ENERGIZING ONE MILLION RURAL HOUSEHOLDS IN INDIA: A REALITY CHECK

Troy Hodges

Bangalore, 23 April 2015
Micro Perspectives for Decentralized Energy Supply
ENERGY ACCESS SITUATION IN INDIA

- 77 million households unelectrified
- 70-75 million still without access 2024
- 2/3 without access live in 6 states
- 20 million with less than 4 hours power per day

Source: Census of India (2011); The Climate Group (2015)
RESEARCH QUESTIONS

1. What are the critical problems and solutions for scaling up DESCOS? How can the right solution be applied to the right sector need at the appropriate time?

2. Is there a successful business model that can be scaled up to reach 1 million households?
OVERVIEW OF ENTERPRISES

SHS Providers

Distributed RE

Source: The Climate Group (2015), The business case for off grid energy in India
WHAT ARE THE BARRIERS?
SHS: PRIVATE SECTOR PERSPECTIVE

Figure 2. What are the largest barriers that hamper development of the stand-alone renewable energy sector? (% of total respondents*)

- Limited access to finance at different stages of project/enterprise development
- High cost of renewable energy technology solutions
- Lack of access to knowledge (market assessments, product design, etc.)
- Lack of adequate capacities
- Lack of awareness among communities
- Inadequate public financial support mechanisms
- Underdeveloped local supply chains
- Administrative barriers
- Limited access to tailor-made financing for end-users
- Present market distortions
- Regulatory barriers

* Respondents could choose up to four answers

Source: IRENA (2015), http://goo.gl/bBTmBr
MINIGRIDS: PRIVATE SECTOR PERSPECTIVE

Source: IRENA (2015), http://goo.gl/bBTmBr
BARRIER 1: OFF-GRID POLICY CONTEXT — CAUTIOUS OPTIMISM

- Targets: 2 GW Off-grid solar by 2022; 24x7 Power for All by 2019

- Promising:
  - Excise duties on off-grid solar removed Dec 2014
  - Inclusive policy formation — High Impact Task Force
  - Banks eligible for solar lending expanded in NSM Phase II

- Just in: Off-grid solar subsidy axed (!)
  - MNRE budget woes

- Wish list:
  - Tradeable tax credits
  - Policy clarity!!!
BARRIER 2: GAP IN FINANCING NEEDS & REQUIREMENTS

<table>
<thead>
<tr>
<th>Equity and quasi-equity</th>
<th>Long term loans (8-10 year loans)</th>
<th>Short term (bridge, working capital and 2-3 year term) loans</th>
<th>Subsidies (One-time, FITs, GBIs, ...)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantum of capital potentially available for Rural DRE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of capital providers exploring Rural DRE*</td>
<td></td>
<td></td>
<td>Driven by budgetary allocation</td>
</tr>
<tr>
<td>Capital provided matches project tenure of Rural DRE projects</td>
<td></td>
<td></td>
<td>Most Subsidies available as one-time and up-front</td>
</tr>
<tr>
<td>Will attract entrepreneurs and ESCOs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Breakthroughs:**
  - Simpa Networks: $4 million debt
  - OMC: $3 million equity + SunEdison partnership

INVESTIGATING THE MYTH OF SCALABILITY
### SCALABILITY: IMPACT TO DATE (2014)

<table>
<thead>
<tr>
<th>Company</th>
<th>Households reached</th>
<th>Delivery type</th>
<th>Founding</th>
<th>Active states</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simpa Networks</td>
<td>7,000</td>
<td>SHS</td>
<td>2011</td>
<td>UP</td>
<td>UP--</td>
</tr>
<tr>
<td>Boond</td>
<td>6,000</td>
<td>SHS, DRE</td>
<td>2010</td>
<td>UP, Rajasthan</td>
<td>UP, Rajasthan--</td>
</tr>
<tr>
<td>SELCO</td>
<td>200,000</td>
<td>SHS</td>
<td>1995</td>
<td>Karnataka</td>
<td>Karnataka--</td>
</tr>
<tr>
<td>Onergy</td>
<td>40,000</td>
<td>SHS, DRE, Solar pump</td>
<td>2009</td>
<td>West Bengal, Jharkhand</td>
<td>West Bengal, 1mm by Jharkhand, 2016, 10mm Orissa by 2022</td>
</tr>
<tr>
<td>OMC</td>
<td>60,000</td>
<td>DRE</td>
<td>2011</td>
<td>UP</td>
<td>10mm people by 2020</td>
</tr>
<tr>
<td>Mera Gao</td>
<td>20,000</td>
<td>DRE</td>
<td>2010</td>
<td>UP</td>
<td>1mm people by 2017</td>
</tr>
<tr>
<td><strong>Total SHS</strong></td>
<td><strong>900,000</strong></td>
<td><strong>SHS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total DRE</strong></td>
<td><strong>100,000</strong></td>
<td><strong>DRE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Company websites; Discussions with enterprises; The Climate Group (2015)
CASE STUDY 1: ADB MINIGRID FUND

- Total investment: $94.5 million; $34.5 million from CTF

Clean Technology Fund

Concessional Funds (~2% interest)

Asian Development Bank

Private Equity investors/Commercial Banks

Country/Regional Impact investors

Leveraged investment

Developers

Equity/Seed investment

Blended CTF + ADB Concess. Debt (~8% interest), Equity, Guarantees
CASE STUDY 2: INFUSE VENTURES

- INR 110 crore venture capital fund ($18 million)
- Public-Private-Academia partnership
- First and only dedicated sustainability & cleantech incubation fund in India

Types of investments
- Seed capital: ~ INR 25 lakhs ($40k)
- Pilot stage equity investments: INR 1-2 crore ($160k-320k)
- Growth stage equity investments: INR 8-10 crore ($1.3mm-1.6mm)

Source: INFUSE Ventures (2015), infuseventures.in
DISCUSSION
THANK YOU!