Modelling of Success of Rural Electrification through Solar Home Systems in Developing Countries

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Abstract

Approximately 20% of the world's population does not have access to electricity, thereby impeding a rise in their living standard. In the Sunbelt, Solar Home Systems (SHS) can supply the electricity demand required for some basic electricity services reliably and economically, where other options of electrification are failing. This research addresses the question how the success of Solar Home System (SHS) implementation can be measured by proposing a model of success. An interdisciplinary literature review was used to develop a preliminary model of success. Surveys of stakeholders involved in the implementation and use of Solar Home Systems were used to provide feedback and information on the various components of this model. Semi-structured as well as narrative interviews, participatory observation, and self-observation processes were used in these surveys, depending on the interviewee. The model developed involves key-stakeholders and their self-set goals, combined with the importance, and level of achievement, of these self-set goals. These components are combined to produce an overall measure of the success of a SHS implementation. Success factors are also used within the model to provide insight into the results obtained. The main stakeholder groups, and an example of their self-set goals (in parentheses) are the International Supply Chain (profit), the National Supply Chain (profit), Donors (social benefit) and Users (provision of energy services). While many aspects of the model can be relatively easily quantified, the measurement of the level of achievement of self-set goals was found to be a major challenge in the application of the model of success. One of the advantages of this model is that, as well as calculating the success of an overall SHS implementation, the success for each individual stakeholder can also be determined. The research highlights the complexity of measuring success of Solar Home Systems. However, this model is believed to be a better indicator of the success of a SHS implementation than the simple metric of the number of installed systems which is often currently used. Source: PhD thesis Hans Holtorf