Extending electricity to poor rural communities in India not reaping hoped-for economic impact

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(Phys.org)—A team of researchers from the U.S. and the U.K. has found that governmental initiatives to provide electricity to poor

communities in India has not brought about the socioeconomic benefits that were predicted. In their paper published on the open access site *Science Advances*, the group describes a survey they carried out involving people living in non-electrified communities in India and a follow-up they conducted after some of those involved in the prior survey gained access to electricity.

One of the precepts of governmental planning for third-world countries is that if poor, remote communities are provided with basic amenities such as clean water and electricity, the standard of living in those areas will automatically rise. People living in such places, it is assumed, would take advantage of electric-powered activities to improve their lot, such as conducting business at night or studying for longer hours. But as the researchers with this new effort found, that might not be the case.

India is a developing country with a population of approximately 1.3 billion people. But despite efforts to expand the grid, approximately 300 million people still live without a reliable source of electricity. This means they must rely on kerosene lamps for light at night, and cannot use electrical appliances that make life easier. The government in India has acknowledged the problem and pledged to provide for such communities by investing heavily in local solar power electricity. Called India's Remote Village Electrification Program, the goal is to increase solar power production from 12.3 gigawatts to 100 gigawatts by 2022.

But will doing so provide the stimulus to lift people living in remote communities out of poverty? To find out, the researchers conducted a survey of approximately 1,300 households in 81 remote, non-electrified communities. A year later, they conducted another survey of the same people, and found that electrification rates had increased by 29 to 35 percent. But the responses of those who gained access to electricity indicated little to no economic gain. The only measurable change in the lives of the people was a reduction in the amount of kerosene they

bought.

The researchers note that theirs was a limited-time study, and point out that it is possible that over longer time spans, economic growth might occur, but they also suggest that other measures besides access to electricity might be needed to improve the lives of the poor living throughout the country.

More information: Michaël Aklin et al. Does basic energy access generate socioeconomic benefits? A field experiment with off-grid solar power in India, *Science Advances* (2017). DOI: 10.1126/sciadv.1602153

Abstract

This article assesses the socioeconomic effects of solar microgrids. The lack of access to electricity is a major obstacle to the socioeconomic development of more than a billion people. Off-grid solar technologies hold potential as an affordable and clean solution to satisfy basic electricity needs. We conducted a randomized field experiment in India to estimate the causal effect of off-grid solar power on electricity access and broader socioeconomic development of 1281 rural households. Within a year, electrification rates in the treatment group increased by 29 to 36 percentage points. Daily hours of access to electricity increased only by 0.99 to 1.42 hours, and the confidence intervals are wide. Kerosene expenditure on the black market decreased by 47 to 49 rupees per month. Despite these strong electrification and expenditure effects, we found no systematic evidence for changes in savings, spending, business creation, time spent working or studying, or other broader indicators of socioeconomic development.

Press release