Kumar, Praveen; Boston College School of Social Work
jayendran@iitb.ac.in
Authors: Aritra Chakrabarty, Indian Institute of Technology Bombay
Rohit Sharma, Indian Institute of Technology Bombay
Praveen Kumar, Boston College School of Social Work
Jayendran Venkateswaran, Indian Institute of Technology Bombay
Chetan S. Solanki, Indian Institute of Technology Bombay
Title: Barriers and enablers impacting durability of solar street lighting systems in rural India

Installation and durability of solar street lighting (SSL) systems contribute to the UN Sustainable Development Goal (SDG) 7 on energy access. Sustained use of SSLs not only has social and environmental benefits but also is a low-cost alternative especially for resource constrained communities. The Street Light National Program (SLNP) by the Government of India has contributed to significant increase in installation of SSLs especially in rural India. However, the durability of SSLs has been a challenge. Limited systematic studies are available to investigate factors impacting durability of SSLs in rural poor communities of India. The aim of our study is to explore barriers and enablers impacting durability of solar street lighting systems in rural India. This study is part of the Solar Urja through Localisation for Sustainability (SoULS) programme funded by the Ministry of New and Renewable Energy (MNRE) of the Government of India to create a renewable energy eco-system in rural poor communities of India. We studied 69 SSL systems installed in four villages of two states of Telangana and Chhattisgarh. Utilizing a mixed methods approach, we collected following data for the study: 1) demographic data of all the rural households from these villages; 2) SSL installation and durability data from local government agencies; 3) qualitative data through focus groups with government officials and community members. Key findings of our study are: 1) lack of adequate awareness on use and maintenance of SSLs among rural households, and inconsistent monitoring by local implementers impact durability of SSLs; 2) community members recognize the significance of SSLs for their overall well-being, however they are reluctant in sharing the installation cost; and 3) centralized SSL systems have relatively higher durability than stand-alone SSL installations. Our findings indicate that sustainability of evidence based technological interventions must be embedded within the demographic, economic and social imperatives of local communities. Challenges of sustainable energy access for rural poor communities can be realized when there are concerted efforts to localize, economize, and democratize energy interventions.