

Preface

...millions of people in the world's poorest countries remain imprisoned, enslaved, and in chains. They are trapped in the prison of poverty. It is time to set them free...

—Nelson Mandela

Over 1 in 5 people living in the world today do not have access to electricity and many more have access to only very limited amounts of electricity. In the main, these are people who live in rural areas in developing countries. That lack of access to modern energy services means not only that these people have a low quality of life, but also that they are not provided with basic services, such as healthcare and education. They are caught in an energy poverty trap. Poverty results in having no access to electricity, and they remain poor while they do not have access to electricity. That there is a moral, social and economic need for electrification programmes to provide these people with access to electricity is not in question. What is in question is how to do so efficiently, cost effectively and without adding to the world's already serious energy-related environmental problems. The importance of finding answers to this question is amplified by the fact that while many rural electrification programmes based on the use of small-scale renewable energy systems have been implemented over the past decades, it is looking likely that there will be as many people in 2030 without access to power as there are today. If the problem is going to be addressed, the number of rural electrification programmes being implemented will need to be greatly increased and their scales expanded. We will need more and bigger rural electrification programmes. But there is a problem!

Many rural electrification programmes using renewable energy systems as an alternative to extending the grid or use diesel generators. The degree to which these programmes have been successful in terms of a sustained increase in the uptake of renewable energy systems is not well documented. However, there is strong evidence that while some of the rural electrification programmes that have been implemented in developing countries to date have been highly successful, not all have been. The problem is that before we invest in larger and bigger rural electrification programmes, we need to be able to answer questions such as why some

of these programmes have not been successful, or have not been successful as they could have or should have been, and how future programmes can be designed and implemented in ways that result in greater success rates? And those are the questions that this book attempts to answer.

In attempting to answer these questions, the immediate paradox that we encountered was that several guidelines to assist those designing and implementing solar home system (SHS) programmes had been published and that the poor outcomes of some SHS programmes were occurring despite the publication of those guidelines. For some reason or reasons, the publication of those guidelines had not appeared to have effectively remedied the problems that they had sought to address. Our starting point, therefore, was that writing yet another set of technical guidelines was not the solution. What was needed was a better understanding of the causes behind the failures of limited success of many of these programmes, and conversely, the relative success of others is required. And that is exactly what we set out to do.

To do so, we undertook a comprehensive review of the literature and then went on to undertake our own SHS programme case study reviews and surveys, and thirdly, we interviewed SHS programme designers and implementers. These strategies were used to gather and to pull together sufficient data and information to be able to understand the full suite of relevant factors that can have an influence on the outcome of a SHS programme and to understand what works and what does not work, and the reasons that they work or do not work. The result of this work is the comprehensive set of issues that need to be considered in each of the steps that are essential to the design and implementation of a successful SHS programme.

The end result is a detailed road map to guide those designing and implementing rural electrification projects in developing countries using solar PV. It includes case studies derived from our own personal participation in and observations of Solar Home Systems, their impacts, their advantages and disadvantages and their operation. The road map provides a comprehensive list of all of the factors that we concluded need to be considered in developing and implementing a SHS programme. It is a road map because rural electrification programmes are not simple, but are complex. The issues that need to be considered are large, and the contexts in which they are developed and implemented vary enormously. It therefore does not attempt to provide a list that needs to be rigidly applied or followed, but a way or map to help navigate through the complexities. We have attempted to provide a road map that can be utilised to help in designing and implementing a SHS programme to ensure that the programme will be as successful and as sustainable as possible within the particular context in which it is implemented.

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