Mobile Enabled Offgrid Electrification

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1.6 billion people live off the grid, still an untapped market!

Solar PV is a solution, but has not yet scaled due to:

**2 MAIN BOTTLENECKS:**

- High upfront investment for customer
- Difficult maintenance & control of units
The next African revolutions: peaceful ones that Mobisol will leverage

- Average Mobile phones per adult in SSA in %
- SSA Rural Electrification Rate in %
- Price for PV in USD/Watt

1600% increase
90% decline
Mobile + Solar = Off-grid electrification

Merging two revolutions

- Average Mobile phones per adult in SSA in %
- SSA Rural Electrification Rate in %
- Price for PV in USD/Watt
Off-grid Solar and mobile technologies provide powerful solutions that have to date been under-utilized

- 1.6bn people live off grid: this is one of the biggest inhibitors to development & poverty alleviation
- Solar PV prices have dropped 90%, making technology affordable to nearly all
- Mobile penetration very high even in remote areas
- The combination of both technologies can be the breakthrough for off-grid electrification

Mobisol’s unique selling points can be a game changer in the industry

- Mobisol’s engineers developed a unique suite of robust and plug&play solar home systems
- Products are affordable (prepaid), powerful (up to 200W) and remotely managed for Bottom of the Pyramid (BoP) clients
- Over the past 2 years, Mobisol has distributed over 2,000 systems to its target market, developing a business model and a blueprint for operations scalable to millions
Mobisol all-in-one service: installation, usage, maintenance & after sales customer service

How it works:

• A Solar Home System is easily installed & trained local technicians are available for help

• Mobisol controller tracks usage remotely

• User pays monthly via phone

• 36 months credit period with 30 days of flexible grace period per year

• System shuts off in case of payment default; impossible to disable without breaking

• Free maintenance for first 3yrs
Mobisol all-in-one service: installation, usage, maintenance & after sales customer service

How it works:

• A Solar Home System is easily installed & trained technicians available for help locally

• Mobisol controller tracks usage remotely, security alarm fitted

• User pays monthly via phone

• 36 months credit period with 30 days of flexible grace period per year

• System shuts off in case of payment default; impossible to disable without breaking

• Maintenance for first 3yrs at no additional cost
Robust, innovative and mature products
Products are robust, mature, plug & play, and easy to service

Product design minimizes need for repair

• Manufacturer solar panel warranty is 20 years
• System designed for easy replacement of controllers – done by local fundis (technicians)
• 3 year warranty on batteries, Mobisol unit technology prevents rapid decline
• Additional warranty possible after 3 years
• Electronics inside unit are manufactured to Mobisol specifications in Berlin, Germany before shipping to Shenzhen, China for assembly

Components are high quality and robust

• Battery has been used worldwide and throughout Africa
• Unit design enhances battery life time with controlled charge cycles
• PV cell technology in solar panels made by Q-CELLS, a reputable German company

Key components are easily repairable with help from database

• Database automatically informs Mobisol Hub when unit is malfunctioning
• Shows what component of unit is causing disruption
• All components can be fixed or exchanged quickly, with a recyclable screwdriver as only tool
### 4 Mobisol products cover consumer needs

**Customers can upgrade easily over time**

<table>
<thead>
<tr>
<th>Product range</th>
<th>30W</th>
<th>80W</th>
<th>120W</th>
<th>200W</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard packing list:</strong></td>
<td>• Battery</td>
<td>• Battery</td>
<td>• Battery</td>
<td>• Battery</td>
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<tr>
<td></td>
<td>• 3 LED lights</td>
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<td></td>
<td>• Pocket Radio</td>
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<tr>
<td></td>
<td>• TV and decoder(DC)</td>
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**Warranty**

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20 years on panel, 3 years on battery and lighting

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**Additional Services**

- Real-time performance monitoring
- Maintenance & repair visits when necessary at no additional costs
- Customer Care call center for complaints
- DC to AC inverter available at extra cost
- TV and decoders available at extra cost
- DC refrigerator available at an extra cost
How it works:

- A Solar Home System is easily installed & trained technicians available for help locally.
- Mobisol controller tracks usage remotely.
- User pays monthly via phone.
- 36 months credit period with 30 days of flexible grace period per year.
- System shuts off in case of payment default; impossible to disable without breaking.
- Maintenance for first 3yrs at no additional cost.
Major investments in powerful IT monitoring back-end: streamlined customer service

Virtual tracking & credit management

- Proprietary database receives real-time usage data for all systems
- Tracks mobile payments, usage of grace period, prevent fraud, automatic SMS reminders

Data collection

- Database aggregates system statistics, e.g. time of usage, appliances used, payment trends
- Data is unique and powerful for sales and credit processes: better target customers based on known preferences, and maintain longer-term relationship
- Statistics collected enable Mobisol to track and measure economic, social and environmental impact
Mobisol’s unique value proposition: prepaid AND powerful AND remotely monitored

Unlike Kerosene or other solar products, Mobisol is:

**Affordable (prepaid)**
- African households pay ~$360/year for energy
- Africans spend >$10 billion on kerosene alone for lighting each year
- **Mobisol** saves ~80% on energy, creating up to 30% more income
- 36 month payment plan makes Mobisol prepaid product highly affordable even for the low-income population

**Saving money and creating income**
- Mobisol is more than just a substitute for kerosene or a generator
- For less money (incremental savings), Mobisol can power many different appliances: multiple lights, mobile charging, radio, TVs, fridges, etc.
- Customers can generate incremental income (e.g. mobile charging business)

**Monitored and maintained remotely**
- Mobisol products can be monitored and maintained remotely
- System tracks SHS in real time and collects detailed user data
- Mobile payments are also recorded
- In case of default on the loan, the system can be remotely switched off, creating a high incentive to pay

Sources: Mobisol survey of >100 customers; IFC/WRI (2007) The Next 4 Billion
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Solar PV is a solution, but has not yet scaled due to:

**2 MAIN BOTTLENECKS:**

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Impact Millions of Low-Income Lives

Units sales create direct impact…

- Expect to sell units to >223,000 low-income households (~1.34M ppl) by 2019
- Study indicates each household realizes $126 net benefit per year owning a Mobisol unit
- Mobisol business in a box’ generates $311/yr. income per household
- Over next 6 years, Mobisol will reach >223,000 households, creating >$129M cumulative income benefit

…But many forms of indirect impact

- Over next 6 yrs., Mobisol will install 29 MW of capacity, saving over 0.22M tons of CO₂ emissions
- Over 223,000 households will lead healthier lives, avoiding kerosene accidents/fumes
- Mobisol will enable thousands of businesses and allow 100,000s of children to study way past light hours
Plan to open 2 more Regional Hubs and 18 more market hubs in Tanzania within the next 18 months.
OUR VISION 2015
## Mobisol product costs

**Customers can upgrade easily over time**

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<td><strong>Down-payment</strong></td>
<td>55 US$</td>
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<tr>
<td><strong>Monthly cost (over 36 mo.)</strong></td>
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