



Request for Proposals Off-grid Refrigeration: Use Case Segmentation

Introduction

The Low Energy Inclusive Appliances programme (LEIA) aims to accelerate the availability, affordability, efficiency and performance of a range of low energy inclusive appliances particularly suited to lesser developed countries. LEIA will support market, consumer, impacts, and technology research that further the programme's goal to double the efficiency and halve the costs of a suite of off- and weak-grid technologies. This includes research to better understand the market opportunities and challenges.

LEIA has identified appliance categories that show growth potential in off- and weak-grid areas – one of which is refrigeration. Refrigeration holds the potential to unlock social and economic progress for people living in un- and under-electrified areas. It can facilitate the development of income-generating enterprises, prolong the shelf life of fresh foods, reduce spoilage and waste and reduce the time that householders spend shopping and/or gathering food.

Background

Highly energy-efficient, affordable, and appropriately designed refrigerators hold unique potential to improve livelihoods and achieve broader development impacts in off- and weak-grid communities. Access to refrigeration can facilitate income-generating activities, prolong the shelf life of fresh foods, diversify and enhance diets, and reduce time spent shopping or preparing food (particularly for women and girls). In addition, 28% of food produced in the developing world is wasted and improved access to cold chain technologies could help avoid nearly a quarter of that waste.

The [2016-17 Global LEAP Awards](#) surfaced information on the highly efficient off-grid refrigerators currently available on the market, and provide insight on the potential is for this technology. However, the low energy refrigeration market remains nascent and the cost of these products is relatively high.

At the [May 2018 Efficiency for Access, Off- & Weak-Grid Refrigeration Round table](#)¹, a variety of industry leaders and stakeholders described the limited consumer and market intelligence as a major challenge in the growth of the market. They want to understand what the different use cases are for low energy refrigeration and how to characterise the potential consumers for these appliances. In additions industry leaders also want prioritisation of what user segments are most “market ready”, presenting the highest potential for sales and impact.

An outcome of the roundtable was that better understanding is needed of:

- For whom refrigeration is useful, in what use cases and under what circumstances?

¹ <http://www.efficiencyforaccess.org/assets/EforA-Refrigeration-Rountable-Summary-22June2018.pdf>





- What are the impacts of refrigeration in off-grid and weak-grid areas?
- What is the ability and willingness of individuals / communities to pay for refrigeration in each case?

Requirements

As a foundation for future refrigeration research, the LEIA project requires an initial use case segmentation of the off and weak grid refrigeration market. This will gather together existing evidence from previous off-grid refrigeration pilots, projects, case studies and discussions with sector experts to propose refrigeration use cases and a segmentation of consumers.

The LEIA project team are looking for a researcher, or team of researchers to characterise the most common current and short term future use cases for refrigerators in the target markets, assessing the viability and potential for growth of each. This research should point to not only where there is immediate potential for impact, but also where there is not. The key use cases in scope for this research effort are show in figure 1:

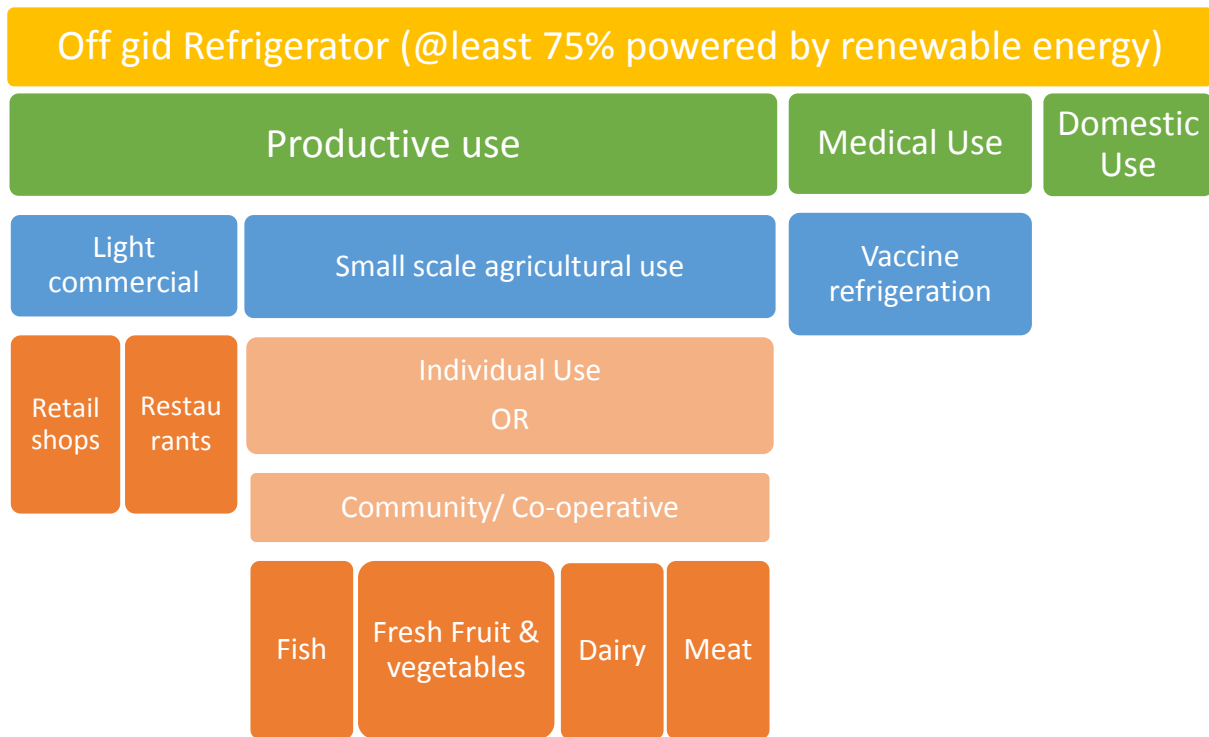


Figure 1: Priority off grid refrigeration use cases

A manageable number of use cases should be developed that are illustrative of the applications and contexts into which, according to the available evidence, growth in sales is most likely to occur. It is anticipated that between [8] and [20] clearly distinguishable use cases may be appropriate, depending upon the outcomes of research.





Scenarios should be built from anecdotal evidence and informed assumptions. Some speculative content may be necessary, that can be reviewed and refined through the research and interviews. Each use case scenario should be sufficiently detailed to enable a supplier, if faced with such a scenario, to make judgements on appropriate types of appliance for that application, to assemble realistic cost and payback business cases and consider their product development needs. Note: This is not the way in which the scenarios will be used, but serves to illustrate the level of detail anticipated.

The selected use cases should illustrate the breadth and variety of likely usage scenarios but of course cannot illustrate all possible scenarios.

The use cases will provide a basis for discussion of concrete market development possibilities with stakeholders, enabling consensus to be built on the relative importance of specific scenarios and so to better inform market and technology development.

The critical research question/ parameters for each use case are:

Profile

1. Where applicable, any geographical location by country or region and (if useful) sub-region. Note: any usage scenario could be applicable to one, two or many geographical locations or types of location.
2. Location by surrounding community - as in rural, urban, size and nature of local community etc.
3. Local power supply situation (presence and quality of grid electricity; off-grid system type and daily power capacity). If useful, power supply could be characterized according to the ESMAP Tiers².
4. Variety and quantities of items intended to be stored in the refrigeration solution
5. What is the profile of the typical user:
 - a. For domestic and individual productive use (age, education level, average income, occupation, location)
 - b. For Community/ Co-operative (Number of members, occupations, location)
 - c. For Medical uses – size of institution, private vs government, location

Potential Impact

6. What is the potential number of primary and secondary beneficiaries;
 - a. For household use, number of household members
 - b. For productive uses number of customers and average household size of those customers (secondary beneficiaries)
 - c. For Medical uses, number of patients in the catch area (a range/geography or hospital size is acceptable)

² See ESMAP TECHNICAL REPORT 008/15, BEYOND CONNECTIONS - Energy Access Redefined, July 2015.





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7. What is the benefit of the refrigeration solution for this user groups e.g. avoiding food wastage, increase sales of cold beverage, preservation of vaccine, extend food shelf life etc.

Technology and Design

8. If already apparent, the necessary refrigeration solution configuration (fridge, fridge-freezer, freezer, coolbox, coolbox + ice making)
9. Include other necessary design features e.g. door position, internal partitioning/ shelving
10. What is the necessary size /size range(internal storage volume) for the refrigeration solution
11. The available power source for the refrigeration solution, given the usage scenario
12. What is the maximum tolerable outage time (loss of cooling function) – note that this is likely to be different to the power availability profile.

Cost and Affordability

13. Indication of the economic constraints for each usage case, in terms of tolerable appliance purchase and (range of) running costs. This would include identifying which business model or models are most likely to be applied to the usage case (PAYG, lease, soft loan, outright purchase, etc).
14. Example maximum price point of the necessary refrigeration solution for wide scale adoption in the usage case. This could be based on anecdotal or other evidence on what magnitude price or scale of price reduction would be needed. Suitable ways should be developed on how to present a price point target, given the different currencies, import duties, business models etc.
15. Assessment of affordability and typical business model based on ideal refrigeration solution.

Review and recommendations

16. Summary of any past pilot/ project targeting that user group.
17. An assessment of the overall potential for that user group in the near term, i.e. how near to Market is that use group?

Figure 1 is not intended to be an exhaustive list of use cases, any use case of off grid refrigeration with potential for developmental impact is of interest to the coalition. Whenever possible the market should be assessed for those use cases as well.

This research effort is intended to be desk based with information drawn from reviews of pre-existing evidence and research on refrigeration in off- and weak grid areas, from a range of sources. Parties will be expected to carry out discussions and interviews with stakeholders including; Off grid appliance manufacturers and distributors, development agencies, project implementers and others.

EST will contact its stakeholders in this field to identify those willing to participate in this initiative, but bidders are expected to also have their own networks.





For clarity, the researcher or team contracted for this work will be responsible for the Task as summarised below;

Task 1: Desk based review of pre-existing literature, data, evidence and research on refrigeration in off- and weak grid areas, from a range of sources to inform the development of questions and selection of interviewees, to ensure that the project builds on existing work and is applicable to the market.

Task 2: Use literature and evidence review to **confirm chosen use cases** or expand the list as appropriate

Task 3: Interview Stakeholder and key informants from different use case segments to gather opinion on ideal/ preferred solutions and to help answer the question in the requirement section above

Task 4: Provide a **summary of the literature review and stakeholder interviews** and a template for use case segmentation

Task 5: Write a report that synthesizes findings from desk research and interviews, the report should:

- a) Summarize each use case presenting it in the agreed upon template from Task 4.
- b) Answer the questions identified under previous tasks
- c) Analyse and comment on the available information, data and evidence supporting the information gathered for this work.
- d) Make recommendations other priority “near market” use cases that should be the points of early focus for research. What research would help fill in any gaps in knowledge of the off grid refrigerator consumer? What use case should a company looking to expand or enter into the off grid refrigeration market be focusing on.

Geographical scope

Though an entirely global use case segmentation may not be practicable, this research effort should, at least, be appropriate to cover markets including the regions and countries below as well as any other geographies where evidence indicates there may be the greatest potential for the off grid refrigeration market to develop.

Regions: East Africa, West Africa, Southern Africa, and South Asia

Countries: Democratic Republic of Congo, Ghana, Malawi, Nigeria, Sierra Leone, Zambia, Bangladesh, Myanmar, Nepal, and Pakistan

Evidence from this project will be used to develop a typology of the most common use cases to be assessed for viability by sector experts. We envisage that this revised use case segmentation will then be used to inform further field research into refrigeration, which will refine





and test the identified typologies and be used to improve understanding of the use cases for off- and weak-grid refrigeration.

Proposal

The LEIA project team request technical and financial proposals from interested parties that meet the requirements above setting forth a proposed methodology for gathering evidence and formulating the use case typologies. This should indicate resources to be used to gather evidence and any partner organisations that may be valuable sources of knowledge.

The project team are open to innovative and alternative approaches that can best help to understand the market potential for off-grid and weak grid refrigeration in the regions outlined above. We also welcome proposals that highlight synergies that can be made with existing programmes to avoid duplication.

Parties should also indicate the proposed costs to undertake the work. Proposals must detail present knowledge and experience of the off-grid appliance sector and experience of undertaking research of this nature.

Outputs

The final output of the project will be a short but comprehensive report that the LEIA project team, and wider stakeholder network can refer to, that segments the market for off and weak grid refrigeration by use case scenarios. The report will describe each of the segments, providing the evidence to back-up each use case description as well as any details of successes and failures of previous projects working in these areas. The report should also point to areas for further research, particularly where certain areas of knowledge are missing for a particular use case

Delivery Requirements and Timeline

- The project will start on 1 October 2018, with a kick off meeting with the LEIA team.
- Throughout the project parties will be expected to give a fortnightly update to the LEIA team to track progress.
- The first prototype segmentation will be expected for review by 26 November 2018.
- The results from this work should be finalised by 14 December 2018.

Work plan & methodology	8 October 2018
List of identified use case scenarios	15 October 2018
Summary literature review and market scoping by typology	29 October 2018





Draft Report with early indications and template for segmentation	26 November 2018
Final Report	14 December 2018

Submission

Parties that wish to respond to this RFP must complete the LEIA prequalification questionnaire. This is a requirement for all sub-recipients of UK DFID funding.

The proposal should not exceed 15 pages in length and must include the following elements:

- A detailed approach and methodology for implementation and management of the project. Include a description of the role of each team member if applicable.
- A summary of experience and qualifications of key personnel that will be engaged in the assignment. This should include details of previous relevant research projects and experience working with off-grid appliance market actors.
- Details of your organisation’s efforts to minimize and manage its environmental impact and energy usage. This is a requirement for all services procured by the energy saving trust above a certain budget.
- A separate budget for the work, including a costed breakdown (in days) of the level of effort associated with the activities and a daily rate, and any other envisaged costs. This should form a document to be uploaded to the CLASP RFP website separately³. **All costs should be set out in UK pound sterling (GBP).**

A committee comprised of LEIA project team will evaluate proposals received from respondents. Selection of the candidate will be based upon the following criteria:

- Robustness of methodology to meaningfully address the requirements and yield exploitable results (35%)
- Value for money (25%)
- Knowledge and experience of the sector (25%)
- Environmental sustainability and energy performance (15%) – see below
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Sustainability

To promote environmental best practice, the Energy Saving Trust will place emphasis on the environmental credentials of its contractors. Each respondent is therefore required as part of their proposal to provide details of their environmental certification relating to ISO140001 and ISO50001 (if appropriate), environmental policy or any other relevant information regarding their approach to sustainability. Responses should outline the organisations commitment to minimising negative environmental impacts and reducing energy consumption when delivering this contract.

³ <https://clasp.ngo/rfps>





Terms and conditions and invoicing

Contractors will be expected to sign Energy Saving Trust's standard terms and conditions (available on request). Payment for the work will be made in two stages. 50% of the agreed budget will be paid at the start of the contract, and 50% on satisfactory completion of the requirements at the end of the contract.

Conflict of Interest

In order to ensure that research is of maximum benefit to the wider community, it must be impartial and seen to be impartial. Bidders must be free of any conflicts of interest regarding which direction the market for off-grid refrigerator might take. This means that bidders must not have commercial interests in the market taking any particular direction. The types of situation that could lead to conflicts of interest include if the bidder is:

- A manufacturer or supplier of refrigerator equipment or components;
- A current or recent past contractor to a single manufacturer or to a small number of manufacturers of a particular type of unit;
- An economic operator with a commercial interest in the market moving in a particular direction.

Bidders must declare if any such conflict exists or if it could be perceived to exist based on their status and work history and, if so, how this would be managed to guarantee impartiality.

Freedom of Information Act

Pursuant to the Freedom of Information Act 2000 the Energy Saving Trust may be required to disclose certain information to third parties and/or the public. Respondents must notify the Energy Saving Trust in writing when submitting their proposals which parts of the proposal are considered to be commercially sensitive. Please note that it is not possible to classify the whole document as non-disclosable. Failure to notify the Energy Saving Trust indicates that no commercially sensitive information has been submitted.

Complaints Procedure

The Contractor will have in place a Complaints Procedure that will be approved by the Contract Manager, prior to the commencement of the Contract.





Procurement timeline

The following table outlines the key dates and timescales in respect of this RFP

Publication of this RFP	24 August 2018
Deadline for RFP questions	12 September 2018
Deadline for return of proposals	23 September 2018
Proposal evaluation	24-28 September 2018
Contract award	28 September 2018

The deadline for application is 24 September 2018. Proposals must be submitted online via the CLASP website: <https://clasp.ngo/rfps>

All questions may be addressed to Greg Shreeve at greg.shreeve@est.org.uk and Amanda Chapple at amanda.chapple@est.org.uk. The last date for submission of questions related to this RFP is 12 September 2018. To note, we cannot guarantee a response to questions until this date.

Warnings & Disclaimers

While the information contained in this RFP is believed to be correct at the time of issue, the Energy Saving Trust does not accept any liability in any circumstances for its accuracy, adequacy or completeness, nor will any express or implied warranty be given. This exclusion extends to liability howsoever arising in relation to any statement, opinion or conclusion contained in, or any omission from, this RFP (including its appendices) and in respect of any other written or oral communication transmitted (or otherwise made available) to any respondent. No representations or warranties are made in relation to these statements, opinions or conclusions. This exclusion does not extend to any fraudulent misrepresentation made by, or on behalf of, the Energy Saving Trust.

Neither the issue of this RFP, nor any of the information presented in it, should be regarded as a commitment or representation on the part of the Energy Saving Trust to enter into a contractual arrangement.

Any costs incurred in the creation and the preparation of any proposal, in establishing legal entities or otherwise in connection with this procurement exercise will be the responsibility of the Tenderer and will not be borne by the Energy Saving Trust, including (but without limitation) if this procurement exercise is terminated or amended by the Energy Saving Trust for any reason.

