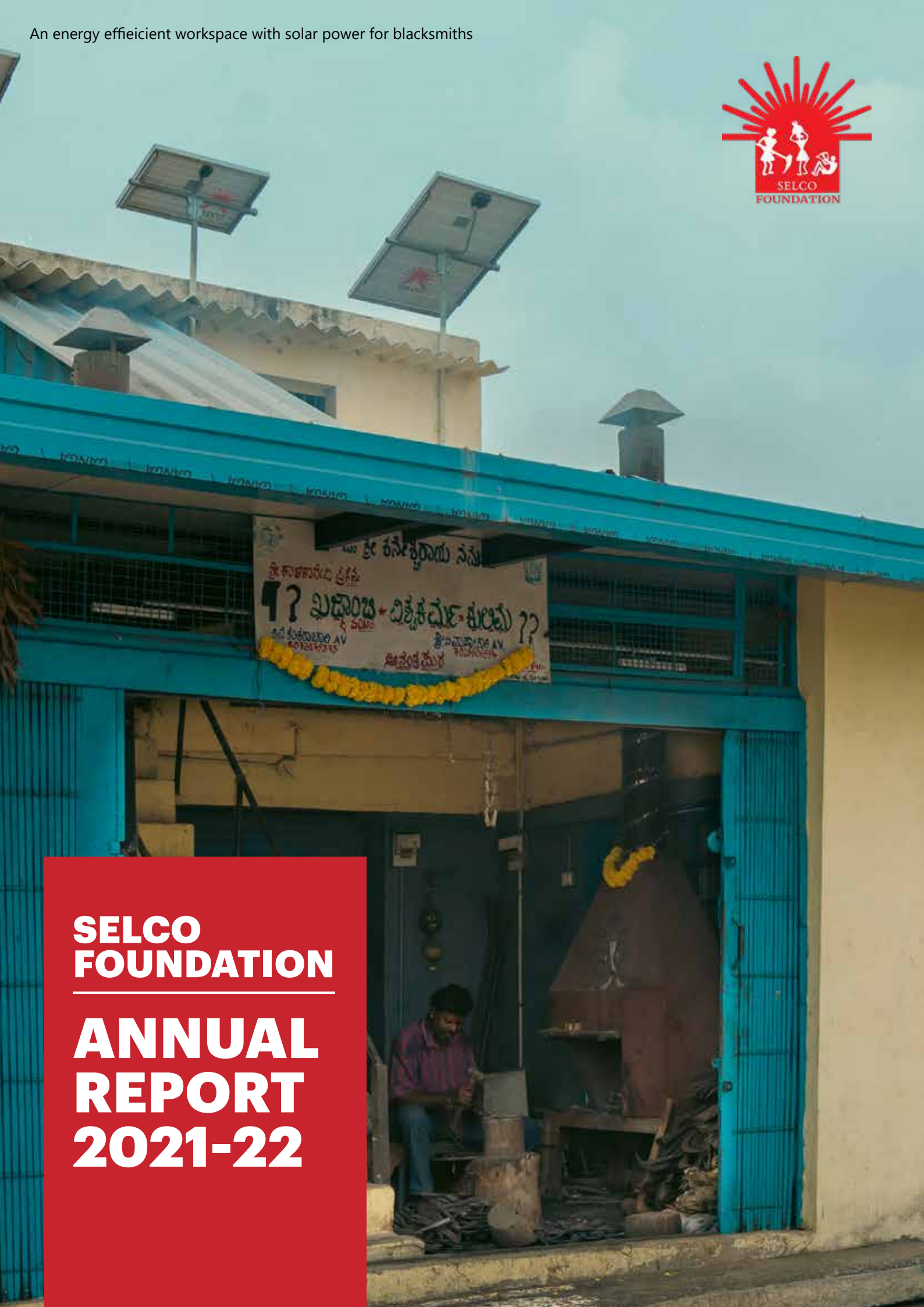


An energy efficient workspace with solar power for blacksmiths



**SELCO  
FOUNDATION**

**ANNUAL  
REPORT  
2021-22**



# TABLE OF CONTENTS

|                                  |    |
|----------------------------------|----|
| Executive Summary.....           | 5  |
| Flagship Programs.....           | 7  |
| SDG7 for Agriculture.....        | 15 |
| SDG7 for Animal Husbandry.....   | 19 |
| SDG7 for Microbusinesses.....    | 23 |
| Built-environment.....           | 27 |
| Healthcare .....                 | 29 |
| Incubation .....                 | 34 |
| SELCAP .....                     | 38 |
| Communication and Advocacy ..... | 40 |
| Conclusion.....                  | 43 |

# EXECUTIVE SUMMARY

In 2021-22 people the world over continued to combat and adjust to the Covid- 19 crisis that has changed the world for the past three years. The effects of the crisis were especially profound on the economically marginalised populations in underdeveloped and developing nations. Amidst the world adapting to the post covid scenario, SELCO Foundation continued to strive towards championing the cause of decentralised solutions using sustainable energy to imagine/build a post-pandemic future that is disaster resilient. The Foundation invested considerable amount of thought and effort into building solutions that are not only replicable but also adaptable to suit local contexts.

4

The pandemic, coupled with consistently re-occurring climate emergencies, created an environment of uncertainty and despair which unfolded in many ways, effecting the financial and healthcare security of vulnerable populations. SELCO Foundation, in this period strengthened its work towards sustainable energy driven health care and livelihood solutions, in a manner that assets and solutions were deployed to build resilience among individuals and communities against the COVID 19 pandemic, as well as future potential calamities SELCO Foundation in this period, laid a strong foundation to scale its health-energy nexus solutions delivering quality and improved accessibility of healthcare services which are reliable. Similarly, the livelihood-energy nexus saw the deployment of technology that can be used sustainably to impact the fields of agriculture, animal husbandry and microbusinesses. Additionally, it developed new workstreams including productive workspaces, where energy solutions are coupled with energy efficient ingrastructure, delivering enhanced productivity and well-being for livelihood practitioners.

Keeping up with its decade long work, SELCO Foundation continued to emphasize SDG7 as a core catalyst that drove its initiatives. Valuable lessons were learnt from research exercises conducted extensively in the year 2021, providing crucial insights in the verticals of agriculture, animal husbandry, microbusinesses and other allied sectors. Through innovation and critical collaborations, decentralized solutions helped in empowering these sectors and value chains besides strengthening and building resilient local economies that are self-sustainable.

The pandemic has reinforced the importance of decentralized solutions, which remains as one of the guiding principles of the Foundation. Progress was made in building decentralized solutions and mechanisms by extending the network of district and block level grassroots ecosystem partnerships and collaborations. Regional ecosystem level initiatives were strengthened by co-designing initiatives and capacity building and training programs.

SELCO Foundation also has endeavoured this year to make climate action a stronger link and narrative towards providing modern and sustainable energy solutions for poverty alleviation through SELCAP (Sustainable Energy Led Climate Action Program). With its learnings drawn primarily from on-ground reality, SELCO Foundation and its partners will continue to view the challenging times as an opportunity to build, innovate and deliver SDG7 driven solutions that are economically, socially and environmentally just and viable.



Vaccine provision at a solar powered healthcare facility



# FLAGSHIP PROGRAMS

## A. HEALTH ENERGY NEXUS SCALING

### i. Context

Strengthening last mile healthcare facilities is critical for effective delivery of healthcare services. In the process of building resilient systems towards achieving Sustainable Development Goal 3, which seeks to ensure quality health for all people, access to energy plays a very important role. Sustainable Energy when combined with efficient medical & electrical technologies helps to democratize the delivery of health services. As the country is putting its best foot forward in handling health emergencies like the COVID 19 pandemic, SELCO Foundation has partnered with the Ministry of Health, Government of India and the National Health Mission in one of the largest programs for upgrading and empowering public health facilities with solar energy and efficient medical equipment across 5 states (Manipur, Meghalaya, Karnataka, Odisha and Nagaland).

7



A solar powered sub center in Manipur

## ii. Approach

SELCO Foundation's approach towards scaling of health - energy nexus program integrates key ecosystem activities and respective stakeholders' across the different phases of the program, thus creating a strong foundation on which the program sustains for a long term. The program follows the 3 key stages from program conceptualization to post implementation operations. The program stages include planning and assessment, installation and monitoring & training. The first stage included stakeholder consultation and meetings, MoUs at State levels for technical partnerships, training and capacity building and technology design & planning. Then comes the approvals, tenders, quality checks, etc of the installation phase. And, finally assets transfer and maintenance agreement, training for health staffs, monitoring of key impact indicators.

## iii. Impact

The first phase of the initiative reached more than 1200 healthcare facilities across 10 districts in 5 states of India directly impacting 57,00,000 people that depend on the public health value chain. The larger goal of the project is to reach 25,000 public health facilities in the next 5 years. Due to improved reliability and access to clean energy, primary impact of the program include:

- Increase in footfall, deliveries, types and number of services provided at the centre
- Reduced out of pocket expenditure and transaction costs on accessing basic health services for poorer communities in the selected region
- Improved staff comfort and retention levels especially in remote and vulnerable contexts
- Reduction in cost per patient healthcare provision at a state level
- Improved climate resilient and reliable access to critical health services for last mile populations

## iv. Impact

There has been an overall improvement in quality and accessibility of healthcare services for the communities, well-being of healthcare staff along with the reduction of carbon emissions from the healthcare sector. Thus, the healthcare sector in the selected geographies is becoming an example of sustainability for the country and the globe.

## B. SDG7 for Micro- businesses

Decentralized micro-businesses are an integral feature of the Indian economy. While many may be informal in nature, like local eateries or barber shops, these are a diverse set of livelihoods which serve as avenues of entrepreneurship and employment opportunities for thousands of poor in the country. Some of the challenges faced by these micro-enterprises, to grow in a sustainable manner, are access to markets, diversification strategies, basic infrastructure and energy.

SELCO Foundation helps built a sustainable ecosystem for underserved vulnerable communities to encourage them to start and enhance existing micro-businesses, while making them aspirational. The foundation identified over 200 end users in each of its primary geographies - North Karnataka, Odisha, Jharkhand and the North East.





### Approach:

To build an enabling ecosystem to promote local entrepreneurship grow in a sustainable manner and help enhance incomes:



#### Providing Technological Support and Building Designs that are Energy Efficient:

Promoting energy led solutions for empowering micro-businesses such as food-processing, retail and services, manufacturing and production.



#### Finance and Business Model:

Backward and forward linkages for purchase of assets, working capital, growth and expansion along with appropriate supporting policies



#### Training and Capacity Building:

For business plan development, operational efficiency, asset management, financing, marketing, growth etc.



**Ownership and Social Models:** Working closely with Self Help Groups, Cooperatives and Individuals with an aim to reach out to the last mile communities and extend our support to the vulnerable and underserved communities.



**Infrastructure:** Energy efficient and climate responsive built environments for carrying out business activities effectively

#### Key Impacts:

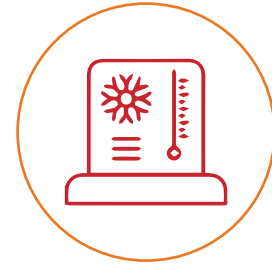
- **Nurturing self-employed Entrepreneurs:** Promoting local entrepreneurship through livelihood diversification helps support the last mile communities to establish a new business that can sustain and cater to the local demands. It also creates local employment opportunities.
- **Ease of access to services at a local level:** With decentralisation of basic services people need not travel miles to avail services like the internet, printing etc.
- **Boost the Economy:** Creating employment at a local level would also help boost the overall economy.

## C. Cold Storage

### i. Context

India's diverse climate ensures availability of all varieties of fresh fruits & vegetables. It ranks second in fruit and vegetable production in the world, after China. As per National Horticulture Database (Second Advance Estimates) published by National Horticulture Board, during 2019-20, India produced 99.07 million metric tonnes of fruits and 191.77 million metric tonnes of vegetables. Yet, every year, India suffers massive post-harvest losses in its horticulture (fruits and vegetables) value chains. It is estimated that 30% -40% of this yield never reaches the end consumer, resulting in an economic loss of INR 63,000 crore every year due to gaps in the cold chain such as poor infrastructure, insufficient cold storage capacity, unavailability of cold storages in close proximity to farms, poor transportation infrastructure, etc. These post-harvest losses directly translate into income losses for small- and medium-scale farmers who struggle to gain access to temperature controlled, post-harvest logistics solutions like cold storage facilities which are designed to reduce post-harvest losses. Moreover, in rural and off-grid settings, most available cold storage facilities still rely on diesel generator sets due to unreliable grid electricity, contributing to higher cost of running these facilities and undesirable impacts on local air quality and long-term adverse impacts on the climate.

Decentralised renewable energy (DRE) based cold storage facilities, available at the farm level, can help reduce post-harvest agricultural losses, improve farmer livelihoods and provide climate co-benefits. Powered by renewable energy like solar PV or biomass, these solutions can reduce reliance on diesel, overcome grid reliability issues and be made available in geographies where grid infrastructure is still non-existent. Hence, there was a recognised need to implement DRE-based cold storage solutions which can improve productivity and income for different categories of end users, primarily individual farmers, Farmer Producer Organisations (FPOs) and other grassroots community-led organisations.



Solar powered cold storage

### CASE IN FOCUS

SELCO Foundation first began its work in the District of Giridih via establishing a partnership with the primary grassroots NGO working in the region, Rudra Foundation. It demonstrated DRE-Livelihood technologies based on joint consultation and conducted exposure visits for the same. It parallelly built relations and motivated bankers and the nodal agency for agricultural financing, NABARD. With these efforts SELCO Foundation was able to unlock public funds and moreover develop processes which are being replicated with a greater number of users. The government, and its linked organization like NABARD and public financing institutions are critical to increase the accessibility of proven technologies and solutions like Solar Powered Cold Storages and Processing Units.

For cold storages, SELCO Foundation has been able to leverage public funds and financial institution linkages for the scaling of DRE solutions in the Agricultural sector. This has directly impacted the profit margins of farming communities in the districts and led to new process developments and partnerships for SELCO Foundation.

## ii. Learnings

Sound governance and business practices, built by appropriate and sustained mentorship by civil society and government organization have been critical not only to enable DRE solutions in a particular district but for the long-term sustainability of business practices. These conditions have emerged as a vital need across SELCO Foundation's Solar Powered Cold Storage pilot sites. To mitigate this risk, SELCO Foundation is prioritizing the building of training and program design methodologies which would help ensure that sound utilization practices are in place for a Solar Powered Cold Storage solution to be successful. SELCO Foundation learned that there is need for handholding of farmer groups to achieve optimum cold storage utilization rates.

## Key Organisational Learnings

### Context of Technology Deployment for Livelihoods and Energy Nexus –

Due to the diversity of practitioners carrying out the same livelihood, albeit in different contexts, technologies often performed differently for varying practitioners. One such example to understand this further is that of input materials. Input materials are raw products which are manipulated using the technologies. Although the basic function and properties of the raw products may not change, subtle versions exist. Raw materials adopted across different geographies themselves may behave very differently with the same machine. To further exemplify, in the case of Rice Processing, changing the breeds of rice would give different results in the quality of output received from the same machine. Similarly, in the case of Rope Making, different rope making raw materials with different tensile strengths, would require higher or lower capacity motors for winding or spinning them into rope. The example of input materials can be used as analogy to help understand other aspects of the user context that may not be as tangible – like their social capital, their ability to access affordable working capital and the human resources available to them.

### ● Combination of Technologies –

Certain technologies may only make sense in the presence of other complimentary technologies. For example, in the case of rice processing, rice hulling and polishing machinery would almost always have to be deployed in a combination. Even in the case of those end users who do not want to create polished (white) rice, an additional cracker would be required, after hulling the rice, to create the final unpolished (brown) rice output. Understanding technologies, from a use case and business model perspective rather than a micro, machine level perspective has greatly impacted the technology benchmarking process of SELCO Foundation.

### ● Common technologies in value chains –

While value chains, or sectors of livelihoods/commodities in a sector, have unique attributes, processes and technological needs, many technologies may coincide across such sectors. The technologies perform processes which may have minimal variations across commodities worked with and can be designed in a manner that they cater to all such common needs. In turn, the wide applicability of such solutions would enable high replicability and adoption. For example –

- Processing technologies which can be used across food groups - like grinding of cereals, pulses, spices, dried fruit or flowers
- On-farm technologies for widely adopted land preparation activities - like tractors or fertilizer sprayers
- On-farm technologies common across specific food groups - like aerators for fish farming which are applicable across varieties of fish farmed in-land

### ● Cost of Technology Adoption –

SELCO Foundation learnt that its solutions worked best when the right enabling conditions and ecosystem stakeholders are present and positively supported the utilization of the solution. While SELCO Foundation achieved early success with cases where such conditions were present, in other cases, it was able to ascertain missing ecosystem elements, which created technology utilization challenges. The missing elements identified and intervened with, when expressed monetarily, contribute to the overall cost of technology adoption.

For example, in the case of Solar Powered Cold Storages, the cost of adoption in most cases for a Farmer Producer Organization (FPOs) would include the following –

- Capital expenditures towards the cold storage unit
- Technology maintenance and utilization costs
- Cost of organization/company formation
- Governance building and strengthening
- Appropriate staffing
- Capacity building for strategy and operations
- Business planning and Creating Market Linkages

In many cases, these expenditures towards the cost of adoption FPOs are allocated for, by complimentary developmental programs. However, in many of these cases, the lack of contextualization of support and solutions as well as the lack of sustained hand-holding, has led to incomplete transfer of assets and ownership over processes to the FPOs. This has in turn lowered the capacity of farmers to be able to sustain such organizations and govern effectively, let alone manage and make use of any technology solution deployed.

### Community Institutions and Organizations as adopters of DRE Livelihood Technologies

Concurrent learnings of SELCO Foundation, which were re-enforced during the COVID19 pandemic, point towards the increasing need for decentralized technologies which have proved to be extremely beneficial across demographics. While many such decentralized solutions are adopted widely by individuals and at household levels, many may only be viable for operations larger than those at individual scale. Village level self help groups, farmer producer companies, water users' associations, have all been frequent adopters of DRE Technologies who are able to better distribute the benefits of such technologies to a wider group of member owners. For example, a farmer producer company may choose to rent-out solar powered sprayers to farmers who may have otherwise hesitated to purchase the technology due to limited seasonal usage.

### Many versions of technologies –

As SELCO Foundation's innovation portfolio width and depth expanded, iterations and variations between technologies increased. Moreover, as variations in financial and business models were piloted, new technological needs emerged. These iterations and variations, although catered to, often went unrecorded. In the first year of the program, SELCO Foundation had created documentation showcasing its iterative technology development process. This process however hadn't been carried out at scale across the portfolio.

While SELCO Foundation has worked on 75 technologies across its technology innovation program in the past 6 years, it has actually worked on 161 versions of solutions. Of these currently, 128 versions were active and 33 versions (20%) were not-active for a variety of reasons.

Recording solutions developed in terms of versions rather than technologies alone, is beneficial in multiple ways, including –

- Improved solution-use case matching, resulting in greater chance of success
- Improved solution communication
- Improved internal tracking mechanisms
- Improved attribution of innovation time, effort and mechanism to projects



Solar powered vermicelli (noodle) making unit

● On assessing the problem/need for which technology versions were initiated,

SELCO Foundation found that 72% were those technologies which largely met user needs but needed to be integrated with renewable energy. Other major reasons included switching from manual operations (14%) and the need to switch over from inefficient technologies being used (14%). This thus points to the fact that SELCO Foundation spends a majority of its effort testing existing technologies and relatively lesser time in modifying machines and working on new technologies. This points to the need of benchmarking available technologies in an efficient and fast manner. SELCO Foundation's revised organization structures made in year 2 of the program were for such emerging needs.



A puffed rice unit using inefficient machinery

SELCO Foundation has been redeveloping its **Theory of Change** for its technology innovation to scale programs. In doing so, for better measurability, it has simplified its original 6 phase design process (Research, Testing, Prototyping, Pilot, Replication, Scale) to a 3-stage process.

In this new structure, stage 1 comprises of technology benchmarking, testing and prototyping. Stage 2 comprises of technologies which have been technically proven but were now being demonstrated for increased access in partnership with ecosystem stakeholders. Stage 3 comprises of ecosystem pull, where stakeholders are themselves scaling technologies with little to no involvement of SELCO Foundation.

Upon analysis of its innovation portfolio, SELCO Foundation found that 104 versions (65%) of all versions were in Stage 1, 32% in Stage 2 and the rest in Stage 3.

# SDG7 FOR AGRICULTURE

## a. Summary

The value chain approach for SDG7 in Agriculture, being a nascent one at the Foundation first underwent a landscaping exercise via which the scope of the Foundation's activities within the value chain workstreams were established. Value chains are defined as a series of processes from the primary production and input collection stage to the end stage of final consumption. A number of actors may be involved across various processes of an agricultural value chain. For each process of a value chain, nodal points are identified where technology plays or could play a role. While the Foundation had been already laying special focus in its solution development and deployment process on specific crops and commodities, to deploy technologies for various nodal points, upon review of the mission set out for the value chain workstream, significant additions were made to the value chain program. In the last year, the foundation continued to build on its agriculture solution repository across key commodities, including – Cereals like Rice and Maize, Horticulture crops like Tomato, and Spices like Turmeric.



## b. Approach and Activities

SELCO Foundation works in close collaboration with such partners, first mapping agricultural value chain needs specific to regions and commodities in question, and prioritizing interventions within the value chain based on needs, and expected impacts from the solutions. The partnerships follow a co-design methodology. The commodities and corresponding partners are highlighted below:



**Tomato Value Chain – Andhra Pradesh Mahila Abhivruddhi Society** – APMAS works with a large number of Tomato Farmers in selected regions of the state of Andhra Pradesh. While SELCO Foundation has been implementing selected technologies across the Tomato Value Chain, it is not seeking to deploy solutions that are interconnected and feed into each other.



**Paddy Processing Units – Inspire Foundation and Sahaja Samruddha** - Paddy being a mainstream and highly prevalent food crop in India, has developed rigid systems which may be difficult to alter directly. It thus is working in a focused manner in selected regions with chosen partners to demonstrate solutions and impacts across the value chain of paddy before assimilating with more mainstream efforts.



**Millet Value Chain – Mission Shakti** - Millet is currently receiving increasing interest in not only urban markets but also is being integrated into governmental food supply chains via its public distribution systems. The Foundation has thus prioritized its partnership with Mission Shakti, a governmental body within the Odisha state for intervening across the millet value chain.



**Turmeric Value Chain – Meghalaya Basin Management Agency** - Turmeric being a highly valued and universal spice commodity especially for tribal farmers, has been prioritized as a target value chain. While partnerships are built across regions with varying practices, MBMA remains a key partner due to the importance of Turmeric in the state of Meghalaya as a high value commodity, impacting end user farmers as well as the state as a whole.



**Agriculture cold storage** – SELCO Foundation has initiated various solar-powered cold storages across states and districts establishing a partnership with the primary grassroots NGO working in the region, Government stakeholders and unlocking public funds from public financing institutions.



## c. Key Learnings

### ● Strategy Complimenting Value Chains and Technologies –

Agriculture value chains, although may be viewed independently, often have complimentary value chains which serve as essential input or output linkages. For example, in the North East Region, piggery farming is complimented with rice farming with by products from rice processing directly feeding into pig feed supply. Similar scenarios exist in a large number of cases where Animal Husbandry activities are carried out in conjunction with Agriculture, with either direct or indirect relationships between them.

### ● Strong Value Chain Partnerships -

The interconnected interventions in an agricultural value chain may include considerable changes to the business-as-usual practices. Business as usual practices are usually aligned in a way where downstream actors of a value chain capture a large proportion of the value generated in the chain. Primary actors, upstream, usually suffer and their practices are largely dictated by upstream actors. A crucial pre-requisite of intervening with one or more transformative technologies (Those which change the inherent dynamic of the value chain, as well as the share of value between actors) in a value chain is the ability of the end user group and other value chain actors to be able to adapt to the changing system. This not only requires implementing a set of training and capacity building activities, but moreover at the nascent stage of this program, would require a high degree of innovation (identifying and developing technologies as well as the complimentary practices) and building of contextual processes to help all stakeholders adapt and change. Thus, it is critical for the Foundation to develop a set of partnerships with livelihood development stakeholders with a specific focus on selected commodities for which value chains level interventions are being planned. Such partners would be integral co-planning and design partners and the work carried out will inform future value chain centric programming. SELCO Foundation has strengthened its work with organizations, and at the same time has prioritized technology and financial benchmarking for focus value chains. Based on its experience of technology solution needs identified thus far, the Foundation has prioritized a set of commodities and partnerships there in which would aid in achieving the goals of the workstream.



# SDG7 FOR ANIMAL HUSBANDRY

## a. Summary

Last year, in order to scale solutions in the key animal husbandry value chains, partnerships with strong sectoral organizations within the Animal Husbandry sector were developed. Programs were designed with partners on identifying and supporting solar micro-enterprises, collectives and cooperatives for scaling animal husbandry solutions. This year the partnerships with chosen organisations have continued and additional partnerships have been developed for scaling solutions in dairy, poultry and piggery value chains.

19



A dairy farmer providing feed to cows grown in a solar powered hydroponics unit

## b. Key Activities

### ● Solar Powered Hydroponics for Animal

Feed - Access to fodder significantly impacts yield from cattle. In many parts of the world, with temperatures going higher, and water tables draining, quality fodder has emerged as a critical input gap in dairy farming. This significantly impacts the income of the farmer in two ways- 1) reducing the milk yield, and hence income per cattle; 2) increasing expenditure and transaction cost in accessing fodder. Hydroponics was identified as a solution for farmers to grow their fodder in heat stress and drought prone areas. There has been sufficient research on hydroponics and a few demos that have been implemented. However, in the last year some implementations have brought forth learnings with respect to this solution. Previously, there have been many concerns regarding the uptake of hydroponics, the “complexity” of the technology where assumptions have been made that the community will not adapt to. However, the hypothesis has been proven that there is scope for improvement in the quality of the milk and the yield of milk from the cows to increase. This evidence has further built confidence in scaling the solution with other partners as it is a very critical part of the dairy value chain which is directly affected by climate change driven increased heat stress, droughts, disasters etc. The program has been specifically impactful, because farmers saw immediate impact from the hydroponics interventions. From the initial pilots, it was also noted that the technical solution, with the right financial product was feasible even for marginal dairy farmers (ie farmers with 3-5 cows).



A solar powered hydroponics unit

### ● Solar Powered Bio Fermenters –

For the production of organic fertilizers, cow urine and manure is often utilized after appropriate treatment. The process of creating the final product requires frequent agitation and aeration. This process has traditionally been carried out manually, where the bio ferment producer would be required to stir the ferment mix consistently. A simple mechanism to automate the stirring action, and a floating aerator to increase oxygen content in the mix has helped reduce drudgery and save precious time. The innovation, built for a capacity five times higher than the traditional systems also help carry out the activity at enterprise scale, where a local entrepreneur could provide the mix to 4-5 farming households in every batch of production.

### ● Productive workspaces for Animal Husbandry -

The Foundation's Productive Workspaces program has been primarily an early stage, evidence generation and innovation-oriented program. It focusses on designing and demonstrating benchmark infrastructure solutions, and has currently prioritised the sector of Animal Husbandry. The sector has been chosen due to early evidence generated from implementations and research, where in the sector showcased tangible and substantial impact in productivity of livelihood activities and well-being of livelihood practitioners. In Animal Husbandry, a lot of evidence has been already developed by veterinarians and other similar stakeholders on the impact of heat stress on the health and productivity of animals and therefore on the incomes of farmers. While evidence existed, practical implication of this evidence in terms of infrastructure design and space management were missing, making accessibility for farmers extremely challenging. The foundation created a repository of, and demonstrated on field, practical solutions for such farmers, and ecosystem stakeholders where passive techniques, low cost and accessible, had drastic impacts on the businesses. On one hand the Foundation is developing and demonstrating incremental solutions like improved roofs for dairy and animal sheds which significantly bring down overall heat gain, and on the other hand is also developing integrated dairy shed management systems which not only integrate improved building design, but also complimentary solutions like animal feeders and other solutions which help improve animal welfare and help control diseases.

### ● Solar Powered, Sustainable and Green Poultry Coops -

Farmers who are rearing indigenous or local poultry species do not have access to modern methodologies of poultry rearing. The Foundation intervened with one poultry farmer in the state of Karnataka, deploying a custom-made poultry coop for bird rearing and egg collection. This has impacted the farmer greatly, not only improving the security of the birds, and reducing the labour involvement but also has showcased an impact on the weight, mortality and health of the bird as well as the overall productivity of the livelihood.



A solar powered poultry farm



A tailor operating a sewing machine powered by solar energy

# SDG7 FOR MICROBUSINESSES

## (i) Summary

Resilience is an essential component of a successful business, especially in uncertain times. SELCO Foundation aims at equipping micro enterprises with sustainable solutions for livelihoods (that combine efficient appliances, clean energy systems and efficient building designs with affordable financing models), which can contribute to increased productivity and income, reduced expenses (on other energy needs), improved well-being and build resilience in small enterprises and in turn their local economies.

Apart from financial and other constraints, energy is one of the major constraints in the sector, especially in the remote geographies. The energy gap in micro businesses, when addressed, shows a direct impact on the entrepreneurial spirit and wellbeing, in addition to other direct economic impacts.



A solar powered mobile cafeteria with a Refrigerator

### ● (ii) Key Activities:

Micro Enterprises are the backbone of local economies. In the wake of environmental risks, both ecological and economic, such enterprises have growing and changing needs. In this period SELCO Foundation strengthened its micro-enterprise vertical and solution coverage to design more solutions catering to microbusiness entrepreneurs in different contexts. This helped SELCO Foundation reach out to a greater number of micro-enterprises with its solutions.

One such example is of Gulam Rabbani, a person with locomotive disability, who after undertaking and Entrepreneurship development program hosted by the District Innovation Commission was highly motivated to start a spice processing unit. SELCO Foundation worked with Rabbani, not only advising him on the right solution to purchase but also linking him to a Karnataka Grameen Vikas Bank for credit support. Furthermore, training and capacity building was carried out to help Rabbani reach out to more customers online. Training in marketing, business growth, brand building, and online profile development were some of the exercises undertaken. Additionally, Rabbani's workspace was renovated to make it more suitable for a person with disability to use and access.

#### Enabling Ecosystems for Scale of Technologies

SELCO Foundation has built critical partnerships with public banks and state rural livelihood missions to be able to reach out to even more individuals like Gulam Rabbani. It has begun formalizing suggestions towards technical and financial models, suitable to different contexts, which can be utilized by governmental and financial official to design new financial products, and make existing livelihood building mechanisms incorporate DRE based livelihood technologies. The learnings and suggestions generated via this effort will be highly replicable as the potential demand for microenterprise solutions is large with similar micro-enterprises existing in different regions.

### (iii) Learnings:

#### Designing diverse and exhaustive solution deployment models:

While SELCO Foundation has begun the transfer of replicable solutions to organizations and governmental departments which can reach out to more individuals, the suggestions made are often attuned to the contexts to which SELCO Foundation has itself been exposed to via its implementation efforts. Even though there may be contextual variances, a greater diversity of models and conditions need to be accounted for when making suggestions for any productive technology to be effectively replicated at scale. For example – In the case of its Solar Powered Snack Making Solutions, beginner entrepreneurs or those with an immature ecosystem may be expected to only use basic technology upgrades/additions and may need longer gestation periods to stabilize their business and markets. The reverse may be applicable to a seasoned entrepreneurs (albeit those with lack of access to modern technologies) who may readily upgrade to larger scale and more complex automation set-ups to boost their exiting livelihoods and may be more easily able to achieve payback in shorter tenures. These bookends of entrepreneurs warrant the creation of exhaustive contextual models of technological and financial solutions. In SELCO Foundation's own as well as from the larger sector's experience, programs which mismatch solutions to users have led to unsustainable and often, counterproductive results.



**Innovation and Scale:**

Innovation and scale are both highly critical to the micro-enterprise development program. While innovation enables the foundation to work with new types of users, scale enables both impact as well as evidence creation for the foundation. Building effective partnerships with organization across both innovation and scaling fronts have been highly critical. Working with more focused rather than broad based organizations who can provide feedback as and when problems arise would help fix issues more efficiently. When considering replication, when a product is highly robust, the most efficient way to reach out to more micro-enterprises or potential ones would be through large organizations, including the government.

**Community as a channel for scale:**

In a replication and scale program of the foundation with respect to micro-entrepreneurs, community members acting as business associates and user identification and conversation channels were found to be highly effective. They helped improve the energy enterprise's efficiency of user onboarding considerably as they were more decentralized than the energy enterprise. This learning is critical to further scaling efforts and would receive dedicated focus moving forward while planning scaling activities.



An efficiently built dairy farm for heat stressed regions, with solar energy

# BUILT- ENVIRONMENT

SELCO Foundation focusses on designing and demonstrating benchmark infrastructure solutions, and has currently prioritised the sectors of Microbusinesses and Animal Husbandry. These sectors have been chosen due to early evidence generated from implementations and research, where in these sectors showcased tangible and substantial impact in productivity of livelihood activities and well-being of livelihood practitioners.


In Animal Husbandry for instance, a lot of evidence has been already developed by veterinarians and other similar stakeholders on the impact of heat stress on the health and productivity of animals and therefore on the incomes of farmers. While evidence existed, practical implication of this evidence in terms of infrastructure design and space management were missing, making accessibility for farmers extremely challenging. The foundation aims to create a repository of, and thereafter demonstrate on field, practical solutions for such farmers, and ecosystem stakeholders where passive techniques, low cost infrastructures can have drastic impacts on these businesses.

27



An efficiently built workspace for potters in cyclone prone regions

### Key Activities:

- 
- 01** Consultations were carried out with technical experts and non-profit organisations in the clean cooking, housing, micro-business, agriculture, animal husbandry sectors who provided critical insights on the need and techniques for improved workspaces.
  - 02** The Foundation also conducted an Impact Evaluation on productive workspaces and their impact on the quality of livelihoods based on its past implementations. With this evaluation the Foundation hopes to generate early evidence of the impact on incomes generated, productivity changes, changes in operational cost, and the impact on well-being of entrepreneurs.
  - 03** Creation of toolkits for Baseline and Impact Evaluation for evaluation of workspaces, modelled on existing evaluation methodologies like the World Health Organisation's Quality of Life Framework. Upon external validation, these toolkits can be used as a resource to the sector at large.
  - 04** Within the implementation realm, the Foundation has created design templates based on different typologies of end users within each sector. For example, in the case of commercial dairy farming, templates have been created based on climate typologies and number of cows stationed in the dairy shed.
  - 05** Furthermore, the Foundation is conducting demonstrations to showcase the impact of new designs and generate practical learnings on processes for implementation of the new techniques.

### Learnings:

With the Foundation's developing governmental relations through its core Livelihoods and Healthcare programs, the Productive Workspaces stream of work has also witnessed considerable impact in terms of ecosystem participation. Based on ongoing interactions, the Foundation has realised a large demand for architectural and infrastructure consultancy services within governmental departments and is effectively utilising the same. It is providing technical advisory, design support and is also enabling the governmental departments to utilise available infrastructural funds towards the building of green and efficiently designed workspaces.

While replication and scaling of designed solutions have met with active partnerships, the same has not been the case for innovation development, where partner engagements alter drastically. In these cases, the Foundation has prioritised working with champion end users who can provide credible testing support and feedback on implemented designs which would help develop the innovations further.

- A key internal challenge or drawback has been the financial benchmarking of productive workspace solutions. Since materials and methods used for sustainability are usually more premium than regularly used materials it is important to identify a methodology by which the ideal cost of solutions can be arrived at. The Foundation will be working actively on this subject in the coming months which would greatly enable the scale of solutions and advocacy for them.

# HEALTHCARE

## a. Summary

SELCO Foundation has been using DRE as a tool to decentralise quality healthcare, as well as mitigate future climate risks by transitioning the health sector to sustainable energy. In the past 5 years, SELCO Foundation has developed key processes towards building of a sustainable energy and health ecosystem. As part of its efforts to replicate these efforts, SELCO Foundation has been engaging with health partners and State Health Departments to design large scale programs. In the past year, with the pandemic crisis, decentralisation of health services has been an important point of discussion. Early pilots, in partnership with the state governments in the first wave helped build partnerships and establish trust in the solutions. In the second year of the program, many of these pilots have been converted into larger scale programs- primarily led by the State Governments. SELCO Foundation has partnered with the State Health Departments in States of Meghalaya and Manipur, as well as with district officials for assessments, proposal development as well as unlocking for funds- not just for capital investment in DRE and energy efficient appliances, but also appropriate human resource and other support operational costs.

Understanding disease burden in order to design DRE health-energy solutions is an important aspect of SELCO Foundation's health portfolio. In the past year, the health-energy assessments have also targetted understanding the COVID impact and needs on the ground. Thus, health projects implemented in the past year have been strengthening public health infrastructure (an already existing gap) while also upgrading it for COVID. This approach has also been recognised by larger initiatives such as the Crypto Relief Fund, as well as the Central Government. This has been especially in the light of the fact, that many interventions during the second wave in 2021 looked at expanding health infrastructure without energy, thereby not being sustainable. For example, oxygen concentrators deployed in large scale in remote hilly terrains of India could not run reliably because of gaps in reliable energy. In partnership with Crypto, as well as the Government of India, SELCO Foundation is now designing a program across 5 states. SELCO Foundation has proposed to blanket 10 districts across the states of Karnataka, Odisha, Meghalaya, Manipur and Nagaland (over 1300 health facilities). This will be used as a demonstration and capacity building opportunity for the health system, which will be followed up by complete deployment across 5 states- lead being taken by the Ministry of Health, Government of India.

## b. Key Activities

### i. Health COVID 19 and Immunisation Work

**01** In November 2021 SELCO Foundation has started the COVID vaccination support program in collaboration with respective district health departments in five districts from Manipur, Odisha & Karnataka state. In this period districts and clusters selected saw a significant change in COVID vaccination rates, with four out of 8 selected clusters seeing a 100 or near 100% rates on 1st Dose vaccination and two clusters seeing near 100% rates for the 2nd Dose as well. SELCO Foundation with the help of its partners mobilized and deployed financial resources to create a comprehensive plan on strengthening immunization rates for COVID 19 for the selected clusters, working closely with District Government Level Immunization Officers and Departments. In doing so, it deployed the resources in a manner to increase demand for vaccines, increasing access to vaccines and strengthening the supply chain for vaccines. This program carried out by the Foundation, at large, provides immense learning on last mile health service delivery, and the systemic needs which enable easier, economic, more efficient and greater quality of health service delivery. Specifically, it provides the foundation learnings for solar energy and technology needs and opportunities for vaccine cold chain networks and immunisation service delivery.

### ii. Testing of New Technologies

**02** During the first and second wave of the COVID 19 pandemic, SELCO Foundation explored and built a number of channels which helped it implement solutions catering to the health emergency. With the need for increasing healthcare infrastructure – it was able to demonstrate the solutions provided by two of its incubated enterprises, Strawcture and Modulus, for rapid deployment of health centers in rural and remote areas. In another case, relating to improving the coverage of the COVID19 vaccine, it was able to create a channel for Blackfrog's vaccine carrier unit, which has been highly beneficial for use at the last mile.



A solar powered laboratory in a health facility

### COVID 19 and BAKDIL Health NGO

The second wave of COVID-19 was considerably worse than the first one with different needs and more fatalities. While the need for testing and isolation centres were primary during the first wave with migrants returning to their home states, the second wave had serious cases with need for oxygen cylinders and ICU infrastructure. Lack of these and late diagnosis were the primary causes for high fatalities during the second wave. There was a huge deficit of oxygen plants, cylinders and concentrators in the country and also the reliable energy infrastructure to power these heavy equipment. SELCO Foundation has been working with BAKDIL, a health NGO in Meghalaya which focuses on Disaster Relief Health & Nutrition Sustainable Development. SELCO Foundation had already powered all their seven PPP health centres in Meghalaya which built their resilience and reliability with decentralised renewable energy. The energy systems helped with supporting them during the second wave with reliable energy to power additional equipment that were required. The key intervention during the second wave was to upgrade the system to include oxygen as well as using the same system to include oxygen infrastructure in the health centres.

### iii. Health Scaling Program

**03** Decentralized renewable energy (DRE) solutions combined with energy efficient appliances have the potential to transform health service delivery, particularly in areas that are rural, remote and facing anything less than 24\*7 power supply. In an effort to scale up the approach of integrating DRE solutions in public health facilities, in partnership with National Health Mission and State health departments, National Health Systems Resources Center (NHSRC), District authorities and other Energy and health partners, a universalization programme is underway across 10 vulnerable districts in 5 states of the country. The sustainable energy led interventions would improve immunization, maternal and child care, as well as basic diagnostics and critical care. In order to strengthen this program further and address the challenges of water access and availability outlined above, SELCO Foundation in partnership with HT Parekh Foundation has implemented solar-based solutions to improve water access and hot water services in these facilities. These are essential to deliveries and care in the maternal wards, sterilization and so on. The goal of the program was to implement Solar powered water pumps and Solar water heating systems across 146 facilities in 5 districts with the appropriate technology, ownership, service and maintenance models. (Solar water heating was added in 161 facilities).

31

### iv. WHO and IRENA Partnership

**04** In early 2021, SELCO Foundation in partnership with supporting members of the World Health Organisation (WHO) and the International Renewable Energy Agency (IRENA) as the two agencies began to strengthen their engagement within Health Facility Solar Electrification (HFSE). This new collaboration came at the behest of SELCO Foundation having implemented HFSE programs at scale in partnership with two State Governments in India - in Meghalaya and Manipur states. Learnings from implementing such programs, facets of which include standardisation of health energy solar energy system designs, defining clear pre-during-post implementation processes have been useful for potential replication of such programs at national scales. SELCO Foundation's role with these agencies is to help provide technical advisory and support integrate planning, procurement and installation of solar energy systems for whole health centers. SELCO Foundation is currently in the process of defining these updated processes for global replication and knowledge, and devising parallel pilot program across various countries and diverse conditions for procurement and implementation of HFSE systems.

## c. Key Learnings

- ◆ Partnerships leading to ease in delivery of COVID-19 critical care: During the first wave, SELCO Foundation's healthcare projects were focused on powering, strengthening health centres, and Temporary Medical Centres with a specific focus on testing and isolation. The second wave of COVID-19 was a lot more devastating in terms of fatalities and health care requirements. The requirements were vastly different between two waves and the systems weren't adequately prepared to handle case loads in both urban and rural settings. With the virus affecting lungs and causing complications, the need for oxygen production infrastructure i.e. plants, oxygen cylinders and concentrators were shooting up. There were two issues - shortage of oxygen devices and reliable energy infrastructure to power these systems 24/7. SELCO Foundation's focus was on infrastructure, oxygen and powering last mile health centres to make sure they are strengthened to handle the present crisis and future shocks.

a.

Quick Deployment Post Pandemic Relief Solutions: SELCO Foundation has been working with partners in powering health centres and implementing efficient equipment for years across focus geographies which include last mile centres. SELCO Foundation built an understanding on the oxygen needs for the second wave with these health partners. With these health centres already powered by Decentralised Renewable Energy, oxygen concentrators were implemented in a plug and play manner which were very easy to implement and in short time frames as well to meet immediate needs. Some centres where oxygen concentrators were implemented include BAKDIL (as mentioned in the case study above), DAPTA, Tamenglong isolation hospital, Mercy hospital, Jharkhand, St Joseph's Hospital, Jharkhand, Dayasparsha hospital, Tumkur. Along with oxygen concentrators, thermal guns, pulse oximeters, PPE kits were also provided. Similarly, during the first wave, SELCO Foundation in partnership with Doctor's For You (DFY) had set up the VISTEX hospital in Bihar. And during the second wave, DFY came back with a request to set up a COVID hospital in Yelahanka, Bangalore which was designed and built in a month.

b.

Oxygen cylinders: As SELCO Foundation had started working with the Government of Manipur, a direct need of oxygen cylinders was expressed which led to implementing 400 oxygen cylinders in the state. Due to the existing partnership with the Government of Manipur on powering 500 health care centres (50 Health and Wellness centres and 50 Primary Health Centres), bringing in this component in that short period of time was possible. It strengthened the partnership as there was a quick implementation to meet the immediate needs of the community during wave 2 of COVID. The oxygen cylinder implementation was not a standalone intervention but ended up becoming a part of something larger i.e. a state level health program.





- ♦ Leveraging and influencing large scale partners: Through the health care and relief work carried out during both waves, SELCO Foundation was able to leverage funds on large scale health programs with an energy focus. In this program, blanketing of 10 of the most vulnerable districts will be carried out to strengthen their health systems at the last mile. These districts also represent different climatic typologies and have differing disease burdens and issues. The program is currently well underway. The efforts undertaken have helped conduct better advocacy for health energy solutions at the National Level in India where government commitments have been received the further the processes to ten states in India. Similarly, learnings generated via the program have been instrumental in taking forward global health scaling efforts in partnership with the World Health Organisation and other key actors.
- ♦ A key aspect of the health value chain is diagnostics which SELCO Foundation is yet to focus on and has started mapping gaps and requirements. In rural areas, it is hard to access diagnostics particularly at the last mile. With increasing burden of lifestyle diseases and Non-Communicable Diseases (NCDs) even in the remotest pockets. With the blow that the pandemic offered, the government is looking to increase access to diagnostics particularly in rural geographies. Initial research shows that a lot of diagnostic machines are very high energy consuming which make it hard to decentralize and are high on investment as well as recurring costs making it harder to install and maintain. With an increasing number of implementations in Sub-Centers and Wellness Centers, understanding gaps in diagnostics and strengthening the same is going to be critical work moving forward for SELCO Foundation. This could include telemedicine, x-rays and other gaps in diagnostics at the last mile. During the course of this program SELCO Foundation entered into a critical partnership with the Center for Cellular and Molecular Physiology (CCAMP) to test new and disruptive diagnostic devices and help enterprises attain greater reach.

# INCUBATION

## Summary

SELCO Foundation, in the last year, has incubated enterprises that showcase evidence of sustainability and potential to scale. The assumption was that a customized and inclusive incubation process keeping end users' well-being and long-term sustainability at the highest priority will yield better results in terms of social impact and financial viability of the enterprise. SELCO Foundation identified and incubated a number of early-stage enterprises providing them both technical support as well as business process development support.

## Types of Incubated Enterprises

### Clean Energy Enterprises

Enterprises which provide last mile installation and servicing of energy systems. Enterprises are selected from across the the North East of India as well as from the states of Odisha and Jharkhand.

Currently, there are 5 small scale CEE Enterprises within SELCO's incubation portfolio and 8 medium scaled enterprises.

### Technology Development Enterprises

Enterprises which innovate on and manufacture decentralised technologies, powered by solar energy and useful for contexts serving the underserved and individuals at the last mile.

Currently, there are 9 technology development enterprises in SELCO's portfolio



### KEY FOCUS AREAS



### CRITERIA FOR SELECTION

- Mechanized technologies that have a **clear climate and pro-poor benefit**
- Technologies and Enterprises with a **proven value proposition and proof of sales**
- High **end-user impact**
- Potential for **replication and scale**

### ENTERPRISE TYPES

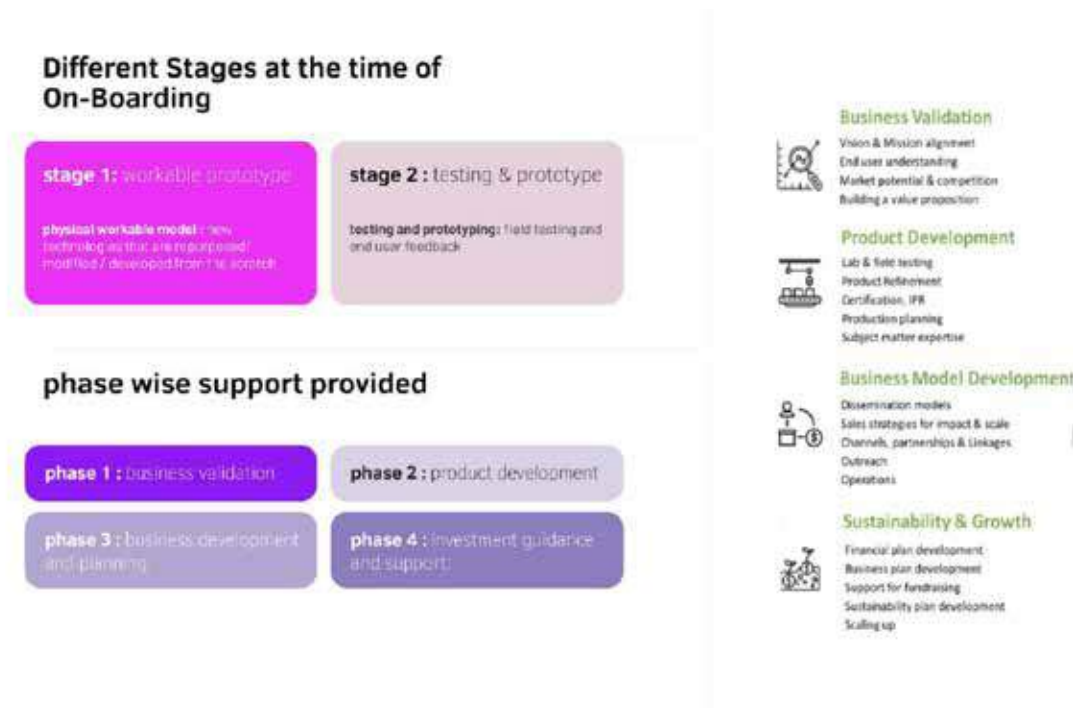


**Technology Incubation Program**  
For energy efficient technology developers



**Clean Energy Enterprises Incubation Program**  
For last mile serving enterprises providing customised solutions

## Process utilised for Technology Development Enterprises



### Key Activities

Over the recent years of program, the foundation has gained a better understanding of measuring its own ecosystems approach which has helped considerably. SELCO Foundation began by initially creating a tool to measure the ecosystem of an energy enterprise, correlating the revenue or general success of an enterprise to its external and stakeholder environment. Further on, to be able to take requisite action it revised this tool in the current programmatic period to measure the status of the enterprise (its capacity, operations and structures) vis a vis the ecosystem it is operating in. This new tool, called PACE – Partner Assessment and Certification, is helping the foundation understand the enterprise it is incubating in a more profound manner, and thus being able to take more direct and effective action to help improve the performance and sustainability of enterprises it is incubating. For example, in the case of Exide Powerpoint, a clean energy enterprise from the state of Jharkhand, the tool showcased how Human Resource availability and planning was missing within the operations of the enterprise. Corresponding training sessions were organized with SELCO Foundation India, to help the enterprise develop better processes for team building and strengthening, in line with the entrepreneurs future growth goals.

SELCO Foundation helped enterprises fine tune and develop their technologies, either by providing direct technical support or via appropriate grants which aided solution development and deployment. SELCO Foundation aided the incubated enterprises to help better integrate their products with Solar PV and energy storage mechanisms. It advised directly, via mentors and via workshops, incubated enterprises on various aspects of business, like - product diversification, patenting, business planning, crisis management and so on. Support provided was always contextual to the enterprise – For example, for Biren Singh, a Loom Manufacturer, support was provided to procure machinery with which he could ramp up his production process.

A solar powered aerator for fish farming by a technology development enterprise incubated by SELCO Foundation



In the early stages of this program, SELCO Foundation, in partnership with the NITI Aayog in India, through its program known as the Atal Innovation Mission, set up the Atal Incubation Center – SELCO Foundation. AIC-SF is an incubator located in Guwahati, Assam with a focus on incubating technology innovators and clean energy delivery enterprises in the North East of India.

For many enterprises, SELCO Foundation helped build appropriate linkages and channels through which they could sell their products and technologies. Some examples include –

SELCO Foundation connected its incubated enterprise Transform Technologies with an organization Wassan, a pioneer in the Millet sector, through whom Transform was able to gain direct access to millet farming communities in Odisha and Andhra Pradesh. With Wassan, Transform had the ability to test new products easily, as well as utilize their networks to support Millet Mission programs being carried out in the states.

SELCO Foundation first connected its incubated technology enterprise Assam Innovation and Research Center (AIRC) to another incubated clean energy enterprise Envo Renewable Energy Services (ERES). With this partnership the two enterprises were able to better integrate their solutions. It later began advocating for various DRE powered livelihood technologies with the State Rural Livelihood Mission. This advocacy includes the egg incubator product manufactured by AIRC.

During the first and second wave of the COVID 19 pandemic, SELCO Foundation explored and built a number of channels which helped it implement solutions catering to the health emergency. With the need for increasing healthcare infrastructure it was able to demonstrate the solutions provided by two of its incubated enterprises, Strawcture and Modulus, for rapid deployment of health centers in rural and remote areas. In another case, relating to improving the coverage of the COVID19 vaccine, it was able to create a channel for Blackfrog's vaccine carrier unit, which has been highly beneficial for use at the last mile.

SELCO Foundation initiated its Catalyze Tech, innovator identification program. Through this effort it was able to mobilize a lot of enterprises who were developing technologies useful for rural and remote communities. The program resulted in new enterprises entering SELCO Foundation's incubation foray. Moreover, the process now has been replicated at regional levels to identify more grassroots talent. The brand itself has now been extended, as previously described, to a problem sharing and innovator discovery platform.

SELCO Foundation's technology incubation vertical forged a number of partnerships to compliment its effort. For example –

With Center for Cellular and Molecular Physiology (CCAMP) it is identifying new technologies, hosting challenges and jointly incubating technology development enterprises.

With Agricultural Universities across India, it is identifying and attracting grassroots innovators to join its incubation support program.

## a. Learnings

01

SELCO Foundation learnt early into its program that contextualization would be necessary not only in deciding the type of support offered to the incubated enterprises, but also the manner in which it would be delivered. SELCO Foundation was forced to move away from its preferred mode of off-line conversation and support provision. In usual cases, incubated enterprises would interact frequently and in person with incubation support staff. While for many incubated enterprises it was nearly impossible to get online to gain support, for others it was a challenge to interact freely and gain the value it would have otherwise. Innovators coming from the grassroots found it much more difficult to adapt than those enterprises which had emerged from urban, high access backgrounds. SELCO Foundation was thus provided a new challenge to not only make its practices more inclusive than before, but also innovate upon itself to be able to provide better incubation support services to its enterprises.

02

SELCO Foundation calculated its Return on Total Investments (ROTI) made on each technology enterprise incubated. The ROTI as has been calculated as a ratio of the total revenue, equity and debt raised by an incubated enterprise in the numerator, to the total investments made by SELCO Foundation in towards the incubation of the enterprise in the denominator.

03

**Evidence for grassroots enterprises** – SELCO Foundation, has determined that grassroots enterprises, require simple interventions to improve their productivity and business functioning, however lag behind usually due to their remoteness and lack of inclusivity in engagement processes. SELCO Foundation going forward would like to identify mechanisms to make incubation processes more inclusive for grassroots enterprises, as well collect and document credible evidence, which makes a case for grassroots enterprises to be incubated and investments for this inclusion made.

Business planning mentorship provided to clean energy enterprises from jharkhand




# SUSTAINABLE ENERGY LED CLIMATE ACTION PROGRAM (SELCAP)

SELCO Foundation began the Sustainable Energy led Climate Action Program (SELCAP) in 2020, through which it created the SELCAP Report, a solutions driven and practitioner centric approach to climate action. The report itself brought out the trajectories different stakeholders had been taking towards climate action vis a vis access to decentralised energy. It calls for climate action that applies an 'optimised development' approach, prioritising access to clean, affordable sustainable energy (SDG 7) as a means of lifting people out of poverty in ways that support mitigation of and adaptation to climate change (SDG 13). Furthermore, it showcased solutions across four sectors which can have tangible climate benefits.

38

SELCAP currently is meant to build on the knowledge generated through the SELCAP report and make it accessible to audiences both internal to SELCO as well as externally. In this period (2021-22) SELCO created additional case studies and documentation to communicate the ideas brought out in the SELCAP report in a more simplified manner, and for specified audiences. It was also deemed important that internal processes are evaluated to move towards the lens detailed out in the SELCAP report. Discussions with Agriculture and Incubation stakeholders have led to new strategy notes, which have also further informed the studies and program notes that have been developed. With respect to specific programmatic outputs under this proposal, SELCO engaged with sectoral stakeholders and developed concept notes on training and information centers for SELCAP: One for agricultural settings and the other for urban settings. Additionally it worked on program notes that SELCO is utilising in its innovation and scale programs on topics which it perceives are seeing a national and global pull

As SELCO concludes this strategy and communication building phase of SELCAP, it looks ahead at the next phase of the program where many of the ideas and concepts articulated in the first and second phase of the program can be put into action. This will be in the form of evidence creation via implementation and dissemination of the evidence. In the next phase of the program SELCO will implement climate centric programs guided by the directions suggested from the current phase, and the partnerships created using the dissemination of SELCAP's knowledge material. There is an urgent need, more than ever, to immediately act towards climate action and this program lies at the right juncture to enable this movement.



## SUSTAINABLE ENERGY-LED CLIMATE ACTION PROGRAMME (SELCAP)



**DECENTRALIZED SOLUTIONS:**

- Encouraging and promoting solutions to be locally owned creates space for context-specific and socially relevant innovations in technologies, delivery models, financing and community based institutions.

**OPTIMISATION FOR POVERTY REDUCTION AND CLIMATE CHANGE:**

- Local solutions that encourage balanced adaptation, without contributing further to emissions is critical.

**ACHIEVING ALL SDGs THROUGH SDG7**

- Allow sustainable energies like solar to play a critical role in making pragmatic interventions for climate adaptation and mitigation, boosting other SDGs in the process

## FILLING THE ENERGY-CLIMATE GAPS WITH SELCAP'S INNOVATIONS



### AGRICULTURE

Need-based agricultural solutions prioritise the demands of the farmer and meets the needs of food security

- Solar-powered soil testing centers
- Solar-powered fermenters for bio-fertilizer
- Solar-powered water pumps
- Solar-powered pole lac pruner
- Solar-powered agri-cold storage
- Solar-powered millet processing units
- Solar-powered ginning & spinning machines



### ANIMAL HUSBANDRY

Efficient decentralised technological solutions for livestock farmers help them become resilient to climatic variations

- Solar-powered Hydropool
- Solar-powered vaccination units and centers for livestock
- Solar-powered cool sheds for reduced heat stress in animals
- Bio-digesters



### COOLING

Cooling solutions improve the supply of food, medicine and ensure well-being for all living-beings

- Solar-powered agri cold-storage
- Solar-powered cool-sheds for reduced stress in animals
- Solar-powered refrigerators for commercial use
- Cooling Solutions for Schools



### AGRICULTURE

Customising health infrastructure for climate-vulnerable communities reduces their burden and cost of medical care

- Decentralised Solar PV systems with Energy-efficiency measures and Built-environment Adjustments

# COMMUNICATION AND ADVOCACY

SELCO Foundation Conducts regular engagement with Atal Innovation Mission under Niti Aayog. Dr. Chintan Vaishnav, the current lead of AIM is a champion of SELCO Foundation and its philosophy. In the first year of the program, SELCO Foundation began the Atal Innovation Center-SELCO Foundation in Assam, for incubating enterprises in the North East, which is co-funded by the governmental institution.

DRE-Livelihood Trade Fairs - In the year 2019-20, SELCO Foundation conducted the North East Trade Facilitation Fair in Assam, Guwahati, to bring together energy-livelihood technology providers, ecosystem stakeholders and potential end users. Over 100 enterprises displayed their products and services, with over 2000 individuals in attendance. Following suit from the success of this fair, in 2021-22, SELCO Foundation conducted a similar program, SDG7 for Agriculture, focusing on technologies for farming and allied activity, in Andhra Pradesh. Over 50 enterprises participated with over a 1000 farmers and micro-entrepreneurs visiting.

Continuing from its work in 2020-21, in 2021-22 SELCO Foundation designed and packaged several solutions which could be readily deployed in lieu of the COVID19 Pandemic. These included solar powered swab collection kiosks, quick build health facilities and solar powered oxygen systems. These packages were highly shared with and adopted by governmental stakeholders. Recognition of SELCO Foundation's work in this period led to SELCO Foundation raising funds for scaling its powering health program, in partnership with the National Health Mission of India.

SELCO Foundation has conducted a series of Catalyze Tech – Innovator Identification programs. This has helped it to reach out to hundreds of innovators. The last one among these was conducted in the state of Mizoram with Mizoram Innovation Science and Technology Council where 80 individuals attended a workshop, 30 innovators applied for grants and 12 selected for pre-incubation support.

SELCO Foundation continues to transfer its innovation processes to networks nationally and globally via its Global SDG7 Hubs platform. SELCO Foundation has carried out multiple training programs with innovation bent organizations like SAGGOT in Tanzania, SNV, ATA and Precise in Ethiopia, and to a host of energy practitioners in the humanitarian sector with the Global Platform for Action for Displaced Communities (GPA). The last among these has led to a specialized MoU between SELCO Foundation and the GPA to take forward the activities on innovation and knowledge sharing.



- SELCO Foundation conducted a series of webinars towards knowledge sharing for deployments of Cold Storage units for Agriculture. These included sessions with technology specialists, Agriculture experts and policy stakeholders, each sharing key enablers to the success of cold storage systems, and indicated the potential for future demand.
- Through the course of its activities, SELCO Foundation has built and strengthened its partnership with governmental officers, institutions and global policy stakeholders. It has spoken at multiple convenings on invitation, for example at webinars hosted by the Ministry of New and Renewable Energy in India and the Sustainable Energy 4 All World Forum held in Rwanda.
- SELCO Foundation has published a number of knowledge documents including –
  - A series of artworks with folk artists in India, showcasing the nature and impact of decentralized renewable energy powered livelihoods.
  - A coffee table book highlighting SELCO Foundation’s case studies and approaches taken
  - A multitude of reports and case studies
  - Company Profiles and a Presentation of our Tech Incubation Approach of its incubated enterprises
  - Photo and Video documentation of its implemented solutions
- In 2021-22 SELCO Foundation launched its new website with an aim to clearly showcase the breadth and depth of the work it conducted, as well as to showcase its knowledge resources in accessible ways.

A solar powered rope making unit



# CONCLUSION

As climate change exacerbates, the world is about to see radical changes in weather patterns. The coming decades are bound to experience extensive climatic induced natural disasters and migration. Additionally, with rising temperatures and warming of the Arctic, scientist are contemplating a rise in newer diseases and possibilities of pandemics due to the release of trapped viruses. These challenges have reinforced the need to adopt approaches that are sustainable, smart and mindful of the emergency at hand. SDG7 driven decentralised solutions across developmental have a very crucial role to play in assisting the present and future generation in coping with rising uncertainties and unprecedented risks.

In this changing environment, several strategic and operative changes were employed on the part of the SELCO Foundation to be able to meet the challenges on ground. The pandemic also necessitated careful deliberations on all ongoing projects to render them more resilient and adaptable when it came to delivery and implementation. Moreover, with decentralization as an adopted maxim for all undertaken work, end users and ecosystem stakeholder partners was able to emerge as a champions in ensuring last mile services, protecting value chains in critical sectors and empowering local economies, all of which impacted livelihoods and health positively.

In 2022, SELCO Foundation continued to facilitate the process of institutionalization of energy plans in health and allied sector which was initiated in years prior to the pandemic. Strengthening health care facilities in the North-east India was undertaken at a considerable pace as well, in this year. Many ongoing livelihood interventions were scaled in this year and several constructive strides were taken in arriving at specific solutions by engaging with communities like the disabled, transgender etc. The Foundation has also expanded its work in the areas of providing technical advisory to various organizations at state, national and international platforms.

Recurrent studies have projected a rise in poverty due to climate change, therefore, climate action will continue to be at the core of all interventions planned, designed and executed. Keeping in mind this intrinsic link, SELCO Foundation along with its partners will foster to devise solutions that help in combating climate induced deprivation and poverty; solutions that will be replicable and sustainable. SELCO Foundation will continue to play a critical role in using a systems thinking approach to achieving SDGs via SDG 7 as a key enabler in countering climate injustice by fostering reliable solutions with the poor.



Training provided to silk spinners using a solar powered silk spinning machine





**SELCO  
FOUNDATION**

**ANNUAL  
REPORT  
2021-22**



# **RAMESH ASHWIN & KARANTH**

**CHARTERED ACCOUNTANTS**

**F. R. No. 010680S**

## **INDEPENDENT AUDITOR'S REPORT**

**To the Members of SELCO Foundation**

### **Opinion**

We have audited the Financial Statements of SELCO Foundation, which comprises the Balance Sheet as at 31<sup>st</sup> March 2022, and the Statement of Income and Expenditure and Receipts and Payments accounts for the year then ended, and notes to the financial statements, including a summary of significant accounting policies. In our opinion, the accompanying financial statements give a true and fair view of the financial position of the entity as at March 31, 2022, and of its financial performance/Cash flows for the year then ended in accordance with the Accounting Standards issued by the Institute of Chartered Accountants of India (ICAI).

### **Basis for Opinion**

We conducted our audit in accordance with the Standards on Auditing (SAs) issued by ICAI. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the entity in accordance with the Code of Ethics issued by ICAI and we have fulfilled our other ethical responsibilities in accordance with the Code of Ethics. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

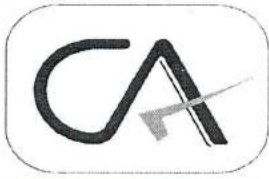
### **Responsibilities of Management and Those Charged with Governance for the Financial Statements**

Management is responsible for the preparation of these financial statements that give a true and fair view of the state of affairs, results of operations and cash flows of the entity in accordance with the accounting principles generally accepted in India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the entity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the entity's financial reporting process.





# **RAMESH ASHWIN & KARANTH**

**CHARTERED ACCOUNTANTS**

**F. R. No. 010680S**

## **Auditor's Responsibilities for the Audit of the Financial Statements**

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

**For M/s Ramesh Ashwin & Karanth**

**Chartered Accountants**

**F.R No. 010680S**

**Prashanth Karanth**

**Partner**

**M No. 214235**

**UDIN: 22214235AQEHRN8774**

Place: Bangalore

Date: 29-08-2022



**SELCO Foundation**  
**# 690, 1st Floor, 15th Cross, 2nd Phase, JP Nagar, Bangalore 560078**  
**BALANCE SHEET AS AT 31st MARCH 2022**

| PARTICULARS                            | Schedule No. | As at 31st March 2022 | As at 31st March 2021 |
|--|--------------|-----------------------|-----------------------|
| <b><u>FUNDS AND LIABILITIES</u></b>    |              |                       |                       |
| Non Corpus Fund                        | 1            | 1,14,73,17,567        | 53,50,25,039          |
| <b>Total Liabilities</b>               |              | <b>1,14,73,17,567</b> | <b>53,50,25,039</b>   |
| <b><u>PROPERTY &amp; ASSETS</u></b>    |              |                       |                       |
| Fixed Assets                           | 2            | 1,49,11,829           | 74,63,642             |
| Current Assets, Loans & Advances       |              |                       |                       |
| Cash and Bank Balances                 | 3            | 1,14,81,01,180        | 53,02,14,334          |
| Other Current Assets                   | 4            | 7,87,13,761           | 4,63,82,445           |
| Less: Current Liabilities & Provisions | 5            | 9,44,09,203           | 4,90,35,382           |
| <b>Net Current Assets</b>              |              | <b>1,13,24,05,738</b> | <b>52,75,61,397</b>   |
| <b>Total Assets</b>                    |              | <b>1,14,73,17,567</b> | <b>53,50,25,039</b>   |

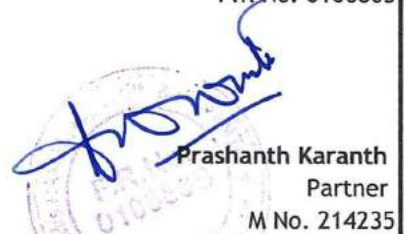
See accompanying notes to the financial statements  
As per our report of even date

For SELCO FOUNDATION

For M/s Ramesh Ashwin & Karanth  
Chartered Accountants,  
F.R.No. 0106805

  
Trustee

  
Trustee

  
Prashanth Karanth  
Partner  
M No. 214235

  
Chief Executive Officer



  
Chief Financial Officer



Place : Bangalore  
Date : 29/08/2022

**SELCO Foundation**  
**# 690, 1st Floor, 15th Cross, 2nd Phase, JP Nagar, Bangalore 560078**  
**INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDING 31st MARCH 2022**

| PARTICULARS                            | Schedule No. | For the year ended 31st March 2022 | For the year ended 31st March 2021 |
|--|--------------|------------------------------------|------------------------------------|
| <b>INCOME</b>                          |              |                                    |                                    |
| Grant Received - Foreign               | 6            | 1,25,09,89,026                     | 50,37,43,401                       |
| Donations - Local                      | 7            | 16,13,43,705                       | 5,76,58,854                        |
| Unutilized Sub-grant Refund Received   |              | -                                  | 83,75,092                          |
| Interest received - From Banks         |              | 3,35,78,903                        | 2,32,39,114                        |
| Interest received - From Other Sources |              | 4,28,480                           | -                                  |
| Professional Income/ Other Income      |              | 34,25,850                          | 12,52,947                          |
| <b>Total Income</b>                    |              | <b>1,44,97,65,964</b>              | <b>59,42,69,408</b>                |
| <b>EXPENDITURE</b>                     |              |                                    |                                    |
| Project Cost                           | 8            | 76,19,97,015                       | 49,92,78,893                       |
| Administration Costs                   | 9            | 7,25,21,949                        | 4,86,50,149                        |
| Depreciation                           | 2            | 29,54,472                          | 22,32,909                          |
| <b>Total Expenditure</b>               |              | <b>83,74,73,436</b>                | <b>55,01,61,951</b>                |
| Surplus                                |              | 61,22,92,528                       | 4,41,07,457                        |
| Provision for Taxation                 |              | -                                  | -                                  |
| Surplus (Carried to Balance Sheet)     |              | 61,22,92,528                       | 4,41,07,457                        |

See accompanying notes to the financial statements  
As per our report of even date

For SELCO FOUNDATION

For M/s Ramesh Ashwin & Karanth  
Chartered Accountants,  
F.R No. 0106805

*[Signature]*  
Trustee

*[Signature]*

*[Signature]*  
Chief Executive Officer





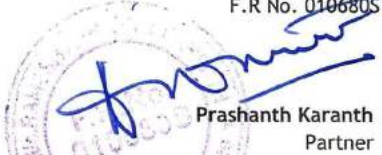




Trustee

*[Signature]*  
Chief Financial Officer



*[Signature]*  
Prashanth Karanth  
Partner  
M No. 214235

Place : Bangalore  
Date : 29/08/2022

| <b>SELCO Foundation</b>  |  |   |
|--|--|---|
| # 690, 1st Floor, 15th Cross, 2nd Phase, JP Nagar, Bangalore 560078  |  |   |
| <b>Receipts and Payments account for the year ending 31.03.2022</b>  |  |   |
| Particulars  | Amount (Rs)  | Amount (Rs)   |
| <b>Opening Balance</b>   |  |   |
| Bank   |  | 4,58,65,095   |
| Cash   |  | 7,266   |
| Fixed Deposit  |  | 48,43,41,973  |
| <b>Receipts During The Year</b>  |  |   |
| Donation Received  | 16,13,43,705   |   |
| Grant Received   | 125,09,89,026  |   |
| Interest Received - From Banks   | 3,53,81,011  |   |
| Professional Income and Other Income Received  | 38.54.329  |   |
| Tax refund received  | 60.32.153  |   |
| Sale of Fixed Assests  | 1.39.830   |   |
| <b>Net Receipts</b>  |  | 145,77,40,054   |
| <b>TOTAL</b>   |  | <b>198,79,54,388</b>  |
| <b>Payments During The Year</b>  |  |   |
| Administrative Costs   | 7,04,62,434  |   |
| Fixed Assets Purchased   | 1,09,70,068  |   |
| Project Costs/Research And Development Cost  | 72,96,15,881   |   |
| Payment of Rental Advance  | 2,88,04,825  |   |
| <b>Net Payments</b>  |  | 83,98,53,208  |
| <b>Closing Balance</b>   |  |   |
| Bank   |  | 5,11,28,695   |
| Cash   |  | 10,005  |
| Fixed Deposit  |  | 109,69,62,480   |
| <b>TOTAL</b>   |  | <b>198,79,54,388</b>  |
| As per our report of even date   |  |   |
| For SELCO FOUNDATION   |  | For M/s Ramesh Ashwin & Karanth<br>Chartered Accountants,<br>F.R No. 0106805  |
| <br>Trustee                 | <br>Trustee                | <br>Prashanth Karanth<br>Partner<br>M No. 214235 |
| <br>Chief Executive Officer | <br>Chief Financial Officer |    |
|                             |  |   |
| Place : Bangalore  |  |   |
| Date : 29/08/2022  |  |   |