

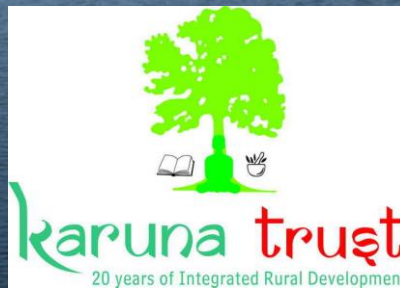
# Decentralized Renewable Energy in Healthcare: The energy-health nexus

Karuna Trust in partnership with  
SELCO Foundation

*by*

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***Secretary, Karuna Trust***



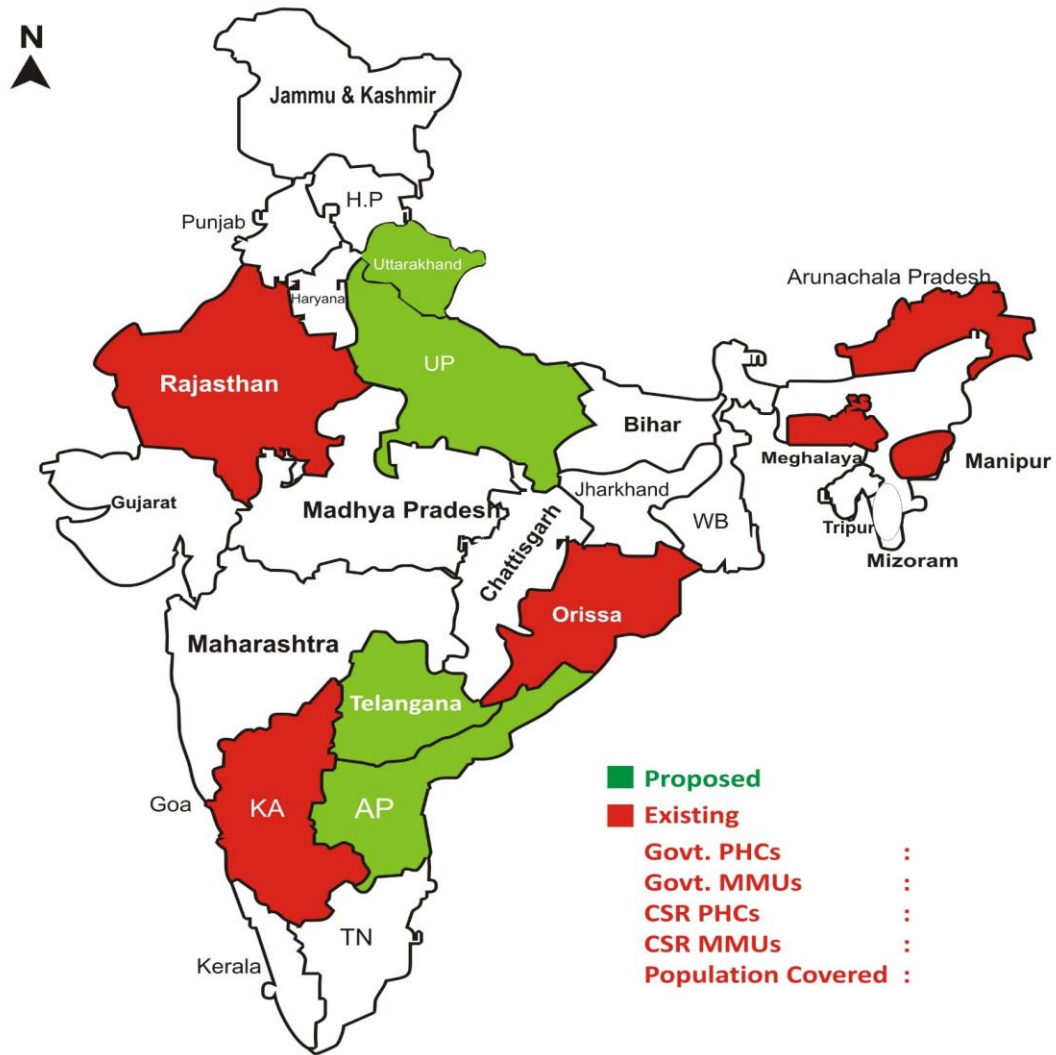
# Karuna Trust

## “Reaching the Health Care to Unreached”

- Karuna Trust delivers Comprehensive (Preventive, Promotive, Curative and Rehabilitative) Primary Health care to 1.5 million people in 5 states of India.
- It reaches out to remote, hilly tribal areas where there is poor or no power supply and telephone connectivity
- Provides Primary Health care at a cost of US\$3/- per person per year.

# "Reaching Health Care to the Unreached"

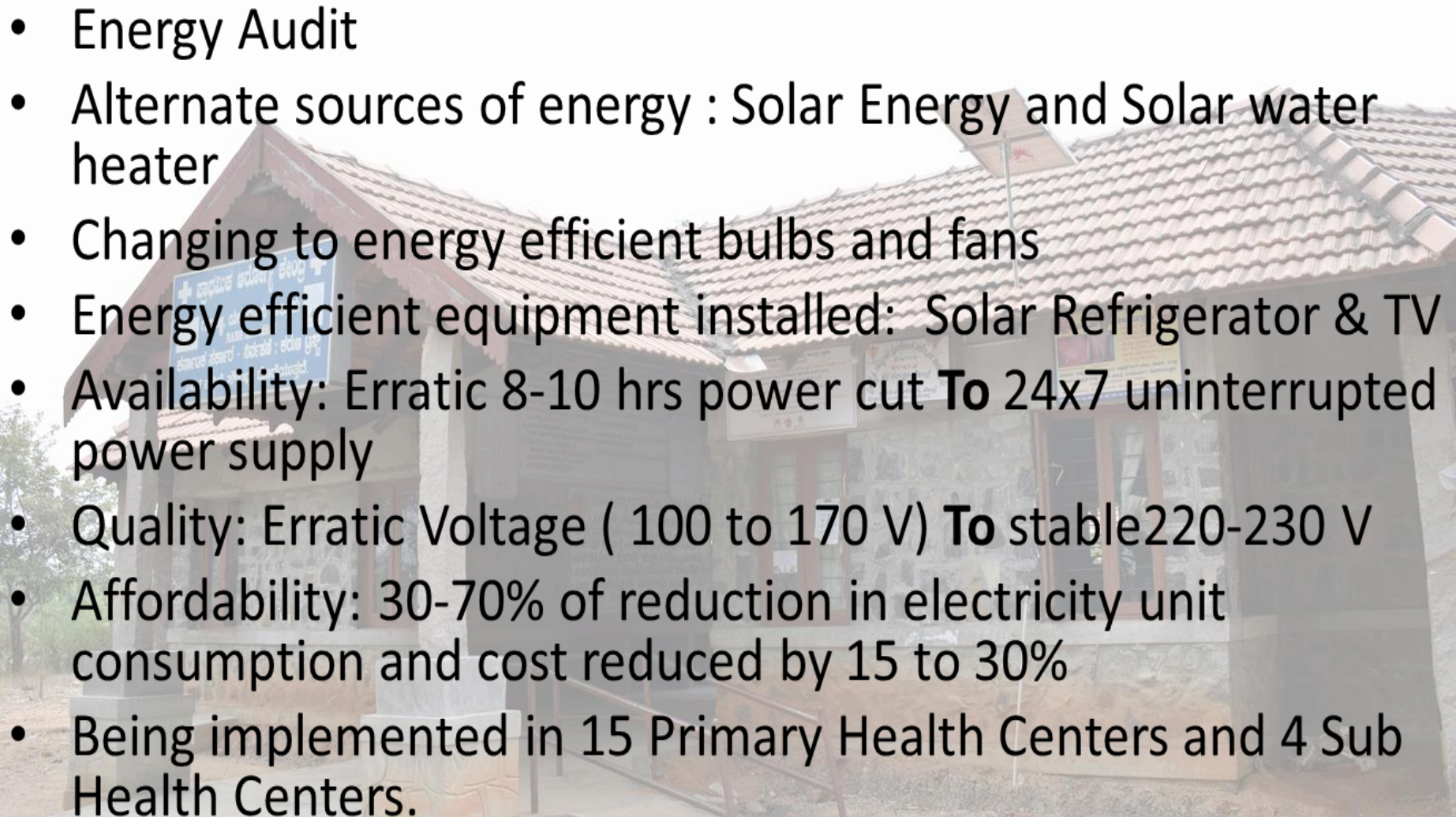
## Health Centres Managed by Karuna Trust



# Health - Energy Projects

- Energy access at the Health Centers
- Energy efficient vaccine refrigerator (Surechill)
- Cold Chain Management
- Energy Efficient Labor Room
- Model Sub Centre
- Comprehensive Healthcare Kit
- Non-Communicable Diseases Screening Kit (NCD Kit)
- Mobile NCD Screening Unit
- Mobile School Health Screening Unit
- Solar TV for health education

# Sustainable Energy at Health Centers

- Energy Audit
  - Alternate sources of energy : Solar Energy and Solar water heater
  - Changing to energy efficient bulbs and fans
  - Energy efficient equipment installed: Solar Refrigerator & TV
  - Availability: Erratic 8-10 hrs power cut **To** 24x7 uninterrupted power supply
  - Quality: Erratic Voltage ( 100 to 170 V) **To** stable 220-230 V
  - Affordability: 30-70% of reduction in electricity unit consumption and cost reduced by 15 to 30%
  - Being implemented in 15 Primary Health Centers and 4 Sub Health Centers.
- 

# Model Sub Health Centre

- To create a model energy efficient sub center with local resources
- Being implemented in Karnataka and North East India



# Energy Efficient Labor (Delivery) Room

- To create a model labor room which is energy efficient and effective
- Being implemented in **5 PHCs** across Karnataka and North East India

Name of Equipment	Typical Usage	Daily Usage (h)	Existing		Efficient and Replaced	
			Power(W)	Energy (Wh)	Power (W)	Energy (Wh)
Baby Warmer (Essential)	Every Delivery	4	800	3200	380	1520
Suction Machine (Essential)	Every Delivery	1	400	400	100	100
Spotlight for Delivery (Essential)	Every Delivery	4	100	400	20	80
Cumulative Power and Energy Reduction (Only Essential)						58%
Photo Therapy (Desirable)	1-2 per month	8	270	2160	20	160
Oxygen Concentrator (Desirable)	Emergency	4	400	1600	350	1400
Total			1970	7760	870	3261
Cumulative Power and Energy Reduction (Essential + Desirable)						58%

# Solar vaccine refrigerator (Surechill)

- Solar energy based vaccine refrigerator where vaccines are stored for immunization Programme
- Currently being implemented in **13 PHCs**





# Solar powered Maternal Health Kit

- To help community health workers in reach inaccessible and remote areas for ANC check up and follow up
- Currently being implemented in **4 PHCs**



# Non Communicable Diseases (NCD) Screening Kit

- For screening six diseases:
  - Hypertension
  - Diabetes Mellitus
  - Cardiovascular Diseases
  - Chronic respiratory illness
  - Anemia
  - Cancer: Oral, Breast and Cervical
  - Vision



# Solar powered Mobile Non Communicable Diseases Screening Unit

- Diseases screened:
  - Diabetes Mellitus
  - Hypertension
  - Cancers: Oral, Breast & Cervical
  - Respiratory illness
  - Anemia
  - Buerger disease
  - Refractory errors



# Solar Powered Mobile School Health Screening Unit

- School health screening across 2 districts in Karnataka
- General, oral and vision check up's are done



# Centre for Decentralized, Renewable, Sustainable Energy for Health Care

- Training Centers at Mysore (Karnataka) and Tezu (Arunachal Pradesh) Focusing on integration between health and energy
- Two Mobile Health Skill and Sustainable Energy Lab
- Scaling up to all the Health Centers run by Karuna Trust and later to Government run Health Centers

# Integrated Neonatal corner

- The objectives of this project are:
  - To develop a safe, cost-effective and energy efficient equipment for new born at Primary Health Centers.
  - To develop this model with a simple interface, making it easy to be used by the Health Workers (ANMs and ASHAs)
- Instead of 5 separate equipment's this all-in-one model will have the following components:
  - Radiant Warmer: to treat hypothermia (Peripheral Temperature < 36.5 degree Celsius)
  - Phototherapy LED: to treat cases of neonatal jaundice
  - Oxygen Concentrator: to supply oxygen for cases having hypoxemia
  - Suction Equipment: for use in case of any airflow obstruction
  - Monitor Screen: to view the vital signs like pulse rate, respiratory rate and oxygen saturation etc.

# PHC Etalin



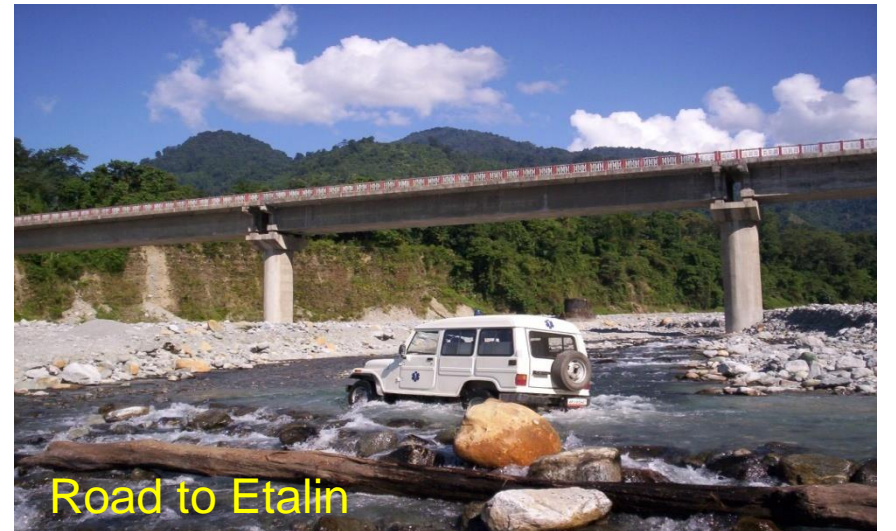
PHC building



Medical officer



PHC building



Road to Etalin

# PHC Jeying





# PHC Walong



PHC building



Pharmacy



Sub centre KIBITHO

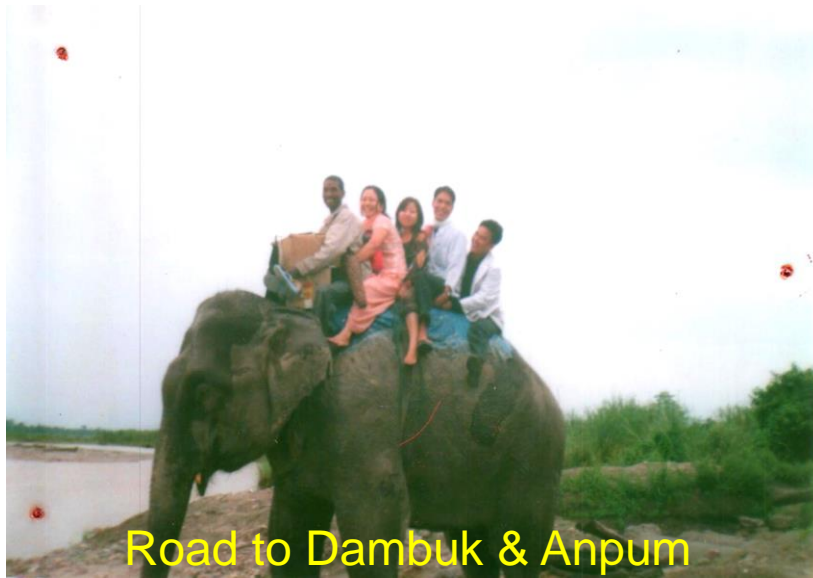


PHC Staff

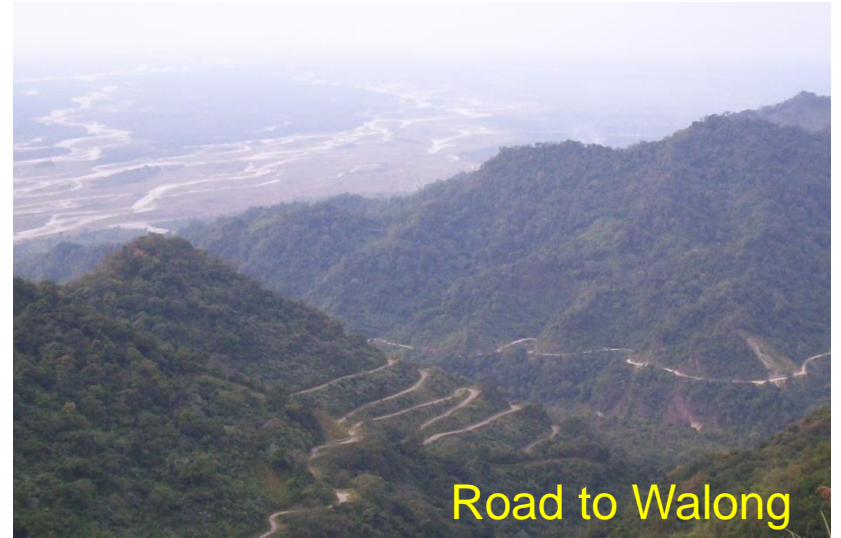
# Road to PHCs



# Road to PHCs



Road to Dambuk & Anpum



Road to Walong



Road to Dambuk & Anpum



Road to Etalin



