

# REAL– Renewable Energy For Agriculture & Livestock

Solutions that shapes DRE sector



## Newsletter March 2023

SELCO Foundation seeks to inspire and implement solutions that alleviate poverty by improving access to sustainable energy to underserved communities across India in a manner that is socially, financially and environmentally sustainable.

The newsletter focuses on the livelihood sector, highlighting various initiatives that support underserved people to improve their livelihoods through agriculture and livestock-based solutions.

### HIGHLIGHT

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In Memory



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## Decentralised Sustainable Energy and Technologies for Livelihoods

*Energy is a necessary component of socioeconomic development. Despite India's rapid and remarkable economic growth, energy remains scarce.*



Strong government support and an increasingly favourable economic situation have propelled India to the forefront of the world's most promising renewable energy markets.

The SELCO Foundation collaborates with communities to identify and address livelihood challenges through the use of energy-efficient technologies and appropriately designed solar energy systems. These renewable energy solutions increase income, improve quality of life, and alleviate poverty.

Providing citizens with affordable, reliable, sustainable, and modern energy is essential for sustainable development

# NEW INITIATIVE

## SDG7 for pastoral community development



Pastoral communities, as their main source of livelihood, raise livestock or semi-domesticated animals wholly or partly on rangelands in production systems that are extensive in terms of land use and involve some degree of animal mobility. They specialize in generating value out of highly variable environments by constantly adapting to fluctuations in rainfall and the availability of forage and water. As of 2019, between 200–500 million people globally practiced pastoralism, and roughly 75% of all countries had pastoral communities. According to the Centre for Pastoralism, 35 million pastoralists live throughout India. Most of them live in harsh and inhospitable regions, such as the cold deserts of Ladakh and the Thar Desert. This community is known to herd camels for their livelihood & despite multiple channels for camel-based livelihoods, income generation and access to scientific approaches are the major challenges faced by pastoral communities.



Sheep and goats have come to significantly outnumber larger stock, especially in the most arid western part of the Rajasthan. Sheep are not only raised for meat but are also at the center of a large regional and national wool economy, Smaller producers in the villages, with only a few sheep, often sell their wool to semi-itinerant neighbors who resell it.

The goal of the program is to introduce and strengthen the Energy Ecosystem approach in the Desert bioregion of global south, with SDG7 as a catalyst for innovation, replication and scale of Pastoral Driven Livelihood solutions at a national and global level. The program will focus upon building and nurturing ecosystem to promote institutions in global desert bioregion.

Focus areas: Pastoral & Non-bovine dairy Value Chain, Animal and plant derived natural fibers ecosystem with key focus on Indigenous Sheep and camel wool



# IN FOCUS

## SDG7 for Millets



### Saura Siri 2022 & Millet conclave

Saura Siri 2022, Chitradurga Karnataka; meaning #solarformillet was focussed on promoting millets and integrating DRE-driven technologies.

Millet conclave 2022 was organized jointly by NABARD and the University of Agricultural Sciences, Raichur prior to the International Year of Millets 2023

### Saurangi Sangam 2022

The SELCO Foundation hosted a curtain raiser event named Saurangi Sangam in Kalahandi District, also considered as the Millet Bowl of Odisha on 22nd December 2022 to celebrate "The International Year of Millets 2023" as declared by the United Nations General Assembly.





# EVENTS

## Saurangi Sangam 2022: SDG7 for Millets

Saurangi Sangam, hosted by SELCO Foundation was a curtain raiser event on 22nd December 22 to celebrate “The International Year of Millets 2023” as declared by the United Nations General Assembly in the Kalahandi Millet Bowl of Odisha. Over 15+ millet seeds were showcased, more than 16+ DRE-based technologies were demonstrated and 14+ Speakers shared their experience & knowledge in the event.

Ms. P. Anvesha Reddy, IAS, Collector and District Magistrate addressed farmers on the adoption of technology, promotion of solar energy and increased millet production and consumption across Odisha. In collaboration with Odisha Millet Mission, 8 Mandia Rath (Millet Chariot) were inaugurated by Padma Shri Kamala Pujari, a Champion farmer to generate awareness on the importance of millets as a sustainable climate resilient crop. A Millet Food Truck run by a Self-Help Group (SHG) of Odisha Millet Mission (OMM) was also showcased in the event with millet food items and products.

## Saura Siri 2022: SDG7 for Millets

*“Millets are expensive to buy. But does the money reach the farmers? What are the ways to ensure that?”*

Smt. Divya Prabhu G.R.J., IAS  
Deputy Commissioner, Chitradurga



Saura Siri on 3-4th November 2022, Chitradurga Karnataka; meaning #solarformillet was focussed on promoting millets and DRE-driven technologies for it and understanding production & processing nodal points. Many farmers and farmer groups participated and got a chance to understand varied experiences on growing different kinds of millets and processing them. There were various technology

vendors present showcasing solutions and services like hydroponics, weather risk management and agricultural implements.

Women-led SHG groups sold cold-pressed oils, millet based snack items and dosa batters. The event was a platform for discussion, deliberation and learning sessions by ecosystem players through Panel sessions on Millet Adaptability to Climate Change - Challenges and prospects of millet Sector in Karnataka. Saura Siri facilitated an atmosphere for all the ecosystems players across the millet value chain such as farmers, SHGs, FPOs, government officials, researchers, technology providers, CEEs, agri-experts, etc. across the region to catalyse the integration of sustainable energy for millet value chains.



## Millet Conclave 2022



Millet conclave 2022 was organized jointly by NABARD and the University of Agricultural Sciences, Raichur prior to the International Year of Millets 2023. The millet farmer producers associations (FPOs), processors and startups participated in the two day conclave which was held on 26th and 27th of August 2022 at UAS campus, Raichur. SF team set up a stall with solar powered millet processing unit machineries (Destoner, grader, aspirator, pulveriser), roti rolling

machine along with a dough mixer for demonstration. The event was addressed by the guests and technical sessions related to millet value chain, discussed and interviewed with partners were conducted. The CEO of Sahaja samrudha organic producer company shared his/her experiences and other benefits they got from different sources like loans and grants from NABARD and NABKISAN. They also mentioned about the millet processing unit run by the SHG at Theertha village where processing machines were sponsored by IIMR and the whole unit got solar powered with the help of SELCO foundation.

## Tech Challenge

### Catalyse Tech Odisha 2022: Catering to the needs of Grassroot Agripreneurs

CatalyseTech Challenge is a platform to encourage and facilitate innovation and entrepreneurship that encourages and promotes local solution providers to bring in technologies, delivery models, financing, and community-based institutions. The aim is to build an enabling ecosystem for identifying, encouraging, supporting, and working with local entrepreneurs, innovators and enterprises who design custom based solutions for communities and people at risk.



Selco Foundation has partnered with Startup Odisha and Sri Sri University for Catalyse Tech Odisha 2022 Challenge to encourage local innovations and develop a conducive ecosystem for entrepreneurship across the State.

# AWARENESS

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## Krishi Mela

SELCO Foundation participated in Krishi Mela in Vijayapura, North Karnataka. The purpose was to explore good opportunities for millets, spice, oil seeds and cooling projects. Site visits will be conducted to raise awareness about DRE post harvest processing and value addition projects. Additionally, crop-specific cooling needs to be explored for lemons, dry grapes, and other horticulture crops.



## FPC Exposure visit in Jharkhand

Selco Foundation has collaborated with three FPCs in Jharkhand and one in Orissa under its incubation program. These FPCs are working as Clean Energy Enterprise that deliver need-based, sustainable energy-driven solutions to underserved communities.

To help the enterprise expand their DRE-based livelihood portfolio, SELCO

Foundation organized exposure visits as part of training and capacity-building programs in order to introduce different energy-based livelihood solutions for agriculture, animal husbandry, and resilient micro businesses that have been tested and piloted in the state. The participants were taken into the field for the exposure visit to understand the end user typology, business model and finance unlocking process.





## Agri based Post Harvest Processing : Awareness workshop, NK

Participants were oriented to our agriculture, animal husbandry, and RMB projects, with a focus on educating small and marginal farmers about various decentralized renewable energy solutions that reduce drudgery and generate income, and how cooperatives / FPOs can benefit from such DRE interventions.

## CAPACITY BUILDING TRAINING / WORKSHOPS

### DRE solutions and Odisha Millet Mission (OMM): Awareness to catalyzing sustainable livelihood implementation



The broad goals and objectives of the program is to support OMM in establishing custom hiring centers to deploy machines and post-harvest operations (clean millet harvest at cluster or GP) and integrate DRE based solutions in the plans, policies & schemes of OMM program in Odisha.

SF team members organized a FPC meeting in Kundra block of Koraput district on 9th November 2022 in collaboration with MS Swaminathan Research Foundation. Most farmers reported facing threshing problems after harvesting of millets from the field. The FPC has more than 50 small collectives and are planning micro level processing units at village level. The FPC has planned to establish a millet processing unit with value chain aspects. The SF team and MSSRF jointly organised a field study related to end-to-end problem statement like harvesting issue, thresher issue, cleaning issue and destoner etc.

## Women's FPO training program



A training program was conducted at the SKDRDP training center for 300 dairy farmers, where they learned about finance linkages and how DRE-based solutions can boost the livelihoods of small and marginal farmers. They were also exposed to technology such as milking machines, khowa machines and hydroponics during the one-day exposure visit.

Key stakeholder involved: Sahana FPO, Ujjivan Small Finance Bank, NABARD, Krishi Vigyan Kendra and Canara Bank

## Odisha Capacity Building – Awareness Camps and Exposure visits: Solutions in Agri. and allied DRE



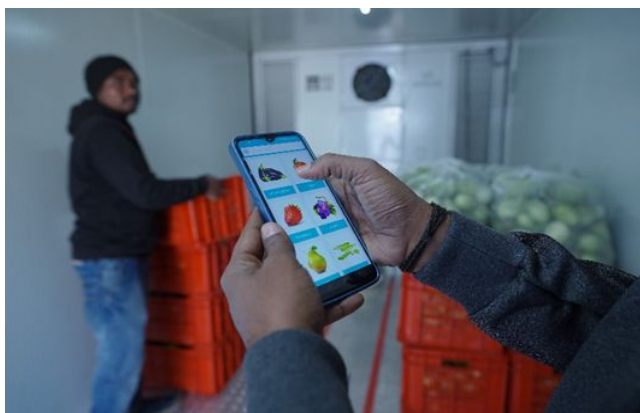
SF is working towards Developing climate resilient technology solutions for 33 units of Agriculture and Allied value chains in Sambalpur district for local producer groups and organizations with the aim of generating awareness on technological and financial innovation in the Agri and allied sector. A community meeting was organised on 11<sup>th</sup> November 2022 to sensitize end users regarding the establishment of new rice mills and solarization of existing rice huller units.

On field demonstration of centralized solar sprayers was also carried out on 19<sup>th</sup> November 2022.

An exposure visit was conducted on 12<sup>th</sup> and 13<sup>th</sup> December to SELCO Foundation intervention areas such as Dal processing unit, Paddy & Millet processing units, Cold Storage, Paper Plate unit, Tailoring unit, LSK, Poly house, etc. in Kalahandi district. The objective was to observe on-field demonstration of DRE solutions for livelihood enhancement, interact with champion beneficiaries and women entrepreneurs to understand the impact, business models and working procedures of solar powered technologies. The participants includes NGO partners – MASS and CWS and Odisha Livelihood Mission (OLM). The members of OLM include Bank Mitra, Krushi Mitra. The insights gained from the exposure visit inspired participants as they showed interest towards some of the solar interventions.



## Agriculture Production Cluster training



The objective of this program is to enhance the resilience of the small & marginal farmers with need based agricultural solutions that ensure decentralized energy-based solutions in 74 Agriculture production clusters in Odisha. SF in discussion with partner team- Harsha Trust APC (Agriculture production cluster) spread awareness of DRE solutions

and its financial contribution. The Producer group level paddy processing units' financial part will be leveraged from GPLF (Gram panchayat level federation) loan of OLM. 5 PGs already received 1.5 lakhs loan and finalised to contribute it for solar power paddy processing unit. Sitalma FPC earned Rs 28,000/- in November through their cold storage business.

SF team conducted an orientation/training programme with the 16 vegetable farmers of Maa Sitalma FPC on app-based product management under the cold storage project on 17th December 2022 at Rayagada. The farmers and cold storage maintenance personnel explained their experience on cold storage benefits and its importance for storing commodities for a suitable period of time. Through this training programme, they gained knowledge on commodity management, stock management and how to maintain the temperature while storing..

## Partnership site visit in Odisha



On 28th and 29th November, NABARD officials visited newly proposed WADI village sites of Kantamal block in Boudh District. The visit aimed at identifying the scope for DRE solutions in solar irrigation system, solar sprayer with charging station, dal processing unit and poultry & gotary farming. The goal was to partner and integrate the DRE based livelihood solutions with NABARD.

NABARD envisions the enhancement of tribal households and livelihood with agricultural development by enhancing irrigation capacity of identified tribal villages. During site assessment SF team elaborated upon sustainable IGA (Income generating activity) by integrating renewable energy across poultry lighting, biofloc, sprayer, flour mill/ processing units, poly house etc.

## Capacity building for additional income generation



Capacity building and income generation for mature women Self Help Groups (SHG) to take up animal husbandry entrepreneurship under livelihood and enterprise development programme (LEDP) of NABARD. The objective of this training was to motivate and support the existing and new farmers from Bokaro district of Jharkhand for creating sustainable livelihood

in the dairy, poultry and goatry sector through awareness building training and post training support on various DRE based energy efficient technologies. Three batches with a total of 90 women participants, have been trained so far, and two more batches will be trained in February 2023. Participants were introduced to several solar-based solutions through this program, which was conducted over two sessions.

## Last mile Egg incubator training



A training program was organized by SELCO Foundation in collaboration with TSRD for 15 members of Ghoroni Lahanti Mahila Utpadak Producer Company Limited. Sumitra Didi, a resident of Dongidih village, who had stopped using egg incubator machines, has now started using them and is motivating others to do the same.

When our team learned that the incubator was installed but the end user wasn't using it because they had never received any physical training. In response to this a training program was organised to train the end users it was a verbal training session followed by demonstration of the hatching process at Gharonj office.





## Knowledge dissemination: Millet processing unit end user capacity building



In order to understand why the millet machine installation was delayed, a site survey was conducted. The survey revealed that some parts of the machine had been damaged, the panels, batteries, and inverter were not working, the batteries didn't have distilled water, and the end user lacked basic knowledge of operating the machine.



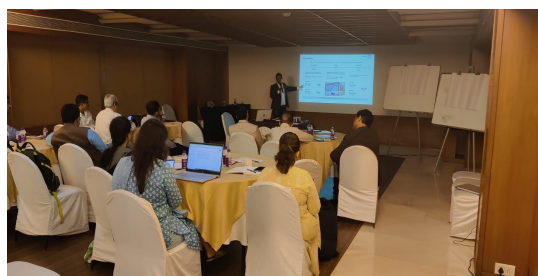
The technical team replaced the parts and shared basic technical knowledge about maintaining the solar system, like monitoring the battery water level and cleaning the panels. A training module was prepared and a training program was organized for end

users and similar farmers. This has led to better adoption of the millet processing unit, the end users are satisfied with the technology and are willing to produce by-products of millet.

## Indoctrination of Post Harvest Loss Management in Kolar and Pune



The objective of the training was to learn from implementations of agri-cooling solutions in Karnataka and Maharashtra (successes and failures), to determine potential focus districts and focus commodities for future implementations-based on need and relevance and also to develop cluster-level plans for implementation and ecosystem building. A total of 74 stakeholders attended the program. Attendees were from Pune, New Leaf Dynamics, GIZ, Inficold, BAIF, SELCO India, CINI, SIED, Sustain Plus Energy Foundation, Ecozen Solutions Pvt. Ltd., Social Alpha, CES, Wingrow Agritech, Coolcrop, Shekru Foundation, and Sahyadri Farms.



# Model FPO: Swastya inauguration



The discussion was on current deployed primary processing units across the state, challenges and opportunities in terms of energy accessibility, upcoming millet plans for the year (more from FPO formation, awareness, workshops & exposures perspective) and plan for international year of millets.

The primary processing including destoner, aspirator and grader were replicated with Swastya FPO, which is the first millet processing unit in the district of Belagavi. The solution is a complete clean energy driven post harvest processing unit and the processing unit will act as center of excellence in promoting clean energy from post harvest processing point of view.

## SPOTLIGHT

### पटमदा. टैगोर सोसाइटी फॉर रूरल डेवलपमेंट स्थित महिला समूह की पहल बिजली की कटौती से थीं परेशान अब सौर ऊर्जा ने बनाया आत्मनिर्भर



मसला पीसने व पैकिंग के कार्यों से जुड़ी महिलाएं.

#### प्रतिष्ठि, पटमदा

पटमदा के माचा गांव स्थित टैगोर सोसाइटी फॉर रूरल डेवलपमेंट स्थित महिला समूह की बिजली की समस्या को देखते हुए सेल्को फाउंडेशन ने ट्रेनिंग सेंटर में सौर ऊर्जा की व्यवस्था की है. सौर ऊर्जा से महिलाओं अब बिना किसी परेशानी के मसला पीसने, सेनेटरी पैड पैकिंग और दाल पैकेजिंग का काम कर रही हैं. यहां कार्यरत महिलाएं 10 किलोमीटर दूर से चल कर आती थीं, लेकिन बिजली नहीं होने से काम नहीं कर पाती थी और उनका पूरा दिन व्यर्थ चला जाता था. इसे ध्यान में रखते हुए सौर पावर की व्यवस्था की गयी. सौर पावर लगने से महिलाओं को अब बिजली का इंतजार नहीं करना पड़ता है. महिलाएं अपने काम को सही वक्त पर समाप्त कर घर चली जाती हैं और अपने घर-परिवार को ज्यादा समय देकर खुश हैं.

#### सैनिटरी पैड बाजार में बेचते हैं

सभी महिलाएं मसला पीसने, और और मिर्च की प्रिंटिंग करती हैं. पीसने के बाद उसे छलनी से छाना जाता है फिर पैकेट बनाया जाता है. 50 ग्राम, 100 ग्राम और 250 ग्राम के पैकेट व दाल के पैकेट, महिलाओं द्वारा निर्मित सेनेटरी पैड बाजार में बेची जाती हैं. जिससे उन्हें अपनी स्वतंत्र आय होती है. अब हमें दूधो पर आश्रित नहीं रहना पड़ता है, हमारे और भी महिलाएं प्रेरित हो रही हैं.

-अंशिका महतो

#### अब बिजली कटने की समस्या नहीं

हमलोग दाल के पैकेजिंग का काम भी करते हैं. पहले वह एक कड़ी बिजली से होत था हम कारखाने दूर से आते हैं और बिजली नहीं होने पर वे कारखाने लौट जाते थे. सौर पावर के आने से अभी-गुजरा हो था इसमसला बाहर, बिजली लगाकर रहती है.

-रघोश्री महतो.

राष्ट्रीय कृषि आजीवन विकास बैंक द्वारा वित्त पोषित एगइटीवी (अजीविका और उन्नत विकास कार्यक्रम) परियोजना के अंतर्गत मसला और दाल के बेस्तर उत्पादन, पैकेजिंग, पैकेजिंग व मार्केटिंग आदि के लिए पटमदा के महिला समूह को जोड़ा गया है.

-विनोद कुमार बिहारी, मुख्य माल प्रबंधक गार्डार्ड.

#### 25 महिलाओं का समूह बनाया गया

करीब 25 महिलाओं का समूह बनाया गया है. इसमें 99 महिलाएं काम करती हैं. महिलाएं अपने समय और सक्षमता के अनुसार गुणवत्ता मसला पीसने, सेनेटरी पैड का निर्माण करने और दाल पैकेजिंग का काम करती हैं. तीन सालों में गार्डार्ड के साथ मिलकर सौर सक्षमता समूह से जुड़ी महिलाओं को ट्रेनिंग में सक्षमता की है. इसके कारण यहां की महिलाओं की आय बढ़ी है और ट्रेनिंग के नये अवसर भी प्राप्त हुए हैं. मधुसूदन महतो, टैगोर सोसाइटी.

### Enhancing livelihood through solar energy

A number of livelihood generation activities are carried out by SHG women, including making sanitary pads and adding value to agricultural products however, the electric connection at the processing center was uneven, causing interruptions in operation. SELCO foundation has supported solar powering of the training center to enable women to work at their convenience.

#### RANCHI UNIVERSITY, RANCHI

इंटरनेट के वी.एड. कॉलेजों में छात्रावास के लिए काउंसिलिंग सॉल्यूशन अवरुद्ध करना. झारखण्ड राज्य के सभी मान्यता प्राप्त बी.एड. कॉलेजों व संस्थानों में सत्र 2022-24 में मामाकन के लिए Counselling का कार्य शीघ्र चि. शीघ्र द्वारा दिनांक 11.12.2022 से शुरू किया जा रहा है. यह प्रक्रिया ऑनलाइन होनी जिसका लिंक <https://rurbedcounseling.in> है. इसी लिंक के माध्यम से आवेदन किया जाएगा. Counselling Fee 6000. इसी लिंक के माध्यम से जमा होना. प्रथम राउण्ड में आवेदन करने का समय 11.12.2022 है. प्रथम राउण्ड में केवल वही अभ्यर्थी आवेदन कर सकते हैं, जिन्हें JCECB के द्वारा वर्ष 2022 में इस Counselling में रजिस्ट्रेशन होने के लिए OI से 13500 CML Rank प्राप्त हुआ है. ड. - कुलसचिव रांची विश्वविद्यालय, रांची





***“SELCO Foundation is an important organization for Jharkhand, and I am confident that we will together bring about revolution with their cooperation”***

**- Vinod Kumar Bist (CGM-NABARD)**

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## FEATURE-Got milk? Indian camel herders cash in with solar-powered coolers

Reuters | Updated: 01-02-2023 07:31 IST | Created: 01-02-2023 07:31 IST



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# Research

## Scoping Study

### Solar Aerator in Fish Farming



A scoping study was conducted to better understand the potential intervention of decentralized renewable energy

solutions in the fishery value chain. Based on its findings, few solutions have been identified that could be deployed in pond, biofloc, RAS and caged farming, with the first phase focusing on solutions that can be tested immediately and the second phase focusing on solutions that will require innovation.

Other than this a detailed study is currently in progress to understand the effect of solar-based aerators in pond fishing; the aerators were installed with the goal of testing the DRE-based aerators, which will help in maintaining desired oxygen levels in the pond fishing. SELCO Foundation conducted an end user assessment in September 2020, which indicated that farmers are using solar-powered aerators throughout the month because it is financially feasible for them also fishes were not coming to the surface to take oxygen.

### Solar Powered Tea Processing



A scoping study was carried out in Udalguri Rwdwmsha Tea Producer Company Ltd located in the Borengabari village of Udalguri district in Assam. Its promoting organization - Grassroots Tea corporation (GTC) collaborates with small tea growers and operates at the aggregation, repacking, wholesale and retail of authentic tea. The scoping study was conducted with the aim of understanding existing gaps and challenges for the Small Tea Growers' community that is engaged in the process. It helped identify the feasibility of the solar intervention and innovation in these tea processing factories. Members in the TPC reported erratic power supply which was a barrier for tea production as it deteriorates the quality of leaves. And diesel are expensive option; its current rate is Rs 85/litre. In a particular month, using diesel costs them around Rs 1 lacs.



# Value chain

## Ecosystem mapping: Rice Value Chain -Jharkhand and Assam



This research is aimed at documenting a detailed analysis of the rice value chain to identify the potential for sustainable energy-driven technology innovation to enable access to more sustainable, reliable, and affordable local infrastructure for community needs. The study will map synergies with government and FI programs/ schemes to strengthen nodal points in the value chain to facilitate the development of suitable agribusiness financing models. The value chain assessment will entail agronomic production profiles ( flow of agricultural products, the flow of funds and information, etc.); functional analysis of each value chain (profiling of industry structure, adoption of skills, technology, and innovation); climate change implications; economic analysis of potential opportunities to add value along the chain; and policy - institutional conditions necessary to create a suitable enabling environment for value chain development. Demand and market conditions also play a key role to assess input and output markets, their structure and dynamics between actors, procurement processes, related standards, the existence of monopolies, and identification of lead firms.

## Identifying the scope of micro irrigation in paddy cultivation



One kg of rice requires 5000 litres of water! Each time you eat a rice meal, you also consume 450 liters of water.

Flood Irrigation is the predominant method of irrigation in paddy since it prevents weed infestation. This works well for areas with abundant water resources. But due to the increasing climate stress, there is a need for water-conservative techniques that are feasible to adopt. Micro irrigation systems reduce water requirements through the precise application of water in the form of spray (sprinklers), drops(drip irrigation), etc. Drip irrigation, if installed properly can reduce the water requirement of paddy up to 80%

Weed infestation is a problem to consider but the main issue is the financial burn of the solution. Experiences in the rice value chain have shown that farmers do not adopt technology solely for the purpose of resource conservation and energy efficiency alone. In India, water is not metered, and power is highly subsidized. New technologies are accepted by the farming community, if its profitable, and supported by the farmer friendly policies by governments offering subsidies and other incentives.

Based on technological research and end-user interaction, we have arrived at a package of solutions that can potentially

reduce the cost of drip irrigation systems making it financially viable for the farmer. It includes

1. Crop rotation (Eg. Rice-Maize-Onion) to use the drip irrigation system throughout the entire year.
2. Formation of a production cluster based on the water source and implementing a centralized drip system to minimize the cost of filters and water pumps.

Currently, studies are underway to understand existing rice fields with drip systems and looking for potential sites to conduct testing in the coming rice season.

## Digital Agriculture- IoT based on farm innovation for agriculture production clusters



Climate stressors, water scarcity and labour bottlenecks are significantly impacting farming today, leading to increased production cost and delayed cultivation. The inclusion of IOT based on farm technologies is the key to addressing water, labour scarcity, and drudgery. Digital agriculture includes the following:

1. Automated Irrigation
2. Weather Monitoring
3. Crop Health Monitoring and Fertilization

Automated irrigation setup consists of soil moisture & temperature sensors, micro

irrigation setup, and a controller connected to the cloud. Irrigation commences when soil moisture falls below the fixed value and stops when the limit is reached. The end user is routinely informed about the irrigation status of the farm through regular SMS updates.

Weather monitoring is done with the help of an Automated Weather Station (AWS) or commercial forecast provider. The AWS unit consists of equipment for recording air temperature, humidity, wind speed & direction to predict the weather. The data is uploaded to the cloud which can also be accessed by the end user. The fertigation unit consists of gate valves and fertilizer tanks. Based on the inputs from initial field testing and weather conditions, fertigation is automated which leads to increased application efficiency. Overall, Digital agriculture can reduce the production cost in the long run, save water and other resources such as labor & fertilizers, and effectively reduce drudgery associated with irrigation and fertigation.



# Key Programs

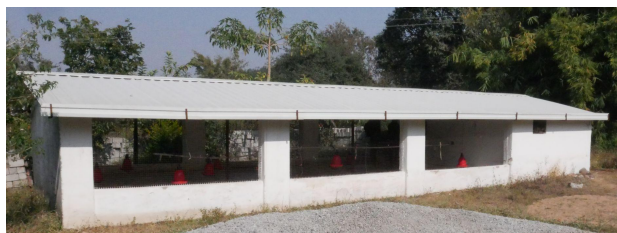
## 1. Ecosystem building for institutionalization of DRE based livelihood solutions among watershed development area with Agri department



With the support of the Karnataka agriculture department, 40 end users have been identified in the chitradurga district of south Karnataka for replicating the

solar powered milking machine. The milking machine will eliminate the drudgery involved in the milking process and lower the operating costs associated with running the appliance through petrol and diesel generators. Also In order to better integrate the technology into the dairy value chain, end users are being trained on the maintenance of solar panels and other appliances.

## 2. Climate-responsive improved roofing innovations for women-led smallholder poultry farmers



Improved roofing solutions were deployed in a prototype project across ten selected women-led smallholder poultry sheds in Gumla, Jharkhand in the month of December 2022. This is **phase one** which is an ongoing collaboration between Jharkhand Women's Self-Supporting Co-operative Federation (JWSPCFL) and its constituent cooperative in the district of Gumla; The Gumla Grameen Poultry Society (GGPS), along with SELCO Foundation have worked on the renovation-testing of two types of roofing - PUF Panel and PPGI sheet roofing with Aluminium bubble wrap insulation. This comes as a response to the ongoing challenges faced by women producers on an yearly basis with increased mortality in the summer months owing to rising temperatures.

Both the improved roofing solutions were chosen as testing prototypes to better understand their performance in Gumla's subtropical-semi arid climate typology with the objective of improving the FCR, mortality and weight gain of the birds for broiler farming.. The ongoing post-occupancy evaluation will look at analyzing data across seasons and cycles

while keeping in mind the behavioral changes of birds, the amount of fuel usage in brooding in winters, the mortality, FCR and weight gain of the birds in response to the deployed improved solutions.

### 3. Solar-powered aerator for biofloc fish culture



To test the solar based aeration solution, existing aerators of fish farmers were solar powered wherein the purpose was to reduce the cost of operation in biofloc based fishing system, this was done in partnership with odisha livelihood mission (OLM) which is an autonomous society under Department of Mission Shakti, Government of Odisha, the capacity building of the end was done by PRADAN NGO. The learnings from this initiative will be used to pilot the solution in Kalahandi, Rayagada and Koraput district of odisha. Through the pilot process financial suitability will be integrated into the program and the learnings of the pilot program will influence stakeholders at different levels of the value chain to adopt the solution

### 4. Cold Press Oil Processing unit: Process & Partnership



The project focuses on implementation of Solar Powered Cold Press Oil Processing Unit with one of the SHGs at a community level. Stakeholders in the ecosystem include NRLM Koppal (District Administration), Karnataka Grameen Bank, and SELCO Foundation. It also highlights the importance of Asset Based Intervention for Income generating activities and also local processing and value addition for oil seeds (groundnut, Safflower, Coconut). The project was financed by RRB depicting the aspects of financial inclusion through such innovative rural livelihood projects.

### 5. Farrowing Crate for pig

Pig farrowing crates are metal crates within a pen in which pregnant sows are housed before giving birth. Farrowing crates prevent the sows from turning around and only allow them to move forward and backwards slightly. Alongside the farrowing crate, within the pen, there is a "creep area" for the sow's piglets. The piglets are able to reach the sow's teats to suckle but she is prevented from being able to clean or interact with them. The bars of the farrowing crate allow the sow to stand



up and lay down, reducing the risk of harming her piglets. The solar lights in the farrowing crate will also create an environment with proper heating for the piglets to grow. Moreover, it gives a more hygienic environment for both the sow and piglets as the feces and urine doesn't remain within the cage itself.

## IN MEMORY

### Remembering our champion end user



Gopikanta, father of Anjan Rajbonshi, an entrepreneur based out of Dakshin Bangakata village of Chaygaon block in Kamrup Rural, which is 40 km away from Guwahati is running a solar-powered Agro-processing facility center. Earlier he was working as an electrician in

industrial center nearby where he had to work day and night to get INR 8000/month only.

This mill has solar pv capacity of 3.3 kWp with 2000Ah Battery Bank (200 Ah\* 10). It consists of a 3HP motor rice huller with a pulverizer that can provide output of 200 kg/hr. It can run for 3 hours on average. According to Anjan, the quality of grinding is better in the solarized power mill as the items get finely grinded. He charges INR 5/kg for grinding and INR 1.25/kg for milling. Around 200 households out of the 500 households within the 2 km radius, come for availing the services. He provides services of 20 kg items per household.

Apart from benefitting the villagers in the area, it is also benefiting other entrepreneurs in the village. One of them is Anil Boro who sells local rice beer for which he comes to Anjan Rajbonshi for grinding rice and a local leaf used for making the wine. He sells 1500 bottles a month for INR 30 each. Moreover, according to him, a solarized intervention was a feasible option because frequent power cuts in the area affected the process.

# INAUGURATION

## Basic energy at cage culture



In partnership with Odisha Livelihood Mission / Mission Shakti and Directorate of Fisheries, Odisha, SELCO Foundation has provided basic lighting and fans to that floating hut/cottage, where the SHG members keep their equipment and fish feed etc. so that this input can be well protected during night time. The objective is to provide clean energy solutions which are affordable and help the community for sustainable livelihood and income enhancement. The cage culture was inaugurated by District Collector Ananya Das on 27th October 2022. The cage culture is managed by Kilasama GPLF formed by 4 SHGs i.e. Alibha SHG, Manisha SGH, Subhasree SHG and Jai Maa Durga SHG. There are a total of 40 members in the GPLF. They have hired 2 persons for managing the day-to-day activity.



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