



INCLUSIVE ECOSYSTEM FOR SUSTAINABLE ENERGY ACCESS

2019 SELCO FOUNDATION





Watch how Rajeshwari and her village Thulasikere, a remote, forested village in MM Hills, Karnataka, India, are using solar energy in various ways.

A local healthcare organisation provides medical services to remote communities using solar, delivered by a local solar enterprise.

Inclusive Ecosystem For Sustainable Energy Access



A brief understanding of
SELCO's ecosystem approach,
its benefits and applications

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Poverty is synonymous with lack of steady financial resources and also stems from the fact that the poor lack access to basic services like health, education, decent livelihood options, clean water etc. The topography, terrains, segmentation, vulnerability to climate change and numerous other social factors could also contribute to the varied conditions of poverty.

For example, poor farmers might not lack resources in terms of land, food and shelter but not having access to timely affordable health services could drain their incomes greatly.

Similarly, a blacksmith might not be income poor today, but lack of access to market knowledge and skill up-gradation opportunities could result in his/her skill being irrelevant tomorrow thus pushing him/her back into poverty.

Quality of life should thus be defined in terms of accessibility, of multiple needs and opportunities, and not just hard financial resources.

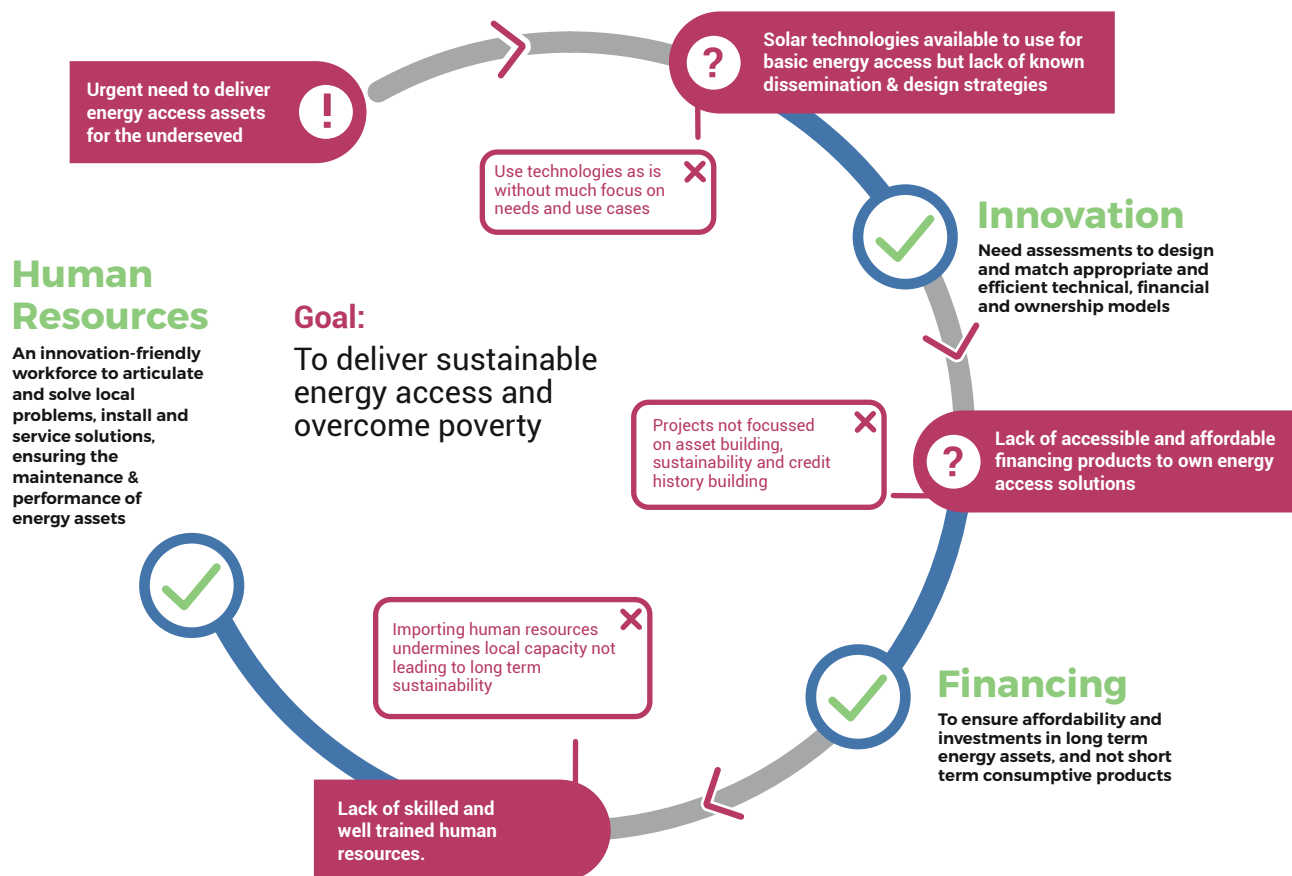


When migration is
the only way out.

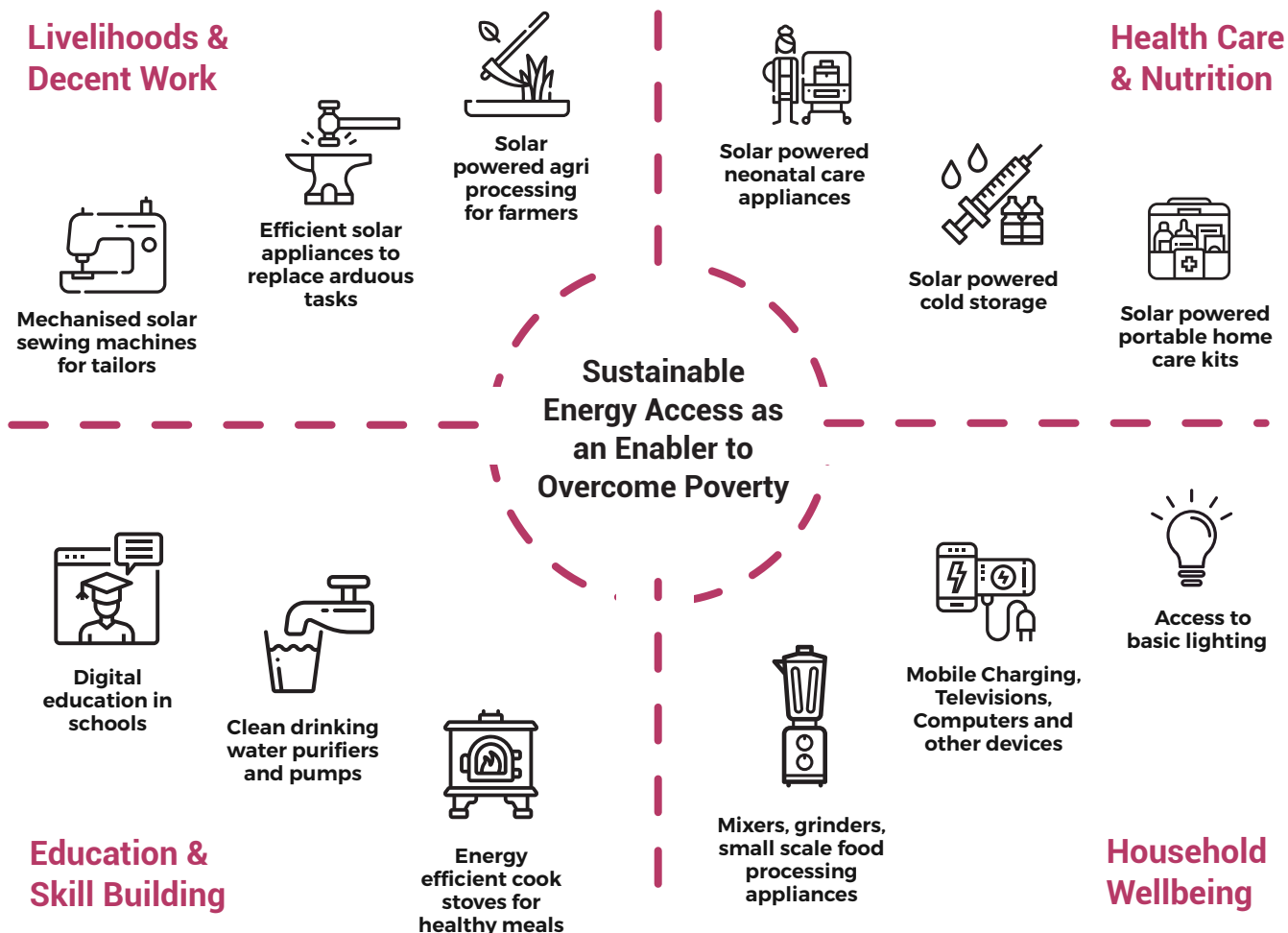
Tribal communities in Kotra,
Rajasthan, India need access
to basic services & greater
incomes. For now, migrating
is the only option.



In **1995**, when SELCO first started looking at energy poverty, it realized that to create long term impact, it had to develop solutions for eradicating poverty, using energy as a catalytic tool. This was from the understanding that energy poverty was not a technology gap but a development gap. The access was defined by demand in areas where there was **no supporting ecosystem that could supply relevant solutions**. To be specific, there was a need to look at Innovation, Finance and Human Resource.



As this ecosystem is further explored, **sustainable energy access appears as a key enabler to a number of other sustainable development indicators**. Each of these specific sectoral domains have their own ecosystems which needed to be built and brought together for solutions within these domains to be successful.



The development work today is focussed on addressing gaps in silos, not viewing the holistic nature of the problem at hand.

Firstly, gap is not a true indication of the actual demand- for example, identifying an energy gap in health centres resulting in high infant mortality and subsequently just solving that specific need, does not take into account the risks caused during pregnancy due to lack of nutrition or poor pregnancy risk-identification due to the inaccessibility of the health centre from the villages.

ENERGY AND MATERNAL CARE SOLUTIONS ACROSS THE VALUE CHAIN



AT HOME OR IN THE VILLAGE

Timely recognition of pregnancies, appropriate pre natal care and referrals of women in their last trimester to the primary care centre

- ✓ Portable solar powered maternal care and delivery kits with mobile equipments for home check ups

✗ IF MISSING

Health worker is not able to carry out basic check-ups at home, forcing a clinic visit, or omission

- ✓ Solar powered mother and child care centres with kitchens and dedicated spaces for maternal care

✗ IF MISSING

Mother, during pregnancy or an infant is not able to access enough nutrition leading to poor development

AT THE NEAREST HEALTH CENTRE

Providing maternal and neonatal care services in normal circumstances, referring complex or emergency cases to the secondary care centre

- ✓ Primary health centre green buildings with contextual space provisions and layout planning

✗ IF MISSING

Lack of power supply causing discomfort in deliveries for pregnant women and health staff

- ✓ Efficient solar powered neonatal care & cold storage equipment for vaccines

✗ IF MISSING

Pregnant women and mothers are unable to access critical vaccines on time and care for babies

AT THE NEAREST MAJOR HOSPITAL

Providing emergency care and addressing complex cases.

- ✓ Provisions for sustainable energy powered operation theatres and sterilisation equipment for complicated deliveries and caesarians

✗ IF MISSING

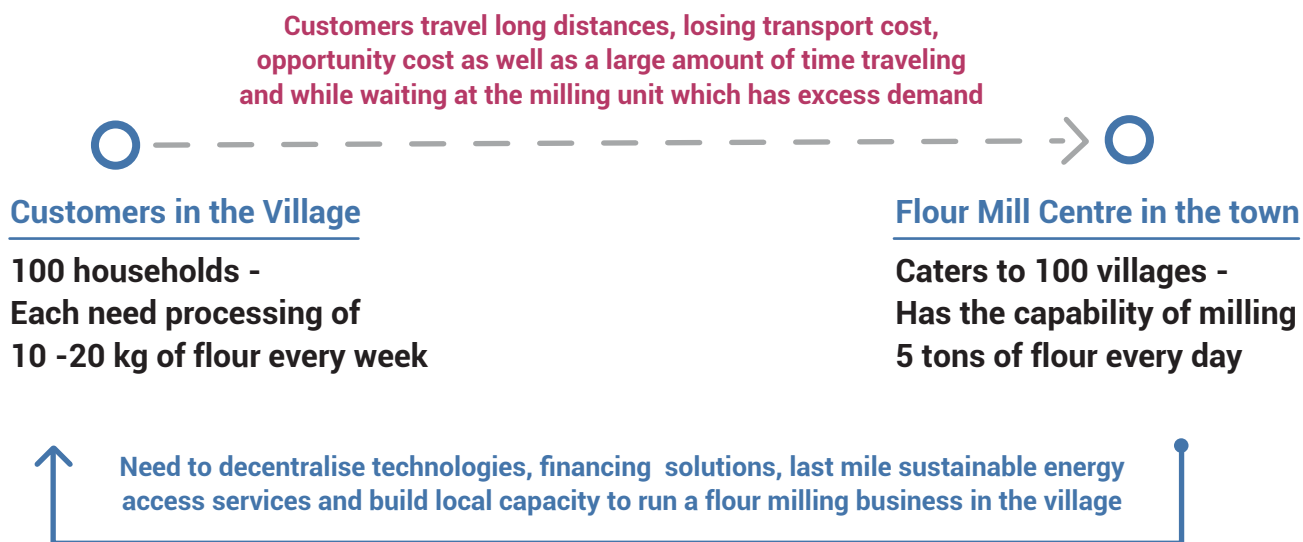
Pregnant women with any complications are unable to access critical services during delivery/operation/surgery

- ✓ Efficient solar powered cold storage & blood storage equipment.

✗ IF MISSING

Disruption in carrying out emergency deliveries with high reliance on other hospitals with blood storage capacity

Secondly, **demand is not a true representation of the factors that lead to inaccessibility of a solution on the ground- which is made up of ecosystem factors.** To elaborate further, demand for energy efficient flour milling machines amongst small and marginal farmers cannot be fulfilled by just developing a flour mill. To actually meet the demand, innovations need to unlock the ecosystem factors of financial inclusion, human resources, last mile service providers, etc. This will result in the defined 'demand' being able to actually access the solution- bridging the demand by creating conditions that support sustained supply modalities.



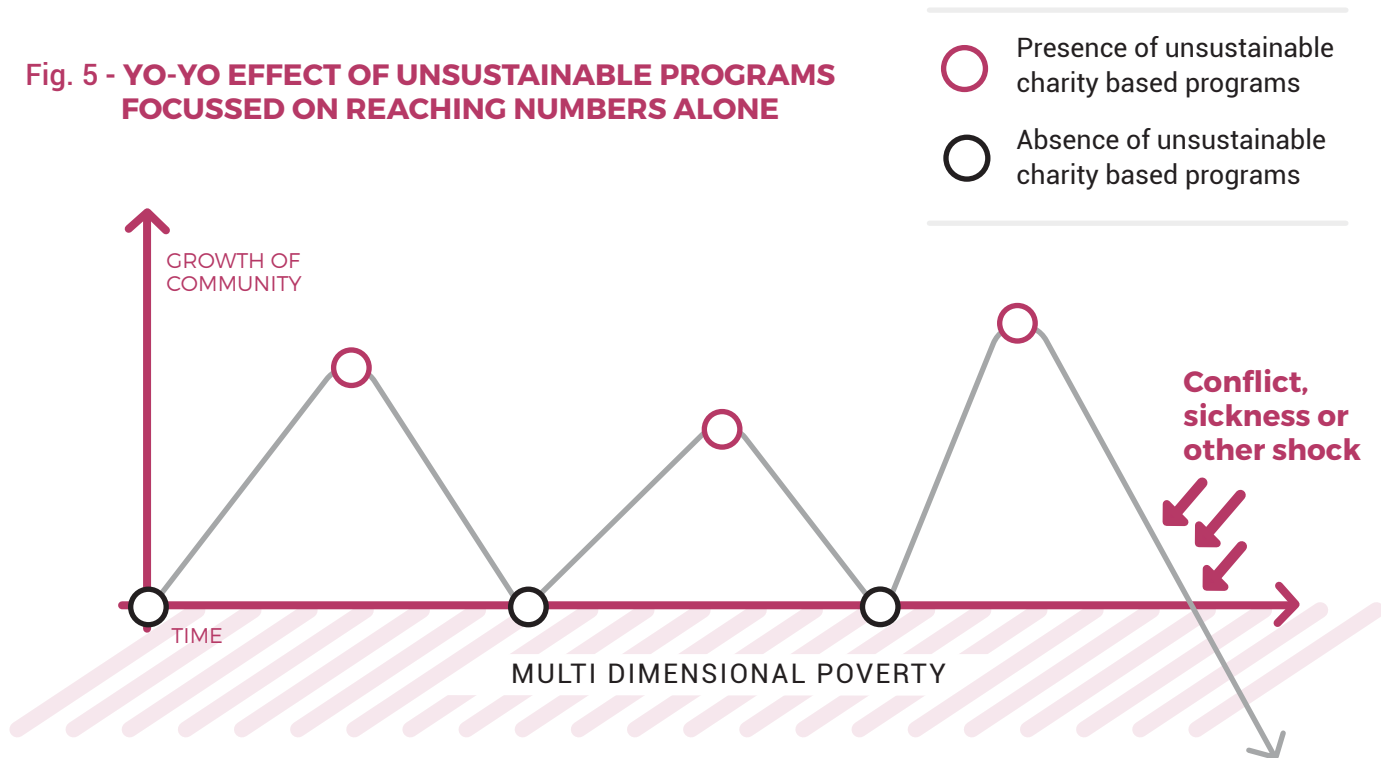
Specifically to the energy discourse as well, **negating the developmental gaps during energy planning is one of the key reasons why the present-day mapping of energy demand has led to unsustainable supply and demand conditions.** The energy programs of today, across the world, need to consider end user and systemic factors at the center of the planning process.

Thus, designing a solution around this context requires a systemic approach- one that uses an intervention to change the inherent system around the poor; the key goal being to reduce the inequality in access to developmental gains.

Multidimensional Poverty Index, developed by OPHI (2018) shows that in addition to 1.3 billion people (about 18% of the world's population) who currently live in abject poverty, an additional 879 million (about 12% of the world's population) are at risk of falling into multidimensional poverty because of one setback or shock, ie one conflict, one sickness, one drought, unemployment and more. Thus, in reality, approximately 30% of our population are either in poverty or at risk of falling into poverty.

Thus, measurements should move away from the numbers game and must concentrate on expending financial and human resources for establishing replicable processes. Creating a plethora of processes and methodologies, that are then institutionalized in macro and micro stakeholders will prevent the world from having scores of countries seeing a yo-yo effect in **poverty numbers**. The norm of poverty should also be upward and not swinging between two constant bars.

Fig. 5 - YO-YO EFFECT OF UNSUSTAINABLE PROGRAMS FOCUSED ON REACHING NUMBERS ALONE





No source of Livelihood

See the negative effects of unsustainable policies on Tribal communities in Meghalaya

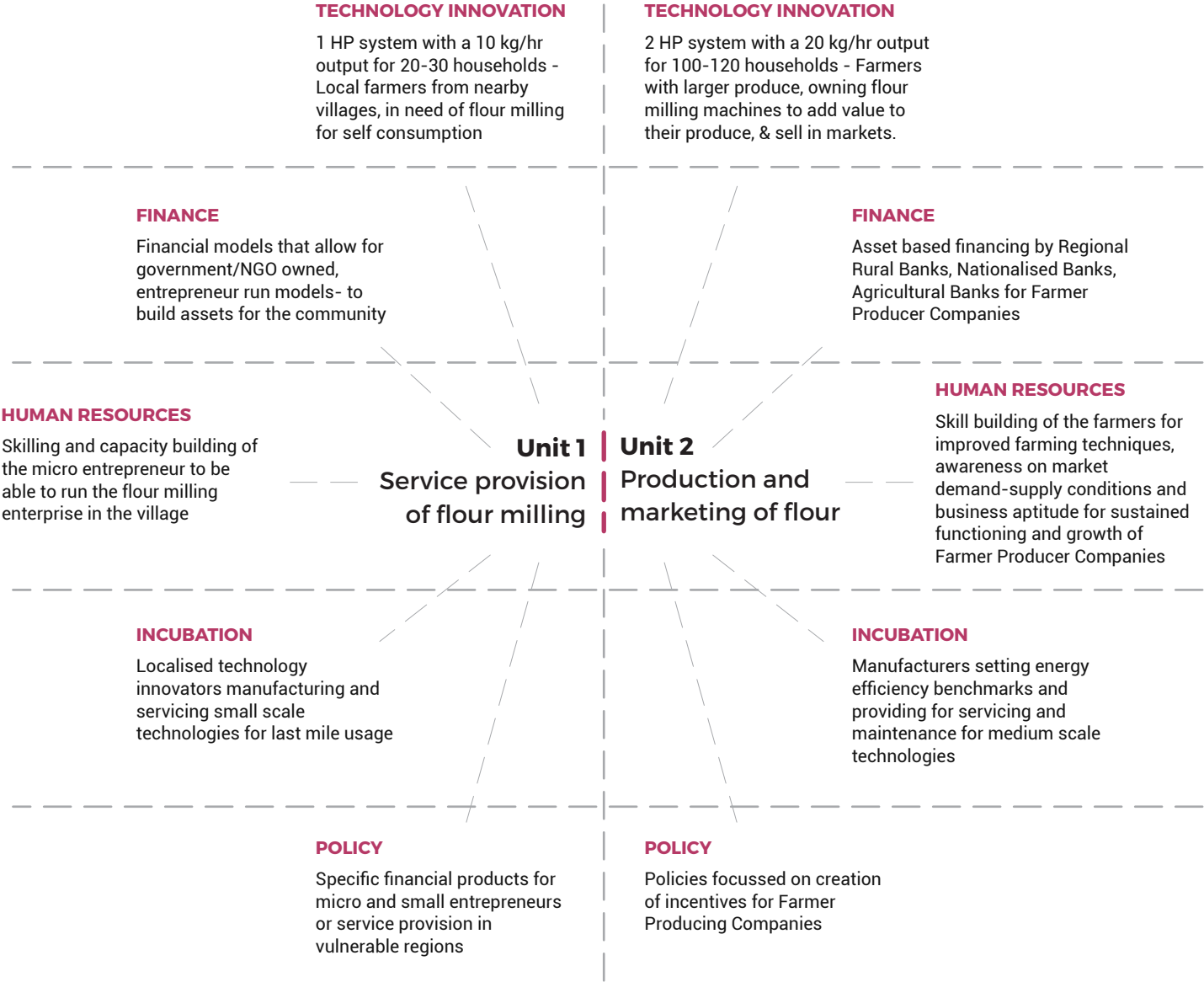


The right approach is one that **innovates on systems that are coherently and increasingly designed for skewed distribution of benefits**. The process of innovation itself has two aspects- a process of creativity and developing or modifying for new and valuable parts and second, a process of adoption and implementation that establishes change within a system and brings about a change in the approach to doing things.

For example, in order to cater to a marginal farmer's needs of agri processing- design, development and deployment of solar powered, energy efficient flour milling machines is required. But the solution designed for the farmer would be developed out of the understanding of the market in the farmer's geography, and not limited by it. The market linkage available to the farmer, the skill levels and the cashflow, determines the design brief for the solution design. For low income micro entrepreneurs, it is imperative that the precious profit margins are spent to build assets and cutting down on operational expenses.

Thus, in the case illustrated alongside, technology innovation to reach the benchmarks in energy efficiency (energy consumption and capacity of the machine) is conducted. In addition, a financial product developed through an understanding of the business model, brings the micro-entrepreneur's cashflow at the centre.

ECOSYSTEM FOR DIFFERENT TYPOLOGIES OF END USERS OF A SOLAR POWERED FLOUR MILL TO SUSTAINABLY RUN A BUSINESS

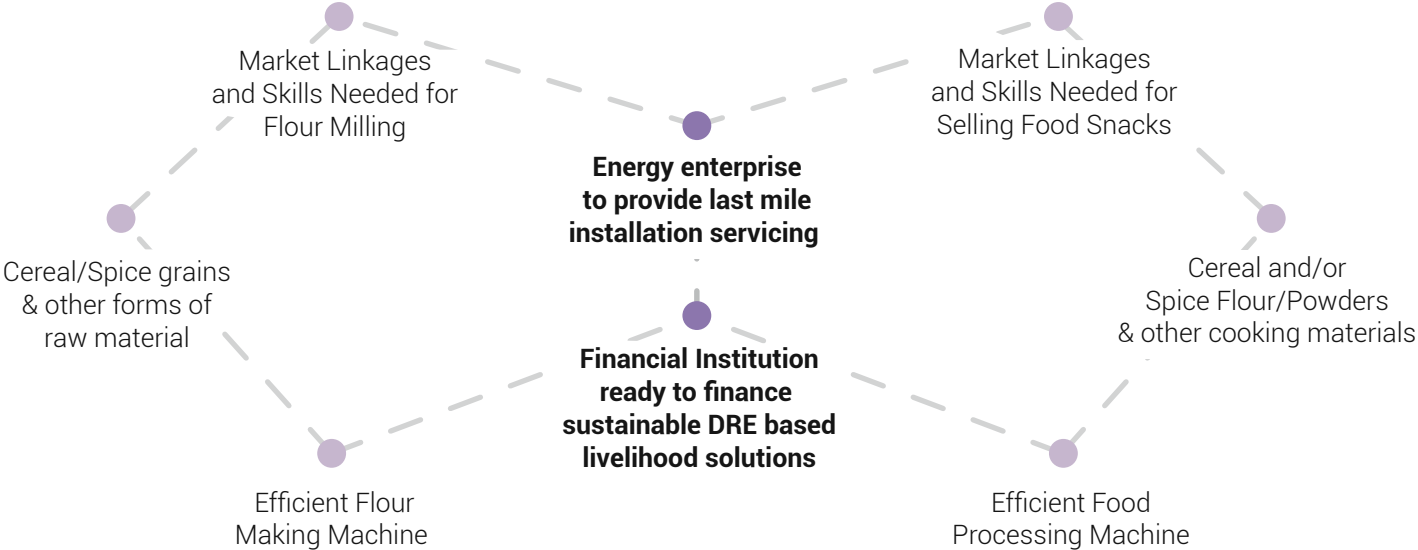


The scaling from thereon would be by creating an ecosystem that allows for such a methodology for solution design to prevail. This would mean scaling of energy efficient technology manufacturers who are able to customise technology, last mile service providers who are able to install and maintain, and inclusion of financial product in multiple financier's product portfolios. Scaling by building this ecosystem, brings focus on the process of service delivery provision and access of a solution in the long term.



Innovation of Processes

A solar powered bread rolling solution is devised to help a lady improve her business productivity.



ECOSYSTEM OF A FLOUR MILLING BUSINESS



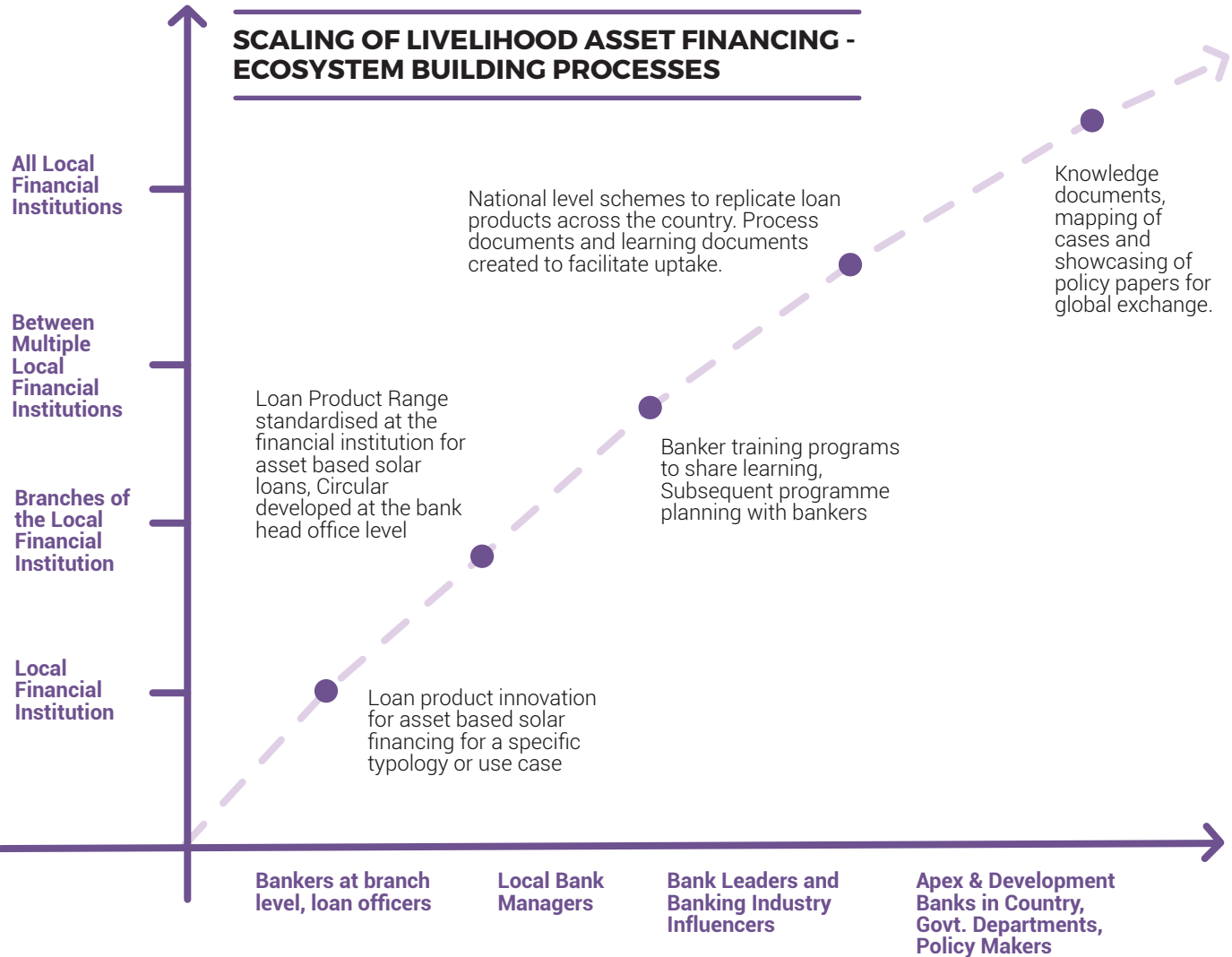
ECOSYSTEM OF A FOOD SNACK MAKING BUSINESS

This change would not just result in growing the impact by 1-2%, but **result in processes which results in improved ways of decision making, innovating and producing.**



Replicating Processes

Various types of women, use solar powered tech to run their bread making business



OPPORTUNITIES IN THE ECOSYSTEM OF A SUSTAINABLE ENERGY DRIVEN, ENERGY EFFICIENT PRODUCTIVE USE APPLIANCE

	Innovation	Replication	Scale
Technology	High risk R&D and innovation for efficient technologies	Capacity building of innovators, manufacturers and suppliers of energy efficient technologies and supply of these to all geographies required	Influencing efficiency guidelines of machines which have been offered national level subsidies through schemes and programmes
Finance	Testing and deployments of loan product innovations that make the solution affordable for the user	Training of financiers and knowledge sharing among financial institutions	Influencing financial policy to disburse appropriate subsidies, target based planning and energy + livelihood schemes
Channels & Linkages	Identification of appropriate business models and relevant business needs for different typologies of livelihoods	Influencing market conditions through various stakeholders - institutions, for improved input-output flow and exchange of goods and services	Influencing national stakeholders to undertake robust models to fill gaps in the product and value chain of various business models
Capacity Building	Awareness amongst local financial stakeholders, NGOs and local governments to be informed of sustainable energy driven services	Enhancing the capacity of raining institutions going beyond technical traing to innovation	Developing models to mobilise & improve the capacity to change mindsets and thought process in Industrial Training Institutes and Skill Development Institutions
Policy	To influence local govts to facilitate gap financing, infrastructure or other support towards a micro-enterprises	Influence state/province level governments to expand reach and prove viable models of small businesses	Increasing accessibility and availability of ownership at a national scale through private and public sources

Inclusive sustainable energy ecosystem building thus needs to achieve two different objectives-

- 1.** Innovating on different parts that can be absorbed by the system
 - 2.** Bring in scale by changing the quality and type of activities of the system
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The creation of this inter-dependent, contextualised building of the ecosystem also allows for end users and communities to not just move out of poverty but also reach a level of social security, such that if there are sudden shocks or stresses one is not plummeted back into poverty, diluting hard-won gains.

SELCO Foundation is dedicated to innovating and replicating customized solutions, processes and ecosystem building methodologies for various developmental sectors with sustainable energy as a critical driving factor in its work.

SELCO first began experimenting with its ecosystem building methodology in 1995 and has since then proven its use across various regions, programs, domains and levels, of sustainable energy access.

Do get in touch with us to know more!



SELCO Foundation

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