Insights *and* Stories

CInI Lakhpati Kisan Programme

The change makers

How women drove the Lakhpati Kisan programme

01

Her hair neatly bunched up on her head, her sari held in place by an oversized brooch, the petite frame of Monika Mundu is a picture of quiet determination.

A resident of Baradaudi village in Jharkhand's Khunti district – a region with a long legacy of tribal movements – she is a member of the Board of Directors of the award-winning Murhu Nari Shakti Kisan Producer Company Limited (MNSKPCL).

The Farmer Producer Company, promoted under the Lakhpati Kisan programme in 2018, now has more than 3,000 shareholders and a share capital of more than ₹30 lakh. MNSKPCL was awarded the best FPO in Jharkhand by the Government of Jharkhand in 2023 and has won recognition as the 'Best FPO' in Eastern India.

As a Board member, Monika facilitates the entire ecosystem that grooms entrepreneurs, provides farmers timely inputs like quality seeds, fertiliser, information, and training. This ecosystem also expedites market linkages so that farmers can sell their produce at fair and just prices. Her FPO supports 100 producer groups.

Monika - Member of the BoD (MNSKPCL)

Monika has been an indispensable part of the Lakhpati Kisan programme. As a leading SHG member, she helped build acceptance of the programme in her community. She participated in aspiration mapping exercises like Urja, helped bring community members into the programme's fold and steered their path towards becoming 'lakhpatis'.

Looking back, she says, "I was just an ordinary village woman, and there were no avenues to earn, no way to fulfil aspirations. Whatever we earned was spent feeding the family. And that too proved difficult at times."

When asked how she is faring now, Monika is all smiles. "Earlier I used to go around in my cycle, now I have bought a scooty. I use it to go to my workplace. We had no TV, no fridge. Now we have both. Earlier, there wasn't much scope to give my children quality education. But even that has changed."

But it is not only the changes in her personal life that she is proud of. "Earlier, no family in my village had a bathroom in their home. But now women are so aware that each house in the village has a bathroom, and they use it too." Monika would also agree that there is more awareness than before about menstrual hygiene and even cervical cancer.

What she isn't fully aware of is the critical part that she and her fellow Didis have played in this sweeping transformation. They proved to be the vehicles of change. They were the ones who helped the Lakhpati Kisan programme to reach out to and encourage hundreds of smallholders and marginal farmers to choose the path towards enduring prosperity and irreversible change.

The 'Scooty Didi' has emerged as the mascot of the Lakhpati Kisan programme, encapsulating the community's aspiration for change. This aspiration is at the heart of realising the programme's vision. Upon becoming a 'lakhpati', owning a scooty – and thus gaining freedom of movement, the ability to take children to school or fetch farm produce – emerged as a dream for the tribal women. This dream has become a powerful trigger, enthusing others to nurture their own aspirations.

From the periphery to the core

As much as 63% of India's employed women are engaged in agriculture, but they are mostly agricultural labourers, not 'farmers' per se.

Despite significant changes in inheritance laws, women still own only around 11% of agricultural land in India, and they are mostly engaged as tenants or wage labourers in farmlands that are usually male-owned. Yet, in every household in rural India, women contribute to various activities connected with the agriculture value chain – sowing, weeding, harvesting, and post-harvest processing. But this labour is mostly unpaid or low-paid and unrecognised work.

The lack of recognition of their contribution also means lack of entitlements, such as institutional credit, seeds, fertilisers, irrigation sources and the like. As the World Bank noted in 2019, insecure land rights create obstacles for women engaged in agriculture or allied activities or in running a domestic enterprise. This constrains their economic prospects, and makes them vulnerable to poverty and violence.

This is also true for tribal India, where despite tribal customs sanctioning greater entitlements to women – such as equality in inheritance, freedom of movement and choice – women's rights and social status are undermined by patriarchal norms and legal disparities.

62.9%

Female labour force participation in agriculture

$2 trillion/year

Estimated cost to developing countries due to gender gap in agricultural productivity

Source: FAO

Caption: to come

Source: Annual Periodic Labour Force Survey (PLFS) Report 2021-22

Inclusivity a must for holistic development

But closing the gender gap is essential to enhance economic productivity, improve development outcomes for the next generation and to make institutions and policies more representative. Education can help bridge this gap. So can women's participation in community development, particularly in matters such as health and sanitation that impact them the most.

Increasingly in rural India, women's involvement in grassroots institutions such as Panchayati Raj Institutions (PRIs) and self-help groups (SHGs) is making a difference. This enhances their representation and participation in decision-making processes at the local level, thus helping them reshape their lives, challenge traditional norms, and contribute to broader societal development. These institutions are emerging as the prime conduit through which community development is being channelised all over India.

The Lakhpati Kisan programme: By the women, for the women

The Lakhpati Kisan programme focused on uplifting the lives of small and marginal farmers by strategically engaging women to break the cycle of poverty and create a momentum of irreversible change. Designed around women, the programme sought to promote women-led institutions – such as FPOs, and SHGs – to increase women's representation in decision-making roles within the villages and in the programme clusters.

The programme also empowered women to become entrepreneurs. They took up roles such as lac cultivators, producers of soil-less saplings, and goat farmers. The also took on responsibilities as community resource persons, including roles like 'Pashu Sakhis' and health carers.

This helped build gender resilience, enhanced women's bargaining power and improved their status in the community, and enabled them to fulfil their own aspirations and those of the larger community.

Through collectivisation and forging backward and forward linkages in the agriculture value chain via community institutions like the FPOs, the Lakhpati Kisan programme generated wealth and social capital within tribal communities. As Board members of Federations, FPOs, entrepreneurs, community resource persons, panchayat members, members of buck-user groups, water user groups and in varied such roles, women were encouraged by the programme to take on a central role in community development, and thus contribute not only to the well-being of their families and the fulfilment of their own aspirations, but also to the overall cohesion and prosperity of their communities.

Programme genesis – Listening to collective aspirations for change

Before designing the programme around women, the CInI team spent close to six months talking to SHG members and leaders in the programme's implementation area, trying to understand their aspirations.

The team undertook visits to states such as Rajasthan and Tamil Nadu, where women had played a critical role in spearheading community development.
These discussions also made the CInI team aware of women's aspirations for themselves and their community.
It was evident from these exercises that community members were eager for rapid progress and were no longer satisfied with incremental change. Community members were willing to take risk, adopt new ideas and technologies if adequate support and guidance was provided. These 'Aspirations' defined the Lakhpati Kisan programme

Caption: to come

Women's aspirations for their family

The most intent aspiration of the women was to give their children access to better educational opportunities. Furthermore, many women wanted to buy a bike or scooter for personal and family use to ease their transportation woes.

Women's aspiration for themselves

Women unanimously wished for financial stability. Female leaders from the Harichandanpur district of Odisha, for example, wished to have at least ₹2 lakh in their bank by the time they became senior citizens, and to construct their own houses.

Women's aspirations for their community

The women also aspired to see some community development. The FPC leaders and SHG members envisioned a comfortable life for the villagers. They hoped for a pucca road and decent sanitation. They also wished for proper water supply to irrigate their fields. Most importantly, they wished to involve all the women in the village and move forward together.

"I do not want to rely on my children or be a burden on them. I want to have my own money and house," said Saraswati Didi, an FPC leader.

Mechanisms to share and learn from each other

Through the mechanisms built by CInI over the years, such as the Urja workshops, the Annual Work Plan meetings, Panchayat exit plans and exposure visits, women were able to share their own aspirations with others. They also got constructive advice on how these could be achieved. The forums helped develop their leadership instincts.

Urja workshops

Known as 'Melava' in Maharashtra, 'Urja' in Jharkhand, these workshops facilitated dialogue and leadership skill transfer and provided the platform for the women to share experiences on a range of issues impacting them. Through these discussions, women became aware of different livelihood opportunities. They learnt how to map livelihood layering prototypes2 in their village and how to market their produce. They learnt of improved agricultural techniques for paddy and vegetables and how to improve yield among other things. They also shared their aspirations for their own families, village, and the community.

[2] Prototypes are early stage or initial design or model that serves as a basis for further refinement and elaboration

Caption: to come

Panchayat exit plan

As part of one of their AWP meetings, women were encouraged to plan how to run their dream panchayat without the assistance of the Implementation Support Agency.

The workshop proved to be a learning experience for them, as they gained better understanding of livelihood layering, financial matters and risk taking, thus emerging as more confident leaders.

Caption: to come

Mechanisms to share and learn from each other (Contd.)

Exposure visits

Visits to other villages and sometimes regions helped women connect and learn from others. This boosted their self-esteem and confidence. Their successful return from distant places also made their menfolk less hesitant about their travel and engagement. This helped to garner greater community involvement in the programme.

Gender sensitisation workshops

In successive workshops, women members of SHGs, Federations and FPCs gained better understanding of gender issues, societal constructs, their implications and how these could be overcome to establish gender equity. This helped participants gain a new perspective and emerge stronger.

Menstrual hygiene awareness

CInI sought to address the widespread social taboos associated with menstrual health. These issues needed to be addressed since poor menstrual hygiene often aggravated health issues among women and adolescent girls and hindered their personal development. Community resource persons or 'Sakhis' helped debunk myths surrounding menstruation and helped promote menstrual hygiene. This increased women's participation, and thus greater engagement in community work.

> The Lakhpati Kisan programme also spread digital literacy among the rural women. It facilitated their adoption of agricultural technologies that increased farm productivity, market reach and overall aspirations.

In some states, women from SHGs and Federations also received basic training on using the internet. For example, the Internet Sakhi project helped create awareness among women on the use of internet. Training sessions were, and continue to be conducted for the introduction of new technology with respect to livelihood choices. Women taking on the role of community resource persons such as 'Pashu Sakhis' were trained on artificial insemination and animal husbandry.

Why are women's aspirations important for community development?

> Recent research has shown that aspirations can inspire forward-looking economic and political behaviour, including entrepreneurship and civic engagement.

Increasingly, aspirations of the economically disadvantaged are being seen as a critical component of developmental economics. Populations with high aspirations have been seen to connect with and engage in forward-looking behaviour. On the other hand, low aspirations among the rural poor have been found to be linked to less efforts and less investment in bringing about change for a better future.

Addressing women's aspirations for their families and community could lead to significantly better outcomes, given the strong correlation between women's empowerment and overall development. Women have been seen to invest as much as 90% of their earnings in their families compared to 35%[1] by men. When women have more control over household assets and decision-making, this results in improved investments in health and education, greater calorie availability and dietary diversity, better nutrition for the child and more use of prenatal care and contraceptives.

Women's aspirations are closely linked to multiple UN Sustainable Development Goals. Thus addressing issues like gender equality and women's empowerment are integral to achieve sustainable development.

90%

of what women earn are spent on their families vs 35% in case of men

[1] FAO report: 'Women Feed the World'

Developing women as leaders and role models

In the programme area, 'Lead Didis' or early adopters emerged as the primary point of contact, taking ownership of the programme and motivating others to come into the programme's fold.

7,700
CInI's SHG outreach in 4 states

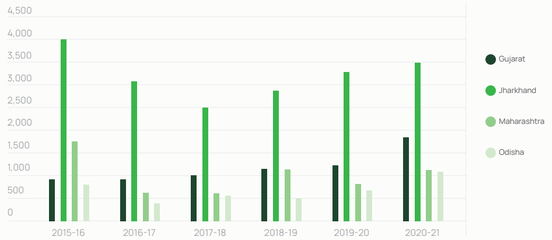
Those with an inclination towards leadership were groomed through discussions, external facilitation, and knowledge-sharing to work as influencers and entrepreneurs in their communities.

Over the programme's duration, CInI ensured that households in the programme area were brought within the fold of robust grassroots institutions led by women, such as SHGs, village organisations and FPOs. The groundwork for this had been laid by the National Rural Livelihood Mission. . Even earlier, through a landmark initiative launched in 1992, many SHGs had been linked with formal financial institutions to facilitate access to credit and promote entrepreneurship among women in rural areas.

In the clusters formed for the implementation of the Lakhpati Kisan programme, efforts were made to develop and strengthen community-based institutions and enterprises. This was done by providing high-quality business development services, establishing links to affordable finance and markets, and developing the management capacities of the staff and women leaders of such institutions/enterprises.

Throughout the Lakhpati Kisan programme, CInI promoted and worked with close to 7,700 SHGs in the four states.

No. of SHGs promoted - year-wise and state-wise



Caption: to come

With support from CInI, women leaders in these institutions implemented various initiatives in their villages. These included identifying and mentoring entrepreneurs, stabilising multiple livelihood activities at the household level, and promoting the use of solar pumps and devices. They also focused on efficient water usage, introduced innovative technologies for better returns, and strengthened market links to ensure fair value for farmers.

Women in other committees

CInI also facilitated women's role in village organisations, FPOs or Federations. Women were encouraged to actively participate in various community institutions under the panchayat, such as 'pani samitis', sanitation committees, gram sabhas, school management committees and water user groups.

This further ensured their prominence in the life of the community. For example, as part of the village water and sanitation committee mandated under the Jal Jeevan Mission (JJM), women became involved in planning, monitoring, and implementing plans to ensure that drinking water reached all households, and the operational system was set up satisfactorily.

Women leaders groomed under the Lakhpati Kisan programme

Particulars	Gujarat	Maharashtra	Odisha	Jharkhand
As BoDs of FPCs	94	15	31	42
As CRP/LRP (community service provider)	80	80	43	142
As Panchayat leaders	256	28	7	125
As trainers/facilitators (TOT) in community and other forums	273	14	15	114
As entrepreneurs	142	76	1	157

So what changed for the women?

- The success of other women fulfilling their aspirations of earning a steady income, acquiring assets like electrical goods and vehicles, providing better education for their children, being able to put together monthly savings or start their enterprise or business in agriculture triggered new hopes and aspirations among others
- Women, as entrepreneurs, FPC members and leaders, community representatives and community resource persons, earned respect within the village and community
- Opportunities created for women to form social and economic connect through the network of women-led institutions, enabled knowledge-sharing, skill development and collective empowerment

Gadaun's women as exemplars

Laxmi Narayani, Maa Mangala, and Maa Gouri in the Gadaun hamlet of Harichandpur, Odisha, had formed the Gaduan SHG under the Gram Panchayat Level Federation (GPLF) and the Tangriapal Gram Panchayat Level Federation.
The groundwork done by such women-led community groups has been at the heart of the Lakhpati Kisan programme. Right from the beginning, these groups have led the intervention on the ground and supported households in executing the programme.

Since its formation, the Gaduan SHG had been arranging regular meetings and ensuring loan rotation for members as per required norms. When the Lakhpati Kisan programme was rolled out in the area, the SHG guided CInI and monitored all livelihood activities. Under the leadership of the Gaduan SHG, individual drip irrigation systems were successfully installed over 5.62 acres for 21 farmers in their community. All activities – from vendor selection to arrangement of loans – were executed by the women of the SHG.
They also helped the promotion of vegetable cultivation, providing end-to-end support from watering and fertiliser application to spraying and marketing.

Drip irrigation with mulch

The changes the Gaduan SHG catalysed created new opportunities for the tribal farmers while giving the tribal women a chance to earn a livelihood and gain direct access to farming inputs and markets, thus creating conditions for irreversible change in the community.

Ground impact

Sparking transformation in the village community

The Lakhpati Kisan programme equipped women with skills and resources that reduced barriers they face in accessing financial services. This went a long way to help them overturn gender norms and set in place tangible change within their community.

The programme promoted role models and mentors who inspired, supported and encouraged women to envision and pursue their aspirations.

Bulu Rani Mahato of Jharkhand's Jugisol village in the Dhalbhumgarh block had always been different from the other women in her village. Articulate, confident and willing to take up challenges, she had been an active participant in her local SHG since she was 16. She moved up the ladder and became president of the SHG and federation, which was when she came in touch with the Lakhpati Kisan programme in 2015.

One of the early adopters of the programme, Bulu Didi used the learnings to diversify into paddy cultivation, high value vegetable farming and goat farming. She was as keen to bring about change in her community as she was with her own life. As SHG president, she facilitated and ran monthly meetings with all the SHG leaders in her panchayat and managed its finances. She also visited the villages regularly in her panchayat to understand their requirements, such as procurement of seeds and farming tools as per the demands. As manager of the Federation's finances, she reviewed loan applications, vetted and facilitated their sanctioning.

Bulu Rani Mahato

Given her wide acceptance in the community as a mentor and leader, in 2018, she was appointed secretary of Adivasi Nari Utthan Ajivika Producer Company Limited. Since her appointment, Bulu Didi has been admirably handling the affairs of the FPC and has increased its profits. Her FPC's turnover, grew to ₹1.21 crore in FY 2023-24.

Apart from managing the Community Resource Persons (CRPs), Bulu Didi also encourages others around her to take an active role in their institutions, even going to the extent of intervening in domestic tiffs to enable women's participation in SHGs. Through her hard work, confidence, and sound advice, she has become an outstanding role model for other women in the panchayat. Always eager to help, she has assisted in the loan recovery of ₹30,150 from 52 SHG members from two panchayats in FY 2023-24 alone.

> Before joining these interventions and groups, I was my husband's wife. Now when I step out of the home, people of the village and panchayat know me for my work. They stop by and greet me - 'Johar Didi'", says Bulu Didi.

The programme enabled women to take on assertive roles as community representatives, thus enhancing their self-esteem and confidence.

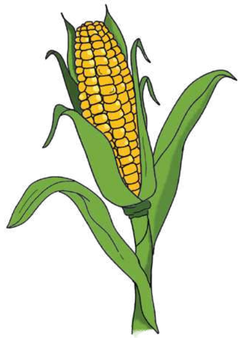
Anjana Nag from the Murhu block of Khunti district, Jharkhand, has gone through a complete role reversal. She was once a housewife, dependent on the earnings of her husband. She rose through the ranks as a member of her SHG, Lily Mahila Mandal. She became a community resource person for the village, and then member of the Producer Group, Genda Baa Mahila Utpadak Samuh. She was subsequently selected by her village to lead the village panchayat, becoming a Mukhiya in 2022. She has become a role model for the other women in her village.

"Earlier my family income depended on my husband's earnings. After enrolling in the Lakhpati Kisan programme, my husband and I took to the cultivation of high value crops and lac cultivation through a scientific approach. I trained with the support of CInI and the local Implementation organisation, Nav Bharat Jagriti Kendra, since 2015. Now I have enough enough income with good savings in bank and able to fulfill many of my basic life choices," says Anjana. she has also taken up goat rearing since 2019. Anjana is now able to send her children to an English-medium school. She has also constructed a toilet in her house with support from the Swachh Bharat Mission.

Anjana Nag at her Panchayat office

CINI - LAKHPATI KISAN

The programme ensured equitable access to credit, technology and markets.



Sumitraben Dalsinhbhai Patel of Dhabada village, Gujarat, once fully relied on daily wage labour. Her family occasionally harvested maize and red gram on her 2.5 acres of unirrigated land for their Kharif and Rabi crops. But the earnings never proved enough to meet the family's needs.

Following the implementation of the Lakhpati Kisan programme in her area, Sumitraben joined the Mahalaxmi SHG, where she learnt how to ensure and manage regular savings. With her own savings and a loan of ₹10,000 from her SHG, Sumitraben first installed a tubewell. This helped her to grow high-value vegetables and sell surplus irrigation water to the neighbouring farmers.

With further credit from her SHG in the second year, she improved her irrigation facility and thus increased the area under high value crops. After receiving training from the CInI team in scientific farming, including growing creeper vegetables and spice crops with a trellis system, she expanded into microenterprise activities. This allowed her to diversify her income sources. Next, with a loan from the farmer's federation, she purchased quality milch animals and started a dairy. This helped her become financially independent and increased her earnings to ₹3 lakh.

Sumitraben did not stop there. She became an exemplary leader and motivated 300 women of Dhabada village to follow in her footsteps. Having broken the vicious cycle of poverty with her courage, ingenuity and her ability to earn the respect of her community, Sumitraben emerged as a role model for others in her village.

Caption Needed

"Initially we were just women who belonged to the house – a *Chulhaphuknewali* (woman who would light the kitchen fire). We would not step out of the house. Even if we did, we got an earful from our in-laws. But now, when I must attend office, my father-in-law reminds me of it, asking me to hurry. I myself look forward to my time in the office", says **Savita Kumari**, BoD member of the Churchu Nari Urja FPO. Her FPO, which has 2,900 shareholders, all of them women, and manages a share capital of ₹22 lakh, serves 7,000 households in two blocks of Churchu and Dari in Jharkhand. Savita's fellow Board member, Rita Devi, says, "The chief difference our FPO has brought is saving time for women producers, who had to think of selling her produce. Now she can devote more time to the field or her other ventures."

2,900

Shareholders in Savita Kumari's FPO, all of them women

Caption: to come

The strongest pillar

How women-led institutions and enterprises are ensuring irreversibility of the outcomes of the Lakhpati Kisan programme

02

Caption required

> The brainstorming at the participatory rural appraisal (PRA) exercise in Jama, Jharkhand, could be compared to any HR exercise in a corporate setting.

These meetings take place to facilitate communication and knowledge transfer among women members of Farmer Producer Companies, SHGs and other grassroots-level bodies.

Much like in a corporate environment, the participants at the PRA in Jama passionately defended their positions, engaging in earnest debate and thoughtful exchanges to arrive at well-considered conclusions. The picture would be the same at all the other PRAs across the Lakhpati Kisan programme's project area – be it in next door Palajori, Jharkhand, or in Dahod, Gujarat.

The debaters are primarily former and current Board members of women-led Farmer Producer Companies (FPCs) and Federations nurtured by CInI and its partners through the Lakhpati Kisan programme. There could be some male participants, but the majority are invariably women. These women lead their village SHGs or cluster-level institutions like FPCs and Federations.

During one such PRA session in March 2024, participants were asked to evaluate the Lakhpati Kisan programme alongside other State and Central initiatives that are active in their villages and cluster areas. The women demonstrated a keen understanding of each programme's distinct focus, its impact on their lives, and the broader community. While discussing the Lakhpati Kisan programme, they not only assessed the achievements but also offered insightful suggestions for improvement.

Their confidence, self-assuredness, and awareness were not surprising. As SHG members and, more critically, as Board members of apex institutions, they are responsible for staying informed about developments affecting the interests of smallholder farmers in their areas.

As FPC Board members, they perform a gamut of roles across the value chain. They identify, encourage and groom rural entrepreneurs. They ensure that quality seeds and inputs reach small farmers. And then they make it possible for the produce to reach the market and sold at fair value. They decide on which vendor to employ to lay irrigation pipes or dig ponds in their area; how and when to collect the produce and deliver it to the market; and how to generate profit for the producers and entrepreneurs, who are also members of their organisation.

They started off either as housewives or girls, with limited resources. But they had the courage and hope to bring change to their lives. They have now managed to transform their world – both how they see the world now and how the world sees them.

This transformation resonates two core principles of the Lakhpati Kisan programme – one, community-centric development and two, having women-led apex Institutions spearhead the development of the region.

Community evaluation exercise of different development programmes in Palajori village, Jharkhand

> The Churchu Nari Urja Farmer Producer Company Limited is a boon to us; it has not only created an identity for us at the village level but has also brought significant changes in the lives of our farmers.
> We have been able to provide doorstep service delivery to the shareholders.
> Our shareholders are happy as we have provided them with market linkages.
>
> **Sumitra Devi**
> Chairman of the Board of Directors at CNUFPCL

Self-help through FPOs: The bigger picture

In India, grassroots-level institutions such as Panchayat Raj institutions and SHGs have played a significant role in enhancing the linkage between the government and rural communities. This has improved performance in agriculture and social indicators.

10,000 FPOs

By 2024-25 - target set by the government of India

Community-led organisations such as SHGs, producer groups, village organisations and FPOs[1] have enhanced the collective bargaining power of the community. They have also promoted inclusivity by encouraging the participation of women and marginalised groups in decision-making processes. SHG formations were initially encouraged as part of a bank linkage programme of the National Bank for Agriculture and Rural Development (NABARD) that began in 1992.

The first phase of FPO formation in India occurred in 2003-10, when pilots were tried out in Madhya Pradesh. The process gained traction from 2013, when a national policy was formulated to promote FPOs as a way to leverage the power of collectivisation and increase farmers' incomes. FPO formation was speeded up by the government from 2020, with a target of forming 10,000 FPOs by 2024-25.

But while SHGs have become synonymous with rural development at the grassroots level, FPOs have had a less noteworthy run for several reasons. Many FPOs struggle for credit access. Also, the fact that they have not always produced viable business plans has made them unattractive to banks. FPOs face stiff competition from organised players and institutional buyers and often suffer from lack of proper market linkage.

The State of India's Livelihoods Report 2023 highlights that the FPO ecosystem, including access to capital and market linkages, has improved but it still takes four to five years for an FPO to consistently achieve annual revenue of ₹10 million without active government support.

Yet, organising smallholders into FPOs would significantly aid India's efforts to achieve SDG 1 (No Poverty), SDG 2 (Zero Hunger), and SDG 5 (Gender Equality) by 2030. This approach would better integrate smallholders into national and global value chains, increasing the potential for improved returns for the farming community.

[1]Under the FPO category, there are three institutions: a) An FPO can be registered as a Farmer Producer Company (FPC) under the Companies Act, 2013; b) Federations are registered under Societies Registration Act, 1860; c) Cooperatives are registered under Co-operatives Societies Act, 1912)

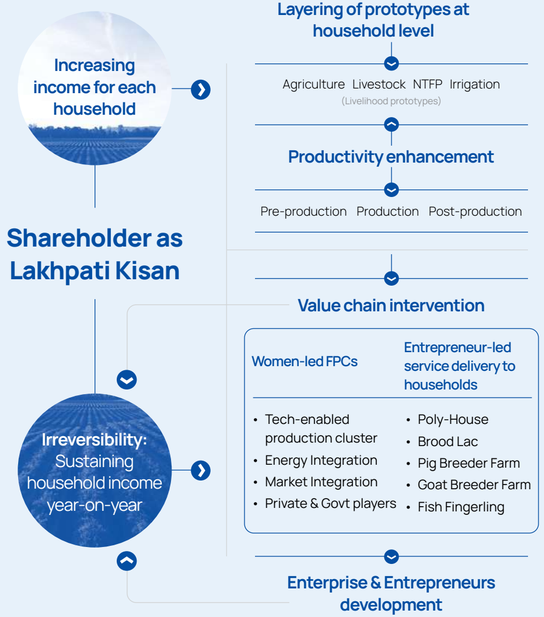
[2]Source: Businessline report, 'Scaling up FPOs', January 24, 2024

Business-led FPOs: Critical anchor of the Lakhpati Kisan programme

The two principles around which the Lakhpati Kisan programme revolves are – one, to increase household income and two, to make these outcomes irreversible. Incomes could be increased through livelihood layering and interventions like drip and solar-based irrigation across the production hub. But to sustain this income, it was necessary to integrate ouseholds into the entire value chain — pre-production, production, and post-production. FPOs provided this crucial backward and forward linkage to farmers, who are also their valued shareholders. Having women head these organisations was found to be beneficial because drawn from the community, they best voiced and represented the community's interests.

CInI had worked on the production part of the ecosystem even before 2015, when the implementation of the Lakhpati Kisan programme began. However, the team realised that there was need to establish a platform or an institutional system that would help communities get fair price for their agricultural outputs. There was also need to facilitate the accessibility of inputs in remote blocks and villages. This is because timely availability of inputs directly impacted production.

Additionally, for a specific livelihood prototype to be effective at the village level, there was need for technical support. For the CInI team, establishing a doorstep service delivery system became crucial for initiating and sustaining any livelihood venture, especially entrepreneurial ones.



Gap areas identified by the CInI team in various livelihood thematic areas

	PRE-PRODUCTION	PRODUCTION	POST-PRODUCTION
Polyhouse nursery	Good quality planting material	Establishment of PoP; Maintaining drip plots	Drying/Sorting and grading/ Marketing
Brood lac	Good quality brood on time	POP like deepening of brood	Lac processing/ lac products
Pig and goat	Supply of buck & piglets of superior breed & quality	Feed management; Cold storage for vaccination	Sale timing; absence of weighing culture
Fish	Quality fingerlings	Netting and pond management	Market linkages
Water Irrigation	Costly field irrigation	Inconsistent seasonal rainfall; challenge of connecting pipelines	

CInI realised that to create resilient livelihoods, it would be necessary to fill the gaps across the pre-production, production and post-production stages across various livelihood thematics in order to generate improved and sustained incomes for farmers. This led to the formation of the apex institutions or business-oriented FPOs.

From the third year onwards, it became the programme objective to spearhead development in the project areas through the active involvement of apex institutions, i.e. FPCs, Federations or cooperatives. In collaboration with the SHGs right at the base of the pyramid, and the village organisations above the SHGs, the FPOs at the apex worked to enhance the impact and sustainability of the Lakhpati Kisan programme.

The FPOs were formed with elected women representatives from the village-level organisations serving on the Board. The FPOs were registered under the Companies Act 2013. Across the four states, FPOs now deal with multiple commodities of agriculture and allied products. Most importantly, they act as anchors in the value chain by providing essential technical support and input credit when needed, and by building partnerships with relevant stakeholders.

Objectives behind FPC formation

FPOs in the Lakhpati Kisan programme play the following roles:

- Serve as end-to-end service provider for the entire value chain in agri, livestock and NTFP livelihoods; they address the pain points that hinder smallholders from achieving lakhpati status by providing quality inputs, market connect, insurance as service, credit as service, etc.
- Serve as women-led business institutions that operate profitably; they ensure operational sustainability, making the template irreversible
- Enable women-led community-based organisations to spearhead development and thus create a sense of ownership and responsibility within the community
- To act as enablers of micro entrepreneurs, with relevant support systems for them to grow and strengthen the value chain

How community-based FPOs facilitated the programme

Within the programme's overall structure, FPOs played multiple roles, including providing market linkages and supporting micro-entrepreneurs, who add value in the pre-production stage. Institutions such as the SHGs, village organisations and producer groups played a critical role in community mobilisation and generating awareness among the farmers.

Primary village institutions such as women-led SHGs, working under the direction of the Board of Directors (BoD) of the FPOs, now undertake group level micro planning. They take various decisions, such as the sowing time of crops, crop type, seeds to be used as well as the type of fertilisers and pesticides.

Village-level organisations, or secondary-level institutions, aggregate the agri-input demand from the primary level institutions, i.e. SHGs. They facilitate linkages between the grassroots SHGs and the apex-level institutions above them.

The objectives to promote business-led community-based organisations were:

- To build community ownership of the Lakhpati Kisan programme for long-term sustainability and irreversibility
- To provide on-time doorstep services to member families at affordable prices
- To operate with profitability to ensure operational sustainability

CInI has formed and works with

7,680

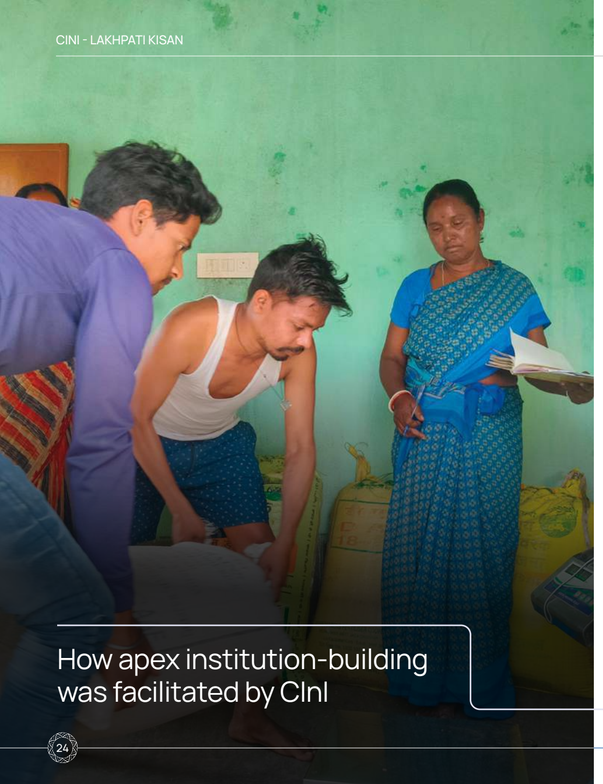
SHGs in Gujarat, Maharashtra, Jharkhand and Odisha

448

Village organisations

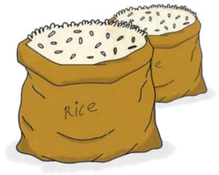
22

Apex institutions (Federations/FPCs)



How apex institution-building was facilitated by CInI

With the initiation of the Lakhpati Kisan programme, CInI recognised the need for an apex institution. This institution would serve as a central focal point for the production hub ecosystem, overseeing its various aspects and ensuring the long-term ownership and continuity of the programme.



During the third year of the programme, registration of Farmer Producer Companies (FPCs) was undertaken, and CInI played a pivotal role in nurturing, and strengthening these FPCs.

As the programme design revolved around women-led institutions, a series of Urja workshops[3] were organised with BoDs and women leaders of the villages. The focus of these events was to help women 'aspire' for quality life. The event helped the women and their institutions to take the lead towards meeting the aspirational goal set by the Lakhpati Kisan programme. The participants were oriented and equipped with necessary skills in order to understand and map the diverse livelihood options for other women in the village.

CInI organised regular capacity-building events and training sessions for women Directors of the Board. The sessions focused on FPC governance, financial management, legal compliance, and sorting and grading.

At the Annual Work Plan (AWP) sessions, women BoD members were encouraged to develop and share the business plans for the year (please refer to pages xx to read on how women were trained to take on leadership). Despite these being

[3]Known as Urja in Odisha and Melava in Maharashtra, these workshops facilitate dialogue and leadership development

Caption required

companies led by rural women, their AWP processes are as rigorous and comprehensive as those in established corporate settings. In these workshops, the women discuss their learnings from the past year and how they are applying these insights. They also conduct a SWOT analysis of their FPOs. Often arrangements are made with specific academic organisations to provide training to the women during the initial stages of the FPO's operations. Processes, such as regular AWP meetings, are central to CInI's approach to nurturing these apex institutions. This attention to detail has significantly accelerated the development of FPOs.

In the early stages of FPO formation, CInI deployed trained personnel from its own team to support the FPO. This helped in developing the systems, processes, products, services, and linkages. This allowed the new FPO to establish itself quickly and enabled community leaders to learn about best practices through practical experience. CInI also conducted financial technical sessions, arranged internal audits by recognised audit firms, and assigned professional accountants to monitor and cross-check FPC accounts every quarter.

A quarterly learning-cum-review platform was created by CInI at the state-level for cross-learning and monitoring the progress of each FPC against its yearly business plan. Microfinance institutions like Rang De, Samunnati, and Avanti were introduced by CInI for credit linkage and working capital support for the FPCs. Professional experts were delegated to assist FPCs in creating professional business plans as per market standards and provide technical guidance to CEOs, Marketing Managers, and BoDs.

CInI also organised exposure visits for community leaders, including the BoD Didi women Directors on the Board, to renowned FPCs such as Sahyadri in Nashik and Jalgaon to experience high-tech drip irrigation facilities and to the Dholpur Federation to facilitate greater understanding.

Caption required

Integrating stakeholders across the production hub

FPOs play a crucial role in the production hub, ensuring farmers receive quality services and technologies.
This is critical to creating improved and sustainable incomes.

In a production hub, a contiguous group of villages are aggregated into an ecosystem, where various stakeholders collaborate for continuous farm production and associated marketing.
The illustration on the right (Production hub-Producer group-FPC integration) shows how a smallholder farm forms a part of the producer group (PG), which, in turn, gets both input and output services from entrepreneurs and FPOs.

FPOs developed an operational ecosystem with the help of women Board members, community resource persons, market players, financial institutions, and others.

The forging and strengthening of the connect between shareholders, entrepreneurs, and producer groups (PGs) through FPOs proved to be the chief catalyst of the successful implementation of the Lakhpati Kisan programme. Each production hub functions as a business unit for the FPO, providing targeted services and support systems to farmers within the PGs in order to generate better returns for all stakeholders.

While implementing the programme, it was crucial not only to bridge the service delivery gap by providing quality inputs to farmer producers at their doorstep but also to identify and encourage entrepreneurs across the various livelihood segments —agriculture, livestock, non-timber farm produce (NTFP), and water. This approach aimed to perpetuate different livelihood models and establish a sustainable process through the grooming and nurturing of risk-taking farmer entrepreneurs, many of whom were women.

In promoting specific micro-entrepreneurs within the value chain, FPOs played a crucial role in identifying and supporting their growth. As a result, 80% of these entrepreneurs were able to repay their loans on time, earn profits, and provide essential inputs to households, contributing significantly to the overall ecosystem development.

Please refer to pages xx-xx to read on entrepreneurship under the Lakhpati Kisan programme

Key services provided by FPOs

Key services

Production

- Village-level micro planning for agriculture inputs, sowing plans
- Doorstep delivery of inputs (soil-less saplings)

Aggregation & Sales

- Setting up collection centres and rural business hubs
- Market research and information dissemination
- Establishing market linkages
- Collective sale of produce

Value addition

- Sorting and grading
- Branding and packaging of produce

Technology

- App-based crop management support
- Drip installation and maintenance support

Key benefits of FPO membership

- Savings in agricultural input cost
- Saving on transportation cost for sale
- Quality assurance
- Timely availability of inputs
- Assurance of right weightage of materials sold
- Credit support

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Women-led community building

A key distinguishing feature of the approach followed by CInI in the course of the Lakhpati Kisan programme has been the focus on involving women in decision-making roles, thus enabling their active participation in programme execution. Institutional roles such as Board Members or Directors of the FPCs provided an impetus to their empowerment, thus helping challenge gender stereotypes and paving the way towards more inclusive community development.

The women leading the FPOs did not disappoint. For example, in Jharkhand, where the first FPO was incorporated in 2017, there are now seven women-led FPOs proactively catering to the community's needs. They help to strategically connect the value chain in high-value crops, agri-inputs, agri-allied activities such as piggery, goat rearing, poultry, lac cultivation and other NTFP produce. The cumulative turnover of these FPOs amount to ₹14.5+ crore, and they have a shareholder base of 12,000+ members.

In Maharashtra, the two FPOs deal in inputs that include agri, livestock feed and supplements; output such as cereals, goat, drip and mulch supply and installation services, fodder seed supply and buyback, the processing value chain (oil milling and dal milling), cleaning and grading service.

The women Directors of the Board of the FPOs regularly interact with other women from their village. They explain their work to them, the necessity of intervention and agricultural technology. They are also actively involved in all aspects of SHG planning. Some of the tasks undertaken by them include regular field visits, collecting share money, noting demand for seeds, and reviewing the work of rural entrepreneurs. At the panchayat level, they directly deal with traders.

As members of the Board, they independently present their annual work plan during the AWP meetings held at the cluster level each year. At these meetings, they demonstrate their understanding of the business and their long-term strategy to enhance their FPOs' revenue and advance the interests of the shareholders. FPOs work across the four verticals of People, Product & Business, Compliances & Governance and Vision and Mission. Workshops on Vision and Mission regularly take place at the AWP meetings.

The engagement and success of these women leaders have inspired other women to become FPO members. The leaders' self-perception has also changed with active involvement in the development of their village. For instance, during a workshop, the women decided to work independently in the panchayat without support from CInI's partner organisation. At the meeting, the Didis were encouraged to plan for their 'dream panchayat'. This challenge not only provided them with practical experience in financial matters and risk taking but also helped them emerge as confident leaders. Many of these women went on to take up critical roles in the panchayat, contributing significantly to community development.

01 Deciding focus areas for the year and developing outline for conducting AWP

02 Understanding the AWP content, reflecting on mission statements; principle, outcome, output achieved last year, reasons for deviation and identifying best practices

03 Review of last year's plan and fixing area/unit-wise thematic target; preparing best practices; implementation plan jointly developed by apex institution, ISA* and CInI

* Implementing Support Agency

This is how BoDs develop the Annual Working Plan (AWP)

A snapshot of institution-building across the programme area

Particulars	Gujarat	Jharkhand	Maharashtra	Odisha
Districts	5	6	3	2
Incubated FPCs	9	7	2	3
Share capital (₹ in lakh)	22.92	84.96	31.44	3.28
Share capital to turnover ratio	2.77%	8.56%	6.55%	4.45%
Shareholders	25,420	13,120	6,287	695
Major products	**Agri inputs:** Seed production Processed spice products Strawberry Sirohi goats Poultry egg and chicks Packaged honey Packaged vermi compost Drip irrigation systems Sprinkler systems PVC pipes Mulching rolls	**Agri inputs:** Collective output marketing **Access to credit support:** Credit support for entrepreneurship activities Insurance for goats and crops Technical know-how support Awareness meetings **Other agri and allied products:** Soil-less saplings Lac and piglets Lac handicraft and bangles Solar operated equipment	**Agri inputs:** Soil-less saplings Livestock services Seed , Fertilizers, Pesticides **Farm machinery:** Drip irrigation systems Mulch PVC pipes Mechanised farming services Custom Hiring Centre (CHC) for mechanised farming equipment **Marketing support:** Marketing support for high-value crops; marketing of quality breed of goats; marketing of fodder/fodder seed	**Agri inputs:** Collective output marketing **Access to credit support:** Credit support for entrepreneurship activities Insurance for goats and crops **Technical know-how support:** Awareness meetings **Other agri and allied products:** Soil-less saplings Lac and piglets Lac handicraft and bangles Solar operated equipment

Particulars	Gujarat	Jharkhand	Maharashtra	Odisha
Major services	**Seed production:** Collective output marketing Support for entrepreneurship activities **Custom Hiring Services** Access to modern agricultural equipment **Access to credit support** Credit support for seed production, purchasing cattle, entrepreneurship activities Collective cattle purchase and insurance facilitation Insurance for goats, buffaloes, cows, and crops **Technical know-how support** Agricultural and livestock rearing practices training Awareness meetings Extension support and services Technical support through videos, WhatsApp images, and messages ATM services	**Quality inputs:** Agricultural inputs such as seeds, fertilisers, pesticides, etc. **Market linkages:** Connections to markets for selling agricultural products. Crop advisory services Expert advice and guidance on crop cultivation techniques, pest control, etc. **Government advocacy:** Representation and support for farmers' interests in government policies and programsmes **Rural entrepreneurship:** Support for rural entrepreneurs, possibly, including training, funding, and mentorship. **Custom Hiring Services:** Services allowing farmers to hire agricultural equipment and machinery as needed **Soil testing:** Analysis of soil samples to provide recommendations for soil improvement and crop management	**Quality inputs:** Agricultural inputs such as seeds, fertilisers, pesticides, etc. **Market linkages:** Connections to markets for selling agricultural products. **Rural entrepreneurship:** Support for rural entrepreneurs, possibly including training, funding, and mentorship **Custom Hiring Services:** Services allowing farmers to hire agricultural equipment and machinery as needed **Soil testing:** Analysis of soil samples to provide recommendations for soil improvement and crop management	**Quality inputs:** Agricultural inputs such as seeds, fertilisers, pesticides, etc. **Market linkages:** Connections to markets for selling agricultural products **Crop advisory services:** Expert advice and guidance on crop cultivation techniques, pest control, etc. **Government advocacy:** Representation and support for farmers' interests in government policies and programmes **Rural entrepreneurship:** Support for rural entrepreneurs, including training, funding, and mentorship **Custom hiring services:** Services allowing farmers to hire agricultural equipment and machinery as needed
Annual turnover (₹ in lakh)	828	992	480.18	73.78
Average annual turnover per FPC (₹ in lakh)	92	142	240	25

Ground impact

Jharkhand's FPOs – Effecting on-ground transformation

Under the Lakphati Kisan programme, CInI worked in six districts and seven blocks in Jharkhand to bring 30,000 households irreversibly out of poverty. The programme helped farmers improve the quality of life and life choices through different livelihood and layering activities.

FPOs became an integral part of social development in the region, to the extent that women-led FPOs have become a hallmark of progress in Jharkhand. These FPOs emerged as key players and income generators, serving as focal points for implementing interventions and reaching the last mile population.

Led by all women Boards, these organisations are presently not only providing services to their shareholders but also addressing major challenges faced by them.

In Hazaribagh district, an FPC named Churchu Nari Urja Farmer Producer Company Ltd. (CNUFPCL) was registered under the Companies Act 2013 in June 2018. Since then, CNUFPCL has been working in two blocks – Churchu and Dadi of the Hazaribagh district – with a 2,958 shareholder base and share capital of ₹23.05 lakh.

The Board members of this organisation are majorly focused on service delivery, land and water management. Their aim is year-round irrigation, improvement of agriculture, development of production-led clusters and ensuring of forward and backward linkages, and dealing with other such challenges.

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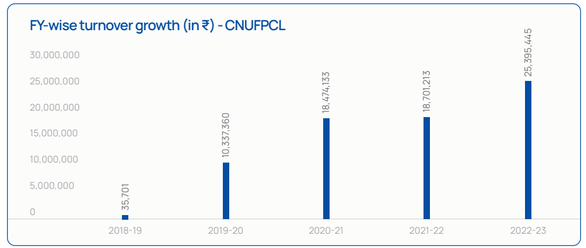
Major services offered to shareholders by FPCs like CNUFPCL

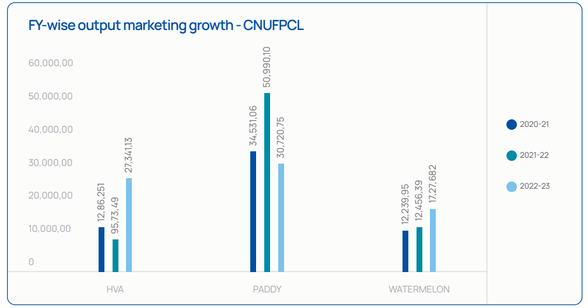
SL No	Prototype	Pre-production phase	Production phase	Post-production phase	Other services
1	**Agriculture**	Inputs (soil-less saplings, seeds, fertilisers, pesticides, mulching rolls, sprayers etc.)	SMS-based crop advisory services, Package of Practices (PoP) trainings by local resource persons (LRPs), front line demonstrations (FLDs), farmer field schools (FFS), exposure visits, Safal Fasal* training	Output analysis, market linkages, marketing of produce	Soil testing, CHC services, cold storage facilities, protective cultivation
2	**Livestock (Goat, Pig, Fish)**	Inputs (quality breeds like Black Bengal-Goat, T&D-Pig, Indian Major Carp, specialty feed, vaccines and medicines, spawn, fingerlings, fish feed	PoP trainings by LRPs, trainings on Machan and Azolla, timely vaccinations and treatment, pond management	Market linkages, marketing of produce	Block-level health camps, livestock insurance
3	**NTFP (LAC)**	Inputs like quality brood, equipment, fungicides	PoP trainings by Lac LRPs and thematic experts, technical sessions by the Jharkhand State Cooperative Lac Marketing and Procurement Federation Ltd.(JHASCOLAMPF) and experts from the Institute of Natural Resins and Gums (IINRG)	Market linkages, marketing of produce, processing and value chain (Lac handicraft)	
4	**Irrigation**	Availability or linkages of irrigation infrastructures like solar micro lift irrigations (MLI), drip irrigation	Training on water management, use and maintenance of irrigation infrastructure		
5	**Others**	Linkages with different government schemes like Fasal Bima Yojana, Kusum Yojana, Pradhan Mantri Krishi Sinchai Yojana (PMKSY), opening of bank accounts	Linkages for farm equipment with District Agriculture Department	Cereals marketing at MSP	

*Safal Fasal is an initiative by a noted agro-chemicals company, aimed to provide Indian farmers the knowhow on increasing yield and crop profitability

Major achievements of CNUFPCL

- CNUFPCL has bagged the dealership/distributorship contract with institutional stakeholders such as BAYER, NUNHEMS, BASF, Seminis, Syngenta, Monsanto, IIFCO etc for seeds, fertilisers and pesticides, which has made it the biggest market player in the local context; this has also ended its competition with 40-50 local input retail shopkeepers as CNUFPCL has become their chief supplier
- Since CNUFPCL has dealership with major input companies, it is able to purchase and provide the best quality seeds to polyhouse entrepreneurs that ensure best quality saplings
- CNUFPCL has been able to cement linkages with institutional buyers such as Mother Dairy, E-Nam, IINRG, PACS etc for selling of produce, thus minimising risk of loss, securing assured payment flow, assurance of quality at better rates
- It has been able to generate substantial growth in terms of business turnover with every passing financial year
- CNUFPCL's Board has played a crucial role in improving its output marketing; in the past three years, paddy marketing has grown substantially; Board members have been able to negotiate with farmers for meeting the quality parameters and similarly negotiate with vendors for providing best price to farmers





Other FPOs in Jharkhand have also kept up, as evident from a summary of their achievements.

Partnership (MoUs) forged by the other FPOs

Mother Dairy, E-Nam, Dehaat, TRIFED, IINRG, Jhascolamph, Selco Foundation, Khetworks, NABARD

Banking partners

JRGB, Samunnati, UCO, BOI, HDFC, Axis, SBI

Dealerships/distributorships

BAYER Crop Science, Seminis, BASF-Nunhems, National Seed Corporation, Godrej Agrovet, Nilkamal, IIFCO

Credit leveraged

₹80 lakh (Jharkhand Rajya Grameen Bank) (Cash credit limit) (3 FPCs)

Awards and recognition

Murhu Nari Shakti Kisan Producer Company Limited (MNSKPCL) awarded the 'Vijayalaxmi Das - Friend of FPO' award by Livelihoods India Summit in 2021

MNSKPCL awarded the 'Mahila Sashaktikaran - East' award by Samunnati and The Economic Times in 2021

CNUFPCL awarded the 'Best FPO of the Year - Small' award by Livelihoods India Summit in 2021

MNSKPCL awarded the 'Emerging FPC Award - Jharkhand' by JSLPS & RDD-GoJ in 2022

CNUFPCL awarded by JSLPS & RDD-GoJ for the 'Best FPO for doing highest output marketing using digital platforms' in 2022

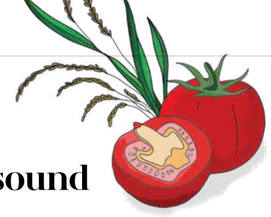
CNUFPCL awarded by Bazaar Samiti, Hazaribagh the 'Best FPO in Hazaribagh District for Highest Output Marketing (Paddy & Tomato) through E-Nam' in FY 2019-20, FY 2021-22 and FY 2022-23

CNUFPCL awarded the 'Leading FPO in Hazaribagh District' by district administration Hazaribagh in 2022

MNSKPCL awarded by JSLPS & RDD-GoJ for the 'Best FPO for achieving highest cumulative turnover - 2nd prize' in 2022

Gharonj Lahanti Mahila Utpadak Producer Company Limited (GLMUPCL) awarded by JSLPS & RDD-GoJ for the 'Best FPO for achieving highest cumulative profit - 2nd prize' in 2022

MNSKPCL awarded by Khunti District Administration as the 'Leading FPC in Khunti District for its excellent work in the field of promoting High Value Agriculture, Livestock & NTFP' in 2023



Ground impact

Gujarat's SAFE: Implementing sound practices

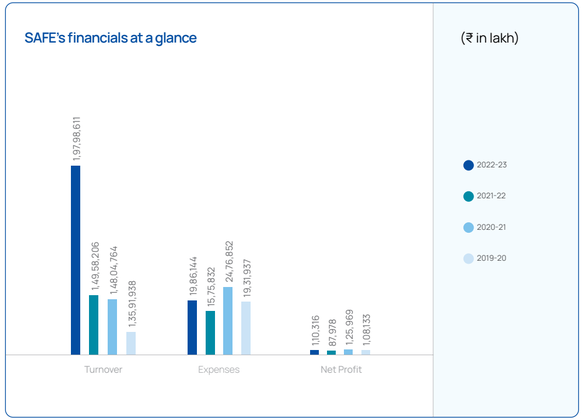
In arid Gujarat, where lack of education and employment has always been a challenge, CInI has been working in partnership with VIKSAT (Vikram Sarabhai Centre for Development Interaction) across 53 villages in the three blocks of Danta, Poshina and Khedbramha in Sabarkantha and Banaskantha districts.

The Sabar Aart Farmer Enterprise (SAFE) Producer Company Limited was incorporated as an FPC in 2015, and now has 4,202 members. More than 90% of them are women from the tribal communities that inhabit the 53 villages in the Sabarkantha and Banaskantha districts. Besides ensuring sustainable livelihoods to small and marginal farmers, the FPC also provides quality farm produce to its consumers. VIKSAT supports the FPC in overall management, providing technical support for improved agriculture practices and market linkages.

The FPC is collectively owned by its farmer members and governed by a women-led Board. The six Directors of the Board of the FPC, representing different clusters, are drawn from the village that has a greater number of members. The FPC works closely with the tribal community in a cluster-based approach, focusing on various aspects of agricultural productivity enhancement, livestock development, microfinance and strengthening of community-based organisations.

The FPC's members are supported by the village level organisations and SHGs in meetings and Gram Sabhas to leverage government schemes. The produce is directly sourced from the farmers through collection centres, which ensure quality control. All the products are laboratory tested and certified as chemical residue-free. Thus, the FPC is involved throughout the product value chain – from seed production and quality inputs at affordable rate to procurement, value addition and marketing of the agriculture produce.

SAFE has been promoting seed production for wheat, maize, pulses and vegetables. The seed plots are monitored for regular irrigation, pre- and post-harvesting practices including pest management and nutrient management. The FPC has also initiated the procurement and aggregation of agriculture produce such as black gram, pigeon pea and maize. All the processing activities such as drying, cleaning, sorting, polishing, grinding, packaging, etc. are done at the FPC facility.



SAFE has been able to establish a strong grassroots connect, robust partnership with village organisations and SHGs in the region and generate a turnover of ₹251.72 lakh during the last five years. It has ensured better yield and reduced input cost for member farmers due to improved PoP. Apart from this, it has also reduced water and energy consumption due to promotion of micro irrigation systems, water saving practices and soil moisture conservation measures.

Most importantly, SAFE has facilitated women's participation and active decision-making in financial transactions, which was unheard of in this region. Women have been the catalysts of change, enabling greater outreach of government programmes in the villages through assertive interaction with the administration. This has also led to increased recognition of women members of FPC by all community members.

₹2,500

Average cost reduction for member farmers due to quality inputs made available by SAFE at affordable rates

Learnings and way forward

> The Lakhpati Kisan programme operationalised existing women-led SHGs at the primary level, village organisations at the secondary level and either Federations or Cooperatives at the apex level.

CInI collaborated with these institutions and by the third year of the programme, established a clear focus on business-centric institutions like FPOs. Producer Groups (PGs) became the focal point, engaging in specific livelihood activities that generated business for the FPOs.

The process of FPO formation, despite the existing challenges, was speeded up appreciably. For example, in the case of Jharkhand, the FPO registration was executed by the sixth quarter of its formation. By the 10th quarter, market linkage was established together with other critical parameters to scale up livelihood layering initiatives.

Further engagements helped CInI recognise the importance of working with Panchayati Raj Institutions (PRI) to support initiatives in areas such as education, water, sanitation, and more.

Building strong apex institutions is crucial for managing activities at both the secondary and primary levels. This approach will strengthen connections with shareholders as producers, support entrepreneurs in bridging service delivery gaps, and facilitate the long-term business growth of these institutions.

However, there is a further need to focus on capacity building of the apex institutions to bring a transformational shift from the programme mode to a business mode. These institutions have to be seen as business institutions. For any business institution, four verticals are critical – HR, Governance and Finance, Product Development, Marketing, Branding and Operational Management. CInI has been able to work on the HR segment, Governance and Finance segments strongly, and even bring in experienced CEOs and marketing managers. However, not much attention could be paid to brand building. Work has also happened on product development, but there is room for more systematic efforts to be undertaken in the marketing and branding of the FPOs.

Opportunities also exist to optimise overall operations, primarily by reducing costs through improved input management and more efficient inventory control.

Since the FPOs work with smallholder farmers and primarily handle multi-agri-commodity products, they face challenges in establishing a robust production line, unlike the more streamlined processes found in the dairy value chain, it is at times difficult to balance production with marketing. With smallholder farmers, continuity in production is always a challenge. FPOs are addressing these challenges by improving input and output linkages, but more needs to be done to ensure continuity in production.

In the context of the Lakhpati Kisan programme, FPCs are empowering shareholders and creating a strong ecosystem that supports production, income and market access. But they require significant support and guidance for at least 5-7 years to reach a stage where they can operate the business at scale and effectively manage all their costs.

> It is also important to build strong apex institutions to manage the activities of both secondary and primary-level institutions.

FPOs face challenges similar to those of startups, which, unlike the former receive support from the larger ecosystem. FPOs have the potential to effectively scale the integration of quality technologies relevant

to rural and tribal areas. But to enhance their impact, financing opportunities for FPOs need to be strengthened, with financial institutions taking on more risk to support early-stage FPOs.

The overall ecosystem, including grooming, mentoring, financial management, and market strategy, is essential for the success and sustainability of FPOs and to meet shareholder demands. Additionally, educating smallholder rural women to serve effectively as Directors on FPO Boards remains a challenge. Investing in quality human resources is essential for the FPOs' daily operations. This would enable the Board Directors, who are farmers, to collaborate with professionals and manage their businesses effectively.

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Harnessing the potential of drip irrigation for smallholder farmers

Field insights from the Lakhpati Kisan programme

03

low res

Irrigation has been one of the critical factors behind India's growth story. It has contributed immensely to the green revolution of the late Sixties that ensured India's food security.

50%+

of India's cultivated area remains dependent on monsoons for irrigation

Wide variations in water availability across India has always made irrigation a challenge for India's farmers.

About 36% of the country's geographical area is endowed with 71% of the total water resources (Verma and Phansalkar, 2007). The sizeable difference in India's net sown area, which is 140.5 million[1] hectares (mha), and its net irrigated area, which is 67.5 mha (GoI, 2016), shows that more than 50% of the country's cultivated area continues to be rain dependent. The inconsistency of the monsoons, shrinking water table and increasing population pressure on the existing sources are complicating the problems, particularly for India's small and marginal farmers, who largely engage in monsoon-dependent farming.

Studies[2] find that the poverty map of India coalesces with the rain-fed map in India. Despite having agroclimatic suitability and land for the adoption of commercial farming, farm income of smallholders in central India remains on the lower side. The average farm income in central India remains 40% lower than the national average. This is because small and marginal farmers, who depend on rains to irrigate their land, remain susceptible to the fluctuating monsoons. In the absence of viable irrigation options and assets, which they are often unable to afford, they are forced to migrate either to supplement their farm income or seek alternative livelihoods.

Caption to come

[1] Source: Revisiting the Impacts of the Green Revolution in India', Laljeet Sangha, Institute for Policy and Governance, Virginia Tech

[2] Source: A one-size-fits-all approach is harming our rainfed farmers', Ashwini Kulkarni, LSE

Could micro irrigation be a way out for smallholders?

Micro irrigation technologies have been known and used for more than two decades in India. One of the earliest government schemes to promote micro irrigation in India was the Centrally Sponsored Scheme (CSS), launched in 2006. This was later scaled up to the National Mission on Micro Irrigation (NMMI), which was subsumed under the National Mission on Sustainable Agriculture (NMSA) and then co-opted into the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

Over the past few years, micro irrigation has been aggressively pushed by the government as a critical water management policy through focused subsidies for fits adoption by farmers.

Not surprisingly, drip irrigated area in India, which was only about 71,000 Ha (ICID 1994) till 1991, has rapidly expanded to cover nearly 2 million Ha in the last two decades.

Among micro irrigation options, there has been high uptake of the sprinkler method by smallholders as they prefer to use pipeline supplied with sprinklers as irrigation conduits. Notwithstanding the government push, adoption of drip technology has been slow, particularly among small and marginal farmers for a host of reasons, although medium and large farmers undertaking commercial cultivation have used these techniques in certain pockets quite successfully.

What is drip irrigation?

Drip is a micro irrigation method. Under this technique, water and nutrients are delivered precisely near the plant roots in pipes called laterals featuring small punctures called drippers. Each dripper emits drops containing water and fertilisers, resulting in the uniform application of water and nutrients directly to plant roots across an entire field.

90%

Irrigation efficiency in drip irrigation compared to 65% in the case of sprinkler irrigation

(Source: CWC studies, 1991)

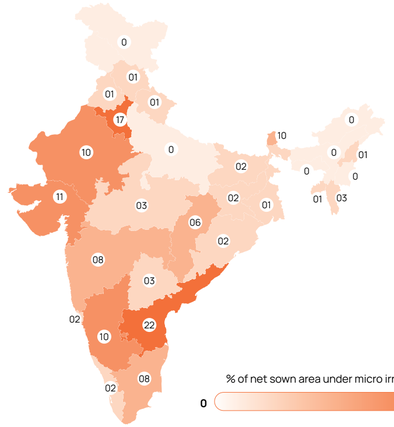
Reasons for the low adoption of drip irrigation among smallholders

Despite the strong subsidy component in micro-irrigation schemes – sometimes as high as 90% - meant to benefit small farmers, the adoption of drip irrigation has not been encouraging. Some of the key reasons encountered by the CInI team are:

- Inability to satisfy entry requirements like having a specified minimum size of irrigated land land holding, year-round availability of water, high initial financial contribution required to avail the scheme, etc.
- Drip irrigation method is only an aid to improve productivity, save water and labour where there is already a practice of commercial vegetable farming. Small and marginal farmers, dependent mostly on the monsoons to irrigate their fields, rarely participate in commercial vegetable farming. For them, drip irrigation often becomes an irrelevant application, resulting in lower adoption.
- Lack of awareness on drip irrigation techniques and their advantages, and scheme details.
- In tribal communities, smallholders often rely on shared irrigation assets rather than individual water assets. However, most of the government-supported schemes are focused on individual farmers.
- Improper selection of water filters and irrigation pumps often leads to early clogging of drip systems; lack of post-installation maintenance services also aggravates the problem. This leads to doubts on the effectiveness of the drip method among practising farmers and results in the fall in adoption rate among other prospective farmers.

Net sown area under micro irrigation

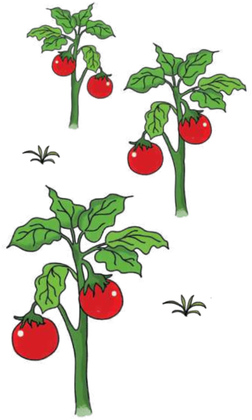
In 2020-21, drip irrigation reportedly covered only 6% of India's total irrigated area, although 270 lakh hectares of cultivated land could be suitable for drip irrigation.



Source: Department of Agriculture and Farmers Welfare 2017

The choice of drip irrigation: A demand-led intervention

Drip irrigation was strategically introduced in the Lakhpati Kisan programme across clusters marked by limited irrigation resource availability and labour constraints. This was done to encourage farmers to undertake cash crop cultivation.



1,536 acres

Area under micro irrigation in Maharashtra, the state with the maximum micro irrigation coverage in the programme area

One of the identified pathways to create a Lakhpati farmer as per the programme design was to move the majority of farmers towards high value vegetable farming. The idea was to popularise high value agriculture (HVA) in the project area at scale. The goal was to develop these areas with an identity of 'Vegetable Production Hubs' to attract value chain actors and stakeholders concerned with sustainable and continued growth.

But while doing so, the scale - both in terms of per household crop command area and marketable surplus production volume - was found to be insufficient to attract market players. A deep dive on finding the reason revealed limited labour availability for crop management, especially for high labour-intensive cash crops. This was the main reason behind the poor scale of production as well as low HVA adoption by farmers, apart from other factors like limited irrigation and financial resources.

Poor households are not able to dedicate their family labour much into farming as they are mostly engaged in multiple small activities. This includes manual labour to earn income from non-farm activities in order to meet their household expenses. Considering the labour constraints at the smallholders' level, the introduction of drip irrigation was more of a strategic response than a standalone technology intervention.

It all began in 2016, at the Gen-Y Agriculture Summit in Keonjhar, Odisha, where experts from Kerala Agriculture University (KAU) suggested the promotion of drip farming among smallholders as a solution to their labour management problems while cultivating cash crops. Drip irrigation was not common among smallholders in the programme clusters due to lack of awareness about these techniques. With support from renowned drip irrigation companies and following extensive efforts to persuade the smallholders, CInI organised exposure visits for farmers from the programme clusters to Raipur and Durg in Chhattisgarh.

Drip irrigation outreach in programme areas

Jharkhand

Odisha

Gujarat

Maharashtra

	Jharkhand	Odisha	Gujarat	Maharashtra
Households	1008	932	623	2,184
Total area (acre)	520	239.35	532.02	1,536
Average area per farmer (acre)	**0.51**	**0.25**	**0.85**	**0.70**

Improvising drip irrigation extension design to encourage adoption among smallholders

The CInI team customised the drip irrigation prototype to the specific needs and capacities of smallholders, ensuring that the technology was user-friendly and easily adoptable. Some of the approach and customisation adopted as part of the Lakhpati Kisan programme under drip irrigation are enumerated below:

Group-based production patch
To align with the prevailing practice of water resource sharing, collaborative drip patches were developed involving multiple farmers. Individual farmers in such a group or patch could have a drip area as small as 0.25 acre.

Leveraging existing knowledge and skills
Increased return and ease of farming had to be demonstrated in the initial years to the community to gain the confidence of the farmers. Therefore, participant families were selected based on their earlier experience in commercial vegetable farming in the flood irrigation system. This helped in showcasing the value addition of drip irrigation method. No family without prior experience in vegetable farming was included as drip farmers.

Proper irrigation pump and filter selection
For ensuring longer life of the drip system, the implementation team considered proper selection of pump and water filters based on the site need and nature of irrigation source. Furthermore, concerted field efforts were directed to enable participant families to learn proper maintenance steps of drip irrigation systems. These helped avoid clogging of drippers in the project locations.

Combining mulching with drip
Drip without mulch has only limited value to the participating families. To reduce labour requirements, effectively manage weeds and conserve soil moisture, use of mulch was made compulsory in the project sites. This resulted in increased yield with much reduced labour demand. Farmer Producer Companies in the project locations made available high-quality mulch to these smallholder farmers.

Enabling access to credit
Recognising financial constraints as a barrier to adoption, it was ensured that interested farmers had access to credit options. This enabled them to invest in drip irrigation infrastructure without facing significant financial burdens. The State Rural Livelihood Mission-supported credit schemes were also accessed by the farmers towards adopting drip irrigation.

Capacity development
Capacity development was a key focus area, with CInI providing on-field training sessions conducted by experienced drip farmers. These sessions covered various aspects of drip system operation, crop selection, and management techniques. This empowered new farmers to effectively utilise drip irrigation technologies to maximise their agricultural productivity in a region where micro irrigation concepts were hardly known.

Working on the entire vegetable value chain
Drip irrigation promotion has never been a standalone approach under the Lakhpati Kisan programme. Rather, it has been recognised as one of the important enablers for smallholders' prosperity. Therefore, the value chain approach – from ensuring availability of quality inputs, farm machinery services, soil-less seedlings to advance production practices and hassle-free market connect – has helped the adoption of drip irrigation system among smallholder farmers.

Advantage of combining drip with mulching

Mulching is a commonly used farming practice that involves covering fields with materials like plastic, crop residues, livestock manure, sand, rocks, or cement applied before, during, or shortly after transplantation.

The main goals of mulching are to reduce water evaporation and soil erosion, regulate soil temperature, retain moisture, and suppress weed growth.

This technique improves crop production, promotes plant growth, and conserves water efficiently. When combined with drip irrigation, mulching helps manage soil moisture effectively, leading to improved yields while reducing water consumption.

Drip irrigation prototype devised by the Lakhpati Kisan programme

The drip irrigation prototype introduced by CInI focused on shared water resources, a common practice among tribal communities where multiple families rely on a single irrigation source. This approach allows them to collaboratively manage their irrigation needs, addressing individual challenges like limited water access and inadequate irrigation infrastructure.

Prototype	Farmers (number)	Area (acre)	Area per farmer (acre)	Project grant (%)	Contribution (%)	Remarks
Shared irrigation source	3-12	1-4 acre	0.2-0.5	70-80%	20-30%	Preferably above 0.25 acre per farmer
Individual irrigation source	1	0.5-1 acre		70-80%	20-30%	

Labour saving in a 0.2-acre vegetable plot: Insights from CInI project field locations

Farming Operations	Weeding	Interculture operations and fertiliser application	Irrigation
Flood Irrigation	Four labourers are required for a single weeding session, with a total of 20-24 labour days needed over the crop's 5-month lifespan. Additionally, if weeding is not done during the initial growth stage, more labour may be required in open field conditions.	6-7 labourers are needed for a single application of fertiliser and interculture, with a total of 18-20 labour days required over the crop's 5-month lifespan	During summer, irrigation is needed 4-6 times per month, requiring 1.5 to 3 hours of labour each time. Over a 5-month period, a total of 30-60 hours of labour are necessary for irrigation.
Drip Irrigation	Weeding is only required during the Kharif season, with 1-2 labourers needed per weeding session. Approximately 2-4 labour days are necessary, as weed emergence is naturally controlled with the onset of harvesting and foot traffic.	Not needed	While irrigating the fields, the farmer can engage in other work.

Per day labour cost in the project area is ₹250 per day + food

A smallholder family using drip irrigation for vegetable crops can save at least 38-40 days of labour, amounting to approximately ₹10,000 in labour costs over a 5-month crop period.

The table, 'Labour saving in a 0.2 acre vegetable plot: Insights from CInI project field locations', shows how adoption of drip irrigation minimises labour requirement in vegetable farming. Further, timing of each of these operations is immensely critical for ensuring yield. With limited household labour, financial constraints to hire labour and lack of availability of skilled labour, smallholder farmers often face crop loss with reduced crop duration in open field flood irrigation system. Adoption of drip irrigation help protect smallholder families, enabling successful commercial cultivation of vegetables by them.

Besides the labour-saving aspect, increased production and productivity was witnessed in the programme's locations. The table below depicts the difference in yield between flood and drip-based irrigation system:

Yield difference in flood and drip-based irrigation

Winner crop of the state	Area (acre)	Crop duration (months)	Flood Irrigation		Drip Irrigation	
			Production (kg)	Gross income (₹)	Production (kg)	Gross Income (₹)
Tomato	1.0	4	7,020	1,12,320	12,960	**2,07,360**
Chilli	1.0	6	6,300	2,20,500	8,820	**3,08,700**
Cabbage/ Cauliflower	1.0	3	7,560	90,720	10,080	**1,20,960**

Under drip irrigation the crop duration gets extended and therefore the production increases.

Ground impact

Taking a leap of faith

In the serene hamlet of Karbhari Pada in Maharashtra, a remarkable transformation has taken place. This is because of the visionary efforts of Gitabai Luka Pawara and Alka Fenda Pawara, two determined farmers who dared to embrace change.

4,000 kg
Chillies sold

₹1,29,420
Revenue generated

Their journey from traditional farming to high-value agriculture through drip irrigation combined with mulching techniques stands as a shining example of resilience and innovation in the face of challenges.

Gitabai and Alka, like many other farmers in their area, were hamstrung by limited technical knowledge, low market accessibility, and concerns over input costs and water scarcity. But under the guidance of the CInI team, the duo ventured boldly into vegetable farming. They took the courageous step of adopting drip plus mulching, adding up to the grant provided under the Lakhpati Kisan programme with their own investments. With expert advice and their own meticulous care, they cultivated 3,000 chilli saplings on a half-acre plot, ensuring optimal plant growth and protection.

Their dedication bore fruit as they entered the local markets with their bountiful harvest. They sold approximately 4,000 kg of chillies, earning a staggering ₹1,29,420 in revenue. What began as a leap of faith evolved into a flourishing enterprise, setting a precedent for fellow farmers and inspiring many others to follow suit.

Gitabai also adopted improved agricultural practices for cereal crops with guidance from the CInI team. She was provided on-field technical support, covering aspects such as plant spacing, seed treatment, and pest and disease management. The adoption of a proper Package of Practices (PoP) for Kharif crops like maize, sorghum, and soybean resulted in increased productivity.

The impact of Gitabai and Alka's success reverberates beyond their fields. Their story has become a beacon of hope and a catalyst for change, attracting visitors from neighbouring villages eager to learn from their experiences. Through their unstinted determination and innovative approach, they have not only transformed their own lives but have also ignited a spark of possibility within their community.

Gitabai in her Drip & mulch plot of chilly crop

Break-up of Gitabai and Alka's income from the produce

Sr. No	Particulars	2022-23			2022-23	
		Kharif			Rabi	
	Crop	Black gram	Maize	Chili (with Drip + Mulch)	Chickpea	Pigeon pea
1	Area (acres)	0.5	0.5	1	0.5	0.5
2	Production (kg)	240	5	4,315	598	260
3	Average rate ₹/kg	60	18	30	45	60
4	Gross income (₹)	14,400	7,000	1,29,420	27,755	15,600
5	Total gross income (₹)	1,50,820			43,355	
6	Expenditure (Assume 25% of gross income)	3,600	1,750	32,355	6,938.75	3,900
7	Net income	10,800	5,250	97,065	20,816.25	1,1700
8	Total net income (₹)	1,13,115			32,516.25	

Role of stakeholders in popularising drip irrigation among smallholders

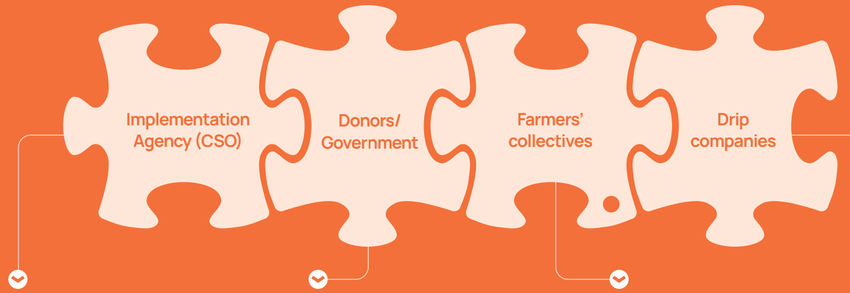
Promoting drip irrigation among smallholders cannot be viewed in isolation. As seen during the implementation of the Lakhpati Kisan programme, several players in the value chain are involved, and each plays crucial and complementary roles to make drip irrigation viable for smallholders.

Drip irrigation system firms
Firms that manufacture and supply drip irrigation systems play a vital role in both providing quality drip irrigation equipment and offering post-installation maintenance services. Many of the Farmer Producer Companies (FPCs) supported under the Lakhpati Kisan programme have either established dealership agreements or partnered with these firms to provide post-installation services to participating families. At the initial stage, the technical teams of these firms facilitated exposure visits for interested farmers and provided technical training to help generate demand for drip irrigation.

Government departments
State horticulture departments have played a crucial role in providing grant support to interested farmers through various schemes. In some states, the minimum land requirement was reduced to as low as 0.25 acres, making it possible for smallholder farmers to adopt drip irrigation. Additionally, government agencies gathered valuable field insights by organising policy roundtables, which helped refine micro-irrigation schemes. Over the years, representatives from CInI have also participated in these forums to share field insights.

Farmers' collectives
Without strong backward and forward market linkages, the widespread adoption of drip irrigation by smallholders would not have been possible. Additionally, farmers' collectives have played a key role in managing essential services such as the operation and maintenance of drip systems, the supply of irrigation pumps and spray machines, and land preparation using farm machinery. These collectives also facilitate knowledge and skill transfer to first-generation drip irrigation farmers by involving experienced farmers who have already gained from drip irrigation adoption.

How various stakeholders can make drip irrigation viable for smallholders



Implementation Agency (CSO)	Donors/ Government	Farmers' collectives	Drip companies
Role Community mobilisation I Selection of farmers I Creating demand	**Role** Designing policy through dialogue among stakeholders I Financial assistance to smallholders	**Role** Market linkage for input and output I O&M service I Knowledge transfer	**Role** Site-based drip system design I O&M support to farmers through collective
Risks & Challenges Focus on numbers and not on quality	**Risks & Challenges** Focus on large and medium farmers	**Risks & Challenges** Limited finances and HR for technical support	**Risks & Challenges** Sub-standard drip materials I Improper design

Until all these agencies collaborate, drip irrigation alone will have a limited impact on increasing adoption among smallholders

Caption to come

Learnings and way forward

What is essential for drip irrigation to work

- Customisation of design, both physical and financial, as per requirement of smallholder and marginal farmers
- Farmers selected for drip irrigation must have experience in open field vegetable or cash crop commercial farming
- Selection of irrigation pump and filters to be done keeping in mind irrigation source and site elevation
- Use of mulch in the drip bed is essential; without it, the potential for increased production will not be realised
- First crop should be cultivated with long duration in the drip bed in order to get maximum returns and boost the confidence of participant farmers

Emerging challenges

- Proper disposal of plastic mulch sheets as it can potentially pollute soil in the long term; alternative mulch options (bio-degradable) were tried during the implementation of the Lakhpati Kisan programme, but they are neither cost effective nor as durable as poly-mulch
- Small farmers are not able to change the drip plots over the years and therefore the same plot being cultivated intensively leads to emergence of soil-borne pests (especially Nematodes); non-chemical pest control options and diverse crop rotations are being promoted to address this challenge

Takeaways

The popularising of drip techniques has transformed agricultural practices and lives. The success stories emerging from villages in Maharashtra, Jharkhand, Odisha, and Gujarat are testament to its tangible impact.

Beyond economic gains, the programme has instilled resilience in rural communities. By equipping farmers with knowledge, skills, and resources, the Lakhpati Kisan programme has empowered them to overcome challenges and embrace sustainable livelihoods.

The impact of this intervention reaches beyond individual farmers, benefitting the wider community. Improved agricultural productivity and incomes are enabling greater spending on education and healthcare, paving the way for transformative change.

Annexure

Economic analysis of drip farming practised by smallholders in the programme area

The efficacy of drip irrigation depends on a host of factors and is weighed against the cost of cultivation, productivity, yield gain factor, cost of produce, fertiliser and power charges, depth of groundwater and irrigation requirement.
The parameters also vary across crops, places of adoption, size of plots and other factors.

The following is a breakdown of the economics of drip irrigation for two crops in a year – tomato and watermelon.

Investment in drip irrigation
Crop: Tomato (Avg area: 1 acre; Period: Aug-Nov)

Particulars		Amount (₹)
A	**Fixed cost (Asset creation)**	
1	Drip irrigation system	1,00,000
	Total	**1,00,000**
B	**Variable cost I Recurring expenses for crop tomato (duration of 3 months)**	
I	**Till first harvest (Working capital need)**	
1	Mechanised land preparation	6,000
2	Mulch sheet 25 micron (8 bundles @ ₹2,500) (2 crop cycle)	20,000
3	Basal fertiliser (2 crop cycle)	16,000
4	Seedling (6,000 number) (3 ft x 2.5 ft)	9,000
5	Fertiliser (Top dressing)	15,000
6	Pesticides	8,000
7	Irrigation (24 times)	16,800
	Total	**90,800**
II	**From first harvest to crop end**	
1	Cost of fertiliser	5,000
2	Cost of pesticide	5,000
3	Cost of irrigation (12 times)	8,400
	Total	**18,400**

Second crop cycle in a year (Avg area: 1 acre; Period: Jan-April)
Crop: Watermelon

Particulars		Amount (₹)
A	**Fixed cost (Asset creation)**	
1	Drip irrigation System	0
	Total	**0**
B	**Variable cost I Recurring expenses for crop watermelon (duration of 4 months)**	
I	**Till first harvest (Working capital need)**	
1	Mechanised land preparation	6,000
2	Mulch sheet 25 micron (8 bundles @ ₹20,000)	0
3	Basal fertiliser	6,000
4	Seedling (5,400 number) (4 ft x 2 ft)	10,800
5	Fertiliser (Top dressing)	15,000
6	Pesticides	5,000
7	Irrigation (24 times)	16,800
	Total	59,600
II	**From first harvest to crop end**	
1	Cost of fertiliser	5,000
2	Cost of pesticide	3,000
3	Cost of irrigation (12 times)	8,400
	Total	**16,400**

Return on investment (Area: 1 acre)

Expenditure		
A	Fixed asset cost per year	(₹)
	Drip irrigation system (5 years min life)	20,000
B	Variable cost (Total sowing to crop end)	1,85,200
Grand total investment per year		**2,05,200**
Income		
	Total production in kg (Crop - Tomato) (2.4 kg/seedling)	12,960
	Average rate	16
	Income from tomato (1st crop cycle)	**2,07,360**
	Total production in kg (Crop - Watermelon) (3.5 kg/seedling)	18,900
	Average rate	8
	Income from watermelon (2nd crop cycle)	1,51,200
	Gross profit (₹)	**3,58,560**
	Net profit (₹)	**1,53,360**
	ROI (%)	**75%**

**Labour expenditure not included in the above table

The rise of new-age rural entrepreneurs

Building robust Service Delivery Systems and enhancing value chains for transforming smallholders into Lakhpatis

04

> The entrepreneur always searches for change, responds to it, and exploits it as an opportunity.
>
> **Peter Drucker**
> Father of Modern Management

Like the other housewives in Bahera village, Jharkhand, Meena Devi stayed in the shadow of her husband, supporting him through thick and thin, and assisting him in paddy cultivation. The farming, done following traditional methods, was insufficient to meet her family needs and expenses for her children's education. And yet, she never stopped dreaming for a better tomorrow.

This led her to join the Lakhpati Kisan programme in her village. The first breakthrough came in the form of training and implementation of modern technologies in paddy cultivation, adoption of hybrid paddy varieties and high-value crops for cultivation. This shift resulted in higher yields and better income.

But to make the change irreversible, she had to take another courageous step forward. It happened when she decided to venture into the unconventional field of piggery, despite opposition from her community, where pig rearing is traditionally not accepted. Guided by CInI's Lakhpati Kisan programme, support from ISA in Hazaribagh, livestock technical experts and the Board members of Churchu Nari Urja Farmer Producer Company Ltd. (CNUFPCL), Meena Devi embarked on her piggery business.

FPCs like CNUFPCL play a critical role in the entrepreneurial value chain, providing backward and forward linkages, ensuring entrepreneurs like Meena Devi receive the necessary financial and technical support, and then connecting entrepreneurs like her to the market. In the case of Meena Devi, her venture began with securing a loan from Rang De, a player from CInI's ecosystem, and with her own investment.

By 2022, Meena Devi had successfully gained an experience of selling more than 120 piglets, generating a total revenue of ₹3,29,450. Notably, 60% of these sales occurred through CNUFPCL. Despite the challenges posed by the COVID-19 outbreak, Meena Devi's business not only survived but also thrived. Over the last two years, her cumulative expenses – making up 45% of the total turnover – amounted to ₹1,57,000, while her net profit stood at ₹1,72,450.

Meena Devi has achieved her dream of financial independence, utilising her income to repay the initial loan of ₹86,000, along with interest. This significant milestone underscores her success as a self-sufficient piglet entrepreneur. She has expanded her pig shed from four rooms to nine, demonstrating a clear understanding that increased investment correlates with higher returns.

Year	Number of piglets sold	Amount (₹)
2020-21	53	1,40,450/-
2021-22	70	1,89,000/-
2022-23	123	3,29,450/-
2023-24	154	4,62,000/-
Total	**400**	**11,60,450/-**

> From overcoming societal constraints as a woman to receiving recognition for my accomplishments with the ICAR NISA award as one of the top pig entrepreneurs, alongside Churchu FPC, my journey has been one of resilience and determination. This is a moment of immense pride for our family. Knowing that I have become an inspiration for other women in our community who aspire to achieve independence, fills me with profound joy.
>
> **Meena Devi**
>
> Piglet entrepreneur, Churchu, Hazaribagh, Jharkhand

Evolving an entrepreneurial ecosystem

The central India tribal belt is home to a significant portion of India's rural poor, with substantial tribal populations dispersed across states such as Jharkhand, Madhya Pradesh, Chhattisgarh, Maharashtra, Odisha, Gujarat and Rajasthan.

Jharkhand	8.29%
Madhya Pradesh	14.69%
Chhattisgarh	7.5%
Maharashtra	10.8%
Odisha	9.2%
Gujarat	8.55%
Rajasthan	8.86%

(Ministry of Tribal Affairs - Statistical Division, 2013)

Tribal composition in programme area Subhead:

50% of India's tribal population reside in these 7 statess

Despite their rich cultural heritage, these communities face a multitude of challenges, including poverty, food insecurity, limited access to technical knowledge, seasonal employment, debt burdens and inadequate infrastructure such as outdated irrigation systems. Additionally, they often lack access to economic opportunities.

However, numerous research studies suggest that entrepreneurship could serve as a strategic pathway towards sustainable development in these regions. Social and institutional factors frequently contribute to the encouragement of entrepreneurship, propelling the social progress of communities. A pivotal approach to fostering community development lies in promoting and supporting rural entrepreneurship. This approach seeks to empower communities, drive societal change and build a culture of innovation while nurturing 'agents of change'.

Aligned with this vision, the Lakhpati Kisan programme was established with the ambitious goal of uplifting small and marginal farmers. Through targeted interventions tailored to their needs, the programme aims to ensure their irreversible transition to Lakhpati Kisan status, thereby ensuring sustainable development within these communities.

Empowering tribal prosperity through the Lakhpati Kisan programme

CInI is actively engaged in uplifting tribal households across the tribal belt of Central India through its Lakhpati Kisan programme. The primary objective is to elevate every household out of poverty through a sustainable and irreversible pathway. This involves diversifying livelihood options by incorporating lac, goatery and piggery alongside traditional agriculture-based activities, helping them widen their income avenues and achieving the incremental income to meet the 'lakhpati' goal. By establishing market-led production clusters, CInI aims to bring about lasting change through technology adoption and innovation to ensure the long-term sustainability of these clusters. In the long-run, self-sustainability of the production clusters will depend on the readiness of households to adopt technology-led interventions and reinvent themselves as per market demands.

Key principles of Lakhpati Kisan 1.0

The programme operates on several foundational principles to guide its actions effectively:

Irreversibility of impact
Ensuring that the communities experience lasting positive change and are empowered to take the lead in driving action

Market-led intervention
Promoting large-scale production and systematically linking communities with markets for sustained economic growth

Innovation-not stereotypes
Leveraging advanced technology and processes through partnerships with leading technology providers

Community centrality
Placing the community at the centre of development interventions and encouraging their active participation

Demand-led
Empowering communities to drive development processes, based on specific needs and aspirations

Convergent multi-sectoral plans
Developing comprehensive plans addressing various aspects of quality of life, including livelihoods, water and sanitation, nutrition and education for overall development

Gap areas across the three phases of production

Approach

Integrating Mission 2020: Lakhpati Kisan principles, CInI's approach focuses on diversifying into high-value crops and engaging in additional livelihoods such as livestock development or Non-Timber Forest Products. This 'layering' strategy expands income opportunities, mitigates risks and gradually increases earnings towards the 'lakhpati' goal.

Gaps in the current scenario

In the present situation, establishing techno-led production clusters faces challenges throughout the entire service delivery system, encompassing pre-production, production, and post-production stages. Through the diverse experiences and insights gained from Lakhpati 1.0, numerous gaps in the value chain have been uncovered, presenting an opportunity for innovative solutions. The gap areas were evident across the three broad phases - Pre-production phase, Production phase, Post-production phase.

Most of the times, the lack of good quality plantings material, seeds, input, brood, etc. tremendously hampers the productivity and income for smallholders. These are often not available at the local level for the farmers to access easily. In cases, where the materials are available, the lack of assistance (technical, knowledge.) from the local shopkeepers is a bottleneck for farmers trying to gain confidence in adopting and using them.

During the production stage, the main challenge is the establishment of Packages of Practice (PoP) for crops, lac, healthcare service of livestock, feeding management of livestock, etc. New technology-based interventions are nuanced and require compliance to be effective. These factors can act as deterrents for day-to-day operations and the farmers might resort to traditional methods if there is lack of constant oversight during the initial stages.

Realising a high market value for the crop yield requires the farmers to undergo the cumbersome processes and adopt technologies for sorting-grading, drying and weighing. It might also require them to take their produce to distant markets. The farmers instead take recourse to the easier alternative of selling to the readily available middleman at a lower price or, in some cases, retail at their local haats, thereby losing time and efforts for a small incremental income. Thereby, even though the tribal households' crop yield may be lucrative, the price realisation may not proportionately increase.

Challenges in establishing market-led production clusters

Intervention	PRE-PRODUCTION	PRODUCTION	POST-PRODUCTION
Vegetable promotion	Good quality planting material	Establishment of PoP; maintaining drip plots	Drying/sorting and grading/marketing
Lac	Good quality brood on time	PoP like deepening of brood	Lac processing/lac products
Pig and goat	Supply of healthy piglets/buck	Fodder and feed management; cold storage for vaccination	Sale timing; absence of weighing culture
Fish	Quality fingerlings	Netting and pond management	Market linkages
Irrigation	Costly field irrigation	Inconsistent seasonal rainfall; connecting pipeline hassle	--

Rural entrepreneurship under the Lakhpati Kisan programme

CInI's rural entrepreneurship initiative addresses gaps in agricultural production and supply chains, identified through on-the-ground experiences. These gaps include the absence of household-level service delivery, insufficient farmer knowledge, and a lack of standardised training, all compounded by poor market connectivity, which hinders fair pricing for farmers' produce.

Since 2017, CInI has prioritised an institution-based micro-enterprise model, where entrepreneurs play a pivotal role in providing inputs to producers and meeting the needs of FPC shareholders. This model aims to establish a virtuous cycle where community-based institutions support micro-entrepreneurs.

Initially, community mindsets posed challenges due to years of disempowerment, hindering risk-taking. However, with continuous support, training, and orientation, aspiring entrepreneurs have improved their livelihoods. Through the rural entrepreneurship programme, CInI has identified and nurtured over 981 rural entrepreneurs in various segments such as agriculture, livestock, and non-timber forest produce. These efforts provide comprehensive livelihood-related services within villages, cultivating the adoption of innovative, cost-effective and environmentally conscious technologies.

Solutions to the gaps in market-led production clusters

Intervention	PRE-PRODUCTION	PRODUCTION	POST-PRODUCTION
Vegetable production	Polyhouse enterprises for soil-less	Drip service providers	Operators for drying, sorting-grading, storage
Lac	Brood entrepreneurs	Lac clinic	Incubator operator; bangles and handicrafts making
Pig and goat	Breeder farm/piglet/buck entrepreneurs	Fodder, pig feed meal; health service providers	Meat processing unit
Fish	Fingerling entrepreneurs	Fish fingerlings and spawn services	Grow-out, fingerling market linkages
Water irrigation	Water entrepreneurs	Seasonal irrigation service through pipeline delivery	--

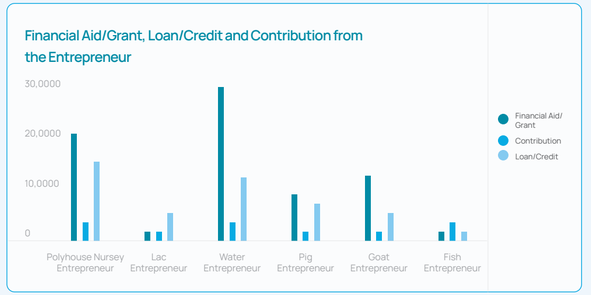
Enterprise model: Addressing key challenges with innovative solutions

A three-pronged approach was devised to successfully operationalise the microenterprise model

- Formation of community-based apex Institutions (like FPOs, and FPCs) as the enterprises' incubator at the production cluster level
- Engaging rural entrepreneurs to facilitate service delivery systems at the household level to bridge the gaps in the demand and supply chain for agriculture and allied activities
- Developing an operational ecosystem with the help of women Board of Directors of FPCs, community resource persons, market players, financial institutions

Importance of investing in pre-production value chain development

- Irreversibility of impact with increased resilience of the communities
- Market-oriented interventions
- Innovative systems and methods
- SHG federations and secondary tiers spearheading the development processes in the area
- Demand-led interventions



Growth in entrepreneurs

Period	Gujarat	Jharkhand	Maharashtra	Odisha	Total
FY 2023-24	94	143	38	10	285
FY 2022-23	43	139	38	10	230
FY 2021-22	23	117	38	10	188
FY 2020-21	21	75	38	10	144
FY 2019-20	16	75	38	5	134

Note: The table shows how the number of entrepreneurs has grown across different regions over five fiscal years, from FY 2019-20 to FY 2023-24. It tracks the total entrepreneurs in Gujarat, Jharkhand, Maharashtra, and Odisha, as well as the overall total. By FY 2023-24, there were 285 entrepreneurs, up from 134 in FY 2019-20, indicating steady year-on-year growth.

Women entrepreneurs

Period	Gujarat	Jharkhand	Maharashtra	Odisha	Total
FY 2023-24	94	41	10	1	146
FY 2022-23	43	40			83
FY 2021-22	23	32			55

Note: The provided data outlines the cumulative count of women entrepreneurs across different regions over five fiscal years from FY 2019-20 to FY 2023-24. It tracks the total number of women entrepreneurs in Gujarat, Jharkhand, Maharashtra and Odisha, along with the overall total. Gujarat demonstrates a consistent upward trend in women entrepreneurship, reflecting positive growth in the state. Jharkhand and Maharashtra also show an overall increase in women entrepreneurs, albeit at a modest rate over the years.

Building the Ecosystem

Anita Topno, a young lac artisan and producer from Binda, Jharkhand

The rural entrepreneurship model that was evolved by the Lakhpati Kisan programme had a networks connecting different groups of people. These groups interacted in three main ways: buying and selling goods and services, the transfer of money and credits as well as sharing information.

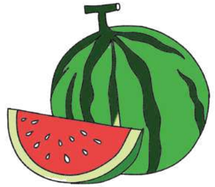
Farmer Producer Organisations (FPOs) are at the centre of this system. They empower tribal communities and protect them from market challenges, playing many different roles within this ecosystem:

For rural entrepreneurs
FPOs provide orders, supplier connections, loan assistance, and training.

For tribal households
FPOs facilitate the purchase of quality farm supplies, assist in selling agricultural products, and help collect non-timber forest products for processing units.

For market players
FPOs streamline access to agricultural goods, making it easier for wholesalers and large buyers to obtain what they need.

FPCs work very closely with community to support their economic activities, primarily agriculture, livestock and NTFPs by way of technical support, market access and introducing new and innovative product and processes. They also help incubate rural entrepreneurs. Increasingly, are collaborating with other platforms and organisations like Cropin for ushering in digitalisation to improve information management and transparency.



Our ecosystem

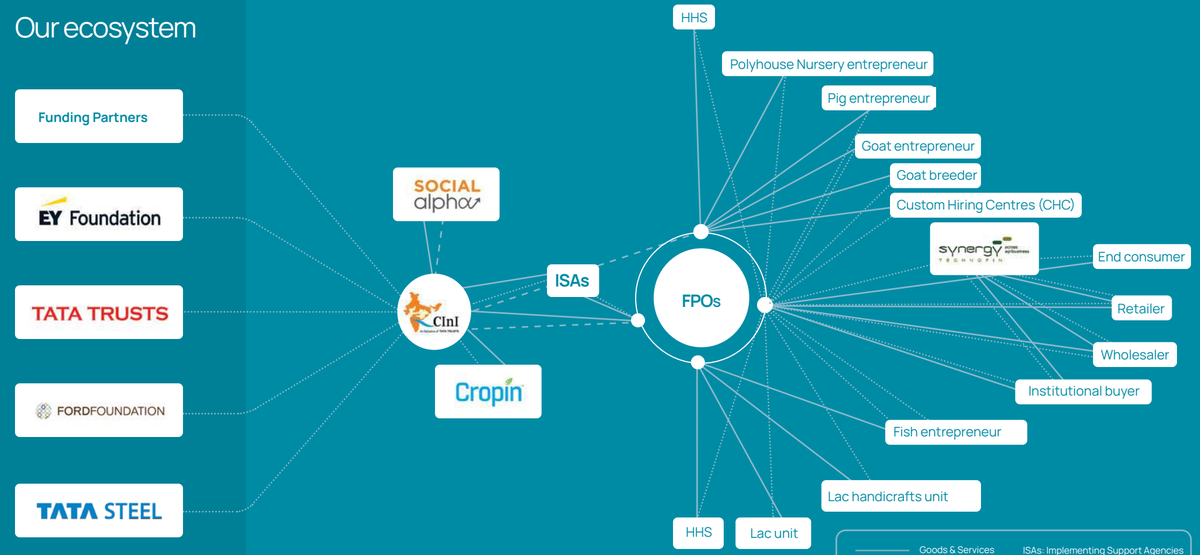


Figure: Ecosystem of Rural Entrepreneurship
Model | Source: CInI's own homegrown model

Becoming an entrepreneur

Incubation process

Inspired by the National Policy for Farmer Producer Organisations (FPOs), CInI started involving rural entrepreneurs in FPOs and community-led apex institutions in 2017. In supporting entrepreneurs, the process includes guiding them through every step — standard selection procedures, training, financial processes, monitoring, and regular reviews to ensure progress.

Process of incubating entrepreneurial ventures

01 Onboarding process
Orientation and selection in consultation with Community Based Organisations (CBOs)

02 Funding and finance
Own contribution, credit/loan support, grant support

03 Training and workshops
Prototype PoP training, in-house capacity building workshops, cross-learning and exposure sessions, mentorship support, awards and recognition

04 Close supervision and mentoring
Business plans and projections, data management, target-based KPIs, periodic review workshops

05 Access to network
Knowledge partners, NBFC partners, technology partners, regional farmers

06 Market linkage
Federation, FPCs, local vendors

07 Sustainable income
Consistent income

Selection process

Selecting an entrepreneur

Selection of the right entrepreneurs is done through a rigorous process. Community-based institutions play a key role in screening individuals and conducting interviews with expert panels to finalise the selection. The selection process focuses on long-term financial sustainability, due diligence and the entrepreneur's understanding of the programme's objectives and mission. It follows a 10-step approach, starting with orientation, document verification, upfront contributions and training.

01 Orientation session: Sharing the plan with the applicants in a Q&A format

02 Application shows expression of interest

03 One-on-one, in-depth interview: Understanding of expectations and requirements

04 Application to FPC/FPO by entrepreneurs, scrutiny and due diligence process

05 Upfront entrepreneur contribution; financial aid support application

06 Exposure and training for business enterprise

07 Quotation and purchase order raised with appropriate vendor

08 Loan application and disbursement

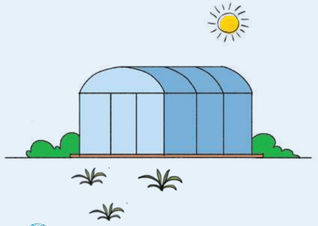
09 Prototype structure, equipment infrastructure completion

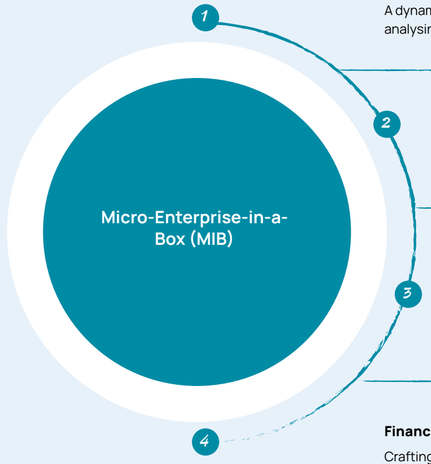
10 Inception of relevant entrepreneurial prototype activities

Micro-Enterprise-in-a-Box (MIB)

Micro-Enterprise-in-a-Box (MIB) Prototype Development helps selected entrepreneurs in shaping their business concepts into cost-effective and sustainable ventures.

MIB is a comprehensive rural micro-enterprise template, encompassing prototypes like polyhouse nursery, goat, lac, pig, fish and irrigation water. It bundles small-scale rural business components, providing training materials, documents, business model projections and detailed operational and marketing plans. Financial modelling ensures viability, projecting breakeven points, shutdown scenarios, loan models and expected income.





Business model canvas

A dynamic strategic management tool for crafting business models, analysing resources and defining products and propositions

Process documents

Documents covering ongoing progress, enhancements, prerequisites, operational plans and more

Capacity-building training

Comprehensive learning sessions encompassing exposure training, capacity-building workshops, presented through diverse formats like presentations, videos, animations and both offline and online training modules

Financial projections

Crafting a robust financial model involves validating the proof of concept, determining working capital needs, outlining loan models, identifying breakeven and shutdown points, projecting expected income and gauging scalability

CInI received the National Entrepreneurship Award from the Ministry of Skill Development & Entrepreneurship (MSDE) 2018, in the Promoters Rural Producer Group Enterprise category

CInI was recognised for its remarkable efforts in transforming rural livelihoods by providing improved quality inputs, establishing market linkages and enabling access to finance through community-led organisations

Roadmap of MIB prototype development by selected entrepreneurs

MIB prototypes are small-scale, low-cost enterprises developed based on a systematic process map

Idea generation
Brainstorming sessions to generate business ideas at the local level

Financial modelling
Testing ideas to assess feasibility

Pilot testing
Correcting assumptions and variables

Data collection
Collecting data on On activities, operations, expenses, income, assets and liabilities

Readjustment
Re-adjusting the financial model to build stakeholder confidence

Key outcome indicators

Production/procurement

Entrepreneurs measure production in units, kilograms, or litres, emphasising the vital role of stable and consistent production for business operations

Net revenue

After meticulous production, revenue and profits are generated through product sales, whether within the community or through agencies or institutions

Net revenue sales through FPO

For early-stage entrepreneurs requiring sales support, this indicator reflects the assistance provided by FPOs in overcoming credit repayment challenges

Credit repayment

A crucial indicator for assessing profitability and loan repayment, high credit repayments signify a successful and scalable MIB prototype

Micro entrepreneurship models

Several micro entrepreneurship models were developed by CInI after ascertaining the requirements of the communities in the programme area. These include vegetable farming nursery, goat, pig, fish and lac based entrepreneurship models for strengthening local value chains. Tailored financial models were developed for each enterprise, accompanied by a standardised implementation process.

A. POLYHOUSE NURSERY

Product

Soil-less saplings for high-value agricultural crops

Polyhouses are structured environments enclosed with poly film, where crops are cultivated under controlled climatic conditions. Various factors such as solar radiation, temperature, humidity and air movement are regulated to suit the specific requirements of different crops.

Benefits

- Mitigates risks for marginal farmers by transferring them to entrepreneurs and ensures a consistent supply of ready-made saplings
- Offers convenience, especially for managing large-scale operations
- Contributes to enhanced plant resilience
- The use of cocopeat minimises root disturbance, facilitating smoother establishment of plants in the field and reducing the incidence of soil-related diseases

Significance of this service in the rural economy

Healthy seedlings produced in polyhouses contribute towards increased productivity through improved fruiting. In regions such as Central India, where rural communities are transitioning into commercial vegetable farming, access to high-quality planting material has been a challenge. However, apex institutions have played a pivotal role in addressing this challenge.

For instance, the Gayatri Mahila Cooperative Federation has supported the development of five nursery entrepreneurs, while the SAFE Producer Company has assisted over 12 others. These initiatives are designed to address the specific crop requirements of farmers in their respective villages.

USP

Demand-driven model

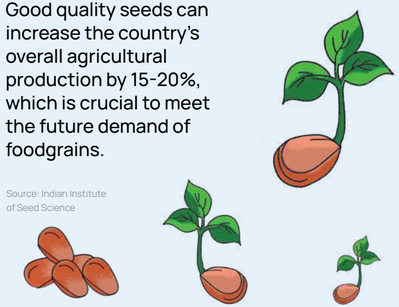
High demand from farmers due to high sapling preparation stress

Year-round disease-free readymade saplings of high-value vegetables at the farm gate

Assured six-eight production cycles

Good quality seeds can increase the country's overall agricultural production by 15-20%, which is crucial to meet the future demand of foodgrains.

Source: Indian Institute of Seed Science



Financial model

Prototype	Total investment (₹)	Grant	Community contribution	Credit	Return annually
Polyhouse nursery	4,50,000	3,00,000	30,000	1,20,000	2,50,000-3,00,000

B. PIG ENTREPRENEURSHIP

Product

Quality T&D piglets

The primary product offering is 2-4-month-old piglets

The Jharsukh breed is especially known for its high feed-to-meat conversion ratio with piglets typically weighing between 10-22 kg and priced at ₹2,500.

As CInI has helped overcome challenges like the quality of breeding stocks, disease vulnerability, lack of knowledge and rearing expertise, the profit-generating capacity of this prototype is enhanced.

Benefits

- **Requires less capital**
  To build a pigsty and other allied facilities
- **High feed-to-meat conversion capability**
  Pigs grow faster compared to other domestic animals
- **Easy availability of food**
  Pigs can eat all types of food, including waste and inedible food
- **Highly productive**
  The pigs reach maturity at 8-9 months of age, after which they can breed twice a year and give birth to 5-15 piglets per cycle
- **High meat producing rate**
  One can obtain up to 75% of a pig's body weight in meat
- **Great market potential**
  In both local and international markets, pork is valued for its higher energy, fat and water content; in addition to taste
- **Pig manure and fat**
  The manure from pigs is used as a fertiliser and as feed for fish in pisciculture

Significance of this service in the rural economy

The socio-economically backward sections of society rear pigs as a source of revenue, primarily from the sale of piglets and adult pigs.

USP

Healthy piglets to mitigate lack of quality pig breeds

Reduced business risk through dedicated veterinary care services

Financial model

Prototype	Total investment (₹)	Trust	CC	Credit	Other source	Return annually
Pig entrepreneurship	1,75,000	80,000	25,000	70,000	25,000	Year 1: 80,000 Year 3 onwards: 2,08,000

C. GOAT ENTREPRENEURSHIP

Product and services

- Supply of pure Breed Bucks & She goats
- Fodder (perennial & Seasonal): Fodder seeds, Planting material
- Doorstep Vet-care & Management (vaccination, de-worming, emergencies)
- Artificial insemination (AI) services for goats
- Training on scientific management

Goat husbandry serves as a reliable source of alternative livelihood for a large number of families and specially crucial for those having less or poor quality agriculture land. Goats are primarily sold for meat purpose through vendors locally. Goat farming in project area is plagued with poor productivity arising from poor quality of local breed, lack of scientific management practices, low access to vet-care and to proper feed and fodder. The primary aim of this initiative is to address these challenges wholistically and strengthen this very important source of livelihood which very often helps poorest of the families to face uncertainty of rain-fed agriculture.

Benefits

Low investment – relatively easy to maintain & manage
Easy to sell when family require cash Good return – low management cost
High market demand

USP

24x7 vet care services to farmers at the doorstep

A less effort-intensive model with multiple layers of service which are clustered in similar and nearby localities, making it easier to manage

The significance lies in interconnected services provisioning

The combination of individual entrepreneurs, service providers and Farmers Collectives provide a bucket of services to goat farmers across geographies:

Goat Breeder Farm

Osmanabadi & Sirohi Breeder Farms provide pure breed bucks and she goats for rapid improvement of local stock.

Goat Service Providers

These entrepreneurs, also known as Pashu Sakhi/Mitra, offer treatments such as deworming, primary care, and emergency treatments to goats

Azolla Entrepreneurs

These entrepreneurs cultivate azolla, a highly nutritious plant used as supplementary feed for cattle for nurseries and provide azolla seeds to farmers, promoting better milk yield and weight gain in goats

Buck Entrepreneurs

These entrepreneurs who own good quality buck, provide insemination services to nearby farmers having local breed of goat to improve quality of their herd for nominal charges, mainly in kind.

Market Linkage

FPC procures medicine and supplements for goat farmers. FPCs also aggregate demand from market sometimes outside district for goats & buck and supplies the same to customers.

Fodder Entrepreneurs:

They provide grow and sale fodder seeds, planting materials to farmers either themselves or through their FPCs.

Financial model

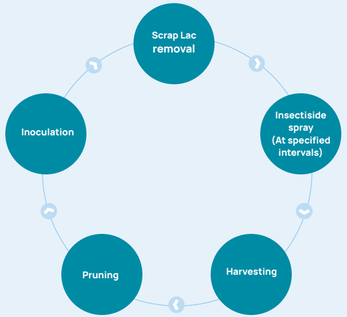
Prototype	Total investment (₹)	Grant	Own investment/ Loan	Net Income (3th year)	Net Income (4th Year)
Goat Breeder Farm (20 She goat, 2 Bucks)	14,00,000	1,19,000	2,14,000	1,98,000	6,40,000

D. BROOD LAC ENTREPRENEURSHIP

Product

Kusmi and Rangini Brood Lac Scrap Lac

Lac, derived from insects like Kerria Laca, is crucial for crafting jewellery, accessories and medicines.
Lac products play a vital economic role by generating employment and utilising social capital.



Opportunities

- E-commerce and internet platforms present promising distribution channels for marketing and selling craft products
- Growth in sectors like retail and real estate increases demand for handicrafts
- Potential for mergers, joint ventures, or strategic alliances
- Expansion into new market segments for higher profits
- Increasing demand for handicraft products domestically and globally
- Growth in tourism in India and rising disposable incomes drive sales
- Development of domestic tourism further boosts sales opportunities

Significance of this service in the rural economy

The handicraft industry is highly productive, utilising both raw materials and providing employment opportunities. It harnesses significant human capital alongside financial and raw material resources, making it a promising avenue for income and employment generation in the region.

Financial model

Prototype	Total investment grant (₹)	Grants	Loan + Entrepreneur's own funds	Annual return
Brood lac entrepreneurship	4,00,000	1,00,000	3,00,000	1,50,000-3,00,000

USP

On-time quality brood supply to lac farmers

Saturation of cluster-level brood demand through in-house production

Afforestation: 10 Kusum and 60 Ber trees at a time

These charts provide a detailed analysis of average annual income across different prototypes and regions, along with income generation per prototype and loan repayment status. This data illustrates how integrating technology, training, and digital skills has elevated smallholders to high-income entrepreneurial status while showcasing their creditworthiness and financial reliability.

Average annual income across all prototypes in various regions

	Gujarat	Jharkhand	Maharashtra	Odisha	Average
Entrepreneur's average income	₹2,10,000	₹1,66,147	₹1,30,850	₹3,00,000	₹2,01,749

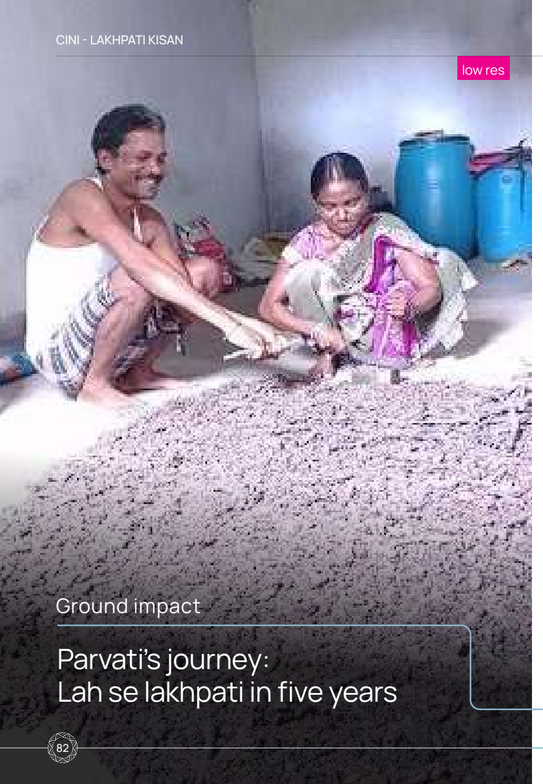
Average income generation per prototype across geographies

Prototypes	Average income (₹)	Jharkhand	Maharashtra	Gujarat	Odisha
Poly nursery	1,90,961	Yes	Yes	Yes	Yes
Piglet	42,857	Yes	No	No	No
Lac	1,13,140	Yes	No	No	No
Fish	18,459	Yes	No	No	No
Goat	53,632	Yes	Yes	Yes	No
Custom hiring centre	1,76,154	No	Yes	No	No
Buck breeder farm	70,000	No	Yes	No	No
Poultry hatchery entrepreneur	1,02,000	No	No	Yes	No

Loan repayment status

Loan repayment	Gujarat	Jharkhand	Maharashtra	Odisha
Total individuals who took loan (No. of person)	19	98	NA	9
Total loan closed (No. of person)	18	36	NA	6

Note: There is no provision for loans programmatically in Maharashtra. The data indicate that, after the closure of some loans, the rest are ongoing with repayments. Since loan disbursement times vary, this results in different repayment schedules.



Ground impact

Parvati's journey: Lah se lakhpati in five years

In the secluded hamlet of Titahi Tola, in Chanaro village, Churchu, Jharkhand, resides Parvati Tudu – a 32-year-old woman, born into a socially barred group, constrained by limited resources.

Coming from a humble background, her family faced immense hardships, with their 1.5 acres of land proving insufficient to sustain their basic needs and children's education. Faced with limited options, she joined a brick factory as a daily wage labourer.

But an opportunity knocked on Parvati's door and she seized the chance to chart a new course – to become a lac entrepreneur. In 2015, Parvati Tudu joined the Marsal Mahila Vikash Samuh, a SHG in her village and started saving ₹10 per week.

Bold dreams require bold actions

Introduced to lac cultivation through the Churchu PIP initiative, Parvati underwent training in Simra village, honing her skills in lac cultivation. With just seven Kusum trees near her village, Parvati ventured into lac cultivation alongside goat rearing, adding a much-needed boost to her income.

The results were promising – an additional income of ₹15,300 in her first year, fuelled her determination to keep moving forward. Undeterred by challenges, Parvati and her husband, Cheto, took a bold step in 2017-18, diving into lac entrepreneurship and high-value agriculture. They expanded their ventures, cultivating tomatoes, chilies and brinjals on 0.4 acres of land. Their hard work led them to earn ₹1,14,290, putting them right amidst the lakhpati farmers, community.

Diversification of income

With an annual income of ₹1,42,000, they diversified their income sources with systematic pig rearing and fish farming, invested in better irrigation systems, repaid their loans and started sending their children to a private school for quality education.

Ground impact

Sowing the seeds of rural entrepreneurship

For Diwakar Mohanty, Madhyapur village (Odisha) farming always meant uncertainties over which he had no control. He toiled on his land for years, braving irregular monsoons and declining productivity. Limited by his knowledge of farming techniques and grappling with the whims of nature, Diwakar felt trapped in poverty.

He would have remained in that state had it not been for his chance encounter with an agriculture and farming training programme in 2016. This was a type of training he had never undergone before. He had never imagined that such learnings could open up, full of possibilities for him and his family. It was at this training that he unearthed the potential of a polyhouse nursery, with its enormous potential of improving seedling preparation.

From a struggling farmer to a business entrepreneur, it has been a tremendously fulfilling journey for him. The initial investment of ₹2,50,000 made by him in his nursery business proved to be a wise decision, as he managed to recoup the amount within a year. This financial success further solidified his position in the market and boosted his confidence.

He is now a lifeline for other struggling farmers like him in his community. His nursery has a capacity of producing 1,20,000 seedlings, with a 50% improvement in production. His success has had a ripple effect in his community - reaching out to a greater number of farming households, enhancing crop yields, reducing preparation time and mitigating disease risks.

Diwakar is now a supplier of quality seedlings not only to individual farmers in his own village, but also to SHGs and Farmer Producer Companies across four districts of Odisha.

> Each village in our country has a Diwakar, with the same hopes – to carve a bright future for himself and others from the soil beneath.

Diwakar Mohanty with his nursery business

CINI - LAKHPATI KISAN

Learnings and the way forward

In this programme, rural entrepreneurship incubation within Farmer Producer Organisations/Companies (FPOs/FPCs) has emerged as a significant theme.
This approach addresses various value chain gaps, providing both tangible and intangible benefits to rural and tribal households.

Market-led production clusters are crucial for fostering lasting change and prosperity in tribal communities. Consequently, two key principles have been added to the design and implementation of the second phase of the Lakhpati Kisan programme

- Rural entrepreneurship promotion
- Value chain intervention in agriculture and allied activities

The learnings

Technology is a powerful enabler

Dispelling stereotype about lack of proclivity and risk taking aptitude of tribal communities and aspiration for change. By introducing technology, training, digital skills and credit connections, even the poorest individuals have become successful entrepreneurs with impressive financial growth and return in a short time.

Rural entrepreneurs are key

Rural entrepreneurs play a vital role in simplifying and adopting agricultural technologies. As risk-takers, they are the first to embrace various technologies like goat breeder farms and poly nurseries, benefitting larger communities.

Women as leaders

Initially, the Lakhpati programme mainly witnessed men as entrepreneurs. However women are now increasingly demonstrating the potential to become entrepreneurs across all sectors.

Demand-driven entrepreneurship

Entrepreneurship in the Lakhpati Kisan context is innovative, driven by demand, technology and the market, and embedded within or working in tendem with community institutions like FPCs.

Timing is critical

Developing innovative solutions and addressing value chain gaps as a service model takes time to prove and become ready for the market. Project deadlines often clash with this long process, making it difficult to quickly select rural entrepreneurs and implement the project.

Challenges remain

CInI has experimented with various models to innovate rural entrepreneurship, such as piglet, brood lac, fish, water and agri polyhouse entrepreneurs. Not all prototypes have been successful, with challenges remaining in scaling up models for water and fish entrepreneurs. Cultural barriers, like resistance to water selling in tribal contexts, and limited engagement seasons for fish entrepreneurs contribute to these challenges.

Entrepreneurs need support

Entrepreneurs must be willing to take risks and adapt quickly to change.
They require technical, accounting and business acumen as well as market and customer knowledge, for successful business operations. CInI provides incubation support to nurture entrepreneurs properly, contributing significantly to the success of the rural entrepreneur model.

Clusters as models

Rural entrepreneurship thrives when there is strong connectivity between rural entrepreneurs, FPCs producer groups and communities. In certain areas, we have successfully established this connectivity. Products such as soil-less saplings in agriculture play a vital role in promoting coordinated production clusters, enabling smallholder farmers to navigate market dynamics and achieve surplus production volumes. These successful clusters serve as examples for others in the ecosystem and for the state.

Way forward

- CInI should continue its efforts to reduce risks of small holders farmers by strengthening local value chain with efficient services and support by promoting entrepreneurship and tailoring advanced technology to suit local needs
- Fostering innovation is crucial for helping entrepreneurs identify service and product gaps at the community level; adapting accordingly is essential for their involvement in the value chain and economic gains
- Digital platforms like JharVeer and OneAgri, along with network institutions and entrepreneurs, can help meet emerging market demands effectively

The Lakhpati Kisan programme has challenged misconceptions and empowered rural tribal communities, particularly women, to become entrepreneurs and catalysts for change.

By partnering with communities and prioritising entrepreneurship, the initiative has promoted prosperity and self-reliance.

Going forward, ongoing efforts to promote rural entrepreneurship, empower women and adopt sustainable farming practices will be critical for ensuring long-term economic growth and prosperity in rural areas.

Creating a safety net

The use of livelihood layering to create resilient farming communities

05

In the village of Walamaba in the Nandurbar district of Maharashtra, Anita Dilwarsing Padavai and her husband, Dilwarsing Govlya Padavi, found it difficult to feed their family of eight from what they produced in their 2 acres of land. They grew a single crop – maize – during the Kharif season. They kept a few goats but grappled with high mortality among the animals.

CInI formed a Village Institution (VI) named Ghandharimata Gaon Upjivika Samiti Walamaba in their area. This was one of the 30-odd such institutions in the block, aimed at transforming the lives of 5,000 tribal families in the Akkalkuwa block, where Anita's village is also situated. Anita is a member of one of the SHGs that make up the VI. Familiarised with the concept of seeding through meetings conducted by CInI, Anita decided to participate in the goat breed upgrade programme. She also participated in various other agriculture development initiatives conducted by CInI and the VI.

Motivated by what they saw and heard, Anita and two other women from her village came together to form a buck user group – 'Shivshankar Buck User Group (B-UG). Their group got selected for the buck induction* activity run jointly by CInI and the VI. CInI provided them with an improved Osmanabadi buck along with a curative medicine kit, supplements, and insurance. With improved herd and veterinary care, the group was able to see better returns from animal husbandry.

The B-UG now provides buck insemination services with fee through the high quality Osmanabadi buck to other farmers with local goats to improve their stock as well. Anita has also benefited from selling more goats in the local market. This is due to the improved productivity of the upgraded breed, which produces more kids per pregnancy cycle and experiences faster weight gain compared to the local goats.

Her success in animal husbandry was not the only change Anita was able to bring about in her life. She transformed the cultivation of her 2-acre plot by adopting innovative agricultural practices. The CInI team provided on-field technical support. This covered plant spacing, seed treatment and pest & disease management. With the adoption of a proper package of practices (PoPs), Anita added other crops to her field. She has started growing strawberries during Rabi and other high value crops such as fenugreek.

The integrated approach with both agricultural and livestock interventions has brought positive changes in Anita's life. From ₹30,000 annual income more than ₹1,10,000 annual income through layering, she has come a long way. With existing household resources, technical expertise, and financial support, many households in the Lakhpati Kisan programme's operational area have stabilised their income. This has been achieved through a strategic focus on multiple ventures that have resulted in enhanced, and steady income.

Anita's income details

Agriculture income

Particulars	2022-23		
	Kharif	Rabi	
Crop	Maize	Strawberry	Fenugreek
Area (acres)	1.77	0.24	0.4
Production (kg)	720	473	20
Average rate (₹/kg)	21	164	20
Gross income (₹)	15,120	77,572	400
Total gross income (₹)	**93,092**		

Livestock income 2022-23

Particulars	Qty	Total income
Buck service charges [₹50/day]	21	1,050
Buck sale [₹7,500/buck and ₹3,500/goat]	Male - 2 Female - 1	18,500
Gross income (₹)	19,550	
Total gross income from agriculture and livestock (₹)	**1,12,642**	

* Buck induction- Introduction of pure/high quality breed of male goats with the aim to improve the general stock of goats in an area through natural insemination with local goat population.

From subsistence to profit: The livelihood layering approach

Research has found that diversity in economic activities vary with the level of economic development. In less developed regions, households tend to engage in multiple economic activities.

88%
Farming households in India rely on some form of non-farm income sources to sustain their livelihoods

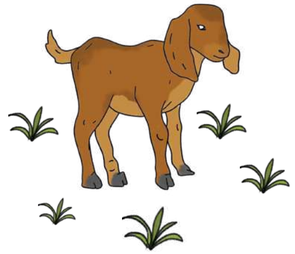
This trend is also observed among small and marginal farmers in Central India, where the population is predominantly tribal. Families in the area depend on multiple sources of income to meet ends. To supplement rainfed-subsistance agriculture practised in the area, farmers work as migrant seasonal labour – both in farms and in the industry – to generate cash income. Many households also keep livestock to enhance their agricultural income. But income from these avenues is neither assured nor consistent.

Therefore, it is essential to stabilise household income, enabling families to make informed investment choices and effectively manage adverse economic situations. Contrary to the usual practice of promoting multiple low-return activities from various sources, the Lakhpati Kisan programme emphasises developing at least two strong livelihood streams at the household level. These streams have the potential for significant growth and income, making households more confident and resilient.

To achieve this, CInI began to focus on optimising household resource utilisation. It also aimed at establishing strong community institutions, providing knowledge extension services, facilitating essential market linkages, and ensuring access to credit. This comprehensive approach aimed to create an enabling environment for the community to break free from traditional constraints.

The programme viewed the household as a unit. It sought to explore all possible combinations of livelihood opportunities using the resources available at the household level. The goal was to stabilise income through two or more livelihood streams, reducing dependence on any single source. This resulted in enhancing the household's resilience to market price fluctuations.

Livelihood layering encouraged families to take up new ventures, such as cultivating high-value crops, lac cultivation, or animal husbandry. The suitability of the venture would depend on factors like community acceptance, local success stories, technical feasibility, and the presence of market players. The main aim was to create sustainable and higher incomes than before.



Lakhpati Kisan programme: Ways to achieve aspirations

- Food security and high value agriculture
- Water resources development and efficient use
- Quality of Life - Education and drinking water
- Promoting livestock and NTFP

Improving household incomes through layering

The planning in each location involved mapping of households into a livelihood prototype matrix. The aim was to arrive at the specific number of households likely to take up each prototype. In each state, gram panchayats covering a certain number of villages were taken up for incubation and refinement of the specific interventions planned. This provided the proof of concept to other households in the same village, who were then motivated to adopt these practices in larger numbers.

Supported by trained community resource persons (CRPs), programme engagements were conducted with a select group of farmers from each village who were willing to explore additional livelihood options and new techniques of production and management.

The different layering prototypes

Prototype	Regions where used
Field crop, HVA, Goats	All four states
Field crop, HVA, Dairy animals	Gujarat
Field crop, HVA, Piggery	Jharkhand
Field crop, HVA, Piggery, Lac	Jharkhand
Field crop, HVA, Goats, Large ruminants (cows and buffaloes)	Gujarat

Determinants for livelihood stream selection for layering

Buy-in from the community and household

Given that new concepts of farming, livestock breeding and new livelihood options such as lac cultivation were being considered, it was important to secure buy-in from the community and households. The role of the early adopters/lead farmers was very important as the communities wanted to see actual results before the same was adopted on scale.

Local ecosystem

The local ecosystem often determined the success of interventions. For example, pig farming could be a viable option in regions with local demand for pork, where it is part of the popular diet. Similarly, the availability of fodder, especially after the monsoon and during the crucial summer season is a major determinant of the success of goat farming and dairy activities. Therefore, protecting and enhancing the local ecosystem is essential to enable individual farmers to engage in and advance these activities.

Availability of labour

Most high-value agricultural activities such as vegetable cultivation and floriculture are labour-intensive. Consequently, the availability of household labour is a major determining factor for scaling up these activities and making the necessary financial commitments. The success or failure of such ventures largely depends on this factor. For instance, livestock management and vegetable farming require daily care and attention. Thus, both the adoption and scale of operations are determined by the time and effort the household can dedicate.

Market intelligence

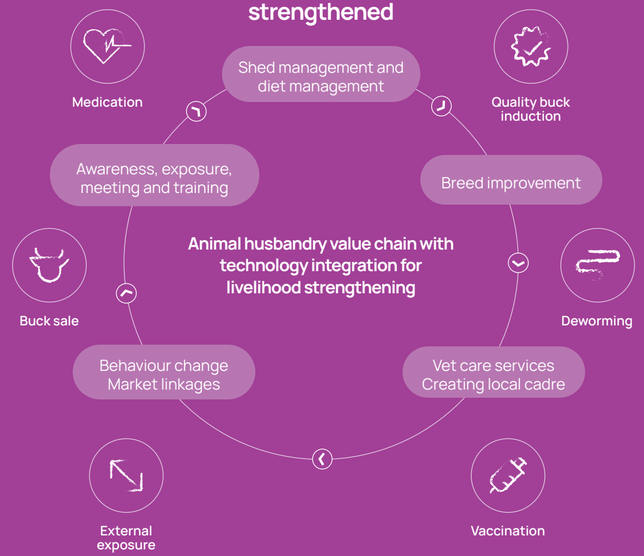
Timing of a livelihood activity must match market demand. For example, floriculture had to align with the festive season; same for the sale of small ruminants or poultry, etc. which needed some advance planning to cater to specific demands.

Why the local ecosystem matters for livelihood layering

Enablers for livelihood layering

- Strong community-based extension systems to promptly address the knowledge and skill gaps of the smallholder farmers across various livelihood activities and businesses
- Irrigation development in the clusters also triggered communities' capabilities to address the fodder requirement for large ruminants.
- Adoption of scientific practices (behavioural change was the key), such as adherence to crop geometry, regular vaccination, feeding practices, hygiene management, better housing facilities for small and large ruminants
- Adoption of improved scientific Package of Practices (PoPs) recommended for various field crops and high value crops like vegetable, fruits & spices
- Technological innovations focusing on water use efficiency, agriculture mechanisation, quality inputs for crop productivity enhancement
- Ecosystem building through group formations and facilitation of market linkages; e.g. breed development interventions for goat entrepreneurs and convergence with the government's extension services
- Community institutions played a critical facilitating role in enhancing access to credit as well as upscaling of the proof of concept
- Better market linkages for both agriculture inputs and outputs

How animal husbandry was strengthened



How agriculture and agri-allied activities were strengthened

Access to irrigation as well as interventions for enhanced water harvesting and groundwater recharge	Capacity building of farmers in scientific management practices, close coordination with district veterinary department for mobilisation of community for vaccination, deworming, etc. at regular intervals
Adoption of drip irrigation and mulching	Engagement of the local community institution for managing the entire range of activities to ensure outreach and sustainability of efforts
Appropriate change in cropping pattern	Developing fodder at scale, including promotion of new technologies, fodder varieties
Access to good quality inputs (e.g. polyhouse nurseries for facilitating availability of quality planting materials)	Strengthening of the goat value chain through the promotion of Breeder farm entrepreneurs and Fodder entrepreneurs to ensure availability of high-quality goats (male and female), and fodder to farmers to reduce their costs and improve ease of production
Knowledge transfer on soil fertility, pest control, rational use of fertilisers	Market linkage for sale of goat and bucks by FPC to farmers through organised bulk sale
Introduction of good quality recommended breeds of livestock	
Strengthening the access to health services for livestock	

Women and livelihood layering

Irrespective of the livelihood prototype selected, women have been at the forefront of layering activities. By design, the Lakhpati Kisan programme has involved women in all aspects of livestock management – breed improvement, nutrition management, shed management, health and hygiene, etc. Efforts have also been made to have a women-led cadre for vaccination and other paramedic services. Known as Pashu Sakhis, these women work closely with the village-level institutions to facilitate these services.

At the district milk federation level, priority is given to women-led dairy cooperatives. Most of the new village-level dairy cooperatives established under the Lakhpati Kisan programme are also led by women. Access to credit is also a critical factor and one of the core lending activities at the women SHG/VO levels are related to livestock management, apart from agriculture related activities.

With the programme focusing on strengthening the participation of women in all aspects of farm-based livelihoods, the integration of the technical aspects of livestock management by women members has been a shot in the arm. Now, they have an enhanced understanding of various technical matters, which helps them to take informed decisions. When women are involved in decision-making processes, the priorities for household resource allocation are significantly influenced. Men are more involved in engagement with external stakeholders, which at times requires them to travel to distant markets and interact with buyers and traders.

The financial convergence and credit linkages are made possible by women-led village and cluster level apex institutions. As decision-makers, women leaders engage and interact with senior level government officials of the district and other agencies. The financial independence and recognition women earn has boosted their self-confidence and importance in the community.

Ground impact

Bringing change in Churchu

The Churchu block in Jharkhand presents a contrasting picture of extreme poverty on the one hand and rich cultural heritage and natural resources on the other.

This is a region facing challenges such as low income, high migration, social backwardness, and limited education. There is also disparity in income levels, landholdings and financial capacity. Amidst these challenges, layering emerged as the most viable solution for improving lives. Reliance on a single livelihood option as a source of income carries greater risk of failure, lower yield and thus lower returns.

The layering strategy used for the region combined agriculture with livestock and NTFP-based livelihood activities.

Layering strategy

The achievement of Lakhpati status was devised through the combination of multiple activities by a single household.

HHs under each option	Income (₹)	(₹)	Pig	Lac A	Lac B	Horticulture	Kharif A	Kharif B	Rabi A	Rabi B	Summer
3,500	90,000	795	22,000	80,000	40,000	30,000	44,000	23,000	21,000	21,000	25,000
1,000	Option A	96,000	1,000			1,000		1,000	1,000		
500	Option B	95,000				500	500		500		
300	Option C	103,000		300				300			
700	Option D	84,000			700		700				
1,000	Option E	90,000					1,000				

Approach used

Based on the baseline survey report, interventions were implemented in the following steps. First, awareness was created among the local communities through road rallies, street plays, video shows, liaising with government bodies, loudspeaker announcements and so. Next, households were identified and segmented based on the availability of landholding and other resources to make an action plan for livelihood development. Exposure visits, trainings on different livelihood prototypes, PoP management were the next steps undertaken to provide a roadmap to the community on how to move forward vand how CInI would provide support to them in exploring livelihood options.

Following this, a blend of grant, loan, personal contribution was used to finance the interventions. Community-based women-led SHGs, PGs (Producers Groups), FPCs (Farmer Producers Company). were promoted to spearhead the change. Women were elected as leaders and heads of these organisations. They were charged with outreach activities and the responsibility to convince community members to take up different activities.

Doorstep service delivery system of quality inputs (saplings, seeds, pigfeed, piglets, bucks, quality fingerlings, brood lac, grafted mango saplings, etc.) was designed. To create awareness of change, regular meetings and annual general meetings were done. The Lakhpati Didis who had taken up two or more livelihoods and allied activities shared their success stories, creating moments for cross learning.

A woman farmer Churchu cluster involved in high value agriculture

A woman entrepreneur of Churchu cluster who has layered her income from agriculture with pig rearing business

Innovation on the ground

- Introduction of innovative farming technology in the form of quality soil-less saplings through polyhouse nursery
- Introduction of high value agriculture with different precision and micro irrigation technologies like sprinkler, drip-based irrigation system and mulching to assure year-round irrigation
- Use of decentralised renewable energy systems such as solar micro lift irrigation to address the issue of poor quality or lack of power supply from the grid to ensure adequate irrigation
- Promotion of youth as potential entrepreneurs in different prototypes and sectoral interventions (agriculture, livestock)
- Improvement of the local breed and feed for livestock (goats and pigs) for enhanced returns
- Introduction of doorstep delivery for saplings, piglets, bucks, pigfeed, fingerlings, vaccination and treatment of livestock; doorstep technical support for farmers

Activity-wise coverage of households

Sl. No.	Activity	Total no. of households
1	HVA (Kharif + Rabi + summer)	3,659
2	Livestock (Pig + goat)	2,325
3	NTFP (Lac)	1,048
4	Horticulture	694
5	Fisheries	292

When the baseline survey was conducted in 2015, the average annual income was ₹30,000. By 2019, 80% of the farmers were engaged in more than two layering activities, out of which 55% were engaged in at least two layering activities and 25% households were engaged in at least three activities. As much as 43% (1,508 farmers) of them had achieved lakhpati status.

Activity-wise average income of households

Sl. No.	Activity	Total no. of households
1	Agriculture (Staple and high value)	75,000
2	Livestock (Small ruminants)	30,000
3	NTFP (Lac)	15,000

In the Churchu cluster, farmers who achieved lakhpati status through 2-3 layers were far greater in number than those who achieved the status through their engagement in agriculture alone. More than 690 farmers who had supplemented agriculture with livelihoods such as livestock rearing, lac cultivation, horticulture, etc. were able to achieve lakhpati status. Meanwhile, a greater number – 760 – were able to achieve lakhpati status when they supplemented agriculture with two other livelihoods (or triple layering).

Number of farmers and lakhpati farmers engaged in the different livelihood layers in the Churchu cluster

Sl.No.	Layering	No. of farmers	Families with layering	Lakhpati farmers
1	Agriculture	795	663 (Single layering)	52
2	Agriculture + Livestock	1,629	1,956 (Double layering)	696
3	Agriculture + Lac	526		
4	Agriculture + Horticulture	57		
5	Agriculture + Fish	76		
6	Agriculture + Livestock + Lac	522	881 (Triple layering)	760
7	Agriculture + Livestock + Horticulture	243		
8	Agriculture + Livestock + Fish	116		
	Total	**3,964**	**3,500**	**1,508**

A tale from a tribal village in Sabarkantha

Although Gujarat has seen healthy agricultural growth and has a sizeable section of big farmers, agriculture is largely dominated by small and marginal farmers.

According to the Agricultural Census of 2015-16, small and marginal farmers (with a holding size of less than 2 hectares) accounted for 68% of the total number of farmers in the state.

Take the case of Babubhai Hirabhai and Varshaben Babubhai of the remote tribal village of Nava Motagam in Sabarkantha. The two had once gone to see a polyhouse nursery at Vadrad village along with members of surrounding villages as part of the exposure visit organised by VIKSAT, CInI's implementing partner in Gujarat. They decided to start a similar venture in their village. Convinced about their plan, the VIKSAT team guided and trained them, providing them the know-how, arranging materials and connecting them with suppliers.

For Babubhai and Varshaben, the technology was new, but they made up for their lack of knowledge with hard work to get the plan off the ground. Having managed to grow seedlings with guidance from VIKSAT's field team experts, they sold their product to far-off villages of Gujarat and Rajasthan. Having turned savvy networkers, they soon had villagers making advance booking for their seedlings.

Varshaben and Babubhai: a success story

Profit in the first two years

Year	Plants sold (Monsoon + winter + summer harvest)	Net income
2019-20	Chilli, Tomato, Brinjal	₹1,20,000
2020-21	Chilli, Tomato, Brinjal	₹1,25,000

Both Varshaben and Babubhai took training at the VIKSAT centre in Kheroj, and now Babubhai trains other budding nursery entrepreneurs in managing polyhouse nurseries in a profitable way.

They also grew various high value crops in winter in their remaining land. During monsoon, they cultivated cotton, okra, soyabean and pigeon pea. In summer, they cultivated groundnut, tomatoes, chilli, and beans. Cotton and sunflower were cultivated for seed production. Their total earning from farming was ₹3.5 lakh.

Varshaben has five cows that yield milk worth ₹20,000 per month. She earns around ₹2 lakh every year from milk sale. She has bought two more buffaloes, and with the programme's support, has initiated drip irrigation for her entire farm.

The two have managed to build a new house and send the children to school. They have also taken additional land on rent to cultivate more crops. They have been earning more than ₹6 lakh every year as a result of successful layering, and setting an example for other villagers.

Developing pathways for sustainable change

In the initial days of the implementation of the Lakhpati Kisan programme, the livestock component was not considered critical.

Most of the tribal families, in any case, kept livestock to tide over adversity.
But gradually, livestock development was added as another critical livelihood layer and scaled up. So, from only 6,900 households in 2015, coverage increased to 69,000 households by 2020.

900%
Increase in households coverage livestock production in five years (2015-20)

Lakhpati Kisan programme (Cumulative progress across the years)

	Year 1 2015-16	Year 2 2016-17	Year 3 2017-18	Year 4 2018-19	Year 5 2019-20	Year 6 2020-21
Agriculture	36,693 HHs	65,362 HHs	86,387 HHs	94,573 HHs	97,103 HHs	95,019 HHs
Livestock	6,964 HHs	12,285 HHs	53,938 HHs	67,599 HHs	69,706 HHs	69,126 HHs
NTFP	1,583 HHs	2,778 HHs	4,536 HHs	4,366 HHs	3,842 HHs	2,925 HHs
Irrigation	24,764 HHs	48,176 HHs	72,230 HHs	75,502 HHs	76,899 HHs	71,952 HHs

HHs - households

As Figure A shows, through a variety of interventions, such as better crop planning, management and adoption of farming techniques, an increasing number were able to grow crops in multiple seasons in Jharkhand. Those involved in livestock were also able to improve their business and generate more stable incomes than earlier.

Layering of prototypes (2020-21)
(Figure A)

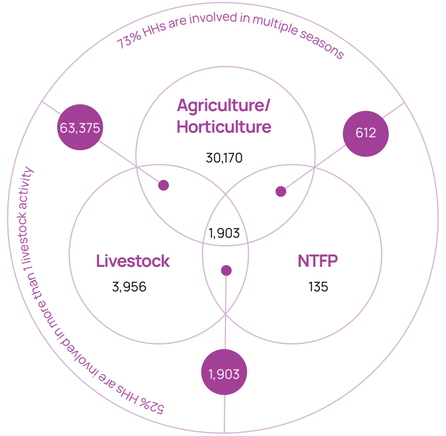


Figure B indicates that through the layering of multiple livelihoods, households were able to generate stable incomes. For example, in 2020-21, households engaged in agriculture and livestock could hope to earn an annual income of more than ₹1,00,000. Those with triple layering could earn even more.

Average income from different prototypes
(Figure B)

State-wise data of sampled households post the first phase (2015-2022) of the implementation of the Lakhpati Kisan programme showed that while almost 90% of the households had seen seen a significant income raise from the baseline of ₹30,000.

Almost 60% of the sampled households across the four states showed an increase in the household income ranging from ₹75,000 to more than ₹1,50,000 annual income. All of this can be directly attributed to the layering of different livelihood prototypes at the individual household level.

The families in the bottom layers were those who still had to depend on a single source of livelihood due to various limitations, such as small land holdings or lack of access to irrigation. This is an issue that would require increasing focus and a different set of solutions. Meanwhile, a majority of the households in the top layer (above ₹1,50,000) were those households that had adopted two to three livelihood streams.

Learnings and way forward

97,000
Households impacted through high value agriculture*

95,000
Households impacted through livestock

6,000
Households impacted through NTFP

Footnote: *2020-21

The Lakhpati Kisan programme has made a paradigm shift in the way existing household resources can be leveraged. It had drawn from the deep community-level knowledge and skills to sustainably enhance household incomes through scientific practices, technology, and foster entrepreneurship and innovation.

It has made focused interventions and strategic investments in irrigation infrastructure, knowledge building and extension services at the individual and community level. Livelihood layering has made farming communities more resilient.

While income from different livelihood activities may fluctuate, layering of livelihood ensures stable cash flow for farmers throughout the year. Further, smallholder farmers often have limited resources such as land, labour, and access to capital. Layering of livelihoods allows them to optimise the use of these resources by utilising them for multiple purposes.

It has also been clearly demonstrated that the integration of complementary activities enhances overall productivity – e.g. livestock management has proved beneficial for agriculture as the manure generated could be used to improve soil health, which is critical to the cultivation of high value crops.

Field experiences under the Lakhpati Kisan programme have also shown that risk mitigation capacities of rural households have increased through the layering and diversification of livelihoods. Livestock development is seen as a way to offset income loss from the climate crisis's impact on agriculture. However, farmers diversifying into dairy farming are seen to prioritise fodder production over other crops due to the guaranteed market and good returns.

Overall, livelihood layering not only enhances the economic resilience of smallholder farmers but also contributes to their social and environmental well-being, making it a key strategy for sustainable rural development.

CInI's continued engagement in livelihood layering for smallholder farmers under the Lakhpati Kisan programme is a testimony to this.

The sun shines on India's farmers

Making decentralised renewable energy technologies work for them

06

Energy has always been critical to human development. Recent studies[1] show how closely civilisational advance is connected to the quest for more energy – as it became important for people to produce more food, assimilate more materials for economic development, improve infrastructure and gain access to increasing amount of information.

The ability to harness and use energy on a large scale, such as during the industrial revolution, was what led to the ascendancy of Western Europe and subsequently North America. Both transitioned from agrarian economies to industrialised societies. The introduction of power lifts, diesel engines, rubber tyres and other tools led to a mechanisation of field work that raised productivity together with the discovery of new crop varieties and synthetic fertilisers.

~80%

Of the rural population and the urban poor in India continue to depend on low quality energy sources and inefficient devices, leading to low quality of life (QoL)

In Asia, farm mechanisation started only during the 1960s. In India, new crop varieties, introduction of synthetic fertilisers, farm mechanisation and improved irrigation powered the green revolution. But the agrarian success in Punjab, Haryana and Uttar Pradesh – which depended on access to cheap energy and groundwater – did not get replicated in off-grid regions or those regions poorly connected to the grid. Hence large parts of India remained out of the ambit of the green revolution.

This was particularly true for central India, which has always had poor grid connection. Even now, the tribal belt of central India, continue to lack access to reliable and affordable energy supply. Remoteness of localities, difficulty of the terrain and lack of infrastructure are some of the challenges faced by the region's inhabitants. They continue to depend on natural resources to meet much of their energy needs.

Empowering tribal communities with control over their energy resources is crucial for fostering sustainable development, environmental conservation, and ensuring a just transition away from fossil fuels. Decentralised Renewable Energy (DRE) is a critical enabler in this. DRE projects, such as small solar or wind installations, ensure reliable and sustainable energy supply to them while safeguarding their environment, which is irretrievably altering as a result of climate change. Moreover, these DRE projects, when promoted with an emphasis on local ownership, could generate sustainable livelihood options for these communities. At the same time, they would facilitate equitable access to clean sources of energy. Committed to promoting 'Affordable and Clean Energy' for all (United Nations Sustainable Development Goal 7), India recognises this as a critical area of action.

What are DRE technologies?

DRE or decentralised renewable energy, as the name suggests, is the reverse of grid-connected energy supply. The source and consumption of energy is within a fixed geography, sometimes governed by a small group of community members, a village council or an entrepreneur, thus leaving the decision-making control in the hands of the community.

Decentralised energy planning focuses on generating energy from renewable sources such as wind, water, solar, and biomass. It also emphasises energy planning at the village level, as individual villages are the smallest social units where energy consumption occurs. Addressing SDG 7 empowers women to own and operate renewable energy assets, reducing their burdens and enhancing their economic independence. This empowerment positively impacts other SDGs related to gender equality, poverty alleviation, and climate change.

The increasing uptake of DRE technologies have benefited communities in India's rural areas, making energy affordable to them in a sustainable manner. However, India needs to make more investments in DRE technologies.

$18 billion

Investment India needs to make by 2024 to meet its sustainability targets

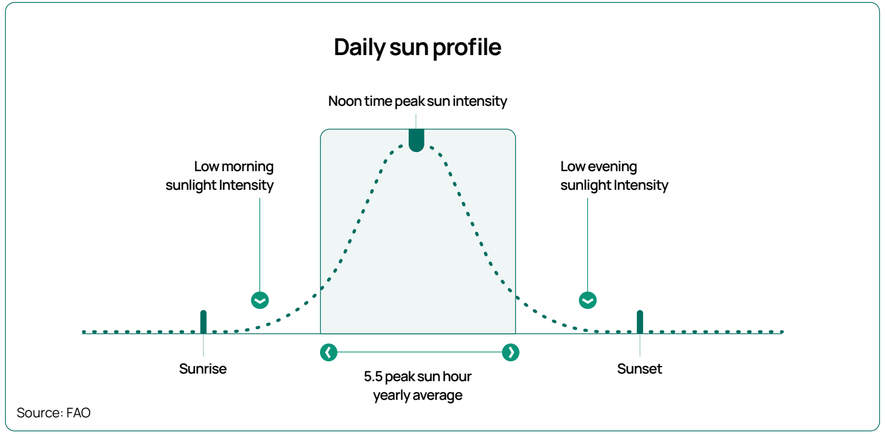
Source: CPI report

[1] Vaclav Smil, "Energy and Civilization: A History"

Why solar irrigation pumps are among the best DRE technologies available to rural communities

Like all scientific innovations, the technology used for lifting water has played a powerful role in influencing the evolution of society and the ecology in South Asia. Solar irrigation pumps could redefine the socio-ecology of South Asia, given their efficacy.

Solar pumps operate during sunlight hours, creating a bell-shaped curve of irrigation intensity that peaks in the afternoon. According to geo-hydrologists, this pattern allows the aquifer to replenish, closely resembling the behaviour of a Persian wheel. As a result, the community can effectively balance ecological, economic, and daily water-related activities.



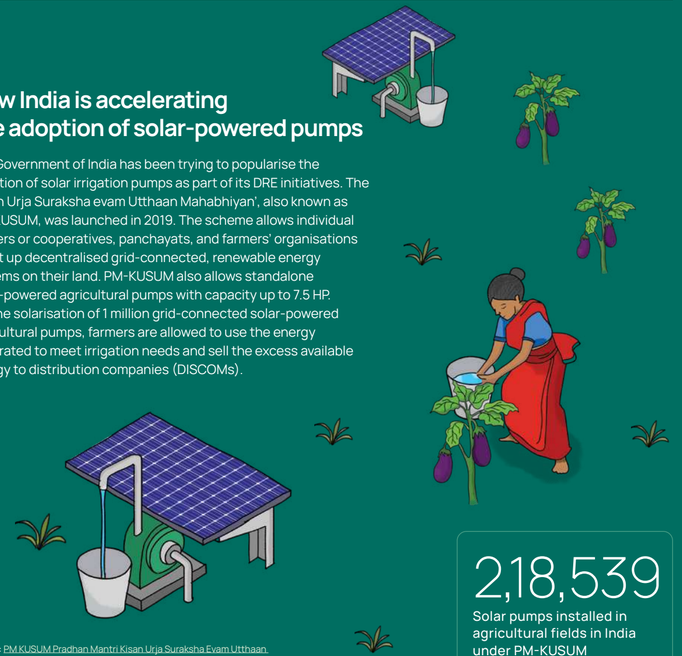
Source: FAO

Advantages of solar irrigation pumps

- Low operating cost because of reduced dependence on diesel or electricity
- Greater reliability as there is less dependence on supply of electricity or fuel
- Ease of plug and play, and so can be used by women, unlike other pumps which require manual effort
- Environmental-friendly as they do not require fuel to run and do not cause emissions
- Financially beneficial as excess power generated can be sold or used for other productive purposes
- Both off-grid and on-grid versions possible

How India is accelerating the adoption of solar-powered pumps

The Government of India has been trying to popularise the adoption of solar irrigation pumps as part of its DRE initiatives. The 'Kisan Urja Suraksha evam Utthaan Mahabhiyan', also known as PM-KUSUM, was launched in 2019. The scheme allows individual farmers or cooperatives, panchayats, and farmers' organisations to set up decentralised grid-connected, renewable energy systems on their land. PM-KUSUM also allows standalone solar-powered agricultural pumps with capacity up to 7.5 HP. For the solarisation of 1 million grid-connected solar-powered agricultural pumps, farmers are allowed to use the energy generated to meet irrigation needs and sell the excess available energy to distribution companies (DISCOMs).



Source: PM KUSUM Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan: A New Green Revolution, Press Information Bureau

2,18,539
Solar pumps installed in agricultural fields in India under PM-KUSUM

Solar energy as a critical enabler of the Lakhpati Kisan programme

Across the entire tribal belt of central India, small and marginal farmers have found their journey to prosperity hindered by fragmented land parcels, climate irregularities, poor technology access and intensive labour in the fields, which generated subsistence-level earnings for them.

The Lakhpati Kisan approach has focused on understanding the specific pain points of the small and marginal farmers within the select blocks and introducing relevant technologies as solutions to address these issues through the value chain approach. Community acceptance and participation in this entire process are integral to this approach.

In case of agriculture, in the pre-production stage, the pain points identified were high input costs, lack of quality inputs, small landholding, the lack of financial linkages and deterioration of soil health. In the production stage, the problems were the lack of on-time water availability, pest infestation, the lack of year-round irrigation and so on. Erratic monsoons, lack of reliability of grid power supply together with the prohibitive cost of fuel to run pumps defeated attempts to resolve the problems related to adequate irrigation. In the post-production stage, the problems were the need for post-harvest processing, inadequate storage facilities and the lack of market linkages and agri-logistics.

Solar-enabled production hub approach

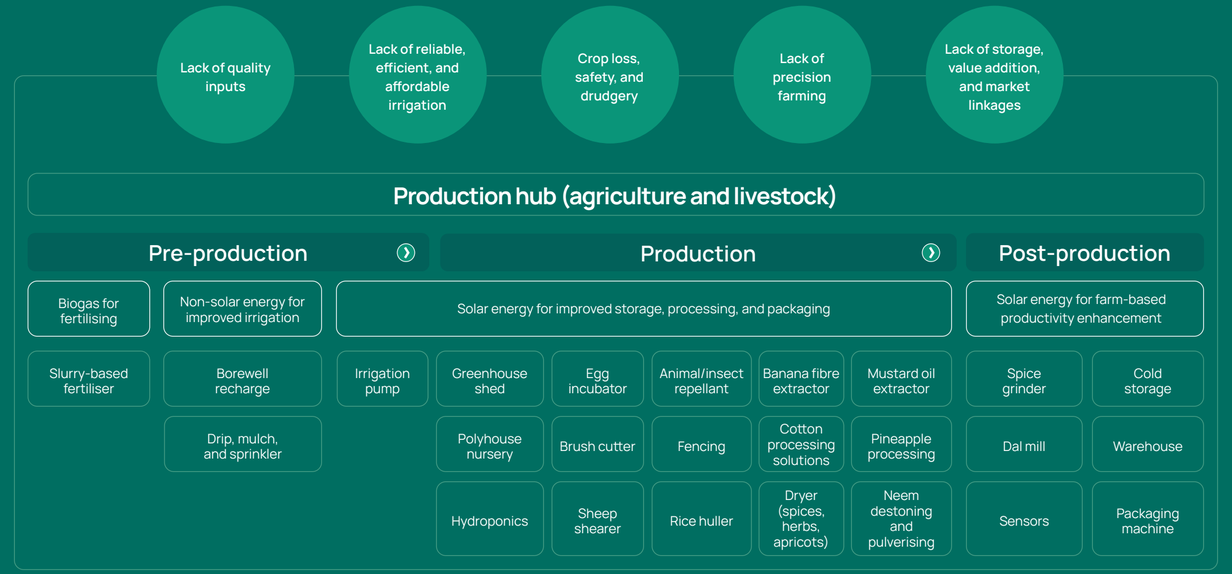
The Lakhpati Kisan programme was undertaken by aggregating a cluster of contiguous villages, termed production hub, where a range of stakeholders collaborated to enhance production and productivity levels and improve market access. This was done through collectivisation of efforts and the building of community-based institutions to coordinate the activities across the pre-production, production and post-harvest stage.

Energy stood at the core of all these activities and was looked upon as a catalyst of change, particularly as the community moved up the developmental ladder. Limited access to energy at each step of the agri-food system undermined the ability of farmers and agri-enterprises to raise productivity, cut losses and cope with other shocks. To mitigate the challenges and accelerate the growth of Lakhpati Kisans, energy gaps were identified. A renewable energy programme was designed with the support of the Sustain Plus Energy Foundation.

Solar-based irrigation systems were integrated within the value chain at the production stage to enable farmers to reduce their cost of cultivation (given that they usually conducted diesel-based irrigation) and address the larger climate challenges at the same time. Each participating farmer chose a package of DRE products and services. For example, a groundnut farmer in Gujarat was given access to biogas units where the farmer needed to use the slurry in his/her farms and sell it within the production hub to other farmers. The farmer also required a proper solar-enabled irrigation system, mechanised equipment and processes and access to a groundnut oil processing unit. So multiple farmers were mobilised within an FPO, which had storage and packaging infrastructure and linkages with varied market players for the sale of groundnut produce.

Also, financial support was made possible for the adoption of DRE technologies through community-based organisations such as the FPOs and SHGs. Steps were taken to build the confidence of new or potential adopters for the uptake of DRE solutions. This was achieved through exposure visits to places where DRE solutions were in operation and through interaction with farmers who had already adopted these technologies.

The Production Hub approach

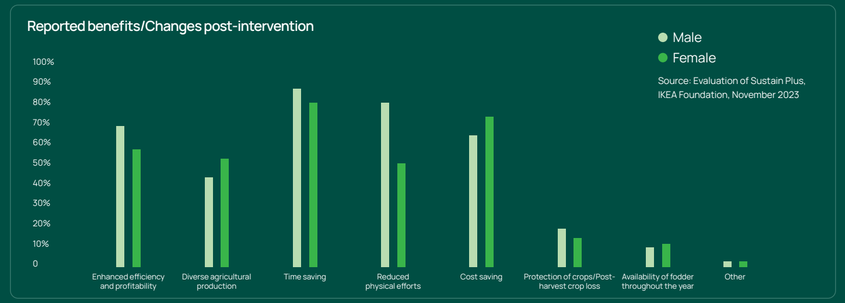


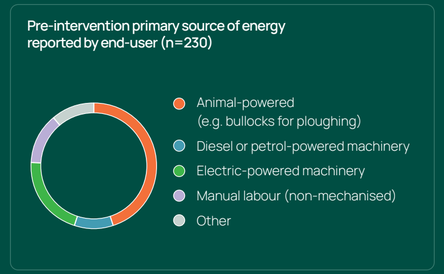
Impact achieved through DRE technologies

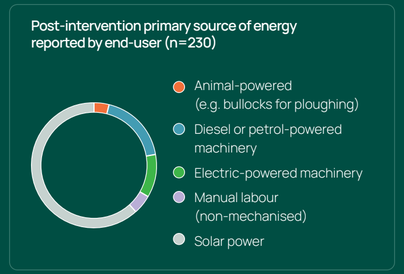
Solar irrigation systems were one of the key enablers of the Lakhpati Kisan programme. Solar irrigation pump users achieved close to 55% cost savings compared to using a diesel pump. The interventions across the production hub were not only targeted to impact lives of the end-users but also enable energy transition from fossil fuel to renewable energy.

The impact was reflected in the evaluation as reported by the end-users (n=230). They reported that their dependence on diesel or kerosene, which was 45% at the pre-intervention usage, had reduced and now they were 61% dependent on renewable energy post-intervention. Apart from cost savings, there was a noticeable reduction of drudgery. On the positive side, they reported time saving, gender inclusion in agricultural activities, increase in production, among other benefits.

Impact on end-users (gender-wise)







DRE technologies deployed in Gujarat, Maharashtra, Odisha and Jharkhand under the Lakhpati Kisan programme from 2015 till date.

1,748
Solar-enabled irrigation pumps (LI and portable) installed so far

548
Solar insect traps installed

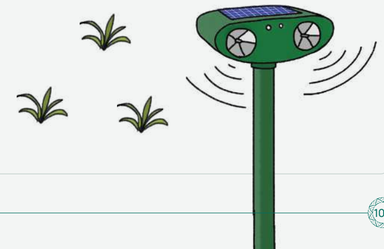
215
Solar sprayers

46
Farms with solar fencing

7
Cold storages installed

1,039
Biodigester

12
Solar repellers



Ground impact

One size doesn't fit all: Selecting the right system

Selection of the right solar system is critical for the success of solar irrigation. This means selecting the right pump for the right purpose, the right soil type and the right people. A pump of too little capacity might force the farmer to continue using diesel pumps, and a pump of too high a capacity might pump too much groundwater.

$2.7 billion
Projected size of solar pump market in India by 2032

Three variables for pump selection

Capacity and configuration of the pump system: This is largely driven by geographic variables like soil type, rainfall zone, cropping pattern, distance of land parcel and water table. Capacity of systems can range from sub-HP to 7 HP. System configuration relates to usage of a submersible pump vs non-submersible pump.

Ownership model (whether owned individually by a farmer, or shared ownership among multiple farmers): This is driven by social and financial variables like average land holding of farmers, their base income, and the cohesion in the community.

Financing structure (quantum of community contribution through upfront investment or loan vis-à-vis costs): This is determined by financial factors like base and potential income of farmers and access to credit.

Off-grid and on-grid solar irrigation pump systems

An off-grid solar system is a solar panel system that generates electricity that either stores power in solar batteries or runs only during daytime and is not dependent on the power grid. In an on-grid solar system, excess solar energy can either be fed into the electricity grid for credits or stored in different battery storage systems. An off-grid solar system works particularly well in remote regions.

Applicable pump models for the three variables

Type 1

Multi-HP, large collective-owned (10 or more members) (off-grid)
Exemplar: Jharkhand, Odisha

Applicable models
- 5 HP systems owned by group of 10 or more farmers
- High subsidisation due to high poverty and low access to credit

Geographic variables
- Medium rainfall, diesel-based borewell/lift irrigation access to credit

Social and economic variables
- Average landholding: 1 acre per farmer
- No access to energy for irrigation
- High poverty levels (avg farmer income approx. ₹40,000 p.a) with seasonal migration
- Low access to credit

Type 2

Multi-HP, individual and group-owned (on-grid)
Exemplar: Maharastra, Gujarat

Applicable models
- 3, 5, 7.5 HP systems owned by individual farmers
- High subsidisation due to medium poverty and low access to credit

Geographic variables
- Low rainfall, low groundwater availability

Social and economic variables
- Average landholding: 2 acre per farmer
- Erratic electricity supply
- Medium-High poverty levels (avg farmer income approx. 40,000-60,000)
- Low access to credit

Type 3

Sub-HP, individual-owned (off-grid)
Exemplar: Odisha

Applicable models
- <1 HP systems owned by individual farmers
- High subsidisation due to high poverty and low access to credit

Geographic variables
- Medium rainfall, diesel-based borewell/lift irrigation

Social and economic variables
- Average landholding: ~1 acre per farmer
- No access to energy for irrigation
- High poverty levels (avg farmer income approx. ₹40,000 p.a)
- Low access to credit

Ground impact

How solar systems are benefiting farmers

Type 1

Multi-HP, large group-owned, off-grid systems

In Nalduha, a small paddy-farming village situated in Kokpara Panchayat within the Dhalbhumgarh block in Jharkhand, 78 of the 147 households possessed no more than 2.5 acres of land, and 31 households owned less than an acre of land. Many in these households also served as wage labourers. However, following the Lakhpati Kisan programme, they are now undertaking high value agriculture with solar pumps. They are also supported with quality inputs like healthy saplings, seepage wells and pipeline for irrigation.

Earlier, diesel pumps were used to extract water for irrigation. But given the increase in diesel price and challenges in its availability, the households faced a lot of difficulties. This changed in 2020, when the villagers were introduced to solar pumps as an alternative mode for irrigation.

Shyam Charan Hansda was one such farmer who had been desperate for better irrigation facilities. This drove him towards proactive participation in the Lakhpati Kisan programme. Says Hansda, "We had already tried a lot of options for irrigation but nothing worked. So, I contributed ₹32,000 as I wanted to try solar irrigation along with five other farmers."

The collective effort led to the installation of the first solar pump in the village. Today, there are six of them. The first pump was installed by a 10-member water user group (WUG) from Badoligarh Tola.

The villagers were trained in the use of better agricultural technology by the Rural Development Agency and CInI team before they gradually shifted to vegetable cultivation. There are now 32 households under the solar patch of Tirildih and 42 households under the Badoligarh solar patch. The average landholding size of each farmer is 1.5-2 acres, including the area for paddy cultivation.

Shyam Charan, who once entirely grew paddy in the 2.5 acres of land he had, has been able to increase his earnings by ₹30,000-50,000 through the cultivation of high-value crops. Like Shyam, many other farmers have transformed their lives with the help of DRE. Members of the WUG in the village had contributed only 10% of the total cost of the system, but given the increased income as a result of solar pump adoption, households are now willing to contribute 25-30% of the asset cost.

Type 2

Multi-HP, individual or group-owned, on-grid systems

Water is scarce in tribal households of the Akkalkuwa block in the Nandurbar district of Maharashtra, where CInI has been handholding villagers to adopt technology-based interventions in farming.

Four women of the Bharti User Group approached the village institution of village Walamba in Akkalkuwa to resolve the problem of water lifting. One of the women was Sapna Ramesh Padvi, leader of the Village Institution (VI).

Though the village is grid-connected, most farmlands are distant from the grid line. Even for those connected to the grid, electricity supply is erratic and available mostly during the night. This forced the men in the household to stay awake at night to irrigate the fields.

The four women of Walamba had between them 5 acres of land. They used the monsoon crops, such as maize and jowar, for household consumption while they sold the winter crops, such as wheat and cicer.

This generated an average annual income of ₹15,000-20,000 for each member.

The CInI team began their work by introducing the women to techniques through which they could tailor crop selection on the basis of topography and weather. Under a programme run with the Sustain Plus Energy Foundation, the farmers were provided solar irrigation facilities and assistance in drip irrigation and mulching. Members of the user group contributed around ₹44,000 and the women decided to try strawberry cultivation on 2.65 acres of land in 2023.

Through hard work and improved irrigation, the women achieved a bountiful harvest of 1-1.8 tonnes of strawberries from each of their plots, generating an average income of approximately ₹1,80,000 to ₹3,00,000 for the members.

The husband of one of the women says, "We still cannot imagine that we are lakhpati now. In the initial stage, we were afraid – what if the strawberries failed to bloom? We would then not even have the money to feed the family. But by God's grace and with favourable climate, we have had a good crop. Now we will be able to give our children quality education, add extensions to the house, reinvest in innovative farming, and at long last dream of things which we could scarcely imagine."

This sub-cluster of three to four hill villages surrounding Walamba, now known as 'Strawberry villages', attracts a lot of tourists during the season, i.e. between January to March. The cultivation is supported by 16 solar lift irrigation systems, and over 100 farmers are now involved in strawberry farming.

Sr. No	Name of UG members	Area (in acres)	Production (in kg)	Total income gained (₹)
1	Sunita Saysing Padvi	0.35	1,167	1,84,386
2	Vantibai Gondya Padvi	1.5	1,843	3,02,252
3	Sapna Ramesh Padvi	0.5	1,689	2,75,307
4	Bijrabai Tikaram Padvi	0.30	1,206	1,89,342
Total		**2.65**	**5,905**	**9,47,752**

Type 3

Sub-HP, individual-owned, off-grid systems

Agriculture in Odisha is largely rain-fed and vulnerable to climate variability and change. About 70% of the net sown area in the state is unirrigated and suffers from frequent droughts and floods.

20-25 years
Average life span of solar irrigation pumps
Source: CGIAR

The lack of irrigation infrastructure and reliable electricity supply limits the use of conventional electric pumps for irrigation. As a result, farmers face water scarcity, low crop yields, and income insecurity.

Women farmers in Odisha, like any other region, face additional challenges due to gender inequality and social norms. Despite their significant contributions to agriculture, women continue to be deprived of access to essential technologies.

The Keonjhar and Mayurbhanj districts of Odisha uniquely have numerous water bodies dotting the undulating hilly terrains. However, these water bodies largely remain untapped due to their distance from homestead lands, which usually have grid connections.

In any other year, Sanahatnabeda, a small village in the Kusumi block of Mayurbhanj district in Odisha, would have seen no crops during spring. But now the fields of Sanahatnabeda are covered with green vegetables. This is because farmers like Srimati Hembram had sought help from CInI.

Caption to come

This led them to take up cultivation of crops like bitter gourd and chilli.

Srimati had been a monocrop farmer, solely cultivating paddy. As a water-intensive crop, paddy farming posed challenges due to her limited access to water around her homestead. With insufficient earnings, her son had to take up work as a migrant labourer to help support the family income.

Things changed in January 2022, when Srimati got access to a solar portable pump and started cultivating vegetables in spring and summer – something she had never done earlier. She planted 800 saplings of bitter gourd and transplanted 600 saplings of chilli in the first batch, followed by 400 saplings of tomato in July 2022. She earned more than ₹1,00,000 from these crops collectively. Srimati is about to construct a ring well and has also planted 1,000 saplings of bitter gourd.

The key enabler in Srimati's case was the sub-HP solar pump, designed for surface water pumping to cater to small farmers with landholding of less than 1 acre. Being small in size, these pumps are easy to carry and operate. Such portable solar water pumps have proved to be a boon for farmers like Srimati. Her story is being repeated by 750+ farmers from across Jharkhand and Odisha.

"The solar pump is like a blessing for us. We don't have to worry about rain or diesel and can now grow bitter gourd and chilli that fetch good prices in the market. It has made us more resilient as farmers," says Srimati.

Other DRE technologies at work

Solar insect trap in Dahod

A solar insect trap is a compact agricultural tool typically featuring 5-10 W solar panels and sensor-based technology. This activates an attached UV bulb at a pre-set time, attracting insects that gather in the fields after dusk. The light attracts insects, which get caught in the liquid underneath the bulb.

The traps are proving to be a boon for the farmers of Manli village in Dahod, Gujarat. Earlier, they used to spend around ₹1,475 on insecticides and pesticides. Now, the cost has come down to ₹100 each season. Farmers in Dahod save over ₹4,000+ annually by using solar traps in their fields, though costs may vary by area.

Around 107 farmers in Dahod currently use solar insect traps in their fields where they grow either vegetables or some other crop. There are others engaged in floriculture in the Limkheda block who are using it too. Farmers pay around 10% of the cost of the traps.

Solar insect trap

Solar-powered spice processing unit

The spice processing unit of Limkheda block in Dahod district of Gujarat was started in 2020 by Limkheda Mahila Bagayat Cooperative Society Ltd. under Limkheda Women's Horticulture Federation Ltd.
The unit is powered by a 15 kW solar power plant that runs a turmeric processing machine, a coriander processing machine, a flour mill and a packaging machine. Together, these machines have managed to turn around the lives of the 2,150 women members of the cooperative, with the revenue generated by the processing unit going up from ₹1,55,000 in 2020 to ₹4,30,000 in 2022.The cooperative serves 5 villages and 250-300 regular customers.

Decentralised solar-powered storage facility

The absence of decentralised cold storage solutions has been a significant challenge for farmers in India, often preventing them from selling their produce in line with market demand and hindering their ability to negotiate prices effectively. The solar micro cold storage is a small-scale solar-powered cold room that enables both pre-cooling and storage of perishable farm produce that preserves their freshness and extends their life.

For the unit installed by CInI in the Khunti district of Jharkhand, farmers pay ₹2/kg for storing vegetables and fruits. The unit, with a capacity of 500-750 kg, is run by the FPC Murhu Nari Shakti Utpadak Limited. It gives farmers the choice to sell their produce at the market rate.

Learnings and the way forward

- DRE technologies should be demand-led and appropriately placed in the value chain to address the critical pain points of the community
- Large-scale deployment of DRE technologies results in market-driven supply chains and the establishment of units for repair and maintenance; in remote regions, deployment must be community-led, with grassroots institutions playing a key role in ensuring the sustainability of these assets
- The scale of DRE technologies influences clustering, post-sale services, technology standardisation, and community adoption; this approach will drive programme-induced scale and further enable market-driven scaling, facilitating the integration of key stakeholders, including financial service providers, channel partners, technology service providers, and the community
- The additional energy generated from the system can help in running other productive loads that are essential for the local community
- A collaborative effort between the government, society, and the market is needed, with parallel work streams focusing on the supply of technology (from foundational technology providers to technology service providers), creating demand and facilitating deployment at the community level

Future strategy for engaging key stakeholders

Strategy stakeholder	Alignment of incentives	Behaviour change	Product design
Financial service providers	Financial service providers	Education on climate smart agriculture technology support for on-ground deployment	Innovate on design of financial products
Technology players	Scale up with access to affordable end-user financing options	Reduce dependency on grant capital	Partner with financial service providers in loan design and loan discovery
Channel partners	New business opportunities in the form of early entrants into the loan market	Optimise process for promoting good credit behaviour	Incentives built into the design of loan products to enable business model
Farmer borrower	Access to technology improved	Reduce dependence on subsidised technology	Healthy mix of down payment and loan amount to enable skin in the game

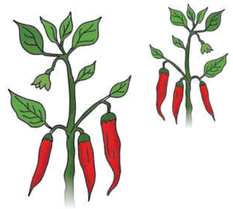
Linking smallholders to the market

Empowering farmers to move away from subsistence farming and establish farming as a business proposition

07

Becoming an actor in the value chain is a process contingent on multiple factors like market exposure, access to market information, quality inputs and advanced agricultural practices.

Not all of these have been accessible to tribal smallholders, which has resulted in limited engagement of such communities with commercial agriculture. Among all these pain points, access to markets for perishable produce like vegetables is probably the greatest concern for smallholders, as it remains beyond their control even during this present era of digital connect.



Smallholder farmers powering global crop production and food supply

Smallholders cultivating farms under 2 hectares play a substantial role in global crop production, accounting for 28–31% of all crops and supplying 30–34% of the world's food while using only 24% of agricultural land[1].

Inefficiencies in the marketing chain

Despite their significant contribution to the overall economy, given their paltry individual production volumes, smallholders struggle to attract market players. This is particularly true in the remote hinterlands of central India.

Market neglect in unreached pockets

Agricultural corporations tend to focus their business efforts on production clusters, while overlooking the potential of these unreached pockets. Similarly, traders and wholesale markets are conspicuously absent from these areas, further isolating smallholders from lucrative market opportunities.

Distance from markets

Wholesale markets are often situated far from smallholders, complicating logistics and necessitating significant time and effort to be spent on marketing endeavours. This burden is particularly challenging for smallholders, who lack experience or sufficient human resources to navigate the process effectively. Furthermore, high transportation costs often negate their already slim profit margins.

Information gap and pricing disadvantages

Smallholders face significant information gap regarding prevailing market rates for cash crops, which fluctuate daily. This lack of price transparency leads to lower realisation rates for their produce. With limited production volumes and insufficient price information, smallholders often find themselves disadvantaged when negotiating with output traders.

"The market lies 25 kilometres away," says Jemamani Nayak, a dedicated vegetable farmer from Damsahi in Jhumpura, Odisha. "Intermediaries frequent our village, offering paltry sums for our hard-earned produce. Sadly, we are left with little choice but to accept, for the journey to the market alone is financially daunting."

[1] https://tabledebates.org/research-library/how-much-food-do-smallholders-produce

Source: Source: 'How much food do smallholders produce?', Table, July 2018

Existing marketing options for small farmers

Direct retailing

Smallholders often rely on weekly markets (haats) within a 3-5 km radius to sell produce directly to consumers. Accessing three to four such markets on different days of the week allows individuals to sell their produce. At these markets, farmers primarily sell directly to consumers at the village level. Traders also participate in these weekly haats to purchase produce. Typically, the unit rate for perishable goods remains high at these markets. However, increased engagement by farmers in commercial production often results in oversupply, leading to price crashes. Unfortunately, households with limited human resources find it challenging to access these local markets.

Traders at the village

Smallholders may aggregate produce collectively to attract traders to their village. This marketing option saves time and encourages families who do not even have the human resources for retailing in haats.

Progressive farmers generally choose this route for marketing their produce when it is grown at scale. Some disadvantages include:

- Farmers suffer from reduced income due to the absence of price information, leading traders visiting villages to offer lower rates for their produce
- Traders encounter difficulty in obtaining a full vehicle load from a single production patch
- Traders tend to avoid distant locations if there is local supply available near wholesale markets or towns, posing a challenge for smallholder growers trying to sell their produce during this time

Wholesale mandi

Some smallholders take their produce to distant wholesale mandis, with commission agents facilitating the process for an 8-10% commission, along with unloading costs. But the rate farmers receive for their produce at these markets fluctuates based on the arrival of similar produce on a specific day.

Again, to reach the mandi, farmers must set out the night before, as these markets typically open in the early hours (4 am) of the day, allowing them to return to their village by afternoon. Thus, transportation costs, hassles during transportation and the uncertainty of rates discourage smallholders from utilising this marketing option.

Organised retail

In areas with modern retail outlets, smallholders can sell their produce for better returns and receive payment within a week. Yet, limited purchase capacity of these modern retails may restrict the collection of all produce from the area. Retail chains often prioritise sourcing produce near townships or major cities, making it challenging for smallholder farmers in distant areas to access these markets.

Marketing through eNAM (Electronic National Agriculture Market) platform

Smallholders can aggregate their produce and sell it through eNAM, an online platform developed by the Government of India, to unify agricultural markets and improve price transparency. This platform boosts their visibility in the marketplace and helps them stay informed about prevailing market prices, thus enabling better decision-making during auctions.

CNUFPCL's journey with eNAM

Churchu Nari Urja Farmer Producer Company Limited (CNUFPCL) is a farmer collective in Jharkhand comprising 100% women shareholders and an all-women Board of Directors. Operating primarily in the Churchu and Dadi blocks of Hazaribagh district, CNUFPCL serves more than 7,000 tribal families.

It focuses on agriculture and allied activities, offering services like quality inputs, market linkages, crop advisory, rural entrepreneurship support, Custom Hiring Centres (CHCs) and healthcare initiatives. Notable products include soilless saplings, T&D piglets, and LAC handicraft and bangles. The company empowered 43 rural entrepreneurs who provide doorstep services to members.

A transformative partnership

CNUFPCL's journey with eNAM began in August 2019, after it learnt about the platform through Bazar Samiti, Hazaribagh. With the support of the APMC Bazar Samiti, Hazaribagh, the FPC successfully completed its registration process, forging an institutional relationship with eNAM.

The partnership with eNAM proved instrumental, providing CNUFPCL with a robust output marketing platform. This increased the FPC's confidence, enabling it to negotiate with shareholders and undertake large-scale production initiatives. Since its inception, major commodities marketed through eNAM by CNUFPCL include paddy, watermelon and tomato.

Strides made

During the unprecedented challenges posed by the lockdown in 2020, eNAM emerged as a lifeline for farmers and the FPC alike. With traditional mandis and local haats closed, CNUFPCL managed to sell 155 MT of watermelon through eNAM in April-May 2020, providing crucial financial assistance and market linkage to 800 farmers.

Over the years, CNUFPCL has made significant strides in output marketing through eNAM, totalling 1,366 MT. This includes approximately 600 MT of paddy, 450 MT of watermelon and 310 MT of tomato. In monetary terms, this amounts to ₹2.11 crore in output marketing over the last three years.

Process backed by transparency

- One of the key strengths of eNAM lies in its transparency. The online marketing and auction processes are conducted openly, allowing producers to track the bidding and sale prices.
- Proper documentation is provided to farmers/FPCs post-purchase.
- The digital payment system of eNAM ensures seamless transactions, with payments directly deposited into the accounts of parties/vendors within 3-7 days, free from deductions or commissions.
- CNUFPCL, in turn, ensures timely payment to farmers within three days of marketing.

Key achievements

The success of CNUFPCL's partnership with eNAM has garnered recognition and accolades.

- 'Best FPO in Hazaribagh District for Highest Output Marketing (Paddy and Tomato) through eNAM' by Bazaar Samiti, Hazaribagh (APMC) consecutively from FY 2020-21 to FY 2023-24
- 'Best FPO for doing highest output marketing using digital platforms' by Jharkhand State Livelihood Promotion Society (JSLPS) in 2022
- Invited to SFAC National Conference in September 2023 for outstanding performance through eNAM, and recognised amongst the top 3 FPCs nationwide

CNUFPCL's partners

Credit limit - JRG Bank: ₹30 lakh

Annual turnover projection (in ₹ lakh)

FY 2023-24
261

FY 2022-23
239

FY 2021-22
210

FY 2020-21
184

FY 2019-20
103

FY 2018-19
0.35

Vision for the future

Looking ahead, CNUFPCL has set ambitious targets for FY 2024-25, aiming to market 1,000 MT of produce through eNAM, including 600 MT of paddy, 200 MT of watermelon and 200 MT of tomato.

Comparing market dynamics in advanced agriculture clusters

In advanced agriculture clusters, medium and large farmers leverage established market routes and logistical efficiencies to gain a competitive edge. Here, we examine how their scale of operation translates into enhanced market access and improved profitability compared to smaller farmers.

Route 1

One common route is through adatia, or commission agents, who typically charge 8% commission on sales. Farmers or farmer groups send delivery challans along with their produce to these agents, bearing all transportation and packing costs until the produce reaches them. Prompt payments are usually received the next day by 10 am.

Route 2

In more advanced areas, the route involves 'loaders' or traders, who purchase produce directly from the farm gate and pay instantly. These loaders often supply directly to retailers in their existing network created over the years, bypassing the commission agents. Loaders prefer mixed items for supplying to retailers but may discard inferior quality items. However, during periods of high vegetable supply, these loaders may not pick up produce.

While there may not be differences in selling options, the advantages enjoyed by medium and large farmers facilitate easier market access for them.

Market presence

Their consistent presence in the market with marketable produce builds trust with chosen commission agents, allowing for seamless transactions with minimal opportunity cost during produce transportation.

Geographical advantage

Being located closer to and having access to more wholesale mandis enhances their market reach, compared to smallholder farmers in newly-developed vegetable clusters.

Sales strategy

Engaging in frequent market sales (weekly thrice to daily) enables medium and large farmers to secure better prices compared to smallholders who sell less frequently and for shorter durations.

Cost-efficient transportation

Transportation costs for medium and large farmers are typically lower (50 paise–₹1.5/kg), with options for pooling produce, leveraging higher volumes from larger farming areas and benefiting from more efficient transport logistics compared to smallholders.

Logistical efficiency

Advanced clusters often have well-developed transportation services, further facilitating logistical operations compared to undeveloped clusters with smallholders.

Volume-based earnings

The medium and large farmers, with higher production and productivity, derive earnings from volume rather than per kg rates, unlike smallholders who rely heavily on higher per unit rates with lower production volumes. This disparity can often demotivate first-generation smallholders from continuing crop care.

100 kg

Per day production from smallholder farmers compared to 2,000 kg from medium farmers per day

Traders in the market

Deal directly with farmers

Farmers (at village)	Trader 1	Wholesale markets
Farmers (at village)	Trader 2	Retail outlets
Farmers (at village)	Trader 3	Consumer
Farmers (at weekly market)	Trader 4	Consumer

PRICE

Lower than wholesale rate	At least 1.5 tonne, can go up to truckloads
Between wholesale and retall rates	0.5 to 1 tonne
Less than retail price, higher than previous case	Less than 100 kg per vegetable, can take up to 3-4 different vegetables

QUALITY

No direct dealing with farmers

Wholesale markets	Trader 5	Wholesale markets
Wholesale markets	Trader 6	Retail outlets
Wholesale markets	Trader 7	Consumer

Risks involved in their role

Risk	Applicable to trader no.
Unsold inventory	3,4,7
Price fluctuation	1, 2, 3, 4, 5, 6, 7
Low demand	1, 2, 3, 4, 5, 6, 7
Lack of supply	1,2,3,4

Economics of a trader

Chagala, a trader is currently buying produce from Harichandanpur and selling to retail outlets in Barabati. His economics have been calculated below:

Collects from farmers at village

Price is lower than wholesale rate

Sells directly to retail outlets based on orders received one day in advance

Price is a little above wholesale rate

Volumes traded per day = 7-8 quintal *Transportation = ₹1,600* *Margin = 20%*

Market share dynamics: Traders, commission agents, and retail outlets

Traders

Command a share ranging from 5-40% of the consumer price

Contingent upon factors like trader type, transaction volumes, and selling channels

Commission agents

Receive a fixed share ranging from 8-10%

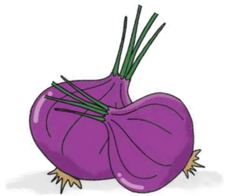
Retail outlets

Secure shares ranging from 15-35%, with lower percentages typically seen when traders supply to them and higher ones when they procure produce directly from wholesale markets

Farmer share varies from 40-60% in the consumer price.
Lower the farmer share when produce is routed through wholesale mandi.

The big shift for smallholders

In 2015-16, the inception of the Lakhpati Kisan programme marked a pivotal moment for CInI's focus on cash crops, particularly vegetables.



Initially aimed at enhancing production practices for first-generation commercial vegetable farmers, the organisation collaborated with agricultural research institutions such as Kerala Agriculture University, Centre of Excellence for Vegetables Indo-Israel, Gharaunda and expert farmers from Chhattisgarh to enhance production techniques and inspire smallholders.

As improvements in production techniques and access to irrigation led to higher yields and returns, more farmers embraced commercial cropping. However, challenges remained in accessing local market avenues for selling produce.

Exploring wholesale markets

To address the challenge of oversupply in local weekly markets, CInI ventured into local and distant wholesale mandis across operational states. These explorations provided valuable insights into market operations and facilitated connections with wholesale traders. Some traders began procuring produce directly from project areas, providing upfront payments to the community.

Pain points encountered by CInI with respect to selling of produce in rural areas

It became evident to the CInI team that small farmers encounter various obstacles when selling their produce to traders in rural areas. These challenges not only affected the farmers, but also impacted the traders involved in the supply chain. Here is a breakdown of the issues faced by both parties:

Problems faced by farmers

- Lower rates were offered by traders
- Procurement was delayed during the season
- Traders often failed to honor commitments regarding quantity or quality and lost interest during periods of high supply
- Traders had limited capacity to procure larger volumes

Problems faced by traders

- Quantity commitments were not met by farmer groups or individual farmers
- Produce quality was poor due to the lack of grading and sorting by farmers
- Coordination with multiple small and scattered production hamlets was difficult

The CInI team realised that by understanding and addressing these challenges, stakeholders in the rural produce trading ecosystem could work towards more efficient and mutually beneficial arrangements.

There was also need to reduce the dependence of intermediaries on CInI for coordinating with traders and connecting them with farmers.

Transition to community-led platforms

Recognising the limitations and dependencies of the existing model, CInI embarked on promoting Farmer Producer Companies (FPCs) and Farmer Cooperatives from 2017 onwards. This shift aimed to create a community-led business platform, empowering farmers to navigate marketing challenges independently.

The perceived gaps in delivery of services and demand pull from the community in the agriculture value chain led to promotion of these FPOs. Such demand-led institutions over the years achieved significant business turnovers in agricultural produce across all states.

Average annual turnover per FPC across states

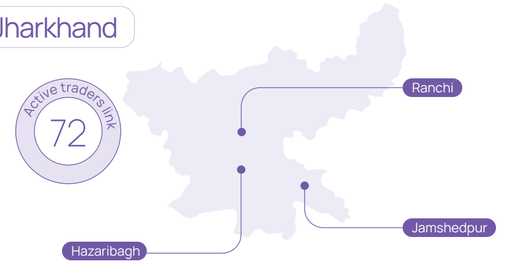
Key crops and turnover success across states

Jharkhand	Maharashtra	Odisha	Gujarat
MT			**(2023-24)**
1,268	3,017	206	241
Turnover (₹)			
1,44,34,550	51,80,000	69,80,271	56,51,037
MT			**(2022-23)**
1,535	1,722	254	200
Turnover (₹)			
95,82,873	79,30,000	59,68,213	42,26,937
Winner Crop			
Watermelon and tomato	Chilli	Bitter gourd, chilli and watermelon	Tomato and watermelon

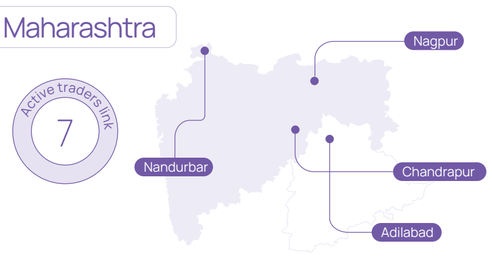
Market reach for CInI clusters

Mandis reached

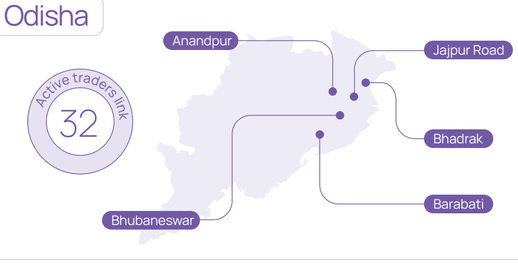
Jharkhand



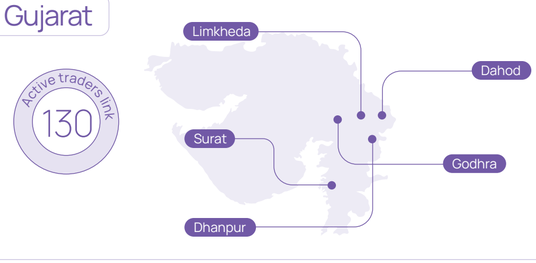
Maharashtra

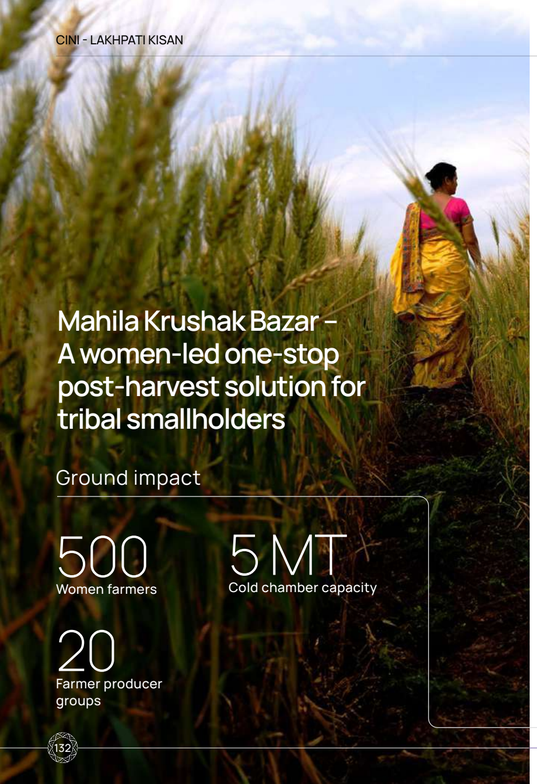


Odisha



Gujarat





Mahila Krushak Bazar – A women-led one-stop post-harvest solution for tribal smallholders

Ground impact

500
Women farmers

5 MT
Cold chamber capacity

20
Farmer producer groups

Despite possessing natural resources, smallholder tribal farmers struggled with subsistence farming. The absence of value chain actors in the programme area led to a lack of commercial orientation among the farmers.

Accessing markets for both input and output was a significant challenge, with post-harvest losses proving to be substantial. Although women farmers had tremendous potential, they were mostly viewed as farm labourers and not farmers.

In response to these challenges, the Mahila Krushak Bazar project at Keonjhar, Odisha, emerged as a solution. It aimed to establish a comprehensive post-harvest solution for smallholder women tribal farmers in the mining-affected block at Harichandanpur in Odisha. Managed by professional staff members with strong support from women FPC leaders, these centres were designed to cater to approximately 3,000 women farmers, promoting their transformation into financially independent 'Lakhpati Kisans.'

The approach

- Convergence of funds/schemes from DMF, Dept. of Horticulture, OMBADC and Mission Shakti
- Field-level facilitation by CInI

Key features

- Establishment of farmers' collectives, with a focus on women-led FPCs and Producer Groups (PGs)
- Service provision was tailored to address existing gaps in the vegetable crop value chain
- The project aimed to promote high-tech nursery entrepreneurship and facilitated knowledge transfer through local expert farmers
- Leveraging digital platforms for information sharing, particularly regarding market rates, is integral to the project's success
- The creation of post-harvest assets at Mahila Krushak Bazar centres and input retail points enhances the efficiency and accessibility of agricultural resources for the participating farmers

Ground impact

Collective marketing transforms livelihoods of women vegetable farmers

Meena and the women farmers of Goriya, a village in Dahod, Gujarat, faced a gruelling routine. Their day began before dawn, with long treks to the local collection centre to sell their fresh produce—okra, cauliflower, radishes and more.

But Meena's life transformed when she became a member of a supply chain initiative linking farmers to markets. She is one among the many women from the eight project villages to begin cultivating and selling vegetables in nearby villages and towns. While some of these villages are close to main highways, others are not, making it difficult for farmers in these remote areas to reach markets on time. The added cost of transportation further burdened them.

In response to this, the Federation established a new collection centre in Goriya, creating a centralised hub where women from neighbouring villages could gather their vegetables. A shared vehicle then transported their produce to Dahod, vastly improving efficiency and reducing individual transportation costs.

Revenues from the sale are distributed back to each woman based on the sale value. The Federation retains 5% of the revenue to cover collective service expenses.

A success story

This collective approach has had remarkable results. Within the first 100 days, the marketing group sold 66,600 kg of vegetables, generating around ₹10 lakh. The average sale price was ₹15/kg, with transportation costs reduced to ₹1/kg. For many, this system prevents crop wastage and ensures fair pricing, making a significant difference for those previously constrained by high transportation costs or low market prices.

The CInI programme team, in collaboration with the Horticulture Federation, continues to support women in vegetable cultivation. They offer hands-on assistance to help these groups grow and succeed. The Federation staff meticulously maintain records of vegetables collected, transported and sold on a daily basis, along with sales realisation and transport expenses, maintaining transparency and trust within the programme.

As the initiative expands, plans are underway to access distant markets where higher prices can be fetched.

Currently, 273 farmers from surrounding villages benefit from this collective marketing system. The Federation is working on establishing more centres to extend these benefits even further.

"Previously, my family had no choice but to sell our vegetables at lower prices to intermediaries in the local market," Meena reflects. "Now, even small farmers like me can sell our produce at good, competitive prices."

Ground impact

How collective enterprise bridged supply chain gaps amidst lockdown turmoil

When the national COVID-19 lockdown was announced on March 24, 2020, farmers were amid harvesting the Rabi crop. The lockdown severely impacted the supply chain, causing a complete breakdown in connections between farmers and consumers.

Responding swiftly to the crisis, CInI made efforts to streamline processes and systems that were typically taken for granted in normal times. It became imperative to intervene, particularly on behalf of the first-generation vegetable growers. Their experience of having crops rot in the field would have undermined the considerable efforts invested by both the farmers and the CInI team in encouraging the adoption of high-value vegetable farming.

Mobilisation for marketing

Against this backdrop of challenges, teams in Gujarat, Maharashtra, Jharkhand and Odisha were mobilised to work closely with local communities. The focus was to ensure that agricultural activities continued despite the disruptions.

Amid the ruptured supply chain, CInI took proactive steps to establish direct links between farmers and wholesale traders. Special permits were facilitated through the district administration, enabling traders to either reach the farm gates or for the produce to be transported to cities. In many cases, farmers were able to sell their produce directly in larger markets such as Ahmedabad (as demonstrated by the Limkheda Federation in Dahod) and Bhubaneswar (by farmers from Harichandanpur, Odisha).

Technology to the rescue

To facilitate these transactions, mobile technology such as the 'I am Kisan' app and 'CropIn' were effectively utilised to connect multiple traders with farmers and provide farm advisory services. Cold storage facilities played a crucial role in Khunti, Hazaribagh and Dahod, enabling the storage of produce and subsequent sale to traders at fair prices. For instance, an average of 10 MT of watermelon was procured at the farmgate at ₹6/kg.

Powering through partnerships

In collaboration with the Odisha Livelihood Mission and the Keonjhar District Administration, CInI launched the 'Vegetable on Wheel' initiative, establishing direct links between producers and consumers. Additionally, discussions were initiated with the Mining Department to explore the possibility of selling vegetables directly to mess facilities.

To counter potential black marketing by traders, efforts to indent and aggregate inputs were initiated across various states. Furthermore, crop planning for the upcoming Kharif season was undertaken to ensure a steady income for farmers. Partnerships were formed with seed companies such as Bayer and Syngenta for bulk procurement of seeds.

These proactive measures safeguarded the interests of both farmers and consumers amidst ongoing COVID challenges in the agricultural sector with immense learnings to take forward.

Testing new export market access with Chandrapur chilli pilot

In 2018, CInI and the district administration of Chandrapur (Maharashtra) entered into a partnership to scale the Lakhpati Kisan model in the district. Improved farm practices and precision agriculture technology were key components for increasing income.

Adoption of drip irrigation and mulching techniques proved instrumental in enhancing chilli production, enabling farmers to earn between ₹1.5-2.5 lakh per acre.

Inspired by this success, 27 farmers ventured into red chilli production for export, guided by the CInI team with Urvara Krsi Pvt. Ltd. (UKPL) as a marketing partner. Through collaboration and diligent adherence to recommended practices, these farmers achieved exceptional returns, earning between ₹4.5-6 lakh per acre from red chilli exports.

The adoption of new technologies and improved farming practices boosted chilli production and increased the quality and quantity of produce available for sale or export.

By embracing collective marketing and export initiatives, farmers unlocked new avenues for income generation, paving the way for sustainable livelihoods and economic prosperity in rural communities.

340+
Farmers secured markets for their produce

₹1,400-3,350
per quintal earned through green chilli local sales

₹25,000
Per quintal earned through red chilli exports

4.5 acres
Maximum area under chilli cultivation by individual farmer

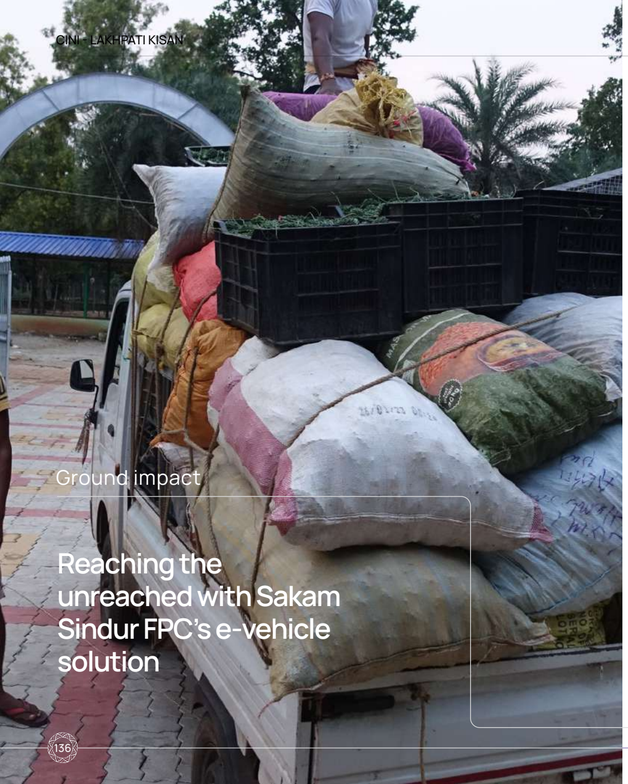
The success of the collective marketing initiative for green chilli paved the way for expansion of red chilli production and exports.

- Farmers sold 85% of green chilli and 90% of red chilli by volumes through collective marketing, eliminating vendor commissions and saving time and effort in marketing
- Doorstep pickup by vendors reduced transportation and labour costs
- Empowered farmers to negotiate prices based on quality and volume

Looking ahead, the addition of 200 new farmers for green chilli collective marketing and 43 for red chilli exports signals new market access opportunities with enhanced returns to farmers.

Current status and plans

- Nearly 3,500 farmers are engaged in cultivating chilli in 2,200 acres
- 300 farmers are engaged in collective marketing of green chilli, and 27 are currently involved in red chilli export
- The aim is to reach 1,500 families in collective marketing and 500 families in red chilli export marketing in the next couple of years



Ground impact

Reaching the unreached with Sakam Sindur FPC's e-vehicle solution

The Sakam Sindur Farmer Producer Company (FPC) in Harichandanpur, Odisha, is a notable source of innovation in a challenging tribal region.

Here, smallholder farmers grapple with the dual burden of limited access to markets and inadequate support systems. The FPC's mission goes beyond typical service delivery; it seeks to revolutionise how agricultural inputs and outputs are managed in these isolated communities, striving to bridge critical gaps and enhance the livelihoods of those who have long been underserved.

Service delivery challenges

Catering to over 1,200 smallholder farmers posed significant hurdles, and in its formative years, the FPC encountered critical issues:

Market linkages
Collective efforts at the local level generated surplus produce, but remote farmers struggled to access markets. Their perishable goods, particularly vegetables, lacked the necessary volume for direct trader connections, leading to wastage and diminished returns.

Input access
Transitioning from subsistence to commercial farming proved difficult due to an inadequate service delivery system. While the Mahila Krushak Bazar in Bhagamunda, supported by the District Mineral Foundation (DMF), Keonjhar, offered some relief, transportation challenges frequently delayed access to essential farm inputs. Often, this discouraged farmers from viewing agriculture as a viable business.

In both input and output markets, reaching a critical volume is essential for effective service delivery. Smallholders frequently fall short of this threshold, hindering their progress towards commercial farming.

A game-changing solution

To address these challenges, the Sakam Sindur FPC sought support from the district administration. The DMF responded by providing an electric vehicle (EV) in September 2023. This development has been pivotal in transforming service delivery while keeping costs manageable.

Unlocking value for farmers

Since the introduction of EVs, the FPC has realised multiple benefits:

Doorstep deliveries
Inputs such as seeds and fertilisers are now delivered directly to farmers, eliminating opportunity costs and ensuring timely access to quality resources.

Nursery support
The delivery of inputs like cocopeat and perlite to nursery entrepreneurs has become more efficient, with reduced transportation costs benefiting both parties.

Vegetable pick-up
Small-scale vegetable producers enjoy hassle-free marketing as the FPC now collects produce directly from their doorstep, irrespective of volume.

Land preparation
The cost-effective transportation of tractor attachments for land preparation has reduced expenses for farmers.

Watermelon sales
Even smaller-sized watermelons, which often go unsold, are now graded and sold at local markets, fetching better rates.

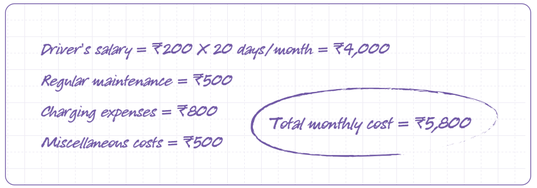
Paddy procurement
The FPC's procurement of paddy from remote hamlets ensures farmers receive better prices.

70 km
Covered daily by the FPC's EVs

1,200
Farmers catered to

6-8 days
Opportunity cost saved per farmer

Balancing value and costs
While the EV adds immense value, the FPC remains mindful of the following operational costs:



Looking ahead

- The FPC plans to further extend its reach by creating marketing linkages with retailers in nearby urban areas to open new markets for the farmers' produce
- Transport support to catchment farmers for paddy marketing to LAMPS (Large Agricultural Marketing Produce Societies) will be offered on a chargeable basis, further enhancing the FPC's service delivery

Through these ongoing efforts, the Sakam Sindur FPC continues to advance the livelihoods of smallholder farmers, setting a precedent for more efficient and equitable agricultural practices

Learnings and the way forward

Upon analysing the marketing options accessible to smallholders and considering the roles, challenges, and expectations of all stakeholders in the post-harvest process, collective marketing emerged as a viable strategy. It improves access to markets and enhances the stability of farm incomes for smallholders, particularly in the handling of perishable agricultural produce.

Field experiences revealed several advantages to this approach

Ease in facilitating trader relationships

Managing traders through apex community institutions has proven to be a game-changer, leading to a symbiotic relationship between producers and traders. Traders usually prefer streamlined processes, wherein they can opt to procure produce from a single, reliable entity rather than individual farmers.

Enhanced market information access for collectives

Collectives offer a conduit to vital mandi information, granting easier access to prevailing rates. This has proven to be a boon for the community of smallholders, as they are now aware of how to take advantage of the opportunities it offers.

Strengthened bargaining power

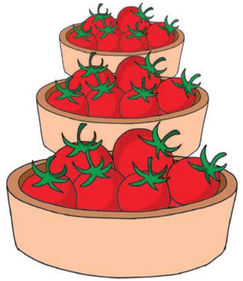
Through collective action, smallholders have been seen to be wielding stronger bargaining chips against traders. This has led to a more equitable share of the consumer price pie.

Streamlined services

These collectives have been able to streamline marketing and transportation services, particularly in newly developed production clusters. This efficiency has proved pivotal, especially for farmers with limited time to allocate to marketing endeavours.

Market-centric approach

Adopting a market-led approach from project inception facilitates better crop planning and heightened productivity. In CInI's experience, this has underscored the importance of aligning agricultural initiatives with market dynamics from the outset.



Challenges and solutions

CInI's experiences and research demonstrate the favourable impact of FPOs across the project area.

However, as smallholders embark on collective marketing endeavours to strengthen their market presence and optimise profitability, a few obstacles have also been experienced:

Inability to shift to digital payments

Despite the digital revolution, farmers still prefer cash payments. However, transitioning to bank transfers offers benefits such as record-keeping and transparency. Delays in payment processing, worsened by poor bank networks and distance from the FPC's centre, pose significant hurdles.

Transparency in transactions

Ensuring transparency in transaction recording and sharing proves challenging at the collective level, particularly with manual processes. CInI is working towards a customised digital platform tailored to accommodate low smartphone penetration that will be instrumental in building trust between farmers and their collective.

Need to save the perishable produce with efficient storage solutions

Access to proper storage facilities capable of preserving perishable produce for extended periods is critical for collective marketing initiatives. Traditional cold storage facilities, while effective, often result in cold shock upon removal, dissuading formal traders and retailers from procuring the produce.

Absence of organised and formal retailers

The absence of organised and formal retailers in newly developed production clusters presented a challenge. By integrating modern retailers into smallholders' collectives, it seemed possible to elevate the value of their produce. However, this engagement remains largely urban-centric.

Managing high unit rate expectations

Smallholders, who produce limited quantities, often expect high rates per unit. To tackle this, CInI has focused on helping them stay in the market consistently through collectives, proper crop planning and connecting them with experienced farmers to increase productivity.

Yet, it is crucial to keep working on changing their expectations over time.

Poor market connectivity and risk mitigation

Inadequate market connectivity with agri-industry players, weak supply chains and the absence of risk mitigation mechanisms further impede the progress of FPOs. CInI's focus has been on establishing robust connections with market stakeholders, improving supply chain efficiency and implementing risk management strategies for enhancing the effectiveness of collective marketing efforts.

By addressing these challenges and leveraging the identified opportunities, CInI is confident that smallholders can navigate the complexities and unlock their full potential in the agricultural marketplace.

Cultivating tomorrow: A call to bring youth back to agriculture

08

Harvesting dreams

Small farm, big profit: Tribal youth leverages drip farming to become lakhpati

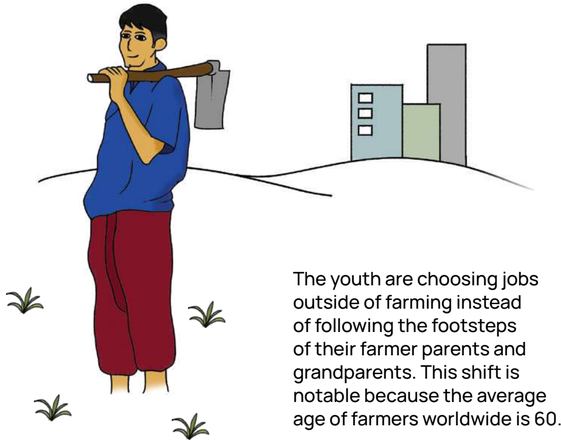
> Why abandon agriculture when it can offer prosperity, dignity, and fulfilment

asks Shyam Chatar, a successful young farmer from Odisha to the youth of his village for whom city life holds tremendous promise.

Two years ago, Shyam, an educated tribal youth from Odisha's Tarajhar village, was looking for employment. His family of six, comprising his mother, two sisters, and two brothers, used to grow paddy on a 2-acre land for subsistence. Shyam's elder sister did the back-breaking work of loading and unloading railway wagons to pay for their upkeep. That is when they learned about fellow villager Damodar Hansda's success story. Damodar had adopted drip irrigation to earn handsome returns from agriculture. He encouraged people to try the technology that demanded less labour and ensured higher profits. Inspired by Damodar's accomplishment, Shyam's elder sister convinced him to start drip farming.

The family pooled ₹40,000, even taking a loan from the local self-help group. As part of the Lakhpati Kisan programme, CInI pitched in with a grant to help buy a solar pump and drip equipment. The pump was installed at the village pond and could be used by Shyam and 17 other smallholder farmers. His first crop, watermelon, could fetch only ₹15,000 because of the COVID-induced lockdown. However, the next produce of bitter gourd earned him ₹1,21,000 in just five months. This was a confidence booster for the family, which also leveraged CInI's network of stakeholders along the value chain for crop advisory and quality inputs, plant protection practices, and marketing advice. Shyam even paid ₹120 to Delhi-based start-up, IamKISAN, to receive regular updates on his mobile about the market value of his produce. **Having won the Young Drip Farmer award in 2021, the 21-year-old Shyam has become a champion of the micro irrigation system,** urging local youth to follow in his footsteps. He now has enough money to spend on his younger brother's education, who stays in a hostel. Aware of the growing demand for quality inputs, he plans to set up a shop in the village since the nearest business is several kilometres away and sells sub-standard materials. The younger generation is no longer interested in agriculture because of the difficult work conditions, poor returns and high risks associated with farming. But Shyam's success has the potential to dissuade them from migrating to cities for livelihood opportunities. With just 2-3 hours of labour every day, drip irrigation can fetch higher returns than the wages of migrant workers.

Aspirations of the youth



The youth are choosing jobs outside of farming instead of following the footsteps of their farmer parents and grandparents. This shift is notable because the average age of farmers worldwide is 60.

The Indian economy relies heavily on agriculture, contributing to food security, rural development, and employment. However, there is a considerable challenge in drawing and retaining young talent in this sector. As the youth population grows, finding innovative ways to engage the younger generation in agricultural activities becomes imperative.

600 million
Individuals in India under the age of 25

60
Average age of farmers worldwide

India boasts one of the largest youth populations globally, with nearly 600 million individuals under the age of 25. Involving this demographic in agriculture is paramount for tackling global food security and securing a sustainable food source for the nation. The younger generation brings new viewpoints, creative ideas, and a willingness to embrace modern technologies, all of which can play a pivotal role in advancing and modernising the agricultural sector. Motivating young people to pursue careers in agriculture can serve to bridge generational gaps and ensure the sector's enduring viability.

Finding purpose in the fields

In the heart of Odisha's Keonjhar district lies the tranquil village of Rasol. Here, amidst the lush greenery and rolling hills, resides Doman Baske—a 28-year-old tribal youth whose life journey embodies resilience, determination, and a return to the roots.

The struggle and migration

The challenge

Doman's early years were marked by poverty and limited access to education. As he observed fellow youth leaving their villages to seek better opportunities in distant states, he too felt the pull of migration. He ventured southward to Tamil Nadu, where he found employment in a spinning mill. However, the monotonous work left him yearning for something more substantial—a purpose that would sustain him beyond mere survival. He decided to return to Rasol, leaving behind the spinning mill for the distant lands that had once again beckoned him.

The turning point

Back in his village, Doman's epiphany came when he earned ₹15,000 in a single month by cultivating leafy vegetables. This modest income sparked a fire within him.

Knowledge

He realised that the soil held immense potential, waiting to be harnessed. With newfound determination, Doman embarked on a journey of exploration. Farming became his canvas and he painted it with dedication.
With support from CInI, he adopted drip irrigation—a technology that transformed his approach to farming. He could now provide optimum water to his plants and tend to his crops with precision. The relentless sun and back-breaking toil were replaced by efficient water management and healthier yields.

Today, Doman cultivates 2 acres of land, and the harvests speak of his commitment. His income has soared to over ₹4.5 lakh annually. But it is not just about the financial gains. With a smile etched on his face, he reminisces about the days when he toiled far from home, working under others. Now, he is the master of his own destiny—a farmer who shapes the land, tends to the earth, and reaps the rewards.

A beacon of inspiration

Doman's story resonates beyond the boundaries of Rasol. He stands as an inspiration for other tribal youth, urging them to reconsider their choices. While many migrate in pursuit of distant dreams, Doman invites them to embrace farming with technology. To be masters of their fields, to find independence, and to cherish the bonds of family and friends within their villages.
As the sun sets over the Keonjhar hills, Doman Baske stands tall—a testament to resilience, a symbol of hope, and a reminder that sometimes, the path back home leads to prosperity and fulfilment.

The youth conundrum in Indian agriculture

India's vast agricultural fields, which have been the lifeblood of the nation, now find themselves facing a unique challenge – a growing disconnection among the youth, who are increasingly turning away from agricultural livelihoods. Despite agriculture's rich cultural and historical significance, there is a discernible gap between the age-old profession and the aspirations of the Indian youth.

This raises questions:

Why are the youth turning away from farming?
What are the challenges that come along?

Based on field insights from CINI's project locations over the past few years, we have identified several key challenges preventing youth from embracing farming.

Lack of assured income

Farming could ensure higher incomes than other livelihood options for village youth with more freedom of choice. However, for most farmers, farm income is neither assured nor available at shorter intervals. One needs to wait for a gestation period of at least two to three months for cash crops like vegetables, with the crop return dependent on several factors beyond the control of farmers like weather and market conditions. Many young individuals seek stable and predictable income, which farming might not always provide.

Associated risks

Agriculture involves inherent risks such as crop pests and diseases. This has become more concerning with changes in weather patterns such as increased temperature, prolonged winter, excess and unseasonal rainfall, and long, dry spells during monsoon that can lead to crop damage and significant financial losses. Youth often perceive agriculture riskier when compared to other professions, dissuading them from pursuing farming.

Drudgery

Present farming practices of smallholder farmers are manual, often physically demanding and labour-intensive, discouraging youth. Poor access to advanced farming practices and farm machinery keeps the youth from engaging in farming.

Knowledge I Tech gap

Poor access and exposure to technological advancements in farming often deter the tech-savvy youth. While farmers of commercial agriculture clusters can access modern technology-led farming knowledge and inputs, youths in remote central India regions, with little business prospects, remain distant from these advancements of commercial agri players.

Farming for freedom

Back to the roots: Saibo Munda's journey

Driving was never Saibo Munda's dream career. Born into a joint family in the village of Jhumpura, Keonjhar, he found himself forced into the role of a driver at an early age. The land was not divided among brothers, leaving Saibo with limited options. With no other source of income, he reluctantly became a driver, working in the local mines.

The reality of his chosen vocation soon hit him hard. Starvation during long hours, abusive language, and minimal respect were part of his daily life. He had to be at the beck and call of the mine owners, regardless of the hour—whether it was late at night or the crack of dawn. To cope with the stress, Saibo even turned to addictive substances that took a toll on his health.

But Saibo was not one to accept defeat. He made a life-altering decision—to return to his village and reclaim his independence. His parents granted him a small patch of land, and Saibo turned to farming. It was a leap of faith, but he soon discovered that the soil held more promise than the mines ever could.

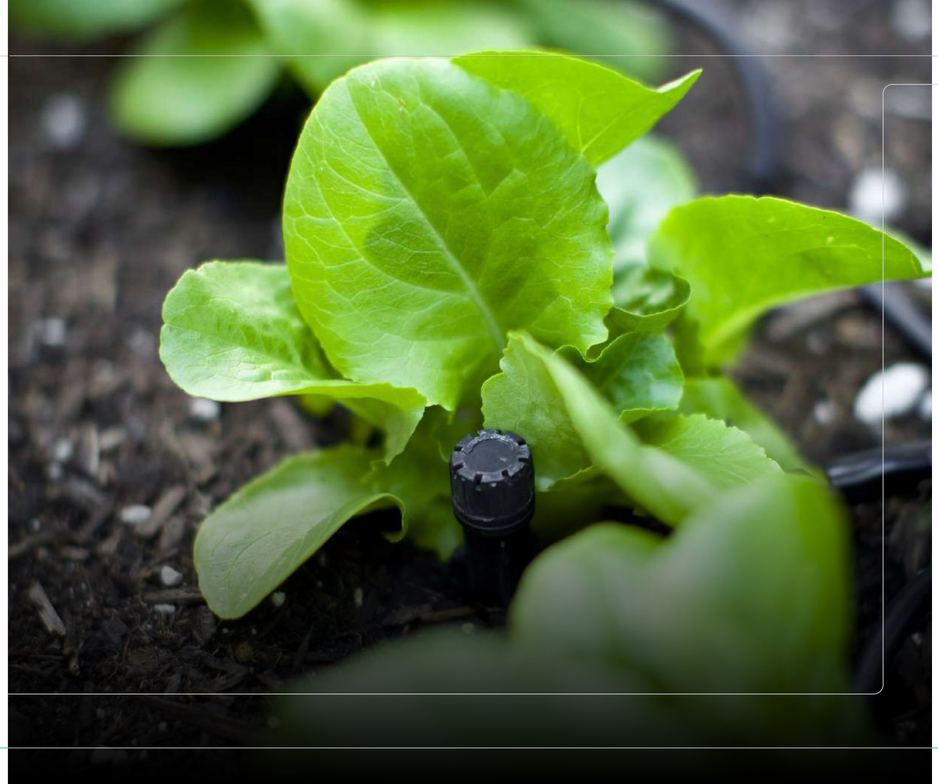
The transformation

From drudgery to dignity

Saibo's journey back to the land was a revelation. Farming became his refuge—a way to break free from the shackles of his past. He started cultivating seasonal vegetables like chili, brinjal, and pumpkin. The earth responded to his efforts, and he began earning around ₹60,000 per annum.

₹60,000

Saibo's earning per annum



Knowledge is power

Recently, Saibo was introduced to drip farming—a technique that captured his imagination. With less labour and efficient water management, he realised that he could manage larger areas effectively. Saibo's aspirations grew—he wanted to be a successful farmer, living a life of respect and dignity in his village.

Today, Saibo stands tall amidst his crops. The fields that once belonged to others are now his canvas. He tends to the soil, nurturing life from seed to harvest. The sunsets bring a sense of fulfilment— the kind that no mine ever provided. Saibo Munda's story echoes through the hills of Keonjhar—a beacon of hope for those who dare to return to their roots.

Factors motivating youth in CInI operational areas for taking up farming as the main livelihood option

- High income potential from farming cash crops in short duration (vegetables)
- Technology, such as drip irrigation, is reducing the drudgery of farming and enabling the management of larger plots with lower labour costs
- Freedom of choice and independence
- Avoiding hardship associated with other vocations: long working hours, with health impacts
- Awareness of advance farming practices for cash crops

Following the implementation of the Lakhpati

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