-Saharan Africa, a huge population lives “under the grid” -- this means that they are within a national distribution company’s (DisCo) territory but are not connected to or are not properly served by the grid. A new report by Rocky Mountain Institute (RMI)¹ explores the opportunity for mini-grids to reach these “under-grid” customers based on research in Nigeria. We highlight their findings.

There are about as many under-grid customers as off-grid customers in the world, representing USD billions of business opportunity.

- » Globally, about 200 million people are sitting under the grid without quality electricity access. In Nigeria, 90% of grid connections are considered unreliable, and outages are longer and more frequent in rural areas. (7)
- » Government and development partners do not focus on under-grid customers because in theory, they already have at least nominal electricity access. (7)
- » Under-grid communities, however, are good target customers because they tend to have greater electricity demand than their counterparts in off-grid communities due to their proximity to urban centers and higher share of commercial applications. (20)
- » This could be an untapped opportunity to better serve under-grid communities through mini-grids utilizing existing distribution. (7) In Nigeria, 40 million rural residents are under-served, 35% of which RMI estimates could be served by 4,000 under-grid mini-grids, presenting a business opportunity of \$1 billion per year. (17)

Under-grid mini-grids can be the most cost-effective way to capture the under-grid market, preventing as much as 50% of DisCo’s financial losses.

- » Nigerian DisCos are reportedly experiencing high financial losses due to non-cost-reflective tariffs and low collection rates. Revenue from electricity sales only recover 35% of costs. (11,13)
- » A DisCo in Nigeria would need to raise its tariff 10 times, achieve a 100% collection rate and also provide 24-hour service, in order to break even in many communities.
- » Collaborating with mini-grid could prevent up to 50% of financial loss for DisCo by transferring collection responsibility to mini-grid operators, and opening doors for additional revenue from sharing distribution infrastructure. (11,15)
- » For example, transitioning 400 communities to under-grid mini-grids can save a Nigerian DisCo about \$3 million a year. (17)
- » Combining decentralized technologies and utility or grid resources can enhance the power sector’s resilience and therefore, making power supply more stable and flexible against natural disaster or macroeconomic shocks. (8,10,19,21)

For under-grid customers, under-grid mini-grids bring more reliable, cleaner and more affordable alternatives to national grid.

- » Under-grid customers often supplement grid services with expensive and polluting alternatives such as diesel generators that bite into their budget. Accounting for diesel generation and the use of kerosene, average community-wide electricity cost is around \$0.58 per kWh for an under-grid consumer. (19)
- » A typical residential consumer could save as much as \$0.15 per kWh being served by under-grid mini-grid instead of paying for costly alternatives such as diesel generation, all while enjoying a more reliable service. (19)
- » Reliable electricity service enables better productivity. Additional impacts such as job creation from vigorous economic activities can be captured by the community. (21)
- » Tariffs for mini-grid companies are still higher than DisCos. Allowing customers to continue buying power at a subsidized tariff from current grid source can mitigate their concern for mini-grid’s affordability. (21)

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By the Numbers:

200 million

GLOBAL UNDER-GRID
POPULATION

- » Communities should evaluate whether to enter a long-term tripartite contract with a DisCo and a mini-grid operator. Such a contract can be initiated by a mini-grid developer, and its terms should be informed by DisCo, the consumers, and the Nigeria Electricity Regulatory Commission. (21,22,27)

20%

POTENTIAL ELECTRICITY
EXPENDITURE SAVINGS
FOR UNDER-GRID MINI-
GRID CUSTOMERS

Share the Message

- » The size of the under-grid electricity market is as large as the off-grid market and could even be larger, given the demand for urban electricity.
- » The under-grid mini-grid business opportunity could be as high as \$1 billion annually in Nigeria.
- » Working with mini-grid companies can save DisCos 50% of their financial loss and open up opportunities for new revenue streams.

\$1BN/year

UNDER-GRID MINI-GRID
BUSINESS OPPORTUNITY

Sources:

1. Under the Grid: Improving the economics and reliability of rural electricity service with under-grid mini-grids. (2019) Rocky Mountain Institute.