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How solar power could transform rural India

More than one billion people remain without electricity today, many of them in remote rural communities. Research on off-grid solar power in rural India suggests it may hold the solution

In the past five years, off-grid solar power as a strategy of rural electrification has become a popular idea — and for a good reason. More than one billion people remain without electricity today, many of them in remote rural communities far from the national electric grid. At the same time, the rapid decrease in the price of solar panels has created new opportunities for commercial off-grid electrification.

While off-grid solar power is far from replacing grid extension as the main mode of rural electrification, it can no longer be dismissed as a trivial strategy. In Bangladesh, for example, [more than three million solar home systems](#) have been installed for residential use. Companies such as [OMC Power](#) in India and [Off-Grid: Electric](#) in Tanzania have secured major commercial investments into their businesses.

What are these companies delivering?

As a first step to answering this question, I and my collaborators ([Aklin](#), [Bayer](#), [Harish](#)) conducted a [survey](#) of the rural customers of [Mera Gao Power](#) (MGP) in the Barabanki district of the state of Uttar Pradesh, India.

MGP is a company that provides villagers with two bright LED lights and a mobile charger in exchange for a monthly payment of 100 rupees. In a randomized controlled trial funded by the [International Growth Centre](#) and [SPEED India](#), we [evaluate the demand](#) for MGP service and its socio-economic effects. The customer survey is an initial effort to understand what MGP is achieving through its work.

The most important observations about the consumer experience can be summarized as follows:

- By far the most common reason for subscription was the improved quality of lighting. In contrast, mobile charging and fuel expenditures were much less important
- The most common use of MGP lights was outdoor lighting. In a typical household, one of the two lights was placed outside at night
- Overall, households were satisfied with MGP service. The main complaint was the behaviour of MGP staff, suggesting that further training could improve customer experience

Further training could improve customer experience

- Willingness to pay for additional services, such as a fan or a television, was low

These findings are interesting for several reasons:

First, they show that the frequently cited benefit of reduced kerosene expenditure is not a major reason for adopting solar power. Instead, rural customers want improved lighting. This is important because much of the discussion on the benefits of solar power has focused on fuel savings. Our experience with the MGP service suggests, instead, that the key advantage of solar power is simply better lighting.

Second, MGP seems to have adopted the optimal service package. There is little demand for additional services even among customers. While this result may initially appear surprising, it is important to remember that MGP customers are among the most deprived households in rural India. Wealthier rural households, who would be able to pay for a fan, tend to live in already electrified habitations.

A challenge for expanding MGP's impact is demand. In villages approached by MGP, only one-fifth of households adopted solar technology. Reducing the price further either through government subsidy or less expensive technology would probably help, as cost and the lack of disposable income were common explanations for not subscribing to the service among the survey respondents.

Overall, however, the results from this survey are encouraging. They show that, even in the poorest villages, many households are willing to pay for good lighting. Companies such as MGP are providing a valuable lighting solution to replace kerosene in communities where grid electricity is not available.

We'll be conducting plenty of additional analysis in the coming months — stay tuned for updates!