RENEWABLE ENERGY FOR REFUGEES

Household Electricity Services in Displacement Settings
About RE4R

• Partnership between Practical Action and UNHCR, funded by the IKEA Foundation
• Project dates: April 2017 - February 2022
• Direct beneficiaries: >62,000
• Working in:
  • Urban settings in Irbid, Jordan
  • Camp settings in Gihembe, Kigeme and Nyabiheke camps in Rwanda

<table>
<thead>
<tr>
<th>Location</th>
<th>Kigeme</th>
<th>Nyabiheke</th>
<th>Gihembe</th>
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<tbody>
<tr>
<td>Year formed</td>
<td>2012</td>
<td>2005</td>
<td>1997</td>
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<tr>
<td>Population (HH)</td>
<td>20,626 (3,830)</td>
<td>14,479 (3,490)</td>
<td>13,181 (3,077)</td>
</tr>
<tr>
<td>Location</td>
<td>Nyamagabe District, Southern Province</td>
<td>Gatsibo District, Eastern Province</td>
<td>Gicumbi District, Northern Province</td>
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Link to Project Website
## About RE4R

### RE4R Activities

**Rwanda**
- Renewable biomass cooking technologies for households
- Solar Home Systems for households & small enterprises
- Productive usages of energy for livelihoods
- Solar community street lighting
- Solar mini-grid for institutions and community facilities

**Jordan**
- Solar water heating systems and energy efficiency upgrades to households
- Skills training and capacity building
- Onsite PV and energy efficiency upgrades for public schools

### Global Activities

- Research and data programme
- Learning on private sector delivery models and livelihoods
- Project learning and knowledge

- Policy advocacy
- Communications and outreach
- Monitoring, evaluation and learning
RE4R Intervention Delivery Process (Rwanda)

Assess
- Understand energy needs and priorities – household, enterprise, community
- Identification of potential technology solutions
- Systems analysis – humanitarian energy context, market environment, supplier analysis

Co-design
- Work with local and national stakeholders
- Build consensus on the most suitable energy interventions
- Select a balance to meet household, enterprise and community needs

Engage
- Inform local suppliers of opportunities, share data and intervention aims
- Suppliers use information to design proposals to access markets
- Develop business models to address opportunities and barriers

Implement
- Supplier agreements for technical and financial support
- Suppliers provide energy products and services
- Uptake, usage, improvements to quality of life

MEL
- Monitor progress
- Evaluate impact against outputs and outcomes
- Share learning and recommendations
RE4R Intervention Delivery Process

- **Assess**
  - Understand energy needs and priorities – household, enterprise, community
  - Identification of potential technology solutions
  - Systems analysis – humanitarian energy context, market environment
  - Work with local and national stakeholders
  - Build consensus on the most suitable energy interventions
  - Select a balance to meet household, enterprise and community needs

- **Co-design**
  - Demand assessment
  - Supply assessment
  - Technical solutions
  - Partnerships

- **Engage**
  - Inform local suppliers of opportunities, share data and intervention aims
  - Suppliers use information to design proposals
  - Design market-based approaches to address barriers
  - Partnerships

- **Implement**
  - Suppliers agree on agreements for technology, demand
  - Suppliers provide financial and technical services
  - Uptake, usage, improvements to quality of life
  - Business model
  - Financing mechanism

- **MEL**
  - Monitor intervention progress
  - Evaluate impact against inputs and outcomes
  - Share learning and recommendations
  - Lessons learned
Assess – Household Electricity before RE4R

- Households ranked their own energy needs as the most important to be addressed
- Working, studying and doing chores were the most important reasons why electric lighting is important
- Lighting, phone charging and radios/televisions were the most important uses if energy were available

Most households rely on combinations of basic sources of lighting

Improved lighting technologies provide tangible increases in lighting availability

Households have modest expenditure on non-renewable lighting sources

Link to Assessment Report
Domestic electricity access is very low (Tier 0) and can be improved by greater access to solar home systems (Tier 1).

**Assess - Co-design - Engage**

**Assess**
Quantitative surveys, focus groups, interviews and market assessments

**Co-design**
Workshop with stakeholders to select interventions, followed by further scoping and design

**Engage**
Competitive process to select suppliers to deliver SHS in the three camps

### Intervention 1: Renewable electricity services for households and small enterprises
- Increase camp-wide access to SHS
- Decrease spend on non-renewables
- Ensure service quality
- Training & capacity building

### Steps for Engage
1. Outreach event on refugee energy market (May 2018)
2. Expressions of Interest issued (Nov 2018)
3. Request for Proposals issued to shortlist (Dec 2018)
4. Market data shared & guided camps tours given (Dec 2018)
5. Evaluation of suppliers and presentations (Jan 2019)
6. Selected supplier contracting and negotiation (Feb - May 2019)
7. Supplier performance tracking and payments (Jul 2019 onwards)

- Suppliers integrated intervention aims to their business models
- Goals shared in advance and informed by assessment data
- Package of financial, technical and facilitation support to overcome barriers identified by each supplier
Engage

Engaging with suppliers for market-based approaches:

- What information do we need to provide for suppliers to design effective business models?
- How do we identify barriers and enablers in the market, and strategies to address them?

<table>
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<tr>
<th>Market size</th>
<th>Market viability</th>
<th>Supplier support</th>
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<tbody>
<tr>
<td>Camp population</td>
<td>Household income and expenditure</td>
<td>Technical, financial and facilitation support</td>
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<tr>
<td>Location and local area</td>
<td>Ability to pay</td>
<td>Relationship building</td>
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<tr>
<td>Current levels of energy access</td>
<td>Willingness to pay</td>
<td>Adaptive management</td>
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<tr>
<td>Technologies being used</td>
<td>Market segments</td>
<td>Feedback and joint MEL activities</td>
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<tr>
<td>Intervention goals</td>
<td>Viability of models</td>
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Information to design effective business models

Enablers and support strategies
Implement – Supplier Business Models

Supplier business models include:

- SHS sales, installation and user training
- Awareness raising, marketing and product demonstration
- After sales services such as technical repair & customer support, and warrantied
- Refugee Vocational Training and Employment
- Sales data, progress reporting and monitoring

**BBOXX**

- 50W system, 3 bulbs + phone charger
- Optional appliances (additional cost) - radio, TV, Torch, sub-woofer, shaver
- Target market: Households and enterprises
- RWF 2,900/month for 3 years (40% subsidized rate) then Energy Service Fee of RWF 2,900/month for 1 year
- Can opt in or out of ESF annually < 7 yrs

**BELECOM**

- 12W/20W system, 3 bulbs + phone charger + radio
- Target market: Households
- RWF 2,600/month for 3 years
- Revolving fund mechanism to support lower income customers
**Implement – Financial Support Examples**

**Revolving fund**
The Belecom model used seed capital for a revolving fund which provides access to finance services (loans and savings groups) for low income households so that they can boost their income and afford the monthly payments for Belecom SHS.

**Retail outlet**
Belecom requested financial support to construct a retail outlet in each camp. This would allow them to establish a selling point, provide a base for Belecom staff (including refugee sales agents and technicians) and offer ongoing customer support.

**Subsidies**
Bboxx requested a subsidy to reduce the monthly cost to the consumer to 2,900 RWF for an initial 3-year period. It was anticipated that this would accustom refugee customers to the financial commitment of the ESF after the initial 3 years was completed and increase uptake for high to middle-income households.
Implement – Results

3,543
SHS sold and installed

424
Participants in revolving fund

87%
Customers on time with monthly payments

97%
Report that they are satisfied with the quality of lighting of the SHS

62%
Report that the SHS meets their basic needs

82%
Use SHS as their primary source of lighting

Uptake ➔ Usage ➔ Improvements to Quality of Life

92%
Report that they feel safer in their home after dark

84%
Report that they are able to do recreational/leisure activities after dark

”The TV we bought made us aware of the news all over the world and protected us from isolation.”

78%
Report that they are able to study after dark

”Having SHS in my house during the lockdown allowed my children to revise their studies and listen to music.”

88%
Report that they are able to do business or productive activities after dark

”As a mobile money agent, having a SHS in my house has permitted me to charge my phone anytime I want. Before I used to spend money on charging my phone and buying candles for lighting. I am now able to serve clients anytime. My life has become easier.”

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Total SHS sales

- 3,543 SHS sold and installed
- 424 Participants in revolving fund
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Graph showing total SHS sales from July 2019 to December 2020 for Bboxx and Belecom.
MEL – Lessons Learned/Recommendations

1. Improving energy access and household incomes builds economic resilience

Build synergies from household, enterprise and community energy access, and maximise refugee participation and employment across all (e.g. PUE, revolving fund, technicians)

2. Market conditions for businesses within camps are challenging, building commitment is key

Assess supplier risks and willingness to work in fragile markets, establish what conditions make business models viable in the long term

3. Affordability of energy products and services will always be an issue for some households

Be realistic about the use of subsidies, and adopt strategies for inclusion, adaptations will be necessary
Thank YOU