

## ABSTRACT

Access to energy is regarded the Sine-quo nan of modernization. The gap between the demand of customers connected to the grid and the available electricity supply reported by the central electricity authority for 2011–2012 was almost 84 TWh, which is 10% of the total requirement. With 15% of villages remaining un-electrified, access to grid connectivity in rural India will remain a distinct possibility in years to come because of geographical adversity, low purchasing power, low consumption, crumbling electricity transmission and distribution infrastructure, lack of road infrastructure. There have been efforts by Government of India to extend electrification to rural villages using renewable energy technologies to overcome the lurking issue of electricity access in the country. In order to satisfy the load demand especially in rural India where solar energy potential is available in abundance, solar photovoltaic (PV) is extensively used for rural electrification and standalone photovoltaic systems along with grid connected energy systems are now being implemented under various schemes of MNRE. The reach of photovoltaic (PV) systems in rural India though primarily used for lightening applications, latest innovations in the PV system design and improvisation in system efficiencies, solar PV is seen as a reliable option to meet energy requirements of Telecom network already penetrated in rural India to grasp 826 million subscriber potential under Universal service obligations. With the aim of using RETs especially solar photovoltaic (PV) in powering rural telecom network operations to a level of around 100% by 2020 report MNES May 2012, standalone photovoltaic systems were disseminated and augmented under TERI-The energy and resource institute to provide solar mobile charging facilities in rural India courtesy Department of telecommunication, Government of India under Universal sharing obligations to boost teledensity. The major barriers in the implementation of such schemes in India relate to technical, financial, institutional and governance barriers. The objective of this research work is the detailed Technical Socio-Economic evaluation of standalone photovoltaic systems augmented to provide solar mobile charging facilities in rural India. Technical, financial, institutional aspects of the solar mobile charging facilities were studied and detailed social impact assessment of solar mobile charging facilities in rural India were carried on. The study found that subsidy based free provision of mobile charging facilities under Universal sharing obligations will deliver better results if a strong team of technical expertise at the local level is developed. This study though suggests that financial support, technical innovations, developing local technical expertise/energy entrepreneurs and mobilization of key resources are the keys for enhancing the effectiveness and sustainability of solar mobile charging facilities in rural India, susceptible models are the future response to energy requirement for both the- technology provider (the operators) and the rural customers (the end-users) under Universal service obligations.