Providing Affordable Off-Grid Energy and Financing For All
## Off-Grid Problem

- **$0.50 / day**
  - Amount of money spent per household / day on bad energy

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>KEROSENE</td>
<td>0.25</td>
<td>90</td>
</tr>
<tr>
<td>PHONE CHARGING + TRANSPORT</td>
<td>0.10</td>
<td>37</td>
</tr>
<tr>
<td>RADIO/ TORCH BATTERIES</td>
<td>0.15</td>
<td>55</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$0.50</strong></td>
<td><strong>$180</strong></td>
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</tbody>
</table>
Global Opportunity

250M homes globally are not connected to the grid

<table>
<thead>
<tr>
<th>Market</th>
<th># of off grid households</th>
<th>Total energy spend / year</th>
</tr>
</thead>
<tbody>
<tr>
<td>TANZANIA</td>
<td>5,500,000</td>
<td>$1.1 Billion</td>
</tr>
<tr>
<td>KENYA</td>
<td>5,000,000</td>
<td>$1.0 Billion</td>
</tr>
<tr>
<td>UGANDA</td>
<td>5,500,000</td>
<td>$1.1 Billion</td>
</tr>
<tr>
<td>GLOBAL</td>
<td>250,000,000</td>
<td>$50 Billion</td>
</tr>
</tbody>
</table>
Can't we offer something better for $50 Billion?

$50 billion spent per year on poor energy by 250M off-grid homes.
CAN THIS BE SOLVED BY THE GRID ALONE?
DIFFICULT TO EXTEND GRID TO RURAL AREAS

Rural economics are expensive!

| COST: ~$1,000 / rural connection |
| REVENUE: ~$4 per connection / month |
| PAYBACK: 20+ years |

Can the government spend this money more effectively?

“LOSSES by TANESCO accounted for 1.3% of Tanzania GDP”

“Reliable and affordable power in urban areas....to help with industrial transformation still badly needed”

HAVE WE SEEN THIS **STORY IN AFRICA BEFORE?**

**TELECOMS**

**BANKING**

**RURAL ENERGY**

**Private Sector Innovation**

?
PRIVATE SECTOR INNOVATION

RURAL CELL PHONE PENETRATION + MOBILE MONEY + SOLAR TECHNOLOGY COST IMPROVEMENTS + INNOVATIVE BUSINESS MODEL = PAY-AS-YOU-GO SOLAR
PAYG SOLAR IS A BOOMING SECTOR

"Half the planet’s population may be best served with PAY-AS-YOU-GO Solar technology…the BEST opportunity in energy services world-wide”

- Ted Hesser – Stanford University Energy Expert

MISSION: To provide high quality affordable energy to all

• Founded in 2012 by same founders as M-PESA

• Founder and global market leader of pay-as-you-go solar
ELECTRIFICATION AT 20% OF THE COST

~$1,000

~$200

GRID

M-KOPA SOLAR

INCL.
- ONLY
CONNECTION

INCL.
- LIGHTS
- RADIO
- TORCH
M-KOPA IS THE CLEAR INDUSTRY LEADER, BUT COMPETITION IS GETTING MUCH STRONGER
2M
People with light tonight
425k
Off-grid homes powered to date
550
new homes
connected daily
1,000 full time staff
CUSTOMER bought an M-KOPA Solar system for a USD $25 deposit

CUSTOMER now saves $0.55 per day on kerosene, instead spends $0.50 per day to use solar on a “pay as you go” basis

All payments made by mobile phone top up (M-PESA or similar, no cash)

All solar systems monitored and controlled in real time by GSM connection

After one year of payments, CUSTOMER owns their system.

With a good credit record, CUSTOMER can upgrade for more power.
## M-KOPA 4

<table>
<thead>
<tr>
<th></th>
<th>Year 1 (Tshs)</th>
<th>Year 2 (Tshs)</th>
<th>Year 3 (Tshs)</th>
<th>Year 4 (Tshs)</th>
<th>Year 5 (Tshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEPOSIT</strong></td>
<td>$22</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>DAILY RATE</strong></td>
<td>$0.50</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>LOAN PERIOD</strong></td>
<td>395 Days</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$190</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
| **SAVINGS (CUMULATIVE)** | $190 $380 $570 $760
M-KOPA Upgrades

100,000+
To date

- School Fee Loans
- Bicycles
- Fertilizer / Seed
- Water Tanks
- Water Filters
- Chickens
200k Positive Credit Records
Pricing TBD – Pending Tax Ruling
How we got here

- 1st prototype developed
- 1st 100 customer activations
- 15 staff

100 homes connected
How we got here

- Successful pilot complete
- Series A investment
- 50 staff

500 homes connected
How we got here

- Launch with Safaricom
- M-KOPAnet system release
- 200 staff

5,000 homes connected
How we got here

- First sales in Uganda
- 2nd generation product release
- 500 staff

50,000 homes connected
How we got here

- First commercial loan for off-grid solar
- Tanzania pilot launch & Ghana licensing
- 1,200 staff

150,000 homes connected
How we got here

- Launch of upgrades for paid-up customers
- 4th generation product release
- $19m equity round with Generation IM, Branson and Case
- 2,000 staff
HIGH QUALITY SERVICE

2-YEAR WARRANTY

CUSTOMER CARE
7-DAYS A WEEK

SERVICE OUTLETS
AROUND THE COUNTRY
Data Is the Key

- 300K+ live connections
- 10,000,000 payments per year = 30,000 / day = 1 every 3 seconds
- Geographic mapping
- 1M+ battery readings per day
- Sunshine data from 300K+ rooftops
Where to next…?
Farmer Productivity

• Performance of hardware in the field
• Sunshine data and atmospherics
• Builds opportunities for agricultural products
Impact of M-KOPA

US$225 million projected savings by M-KOPA customers

37.5 million hours of kerosene-free lighting

94% of customers report their children can now study better at night
CHALLENGES TO SCALE

SOLAR HIT BY NEW TAXES –
• 18% VAT and 25% DUTY leading to a **20% price increase**, projected 40% sales drop

HIGH INITIAL START UP COST FOR NEW INDUSTRY
• High cost of capital from foreign currency risk,
• High interest cost on working capital
• High cost of training new work force with new skills
• High labour cost/taxes/work permits
Unit economics - off-grid energy options for light

<table>
<thead>
<tr>
<th>Option</th>
<th>Levelized annual cost ($/yr)</th>
<th>Down payment ($/person)</th>
<th>Recurring cost ($/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone charging</td>
<td>~30-40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Candles</td>
<td>~30-40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced lantern</td>
<td>~50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerosene</td>
<td>~45-65</td>
<td>~6</td>
<td>~40-60</td>
</tr>
<tr>
<td>Solar kits 4-20 watts</td>
<td>~60-150</td>
<td>~6-15</td>
<td>60-144</td>
</tr>
<tr>
<td>Micro-grid</td>
<td>~85-150</td>
<td>~6</td>
<td>80-120</td>
</tr>
<tr>
<td>Solar home systems &gt; 80 watts</td>
<td>~120-500</td>
<td>~6</td>
<td>80-420</td>
</tr>
<tr>
<td>Grid Extension</td>
<td>~170+</td>
<td>~5</td>
<td>80-120</td>
</tr>
<tr>
<td>Low quality lantern</td>
<td>~5-175</td>
<td>~5</td>
<td>0-170</td>
</tr>
<tr>
<td>Alkaline batteries</td>
<td>~5-210</td>
<td>~5</td>
<td>0-205</td>
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