

Research: Market Analysis of E-Cooking Solutions - Opportunities, Limitations and emerging business models

Background

Dutch Spark for Clean Cooking Solutions issued this **Terms of Reference (TOR)** to conduct a comprehensive research study on the opportunities and barriers to scaling electric cooking (e-cooking) solutions in emerging markets. Clean cooking is central to achieving global sustainable development goals, addressing public health risks, and reducing environmental degradation.

The global clean cooking market is diverse, encompassing a range of technologies from traditional improved biomass stoves to modern electric cooking appliances. While e-cooking solutions, including electric pressure cookers (EPCs) and induction stoves, represent a smaller share of the market today, their adoption is rapidly growing due to the increasing availability of electricity through grid, mini-grid, and off-grid solar systems. According to the Clean Cooking Alliance¹, over 2.4 billion people worldwide still rely on polluting fuels like wood, charcoal, and kerosene, with clean cooking technologies reaching just a fraction of the target populations annually. E-cooking is emerging as a viable alternative, particularly in urban and peri-urban areas with reliable electricity. Still, its market share remains constrained by affordability and infrastructure challenges in many regions.

Initiatives such as “Mission 300: Providing Access to Electricity to 300 million People in Sub-Saharan Africa by 2030”² are also expected to boost the e-cooking sector. The focus is on identifying the opportunities in grid and off-grid electricity access.

Despite these challenges, the e-cooking market shows significant potential for growth in the near future as access to reliable and affordable electricity increases. Advances in battery storage, cost reductions in solar systems, and expanding grid connectivity enable e-cooking to reach previously underserved populations. Market forecasts indicate that e-cooking could play a pivotal role in achieving the goal of universal access to clean cooking by 2030, particularly as initiatives like Pay-As-You-Go (PAYGO) financing models make these solutions more accessible. However, the adoption of e-cooking solutions must be considered alongside other clean cooking technologies—such as improved biomass stoves and biogas systems—that may be more practical in rural or resource-constrained settings. By understanding the interplay between these technologies, stakeholders can effectively design solutions that address the diverse needs of the global population. Given the scope of this assignment, we are not looking for a full assessment of the alternatives to electric cooking. Some level of comparative analysis is encouraged.

¹ [Clean Cooking Alliance](#)

² [Mission 300 is Powering Africa](#)

As part of Dutch Spark’s commitment to advancing sustainable and accessible cooking technologies, this research focuses on electric cooking solutions, including electric pressure cookers, induction stoves, and other appliances powered by grid, mini-grid, or off-grid electricity. These solutions offer substantial benefits, such as reducing indoor air pollution, improving energy efficiency, reducing emissions, saving household time (for cooking-related tasks), and reducing financial burdens. However, scaling these solutions across the Global South—particularly among rural and low-income households—faces significant hurdles, including limited infrastructure, affordability concerns, and cultural practices.

This study will assess market opportunities, socio-economic and technological barriers, and viable business models for e-cooking. It will also evaluate where alternative clean cooking solutions, such as improved biomass cookstoves, can complement e-cooking efforts. Insights from this research will guide Dutch Spark’s network of stakeholders—including policymakers, financiers, and development organizations—in crafting effective strategies to accelerate the adoption of clean cooking technologies and achieve impactful energy transitions.

Objective

The primary objective of this **TOR, issued by the Dutch Spark for Clean Cooking Solutions**, is to commission a research study that provides a comprehensive assessment of the e-cooking sector in emerging markets, focusing on its opportunities, challenges, and pathways for scale. Specifically, the study aims to:

1. **Evaluate Market Viability:** Analyze geographical, socio-economic, and technological contexts where e-cooking solutions are viable and identify regions where alternative solutions (e.g., improved biomass cookstoves) may be more suitable.
2. **Analyze Business Models:** Investigate successful business models for e-cooking enterprises, emphasizing approaches that enable access for low-income and underserved populations. This includes innovative financing mechanisms, distribution strategies, and partnerships with mini-grids, solar home system providers, and other clean energy sectors.
3. **Identify Barriers and Solutions:** Examine key barriers to e-cooking adoption, including affordability, infrastructure limitations, cultural norms, and market readiness. Propose actionable recommendations to address these challenges and accelerate uptake.
4. **Support Stakeholder Planning:** Provide Dutch Spark and its partners with strategic, data-driven insights and recommendations to enhance market development for e-cooking solutions, contributing to broader clean cooking and energy access goals.

Scope of Work

The consultant will be responsible for conducting a comprehensive research study to analyze the opportunities, challenges, and pathways for scaling e-cooking solutions in emerging markets. The study will explore successful and potentially successful business models for e-cooking and evaluate the socio-economic, technological, and market conditions influencing adoption. The scope of work includes the following key activities:

1. **Comprehensive Market Analysis:**
 - Conduct desk research to evaluate the current state of the e-cooking market, identifying trends, growth potential, and key barriers in Asia and Africa.
 - Compare e-cooking solutions with other clean cooking alternatives (e.g., improved biomass stoves and biogas systems) in terms of market share, affordability, adoption rates, and suitability for different contexts.
 - Assess the impact of policy, regulatory environments, and energy access initiatives on e-cooking adoption. Sharing of success stories.
2. **Business Model Assessment:**
 - Review existing and emerging business models for e-cooking enterprises, focusing on approaches targeting low-income and underserved populations.
 - Analyze successful strategies for financing e-cooking solutions, including the linking of carbon credits to emissions savings from the use of electric clean cooking devices, Pay-As-You-Go (PAYGO) mechanisms, subsidies, and partnerships with energy service providers.
 - Explore innovative distribution and service delivery models, including synergies with mini-grids, solar home systems, and off-grid electrification initiatives, as well as business models and approaches engaging local male and female energy entrepreneurs, empowering them to create sustainable businesses, generate income, and contribute to community development.
3. **Geographic and Socio-Economic Context Mapping:**
 - Identify and map geographic regions within Sub-Saharan Africa where e-cooking solutions are viable based on electricity access, infrastructure, and socio-economic conditions.
 - Evaluate market segmentation, highlighting key customer demographics, purchasing power, and cooking needs, as well as gender dynamics that shape the adoption and impact of e-cooking solutions in different socio-economic settings.
4. **Barriers to adoption and opportunities for increasing the uptake:**
 - Examine critical barriers to e-cooking adoption, including affordability, infrastructure limitations, cultural practices, and supply chain gaps.
 - Provide recommendations for addressing these challenges to increase uptake in emerging markets.

5. Stakeholder Engagement:

- Conduct interviews with stakeholders across the e-cooking value chain, including technology providers, policymakers, financiers, NGOs, and end-users.
- Incorporate perspectives from related sectors such as energy access, clean cooking initiatives, and development organizations.

6. Recommendations and Action Plan:

- Develop actionable recommendations for scaling e-cooking solutions in emerging markets tailored to diverse socio-economic and geographic contexts.
- Propose strategies for market entry and expansion, including leveraging partnerships, financing mechanisms, and policy interventions.
- Outline a high-level roadmap for the Dutch Spark to guide future investments and initiatives in the e-cooking sector.

Timelines and Deliverables

This TOR will be circulated from 6 March 2025, with a kick-off date planned for early April 2025:

Circulation TOR: 6 March 2025

Deadline for submission: 19th of March 2025

After the submission deadline, Dutch Spark will review the applications. The candidates will be informed of the results by 25 March at the latest, with the work of the project expected to start from the kick-off date of 1 April 2025.

The completion of this project is expected in 3 months from the kick-off date, with the following deliverables:

Interim Report:	Summarizing desk research findings, stakeholder interviews, and preliminary analysis. <i>Due mid-May 2025</i>
Final Report:	A comprehensive document presenting market insights, business model analysis, recommendations, and an actionable roadmap for scaling e-cooking solutions. <i>Due end June 2025</i>
Presentation:	A detailed presentation of findings to Dutch Spark and relevant stakeholders. <i>Expected timing: August/September 2025- coinciding with the periodic meeting of the Dutch Spark members.</i>

Budget

The total budget for this research project is €10,000, excluding VAT, to be allocated across various research activities as proposed by the consultant.

Proposal Requirements

The pre-selected candidate for this assignment should submit a detailed proposal including the following:

- Personal resume/CV showcasing relevant experience and qualifications
- Comprehensive research methodology
- Detailed timeline of activities
- Budget breakdown
- Proposed approach to stakeholder engagement
- Data collection and analysis methods
- Potential challenges and mitigation strategies

Evaluation Criteria

The proposal will be evaluated based on:

- Robustness of the proposed research methodology
- Relevant experience and expertise
- Value for money
- Innovative approaches to addressing research objectives

Submission Deadline

It is possible to submit questions/inquiries regarding the TOR by 10 March at the latest. The Dutch Spark has five days to provide an answer or clarification, and the reply will be shared with all candidates for reasons of transparency.

The final submission should be submitted by 19 March 2025 to the Dutch Spark Coordinator via gerdien@dutch-spark.org