IWMI International Water Management Institute

CGIAR Transforming Agrifood Systems in South Asia

SoLAR Solar Irrigation for Agricultural Resilience

Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Agency for Development and Cooperation SDC

Energizing Agriculture and Enabling Just Energy Transitions in South Asia: A Regional Knowledge Forum

SOLAR IRRIGATION FOR AGRICULTURAL VALUE CHAINS

Creating Livelihoods For Small And Marginal Women Farmers - A case of Urmul Seemant promoted Bahula Ecosystem

उरमूल सीमांत

desert resource centre

bahulā

Hydro Greens

WRI INDIA

Global Green Growth Institute

IRENA International Renewable Energy Agency

Ahmedabad University | Global Centre for Environment and Energy

ISA International Solar Alliance

german cooperation

Implemented by giz

STRUGGLES OF THAR AND ITS PEOPLE

- Migration | Lack of skills | Recurring Droughts | Remoteness | Lack of Financing
- Health | Quality Nutrition | Gender Equal Growth | Education
- Caste based discrimination | Feudal Mindsets | Low Literacy | Education

THE MILK HUB OF THE WORLD?

Declining Livelihood Potential

- 40% Shortage of green fodder (260 Million tons)
- Affects 70 Million farmers involved in livestock (70% are women in the dairy enterprise)
- 15 to 25% loss in dairy income due to climate variability
- A single cow on average produces between 70 to 120 kg of methane per year

WHAT DO WE DO?

The foundation for a net zero dairy has been laid.
Bahula dairy is progressing on this journey.

1kg of milk generates 2.5 Kg CO_2e

- 40% from feed
- 50% in Processing (Cooling, handling, etc)
- 10% from manure

- Our fodder solution helps reduce 25% of the 40%
- Our 100% clean energy run processing and milk handling reduces 45% of the 50%
- Biogas managing 10% from manure and promoting clean energy for women farmers

Solar Powered, Micro Climate Controlled, Vertical Farming Systems

To improve livelihood sustainability with small & marginal farmers

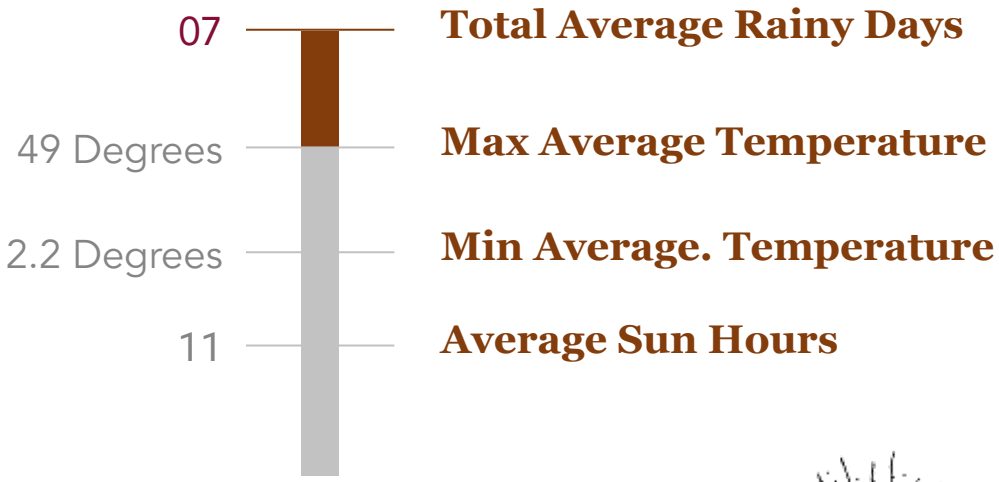
OUR OBJECTIVES AT THE BEGINNING

- Harvest high protein fodder of about ~96 trays or about 650 to 750 Kgs everyday even in extreme summers.
- Deliver one tray at INR 45 to 50 to community members for fodder security and enhanced health.
- Record the increase in milk yield reported by community members, incremental income thereof.

Given the low probabilities of ground based agriculture in the region, low cost customised Hydroponics could provide an opportunity to strengthen local livelihood around animal husbandry.

WHAT MAKES THE DIFFERENCE?

GEOGRAPHICAL REALITY



TECHNOLOGY CAPACITY

- Can produce 100 to 170 tons (pa) of carbon negative, high protein fodder & sprout varieties despite harsh climates.
- Using 95% less water, physical space & 0 grid energy
- Can avoid 8.9 tons of Co2e p.a & reduce 1.4 tons of Co2e (pa) basis a certified LCA
- Extending the green fodder availability from 4 to 10 months

CURRENT BENEFITS

- 300 kg green wheatgrass fodder/day and in summer it gives maize fodder of upto 500 kgs/day per station.
- Two fodder stations are successfully running catering to cow farmers in two remotest locations in Bikaner and Jodhpur run by two microentrepreneurs earning their livelihood.
- Registered milk increase of up to 1.5 litre per cow and fat increase ranging between .5-.8. per litre.
- Through DRE produced 7500 units (3250 units per stations) clean electricity in 1 year in areas where grid does not exist.

BAHULAVERSE

Our Net Zero dairy

- Mobilisation and Sensitisation
- Input Services; Seeds, Biofertilizers, Biogas, Fodder, Clean Tech
- Institutionalisation; Micro Entrepreneur, VLCs

IMPACTED

1000
FARMERS

4000
PASTORALISTS

USD 31000
PER MONTH INCOME ENHANCEMENT

FROM PILOTS TO PROFITS

- Enabler in the agri-dairy value chain and network of activities, from production to processing to distribution.
- This input support ensures a continuous, enhanced and high-quality supply of raw milk, which not only ensures less methane per cow but overall better health for animals.
- Value addition at each stage of the process to command better returns.
- A higher market price ensuring the surplus trickles back to the farmer.

"In this Thar desert the probability of getting the green fodder for around 8 months is low to nothing due to insufficient water and arable land but the solar powered hydroponics system can run throughout the year. My livestock is enjoying eating it and my input cost has decreased by 20% and the income has increased by INR 2000 (USD 24.3) per month."

Mr. Kayamdeen
Sheep Herder, Narayanpura

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Hydro Greens

Innovative water solutions for sustainable development

Food · Climate · Growth

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