



Empowering through Light: Women and Solar Home Systems in Rural Bihar, India

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In rural India, women in poor households spend a large part of their day performing basic tasks such as collecting fuel wood or kerosene, which keeps them away from employment or education opportunities and makes their lives more difficult. Access to electricity is therefore increasingly regarded as a means to improve their status in society. Although a large number of small-scale and community-based off-grid renewable energy projects are in place to provide access to electricity with a women-centric approach, research on the benefits to women has been largely anecdotal. A review of the evidence for the impact of rural electrification on women's lives concluded that electricity access has a positive effect on women's practical needs by reducing drudgery and providing better health, time-savings and income generation. However, it was found that electricity policies only look at women as end-users of electricity and do not explore gendered impacts of policy and productive end uses [1].

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A collaboration between an energy technology initiative by The Energy Resources Institute (TERI) and a women-

centric poverty reduction intervention Bihar Rural Livelihoods Project (BRLPS) has enabled researchers to gather feedback directly from women who had been provided electricity access with solar home systems. Solar home systems are stand-alone photovoltaic systems that generate sufficient power for basic lighting and appliances in a household that is not connected to the grid. Such units are commonly distributed as part of rural electrification projects in several countries, including Peru and Bangladesh. In 2013, women from the Purnia district of Bihar, where a large number of poorly electrified and un-electrified villages exist, were lent solar home systems as part of the initiative by TERI. These women live in small windowless homes with walls and roofs made of straw and bamboo. They perform a wide variety of activities including farming, post-harvest activities and animal husbandry, in addition to their domestic responsibilities of supervising children and cattle, cooking, and cleaning. Some of them own small shops to sell basic grocery items. Researchers conducted semi-structured interviews and focus groups discussions regarding the impact of solar home systems on the women's lives, who were already members of small self help groups through BRLPS.

When researchers asked questions about life before and after access to solar home systems, they were struck by the fact that none of the answers centered on the women's own needs in their life. Instead,

many women highlighted the benefits of prolonged lighting provided by the solar home systems for their children. The women stressed how important it was that their children were able to study in the evenings and do well at school. Child welfare was a recurrent topic, with women responding to abstract questions such as “what do you value the most in life?” and “what is important to you?” with answers like “my child’s welfare, his health and education”. The extent to which the women would do anything for the welfare of their children also spurred creative uses for the power supplied by solar home systems, as indicated by an anecdote from the state project manager of the poverty-reduction intervention program: “A mother in a household told me that her new ‘smokeless’ cook-stove with a fan attachment benefited her a lot. I went to her house and noticed that the fan had been removed and placed next to her sleeping child. The mother mentioned her child was ill and she wanted to give him some relief from the heat.”

What transpired from further interviews was that the women viewed giving their children a good life as a key parental responsibility, and something to be proud of. Ownership of an asset like a solar home system, and the fact that they were the ones to bring light to the household, gave them pride and self-respect. Several women said that of paramount importance to them was “my child’s education, so that he grows up and makes me proud”, whilst others explained that they felt good seeing their children do well in life. Participation in BRLPS’s self help groups themselves was also observed to have a beneficial effect on the women’s confidence, with women who had actively participated in such activities over 9 years speaking in great detail about their views and treating everyone as an equal. In contrast, women in newer groups usually had a few women speak on behalf of others, with some joining in agreement only if there

was something they felt strongly about.

This study shows that the benefits of rural electrification extend beyond measurable factors such as income generation and improved health. Whilst the primary impact of providing off-grid electrification to women in Bihar appears to be enhanced child welfare, the initiative also seems to have increased levels of self-respect and pride for the women who bring the technology into their households. This outcome is arguably far more important than small savings on kerosene fuel or better quality light, it contributes to women’s empowerment and should therefore be taken into account when planning projects or policies looking to subsidize solar home systems.



Image of household cookstove, courtesy of S. Chandna

Key to this favourable outcome was the collaboration between the energy technology initiative and Bihar Rural Livelihoods Project, with the former bringing expertise in renewable energy products and the latter providing access to rural, poor communities as well as infrastructure for monitoring the use of the technology. Indeed, a major part of any energy-access project should be devoted to engagement and building good relationships with the local community by partnering with individual and organisations who are already known and trusted by the community when possible [2]. For instance, the energy initiative’s provision of trained local technicians to deal with maintenance of

solar home systems helped eliminate any insecurity about adopting the technology, whilst the self-help group sessions can be said to have promoted some of the women's confidence in giving voice to their opinions and experiences regarding off-grid electrification. This indicates that rural electrification efforts can be directed in a way that is particularly beneficial to women in rural areas through synergistic partnerships with well-established women-centric development programmes.

References

[1] Winther, T. et al., 2016. *Scoping study report Exploring Factors that Enhance and restrict Women's Empowerment through Electrification (EFEWEE)*, Oslo.

[2] Gill, K. et al., 2010. Bridging the Gender Divide: How technology can advance women economically. *How Technology Can ...*. Available at: http://www.icrw.org/publications/bridging-gender-divide?utm_content=bufferf7dcc&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer.

About the Author



Shivi completed her MPhil in Engineering for Sustainable Development at the University of Cambridge in 2016. She is passionate about the use of technology for social impact, especially gender development and sustainability in developing countries. Prior to her masters Shivi has worked as an engineer and technology consultant at Qualcomm/Cambridge Silicon Radio for six years. Shivi has a BEng in Electronic Engineering and Computer Science from Aston University.