



**CREATING A  
SOLARPRENEUR  
ECOSYSTEM FOR  
PERSONS WITH  
DISABILITIES  
IN RURAL INDIA**

*SHOWCASE OF 10  
STORIES OF  
SOLARPRENEURSHIP*



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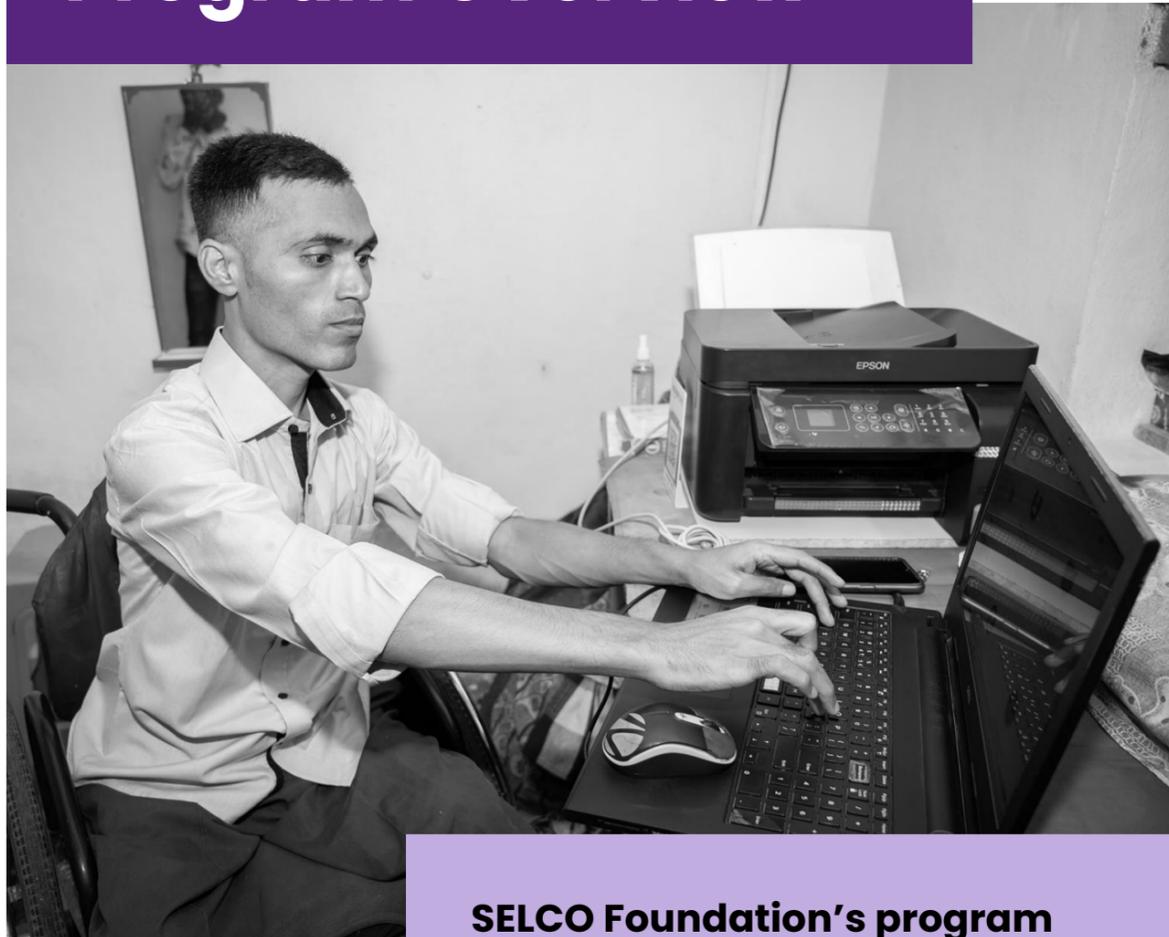


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## Stories of Change

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# Background and Program Overview



**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.

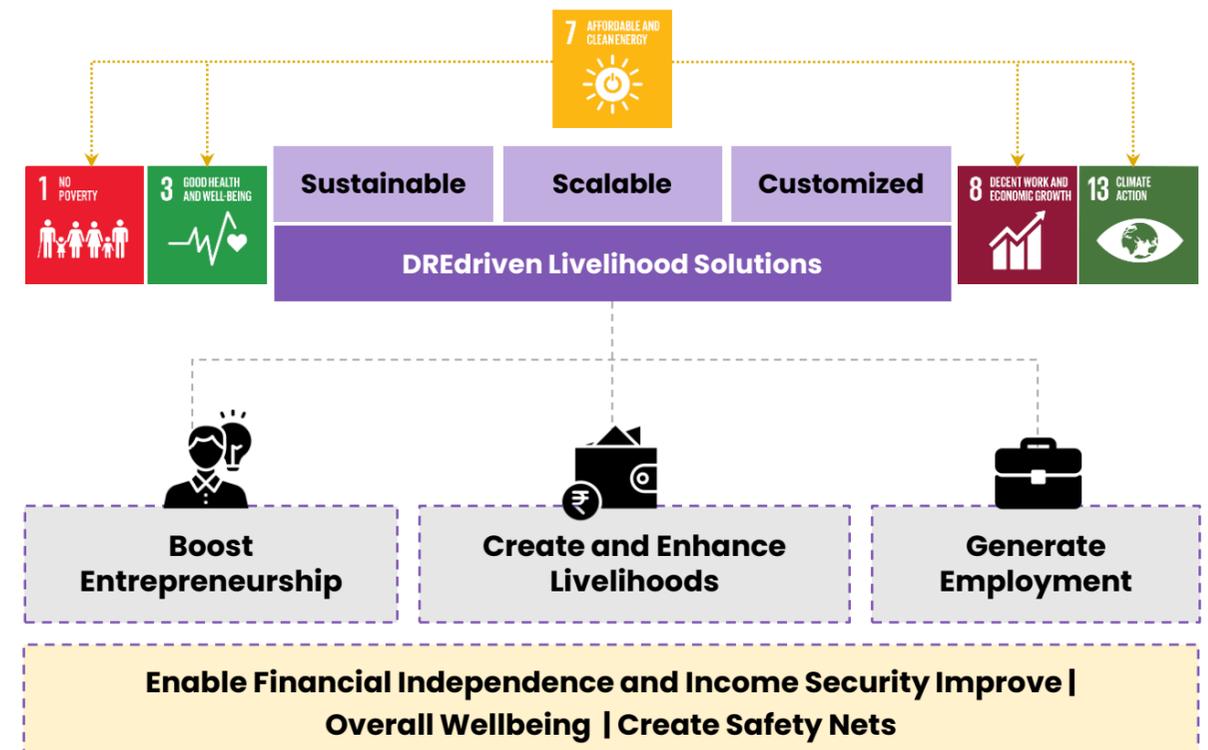
A large number of persons with disabilities come from **impoverished backgrounds**, and are at a greater risk of poverty and more likely to be **part of the informal economy** experiencing the worst socio-economic outcomes.

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

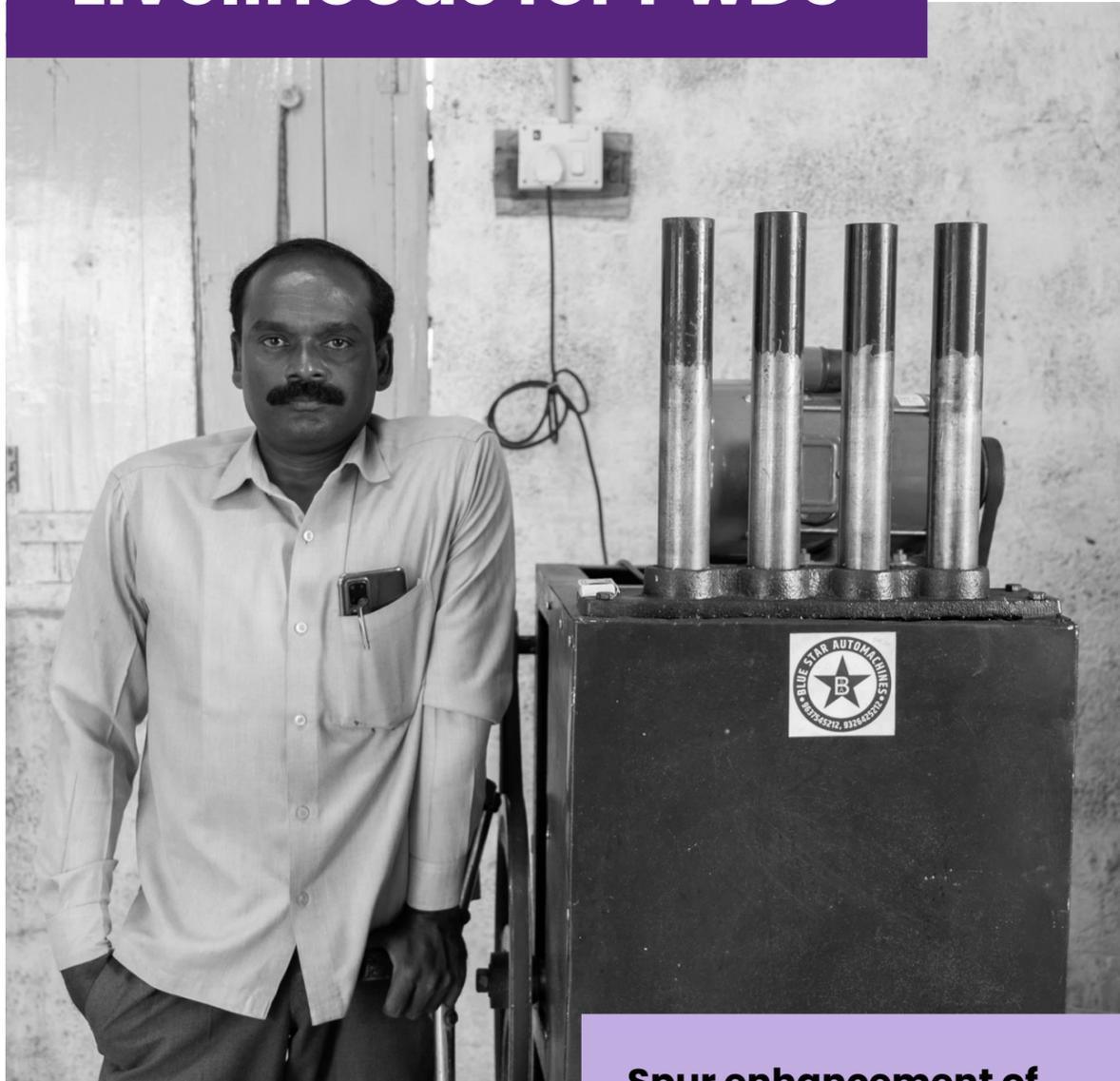
They often encounter,

- ❖ 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.



# Ecosystem Building for DRE driven Livelihoods for PwDs



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

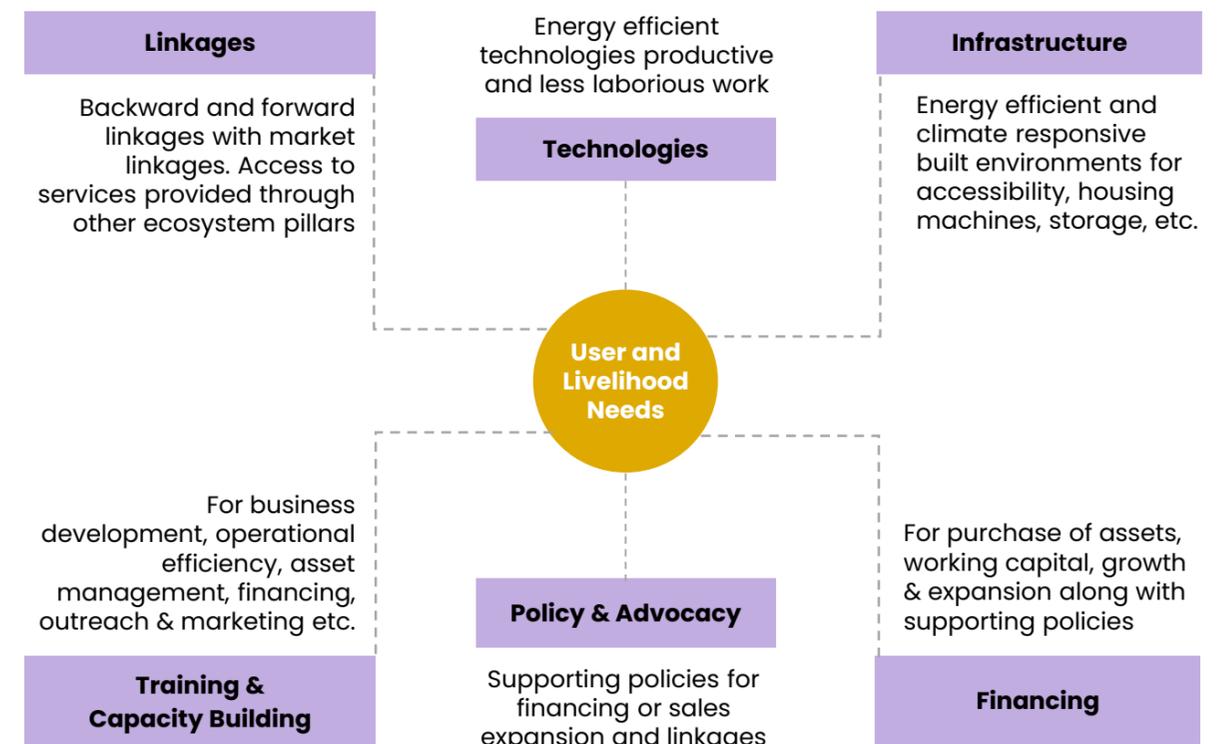
Develop innovative solutions with a mix of **energy efficient appliances, decentralized renewable energy and sustainable built environments** which lead to sustainable and resilient models for livelihood generation.

## HOLISTIC SOLUTION DESIGN



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

## ECOSYSTEM BUILDING & STRENGTHENING



# Partnership for Strengthening the Ecosystem

## Phase 1 (21-22) & Phase 2 (22-23)

of SELCO Foundation & EnAble India's **PwD Solarpreneurship 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

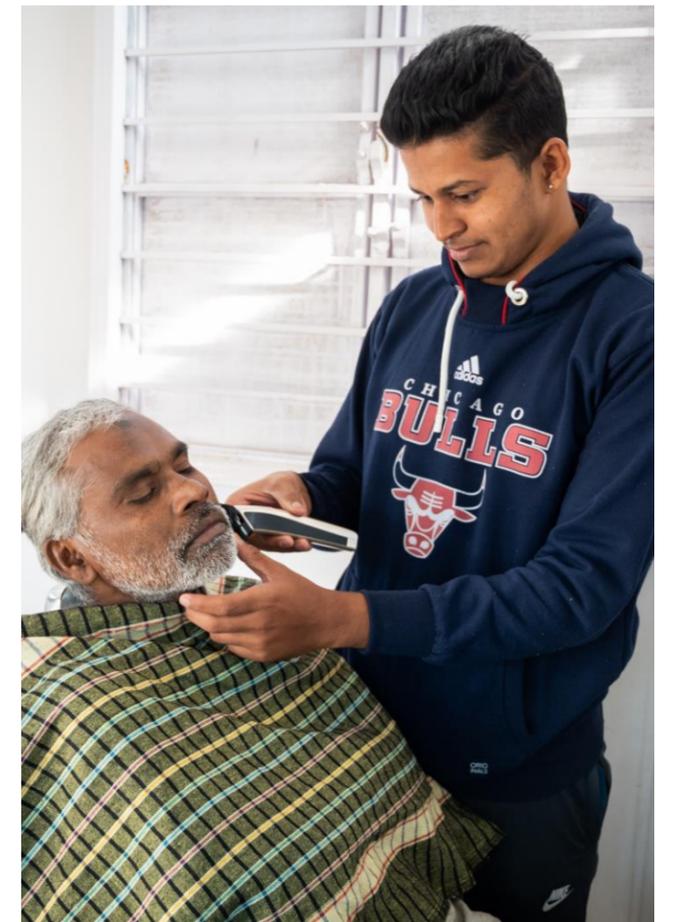
- 75+** PwD Entrepreneurs
  - Locomotor Disability
  - Polio
  - Cerebral Palsy
  - Low Vision / Blindness
  - Deaf & Dumb
  - Hearing Impaired
- 02** Districts in Karnataka
  - Doddabalapur
  - Hassan
- 09** DRE Livelihood Solutions
  - Roti / Papad Making
  - Chilly Pounding
  - Petty Shop (Printer)
  - Petty Shop (Sugarcane)
  - Tailoring
  - Digital Service Centre
  - Barber Shop
  - Agarbatti Making
  - Cow Milking

### 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



# Stories of Change

## DRE driven Livelihoods for PwDs



## Mahboob Bi

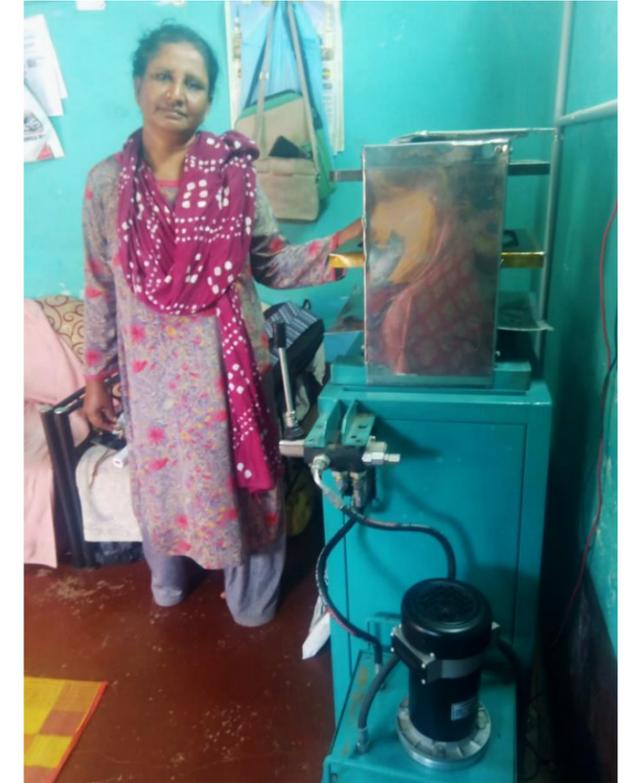
### Papad Making Business

- Chikkaballapur, Karnataka
- Locomotor Disability (By Birth)
- Papad making-Beedi rolling business

#### 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.



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

#### ! PROBLEM STATEMENT

**Limitation by Disability**

Challenges in mobility, lifting heavy objects ,accessibility

**Limited Productivity and Income**

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', Mahboob 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

# Thippe Rudraiah

## Chilly Crushing Business

- Chikkaballapur, Karnataka
- Locomotor Disability (By Birth)  
Non functional left arm
- Flour Milling Business & Dairy Farmer



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

### 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**.

### ! PROBLEM STATEMENT

- Limitation by Disability**: Challenges in any heavy lifting or labour intensive work.
- Limited Productivity and Income**: Customer concerns about a common milling machine for different commodities

### 🌱 SOLUTION SUITABILITY

- Existing factors determining the need for the solution**: To mitigate increased operational costs due to wear & tear and high power consumption
- To increase sales to cater to existing-new customers

### 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 4,30,000 /-**

### 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 adaption 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



*"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"*

### 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.

### ! PROBLEM STATEMENT

- Limitation by Disability**: Difficulty working post sunset (reduced work hours)
- Limited Productivity and Income**: Forced to shut the shop after dark on most days, because of lack of electricity

### 🌱 SOLUTION SUITABILITY

- Existing factors determining the need for the solution**: To address **reduced agricultural wages** due to limited working hours
- To cater to the demand of photocopy and printing services from **Panchayat office**

### 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

# Gangaratna

## Agarbatti Making Business

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



*"Before when I didn't have anything to do, I used to simply sit and while away my time. Now, with this, I am able to utilise my time effectively"*

### BACKGROUND & 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-home based enterprise**: Financial independence through entrepreneurship
- To address **need for reliable energy and mechanized processes** to meet customer demand

### 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 /-**

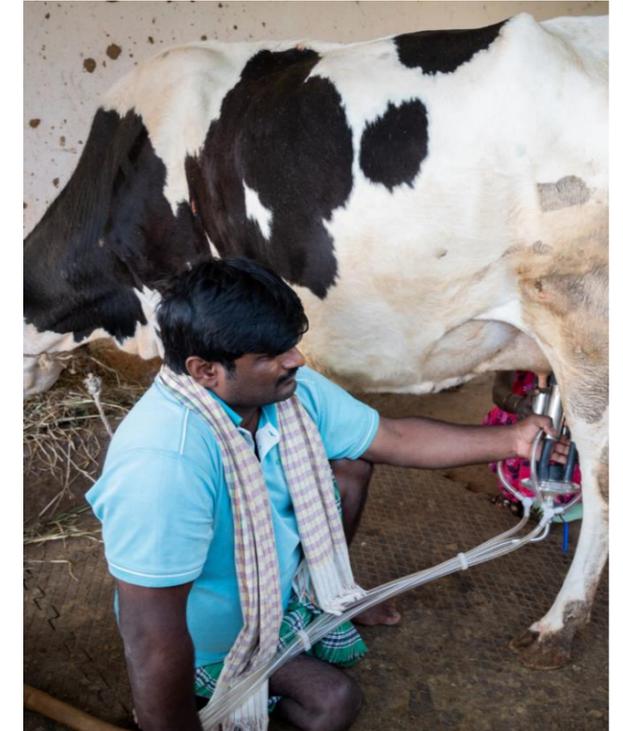
### IMPACT OF THE SOLUTION

- 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**

# Bharath

## Dairy Farmer

- Hassan, Karnataka
- Locomotor Disability (By Birth)
- Dairy Farmer



*"After getting the milking machine, I was bale to increase the number of cows. I am now actively pursuing this dairy business "*

### BACKGROUND & CONTEXT :

Bharath, aged 28 years lives with his family Aarati of 6 in Hassan District. Previously, he worked as a **daily wage labourer** in a nearby field, earning approximately INR 300 per day. 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

### 🔧 SOLUTION SUITABILITY

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

### 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**

# Saraswati

## Eatery Owner

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



### BACKGROUND & CONTEXT :

Saraswati, 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, Saraswati 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**

**Dependent on family for communication**

**Limited Employment Opportunity**

**Non inclusive workspaces, limited aid appliances and overall awareness**

### 🔧 SOLUTION SUITABILITY

**Existing factors determining the need for the solution**

**To improve existing family run restaurant business**

**To initiate sales of cold drinks** for existing and new customers. **Also, store perishable products** like tomatoes, greens etc.

### ABOUT THE SOLUTION :

Saraswati had been **limited to home based agriculture business** due to communication challenges with outsiders. After attending Enable India's 'Enterprise Development Program', Saraswati 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



*"Srinivas's shop is established on land provided by the panchayat in support of his disability"*

### 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 him 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**

**Restricted mobility and accessibility**

**Limited Employment Opportunity**

**Non inclusive workspaces, limited soft skills for getting other employment**

### 🔧 SOLUTION SUITABILITY

**Existing factors determining the need for the solution**

**To augment existing carpentry business** having sufficient daily demand

To reduce **high monthly operational cost** due to commercial meter

### 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



*"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"*

### 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.

### ! PROBLEM STATEMENT

**Limitation by Disability**

Restriction in mobility and lifting heavy objects

**Limited Employment Opportunity**

Lack of employment, forcing him to set up a makeshift shop with low-margin items

### 🔗 SOLUTION SUITABILITY

**Existing factors determining the need for the solution**

To leverage existing petty shop location

To cater to the demand for cold water and cold drinks from customers especially during summer months

### 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.

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

### 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**

# Shahidullakhan

## Digital Service Centre

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



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

### 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.**

### ! PROBLEM STATEMENT

**Limitation by Disability**

Inability to walk long distance and lift heavy objects

**Limited Employment Opportunity**

Inaccessible workspaces and no job opportunities in the factory sector.

### 🔗 SOLUTION SUITABILITY

**Existing factors determining the need for the solution**

To leverage previous **experience** working at his brothers cyber shop

To cater to **growing demand** for printing services near his house

### 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 Shahidulla, he was able to then link the benefit of a **Solar Powered Printer to start a home based digital service business.**

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

### 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**

# Svarnamangla

## Petty Shop Owner

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

### BACKGROUND & CONTEXT :

Sarvamangla 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**.

Sarvamangla suffered a **spinal injury** followed by a stroke, which left her **handicapped**. To support her husband with household and medical expenses, Sarvamangla **enrolled as an ASHA worker**.



*"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', Sarvamangla 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, Sarvamangla 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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