



SOCIAL ENTREPRENEURSHIP TO IMPROVE RURAL ENERGY ACCESS

Karan Takhar

LIGHTING ASIA
Catalyzing markets for modern off-grid energy
INDIA



BACKGROUND

- More than \$2 billion people live on less than US\$3.10 a day, limiting access to essential goods and services including electricity (World Bank)
- To reach the poorest and effectively contribute to sustainable local development in the long term, a scalable electrification business model must be developed that provides a positive ROI and also boosts the economic agency of underserved communities
- A successful model should:
 - Create local employment opportunities
 - Increase community income through reduced electricity costs or an energy sharing framework
 - Enable marginalized groups to pay for products through innovation in micro-financing mechanisms

OBJECTIVES

Perform an analysis of 6 successful enterprises in the energy access space:

Dharma Life	Frontier Markets	Simpa Energy	ONergy Solar	Selco	Barefoot college
-------------	------------------	--------------	--------------	-------	------------------

Key metrics:

Number of rural entrepreneurs created over time	Strength of training models (\$ generated by entrepreneurs and retention rates)	Best micro-financing structures in place (products sold on credit)	Future scalability (historical performance and use of technology)
---	---	--	---

Outcome: A scalable distributed generation model that can be applied in other developing countries

CURRENT METRICS

Barefoot college:

- 2200 solar mamas
- 93 countries
- 1000000 people with light
- Founded in 1972

Dharma Life:

- 16000 rural entrepreneurs
- Earn/m: INR 1000 – 8000
- 40000 villages
- 13 states
- Founded in 2010

Onergy Solar:

- 3000+ trainings conducted
- 300+ institutions solarized
- 250 solar microgrids
- 12 states covered
- Founded in 2009

Frontier Markets:

- 3000+ rural entrepreneurs
- 4 states served
- 1000000 products sold
- 700k customers engaged
- \$10M overall turnover achieved
- Founded in 2012

Simpa Energy:

- 25 branches (3 states)
- 3000 village level entrepreneurs
- 80000+ units sold
- Founded in 2011

Selco :

- Founded in 1995
- 510 employees
- 67 energy centers
- 5 states served

ANALYSIS WILL BE PUBLISHED AS A RESEARCH PAPER

1. For each model, what are the growth limiting factors? Is there any scope for improvement?
2. What is my definition of a successful model (references and discussion included) and what should be the priority - cost efficiency, higher profits, innovation, environment, etc.
3. Key aspects which made the particular models successful
4. Will rank the selected models based on key parameters and statistical analysis

ANALYSIS WILL BE
IN REPORT FORM

APPENDIX

Slides

Topics

1-4

Frontier Markets: Using Technology to Scale

5-8

Dharma Life: Entrepreneurship Development Program

9-11

Simpa Energy: Immersing Technology into Financing

12-14

ONergy Solar: Small Energy Entrepreneurship via RECs

15-19

Selco: Innovation in Financing for 'Unbankable' communities

20-22

Barefoot College: International yet Local

23-26

Next steps: 3 field projects

FRONTIER MARKETS CASE STUDY

- Built a platform to connect Last Mile customers to essential products/services
- Four main pillars
 - Rural women entrepreneurs
 - Local Fulfillment infrastructure
 - E-commerce platform
 - Consumer data-base

[Interview with founder: Ajaita Shah](#)

700,000
Customers engaged

1,000,000
Products sold

3000+
Rural Women
Entrepreneurs trained

123 employees hired
from local villages

\$10 M
Overall turnover
achieved

4 states served

FRONTIER CUSTOMER JOURNEY



Introduction to Frontier Markets

Sahelis come to their home, or attend marketing event hosted by Frontier Markets in their community



Customer tries product

Look at Saheli's ecommerce app, and can see and touch demo units of products



Purchase the product or service in cash

Saheli then places order for customer on ecommerce app



Purchase arrives to their home within 48 hours

Frontier markets arrives at the customer's house within 48 hours to deliver and install the product



Stay in touch with their Saheli's for new products and services

Saheli's visit their home regularly to share about newly available products and services and provide maintenance

SOLAR SAHELI TESTIMONIALS



- “Joining Frontier Markets as a Saral Jeevan Saheli has been the best decisions of my life. It has given me recognition, respect and financial independence”
- “I drive away the darkness and bring light into the community” Sahuni, Sinthli village
- “I’m proud of what my mum is doing, she was uneducated and she’s now educating the whole village” daughter of Saheli, Miina, in Seeli Baori village
- “I want to create impact and bring light to the community and can now save money, pay the scholarship of her kids and use a smartphone”

FRONTIER MARKETS: USING TECH TO SCALE

Is your target community ready?

- Rural India has a projected consumption of \$1.2 trillion by the year 2030
- Average rural family today has 17k rupees annually to spend on discretionary purchases – on purchases beyond basic necessities (Shah, 2019)
- Jio and Airtel have helped to penetrate rural India with 4G connectivity but still many untapped

Does your service actually work offline?

- Before writing code, Frontier built a functional and effective online commerce infrastructure
- For years, Frontier Markets' women entrepreneurs have been able to accept orders from customers in remote, Last Mile villages, process payment and get the product delivered
- Used the solar sahelis to help design the ecommerce platform

Are you willing to invest in skilling and tech tools?

- Tech adoption for last mile customers was not as simple as “if you build it, they will come”
- Major barriers to adoption: low digital literacy, low smartphone ownership
- Train the trainer model:
 - Converted a dozen of most tech savvy women into full-time field based tech support
 - They are responsible for training and supporting women as they get onboarded to using technology to do their work—and can help them navigate the anxieties associated with tech adoption
- Most significant investment = hardware itself

DHARMA LIFE CASE STUDY

[Interview with founder: Gaurav Mehta](#)



To date, Dharma Life has created a network of more than 16000 rural entrepreneurs



They reach more than 10 million beneficiaries in over 40000 villages across 13 states



More than 75% of these are women



DLE Entrepreneurs earn between INR 1000 – INR 8000 per month



Sell and distribute products including quality solar lanterns and home systems, water purifiers, modern cook stoves, sewing machines, nutritional supplements and services such as digital literacy and behavior change campaigns

DHARMA LIFE MODEL



Recruits people with basic education, who are in need of money and do not have a full-time job



Typically recruit subsistence farmers and women and then provides entrepreneurship development training



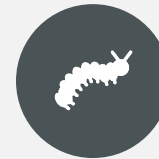
Provides it recruits products that address rural needs



Sources its products from retail, FMCG and social enterprise companies



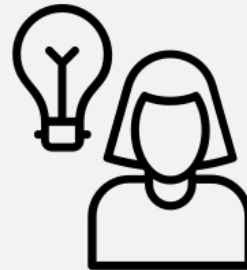
Ships products to distribution points in a district where a local distributor (chosen by the company) and an enterprise leader (on the company's payroll) ensure that the goods reach the local entrepreneurs



If a product fails to find traction among villagers, the entrepreneur returns the unsold items to Dharma, which bears the loss. To counter failures, Dharma incorporated a mentoring programme: an enterprise leader in the district has weekly feedback visits with members of team

CHALLENGES FOR WOMEN ENTREPRENEURS

- Business management skills:
 - Compared with men, women entrepreneurs have lesser exposure to formal business training, especially in marketing and financial management and are more likely to operate their enterprises from home
- Lower confidence
 - Women tend to display lower confidence in their abilities as entrepreneurs compared to male counterparts
- Smaller networks
 - Women entrepreneurs operate in smaller, less-diverse networks than men and are less likely to seek support from their social networks to grow their businesses
- Limited access to finance
 - Banks and mainstream financial institutions still consider women to be risky borrowers and often doubt their ability to succeed



IFC ENTREPRENEURSHIP DEVELOPMENT PROGRAM

- Dharma Life successfully increased its network of entrepreneurs from under 5000 in 2015 to over 16000 in 2019, of which 75% were women. Prior to this training, women represented only 15 – 20% of their entrepreneur network
- Women DLEs who underwent the IFC-designed training increased their average monthly income by almost seven times (increase from INR 63 to INR 478)
- DLEs recruited using IFC screening tools reported higher incomes compared to trained DLEs who were not recruited using screening tools (INR 3272/USD 48 vs. INR 2786/USD 40.97)

Figure 1: Entrepreneurship Development Program created by IFC and Dharma Life

Basic Entrepreneurship Development Program

Approach and Methodology: An instructor led blended learning program focusing on overall personality development of the entrepreneurs.

Modules

- Marketing - Concepts and Promotional Skills
- Sales - Concepts and Selling Skills
- Financial Management
- Business Planning
- Tracking and MIS
- Behavioral and Soft Skills

Program Details

Program	Classroom Training	On Field Training	Total
TEJASVINI I	15 hours	5 hours (to be started)	20 hours

Experiential Learning

- Participatory tools like role plays, case studies, GDs facilitating the process of meaningful reflection, engagement and skilling on real life field situations

Discovery Learning

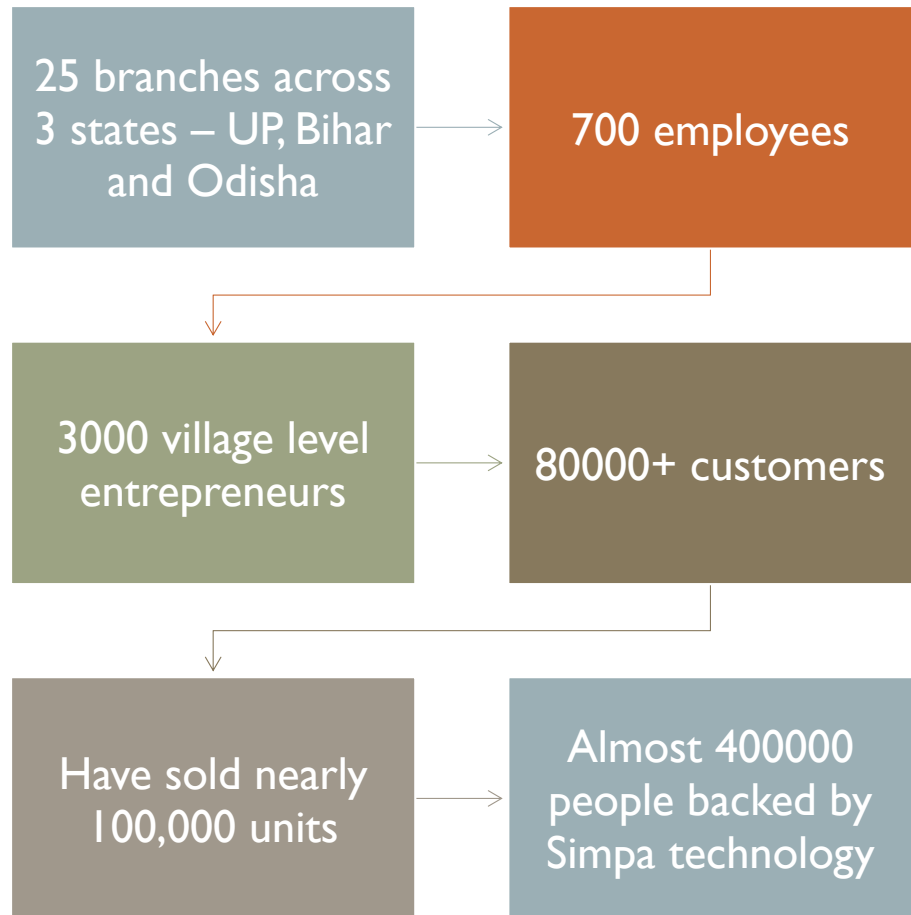
- Field study on real life market assessment to understand the pulse of the market
- Games, activities and trainer tales to discover the softer aspects of personality needed to become a successful entrepreneur

Simulation Based Learning

- Extensive simulations on real market to acquire skills in marketing, promotion and acquiring customers

SIMPA ENERGY CASE STUDY

[Interview with founder: Piyush Mathur](#)



SIMPA MODEL

Apply

VLE and Rural sales associates visit the homes to assess energy needs of rural customers and help them apply for one of the simpa's solar home systems by paying small down payment of INR 2000 - 3000

Approve

In-house credit team assesses the eligibility and quality of the application basis and help customers get financing from banking partners

Install

Simpa makes delivery of SHS at the doorstep of the customer, which is installed by Simpa Certified Technician

Pay-Go

doorstep collection and service to customers for making monthly repayments

Own

After repaying the loan for contract period of 1-3 years, customers get ownership of the system and get free energy for lifetime

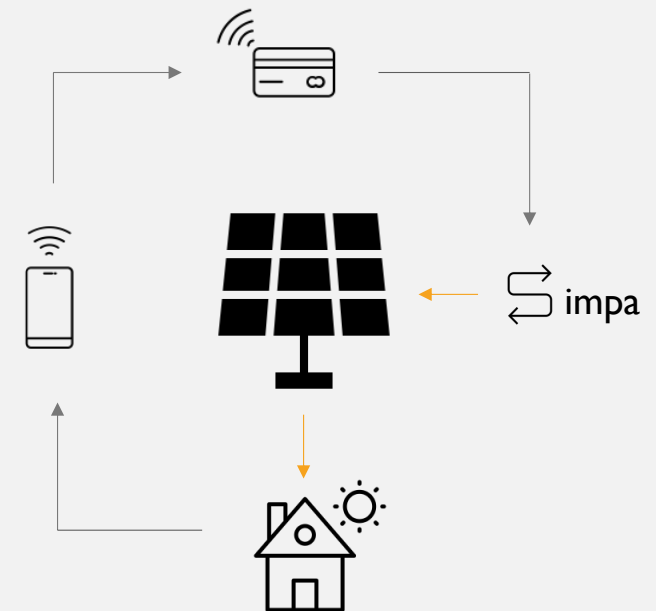
IMMERSING TECHNOLOGY INTO FINANCING

PAYGO TECHNOLOGY

- Pay small down payment and then keep paying for the system over time
- System would deactivate if they don't pay, and as they pay, the system would be switched back on (metering system)
- Panel is continuously talking to us, telling us how many watts are generated, and when he pays the panel automatically gets the communication, it switches on, gives the output, if the customer doesn't pay, the panel shuts off automatically

FINANCE MODEL

- Initially would finance the system, so it used to be on Simpa books (minus the down payment)
- Now commercial banks are lending to the end customer...now the bank is lending to the customer, Simpa is facilitating that and helping the bank to recover the money using this technology



ONERGY SOLAR CASE STUDY

[Interview with founders: Vinay and Piyush Jaju](#)

12 states covered

20 Renewable energy centers

3000+ trainings conducted

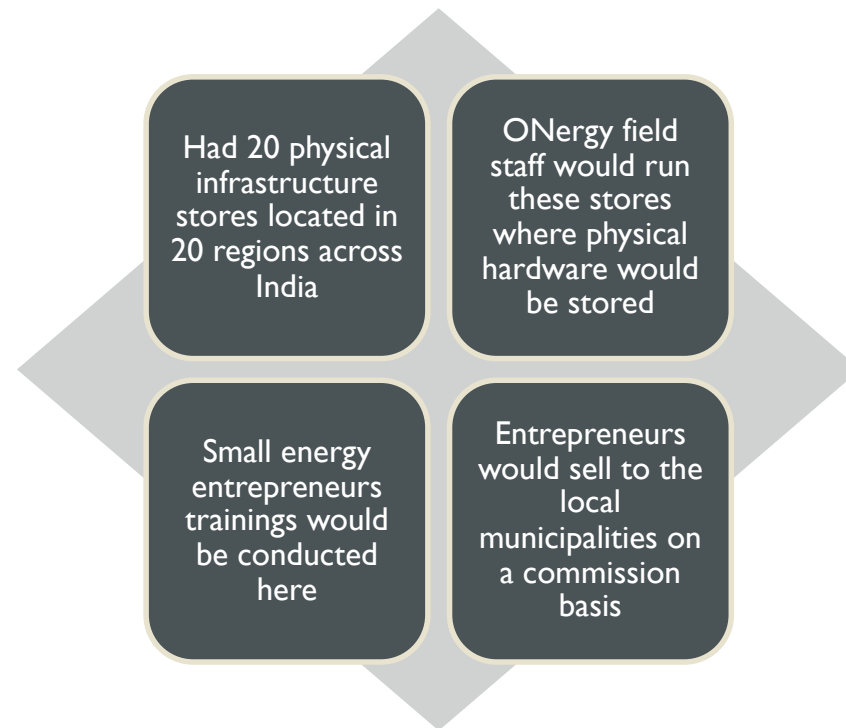
300+ institutions solarized

250 solar microgrids

5000+ solar street lights

impa



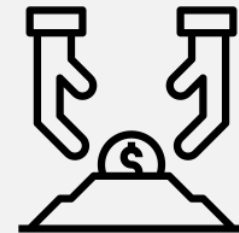
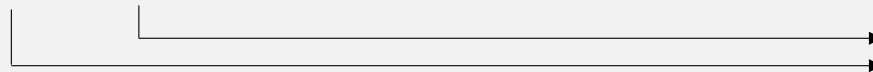


RENEWABLE ENERGY CENTER MODEL

SMALL ENERGY ENTREPRENEURSHIP

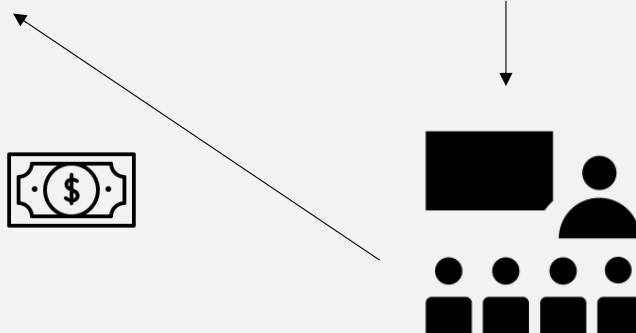
Normal process

Social Enterprise → Dealers → Retailers → End consumer



Small Energy Entrepreneurship model

Social Enterprise → Local field office → Entrepreneur → End consumer



SELCO CASE STUDY

To create a sustainable business by promoting energy services in the underserved and un-served areas of India

To build a sustainable linkage between energy services and income generating activities

To build a strong network in the rural areas for solar systems and other energy services

[Interview with founder: Harish Hande](#)

Established in 1995

5 states served

510 employees

90% of employees from local areas

67 energy centers

1 million people impacted

ORGANIZATIONAL STRUCTURE

Executive Leadership

Assistant General Manager

Assistant General Manager

Senior
Manager

Senior
Manager

Senior
Manager

Senior
Manager

Senior
Manager

Senior
Manager

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

Energy
Service
Center

ORGANIZATIONAL FUNCTION

ENERGY SERVICE CENTERS

- Have staff located in a small – mid-sized provincial town and each ESC coordinates the local sales and marketing, installation and after-sales service of the particular energy service to its customers

SENIOR MANAGERS

- All ESCs operated in a given area are administered by a group of Senior Managers. Each Senior manager oversees 5 branches and is responsible to provide management assistance, ongoing training, sales and marketing efforts and technical assistance

ASSISTANT GENERAL MANAGERS (AGMs)

- AGMs operate out of regional offices and oversee all operational activities across 50+ branches. The AGMs work closely with SELCO HQ for all technical components and equipment procurement, operating procedures, component R&D, quality

EXECUTIVE LEADERSHIP

- This team is based out of the HQ. They oversee company operations from the Bangalore office.

CHALLENGES TO FINANCING: 8 SELCO PROJECTS

“System would have been affordable only if it was being financed based on the cash flows of the beneficiaries—something that no institutional financier would offer these migrant workers living without any formal documents on government land for 20 years”

“Lack of awareness of how the light works on solar energy was further complicated by financial barriers as their settlements were migratory in nature: makeshift shanties without legal documents”

“Financial barrier of down payment”

“In order to avail the loan certain bank charges were mandatory as part of the documentation process and these charges were too high for villagers to pay for”

“At first glance this is an unsustainable installation for a social enterprise such as SELCO because of the extreme transaction costs required to create awareness that would generate a critical number of enquiries that would spearhead the project to scale”



FINANCIAL INNOVATIONS FOR ENERGY ACCESS

Solar financing via Joint liability groups:

- CKGB agreed to finance the systems but through groups of ten families forming a Joint Liability Group (JLG) which would in turn receive financing from the bank
- Primary characteristic of a JLG is that each family will be equally liable for the loan thereby socially pressurizing each other to ensure timely repayments
- Different than a self-help group as a JLG will not earn any income from facilitating the financing

100% guarantee of loan:

- As part of the model, every month, a part of the deposit was returned to SELCO after completion of the repayment to reduce its risk
- Drawback: reduces risk of MFI and also jeopardizes replication

Financial barrier of down payment overcome with REEEP support, covering 15% of loan:

- SELCO covered a percentage of documentation and transaction costs, but it was important to encourage the community to experience the workings of a bank and in turn their procedures
- 85% of the loan could then be repaid on a monthly basis leading to affordable monthly payments for villagers

Women Self-help group:

- Group has provided a credit facility for loans to its 15 women members to help them in setting up micro-enterprises
- SHG established a micro-solar enterprise to charge 30 batteries at a central solar station with financing support from the local bank branch
- First bank loan covered 15 solar light systems after pilot project

BAREFOOT COLLEGE CASE STUDY

[Interview with founder: Bunker Roy](#)

Founded in 1972

93 countries

2200 solar mamas

1300 villages

18047 solar systems
installed

1 million people with
light

INTERNATIONAL YET LOCAL



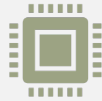
Village-based solutions

Create solutions that work at the village level with a combination of traditional skills and experiential learning



Village wisdom

first use the knowledge, skills and wisdom found in villages for its development before employing skills from outside



Appropriate technology

Use sophisticated technology, but it should be in the hands and in control of the poor communities so that they are not dependent or exploited



Dynamic education

Recognize and value the difference between literacy and education



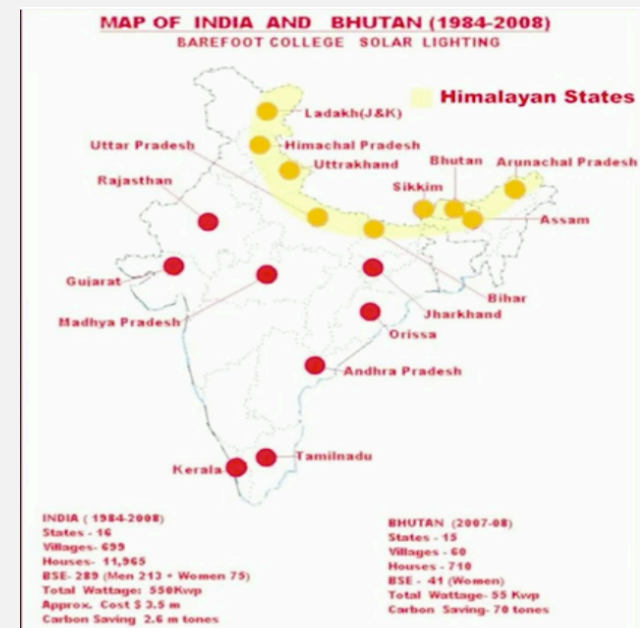
Women first

Respect the equality and outstanding capability of women

SOLAR MAMAS MODEL

**“What’s the best way of communicating in the world today?
television, no, telegraph, no, telephone, no....telewoman” - Bunker Roy**

- Fly women from their villages to Barefoot’s campus in Tilonia, Rajasthan
- Trainings last for 6 months
- Use sign language and body language to communicate and train solar mamas from different countries
- After training ends, solar mamas go back to their villages and train other village elders



THREE FIELD PROJECTS



1

BAREFOOT
COLLEGE :
WOMEN
PROSPER
INITIATIVE

- Objectives of the initiative
 - Create 10,000 jobs for female entrepreneurs in the clean energy sector
 - Serve 50,000 households with access to clean, affordable light
 - Be the single largest deployment of renewable energy hardware to the poor, in India's history
 - Develop a market driven, gender revolution touching 1 million of the poorest women in India
 - Realize the potential to create +\$21.4 million in GDP within 3 years
- Methodology:
 - Will be living on the Barefoot campus for 3 weeks analyzing how this model is being implemented and about the solutions to the pressing challenges in implementing such a large initiative

2

TEST PILOT PROJECT: CONSUMER AWARENESS CAMPAIGN WITH DEVIDAYAL SOLAR

- Pilot project objective: Marketing campaign to increase awareness of usefulness of solar refrigerator product
- Constraints of local area:
 - Reliable power
 - Inadequate transportation facilities
 - Remote location and customer connectivity
 - Availability of skilled manpower locally
 - High ambient temperature -40 degrees Celsius
- Methodology:
 - Will spend two weeks driving around in a solar refrigerator equipped truck across the state of Rajasthan and UP

3

FIELD PROJECT: INSTALLING MICROGRID IN RURAL VILLAGE WITH ENERGY SOLAR

- Objective: Learn about the process of installing rural microgrids in remote villages
- Methodology:
 - I will be fully financing a rural microgrid electrification project (USD \$5000)
 - Village has no access to electricity and is a 2 day drive from the closest urban center, Kolkata, the capital of West Bengal
- Timeline:
 - The whole process will take three weeks from site survey to final installation and I will be engaged writing a study throughout