CREATING A SOLARPRENEUR ECOSYSTEM FOR PERSONS WITH DISABILITIES IN RURAL INDIA

SHOWCASE OF 10 STORIES OF SOLARPRENEURSHIP
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SELCO Foundation’s program seeks to address the challenges faced by Persons with Disabilities (PwDs), by creating an inclusive ecosystem using Decentralized Renewable Energy (DRE) as catalyst to enable accessibility and reliability for disabled communities through various livelihood opportunities.

A large number of persons with disabilities come from impoverished backgrounds, and are at a greater risk of poverty and more likely to be part of the informal economy experiencing the worst socio-economic outcomes.

Besides income poverty, people with disabilities also face higher risks of multidimensional poverty and are disproportionately affected by climate change.

They often encounter,
- Barriers accessing healthcare and public infrastructure,
- Adverse effects of heat stress,
- Difficulties using assistive tech during power outages,
- Challenges in evacuating during disasters

These factors exacerbate the already complex socio-economic stigmatization faced by persons with disabilities.
Develop innovative solutions with a mix of energy efficient appliances, decentralized renewable energy and sustainable built environments which lead to sustainable and resilient models for livelihood generation.

Create an enabling environment for delivery of appropriate livelihood technologies, financial and market linkages, trainings and policy environment.

**SELCO Foundation’s Approach**

**Ecosystem Building for DRE driven Livelihoods for PwDs**

Spur enhancement of livelihoods, increased incomes and drudgery reduction for businesses run by PwDs.

**HOLISTIC SOLUTION DESIGN**

- **Linkages**
  - Backward and forward linkages with market linkages. Access to services provided through other ecosystem pillars

- **Technologies**
  - Energy efficient productive technologies and less laborious work
  - For business development, operational efficiency, asset management, financing, outreach & marketing etc.

- **User and Livelihood Needs**
  - For purchase of assets, working capital, growth & expansion along with supporting policies

- **Policy & Advocacy**
  - Supporting policies for financing or sales expansion and linkages

- **Infrastructure**
  - Energy efficient and climate responsive built environments for accessibility, housing, machines, storage, etc.

- **Training & Capacity Building**
  - Disability friendly Productive Technology
  - Inclusive and Accessible Workspaces
  - Accessible and Blended Finance
  - Trainings, Mentorship and Linkages
Phase 1 (21–22) & Phase 2 (22–23) of SELCO Foundation & EnAble India’s PwD Solarprenership Program, focused on the scaling of DRE livelihood solutions for PwDs through their Garv Se Centres in 2 districts of Karnataka.

**Phase 1 and 2 Outcomes**

- 75+ PwD Entrepreneurs
- 02 Districts in Karnataka
- 09 DRE Livelihood Solutions

**Entrepreneurs Level Impact**

- Average
- 30 to 50% Monthly Income Increase across cases
- Reduced Physical Strain and Improved Health & Wellbeing of PwD Entrepreneurs
- Higher and Improved Work Productivity for PwD entrepreneurs
- Self Reliance, Financial Independence and Increased Confidence through DRE Livelihoods

**Ecosystem Level Impact**

- Integration of DRE livelihood technology trainings within PwD Entrepreneurship Development Programs
- Mapping of viability of technology solutions against different types of disabilities
- Evidence of cash flows and validation of business models for 9 DRE solutions
- Creation of SuryaMitra Training Centre as a sector asset for all aspiring PwD entrepreneurs
BACKGROUND & CONTEXT:
Mahaboob Bi, a 42-year-old woman, was forced out of employment in 2017 when the soap making factory where she worked unexpectedly shut down, thereby leaving her with no reliable source of income. As a result, she and her husband decided to start a family run enterprise in 2017 producing papads and rolling beedis. Mahaboob would make papads and roll beedis manually, while her husband would transport, market and sell the final products.

PROBLEM STATEMENT
Limitation by Disability
Limited Productivity and Income
Challenges in mobility, lifting heavy objects, accessibility
Reduced output due to high drudgery and frequent breaks during the manual process

SOLUTION SUITABILITY
Factors determining the need for mechanization of existing livelihood
To enable ease of work and providing a competitive edge in the market
To increase sales to cater to existing and new customers

ABOUT THE SOLUTION:
After attending Enable India’s ‘Enterprise Development Program’, Mahaboob understood the benefits of mechanisation through efficient technologies, inspiring her to mechanise her manual papad making process. In order to upgrade and enhance her livelihood, SELCO Foundation in collaboration with EnAble India, provided her with a Solar Powered Hydraulic Papad Making Machine.

Total Cost of the Solution (Technology + Solar): INR 1,85,000 /

IMPACT OF THE SOLUTION
Easy of Working, due to Reduced Drudgery and Time taken for tasks
50% increase in monthly income from INR 5,000 to INR 10,000
3 times increase in production from 100 to 300 packets/month
50% reduction in the time taken to produce 1 packet of papad, from 2 hrs to 1 hr

"Now with this machine, my work is a lot easier with the support of my husband and my kids"
Thippe Rudraiah

**Chilly Crushing Business**

Chikkaballapur, Karnataka

Locomotor Disability (By Birth)

Non functional left arm

Flour Milling Business & Dairy Farmer

**BACKGROUND & CONTEXT:**
Thippe Rudraiah, aged 54, resides with his wife and two sons. He has been operating a flour mill since the last 15 years, offering milling services for ragi, masalas and other grains. He also rears two cows and sells their milk to a local cooperative collection center.

Due to financial constraints, Thippe was using the same machine to grind ragi, chilly powder and masalas, which would often alter the flavour of the end products, thereby leading to a decline in number of customers.

**IMPACT OF THE SOLUTION**

“Everyone is coming to my house these days to see the machine. They are amazed to see it and congratulate me for this venture”

**ABOUT THE SOLUTION:**

After attending Enable India’s ‘Enterprise Development Program’, Manjunath realized the importance of improving his operational efficiency to address customer grievances and maximize his profits. To segregate the milling processes for his customers, Manjunath decided to set up a separate Solar Powered Chilly Crushing Machine with the support of SELCO Foundation and EnAble India.

Total Cost of the Solution (Technology + Solar): INR 41,000 /-

**IMPACT OF THE SOLUTION**

- Improved Customer Satisfaction and increased sales due to segregation of milling processes
- Reduced Wear and Tear of the existing Flour Milling Machine
- 60% Savings on Energy Expenditure (Electricity) from INR 5000 to INR 3000
- Social Recognition for adoption of Solar Livelihood Technology

Manjunatha

**Petty Shop Owner**

Chikkaballapur, Karnataka

Low Visibility (By Birth)

Complete blindness in low light

Petty Shop Owner and Seasonal Agricultural Labourer

**BACKGROUND & CONTEXT:**

Manjunatha Reddy, 37 years old, lives with his parents, wife, and a 3-year-old son on his 2-acre agricultural farm. To supplement his income, he established a petty shop opposite the Panchayat office in 2020, where he sells condiments, tea, coffee, and water.

Being in proximity to the Panchayat and Dairy Cooperative Collection Centre, the shop has substantial customer footfall throughout the day.

“Presence of light in the shop is really helpful since it helps me to see better in the evening and also when there is no electricity”

**ABOUT THE SOLUTION:**

After attending Enable India’s ‘Enterprise Development Program’, Manjunath realized the importance of diversifying his income sources. While he had prior knowledge of solar technology, he was introduced to benefits of DRE powered livelihood solutions through the collaboration between SELCO Foundation and EnAble India. In order to diversify his income and enhance his existing petty shop, Manjunath opted for a Portable Solar Powered Printer.

Total Cost of the Solution (Technology + Solar): INR 41,000 /-

**IMPACT OF THE SOLUTION**

- Business expansion via increased hours of working due to the presence of light post 6pm
- 67% Increase in monthly income from INR 15,000 to INR 25,000
- 50% Savings on Energy Expenditure (Electricity) from INR 1500 to INR 750.
- Increased customer footfall and daily socialization due to diversified services
**IMPACT OF THE SOLUTION**

**Gangaratna**

**Agarbatti Making Business**

Chikkaballapur, Karnataka

Locomotor Disability (By Stroke)
Non functional left arm
Home Maker & First time Entrepreneur

**ABSTRACT & CONTEXT:**
Gangaratna, aged 35, has completed her education up to the 7th grade. She lives with her husband and two children. Her husband is a farmer, mainly cultivating Jowar. They also rear two cows and sell their milk to the district cooperative collection center.

Gangaratna’s house has no electricity due to absence of grid power supply at her village. She is aware about the application of solar for home lighting, through the solar lighting system installed at her house.

**PROBLEM STATEMENT**

- Limitation by Disability
- Limitation in manual work. No employment opportunities
- Absence of Grid Connection
- No electricity(grid) to pursue any home based livelihood.

**SOLUTION SUITABILITY**

- Existing factors determining the need for the solution-
- Financial independence through entrepreneurship
- To address need for reliable energy and mechanized processes to meet customer demand
- No electricity(grid) to pursue any home based livelihood.

**ABOUT THE SOLUTION:**
Although familiar with solar technology, she was not aware of solar powered livelihood solutions. During one of SELCO’s demonstrations, Gangaratna recognized the potential of adopting an alternate source of livelihood powered by solar energy. Through the collaboration between SELCO Foundation and EnAble India, Gangaratna was provided with an **Solar Powered Agarbatti Making Machine,** thereby starting her entrepreneurial journey.

**Total Cost of the Solution (Technology + Solar): INR 2,85,000/-.**

**IMPACT OF THE SOLUTION**

- Diversification of Household Income
- Financial independence through monthly income generation of INR 10,000/-
- Ability to efficiently cater to existing market demand due to mechanized processes
- Self reliance and renewed sense of livelihood

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**Bharath**

**Dairy Farmer**

Hassan, Karnataka

Locomotor Disability (By Birth)
Dairy Farmer

**ABSTRACT & CONTEXT:**
Bharath, aged 28 years lives with his family Aarati of 6 in Hassan District. Previously, he worked as a daily wage labourer, but his limited access to long distances hindered his work and income.

However, the seasonal nature of agricultural work, and his physical limitations would often hinder his work and income. Bharath’s father owned one cow, and Bharath wanted to expand the business and supplement their income by selling the milk.

**PROBLEM STATEMENT**

- Limitation by Disability
- Challenge in mobility, lifting heavy objects and travelling long distances
- Limited Productivity and Income
- High drudgery in dairy farming and limited access to alternative livelihood
- No mechanization of existing cattle for milk production

**SOLUTION SUITABILITY**

- Factors determining the need for mechanization of existing livelihood
- To enable expansion of cattle for milk production (self owned and run)
- To mitigate the drudgery involved in the manual milking process

**ABOUT THE SOLUTION:**
After attending Enable India’s ‘Enterprise Development Program’, Bharath learnt about benefits of solar power for enhancing livelihoods. This encouraged Bharath to **start his own dairy business (with one cow initially),** and with the support from SELCO Foundation and EnAble India, he was able to install a **Solar Powered Milking Machine** to mechanize the milking process.

**Total Cost of the Solution (Technology + Solar): INR 85,000/-.**

**IMPACT OF THE SOLUTION**

- Reduced drudgery and time consumption, due to mechanization
- Increase in the number of cattle, from 1 to 7 cows, after the solution
- 76% increase in monthly income from INR 6,000 to INR 25,000 due to increased milk production and improved hygiene
- Increased self reliance and financial independence
Saraswathi
Eatery Owner

Devanahalli, Karnataka
Dumb and Deaf (By Birth)
Hoteller and Agriculture-Dairy Farmer

BACKGROUND & CONTEXT:
Saraswathi, aged 45 years, lives with her parents, brother and sister-in-law. The family owns 0.5 acre land where they grow ragi and also rear cattle.

After discontinuing her studies, Saraswathi could not independently set up a business or pursue a job, since she requires constant assistance for basic communication. She now works at the hotel that her family set up next to the DC Office in March 2023. They serve lunch items like biryani, curries etc.

PROBLEM STATEMENT
Limitation by Disability
Limited Employment Opportunity

SOLUTION SUITABILITY
To improve existing family run restaurant business
Existing factors determining the need for the solution

ABOUT THE SOLUTION:
Saraswathi had been limited to home based agriculture business due to communication challenges with outsiders. After attending Enable India’s ‘Enterprise Development Program’, Saraswathi learnt about benefits of solar power for livelihoods enhancement. When SELCO Foundation and Enable India approached her, she was inspired to install a Solar Powered DC Fridge at their restaurant.

Total Cost of the Solution (Technology + Solar): INR 95,000 /-

IMPACT OF THE SOLUTION
Ability to cater to customer demands for cold beverages
Additional monthly income of INR 3000 through the sales of cold drinks and water
Reduced transaction costs due to reduced losses of perishable items that are now stored in the fridge

Srinivas
Carpentry Business Owner

Chikkaballapur, Karnataka
Locomotor Disability (From Gangrene)
Carpentry and Mat Weaving Business

BACKGROUND & CONTEXT:
Srinivas, a 33-year-old man, resides with his family. He could not continue with his education after his amputation, and has been confined to his home since. To support his family, he started weaving mats.

To supplement his family’s income, Srinivas, along with his father and nephew, started a carpentry shop 3 months ago at their backyard. While family members do the labour-intensive tasks, Srinivas provides the final finishing touch to each piece.

PROBLEM STATEMENT
Limitation by Disability
Limited Employment Opportunity

SOLUTION SUITABILITY
To augment existing carpentry business having sufficient daily demand
Existing factors determining the need for the solution

About the Solution:
After attending Enable India’s ‘Enterprise Development Program’, Srinivas recognized the benefits of solar powering his recently established shop to reduce his monthly operational expenses. In order to enhance his livelihood, SELCO Foundation in collaboration with Enable India, Solar Powered his Carpentry Shop and provided him with a Lighting System.

Total Cost of the Solution: INR 3,52,000 /-

IMPACT OF THE SOLUTION
Improved Productivity due to additional 2 to 3 hours of operation per day due to uninterrupted power supply
60% Savings on Energy Expenditure (Electricity) from INR 5000 to INR 3000
Increase in monthly income from INR 35,000 to INR 45,000
Employment generation for 5 people at the shop
**Satish**

**Petty Shop Owner**

- Devanahalli, Karnataka
- Locomotor Disability (By Accident)
- Petty Shop Owner

**BACKGROUND & CONTEXT:**

Satish, aged 38, resides in Devanahalli with his wife and two daughters. His life took a turn after an accident, ending his work at a mining quarry in 2017.

Left with no other means to sustain his family, Satish set up a small petty shop in his locality, which he now manages together with his wife.

“After we got this fridge and realised it’s potential, we are now shifting our shop to the main road. This will attract more customers and help us with our business.”

**ABOUT THE SOLUTION:**

After attending Enable India’s ‘Enterprise Development Program’, Satish learnt about product diversification and alternate opportunities for his expanding business. When SELCO Foundation in collaboration with EnAble India approached Satish, he was able to link the benefit of a Solar Powered DC Fridge to augment his income and diversify his existing petty shop business.

**IMPACT OF THE SOLUTION**

- Ability to cater to customer demands for cold beverages
- 33% increase in monthly income from INR 6,000 to INR 9,000 due to an added service. *Income Diversification*
- Increased customer footfall at the shop due to a well illuminated shop after sunset

**Total Cost of the Solution (Technology + Solar): INR 95,000 /-**

**Shahidullakhan**

**Digital Service Centre**

- Doddaballapur, Karnataka
- Locomotor Disability (By Birth)
- First Time Entrepreneur

**BACKGROUND & CONTEXT:**

Shahidula khan, aged 23, lives with his parents and elder brother. His father is a semi-skilled worker specializing in installation and repair services. Shahidula’s elder brother manages a cyber shop and Shahidula would assist him in the evenings during his college.

Despite wanting to earn his own livelihood, Shahidula had to continue working at his brothers shop post graduation due to constant rejections from employers.

Shahidullakhan setup a separate home based digital service centre facing the road, which enables easier outreach of his business.

**ABOUT THE SOLUTION:**

Shahidulla was introduced to EnAble India 7 years ago and after attending their ‘Enterprise Development Program’, he learnt about business initiation by setting up his own livelihood. When SELCO Foundation in collaboration with EnAble India approached Shahidula, he was able to then link the benefit of a Solar Powered Printer to start a home based digital service business.

**IMPACT OF THE SOLUTION**

- Ability to cater to customer demands for cyber services in the locality
- Income generation of INR 10,000 monthly through the business
- Improved self reliance and more financial independence
- Ownership of Capital Assets

**Total Cost of the Solution (Technology + Solar): INR 41,000 /-**
Svarnamangla
Petty Shop Owner

Bangalore Rural District, Karnataka
Locomotor Disability (By Stroke)
Petty Shop Owner and ASHA Worker

BACKGROUND & CONTEXT:
Svarnamangla lives in Hosahalli with her husband, children. She along with her husband run a petty shop where they sell tea, coffee and other condiment items. Svarnamangla suffered a spinal injury followed by a stroke, which left her handicapped. To support her husband with household and medical expenses, Svarnamangla enrolled as an ASHA worker.

“Left hand is less functional, limitation in type of activity
Confined to home based workspace
This technology is so convincing that now I want to integrate a printer into my shop business expansion and better earnings

PROBLEM STATEMENT
Limitation by Disability
Left hand is less functional, limitation in type of activity

Limited Productivity and Income
Confined to home based workspace

SOLUTION SUITABILITY
Existing factors determining the need for the solution
To leverage existing petty shop business with a good customer base
To cater to the demand for sugarcane juice the area

ABOUT THE SOLUTION:
After attending Enable India’s ‘Enterprise Development Program’, Svarnamangla learnt about product diversification and business strategy to boost income. The training inspired her to overcome disability-related challenges and concentrate on advancement. To enhance her petty shop, and in lieu of her physical limitations, Svarnamangla with the support of SELCO Foundation and EnAble India set up a Solar Powered Sugarcane Juicer at her shop.

Total Cost of the Solution (Technology + Solar): INR 1,14,000 /

IMPACT OF THE SOLUTION
Business Expansion via increased hours of working, due to availability of solar lighting post sunset
Increased customer footfall due to diversified services
3X increase in income from INR 250 to INR 750 per day due to the added sugarcane service
Self reliance and renewed sense of confidence

DRE Livelihood Opportunities

Food Processing Sector
- Roti Making Technology
- Papad Making Technology
- Dough Kneading Technology
- Chips Making Technology
- Chakli Making Technology
- Oil Milling Technology
- Chilly Pounding Technology
- Flour/Dal Milling Technology

Manufacturing Sector
- Rope Making Technology
- Agarbatti Making Technology
- Blacksmith Unit with Blower

Retail & Services Sector
- Provision Shop with Printer and DC Fridge
- Digital Service Centre
- Petty Shop with Sugarcane Juicer
- Barber Shop with Trimming Technology
- Eateries / Hotels
- Tailoring Unit with Sewing Machine
- Puncture Shop

Dairy & Poultry Sector
- Milking Machine
- Hydroponics (Fodder Technology)
- Biodigester Technology
- Pressure Washing Technology
- Milk Chilling Technology
- Egg Incubator
- Poultry Shed Lighting

Scan to know more about these DRE livelihood technologies
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