RENEWABLE ENERGY FOR RURAL ELECTRIFICATION: LESSONS FROM MALAWI

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SIZE
118,484 km² (20% Water)

POPULATION
13 Million (86% Rural)

GDP/capita
US$337

Electrification
7.6% (1% Rural)

ENERGY RESOURCE
Biomass, coal, hydro, solar, wind
RURAL ELECTRIFICATION INITIATIVES

INTERVENTION

**MAREP**
1. Grid extension
2. 4.5MW Hydro
3. Solar villages (20.1 KW)

**BARREM**
1. PV in sch. & HC
2. SHS
3. Water Pumping
<table>
<thead>
<tr>
<th>System Type</th>
<th>No systems</th>
<th>Average Wp</th>
<th>Total Wp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>4000</td>
<td>20</td>
<td>80000</td>
</tr>
<tr>
<td>Institutions (not stated whether schools or health or other)</td>
<td>178</td>
<td>75</td>
<td>13350</td>
</tr>
<tr>
<td>Health Centres (lighting)</td>
<td>150</td>
<td>75</td>
<td>11250</td>
</tr>
<tr>
<td>Health Centres (vaccine)</td>
<td>130</td>
<td>140</td>
<td>18200</td>
</tr>
<tr>
<td>Beverage Coolers</td>
<td>11</td>
<td>375</td>
<td>4125</td>
</tr>
<tr>
<td>Water pumps</td>
<td>113</td>
<td>200</td>
<td>22600</td>
</tr>
<tr>
<td>Radio communication</td>
<td>150</td>
<td>30</td>
<td>4500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4732</strong></td>
<td></td>
<td><strong>154025</strong></td>
</tr>
</tbody>
</table>
RURAL ELECTRIFICATION INITIATIVES

**INTERVENTION**

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**KAVUZI**
10 KW saving a community of 80 households

**OTHERS**
1. PV in sch, HC
2. PV homes
3. PV–wind Hybrid
Financing

- Government e.g. MAREP
- Donor e.g. BARREM
- Loan Scheme e.g. CGF (credit guarantee fund)
- Self (cash basis)
Universities

TRAINING

Barefoot Project
Mounting PV module on a roof

Preparations for installation
TRAINING

Universities

Barefoot Project

User Training (on site)
LESSONS

1. Solar and micro hydro electricity are proved viable.

2. Productive time, livelihood, education and flow of information are improved in the project areas.

3. Lack of good policies to promote technology uptake.

![Graphic: Projection of Contribution of RETs to the Total Energy Mix]

- % Contribution: 2, 4, 6, 12
LESSONS

2. Financing mechanism unsatisfactory
3. Poor resource assessment
4. Increased unprofessional installations—poor system performance
5. Poor system management by end users
6. Influx of low standard RE equipment
7. Lack of after sale services
8. Theft
CONCLUSIONS

- Solar PV remains the most used alternative energy for rural electrification in Malawi
- Rural electrification interventions have not substantially increased level of rural electrification
- Many challenges still need to be addressed in order to have effective rural electrification through renewable energies.
I WELCOME YOUR COMMENTS