

Step 2 Preliminary mapping, strategic design and planning

Table of Contents

Introduction	2
Step 2.1 Mapping an energy market system	3
Step 2.1.1 - Mapping level 1 - market chain	4
Step 2.1.2 - Mapping level 2 - inputs, services and finance	5
Step 2.1.3 - Mapping level 3 - enabling environment factors	7
Step 2.1.4 - Using a preliminary market map	10
Step 2.2 Categorising energy market actors	11
Step 2.3 Preliminary market analysis	14
Step 2.4 Additional data collection	16
Step 2.5 Preliminary vision for change	18
Step 2.6 Identification and categorisation of potential support interventions	19
Step 2.7 Recommendations for using subsidies smartly	21
Step 2.7.1 - Keep them minimal	21
Step 2.7.2 - Be strategic	22
Step 2.7.3 - Be cautious	22
Step 2.8 Facilitation process – exit before you enter!	24
Annex 1 Template for energy market mapping	25
Annex 2 Template for assessing the influence-relevance matrix of market actors	28
Annex 3 Template for identifying the blockages, opportunities and risks in the energy market system	29
Annex 4 Template for identifying potential further research questions	30
Annex 5 Template for energy market system vision and strategy	31
Annex 6 Template for categorisation of potential support interventions	32
Annex 7 Template for making subsidies smart	33
Annex 8 Template for planning your exit before you enter	34
Annex 9 References and further reading	35

‘Facilitators start to make sense of the energy market system, identify key actors and barriers and future plans’

Introduction

Step 2 of the Energy Markets roadmap focuses on the facilitation team collecting additional information about the selected energy market so they can start facilitating its participatory process of change. This includes developing a preliminary structured map of the selected energy market system, identifying its key market actors and carrying out initial analysis of its critical barriers and opportunities. Following the mapping and analysis an initial vision for future change of the energy market system can be outlined. This typically includes developing an initial strategy for implementing the rest of the roadmap steps, including potential facilitated interventions for supporting the market actors to overcome the identified market barriers themselves.

Step 2 also introduces the 3 fundamental principles of the roadmap – systemic thinking, participation and facilitation – including examples, recommendations and tools for putting them into practice. Recommendations on how to build flexibility into the strategy so that it can respond to the changing aspirations of the market actors, as they take ownership of the process, are also included.

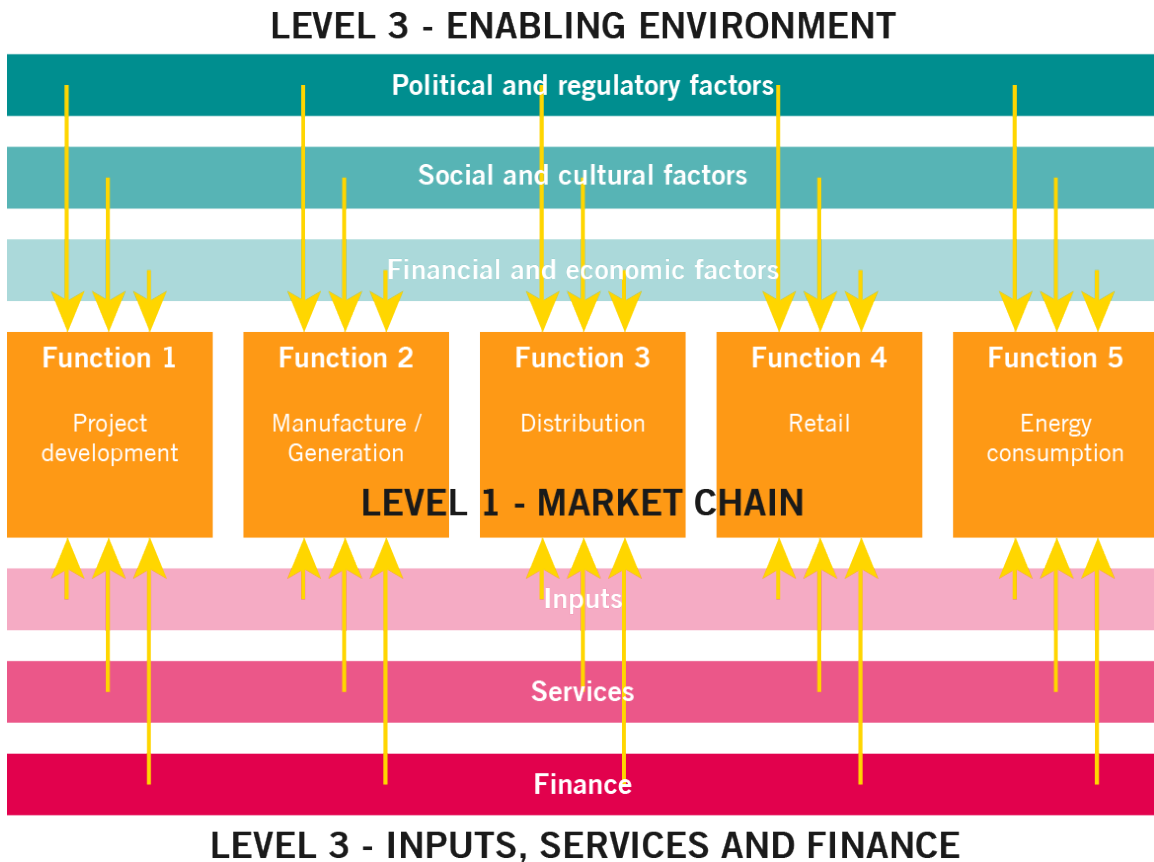
Note: by the end of Step 2 it is often as important for the facilitators to identify what they don’t know as much as what they do know!

Step 2.1 Mapping an energy market system

The first activity is to produce a preliminary map of the energy market system that was selected in Step 1. To try and reduce the inherent complexity of an energy market system it is useful to map it against a defined standardised framework. This allows a complex energy system to be visualised in an intuitive way, to allow it to be analysed so that the actions of the market actors can be effectively supported.

This involves identifying the market actors in each of the 3 levels of the market system, as well as the roles they play, and how they interact with each other. The framework defines each energy market system divided into three functional levels, each of which are further subdivided into several critical functions and factors, as follows and in Figure 1.

- Level 1 Energy market chain actors
 - Level 2 Inputs, services and finance
 - Level 3 Enabling environment factors
- Figure 1 Generic Energy Market Map



As the market chain involves the actors who own the energy products and services it has been chosen as level 1, whilst the inputs, services and finance, which directly support the market chain actors constitute level 2. The overarching enabling environment factors which impact all the other market actors are in level 3.

Note: The level numbers do not refer to their importance - all three levels need to function for the energy services to be provided! It is also useful to identify the sub-components of each level with a different colour coding.

When developing a preliminary market map it is important for facilitators to identify any gaps in their understanding, as these will need to be further investigated, particularly during the participatory mapping in Step 4 of the roadmap.

Step 2.1.1 - Mapping level 1 - market chain

At the centre of the market system is the market chain.

It describes the channels through which the conversion equipment and products (e.g. the solar PV systems that convert sunlight to electricity and the processed fuels) or the appliances (the improved cook stoves or light bulbs etc.) move from the primary generators, or manufacturers, to the final end users.

Market Chain Functions: The market chain is divided into broad functions, which are the most important stages of delivery of each energy product or service:

Function 1 Project development: This involves the preparatory activities that are required before the energy generation or manufacturing can start and which are of particular importance for mini-grid electricity supply. This largely entrepreneurial activity is focused on developing the structure of an energy market chain, including its business plan and bankability.

Function 2 Manufacturing or generation: This involves the conversion of energy from a range of resources (sunlight, flowing water or diesel) to electricity for mini-grid technologies, or the production of products for energy generation and conversion.

Function 3 Distribution: This involves the establishment of new, or use of existing, distribution networks to allow the energy services or appliances to be transported throughout a country or region, or even internationally (of particular importance for solar PV products). This often involves various transportation methods and logistical arrangements including their storage.

Function 4 Retail: This involves the retail of energy services directly to the end users, through a variety of formal and informal retail outlets and channels, employing various retail and marketing strategies.

Function 5 Energy consumption: This involves the use of energy or appliances by end users, from households, community services and companies to acquire the required services from lighting to heating and motive power to improve people's well being and livelihoods.

Each function is delivered by one or more market chain actor(s) who are the individuals and companies (large and small, formal and informal) that operate within each energy market. These actors own the energy product, service or appliances being delivered at any point in time and are in charge of the operation, management and maintenance as highlighted below.

Operation, management and maintenance

The operation, management and maintenance of energy systems need to be effectively prioritised and delivered by specific market actors or service companies. Experience has identified this as a common shortcoming of many energy programmes, which could result in their failure if not addressed effectively.

Once the functions of the selected energy market chain have been clearly defined, it is important to identify which market actors are involved in delivering each of them. It is also important to map out how these actors interact with each other to manufacture, distribute and retail the energy products and appliances the end users.

Note: Some market chain actors deliver more than one function.

Typically each energy product or appliance is transformed in some way as it travels along the market chain. This transformation might be more obvious for physical products such as processed fuels and energy appliances, and the construction of a solar lantern or a cooking stove from its component parts. Other transformations of the energy services are less visible, such as regulating voltage for a mini-grid system, but are often equally as important.

Step 2.1.2 - Mapping level 2 - inputs, services and finance

In order for each of the energy market chain actors to carry out its function, or functions, effectively and efficiently, they need to access a variety of specific secondary inputs, services and finance, which are grouped into Level 2 of the market system. These inputs and services may have their own value chains, including the actors and organisations that provide each one of them. However, as they are secondary to the energy market chain they are not mapped in detail in order to limit the complexity of the map. If these secondary markets are identified as being of critical importance to the success of a particular energy service market, they could and should be mapped as well.

It is useful for the facilitators to work their way along the market chain asking

what inputs, services and advice each market chain actor needs to implement their role in the market system. The facilitators should include what the actors currently have access to, and what they don't, but need to, to become more efficient. These preliminary observations can be verified during the later steps of the roadmap.

Inputs: Many of the market chain actors require a range of specific inputs, including the physical materials and products required to effectively deliver their function and further develop the energy products or services. Such inputs include the electrical equipment for mini-grid developers, hired labour for manufacturing improved cook stoves or wood for the production of charcoal.

Services: Wide ranges of services are also needed by the market chain actors to better produce, distribute and sell their energy services and appliances. Different actors, including private sector companies, government departments and community-based organisations, provide these services. They may include product design, market research and quality control and product testing procedures and need to be delivered sustainably and effectively. Educational services are also required to increase knowledge and technical understanding of a range of energy service markets.

Finance: Different financial services are needed across the market chain to enable the market chain actors to produce the products and services to a high quality and deliver them widely throughout each country or region. Other financial services are required by the end users in order to allow them to purchase the energy products and services. This applies in particular to higher cost production systems such as solar home systems (SHS) as well as highly efficient improved cook stoves (ICS) that are relatively expensive for poor consumers.

It is also important to note that finance can be provided over different time periods. While some finance might be required for very short term periods (e.g. to pay for an appliance such as a solar PV lantern), other finance is required over much longer periods, such as loans and equity for mini-grid systems which might have 10 or 20-year pay-back periods.

In every energy market system, these inputs, services and finance are provided by a wide variety of actors and through different mechanisms, varying considerably in the effectiveness of their delivery. The following are some example questions to help explore them more fully:

- **Effective access, partial access, or absence:** How effective is the access to and delivery of each supporting input and service for the different market chain actors?
- **Providers:** Who is delivering each input, service and finance? They are likely to include private enterprises, government agencies, and non-governmental

organisations.

- **Delivery mechanisms:** How is each input, service and finance accessed? Are there free markets operating, controlled and/or subsidised markets or fully controlled delivery mechanisms?
- **Formality:** Are the supporting inputs and services accessible through formal, informal or illegal mechanisms?
- **Poverty and gender:** How can the inputs, services and finance be supplied to support poverty reduction and gender equality?

Note: It is possible to map the market for an input, service or finance if it is considered important enough. To do this, the supporting function then becomes the subject of the market chain and map.

It may be desirable to map out a supporting function if it becomes clear it is a priority issue for the primary market system. However, be aware of the additional time and resources required to carry this out.

Step 2.1.3 - Mapping level 3 - enabling environment factors

Level 3, the enabling environment, covers the diverse set of factors that act as the “rules of the game”, shaping how the market chain functions, and inputs, services and finance operate. Such an environment is often generated by institutions (national and local authorities and research agencies), as well as policies, regulations and cultural practices.

These enabling environment factors often directly affect the specific functions and market chain actors within the energy market system. However, external facilitators and specific market system actors can influence them through targeted interventions. It is important to note that achieving poverty reduction and gender equality often depend on supportive enabling environment factors.

The enabling environment is structured into three types of factors:

Factor 1: Political and regulatory factors

These include the specific political and regulatory factors that affect the energy market chain and inputs and services, such as:

- National rural electrification plans
- National forestry and agricultural development plans
- Energy tariff and electricity concession regulations
- Quality control regulations
- Regulatory permits and licences

- Fiscal regulations, including VAT (or conversely VAT exemption) on appliances and fuels, such as ethanol or LPG
- Economic regulations, including subsidies on fuels and appliances
- Trade regulations, including import taxes on energy goods such as solar PV equipment, batteries and imported improved cook stoves

Factor 2: Social and cultural factors

These include the social and cultural factors that affect the effective exploitation of particular energy services and appliances as well as their demand by the end users:

- Lack of awareness and specific knowledge about the benefits or negative impacts of energy use
- Informal community ownership rules of resources such as rivers and forests
- Social norms concerning cooking habits, such as the use of smoke from stoves for eliminating insects
- Misconceptions around the performance of energy technologies, such as the level of lighting from solar PV systems

Note: It is important to note that awareness raising is often considered a “public good” which individual market actors are often unable or unwilling to invest in sufficiently (as their competitors may well benefit rather than themselves). It often needs to be overseen by various government ministries as it supports important impacts including increased energy access, health, education and agricultural production.

Factor 3: Financial and economic factors

This includes the financial and economic factors that influence the delivery and affordability of a range of energy products and appliances, such as:

- Income levels and livelihood strategies of end users
- End users' ability to pay
- Formality of payment systems
- Level of local economic activity

It is also important to note that there are wider aspects of the enabling environment of an energy system that may take a very long time to overcome and may require extensive resources beyond the ability of most market actors and stakeholders. While they may be influenced by long term engagement with planned interventions, they are

generally difficult to overcome in the short term, such as:

- **Global market trends:** Global technology development trends as well as the demand for, and costs of, materials and energy goods clearly affect the availability and affordability of energy services. However, it is typically beyond the ability of stakeholders in any individual energy market system at national level to influence them to a meaningful extent.
- **Macro-economics:** Political and economic stability and levels of macro-economic indicators such as growth, inflation and exchange rates need to be given significant considerations with respect to potential market actors' willingness to engage in specific energy market systems. Yet, they are largely beyond the control of those focused on energy access provision.
- **Social and cultural norms:** The collective beliefs of consumer groups within urban or rural settings of developing countries are important in influencing their decisions with respect to the consumption of a range of energy services. However, they are often quite complex or deeply-rooted and resistant to change. Similarly, while ease of doing business will affect the development of energy market systems, complex factors, which facilitate or obstruct business processes (e.g. general levels of corruption and bureaucracy) are difficult to change. Therefore, it is usually better to focus on social and cultural norms, which can be overcome through feasible interventions.
- **Major infrastructure:** This includes roads, telecommunications, aqueducts, etc., which are typically beyond the scope of a particular energy project. Certain infrastructure, such as mini-grid electricity cables of a specific energy project, is included as part of the service provided by the market actors. However, other infrastructure is included as part of the overall national infrastructure and can only be developed as part of a wider infrastructure improvement programme.
- **Environmental and ecosystem factors:** This includes rain regimes, quality of soil, presence or absence of minerals or plants for fuel, etc., which are beyond the capacity of the development agents and market actors to influence.
- **Legal system and enforcement:** The robustness of the legal system, confidence in contractual enforcement, clarity in relation to issues such as land ownership, and a business-friendly environment in relation to factors such as repatriation of earnings, are all considerations for investment decisions by prospective market actors. These can be overcome through market facilitation, but often require significant resources and tailored technical interventions.

Step 2.1.4 - Using a preliminary market map

A preliminary Market Map can be used in the following three ways:

Aiding analysis: The preliminary map provides a helpful framework to steer questions and organise information for use during the facilitated participatory and detailed analysis with other stakeholders during the later roadmap steps.

Increasing market literacy: The market map can also be used to help each market actor understand how their market operates as a system, and to appreciate how the connections and relationships between different actors shape how efficiently the system operates, in particular marginalised actors (low income and female actors).

Catalysing action: When the groups of market actors map out the market system in a participatory way, it becomes a relationship-building activity in its own right. It supports market actors to develop a shared understanding of their market system and a vision for change for the future, which is discussed in more detail in Step 4: Participatory Market Mapping.

When mapping any energy market it is always important to highlight the inherent role of the end user or customer as the market's success and long-term sustainability depends on the creation and maintenance of demand for the energy products or services. It is important to concentrate on the reality of the particular geographical region you are focusing on and the target population you are ultimately aiming to impact. The facilitators also need to make sure they place this local context within the broader district, regional and national level context in which their chosen region fits, in particular the end markets - local, national, regional and international.

The facilitation team should start to map their selected energy market system using the templates and guidance provided in Annex 1. When developing their preliminary market map the level of detail obtained will depend on the availability of time and resources and the research methodology used. It often also depends on the local context and formality of the energy market system, with more informal and rural energy markets being more difficult to map. However, it is important to make the analysis as specific and detailed as possible in order to allow the most accurate predictions about how competitive, efficient and inclusive the energy market system is.

Note: To ensure the facilitation team is able to address gender equality, it is important that it is also gender balanced, with members who are experienced in gender equality and poverty reduction.

Step 2.2 Categorising energy market actors

Once the first preliminary map of the selected energy market system has been completed it is important for the facilitation team to start to assess the relative role and importance of each market actor. This includes identifying the key market actors, defined as the ones who are either highly relevant to the functioning of the energy system, have a high degree of influence to bring about change in it, or are critical in terms of inclusion, including women and low income market actors. These will often be the ones that the facilitators will need to work with closely and engage with during the participatory process over the next steps of the roadmap.

The facilitation team should use the Template in Annex 2 to carry out the following actions:

- List all the market actors in the energy market system in all 3 levels. Once again it may be easiest to start with the core market chain, then move to the supporting function actors, before finally considering the enabling environment actors.
- Again, it is important to be as specific as possible, and if possible, speak to strategically chosen stakeholders and experts who know more about the market system than you do.
- Once all the market actors have been identified it is useful to categorise them according to the Influence-Relevance Matrix, as experience has shown that these are the most important dimensions in making some market actors key actors. Use the definitions of Relevance and Influence below to guide you.

Relevance: This relates to how important a type or category of market actor is to the functioning of the system. The overall performance of the energy market system will suffer if each actor is not there. It is also helpful to identify if each function can be taken up by other group of actors, and how easily or quickly this is likely to happen.

Influence: The influence of a market actor describes how capable they are to change the market system directly or mobilise others to change it. It is important to be aware that influence can be manifested in different ways.

Direct and Indirect: Some market actors, such as a government regulator, have explicit or direct power to set the rules that affects every business in a sector across the country. For example, finance companies have the power to change their lending practices, which in turn affects how businesses operate. Other market actors may have more invisible or indirect power. This includes mini-grid developers who cannot change electricity generation regulations themselves, but

their ideas or practices can influence their peers, which through group action can lead to structural change, or the presence or absence of consumer power.

Once the initial categorisation of the market actors has been made it is useful to use the recommendations in Table 1 on how to engage and interact with each market actor, during the next steps of the roadmap.

Table 1 Recommendations for future engagement with market actors

		Relevance	
Influence		Low	High
	High	<p>These actors are powerful and may turn out to be important drivers of change, despite them not seeming to be very relevant at this stage.</p> <p>Stay open minded, and if they show an interest, be quick to provide them with information about your investigation and preparation process and subsequently keep them informed.</p>	<p>These are important players in the system - the ‘movers and shakers’ – who have power to change things.</p> <p>Actively target these actors, engaging them as early as possible and throughout the investigation and preparation process.</p>
Low	<p>Although they do not seem to be as important, they may still prove to be, particularly as the understanding of the system changes, and the system itself changes.</p> <p>Stay receptive towards these actors, and if they show an interest, provide them with information about your investigation and preparation process</p>	<p>These actors may still be an important part of the market system. Ignoring them may have severe unintended consequences.</p> <p>Keep them informed about the investigation and preparation process</p>	

Step 2.3 Preliminary market analysis

Experience has shown that changes in market systems are more sustainable and more likely to have impact at scale when the identification of the market barriers and interventions for overcoming them have been designed and delivered by the energy market actors themselves. However, after identifying and categorising all the energy market actors it is important for the facilitation team to carry out some preliminary analysis to pre-empt the issues that the energy market actors are most likely to be interested in to ensure they can be effectively facilitated during the next steps of the roadmap.

This preliminary analysis should not form the basis for the design of firm and inflexible interventions, but should instead focus on trying to identify the market barriers that are limiting the growth of the selected energy market system, and which the market actors are most likely to choose to take action around. This preliminary market analysis should be kept as open and flexible as possible so that it can be updated with input from further discussions with the market actors, but can provide a useful baseline for facilitating these discussions.

Such barriers may include corruption and abuse of power arising from incoherent or inadequate regulation (e.g. in the charcoal market), or a lack of technological or institutional capacity that keeps the system operating in a dysfunctional way. Another example is a lack of quality control regulations to ensure that poor quality products do not damage a market or too few forestry officials, who are unable to control illegal logging for informal charcoal production.

The facilitation team should use the preliminary market map developed in Annex 1, including all its market actors, to highlight where in the energy market system the main barriers and opportunities occur, using a marker composed of a letter and number, as per the following key:

	The letter refers to which of the 3 levels of the energy market system the identified barrier sits within, as follows:
Key:	M: refers to the energy market chain – Level 1
	S: refers to the inputs, service and finance – Level 2
	E: refers to the enabling environment factors – Level 3
	The numbers refer to the number of the identified supporting intervention. Each intervention can be separately identified, starting with 1 and ending with the last identified intervention.

The facilitation team can use the template in Annex 3 to carry out preliminary market system analysis to identify some of the most important potential market blockages and opportunities that occur within the selected energy system. These will be investigated more fully throughout the next roadmap steps. It is important to remember that each specific barrier or opportunity can impact one or more market actors in one or more of the three market levels of the system.

Systemic blockages: These are the constraints or bottlenecks in the selected energy system that hamper the ability of the market actors to increase access to the energy products or services in a more inclusive, efficient and productive manner.

Systemic opportunities: These are a combination of favourable circumstances that create a market opening or leverage point that the market actors can use to achieve their business goals resulting in increased access to the energy products or services.

Systemic risks: These are potential negative consequences of circumstances and events, which negatively impact the efficiency, inclusiveness or productivity of the selected energy market system.

Experience has shown that many barriers that occur in energy markets are often due to the lack of capacity of particular market actor, as briefly outlined below.

Market actors capacity

Within many energy market systems in developing countries there is a general lack of capacity. This often includes government departments, as well as the energy companies and the supporting services and financial institutions. To overcome this lack of capacity, a range of capacity development activities need to be designed and delivered to address each specific problem, from the development of specific regulatory documents to training companies on how to produce sustainable business models. This lack of capacity can be viewed as a cross-cutting barrier which needs to be addressed within most levels of energy market systems.

Note: It is important for the facilitators to not worry too much about trying to work out solutions to the blockages, or how to take advantage of the opportunities at this stage. This should only be tackled during the next steps of the roadmap, through the facilitation of the market actors in a participatory process. The energy market actors have the best understanding of their interests and motivation and need to lead the process to ensure its sustainability!

Step 2.4 Additional data collection

Once a preliminary market map has been completed, including the identification of its market actors and their relative influence and relevance, and the preliminary blockages, opportunities and risks, the facilitators can continue to build their knowledge about the selected energy market system by collecting additional information.

If time and resources are available this information can be best obtained through an iterative process, gradually updating and improving it over time. Relevant information can be collected through a range of channels, including:

- Analysis of completed relevant strategies, assessments, regulatory material and government policies produced by the public or private sector.
- Speaking directly with key informants to gain their perspectives.
- Carrying out new desk-based research.

It is even more effective if the information can be triangulated through several methods. The facilitation team can also continue to collect information about the selected energy system throughout the rest of the roadmap steps. This helps ensure that the facilitated interventions are based on the best available understanding of the market system, even as the system changes over time.

The facilitation team can use the template in Annex 4 to identify a set of priority research questions to help them fill in their knowledge gaps. These questions can then be answered when time and resources are available to gradually add information to the preliminary market map, market actor analysis and preliminary market analysis. The following steering questions can help brainstorm these research questions.

- **Market actor gaps:**
 - Are there gaps in your understanding of how the market chain functions operate, what supporting inputs, services and finance exist and are most important, and what are the critical enabling environment issues?
 - Do you know the names and locations of the market actors?
 - Do you know the relevant offices within government departments?
 - Are you aware of specific organisations and associations that represent groups of market actors?
- **Market actor linkages:** Are you sure the linkages between different market actors are direct, or could you have missed some intermediaries?
- **Quantification:**
 - How many individual market actors are carrying out each market chain

function?

- What are their production costs and sales prices, and what volumes of energy products and services are they manufacturing and selling, and how much do these fluctuate over time?
- **Importance and ease of data collection:** When prioritising the research questions, strike a balance between the importance of the question, and how easy it will be to collect the information to answer the question.
- **Data collection prioritisation:** Through the rest of the roadmap process you will continue to learn as you facilitate, so focus on the questions that are most urgent.
- **Know enough:** Be careful about moving onto Step 3 if your understanding of the selected energy system is limited. Facilitating the development of market systems can provide very big opportunities, but also big risks, so make sure you are confident that you have carried out enough research.

Note: Although additional data collection takes time and resources it will provide the facilitators with the confidence that they are using the most up-to-date and complete information when making important decisions throughout the rest of the roadmap steps.

Step 2.5 Preliminary vision for change

The next stage is to develop a preliminary vision for change for the selected energy market system. This vision needs to achieve the aspirations of the market actors in the development of their energy system, as well as being specific and concrete enough to achieve impact at scale. Although it is useful to develop an outline of the vision at this stage for planning purposes, it will be investigated much more fully during the later roadmap steps.

Using your preliminary energy market map, market actor analysis and preliminary market analysis summaries, the facilitation team can start developing their preliminary vision and strategy. It should be as close to the aspirations of where they think the market actors want to go as possible, using the information that's been gathered so far and intelligent guesswork. The facilitators can use the template in Annex 5 to develop a short outline of the vision they hope will take place in the selected energy market. It should be as clear, focused and relevant as possible.

Note: Although it is impossible to know in advance how the market actors will respond to the rest of the roadmap steps and what specific solutions may emerge, this process provides a useful baseline, which can then be updated as the vision and strategy evolves through discussions with the market actors.

The following questions are useful for developing the vision and strategy:

Market actors: If the systemic issues were addressed, would there be more or less market actors and how would their roles change? Will new practices and business models emerge along the market chain, from energy processing, storage, technology manufacture, quality assurance to distribution and retail? What opportunities are likely for poor, vulnerable and marginalised actors, including women and end users?

Actor relationships: If the systemic barriers were addressed, how would the relationships and trust between the market actors change? How would this change the actors' ability to innovate, adapt to new challenges and opportunities and respond to shocks? How would the power structures change to give marginalised actors greater choice and self-determination in their participation in the energy market system?

Energy products and services supply: If the systemic issues were addressed, how would the supply of the energy products and services to the end-markets change? How would the products be different, in terms of how they are delivered, their quality, volume and variety?

Market demand: What is the current demand for the market system energy products and services, and how is it expected to change in the future? How can new markets be realistically accessed?

Step 2.6 Identification and categorisation of potential support interventions

Once the broad vision and strategy of the energy market system has been outlined, the next step is to start to design a set of potential interventions for overcoming each market barrier, as well as their categorisation and prioritisation.

Although these interventions will be developed more fully in the next roadmap steps, it is useful to start to identify potential interventions at this stage.

It will probably not be possible to overcome all the barriers in a dysfunctional energy market, at least not in the short term, but it is useful to start to identify them. This helps the facilitators know what to expect during the next roadmap steps, which will be developed in more detail by the market actors. The potential interventions should be designed according to the following criteria:

- **Impact:** An intervention in a market system needs to result in tangible impacts. It is important to develop milestones and targets against objectively verifiable indicators (OVIs) for the planned impact of each intervention.
- **Value addition:** It is important that any intervention adds significant value in terms of sustainability and scale of impact over and above a traditional energy market support programmes. It is important to be clear what this value addition is and ensure it can be captured in the OVIs and targets.
- **Cost-effectiveness:** It is important that any intervention achieves value for money: indicating that its resources are being used for the greatest effect. Once again, this should be reflected in the OVIs and targets.

Once all the potential support interventions have been identified, it is important to categorise them. The facilitation team can use the template in Annex 6 to carry out preliminary categorisation of the potential support interventions. It is useful to use Table 2, which summarises the main types of interventions that have been identified through experience of supporting energy systems. The table is divided into the 2 categories of technical assistance (TA) and financial assistance (FA), as well as an intervention code to allow them to be quickly and easily identified.

Table 2 Summary of Categorisation of Potential Support Interventions

Intervention type	Intervention description	Intervention code
Technical Assistance (TA) Interventions		

Business development support	Increased capacity of market chain companies to develop their business models.	TAB
Technical support	Increased capacity of market chain companies on technical issues.	TAT
Policy support	Increased capacity of government departments to overcome a particular enabling environment factor.	TAP
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.	TAA_d
Awareness-raising support	Increased capacity of end-users to understand the benefits of energy products and appliances and increase their uptake.	TAA_w
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.	FAG
Loan financing support	Provision of loan financing, directly or through intermediaries (e.g. local banks or micro-finance institutions).	FAL
Equity financing support	Provision of financing for equity investment in companies, again directly or through intermediaries (e.g. dedicated energy investment funds such as ACRE).	FAE
Complementary financing support	Provision of complementary financing (e.g. policy risk mitigation, currency risk mitigation, loan guarantees etc.).	FAC

Note: Once all the interventions have been defined and categorised it is also possible to start to prioritise them. However, as this prioritisation needs to be made based on the potential impact of each intervention on the market actors and end users, it is more effectively achieved during the next steps of the roadmap process.

It is also important to reiterate that the market mapping, assessment of market actors, identification of potential market barriers and potential support interventions, carried out in this step is to produce a baseline to inform the market facilitation process. All of these need to be independently identified during the facilitated activities with the energy market actors in the next roadmap steps.

Step 2.7 Recommendations for using subsidies smartly

Subsidies: this refers to any investment to directly support any function of an energy market system with funding that does not need to be repaid at market rates. Subsidies cover a wide range of types and can come from a wide range of sources (although are often linked to public funding), such as asset transfers, sharing costs of inputs, delivering services including training, providing marketing assistance and grants for innovations and piloting.

In the past, interventions for overcoming market barriers have often involved the use of some form of subsidy. Whilst the use of subsidies has had mixed results in supporting lasting impact at scale in a range of sectors, including energy access, experience has shown that it can be a powerful instrument in achieving sustainable changes in an energy market system. Particularly when it is used in a targeted way as part of a strategic facilitation process, such as follows:

- Financing the demonstration of innovative new business models.
- Reducing the risk for poorer market actors or building their capacity, such as empowering women to become energy technology sales agents.
- Increasing access to critical inputs, services and finance.
- Supporting the development, and adherence to, quality control regulations – this is becoming increasingly important for a range of energy products and services.

When subsidies are used in a broad way, or to support market actors or end users who don't need them, they can undermine the efforts of the facilitator to achieve growth without distorting the energy market. This can create significant risks for the sustainability and the potential for impact at scale of the roadmap process.

As the use of subsidies are very common for funding interventions to overcome market barriers, it is useful for the facilitation team to start to identify when, and what types, of subsidies should, and shouldn't, be used in the next steps of the roadmap. The facilitation team can use the template in Annex 7 to start to assess whether a subsidy should or shouldn't be used for each potential interventions already identified. It is very important to carry out careful design and planning to ensure that any subsidy that the facilitators consider applying is used smartly, following the following 3 principles:

Step 2.7.1 - Keep them minimal

- Don't use subsidies and direct delivery unless you have to.
- Always look to use the minimum level of subsidy.
- Are there any market actors who have the incentives to invest and support the intervention in question?

- Could you facilitate these market actors to address the market barrier themselves?

Step 2.7.2 - Be strategic

- If you choose to use subsidies and direct delivery, be strategic about them.
- Be clear about their purpose and the objective of their use.

Step 2.7.3 - Be cautious

- Be aware of the risks of using subsidies and direct delivery of market functions and mitigate risks as much as possible if you do choose to use them.

It is useful to use the examples in Table 3 to select activities to include in the next steps of the roadmap, including the budgets to implement them.

Table 3 Common Risks of Using Subsidies and Ways of Mitigating Against Them

Risks of subsidies	Description	Mitigation activities
Dependency on time-bound resources	If market actors internalise a subsidy, using it as part of their business plan, this creates a dangerous dependency that can harm them more than it helps them when the funding ends.	Communication: Be clear to market actors exactly how much subsidy they will receive, for what and for how long. Help them plan their business models and livelihoods after the end of the subsidy.
Not scalable	New business models and innovations that require subsidies to get off the ground are always more difficult to replicate and copy, reducing the likelihood they will be scaled up into system-wide change.	Partnering: While financial institutions may not be willing to finance research and development into new business models, they may be willing to finance market actors who want to copy or adapt an innovation that has been tested and demonstrated. Financial institutions can be strategic actors to help scale initially subsidised innovations.
Addressing symptoms rather than causes	Subsidies can be used to plug gaps in a market system. It is tempting and easy to use them as a temporary aid rather than seeking the root cause of the market failure and facilitating the market actors to work to overcome it.	Systemic Planning: By carrying out systematic and careful analysis of the energy market system it is possible to identify the underlying market barriers and planning interventions that don't rely on long-term direct subsidies.

Distortion of existing markets	Subsidised goods and services can severely distort existing supply markets by temporarily deflating demand for the energy products and services and providing uncompetitive advantages to participating market chain actors.	Coordination: Analyse energy market chains to identify the existing market actors. Use short term, targeted subsidies, such as Results-Based Finance (RBF) voucher schemes to encourage the market actors to develop better relationships with their end users, and work with existing, ideally marginalised, market actors.
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Step 2.8 Facilitation process – exit before you enter!

The roadmap process involves supporting the development of a set of interventions to facilitate the market actors to transform their own energy market system themselves. Even when it is very 'light-touch', it is important to start to think about how the market system will continue to evolve after the end of the roadmap process, even during Step 2. This enables the facilitation team to strategise on how the processes that they facilitated will continue to happen after their activities have ended, even from the very beginning.

The facilitation team can use the template in Annex 8 to start planning who they expect will take over activities that they facilitate through the roadmap process. There may be activities that you facilitate in the roadmap process that are intended to catalyse, or kick-start, change. However, as the market system continues to evolve and market actors adapt to new challenges and opportunities these catalytic activities may continue to be needed for the market system to evolve in an efficient, inclusive and equitable manner. These activities may need to continue to be delivered, but by one of the market actors themselves.

Annex 1 Template for energy market mapping

LEVEL 3 - ENABLING ENVIRONMENT FACTORS

LEVEL 1 - MARKET CHAIN

Function 1

Function 2

Function 3

Function 4

Function 5

LEVEL 2- INPUTS, SERVICES AND FINANCE

- Print the mapping template on a very large sheet of paper.
- With your team start mapping out each actor on coloured cards that you can move around in an energetic, fluid brainstorming process, questioning and discussing each one.
- Write down all the market actors you know as well as their relationships - don't be afraid to make mistakes as you can easily change or discard them later!
- Market systems are often complex so it's normal that mapping them can get messy very quickly - don't worry you can tidy up when you have finished!
- It is often easier to start with the actors in Level 1 of the market chain, as they are the ones that have ownership over the energy products or services as this gives you a reference point for the supporting inputs, services and finance and enabling environment actors, but only if you find this easier.
- You may find it useful to move along each energy function of the core market chain and asking the following question for each actor you identify: "What inputs, services and finance does this market actor use or need to access to carry out their role in the market system in an efficient and effective manner?"
- Be as specific as possible: It's easy to put down generic information on the map that is not very useful. Avoid this by repeatedly asking yourself: "Does this reflect the real situation, or are we missing something? Can I be more specific?"
- It is normal that there will be many areas where you have less information, and, or, understanding. Your first market map can help identify knowledge gaps that require further research or can be filled during the next roadmap steps.
- The primary focus of preliminary market mapping is to identify the key market actors, as these are the ones who will be targeted and brought together during the next steps of the roadmap, as they are the ones whose capacity will be built through the facilitation process.

Common market mapping questions:

- **Inclusion:** Where are the poor and marginalised actors, including women? Are they in the chain, or are they conspicuously absent? How many are involved? What roles are they playing?

- **Competition:** What are the different channels? Are they competing with each other over particular segments of the end market?
- **Efficiency:** How long are the market chains? What are the value-adding roles of each actor along this chain?
- **Value retention:** How is the value distributed across the market chain? What are the profit margins, trade volumes and total profits of different market chain actors?

Annex 2 Template for assessing the influence-relevance matrix of market actors

Power and influence	Market actor	Level of relevance	Level of influence
	Market actor 1		
	Market actor 2		
	Market actor 3		

Annex 3 Template for identifying the blockages, opportunities and risks in the energy market system

Main	Short description	Who are the key actors most affected and involved in this issue?
System blockages		
Blockage 1		
Blockage 2		
Blockage 3		
System opportunities		
Opportunity 1		
Opportunity 2		
Opportunity 3		
System risks		
Risk 1		
Risk 2		
Risk 3		

Annex 4 Template for identifying potential further research questions

Research question 1			
Activities	Responsibility	By when	Resources needed
Research question 2			
Activities	Responsibility	By when	Resources needed
Research question 3			
Activities	Responsibility	By when	Resources needed

Annex 5 Template for energy market system vision and strategy

Item	Goal 1	Goal 2	Goal 3
Energy market system vision for change			
Energy market system strategy			
Timeline for change			

Annex 6 Template for categorisation of potential support interventions

Intervention type	Intervention description	Intervention code
Technical Assistance (TA) Interventions		
Financial Assistance (FA) Interventions		

Annex 7 Template for making subsidies smart

Subsidy and description	Be strategic		Keep them minimal		Be cautious	
	Purpose and objectives of subsidies	Measures to be taken to ensure subsidies serve their purpose and achieve their objectives?	Are there market actors who have incentives to help overcome the market barrier?	Could they be facilitated to address the barrier without a subsidy?	What are the risks of using a subsidy?	How can you mitigate against these risks?
Potential support intervention 1						
Potential support intervention 2						
Potential support intervention 3						

Annex 8 Template for planning your exit before you enter

Activities	At the beginning of the Roadmap		At the end and after the Roadmap		What needs to happen for this transition to take place?	What are you going to do to ensure this transition will happen?
	Who does ?	Who pays?	Who does?	Who pays?		
Activity 1						
Activity 2						
Activity 3						
Activity 4						

Annex 9 References and further reading

Original 'Planning your exit before you enter' diagram

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