

Building Energy Access Markets

A Value Chain Analysis of Key Energy Market Systems

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in cooperation with



Introduction: EU Energy Initiative – Partnership Dialogue Facility (EUEI I PDF)

- ▶ An instrument of the EU Energy Initiative, founded in 2005 by EU Member States and the European Commission
- ▶ Main functions: policy & strategy advisory, dialogue, support to energy market development in developing countries
- ▶ More than 80 activities supported in over 20 countries and regions, incl. advisory projects, thematic studies, events, etc.
- ▶ Multi-donor: AUT, EC, FIN, FR, GER, NL, SWE; hosted by GIZ



Publication: “Building Energy Access Markets. A Value Chain Analysis of Key Energy Market Systems”



Building Energy Access Markets
A Value Chain Analysis of Key Energy Market Systems

Link: <http://euei-pdf.org/thematic-studies/building-energy-access-markets>

Background and Rationale

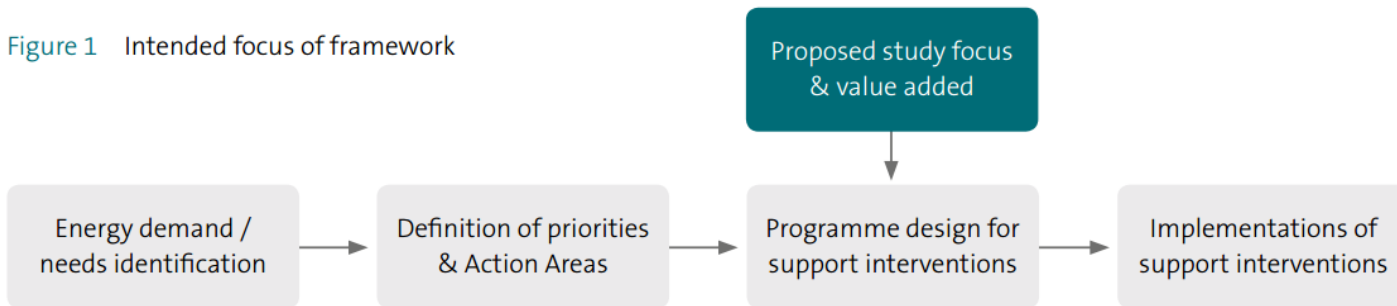
- ▶ *Why are 80% of African solar lantern sales taking place in only three countries?*
 - ▶ *Why are mini-grids not taking off despite wide recognition and support?*
 - ▶ *How do energy access markets actually work, what are key barriers and success factors?*
 - ▶ *How can energy access market uptake be supported, what are starting points, and which instruments can be deployed?*
- ▶ Existing literature either too generic and unspecific, or not applying a coherent analytical framework

Objective and Approach

- ▶ Cooperation Project of EUEI PDF and Practical Action
 - ▶ Final publication: <http://euei-pdf.org/thematic-studies/building-energy-access-markets>
- ▶ Objectives
 - ▶ Improving the understanding of market systems
 - ▶ Identifying barriers and success factors
 - ▶ Identifying interventions to promote market uptake
- ▶ Approach
 - ▶ “Market-System”-perspective with the value chain in the centre
 - ▶ Adoption of a coherent framework through literature and new research
 - ▶ Application of the framework to 5 market segments
 - ▶ Validation through case studies

Focus and target group

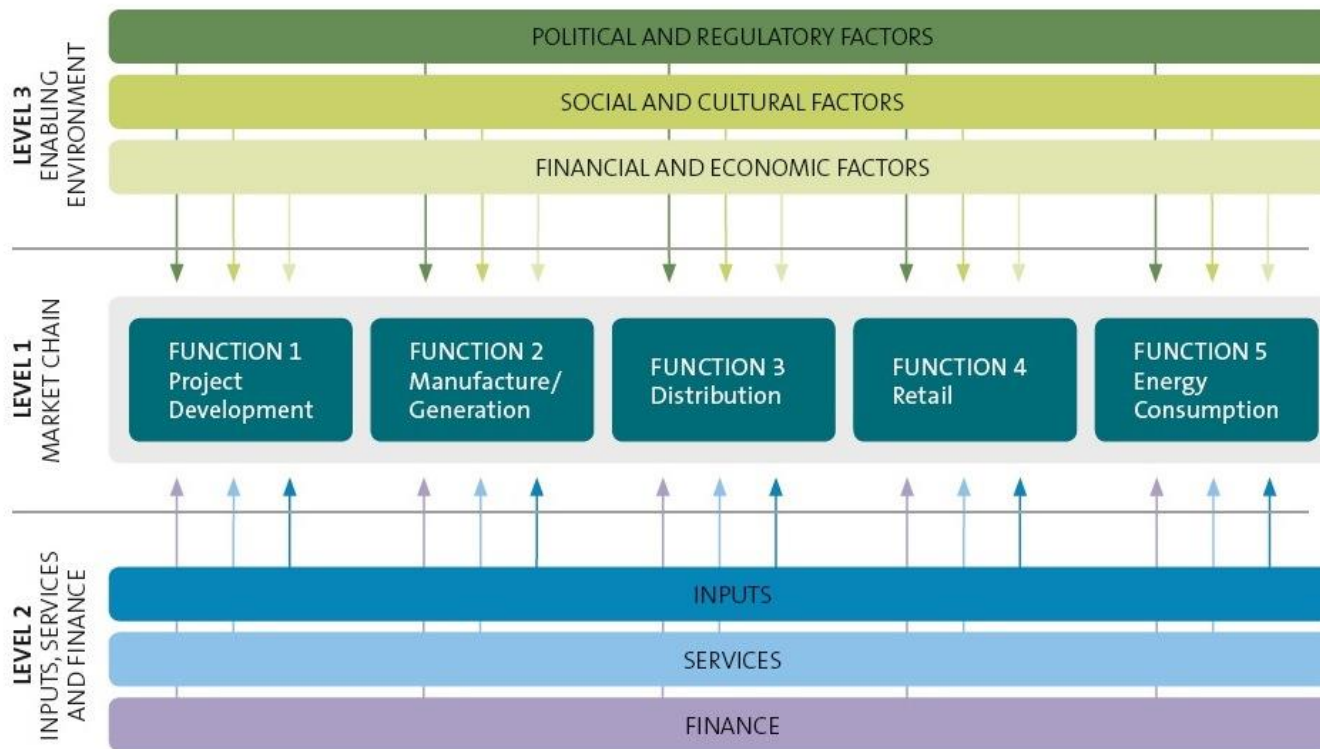
Figure 1 Intended focus of framework



▶ Target group

- ▶ Primary audience: anyone involved or interested in supporting energy access market uptake in a development context
- ▶ Businesses or other actors with an interest in understanding better their own market environment
- ▶ Anyone else with an interest in understanding energy access markets

I. Energy Market System Mapping



Level 1 Market Chain

- ▶ **Project development:** preparatory activities prior to energy (service) production (relevant in particular to mini-grids which are often structured as individual projects);
- ▶ **Manufacturing or generation**, comprising the production of energy (e.g. electricity) or products for energy generation (e.g. solar lanterns)
- ▶ **Distribution**, comprising networks or systems for energy service or product delivery;
- ▶ **Retail** of energy goods or services to end-users;
- ▶ **Energy consumption** at the level of the energy end-user.

Level 2 Inputs, Services and Finance

- ▶ **Inputs** required by market chain actors, e.g. physical materials and products, fuels, etc.
- ▶ **Services** comprise intangible commodities required in the value chain, e.g. repair and maintenance, transport services, training, or information etc.
- ▶ **Finance** is required in different forms and shapes, e.g. at the level of end-users (micro-finance) or

Level 3 Enabling Environment Factors

- ▶ **Political and Regulatory Factors** that affect the energy market chain, e.g. standards, policies, import duties and taxation, etc.
- ▶ **Social and Cultural Factors** influencing the effective exploitation of particular energy services and appliances as well as their demand by the end users, e.g. awareness levels or cultural practices
- ▶ **Financial and Economic Factors** such as income levels, ability to pay, or level of local economic activity;

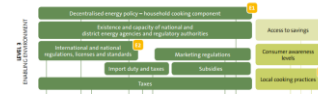
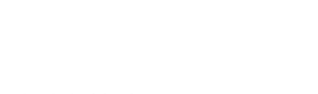
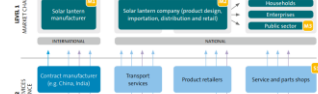
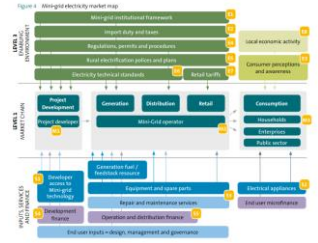
II. Identification of barriers and potential supporting interventions

- ▶ Identification of key barriers in each market system map (yellow boxes coded M (Level 1), S (Level 2) and E (Level 3))
- ▶ Categorization of support interventions
- ▶ Linking of support interventions with identified key barriers for each market system

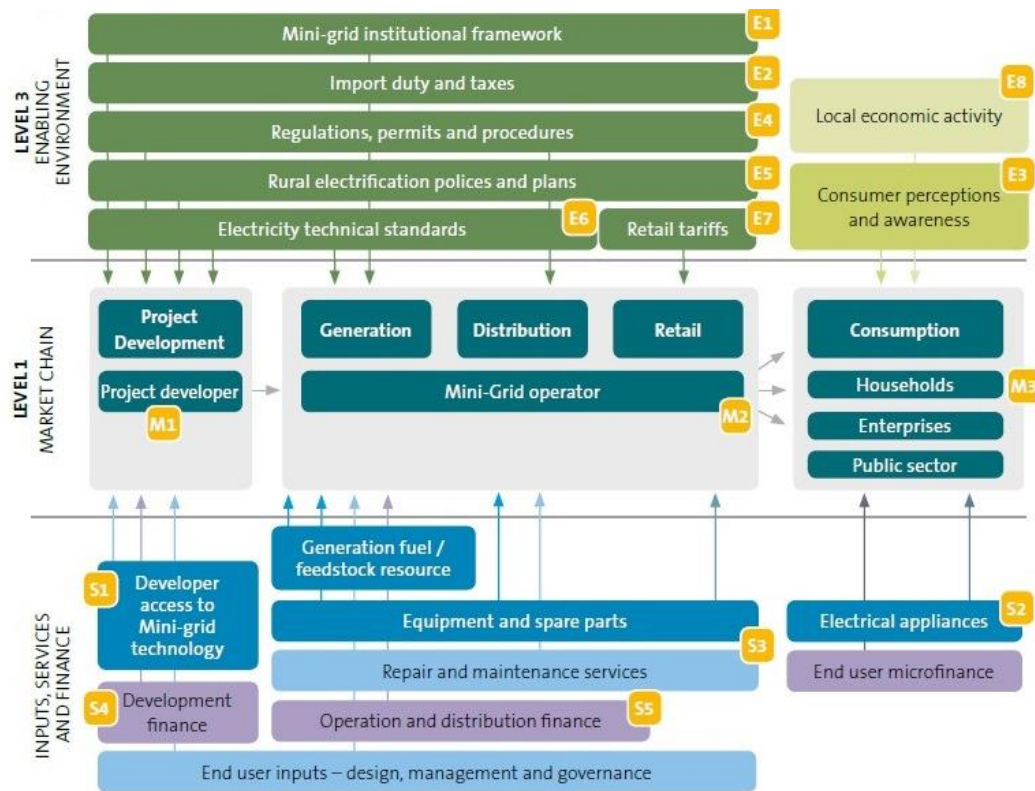
Intervention Type	Intervention Description	Intervention Code
Technical Assistance (TA) Interventions		
Business Development Support	Increased capacity of market chain companies to develop their business models.	TA _B
Technical Support	Increased capacity of market chain companies on technical issues.	TA _T
Policy Support	Increased capacity of government departments to overcome a particular enabling environment factor.	TA _P
Advocacy Support	Increased capacity of relevant stakeholders to allow them to participate in the development of particular policies and regulations as well as ensuring they are enforced.	TA _{Ad}
Awareness-raising Support	Increased capacity of end-users to understand the benefits of energy products and appliances and increase their uptake.	TA _{Aw}
Financial Assistance (FA) Interventions		
Direct Grant Financing Support	Provision of grant funding to directly or indirectly subsidise the costs of establishing an energy delivery system (e.g. a mini-grid or establish a stove production facility), including tax concessions.	FA _G
Loan Financing Support	Provision of loan financing, directly or through intermediaries (e.g. local banks or micro-finance institutions).	FA _L
Equity Financing Support	Provision of financing for equity investment in companies, again directly or through intermediaries (e.g. dedicated energy investment funds).	FA _E
Complementary Financing Support	Provision of complementary financing (e.g. policy risk mitigation, currency risk mitigation, loan guarantees etc.).	FA _C

Energy Market Systems

- ▶ Electrification Mini-Grids
- ▶ Solar PV Home Systems
- ▶ Solar PV Lanterns
- ▶ Biomass Cookstoves and Fuels
- ▶ LPG Stoves and Fuels



Example: Electricity Mini-Grid Market Map



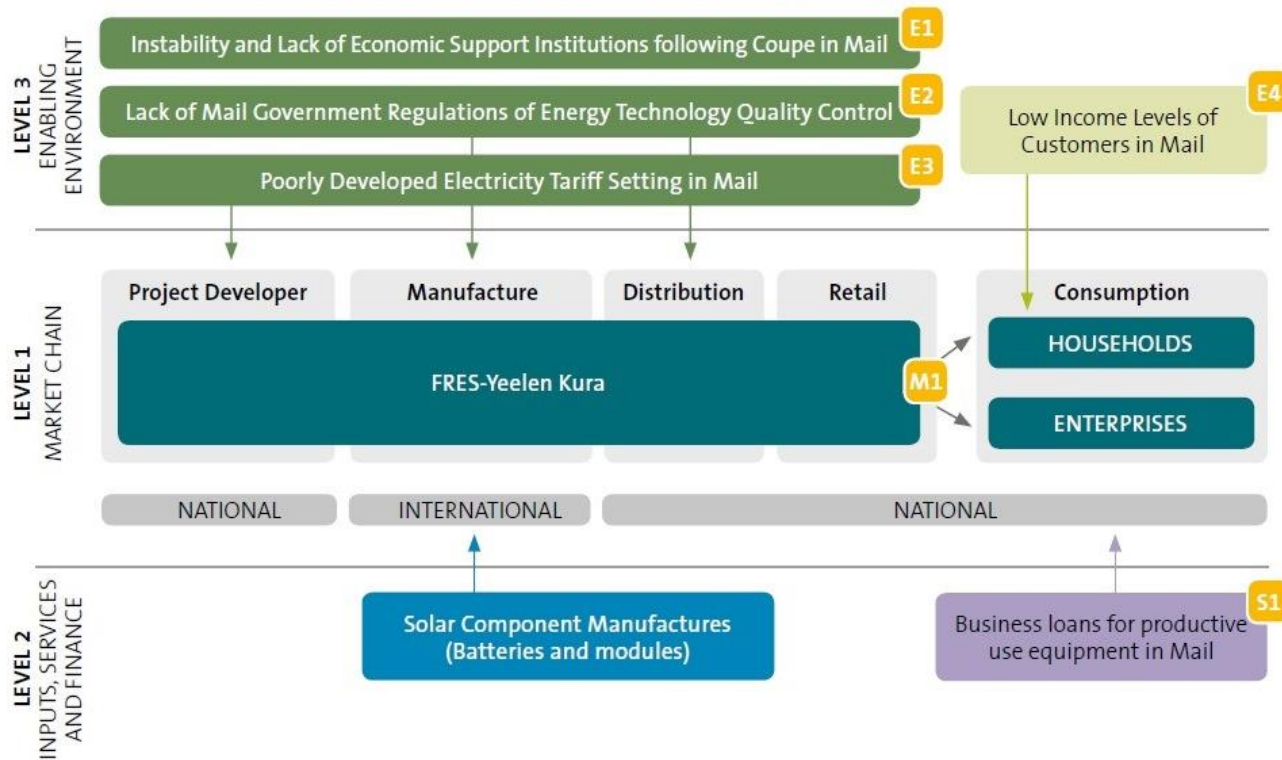
Electricity Mini-Grid pot. Support Interventions

Identification	Market System Level Issue	Responsible Actor	Support Intervention	Category
Level 3 – Enabling Environment				
E1	<p>Lack of Rural Electrification Agency and Government Authorities to Support Mini-Grid Deployment</p> <p>An institutional structure to oversee and enable the large scale deployment of mini-grids, including a rural electrification agency and a regulatory agency, is essential. Clearly defined roles and responsibilities as well as coordination between the various institutions that support rural electrification are required. Mini-grids should be given resources proportionate to their expected contribution to achieving universal access to electricity.</p>	Ministry of Energy, Rural Electrification Agency, National Energy Regulator	Technical assistance to establish the structure, procedures, incentives, priorities and technical capabilities of government agencies.	TA _p
E2	<p>Lack of Supportive Importation Duty and Tax Policies</p> <p>The mini-grid market can be stimulated by reducing costs of mini-grid equipment or components through lower import duties and taxes.</p>	Ministry of Finance, Bureau of Customs.	Technical assistance to promote supportive trade and tax policies.	TA _p

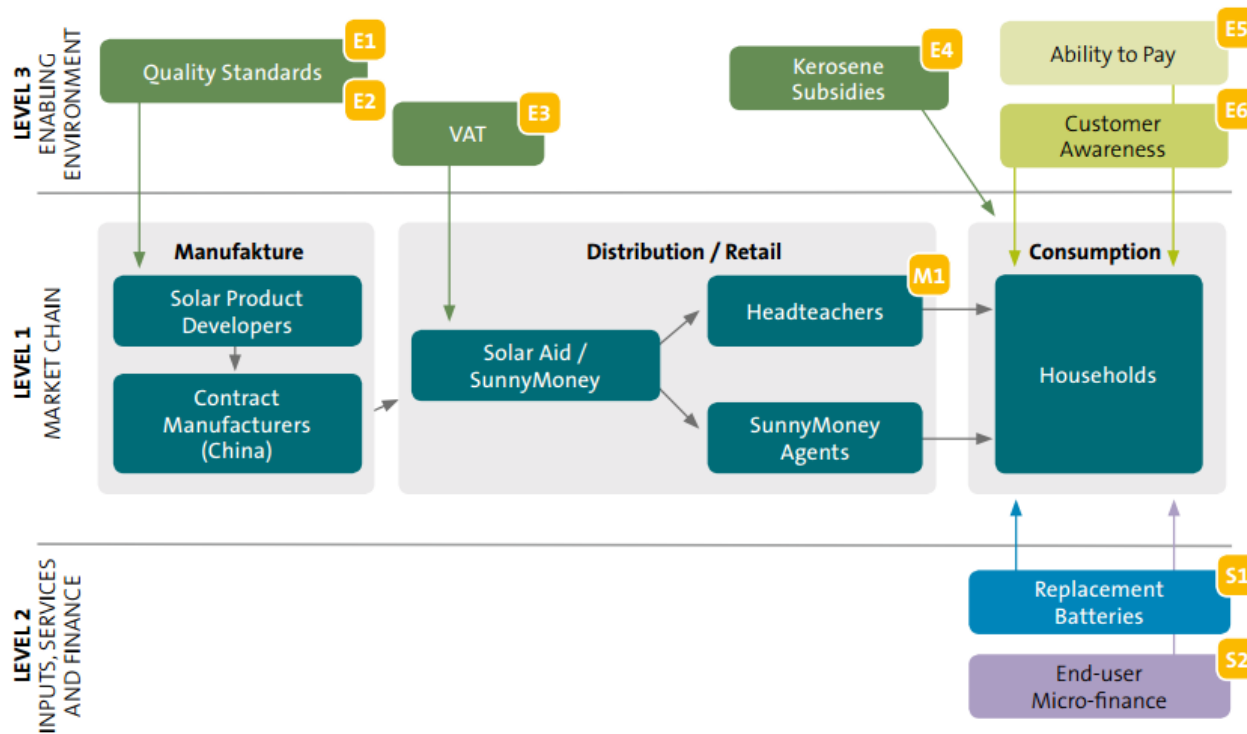
Energy Market System Case Studies

- **Electricity Mini-Grids**
 - 1 FUNAE solar PV community mini-grids Mozambique SA
 - 2 Inensus hybrid mini-grids Senegal WA
- **Solar PV Lanterns and Home Systems**
 - 3 [Solar Aid pico-solar community distribution model Malawi](#) SA
 - 4 [FRES solar home system \(SHS\) fee-for-service model Mali](#) WA
 - 5 M-Kopa solar PV mini-grid mobile payment model Kenya EA
- **Biomass Cooking Stoves and Fuels**
 - 6 Restio imported cook stoves South Africa SA
 - 7 Toyola centralised locally produced cook stoves Ghana WA
 - 8 Ugastove centralised locally produced cook stoves Uganda EA
 - 9 Local manufacturers decentralised produced cook stoves Rwanda EA
- **LPG Fuel and Stove**
 - 10 Government and Private Sector LPG stove and fuel Senegal WA

FRES, Mali, Solar PV Home System Market Map



SolarAid, Malawi, Pico PV Market Map



Conclusions

- ▶ Framework is not a blue print, but a tool to understand markets and how to make them work
- ▶ Framework helps address two perspectives:
 - ▶ Holistic perspective: building markets, or dynamic market development, requires many „success factors“ to be in place at the same time (→)
 - ▶ Differentiated perspective: understanding value chains in distinct market segments, and their specific barriers, needs and requirements
- ▶ Can also help to see similarities between markets, and possible synergies for doing business or for supporting, e.g. cooking stoves / solar lighting products
- ▶ Framework & publication are free to use for anyone; feel free to request hardcopies from EUEI PDF

Many thanks!

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