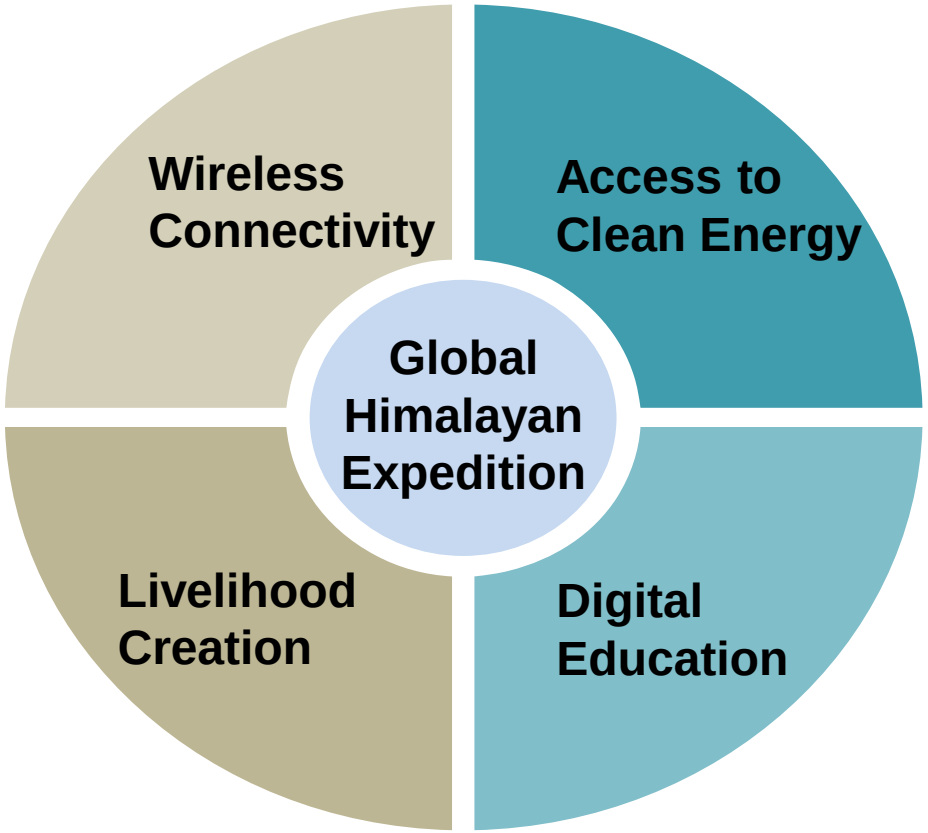
Lighting up the Roof of the World

Global Himalayan Expedition

Core Objective

Global Himalayan Expedition leverages tourism and technology to provide **Clean Energy, Digital Education, Livelihood Creation, and Wireless Connectivity** to remote mountainous communities



Vision & Mission

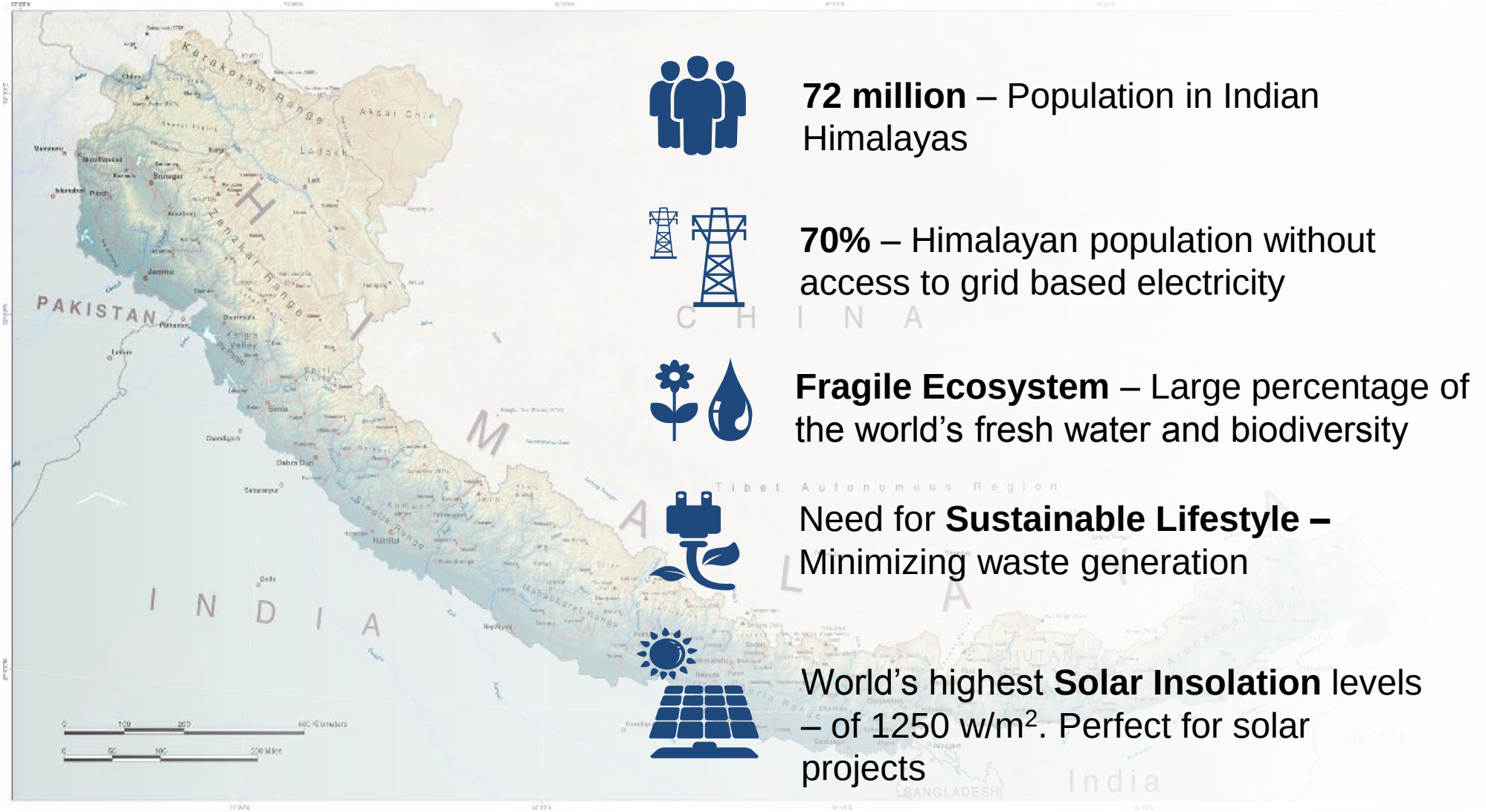
Vision

To provide energy, education and connectivity access to remote communities in a sustainable manner

Mission

To impact 1 million lives and in the process create 1000 entrepreneurs in the next 5 years

The Himalayan Situation



72 million – Population in Indian Himalayas

70% – Himalayan population without access to grid based electricity

Fragile Ecosystem – Large percentage of the world's fresh water and biodiversity

Need for **Sustainable Lifestyle –** Minimizing waste generation

World's highest **Solar Insolation** levels – of 1250 w/m^2. Perfect for solar projects



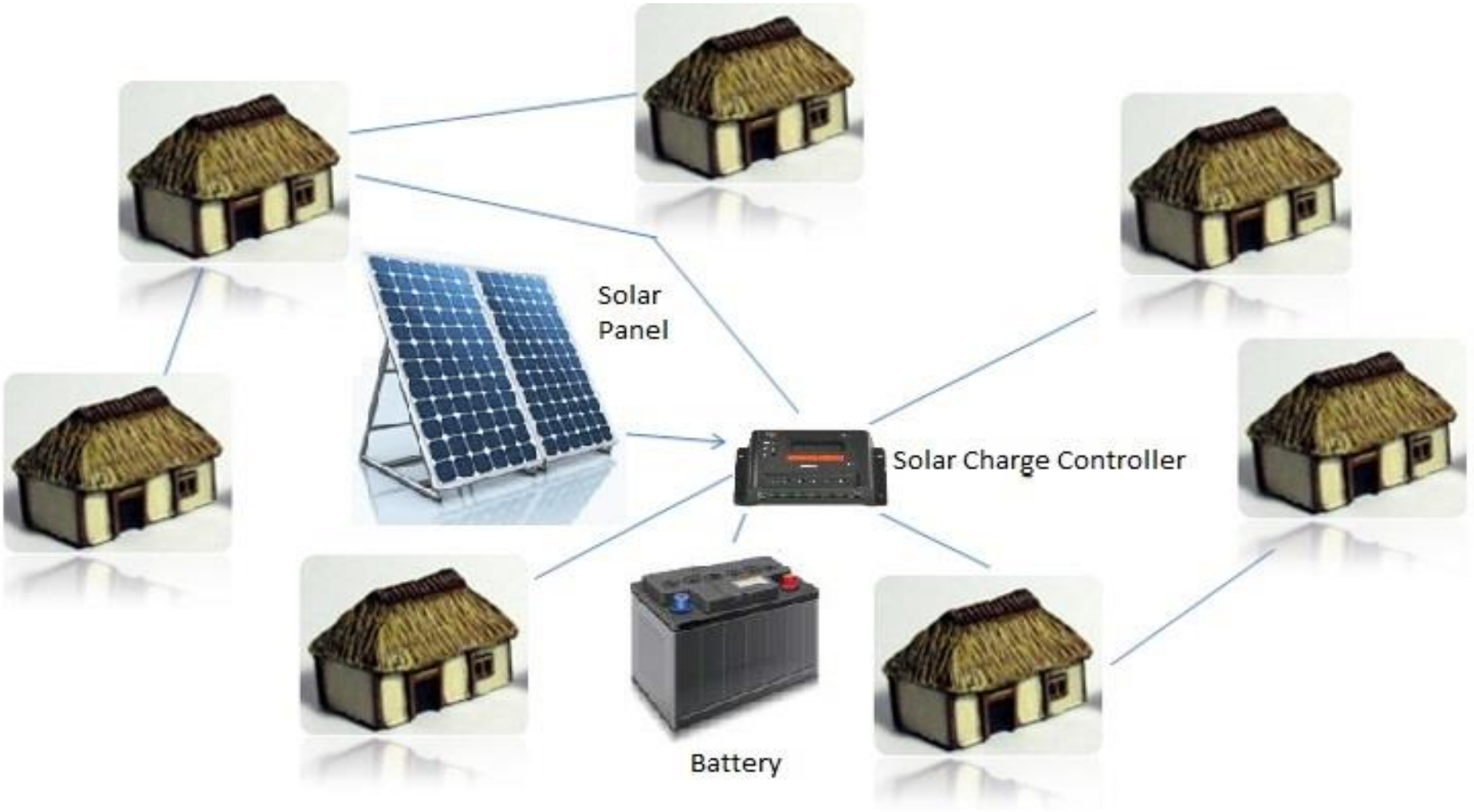



29 Villages Electrified
15500+ Lives Impacted





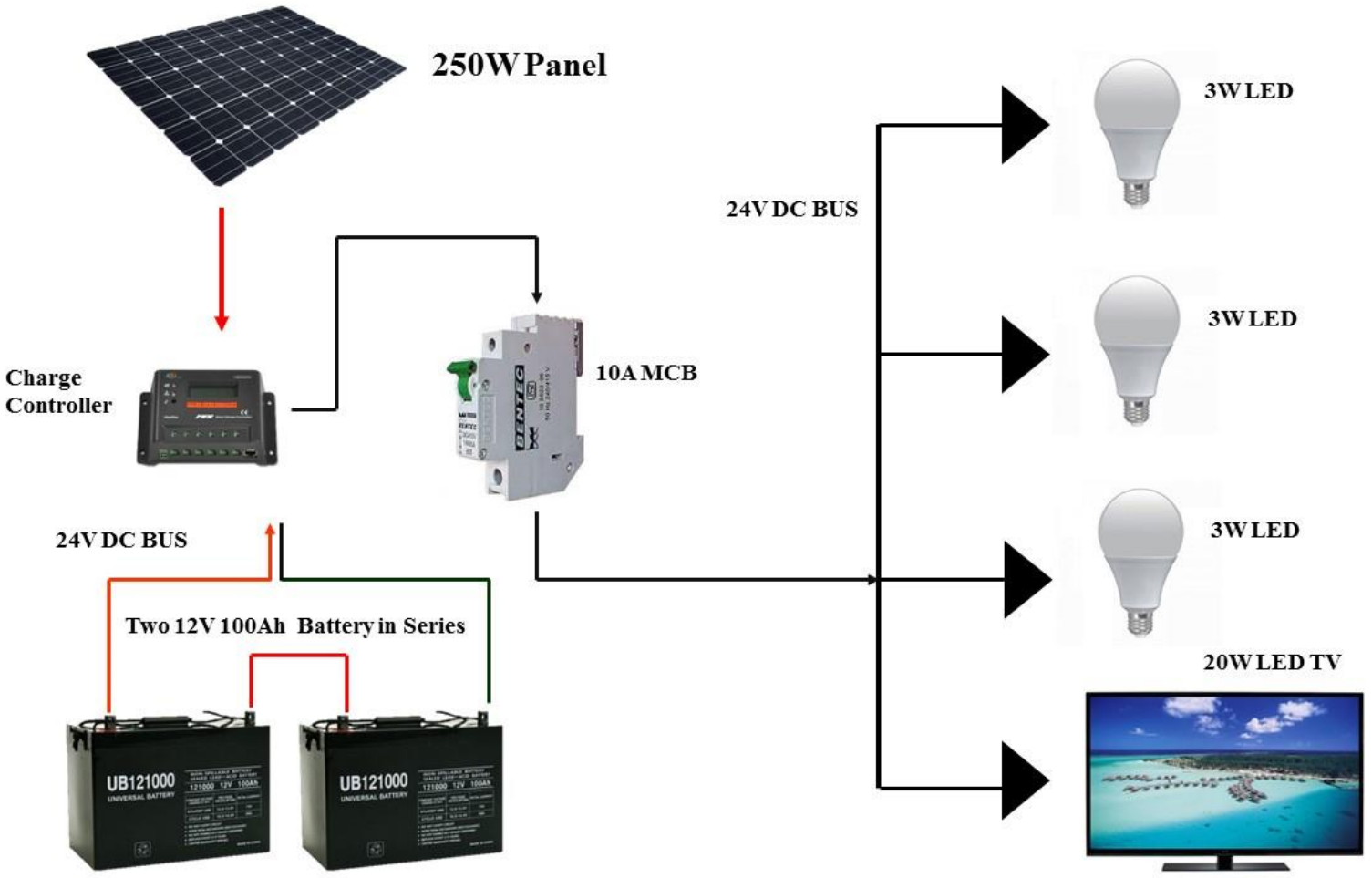

Technology - DC Solar Microgrid



Why DC Solar microgrid and not AC?

- DC highly efficient than AC– **No conversion losses**
- Safe and Risk free for remote villages – **No Shock**
- Easy to operate and maintain by villagers – **Easy Operation**
- Same wiring for **upgradability to AC** in future
- Local capability development for maintenance is easier.
- Better LED Drivers functioning with more Lumens than AC
- DC product ecosystem available – DC LED TV, DC Grinders
- **LESS INVESTMENT FOR MAXIMUM IMPACT**

Single Line Diagram - DC Solar Microgrid



Sumda Chenmo – The 11th Century village

Village: 3 days trek from the nearest road

Sumda Chenmo, Ladakh

17 August, 2014 19.40 pm

Sumda Chenmo, Ladakh

18 August, 2014 19.40 pm

Village Identification

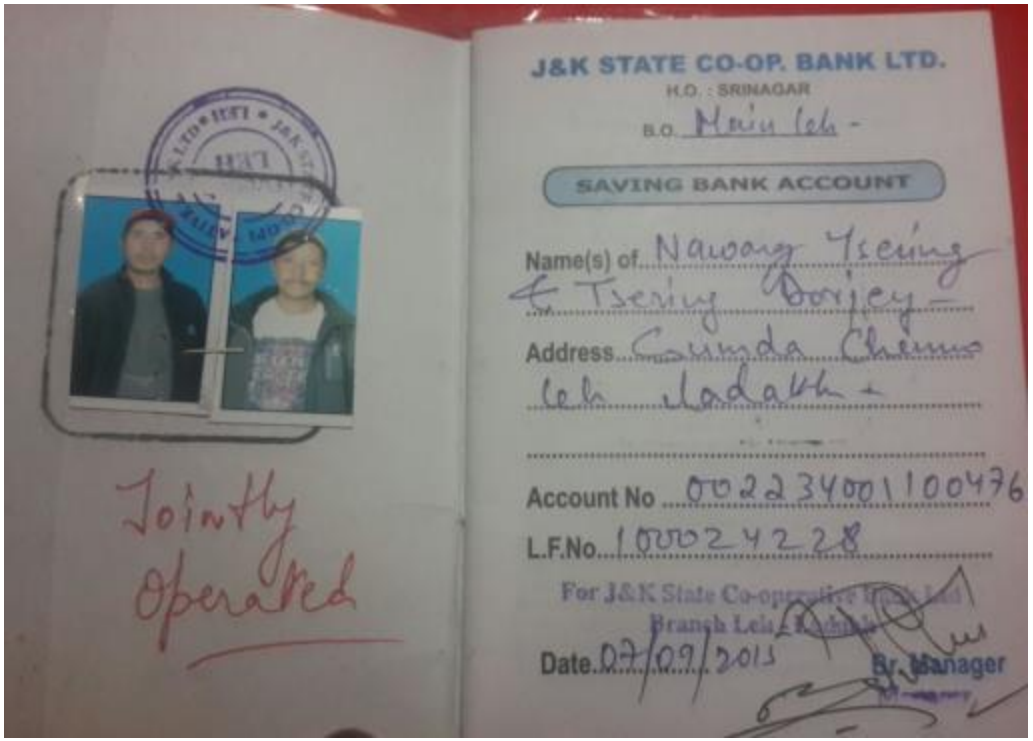
We search villages through local contacts as there is no database or survey conducted due to their in-accessibility. The team treks sometimes for 5-6 days to reach Villages or need to drive on un- motorable roads

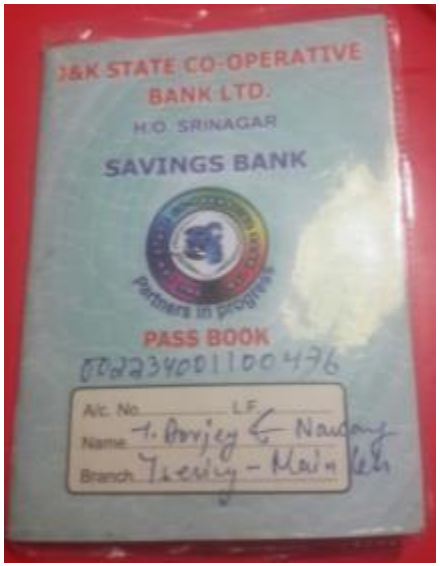
Village Mobilization & Awareness on Solar

It's important to have the community as well local leadership buy in before implementing the Solar microgrid. The process also includes educating villagers on the benefits of using Solar and its long term affect

Joint Bank Account

A committee is formed in the village that looks after the upkeep and maintenance of grid. Every villager contributes a monthly rental which goes into a Joint account opened by the villagers





Grid Material Transportation

Village Electrification

Religion & Science

Villagers putting the traditional Buddhist ‘Khatak’, on the Solar Charge Controller for the longevity of system.

Visible Impact

Family using Kerosene Lamps

A 3W LED Light – 330 Lumens

Electrified Village – Umlung (15000 feet)

Lingshed Monastery Electrified – 14 Microgrids

Energy Efficiency – GHE DC Products

BLDC Fan
7W to 9W
with regulator
12V/24V DC

DC HD LED TV
16” TV– 19W to 21W
21” TV – 22W- 25W
Inbuilt Speaker
12V/24V DC

DC LED
3W – 320 Lumens
(270^0 Beam Angle)
B22/E27 Casing
12V/24V DC

DC Microgrid Configurations

System Power (Wp)	Homes	Equipments	Grid Size
240Wh	1	4LED Lights + 1LED 16”TV + 1Mobile Charging + 1Fan + 1 Street Light	40W
635Wh	3	12LED Lights + 3LED 16”TV + 3Mobile Charging + 3Fan + 1 Street Light	100W
1165Wh	5	20LED Lights + 5LED 16”TV + 5Mobile Charging + 5Fan + 2 Street Light + 1 Computer	250W

Device	Hours of Operation
LED Lights	**8**
TV 16”	**4**
Fan	**8**
Mobile Charger	**6**
Street Light	**4**

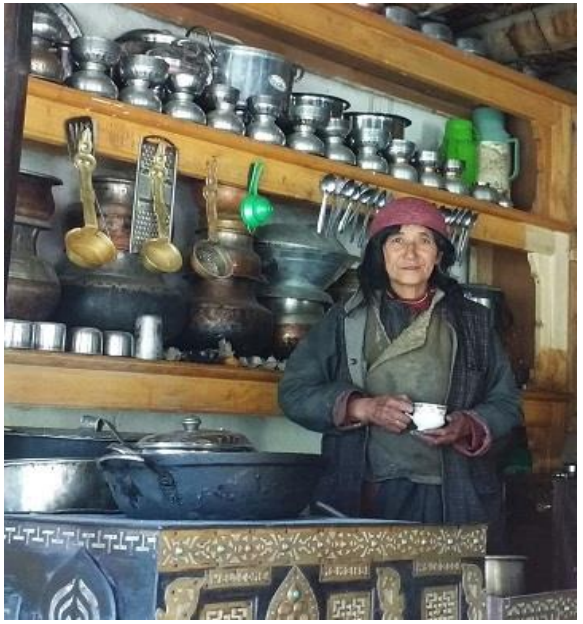
Income Generation – Mountain Home-stay

Mountain Homestay

Empowering the Local Community

Women empowerment – Mountain Homestays

- **Additional income for the family through homestays**
- **Better sanitation and living standards**
- **Engaging in economic activities of the household**
- **Motivation to make Pashmina and other woolen artifacts**



Aspirational Loads

2014

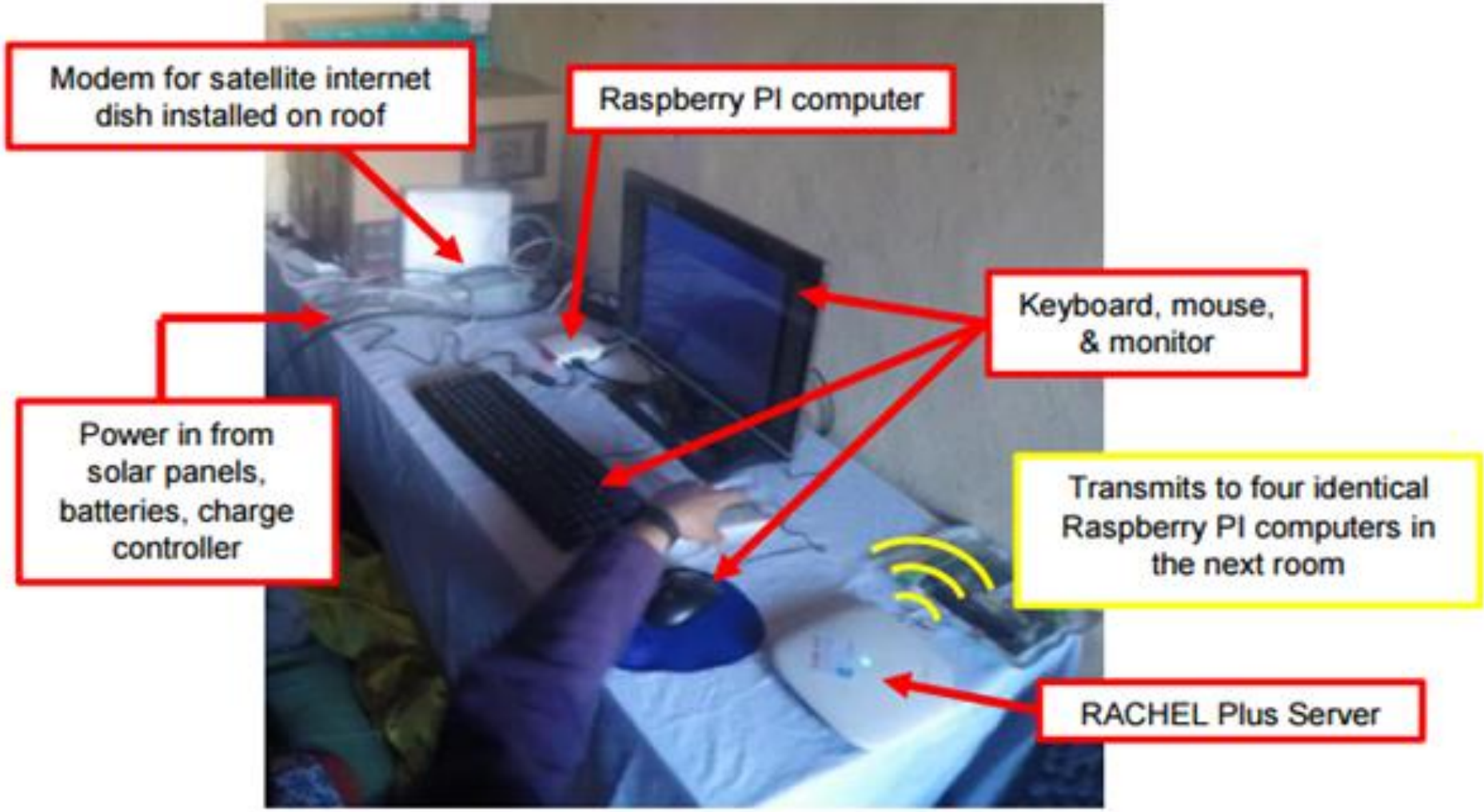
2016

Digital Education – Himalayan Innovation Centre (HIC)

HIC in Action in one of the Remote Villages

- **Children access offline Internet Content**
- **Wikipedia, Khan Academy, TED talks and the School Curriculum pre loaded on a 500GB Wifi Server**

The Himalayan Innovation Centre Technology



Service Centre run by the Local Community

Women Electricians

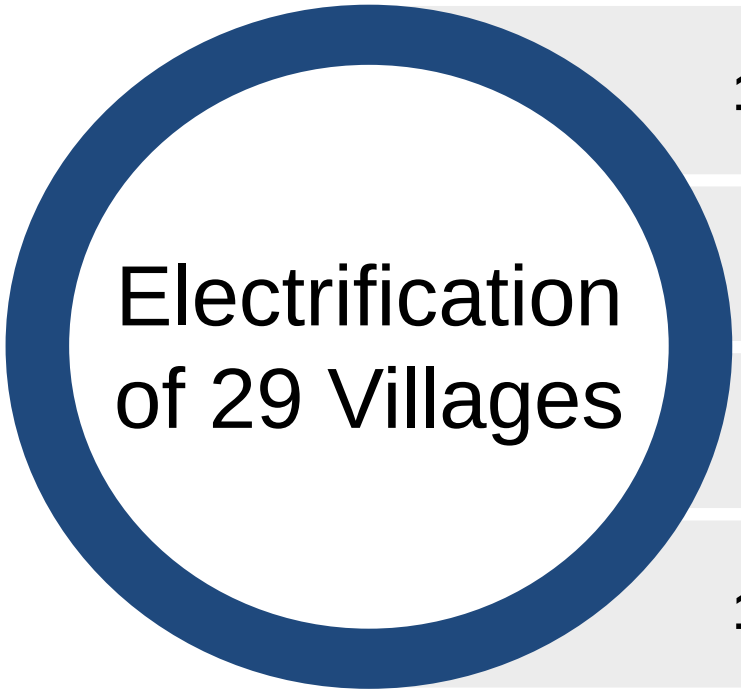
Women run service centre

IoT Enabled Villages of the Future

Internet of Things ("IoT") enabled metering and Data Collection

- Mobile based data connectivity directly with Solar Charge controller
- Solar Charge controller communicates with individual Meters
- Mesh Network to upload Tourists data onto the server and transfer it on the device whenever connected

GHE Impact & Performance



15,500 Lives Impacted

Established **20** Woman Entrepreneurs

1,000 Student Lives Impacted

175 Tons of CO^2 Eliminated

Core Team

Paras Loomba
Founder

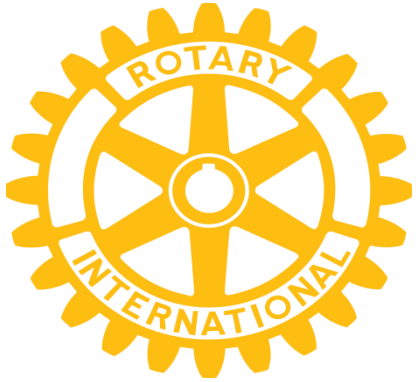
Gaganpreet Singh
Homestays Leader

Michiel Roodenburg
Project Finance Leader

Jaideep Bansal
Energy Access Leader

Strategic Partnerships

NATIONAL GEOGRAPHIC



Areas of Expansion

Ecuador

Peru

Nepal

Bolivia

Let there be Light!