AFRETEP 3rd REGIONAL WORKSHOP
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IMPACT ON POVERTY REDUCTION OF MINI OFF GRID SOLAR PHOTOVOLTAIC SYSTEM
Case study: Ankaranana, remote village in middle region of Madagascar

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CONTENT

- Overview of Power sector in Madagascar
- Description of the infrastructure
- Impact on poverty of the Project
**OVERVIEW OF POWER SECTOR IN MADAGASCAR**

**PHASE I (BEFORE 1999)**
- Regime: monopole
- Authority: Ministry of Energy
- Public Company: 01 (JIRAMA)
- Private Company: 0
- Access of electricity in rural area: < 2%
- Urban electrification level: 29.5%
- Total installed capacity: 171 MW

**Reform of Power Sector:**
- Law n°98-032
- Liberalization
- PPP
- Creation of **Rural Electrification Agency (ADER)** and Regulation Authority
- National Electricity Fund

**PHASE II (2000 - 2010)**
- Access of electricity in rural area: 7.8%
- Urban electrification level: 55.12%
- Total installed capacity: 434 MW

- Public Company: 01 (JIRAMA)
- Private Company: 27
DESCRIPTION OF THE INFRASTRUCTURE IN OUR CASE STUDY: village of Ankaranana

Localisation

Daily average solar radiation of the site: 6 kWh/m²
DESCRIPTION OF THE INFRASTRUCTURE IN OUR CASE STUDY: village of Ankaranana

Principles of the installation

Equipement
- 01 power house in storage container type LC8 9m³ : 2.44 m x 2.2 m
- 12 solar modules of 270 Wp : 3240 Wp
- 01 solar regulator of 140 A
- 12 batteries Exide A600 Solar 2V/1200 Ah
- 01 Inverter of 3300 W, 24 V/230 V
- 01 distribution board 230 V with main meter and circuit breaker
- 1700 m of distribution line : wire 2x16 mm²
- 12 streets lights
Users:
- 01 Church using 03 bulbs + 01 socket
- 01 Hospital: 06 bulbs + 03 sockets
- 01 community’s office: 03 bulbs + 02 sockets
- 03 groceries stores using each 02 bulbs
- 48 households using each 02 bulbs
Nota: power of 01 bulb: 11 W

Financial scheme:
- Investment: 73 122 euros: 86% Switzerland’s NGO
  14% government’s subsidy
- Without meter, inclusive tariff per month: 0.393 euro per bulb
  1.429 euros per socket

Operator:
Association FAHAZAVANA, with 02 local technicians trained by the Switzerland’s NGO for the maintenance
DESCRIPTION OF THE INFRASTRUCTURE IN OUR CASE STUDY: village of Ankaranana

Illustration’s photo

Power house and solar module

Regulator – Inverter – Distribution board

Batteries

Street light
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Before</th>
<th>After (2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory diseases (per year)</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Distance for charging cellphone’s</td>
<td>30 km</td>
<td>&lt; 500 m</td>
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<tr>
<td>Rate of exam success (medium school)</td>
<td>70 %</td>
<td>85%</td>
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<tr>
<td>Lighting’s budget allocated per household (monthly)</td>
<td>6.50 euros</td>
<td>0.800 euro</td>
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<tr>
<td>Act of banditry (per year)</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Community’s office can use electronic equipment (desktop, printer, etc...)</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>
CONCLUSION

• Contribution in development of the project is significant
  ➢ Health
  ➢ Security
  ➢ Education
  ➢ Money saving

• This project is among of pilot mini off-grid solar PV in my country, but the final assessment needs more time (01 year isn’t enough).

• As a pilot, its assessment’s result is very usefull to design in social scheme our futur solar PV projetc included in our regional planification.
THANK YOU FOR YOUR KIND ATTENTION