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# POWER FOR ALL RESEARCH SUMMARY

## Understanding rural consumer behavior and electricity demand in India

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**POWER  
FOR  
ALL**

**60%**

GRID ELECTRICITY CUSTOMER  
SATISFACTION RATE

**80%**

MINI-GRID ELECTRICITY  
CUSTOMER SATISFACTION  
RATE

**41%**

RURAL ELECTRICITY  
CONSUMPTION FROM  
AGRICULTURAL APPLICATION

The Government of India (GoI) has made great progress providing grid electricity access to rural areas. There is, however, still a gap in actual adoption and use of electricity. A new report by Smart Power India (SPI)<sup>1</sup> provides much-needed insight into consumer behavior to explain these gaps. In this report, SPI surveyed 10,000 rural households and 2,000 rural enterprises across four states in India to understand rural customers and their demand.

**The Government of India has made great strides connecting all village communities, but must now focus on actual adoption of electricity and inclusiveness for poorest households.**

- » In April 2018, the GoI announced 100% village electrification. 5.8 million households (one-fifth of the Saubhagya target) are unconnected and are currently classified as “unwilling”. Most of these are low-income households. (23,73)
- » The survey found that 90% of the households have grid electricity available to them (i.e. connected, or have electricity pole within 50 meter distance). However, only 75% of the surveyed households are using electricity. (23)
- » Grid electricity is viewed as expensive even given the subsidized tariffs. Some rural households declined to be connected due to their low ability to pay. (37,38,73,74)
- » Customers with unmetered connections are charged the same fixed monthly tariff despite electricity use, finding poorer households using electricity for simple uses paying a much higher per unit cost. (77)
- » Irregularity in bill generation and bill collection also make it difficult for poor households to plan for their expenses. (38,78)

**For rural enterprises, quality of electricity supply is particularly important. Many opt for a mix of non-grid sources, with decentralized renewable energy (DRE) playing an important role.**

- » Adoption of grid electricity among rural enterprises is even lower than households. About 90% of rural enterprises have access to nearby grid, but only 65% of the surveyed enterprises have opted for a connection. (28)
- » One in two consumers with grid connected electricity face on average eight hours of power outage per day. (41)
- » Low quality of grid electricity drives consumers to adopt non-grid sources. 40% of rural enterprises use non-grid electricity sources, as compared to only 16% for rural households. (25,29,73)
- » Rural enterprises often stack different sources of electricity, especially those that are highly dependent on reliable electricity supply such as cyber cafes and mobile repair shops. (30)
- » DRE solutions such as mini-grids and solar home systems (SHS) play an important role in the rural energy mix, together satisfying 17% of the electricity needs among the surveyed enterprises. (34)

**Two out of five people are still unsatisfied with grid electricity. Mini-grid electricity, on the other hand, has a satisfaction rate of more than 80%**

- » Consumer satisfaction is driven by reliability, adequacy and quality of electricity supply more than affordability perceptions. Low satisfaction (60%) affects the willingness of existing customers to pay their bills (44,47,48,49)
- » Solar mini grids are an important solution for tackling the challenge of rural electricity access. They achieve a satisfaction rate of 80% among households and 90% of enterprises that use mini grid electricity say they recommend it to others. (51,52,48)

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# POWER FOR ALL RESEARCH SUMMARY

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

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### By the Numbers:

# 60%

GRID ELECTRICITY CUSTOMER SATISFACTION RATE

- » Perceptions of mini-grid electricity are better than grid electricity in terms of quality, reliability, adequacy, redress services and ease of getting a connection. (52)
- » 41% of mini-grid electricity users find the service unaffordable. Although, this does not seem to have a strong effect on customer satisfaction according to the survey. (52)

# 80%

MINI-GRID ELECTRICITY CUSTOMER SATISFACTION RATE

**Agricultural applications such as irrigation comprise a significant share of rural electricity demand. Village electricity demand is mainly driven by number of users and agricultural activities.**

- » The bigger a village, the larger its population, and the more commercial and irrigation activities there are, the higher the village's electricity demand. (67)
- » 41% of total village electricity consumption goes to agricultural activities. Survey results show that 35% of rural households own a irrigation pump. (64)
- » Following irrigation, air circulation (i.e. fans) contributes to 58% of household electricity demand, followed by lighting 24%. (68)
- » For rural enterprises, various productive use activities such as printing and refrigeration contribute to 62% of consumption. (69,70)

# 41%

RURAL ELECTRICITY CONSUMPTION FROM AGRICULTURAL APPLICATION

### Share the Message

- » Despite progress in rural electrification in India there is a gap in actual adoption of electricity. This gap can be addressed by improving the quality and inclusiveness of grid electricity service.
- » DRE solutions are important in rural energy mix; mini-grid electricity is better perceived by rural electricity users than grid electricity.
- » Agricultural application is an important driver of rural electricity demand, making up 41% of total consumption.

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### Sources:

1. Rural electrification