EEP AFRICA IMPACT AND PERFORMANCE EVALUATION
END-USER RESEARCH ABSOLUTE ENERGY

Presented to the Nordic Development Fund
1. Context and objectives
2. Sample overview
3. Using the Absolute Energy mini grid
4. Impact
The objective of this presentation is to detail the results of the Absolute Energy end-user research in Uganda

1.1 Context and Objectives

**Context**

- The acquisition of the Energy and Environment Partnership Africa Trust Fund by the Nordic Development Fund in 2018 has transformed it into an open-ended, multi-donor trust fund.
- NDF has mandated Altai Consulting to conduct the first impact and performance evaluation of EEP Africa since the NDF acquisition and change of structure.

**Evaluation approach and data collection**

- To conduct the evaluation Altai has leveraged three types of data: desk review, stakeholders Key Informant Interviews (KII), end-user research.
- Three end-user studies of EEP-funded projects have been performed.

**Objectives**

- The objective of the end-user studies is to provide an independent assessment of the impact of selected grantees.
- The results will serve to confirm the underlying assumptions in EEP Africa’s Theory of Change and provide tangible examples and data for the final evaluation report.
- Additionally, the results will be shared with Absolute Energy.

**Countries**

- Uganda
- Zambia
- Zimbabwe

**Services**

- Absolute Energy
- SupaMoto
- Zonful
297 quantitative customer interviews and 6 qualitative business operators interviews have been conducted on Kitobo island

Absolute Energy

• Absolute Energy provides **affordable clean energy to Kitobo island’s inhabitants**. The company has developed a **mini grid** set for **domestic and business purposes** on the island

• Absolute Energy has developed several **businesses** on the island, which are connected to the mini grid

Sample size

• The 297 participants were randomly selected on Kitobo island

Data collection tools

• The questionnaires were written by Altai
• Enumerators **used tablets (CAPI)** for the quantitative interviews
• The questionnaires were administrated **face-to-face**

Fieldwork

• The data collection was conducted between July 26th and July 30th by **enumerators of Sagaci Research, Altai’s long-term field partner** in Africa
• Before the data collection, enumerators received a training on the questionnaire
1. Context and objectives

2. Sample overview

3. Using the Absolute Energy mini grid

4. Impact
The average interviewee is a 31-year-old woman

Gender of customer

- Female: 65%
- Male: 35%

Number of household members

- 1: 19%
- 2: 25%
- 3: 26%
- 4: 13%
- 5: 7%
- 6: 5%
- 7: 3%
- 8: 1%
- 9+: 1%

Age of customer

- Under 24: 23%
- 25-29: 22%
- 30-34: 21%
- 35-39: 12%
- 40-44: 8%
- 45-49: 5%
- 50-54: 3%
- 55-59: 1%
- 60-64: 0%
- 65+: 0%
- Do not wish to answer: 4%

- Number of customers interviewed: 297
- Among interviewees, 192 are women and 67 are under 24 years old
- The average age is 31

Sources: Questions used: “4. How old are you?”, “5. Gender”, “6. How many people are there in your household?”
Access to light, phone charging and appliances are the main reasons to connect to the mini-grid

<table>
<thead>
<tr>
<th>Reasons to be connected to the mini grid</th>
<th>Share of Households (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To have access to light</td>
<td>79%</td>
</tr>
<tr>
<td>To be able to use appliances (e.g. TV, radio, fridge)</td>
<td>60%</td>
</tr>
<tr>
<td>To be able to charge my phone at home</td>
<td>56%</td>
</tr>
<tr>
<td>To use in my business</td>
<td>22%</td>
</tr>
<tr>
<td>To save money</td>
<td>10%</td>
</tr>
<tr>
<td>For the service quality (reliability, power, etc.)</td>
<td>10%</td>
</tr>
<tr>
<td>To start a business</td>
<td>3%</td>
</tr>
<tr>
<td>To have more lights</td>
<td>2%</td>
</tr>
<tr>
<td>Recommended by friends &amp; family</td>
<td>2%</td>
</tr>
</tbody>
</table>

Months since start of connection

<table>
<thead>
<tr>
<th>Duration</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 11</td>
<td>10%</td>
</tr>
<tr>
<td>11-23</td>
<td>9%</td>
</tr>
<tr>
<td>24-35</td>
<td>12%</td>
</tr>
<tr>
<td>36-47</td>
<td>19%</td>
</tr>
<tr>
<td>48+</td>
<td>33%</td>
</tr>
<tr>
<td>Do not know</td>
<td>16%</td>
</tr>
</tbody>
</table>

- The most frequently mentioned incentive is access to light (79%)
- 60% of the households interviewed also wanted to be able to use appliances in their home
- The third most frequently mentioned argument is to be able to charge the phone at home (56%)
- Most of the households interviewed have been connected to the mini grid for more than 3 years (52%)

Sources: Questions used: “7. Why did you decide to connect your household to the mini grid?”, “12. How long has your household been connected to the mini grid (in months)?”
8 of the individuals interviewed work in Absolute businesses

Households where an individual is working in an Absolute business
N=297

- Yes: 98%
- No: 2%

Absolute businesses
N(households where an individual is working in an Absolute business)=7

- Ice maker: 57%
- Laundry: 29%
- Connect: 14%

Sources: Questions used: “8. Is anyone in your household employed by one of the Absolute businesses?”, “9. How many household members are employed by one of the Absolute businesses?”, “10. Which ones?”
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The households interviewed all use the grid for lighting. Many of them also use it for phone charging or TV.

### Use of electricity

*N=297*

- **Light inside**: 100%
- **Phone charging**: 93%
- **TV**: 60%
- **Light outside**: 56%
- **Iron**: 40%
- **Radio**: 22%
- **Fridge**: 10%
- **Fan**: 4%
- **Cookstove**: 2%
- **Water heater**: 1%

- All of the households interviewed use the electricity for lighting inside.
- The second most frequent usage of grid electricity is for phone charging (93%).
- The third is for TV (60%).

Sources: Questions used: “13. What do you use electricity for?”
Use of rudimentary and/or health-endangering sources of light has declined with the transition to the mini grid

Evolution of sources of light (share of households mentioning the source)

- Before the mini grid, the three main sources of light were torches (31%), generators (24%) and candles (18%)
- The generator mentioned by the interviewees was a community generator. It had been installed by a local entrepreneur who used to sell the electricity generated to some inhabitants. It has been removed when the mini grid started
- 6% of the households interviewed had no source of light before the mini grid

All sources of light have declined with the transition to the mini grid
- Except from the generator, the source of light which has experienced the greatest decline in usage with the transition to the mini grid is kerosene (-75% of overall use)

Sources: Questions used: “15. What did you use to light your home/facilities before the mini grid?”, “16. Which of these light sources do you still use now that you are connected to the mini grid?”
The households interviewed are now mainly using the mini grid for lighting

- 54% of the households interviewed are now only using the mini grid for lighting
- The households interviewed have an average of 2 lights connected

Households using other sources of light in addition to the mini grid
N=297

Number of lights connected to the mini grid
N=297

Sources: Questions used: “14. How many lights connected to the mini grid do you have?”, “16. Which of these light sources do you still use now that you are connected to the mini grid?”
Most of the interviewees used to pay for phone charging before the mini grid. The mini grid enables them to use their phone more.

Past sources of energy used for phone charging

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I paid for phone charging</td>
<td>49%</td>
</tr>
<tr>
<td>I used a solar home system</td>
<td>16%</td>
</tr>
<tr>
<td>I used a community generator</td>
<td>12%</td>
</tr>
<tr>
<td>I charged at a neighbour/friend’s house for free</td>
<td>7%</td>
</tr>
<tr>
<td>I did not have a phone</td>
<td>2%</td>
</tr>
</tbody>
</table>

Households using their phone more now that they are connected to the mini grid

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>62%</td>
<td>38%</td>
</tr>
</tbody>
</table>

- 49% of the interviewees used to pay for phone charging before the mini grid
- 62% of the interviewees use their phone more now that they are connected to the mini grid

Sources: Questions used: “17. What did you do to charge your phone before the mini grid?”, “22. Since you are connected to the mini grid, do you use your phone more?”
3.5 Using the Absolute Energy Mini Grid > TV

The mini grid has facilitated access to television

Past sources of energy used for TV

<table>
<thead>
<tr>
<th>Past source of energy</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I had no access on the island</td>
<td>35%</td>
</tr>
<tr>
<td>I used the community generator</td>
<td>22%</td>
</tr>
<tr>
<td>I went to a neighbour/friend's on the island</td>
<td>13%</td>
</tr>
<tr>
<td>I went to a bar/restaurant/cinema on the island</td>
<td>13%</td>
</tr>
<tr>
<td>I used a solar home system</td>
<td>9%</td>
</tr>
</tbody>
</table>

- 35% of the interviewees now using the mini grid for plugging TV did not watch TV before the mini grid
- 22% of the interviewees used the community generator

Sources: Questions used: “19. What did you do to watch TV and/or listen to the radio before the mini grid?”
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4.1 Impact > Fishermen

The Absolute Energy Ice Machine seems to have a positive impact on the livelihood of the fishermen

Perceived increase in income from access to ice
N(fishermen) = 149

- 53% of the fishermen perceived an increase in income from their business now that they have access to ice on the island thanks to the Absolute Energy Ice Machine
- The two main reasons mentioned are that they throw fewer fish away (54%) and that they save time when buying ice (53%)

Reasons for income increase
N(fishermen perceiving an increase in income) = 79

- I throw fewer fish away
  - 54%
- I save time when buying ice
  - 53%
- I save money on the quantity of ice I need to buy
  - 38%
- I save money on fuel
  - 30%

Sources: Questions used: “23. Has access to ice on the island improved your income from fishing?”, “24. How has your business improved?”
Interviewees are overwhelmingly positive about the impact that the mini grid has had on their quality of life

- 88% of the households interviewed perceive an overall improvement in their quality of life thanks to the mini grid
- Only 8% of the households interviewed disagree with the fact that the mini grid has improved their quality of life

Sources: Questions used: “30. For each of the following statements, please tell me if you “Strongly agree”, “Somewhat agree”, “Neither agree nor disagree”, “Somewhat disagree”, “Strongly disagree”, “Do not know””
The mini grid has had various positive impacts on the quality of life of people on the island.

Improvements in quality of life

N=297

- I have a more comfortable home: 89%
- I feel safer: 88%
- People in my house seem to be in better health: 80%
- I have a better access to information (through phone/TV/radio): 80%
- I spend less time searching for energy sources: 74%
- I can spend more time with my children: 49%
- My children have more time to do their homework: 30%
- My household’s income has increased since my household members work for Absolute businesses: 7%

- The main improvement perceived by the households interviewed is that they have a more comfortable home thanks to the mini grid (89%)
- 88% of the households interviewed feel safer now (light provides a sense of security)
- 80% of the households interviewed notice that their family seems in better health thanks to the mini grid and 80% have better access to information

Sources: Questions used: “30. For each of the following statements, please tell me if you “Strongly agree”, “Somewhat agree”, “Neither agree nor disagree”, “Somewhat disagree”, “Strongly disagree”, “Do not know””
The households interviewed are mostly very satisfied with the mini grid and are likely to recommend it to friends or relatives.

- **73%** of the households interviewed are satisfied with the value for money of the mini grid.
- **89%** of the households interviewed would recommend the mini grid to a friend or a relative.
- Results are likely to be negatively affected by current issues with the mini-grid which have not been fixed due to the Covid-19 situation.

Sources: Questions used: “31. How do you rate the value for money of the mini grid?”, “32. How likely are you to recommend the mini grid to a friend or a relative?”
The mini grid has enabled many of the households interviewed to save money on energy expenditures

Expenses on all sources of energy per week before the mini grid (in UGX)

N=203 - excl. Do not know & Do not wish to answer

- 35% spent less than UGX 2,500
- 18% spent UGX 2,500 to 5,000
- 14% spent UGX 5,000 to 7,500
- 33% spent more than UGX 7,500

Expenses on all sources of energy per week now (in UGX)

N=267 - excl. Do not know & Do not wish to answer

- 32% spent less than UGX 2,500
- 27% spent UGX 2,500 to 5,000
- 25% spent UGX 5,000 to 7,500
- 17% spent more than UGX 7,500

- Of the 187 households interviewed who know their expenses before the mini grid and now, 53% spent less than UGX 5,000 (~USD$1.4) before the mini grid compared to 59% now
- Of the 187 households interviewed who know their expenses before the mini grid and now, 57% have saved money thanks to the transition to the mini grid. The average savings are of UGX 11,700 per household per week (~USD$3.2)

Sources: Questions used: “26. How much, on average, did you spend on all energy sources per week before being connected to the mini grid?”, “27. How much, on average, do you currently spend on all energy sources per week?”
None of the households interviewed report spending more than what they earn.

### Income per week (in UGX)

**N=157** - excl. Do not know & Do not wish to answer

- 10% Less than 50,000
- 17% 50,000 to 100,000
- 25% 100,000 to 150,000
- 49% More than 150,000

### Expenditures per week (in UGX)

**N=223** - excl. Do not know & Do not wish to answer

- 36% Less than 50,000
- 38% 50,000 to 100,000
- 17% 100,000 to 150,000
- 10% More than 150,000

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Average weekly GDP per household in Uganda (average HH size 4.5):
- ~179$

Average weekly income per interviewed household:
- UGX 255,815 (~USD$69)

Average weekly expenditures per interviewed household:
- UGX 78,127 (~USD$21)

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