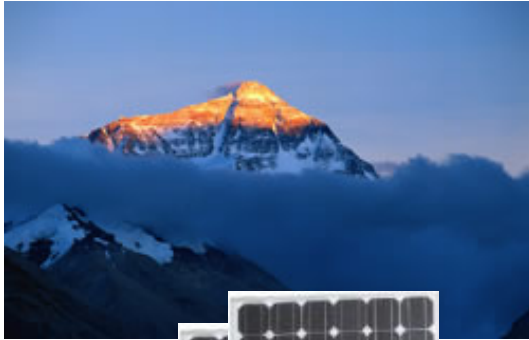


# Enhancing Connectivity and Productivity: Khotang/Okhaldhunga Rural Microgrid

Kishor Rimal  
GM, Gham Power



# Gham Power: Solar Project Developer, Social Enterprise



- Started in 2010
  - Provide Solar PV systems at costs below diesel
  - Focus on businesses and productive use
- 900 kw installed; 668 Projects:
  - Possible Health Bayalpata Hospital (12 KW)
  - Maiti Nepal Shelter for Trafficked Girls (8 KW)
  - EVK2 Lab @ Mt Everest base camp (10 KW)
  - US Embassy for Nepal (23 KW)
  - UNICEF (42 KW)
- 2016 target pipeline: 5 mW

# Rural Solar Microgrids in Khotang & Okhaldhunga

- Rural Microgrid projects in 3 remote villages
- Phase 1: 35 kW
  - Powers 25 businesses, 83 households
  - Total installation costs: \$239k
  - Funded by Local Community Investors, ADB, & DOEN
  - Installation completed by end of 2015
  - Inauguration program held on 13<sup>th</sup> and 14<sup>th</sup> March 2016

# Benefits to communities

- Electrification is not just lighting
- Productive end uses to enhance local economy
- Cheaper than their current energy source (Diesel and Kerosene)
- Reliable power

# Phase 2

- Phase 2: Add 37 kW to power mobile towers + add'l load
  - 2 mobile towers + ~146 households + ~20 businesses
  - Partnership with NCell (Nepal's leading private telecom)
  - GSMA M4D Grant award
  - Enhance connectivity and power

# Benefits to Local Communities

- Mobile signal to 5 VDCs\* with above 20,000 population (no/poor mobile connection today)
- Enable mobile Pay-as-you-go (PAYG) option for electricity (and other services) through eSewa (first time in Nepal)
- Mobile connectivity enables new businesses (recharge cards, mobile banking, etc.) and connects markets

\*Village Development Committee

# Benefits to Telecom

- Access rural market with lower operational costs
- Fixed PPA + Service Level Agreement (SLA) more desirable compared to owning/maintaining power backup options (solar + diesel)
- Electricity at homes to charge mobile phones
- People will use mobile data to access Internet

# Benefits to Microgrid

- Fixed monthly PPA with Ncell provides financial stability to Microgrid (“Anchor Client”)
- Telecom more “bankable” off taker to raise project financing
- Enable mobile payment option for electricity (and other services) through eSewa



# Operational Model

- Local SPV as an entity to own and operate micro grid
- Local communities and EPC both as equity partners in the SPV
- Community as an investor of Solar Micro Grid
- Ensures sustainability

# Challenges

- Long sales cycle for private companies
- Project Development Costs
- Lack of concrete policies regarding solar micro grid
- Lack of financial/investment model

# Future

- More than 3000 telecom towers from Ncell only
- Rural communities still waiting long for electrification
- Government and other stakeholders need to come up with concrete investment model
- Structured subsidies

# Thanks!



Kishor Rimal  
GM, Gham Power  
[kishor@ghampower.com](mailto:kishor@ghampower.com)