

Educational benefits and social impacts of solar photovoltaic systems in rural Kenyan schools

Olang, Tabitha

Graduate student, The University of Tokyo, Japan, olang@s.k.u-tokyo.ac.jp

In many developing countries, the high costs of grid extension and the externalities associated with fossil energy production such as fluctuating fuel costs and maintenance of diesel generators led to most rural electrification programs opting for renewable energy systems, especially solar photo voltaic (PV) systems. The Kenyan government, through the Rural Electrification Authority, equipped over 500 public schools in remote areas with solar PV systems over the last 12 years, starting in 2005. Additionally, some schools have also benefited from solar PV systems highly supported by international donors. This research was aimed at investigating the level of efficiency in the deployment of these projects and to establish the effects of having a school being electrified in the midst of a community lacking access to modern sources of energy. This objective was achieved by carrying out a detailed case study analysis of eleven primary schools in Kenya using solar PV systems to elaborate how these systems have impacted on the school, as well as the communities within which the school exists.

Findings show that solar PV systems used for pumping underground water had a positive impact on students' performance and discipline as the students no longer had to leave the school premises during teaching hours to go fetch water for drinking and cleaning during school hours. Furthermore, an increase in the level of community involvement in the project was observed as community members could readily access clean underground water during the day which improved the health of community members in general. On the other hand, solar PV systems used for lighting purposes yielded positive impacts such as improved academic performance and discipline among students due to the availability of longer studying hours. The availability of solar PV system made it possible for some schools to convert upper elementary students to boarders hence shielding them from ills such as child prostitution and drug abuse. However, there was minimal community involvement and in some instances conflicts arose among community members, with regards to water needed for the school to operate. There were also cases of vandalism especially during school long holidays.

The study concludes by emphasizing the importance of capacity building both individually and communally for a successful solar PV system implementation in schools. Moreover, a simultaneous access to electricity and clean water in schools is essential to ensure better health and academic performance among students, as well as to improve the cohesion within the community within which the school exists. Improving the cohesion within the school members and the surrounding communities is vital as it would encourage these stakeholders to embrace the project and become champions of ensuring the project's success.