Global Himalayan Expedition

Lighting up the Roof of the World
Global Himalayan Expedition leverages tourism and technology to provide Clean Energy, Digital Education, Livelihood Creation, and Wireless Connectivity to remote mountainous communities.
The Himalayan Situation

72 million – Population in Indian Himalayas

70% – Himalayan population without access to more than 10 hours of grid based electricity

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

World’s Oldest Civilization. Need for Sustainable Lifestyle – Minimizing waste generation

India’s highest Solar Insolation levels – of 1250 w/m². Perfect for solar projects
DC Solar Microgrids (250W – 500W)
GHE’s Sustainable Solution

**Impact Expeditions**
- Impact expeditions to electrify remote villages with support from Tourists
- Team of 10-20 people as part of expedition
- Promotes the theme of responsible leadership and sustainable tourism among the participants.

**Village Electrification**
- Setup DC solar microgrids to provide electrification to remote off grid villages
- Removal of Subsidized Kerosene Oil from their lives
- Capacity development of Youth to become skilled and maintain these solar projects for various unelectrified villages

**Village Solar Homestays**
- Develop the homes of villagers for tourists to stay.
- Conduct village immersion tours for tourists to experience local culture
- Results in income generation for the village community and promotes entrepreneurship at village level

Global Himalayan Expedition

www.ghe.co.in

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Our Ground Approach

1. Identify remote off-beat communities lacking basic infrastructure
2. Conduct surveys for solution design and community mobilization
3. Impact expeditions to remote villages and setup social infrastructure
4. Create a model of sustainability and ownership among community
5. Promote remote destinations as tourist hotspots
Our Ground Approach

1. Identify remote off-beat communities lacking basic infrastructure

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.
Our Ground Approach

2. Conduct surveys for solution design and community mobilization

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.
Our Ground Approach

Impact expeditions to remote villages and setup social infrastructure
Our Ground Approach

3 Impact expeditions to remote villages and setup social infrastructure
Our Ground Approach

Create a model of sustainability and ownership among community
Our Ground Approach

5 Promote remote destinations as tourist hotspots
Value Proposition

Energy Efficient DC Appliances

250W Panel

24VDC BUS

10A MCB

24VDC BUS

Two 12V 100Ah Battery in Series

3W LED

3W LED

3W LED

20W LED TV
Value Proposition

Impact of Energy Efficiency

A 3W LED Light – 330 Lumens
Value Proposition

Women Electricians

Women run service centre
## Value Proposition

### STEPS TO TROUBLESHOOT MICROGRID

1. **Array collects energy from the sun**
   - **Note:** Do not move or rewire solar PV system.

2. **Controller protects battery for long life**
3. **Battery stores energy for use later**
4. **Energy is used for lighting & entertainment**

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### Operations

- Do not waste energy, use energy efficient appliances.
- Use lights only when needed. Switch off when not needed.
- To add extra appliances, consult with solar expert. Do not use appliances which use a lot of power.

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### Maintenance

- Clean dust and dirt from PV array.
- Use caution with batteries. Check battery terminals for corrosion and tight connection.
- Keep PV array shade free.
- Add distilled water or directly collected (pure) rain water only (for flooded batteries only).

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### Reduce energy use during cloudy weather

- Regularly check controller to see how full your battery is.

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Value Proposition

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
Value Proposition

Low Power Digital Education Centre

- Modem for satellite internet dish installed on roof
- Raspberry PI computer
- Keyboard, mouse, & monitor
- Power in from solar panels, batteries, charge controller
- Transmits to four identical Raspberry PI computers in the next room
- RACHEL Plus Server
Value Proposition
Value Proposition

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Electrification of 29 Villages</td>
<td></td>
</tr>
<tr>
<td>$200,000 Gross Revenue from Expeditions</td>
<td></td>
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<tr>
<td>$25,000 Revenue from Homestays</td>
<td></td>
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<tr>
<td>$7,000 Generated From Handicrafts</td>
<td></td>
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<tr>
<td>$105,000 Bottom Line</td>
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</tbody>
</table>

* 2x returns from every Impact Expedition
## GHE Impact & Performance

**Electrification of 29 Villages**

- 15,500 Lives Impacted
- Established 20 Woman Entrepreneurs
- 1,000 Student Lives Impacted
- 175 Tons of CO\(^2\) Eliminated

- 200 Tourists Impacted 15,500 Lives
- 1 Tourist Impacts 7 Lives Directly
- 1 Tourist Impact 35 Lives Indirectly
Aspirational Loads

December 2014

August 2016
# Marketing Strategy

<table>
<thead>
<tr>
<th>Social Media - Promote the impact expeditions and disseminate information on technological innovations to increase impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHE has partnered with media houses such as Nat Geo to show GHE’s work. Airing of our documentaries have bought in huge traction and interests from around the world</td>
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<tr>
<td>For sustained revenue, GHE is institutionalising the initiative with corporates and universities that brings in constant revenue for a longer period</td>
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<tr>
<td>Commercialisation of energy efficient DC products that have been designed by GHE for the market that is within as well as outside India</td>
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Core Team

Paras Loomba
Founder

Gaganpreet Singh
Homestays Leader

Michiel Roodenburg
Project Finance Leader

Jaideep Bansal
Energy Access Leader
Strategic Partnerships
Future Plans (Next 5 Years)

Increase Existing Programs
• 100 Electrified Villages in Himalayas
• 100 Impact Expeditions
• Develop Homestays
• Increase in rural handicrafts and education programs
• Quality Digital education

Develop Team and Technology
• Grow Core Team to 10 people
• Refine payment mechanisms and software
• Increase in efficient microgrid systems supporting multiple rural applications

Global Expansion
• Based on lessons learned by GHE in India, expand to the following countries:
  Peru, Kazakhstan, Ecuador, Nepal, Bolivia, Ghana, Cameroon, Liberia

Investment Required: US $ 2 million
1400 Year old Lingshed Monastery – 14000ft
Let there be Light!
Thank You!

Contact Details:

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