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Scaling up energy access through
productive end use

Developed/Deployed 70 kW Microgrid Pilot



Supported by



- Long development time not sustainable
- Structured subsidies required

Rural microgrid project : Productive end use(PEU) loads



Grinding Mill – 1.8 kW



Computer Center – 2.5 kW



Petrol Pump – 3.5 kW



BTS tower – 0.8 kW

A Solar Water Pump story



Rivers drying up...





As a result...



And the wells are being dug deeper and deeper every year !



- Diesel generators can operate from 5 to 12 hours daily
- Consumes 1 liter of diesel per hour



A charge of Rs. 250 /hr for irrigating fields to the farmer

Installed a solar based water pumping solution

2100 Watt panels

2 HP AC pump





- Access to cleaner/cheaper source of water
- Very little maintenance required
- Pilot projects conducted at 3 sites using private money
- Leased costs < Diesel costs
- Learnings and operational data vital to help optimize the design

PEU: Cyber Cafe



- Computer center in Chyasmitar charges \$1 per hour of internet use i.e. \$ 10/kWh

PEU: Grinding Mills



- Diesel generator based grinding mills charge up to \$ 0.1/kg i.e. \$ 3.50/kWh !!
- VFD based grinding mills can offer 15% investor return at \$0.03/kg

PEU's powered by solar



Telemedicine



Mobile Banking



Access to ICT



Water Pumps



Rice/Seed Grinding Mills

- PV systems integrated with an appliance/specific business
- Can be replicated with little donor support
- Phased approach -> start with PEU anchor loads, then extend to microgrids

Opportunity for standardization around PEU's

- Move on from 'one-off projects' and deliver replicable models
- Standardized units
 - Solar water pumping packages offering certain amount of water per day
 - Grinding mills offering certain amount of output per day
- Identify a unit of system size and identify dimensions to fine tune
- Identify the sensitive design parameters
- Propose exploitation path based on those sensitive parameters

Outlook

- ‘bootstrapped approach’ with PEU’s easier to scale
 - Low project development costs
 - Faster payback
 - Immediate value to the users
- Further opportunity to aggregate projects together to increase capital requirements
- Industry led approach open source approach to developing standards (technology design, financing structure, O&M practices) required

Thank You!



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