



# Framework for analysis

## eCooking Market Assessment

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*This version is intended for public disclosure*

## The MECS/EnDev eCooking Market Assessments

This document is part of a series of publications produced jointly by Energising Development (EnDev) and the Modern Energy Cooking Services (MECS) Programme. This series of market assessments offer strategic insight on the current state of electricity access and clean cooking in eight countries across sub-Saharan Africa and South Asia. These studies identify the key opportunities and challenges to the scale up of electric cooking in the coming decade and conclude with a series of recommendations for targeted interventions that could support the development of emerging eCooking sectors. The market assessments are structured according to the MECS transition theory of change (TToC), which consists of three interrelated dimensions: the enabling environment, consumer demand and the supply chain.

## Acknowledgements



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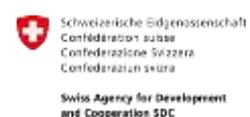


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# 1 Introduction

This framework is intended to guide the development of a series of market assessments requested by GIZ/EnDev to offer strategic insight on eCooking for their country offices. The market assessments will be used to guide the development of project proposals, so should conclude with a series of targeted recommendations for interventions that could help the eCooking sector in that country develop.

The key output is a 5-10 page document, which can be presented to the EnDev/GIZ teams. This framework alone is already 7 pages, so clearly it won't be possible to answer all the questions comprehensively – they are intended to act as a guide for the key things to think about, rather than an exhaustive list of everything that must be covered. It is also important to note what we don't yet know, or what hasn't yet been tried, as these gaps could be ideal opportunities for strategic interventions that the EnDev/GIZ teams could make.

At several points, I've highlighted collaborations with specific parts of the MECS programme (modelling, culinary & appliance manufacturers). Each has a specific contact point, so please do reach out to them for support with these sections as they have a standardized approach that can support the collection, analysis and presentation of data for these areas.

The key research questions for the market assessment as a whole are:

- **What is the market potential for eCooking in this country?**
  - Which specific market segments have been (or should be) targeted for piloting and which for scaling eCooking interventions?
  - What is the potential size of each market segment?
  - What are the potential impacts of scaled uptake?
- **What are the key opportunities & challenges for piloting or scaling up eCooking in this country?**
  - Which opportunities are available now and which new opportunities are on the horizon?
  - What is constraining the development of the eCooking market?
  - Who are the key stakeholders in the eCooking market?
  - Which strategic interventions would be most effective to facilitate the growth of this market?

Useful resources:

- Desk review:
  - [Global Market Assessment \(GMA\)](#) (password = GMA2021)
  - Landscaping reports / policy and markets review
  - Other MECS outputs (MECS.org.uk & MECSplus)
  - Work in progress:
    - Challenge funds – speak to Richard Sieff and/or Jane for access to the most recent docs
  - Theory of Change submitted for MECS Annual Report
  - Non-MECS publications

- Interviews/email requests:
  - GIZ Country Offices
  - MECS Country partners

The framework is based on 3 key dimensions in MECS Transition Theory of Change (TToC):

1. Consumer preferences (demand)
2. Supply chain (private sector)
3. Enabling environment (policy)

## 2 Enabling environment

- What are the key barriers/drivers in the eCooking ecosystem?
- Who are the key ecosystem building stakeholders in both the clean cooking and electrification sectors?
  - Which are already exploring eCooking?
- Which interventions have successfully facilitated access to clean cooking and/or electricity? Which have failed and why?
- Have any projects/programmes actively promoted eCooking? If so, what evidence has been generated and what are the key lessons learned?

### 2.1 Clean cooking and electrification policy

- Is clean cooking and electricity access a priority for the national (or sub-national) government? If so, which policies or programmes specifically address these challenges?
  - Does clean cooking and electrification policy connect in an integrated planning framework or are they treated as two separate problems?
- Which policies specifically enable/constrain the development of a sustainable eCooking market?
  - e.g. national standards & labelling for appliances, eWaste regulation, import tariffs

#### 2.1.1 2030 targets (or nearest equivalent)

- What is the targeted electrification rate?
  - What proportion will be grid/mini-grid/off-grid (SHS)?
  - What is the targeted generation mix for each?
- What is the targeted share of clean cooking and eCooking specifically?

## 3 Consumer demand

- What are the key demand side barriers/drivers for eCooking?
- Which messages / marketing strategies have been (or are likely to be) most effective?

- Which market segments have already seen substantial uptake of eCooking? Which are now being targeted and which could be targeted in the future?
  - e.g. on-grid/mini-grid/off-grid, urban/peri-urban/rural, high/middle/low income, biomass/kerosene/LPG users

### 3.1 Local cuisine

*Collaboration with MECS Culinary Workstream – Jon Leary*

- See separate document with full methodology: *Culinary Analysis: Understanding the Weekly Menu*
- What types of foods are most commonly cooked?
  - How does this vary across the country?
- What are the most popular cooking devices and vessels?
- Which energy-efficient appliances fit best with local cuisine?

### 3.2 Relative costs of cooking and willingness/ability to pay for appliances

- What is the national cooking energy mix (i.e. how many people primarily cook with firewood, charcoal, kerosene, LPG & electricity)?
  - How many people already cook with electricity (either as a primary fuel or part of a fuel stack)?
- What are typical prices for each of the popular cooking fuels and are they subsidised in any way?
  - How many people are paying for polluting cooking fuels (typically charcoal, kerosene or coal) and how much are they paying?
- How does the cost of cooking with popular fuels compare to eCooking, in particular energy-efficient appliances?
- Which market segments are likely to be able to purchase appliances in cash and which will need consumer financing?
- Which consumer financing models have reached scale and have any already been applied to eCooking appliances? e.g. on-bill financing, PayG, women's savings groups

## 4 Supply chain & delivery models

- What are the key supply side barriers/enablers for eCooking?
- Which private sector organisations, research institutions, parastatals or NGOs are already piloting eCooking and which are already offering commercial eCooking products/services?

### 4.1 Delivery models

- Which business models have been piloted and which have reached scale in the clean cooking and electrification sectors?
  - Which have already been applied to eCooking and which could be?

### 4.2 Appliance availability

*Collaboration with MECS Appliance Manufacturer Corporate Engagement – Nick Rousseau*

- Which eCooking appliances are available in the market (type, typical price range and sales volumes)?
  - Are any manufactured/assembled locally?
  - How widely are they available? e.g. specialist online retailers only, main urban areas only, retail and service networks extend into rural areas
- Which organisations are importing (or manufacturing/assembling) eCooking appliances?
  - Which distribution networks are they using and how robust are they? Do they also offer after-sales service?
- If availability of energy-efficient appliances in particular is currently low, are there private sector organisations (energy service companies, distributors, retailers) who are willing/able to make the capital investment to bring stock in?

### 4.3 State of the on- & off-grid electricity sectors

- How many people have access to electricity (grid, mini-grid and off-grid/SHS)?
  - How does this vary across urban/peri-urban/rural areas?

#### 4.3.1 National grid

- What is the current electricity generation mix on the national grid (i.e. what percentage is renewable)?
- How reliable is grid electricity? Would energy storage be required for some consumers?
- Is the utility stimulating demand (surplus) or managing it (short fall)? What is the future outlook?
- What is the current tariff system on the national grid? Is there a lifeline tariff and if so, is it generous enough for cooking?

#### 4.3.2 Mini-grid and off-grid?

- What is the state of the mini-grid sector? Has eCooking already been piloted or scaled?
  - How many mini-grids are in operation, what are the key generation sources, who developed/operates them, how many people do they serve, what level of service do they offer?
  - Is there a standardised tariff in the mini-grid sector? If not, what are typical tariffs?
- What is the state of off-grid (solar home system) sector? Has eCooking already been piloted?
  - How many solar home systems have been sold, what capacity are they and how viable is off-grid e-cooking?

## 5 Impact of scaled uptake

- Collaboration with *MECS Modelling Workstream – Matt Leach*
- See separate document with full methodology: *Scale-Up Analysis: Modelling Method And Assumptions*
- Suggested WHO tool: <https://www.who.int/tools/benefits-of-action-to-reduce-household-air-pollution-tool>
- What percentage of the population might adopt different forms of eCooking by 2030 (or nearest relevant date from targets above)? How many people/households does this equate to?
  - On-grid, mini-grid, off-grid
  - Different appliances/fuel stacks
- What are the likely impacts of scaled uptake of eCooking in this country?
  - Health: How many people are suffering from acute respiratory illnesses due to cooking with polluting fuels and what reduction could be expected?
  - Environment:
    - How much non-renewable biomass is harvested every year for cooking and what reduction could be expected?
    - How much CO<sub>2</sub> is emitted each year due to cooking and what reduction could be expected?
  - Socio-economics:
    - What are the overall macro-economic challenges or opportunities for eCooking?
      - How much money would households save on cooking fuels (if any)?
      - How much money would the government save on fuel subsidies (if any)?
      - How much more revenue would the utility make?
    - How much more time would women have?

## 6 Recommendations for interventions

- What are the key opportunities and challenges for eCooking in this country?
- Which strategic interventions could EnDev support to overcome the challenges and leverage the opportunities? Which are most important?
  - Could include both the piloting of innovative solutions (e.g. off-grid eCooking) or the scaling of established options (e.g. energy-efficient appliances for grid-connected households)
  - Considering both clean cooking & electrification sides of EnDev

Table 1: Decision matrix/board highlighting key factors and viability of specific interventions.

		<b>Current status (inc. summary of key opportunities &amp; challenges)</b>	<b>Recommended interventions (highlight most important in bold)</b>
<b>Market segments</b>	<b>On-grid</b>	<i>e.g. Majority of population now grid-connected, but uptake of eCooking very limited. Utility keen to stimulate demand for surplus electricity.</i>	<i>e.g. Support utility to develop a cooking with electricity demand stimulation programme.</i>
	<b>Mini-grid</b>	<i>e.g. Pilots carried out on solar-hybrid MGs with encouraging results, but high tariffs are major barrier.</i>	<i>e.g. Explore viability of carbon finance to enable dedicated subsidised cooking tariffs.</i>
	<b>Off-grid (SHS)</b>	<i>e.g. Several SHS companies piloting solar eCooking, but high import tariffs for battery storage increasing price point above commercial viability.</i>	<i>e.g. Lobbying government to reduce import tariffs on battery storage sized for cooking.</i>
<b>TToC dimensions</b>	<b>Supply chain</b>	<i>e.g. Product/market fit of EPCs established with early pilots, but limited availability in retail outlets</i>	<i>e.g. RBF programme to develop local supply chains for EPCs.</i>
	<b>Consumer demand</b>	<i>e.g. Early pilots indicate cultural compatibility of EPCs with local cuisine, but most consumers unaware of this new appliance.</i>	<i>e.g. Set up consumer awareness campaigns involving a blend of live cooking demonstrations, TV and social media.</i>
	<b>Enabling environment</b>	<i>e.g. Current policy framework supportive of clean cooking &amp; electrification in separate strategies, but does not connect the two.</i>	<i>e.g. Targeted capacity building for Ministry of Energy on eCooking to support the development of the forthcoming integrated energy planning framework.</i>