

# STEPs Resources Guide

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Sustainable Thermal Energy Service Partnerships

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# FOREWORD

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*This resources guide represents the efforts of researchers from four continents – Africa, Asia, Europe and North America active on energy access, renewable energy, thermal energy, financing, business models, policy and regulation and technology.*

*The resource guide brings together and synthesises the research and experience from these partners in a manner that can be a reference for key stakeholders in developing countries involved in various aspects of energy access.*

*The aim of the resource guide is to become a valuable reference for key stakeholders involved in energy access efforts to ensure sustainable delivery of thermal energy as a service.*

- Binu Parthan

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<http://stepsproject.net/>

## 1.0 – Who Should Use This Resources Guide?

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The resource guide is targeted at the following stakeholder segments in developing countries

**Developing countries:** in priority stakeholders in Africa and Least Developed Countries (LDCs), where the capability and resources available with stakeholders to promote thermal energy access is relatively limited.

**Practitioners** include organisations that provide energy services or systems and devices to end-users in the domestic, commercial, industrial and public sectors. As practitioners are the interface with the beneficiaries of the services they need to appreciate the move into a service mode that is technology neutral. Examples of practitioners include small enterprises, NGOs, individuals, cooperatives, community based organisations irrespective of the way they are organised, owned or oriented (for-profit or socially-oriented);

**Private Sector** stakeholders are normally not directly interfacing with the users but make investments in manufacturing facilities for thermal energy devices, supply chains and energy infrastructure that are essential for the practitioners to provide thermal energy services. Also included in this group are the private financiers such as commercial banks. Note that small private enterprises – micro and small in energy access have been grouped under practitioners.

**Development Agencies** support development oriented investments in thermal energy access infrastructure and support creation of facilitating frameworks relating to policy, regulation, finance, technology and business. Development agencies also play an important role in human and institutional capacity building in thermal energy as well as identification, synthesis and promotion of ‘Best Practices’ in thermal energy. Examples of development agencies include multi-lateral development banks, UN agencies, international organisations, national development agencies as well as national development banks.

**Researchers** are involved in identifying, analysing, identifying, developing and articulating key issues and solutions to development problems. During the conceptualisation of this research effort, it was found that the body of academic and research work in the space of thermal energy services was rather limited. The resource guide is intended to inform and catalyse more research efforts in this area.

**Others:** there are also an important group of organisations such as national and regional governments, alliances of like-minded organisations, partnerships, industry bodies, consulting and advisory companies etc. who also have significant influence on energy access efforts. Many of these organisations have the ability and the resources to influence action by stakeholder groups.

The global survey carried out as part of the research and detailed in chapters 1 and 11 have also covered all these stakeholder groups. Therefore the research presented through these resources guide have been developed on the basis inputs from these stakeholder groups.

## 2.0 – How to Use this Resources Guide

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The resources guide intends to provide the targeted stakeholders with the following key understanding:

- Development of an understanding of the concept of thermal energy services and why it is needed to ensure sustained energy access for thermal uses;
- Understand the existing business models, financing, institutional and regulatory frameworks and the considerations in these areas that need to be made to provide thermal energy services;
- Understand the technologies that are relevant for thermal energy conversion and use such as bio-digesters, solar water heaters, Liquefied Petroleum Gas (LPG), efficient cookstoves as well as associated technology business models;
- Understand existing cases on thermal energy services from around the world and understanding of the financial considerations and a model for a LPG thermal energy business;
- Understanding of the synthesis of learnings from the research into elements that make up the STEPs model which may then be used to design and develop programmes, projects and enterprises offering thermal energy services.

It is suggested that irrespective of the nature and objectives of the reader, a basic understanding of the thermal energy services and the STEPs model may be carried out initially. This should provide the context for utilisation of the different modules (explained in the next section) and to understand the essential and desirable aspects of sustainable thermal energy services.

Thereafter the choice of the modules can be based on the nature and role of the practitioner and the intended plans in thermal energy service provision. The choices can be:

- Organisations which specialise in a particular technology may limit study and reference to the relevant technologies viz. bio-digesters, solar water heaters, Liquefied Petroleum Gas (LPG) and efficient cookstoves. Organisations which offer more than one technology solution may refer to all relevant technologies;
- Organisations which deal with different specialised functions may study and refer to the relevant modules viz. business models, technology-business models, financing, institutional and policy frameworks. Similar to technologies organisations involved in more than one of these areas may refer to all relevant chapters.

It is also possible for any organisation to refer to any one of the modules without referring to others depending on the expertise within the organisation and the specificity of the issue.

It should be noted that the material in this resources guide underpinned by several years of experience and research will need to be interpreted and applied in the specific socio-political and business context where the thermal energy access is to be provided. So the resource guide should be used as a reference that needs to be interpreted. Many of the aspects of the final STEPs model, especially the essential and desirable requirements have been described in an indicative manner to allow further elaboration to suit a particular context. So further elaboration and development is needed on many of the requirements and recommendations before application and implementation.

### 3.0 – What is the resources Guide?

The resources guide consists of eleven chapters or packages which are in a modular form. These are part of the same packages but as explained in the previous section several reference combinations are possible depending on the nature of the organisation and the objective and need. The names as well as a description of the contents of the eleven chapters is given in Table 1.

**Table 1: Modules included in the resources guide**

#	Name	Description
1	Basics of Thermal Energy Services in Developing Countries	Introduces the concept of thermal energy services and its importance. The chapter also reports on the findings of the global survey on technology, geography and different approaches.
2	Business Models for Rural Energy Services in Developing Countries	Presents the five different types of business models for energy access with supporting examples. The module draws lessons from these electricity access models for provision of thermal energy services and makes conclusions.
3	Thermal energy services with bio-digesters	Presents various technology and service options for developing countries and examines four biogas digester programme implementation cases to identify lessons. The module also illustrates the financing and business models for biogas digester projects, examines the experience from international organisations supporting biogas digesters, draws conclusions and makes policy recommendations.
4	Thermal energy services with solar water heaters	Elaborates on different types of solar water heating technologies, provides four case studies and examines the business models and financing options. The module also illustrates cases that have encouraged market growth through policy support and draws conclusions.
5	Thermal energy services with efficient cook-stoves	Presents various efficient cook-stove technologies with associated trends and examines large scale efficient cookstove markets. Also examines the cookstove value chain, business models and financing models. The module also examines the effect of donor support and subsidies, gender issues, Public-Private Partnerships etc. and isolates key factors and lessons for future



#	Name	Description
		market development as well as making conclusions and recommendations.
6	Thermal energy services with LPG	Examines the patterns and developments of LPG use and fuel switching to LPG. Studies cases of LPG use in developing countries and associated financing and business models as well as partnerships and draws conclusions and recommendations.
7	Technology and Business models for thermal energy services	Examines technology options, characterises demand and services and examines operator models and transaction types. The module also presents case studies and makes concluding recommendations.
8	Financing thermal energy services	Examines the financing needs and barriers to financing. Details the sources of financing and explains the financing instruments for thermal energy enterprise and customer levels. Also examines the financing risks and risk management.
9	Process for creating an enabling institutional and regulatory framework for thermal energy services	Highlights the importance of policy and regulation and describes the institutional framework. Describes the 5P model and its policy and regulatory considerations. Outlines the policy and regulatory principles and instruments for thermal energy services.
10	Applied cases	Showcases examples from Afghanistan and South Africa on efforts to integrate thermal energy into electricity/lighting services.
11	The STEPs Model – synthetic overview	Elaborates on the four key building blocks of the STEPs model viz enterprises, financing, technology and policy & regulation. Synthesises and constructs the STEPs model through the definition of essential and desirable requirements and provides guidance on application of the STEPs model.

All the modules have been written in a simple and easy to understand manner for both specialists and generalists. It is hoped that this guide is able to serve as a helpful reference in ensuring a paradigm shift from the current energy access approach to a thermal energy service approach. Welcome to the resources guide!



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