

Preface

Access to sustainable energy for all remains an important topic going by the current discussions at the international level. Globally, there is no universal approach to the provision of access to electricity and a number of factors and actors determine what approach would be most suitable for a given community. This edited volume is an effort to contribute to this discourse on sustainable energy for all and forms part of the dissemination activity of a Research Councils UK funded project on off-grid electrification, called OASYS South Asia, which is a collaborative research work of five partner organisations, namely De Montfort University (DMU), Manchester University, Edinburgh Napier University from UK, and The Energy and Resources Institute (TERI) and TERI University from India. The consortium has since 2009 undertaken a significant amount of research on rural electrification, especially off-grid electrification, in South Asia. Based on this work, it has identified mini-grid-based rural electrification as one of the options for extending the electricity access in developing countries. The project has also undertaken a set of demonstration activities in India to showcase alternative ways of delivering electricity in rural areas through mini-grids and to develop a better first-hand understanding of the challenges in doing so. This edited volume brings together studies and research carried out by the consortium to share the knowledge with the wider research and practitioner community.

This volume contains 15 chapters divided into two parts: Part I provides the background understanding of mini-grids while Part II provides seven case studies from South Asia covering different countries, technologies, and business models. Following the multidisciplinary focus of the project, the book covers various dimensions relevant for any mini-grid-based electricity supply. It also provides practical guidelines for design and implementation of mini-grid projects alongside more academic research studies. We hope this mix of presentation will impact a wider section of the interested readers.

The work reported here has been discussed internally and in various workshops organized as part of the research activity. These were held in Delhi, Bhubaneswar, and Leicester between 2012 and 2014. The chapters have thus benefited from the inputs and comments of a large number of participants from the academia as well as those involved in practice with mini-grid-based electrification and their financing. A part of the content has appeared in various peer-reviewed journals as well. These have been appropriately acknowledged in the relevant chapter.

As the editors of the volume we would like to thank all the contributors to this volume for their continued support and hard work. We are particularly thankful to the stakeholders who participated in our case studies and provided valuable insights. We would like to thank the reviewers of the journals who provided valuable comments to improve the quality of the work. We also thank Elsevier for allowing us to reuse the materials published in their journals. We also thank TERI, New Delhi, India and Practical Action, UK for allowing us to use their diagrams here. We are also grateful to our respective institutes, DMU and TERI, for encouraging us to edit this volume. Despite of all the support from different quarters, errors, if any, are ours.

We are also indebted to the workshop participants for sharing various thoughts that have enriched our experience. The demonstration project in Odisha (India) has benefited from the support of a large number of individuals, too many to mention here but we are thankful to them for their continued support, without which the work could not be taken forward. We are grateful to the funding agencies Engineering and Physical Science Research Council and Department of International Development of United Kingdom and Rural Electrification Corporation, Government of India for their support to this initiative.

We also thank the publisher—Springer for agreeing to publish this volume despite the specialized nature of the work that still faces limited academic attention.

We hope this volume will prove to be a valuable addition to the literature on rural electrification and will help to promote mini-grid-based sustainable electrification solutions worldwide. We believe that it would benefit researchers and practitioners, as well as donors and other stakeholders involved in policy-making in enhancing electricity access in rural areas of the developing world.

Last but not the least, we would like to thank our respective families: Subhes thanks his spouse (Debjani) and daughter (Saloni) while Debajit thanks his spouse (Dipanwita) and daughter (Roshni) for their support and cooperation in completing this work over the winter of 2013–2014.

March 2014

Subhes C. Bhattacharyya
Debajit Palit

Mini-Grids for Rural Electrification of Developing
Countries

Analysis and Case Studies from South Asia

Bhattacharyya, S.C.; Palit, D. (Eds.)

2014, X, 409 p. 123 illus., Hardcover

ISBN: 978-3-319-04815-4