State of the Off-Grid Appliance Market 2019

Efficiency for Cooling: Technology and Market Trends
What impact do cooling appliances have on off-grid households?

**Affordable access to new technology** is an important part of SDG1: No Poverty, ensuring that all men and women have equal rights to basic services – such as cooling technologies.

Access to **refrigerators allow families to store food, safely, for longer periods of time**, reducing food waste and incentivizing cheaper in bulk food purchases.

The **safe storage of food** in refrigerators can reduce the risk of food-related infections and diseases.

Appliances such as refrigerators have the potential to improve gender equality by **reducing the amount of time women must spend on domestic tasks**.

What is the current state of the market today for off-grid refrigerators?

Approximately 70% of current GOGLA sales are primarily in Sub-Saharan Africa...

In 2018 5,900 off-grid refrigerator sales were reported, of which around 4,000 were in sub-Saharan Africa...

...However, there are three major challenges to increase penetration:

- **High price** relative to the off-grid population’s purchasing power
- **Low demand at the household level**, due to limited need for storage
- **High energy consumption** of current refrigerators

Source: GOGLA sales data, H2 2018; Dalberg analysis
How have efficiency and performance of off-grid refrigerators evolved?

Refrigerator Energy Efficiency: Global Leap Awards Winners compared to market average

New product innovations in the refrigerator market

- **SunDanzer**
  - 50-liter DCR50 refrigerator

- **Fosera**
  - Cool Sun 54-liter refrigerator

- **Yoomma (Embraco)**

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*EEI: Energy Efficiency Index
Sources: Global LEAP Appliance database, 2019; Dalberg analysis*
How are existing business models adapting to off-grid refrigerators?

- **Understanding of product technology & design**
  - OEMs
  - Generic Manufacturers
  - Branded Manufacturers

- **Understanding of the customer**
  - Upstream Actors
  - Midstream Actors
  - Downstream Actors
  - Local Distributors / Retailers
  - Specialist Financiers

**Value Chain**
- Design
- Production/assembly
- Sales / Distribution
- After sales
What is the potential serviceable household market for off-grid refrigerators?

Cumulative market potential, globally (Bn USD)

<table>
<thead>
<tr>
<th>Year</th>
<th>Côte d'Ivoire</th>
<th>Ethiopia</th>
<th>India</th>
<th>Kenya</th>
<th>Myanmar</th>
<th>Nigeria</th>
<th>Sierra Leone</th>
<th>Uganda</th>
<th>Global</th>
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</thead>
<tbody>
<tr>
<td>2018</td>
<td>0.04</td>
<td>0.05</td>
<td>4.93</td>
<td>0.07</td>
<td>0.07</td>
<td>0.74</td>
<td>-</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>2030</td>
<td>0.16</td>
<td>0.37</td>
<td>15.46</td>
<td>0.33</td>
<td>0.47</td>
<td>1.00</td>
<td>-</td>
<td>-</td>
<td>41</td>
</tr>
</tbody>
</table>

Source: GOGLA sales data, H2 2018; Dalberg analysis (market sizing)
What needs to happen to accelerate growth in sales and uptake of off-grid refrigerators?

<table>
<thead>
<tr>
<th>Category</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td><strong>Continued investment in R&amp;D</strong> to improve energy efficiency and performance of cooling technologies</td>
</tr>
<tr>
<td>Market Players</td>
<td>Incentivizing <strong>entrance of global white goods players into off-grid cooling market</strong> would accelerate technology developments</td>
</tr>
<tr>
<td>Customers</td>
<td>Greater insights into household demand and <strong>productive use cases</strong></td>
</tr>
</tbody>
</table>
| Financing      | More **dedicated financing for off-grid appliance players**  
Examples: results based finance, working capital loans |
| Policy         | **Integrating appliances into national electrification programs**; policies around tax exemptions, quality assurance, etc. |

Source: Dalberg Analysis
End of Presentation
Logic of the household appliances market sizing model

Projections will be based on:
• Expansion and quality of grid connections
• Population and income growth
• Development of mobile money and bank account ownership