# Nandurbar Lakhpati

## Meeting Aspirations of Small and Marginal Tribal Families in Dhadgaon and Akkalkuwa Blocks, Nandurbar district, Maharashtra

Outcome Assessment Report 2021-2024

CInI
An Initiative of TATA TRUSTS

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TATA ASSET MANAGEMENT LIMITED

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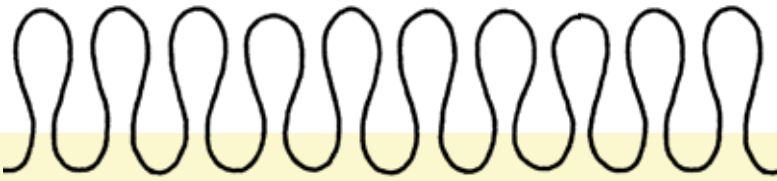
# Lakhpati 2.0 in Nandurbar

The Lakhpati Kisan program, **a flagship program of CInI** works with the key objective of providing a **three-fold increase in income for small and marginal farmers** in the tribal hinterlands of Central India.

**Lakhpati 2.0 seeks to enhance the overall economic, social, and environmental security of the families living in the intervened program geographies.**

**The collaboration with Tata Asset Management began in 2021 in Dhadgaon block of Nandurbar, to support small and marginal farmers and contribute to a larger, region wide program.**

In the following years, the program was scaled up to cover farmers in Akkalkuwa block of Nandurbar district and soon the initiative had expanded significantly. During the three year period, interventions such as **drip-mulch irrigation, soil and water conservation techniques, and breed improvement efforts were carried out.**



**387**
Farmers directly supported through the program under TAM

**144**
Households provided with drip irrigation with mulching under TAM

**71.8**
Total acres of farmland being cultivated using drip and mulch technique

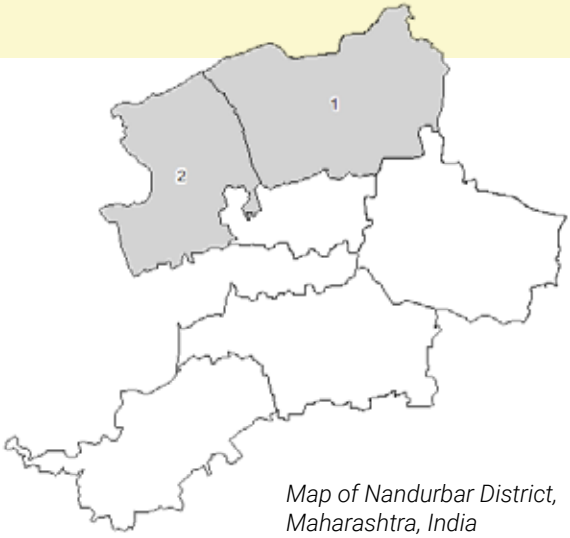
**2-4x**
Average annual income increase for farmers from baseline income of INR 35k

**40**
Households provided with Osmanabadi buck for larger herd size and quality kidding

**08**
Number of new dug wells provided, one per user group of 4 members each

Akkalkuwa and Dhadgaon districts which are two of the focus geographies for the program, **comprise of nearly 90% tribal population.** Akkalkuwa specifically, is considered as one of the **most remote, underdeveloped and backward blocks** in Maharashtra.

The primary **target group are rural tribal families belonging to Bhil and Pawara tribes,** who are predominantly dependent on agriculture (staple crops of jowar, maize, etc.) and livestock (small ruminants).



*Map of Nandurbar District, Maharashtra, India*

**81 villages from Dhadgaon & Akkalkuwa blocks**

**76 Local Village Institutions (VI)**

**1 Farmer Producer Company with 2500+ shareholders**

# Data Analysis

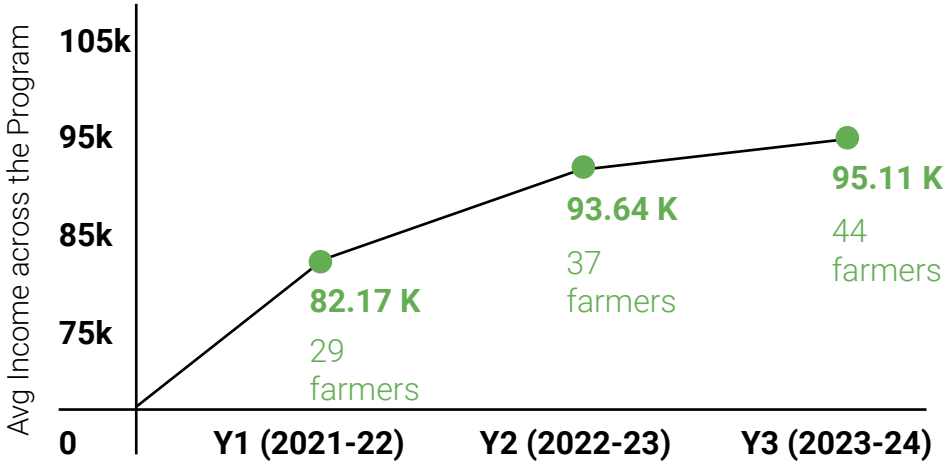
**To gain a better perspective of Lakhpati 2.0's outcomes in Nandurbar, data on farmers using drip and mulch technique, recorded in CInI's MIS systems were analysed.**

**144**
**Households provided with drip & mulch under TAM**

**45**
**Sample HH's with data recorded in CInI's MIS from the set of 144**

| | 2021-2022 | 2022-2023 | 2023-2024 |
|---|---|---|---|
| **Year-on-year new HH interventions** | **31** | **06** | **08** |
| **HH's with data recorded over the years** | **29** | **37** | **44** |

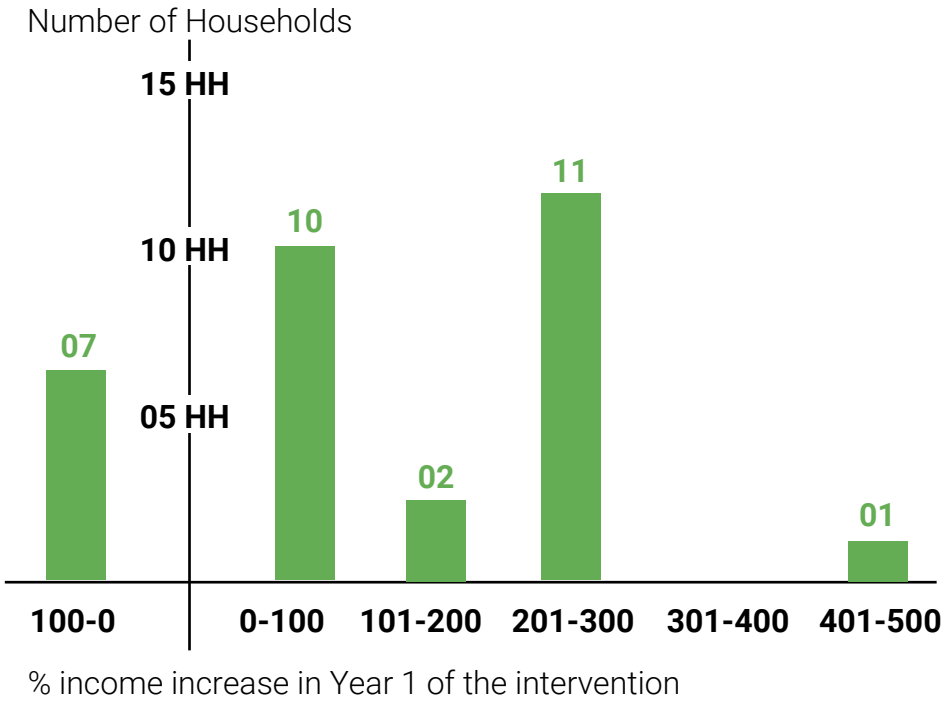
**Year-on-year incomes, though at different rates, have grown steadily through the three year program period**




In Y1, the average income of 29 farmers was 82.17K, which is nearly a 57 % increase from their average baseline incomes of INR 35,000. In Y2, the income of 37 farmers was averaged at 93.64K, whereas in Y3, the average income of 44 farmers was 95.11K.

**In Y1, farmers performed diversely, with maximum number of households seeing up to 100% or 200-300% Increase in income.**

**22% of 29 farmers intervened in Y1 experienced losses.**

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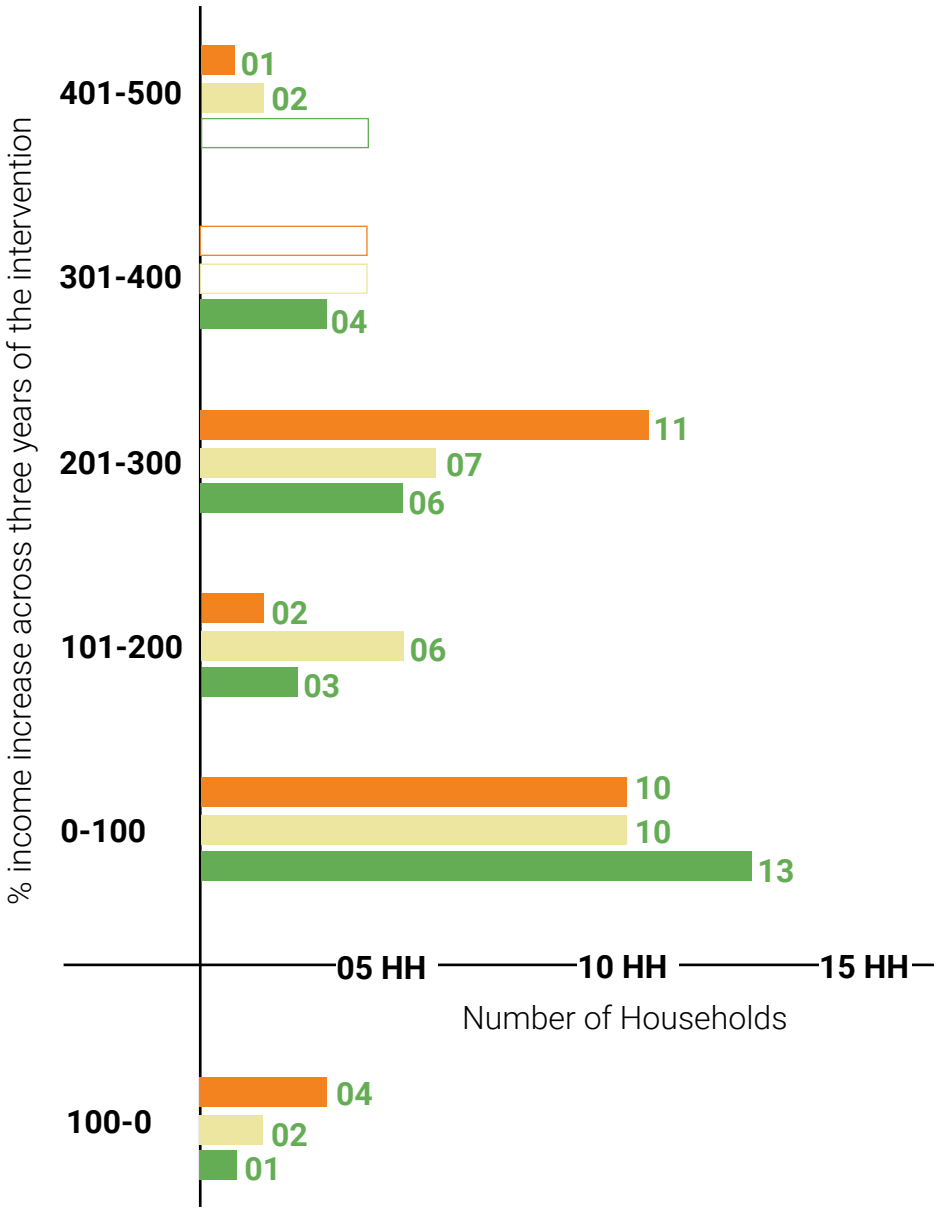
**Variances can be seen in the performances of the 28 farmers that CInI has worked with since Y1 (2021), with data recorded for all three years.**

In the graph, a comparison has been drawn between the income growth over the three years agaisnt the baseline income of INR 35,000, for the selected 28 HH's.




Year 1 (2021-22)

Year 2 (2022-23)

Year 3 (2023-24)

**Considering the diversity over three years, as shown in the last graph, it is important to understand why some households performed consistently over three years, and why some have had more varying journeys.**

The 28 selected farmers have been divided into 3 categories based on their individual journeys.

**Data available on cropping patterns, usage of drip technology, livestock ownership and seasonal trends was utilised to understand the characteristics of the four categories namely Aces, Bolters and Crawlers.**

**1 of the 28 HH's saw an inverse growth rate over the 3 years, since they were unable to adopt high value vegetable cultivation or drip technology successfully.**

## ACES

**Households that have an income growth of 50% or more in all 3 years**

**Total 12 Households**

### Stable but Conservative Approach

Farmers who followed a stable low risk approach, continuing their methods without utilizing the drip and mulch technique but ensuring steady income. They relied on livestock, however, faced income stagnation in Y3.

**Total 4 HH's**

### Highly Adaptive and Diversified Approach

Farmers who experimented with watermelon, chilli, brinjal, tomato and used drip irrigation in some cases. They also engaged in frequent crop rotation, cultivated in all three seasons and also diversified livelihoods through livestock rearing.

**Total 8 HH's**

# BOLTS

**Households that see flashes of high growth initially but faulter over time**

Y1-Y2 above 50%, then down in Y3

**Total 07 Households**

### Initial Success with Sudden Loss or Drop-off

Farmers who saw good returns in the first one or two years by using drip irrigation, growing high value vegetables and/or rearing livestock. These farmers either discontinued the technique or faced major livestock losses potentially contributing to a decline.

**Total 5 HH's**

### Consistent but Limited Cultivation with Mixed Returns

Farmers who engaged in only 1-2 seasons of cultivation with or without drip irrigation, resulting in inconsistent or restricted returns later on.

**Total 2 HH's**

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# CRAWLERS

**Households that start slow and grow gradually over time**

Up/down in Y1, down in Y2 and then up in Y3

**Total 08 Households**

### Late but Steady Growth

Farmers who delayed or limited adoption of new practices in Y1 but later scaled up quickly, even cultivating in all 3 seasons.

**Total 5 HH's**

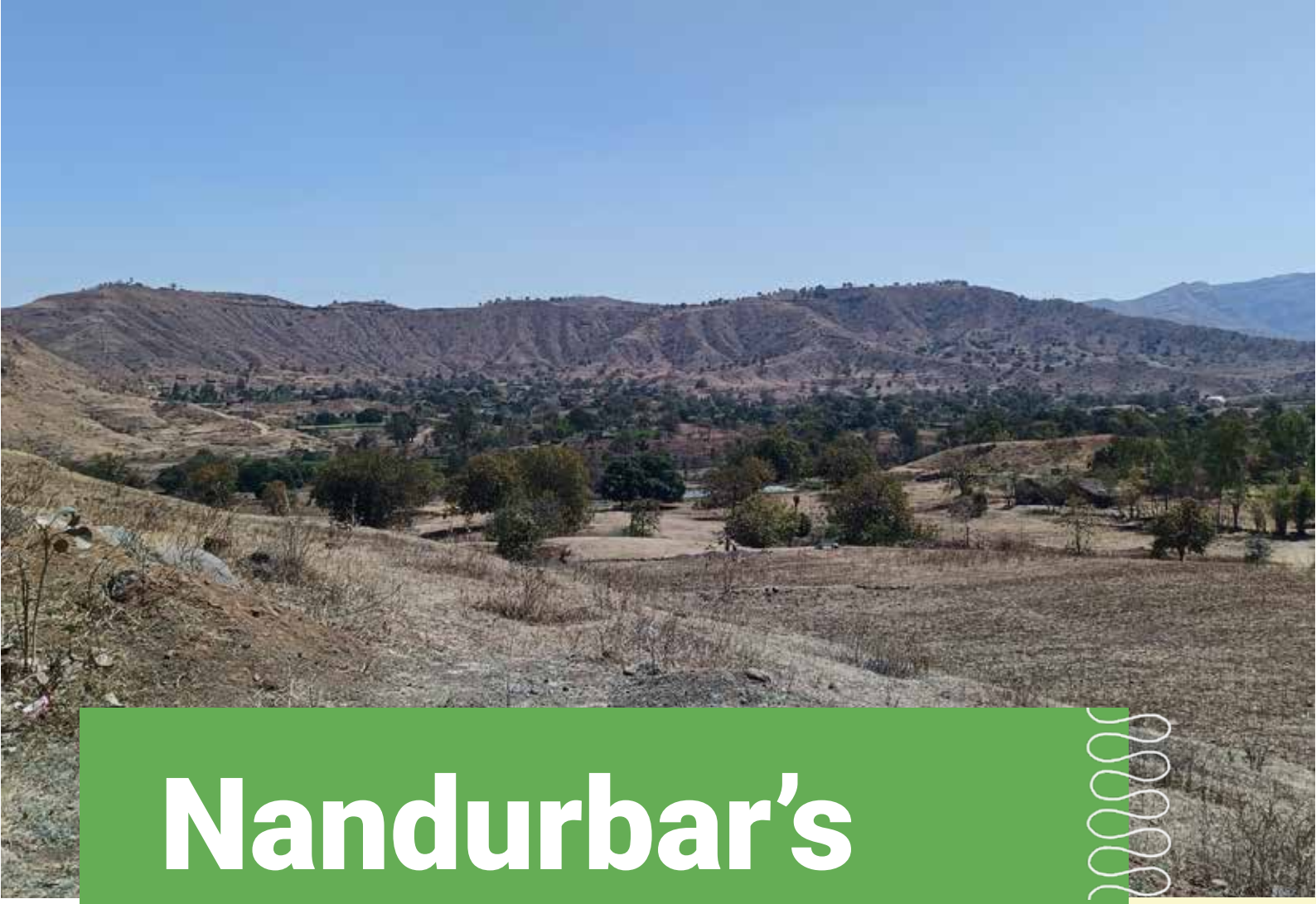
### High Experimentation with Higher Risk

Farmers who frequently tested new crops and methods like cabbage and muskmelon with drip irrigation etc. experiencing ups and downs along the way.

### Consistent Cultivation with Sudden Livestock Loss

Farmers who were practicing drip technique and cultivating regularly, but underwent a major livestock related loss in Y2 or Y3.

**Total 3 HH's**



# Nandurbar's Key Challenges

**When the partnership began, the communities were facing immense difficulty & hardship.**

As per census 2011, Nandurbar district has a **total population of 16,48,295.**

The **tribal community** there makes up for **69.27%** of the total population of the district.

HDI

**0.604**
**Human Development Index (Ranked 35th,last in the state)**

**64.32**
**Average literacy rate**

**15%**
**Rise in malnutrition in June-July due to seasonal migration**

# Agriculture

a predominant livelihood in the region, was practiced only for subsistence, with very low productivity and returns

**Farmers in the two chosen blocks, practiced rain fed agriculture which is heavily dependent on monsoon, resulting in repeated failures and agriculture distress.**

**Vegetable production was for household consumption, with very low agricultural commercialization.**

# Migration

to other states has been a key concern in Nandurbar since CInI's foundational programs in the district

**Key reasons for out-migration:**

**Better work opportunities in industrial/ urban areas**

**Better facilities for higher education**

## Seasonal Migration for Agricultural and Other Labour

As per a study by IJAR, where 300 migrating families(tribal) of Nandurbar were interviewed, at least 3.6 labourers per family had migrated, **earning an average of INR 12,175 per labourer via this migration.**

# Layered Solutions

**CInI's approach to solution building for Nandurbar addresses the district's contextual needs and helps create local level linkages, and knowledge sharing avenues to solve them.**

**Opportunities to diversify livelihood income sources**


**Access to new technologies and infrastructure**

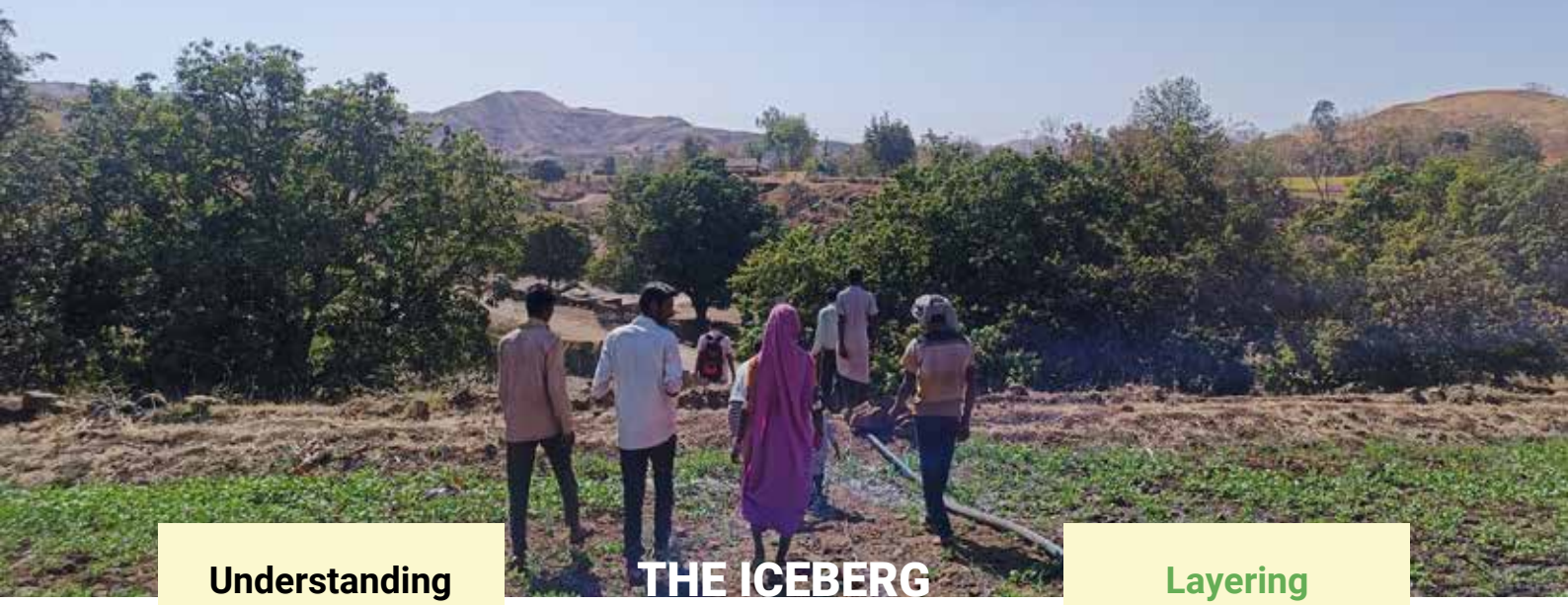
**CInI's Approach for Lakhpati 2.0**

**Technical inputs via Community Resource Persons (CRPs)**

**Access to inputs, backward and forward linkages**

**Through the program, CInI has been working on the ground to not only address visible issues and needs, but also address underlying patterns, structures and behaviours that shape them.**

The iceberg model has been used to uncover deeper causes behind rural agrarian challenges, and how CInI's solutions address them.

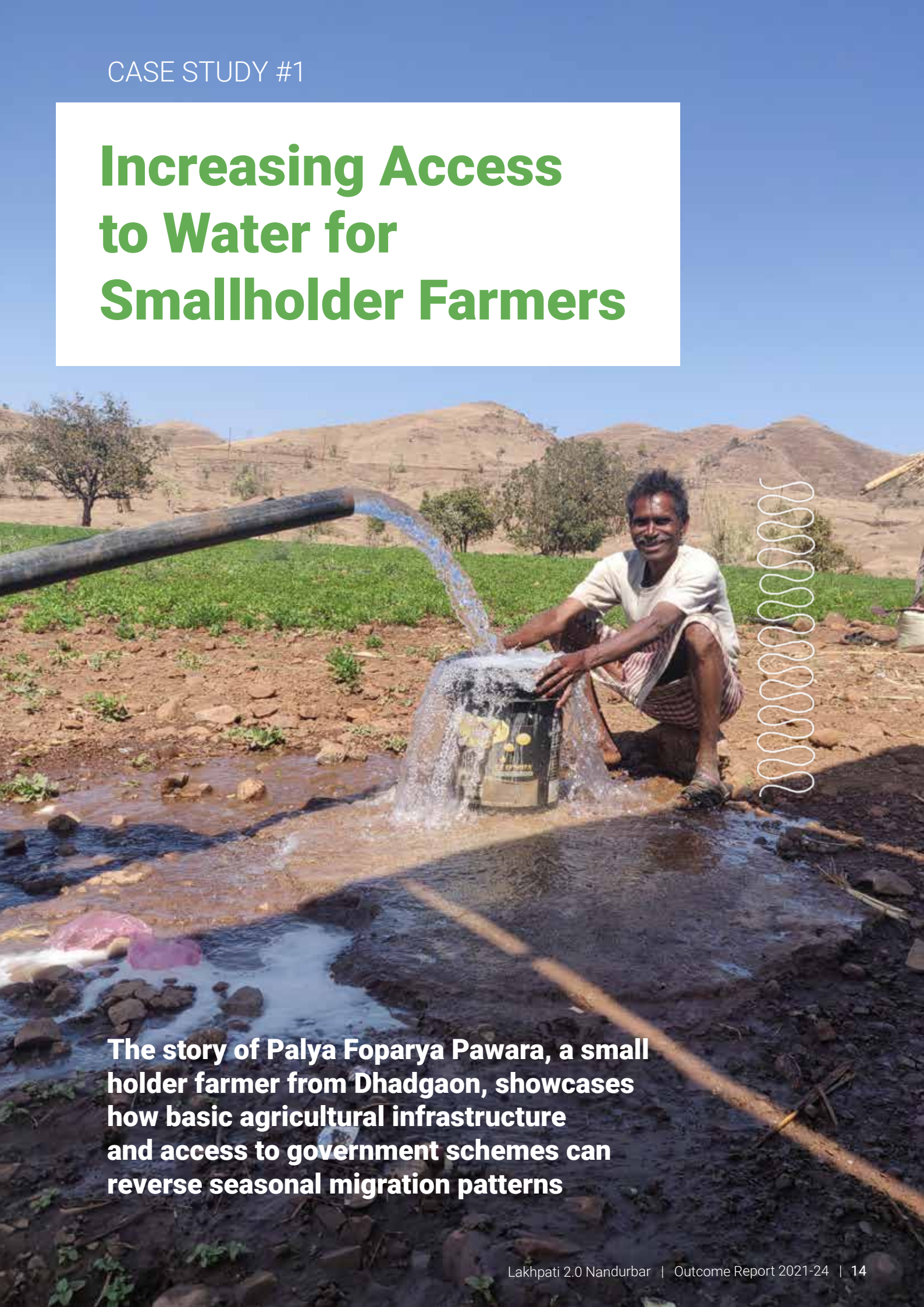


## THE ICEBERG

| Understanding the Problem | | Layering Solutions |
|---|---|---|
| **Visible Symptoms**<br>Whats happening? | EVENTS | Visible / Quick Changes |
| **Recurring Trends**<br>What keeps happening? | PATTERNS | New Patterns |
| **Root Causes**<br>What influences these patterns? | STRUCTURES | System Building |
| **Deep Rooted Beliefs**<br>Why does this persist? | MENTAL MODELS | Sustainable Change |

CASE STUDY #1

# Increasing Access to Water for Smallholder Farmers



**The story of Palya Foparya Pawara, a small holder farmer from Dhadgaon, showcases how basic agricultural infrastructure and access to government schemes can reverse seasonal migration patterns**

## PROBLEM

**Nandurbar experiences a hot & dry climate with minimal annual rainfall. A large portion of the district's agriculture is rain-fed. However, the hilly terrain with sparse tree cover makes it difficult to retain rainwater.**

Nearly half the farmers in India, with landholding less than 2 hectares, are dependent on rainfall for agriculture, with little to no access to irrigation.

For irrigation, majority of the farmers are dependent on **groundwater, often accessed through dug wells, bore wells and pumps**. However, this access is not uniform.

When lacking, farmers often **migrate in search of alternate livelihoods.** This migration is often temporary and seasonal, with farmers returning to their villages for farming during certain seasons.

**70-80%**
Farmers depend on groundwater for irrigation

**767mm**
Average annual rainfall in Nandurbar

## USER PROFILE
### Palya Foparya Pawara

*Location*
**Kharwad, Dhadgaon, Nandurbar**

*Agriculture Landholding*
**3 acres (shared usage by UG)**

*Type of Intervention*
**Construction of dug well for irrigation by 3 member user group**

*Year of Intervention*
**2023-24**

*Commodities grown (pre-intervention)*
**Sorghum and Maize**

*Commodities grown (post-intervention)*
**Sorghum, Maize, Groundnut, Black Gram and Okra**

## SOLUTION
### Dug wells

CInI facilitates the repair of old and construction of new dug wells to be owned by user groups. Recommendation of user groups are made by 'Village Institutions' based on sanctioning of projects.

Each dug well is 30 feet deep and 20 feet wide. CInI invests up to 85% while the UG invests up to 15% of the total cost of INR 3.3L/dug well.

# The challenge of low agriculture incomes and productivity and its relationship with access to irrigation can be better understood via the iceberg model.

| Understanding the Problem | | Layering Solutions |
|---|---|---|
| **Low agricultural productivity** and crop failures due to unpredictable rainfall | EVENTS | Farmers gain **access to irrigation.** Crop yields improve, ensuring stable farm incomes |
| **Seasonal migration** due to fluctuating yields and unreliable farm income<br><br>Dependence on **rain fed agriculture** with minimal or no irrigation | PATTERNS | Farmers **diversify crops,** practice crop rotation<br><br>**Year-round agriculture** becomes possible, reducing out-migration |
| **High cost of bore wells** and individual irrigation systems<br><br>**Inefficient or complex** government schemes<br><br>Fragmented land holdings, making **infrastructure investments nonviable** | STRUCTURES | Dug wells as a group model provides **shared water access**<br><br>Farmers receive **training on crop selection and improved farming techniques.** CRPs ensure continuous guidance |
| **Perceived risk** of water investments being costly and uncertain<br><br>Distrust in government schemes, and **resistance to change** | MENTAL MODELS | Farmers see **proof of success** in their fields<br><br>Thereby, **building trust in community-led solutions** and improved farming methods & technology |

# For Palya, the layered solutions have materialised to change his livelihood options

## Palya's Migration Challenge

**A father of 5 children, Palya, until recently, was solely dependent on rain fed agriculture without access to any source of irrigation. His farming activities were limited to subsistence level during the monsoons. This in turn, would force him and his sons to migrate to Gujarat for agricultural labour work during winter (Rabi) & summer seasons.**

**However, he ensured quality education for his daughters who are now specializing in nursing and pharmacy.**

*Palya (left) and CRP Santosh (right) testing the solar water pump connected to the dug well*

> With the irrigation support I will earn more. I have resolved to **never return to migration**.
>
> PALYA PAWARA, MEMBER OF DUG WELL UG

## Water User Group Model

Palya, with the help of the VI, formed a **user group with his brothers for shared access and usage of water** through the dug well provided by CInI.

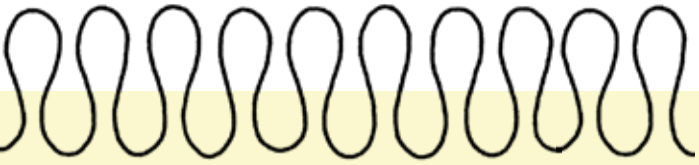
## Local Governance and Decision Making

In order to stop Palya from migrating, the **Village Institution (VI)** in agreement with the brothers, decided to let **Jobi first utilize all the water collected in the well** to irrigate their shared land during the next winter - summer seasons.

## Local Technical Advisory and Support Services

Palya was guided throughout by **CRP Santosh,** who also encouraged him to apply for the government's **KUSUM scheme** for accessing solar powered irrigation funds.

Santosh, a member of the gram panchayat, is **trusted by all the farmers** in his village. Through CInI's support, he is able to extend unhindered service to the farmers.



**In the first Kharif after the intervention, Palya was able to successfully produce Black Gram and Groundnut.**
**He now wishes to cultivate vegetables using drip and mulch technique, from the profits generated from Groundnut.**

**25 Quintals**

**Total Groundnut production**

**1.5L INR**

**Income from the sale of Groundnut**

CASE STUDY #2

# Promoting Crop Diversification and Providing Input Support

**The story of Shobha and Ratilal Pawara, a young farmer couple from Dhadgaon, showcases how knowledge and access to innovative farming technologies and inputs can help maximize a farmers existing resources.**

## PROBLEM

**Nandurbar's agriculture is dominated by traditional crops like Jowar and Maize used for self consumption, with limited diversification. This affects income stability and prevents farmers from growing and creating safety nets.**

### Lack of inputs and access to modern techniques

Marginal and smallholder farmers face challenges due to small landholdings (less than 2 hectares), and inadequate access to quality inputs and modern farming techniques.

### Lack of opportunities for rural youth

In India, majority of the rural youth are engaged in agriculture and allied activities. However, almost all of them seek non farm jobs in urban areas due to limited access to technology and perceived low productivity and profits in traditional agriculture.

**80%**
Rural youth engaged in agriculture in India

**85%**
Of them seek non-farm jobs in urban areas

## USER PROFILE
## Shobha & Ratilal Pawara

*Location*
**Jarli, Dhadgaon, Nandurbar**

*Agriculture Landholding*
**2 acres**

*Type of Intervention*
**Drip and Mulch technique for growing high value fruits & vegetables**

*Year of Intervention*
**2021-22**

*Commodities grown (pre-intervention)*
**Sorghum, Maize and Groundnut**

*Commodities grown (post-intervention)*
**Watermelon, Chilli, Tomato, Sorghum, Maize and Groundnut**

## SOLUTION
## Drip Irrigation with Mulching

CInI has introduced a 'drip irrigation with mulching' technique to help farmers optimize water usage, minimize weed growth and soil erosion, and reduce the need for labour and associated costs.

Using this technique, farmers can maximize existing resources, diversify their crops by growing high value fruits and vegetables and save water by up to 30% compared to traditional methods.

# The layered problem of rural youth migration and solutions in agri-entrepreneurship, skilling and rural ecosystem building can be better understood by the below iceberg model.

| Understanding the Problem | | Layering Solutions |
|---|---|---|
| **Migration of rural youth** to urban areas for work due to limited agriculture opportunities and incentives | EVENTS | Farmers engage in **year round farming using improved techniques,** thereby reducing out-migration |
| **Seasonal migration** leading to labour shortage in rural areas<br><br>**Decline in interest** towards agriculture, increasing **reliance on urban remittances** | PATTERNS | Adoption of **diversified cropping** leading to steady income<br><br>Increased youth participation as farming becomes **technological advanced and profitable** |
| Strong push for **urban job based skilling,** and demand for cheap **skilled-unskilled rural labour** in urban markets<br><br>Limited support for high value crops, and **inefficiencies in accessing inputs** | STRUCTURES | Push to create rural employment, where farmers are trained to become **agri-entrepreneurs and decision makers**<br><br>Creation of **local agri infrastructure** and localized supply chains |
| **Aspirations of an urban lifestyle,** wherein agrarian livelihoods are looked down upon<br><br>**Risk averse mindset** of farmers who avoid experimenting | MENTAL MODELS | Farming seen as a **viable, business,** with farmers recognizing its profitability<br><br>**Reduced risk perception** via strengthened local systems |

**With access to existing water resources, all Ratilal and Shobha lacked was the access to knowledge, technology and inputs to transform their farming activities. This was made possible via a local ecosystem of service providers.**

### Technology Inputs by the TAM-CINI Partnership

Farmers like Shobha and Ratilal have benefited from the installation of drip irrigation and with mulching technique.

### Farm Inputs from Farmer Producer Company

The FPC provided various farm inputs like mulching paper, fertilizers, pesticides etc. to Shobha and Ratila.

### Tractor Rentals from a Custom Hiring Center

The FPC also operates a custom hiring center which provided a tractor at subsidised rates to them.

*Ratilal and Shoba Pawara*

### Saplings from the Local Nursery

Shobha and Ratilal purchased chilli saplings, suited to their farm needs, from the local nursery.

### Technical Support and Guidance via CRPs

Roopsingh a CRP provided constant guidance and technical assistance to Shobha and Ratilal.

**With the new technique, they could to do two cycles of chilli and one of watermelon. They were also able to buy a bike and invest in jewelery with the income earned.**

**INR 1.8L**

**Annual income from watermelon in Y1**

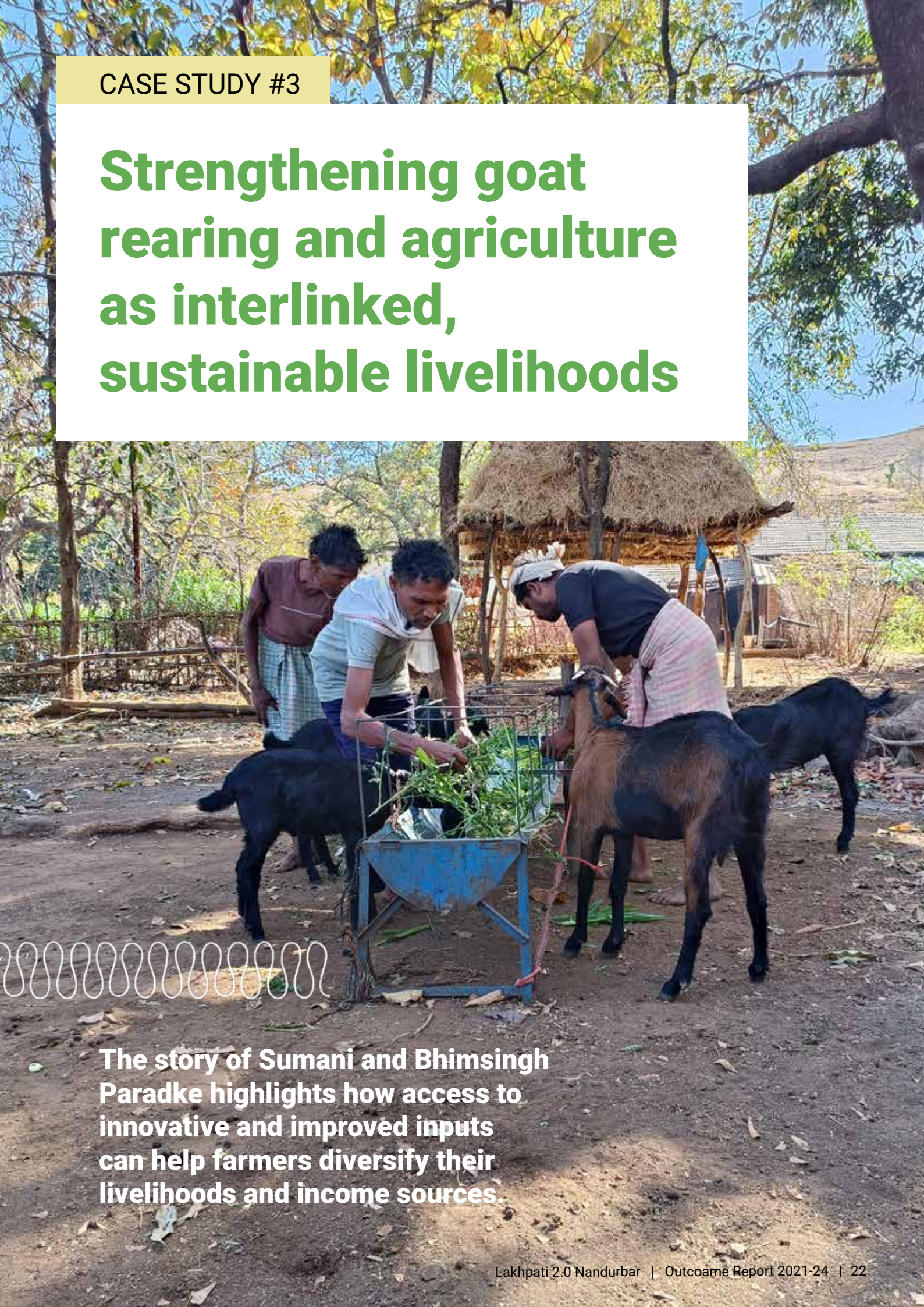
**5x**

**Income increase from baseline agri income of INR 35,000/ year**

> My wife and I have a BA degree. I didn't enjoy the low paying job in Pune. While we had access to water on our land, we had **no idea or technical skill for farming of high value vegetables.** Now with drip & mulch, I am able to **earn more than the job.**
>
> RATILAL PAWARA, DRIP & MULCH USER

CASE STUDY #3

# Strengthening goat rearing and agriculture as interlinked, sustainable livelihoods



**The story of Sumani and Bhimsingh Paradke highlights how access to innovative and improved inputs can help farmers diversify their livelihoods and income sources.**

## PROBLEM

**For Nandurbar's farmers, exploring beyond agriculture wasn't always a lucrative affair. Diversifying livelihoods, like rearing livestock was limited to traditional, low value breeds and practices, not providing substantial incomes.**

### Lack of modernisation in traditional livelihoods

While most households in Nandurbar would rear goats, herd sizes remained low. No breeding programs had been introduced in the region thus far and resistance to change was also high.

### Lack of Support Services

Goat rearing requires additional support as goats are sensitive animals. Nandurbar, however, lacked access to veterinary services and supply chains for long term sustenance of new breeds.

**3.23L**
Number of goats in Nandurbar district, 2019

**4-8**
Average herd size per HH (desi breed)

## USER PROFILE
### Sumani & Bhimsingh Paradke

*Location*
**Akkalkuwa, Nandurbar**

*Agriculture Landholding*
**6 to 7 acres, shared by 3 brothers**

*Type of Intervention*
**Introduction of Osamanabadi pure breed buck (male goat)**

*Year of Intervention*
**2022-23**

08 *Livestock strength (pre-intervention)*
**8 goats all local desi breed**

20 *Livestock strength (post-intervention)*
**20 goats, all Osmanabadi-desi mix breed since its the first few breedings**

## SOLUTION
### Introduction of Osmanabadi Buck

Osmanabadi buck induction is a breed improvement initiative by CInI. The Osmanabadi variety improves the kidding index and this breed is especially well known for substantial daily weight gain.

Exposure visits are conducted to introduce goat rearers and buck entrepreneurs to the techniques for cultivation of new varieties of green fodder, shed-nutrition management

## While diversifying livelihoods is a common strategy, layered challenges hinder its adoption. These can be better understood by the below showcased iceberg model.

| Understanding the Problem | | Layering Solutions |
|---|---|---|
| **Stagnation in income & livelihood with no financial safety net** during climate crisis or market crashes | EVENTS | Farmers **rear improved Osmanabadi goats**, with better growth and income, and reduced mortality due to **veterinary access** |
| Over reliance on a **single source of income,** without maximizing resources<br><br>Farmers continue **subsistence level goat rearing without optimizing herd size or breed** | PATTERNS | Farmers **increase herd size and productivity** with growing trust in improved breeds and vet services<br><br>Better **integration with agriculture and livestock practices** |
| **One-size-fits-all** interventions that are not locally adapted<br><br>**Limited exposure and cross learning** on Improved breeds - farmers stick to local breeds without considering high yield alternatives | STRUCTURES | **Locally setup breeder farms** supply quality Osmanabadi bucks for breed improvement<br><br>A network of **trained vets provide timely and accessible healthcare** services, reducing outbreaks and mortality |
| **Resistance to scaling up,** adopting better breeds or commercial rearing practices<br><br>Short term survival - seeing goats as an **emergency asset rather than an enterprise** | MENTAL MODELS | Farmers recognize the potential of **goat rearing as a long term business**<br><br>Higher **trust in improved breeds** and scientific rearing methods |

## For Sumanibai and Bhimsingh Paradke, diversifying their livelihood meant gaining access to a host of new inputs, including an improved Osmanabadi breed buck.

### Breed Improvements via the CINI-TAM partnership

The family originally had only 8 desi goats from the region, which weighed and reproduced lesser. The introduction of the Osmanabadi buck has now increased their herd size to over 20 goats in one year.

### Para-Veterinary Services

In Akkalkuwa block, a network of para-vets manage 40-50k goats in the region, providing vaccination, deworming and other technical advisory.

### Income Improvements

Thus far, the family has sold 4 of their goats after the herd size increased substantially. They earn over INR 10,000 per goat sold.

*Bhimsingh Paradke feeding his goats*

### Package of Practices

Alongside goat rearing, CINI also provided trainings on improved farming practices. The family now utilizes the grain for their own consumption, and as for fodder for the goats.

### Local Breeder Farms

To ensure a continuous supply chain of improved bucks in the region, CINI has incubated an entrepreneur to set up a breeding center for Osmanabadi goats. It has 50 goats and 3 mature bucks.

**2.5x**

**Growth in herd size from 8 desi goats to 20 Osmanabadi-desi mix goats in 2.5 years**

**INR 40k +**

**Income from selling 4 mature goats**

> Our family has started **saving more money** and we have also purchased additional silver jewelery as investments.
>
> BHIMSINGH PARADKE,
> BUCK ENTREPRENEUR

# Interlinked Outcomes

**Today, after working with hundreds of farmers in CInI is recognising that its solutions are building on themselves to create sustainable outcomes & impacts.**

**Re-investments of agri incomes by farmers to grow the local economy through alternate businesses**

**Investments by farmers and other stakeholders for region wide adoption, development and growth**

**Key Program Outcomes**

**Investments by farmers for farm expansion and adoption of new solutions**

**Investments by farmers to create safety nets for long term development needs**

## Causal loops have been used as a tool to illustrate how the solutions provided by CInI have created interconnected and reinforcing cycles of change in rural agricultural systems.

The cause-and-effect relationships between factors like improved agriculture technologies, migration, farm incomes, livelihood diversification, local job creation, local support systems etc. have been mapped for three cases.

**The diagrams help visualize how a single intervention can trigger broader social and economic transformations, at a local, regional and state level.**

**Highlight the dynamic nature of rural development, where changes in one area influence multiple aspects of farmers' lives.**

**Distinguish between reinforcing feedback loops that drive sustainable change (e.g. increased income leading to reinvestment) and balancing loops that prevent setbacks (e.g. job creation reducing migration pressures).**

**Moving forward, these diagrams can help CInI and other stakeholders understand key areas where targeted interventions can create the most impact.**

CASE STUDY #4

# Re-investing agricultural incomes into growing the local economy through alternate businesses

**Nandurbar's economy is heavily dependent on agriculture, with most individuals being limited to on farm activities. This has created a need for alternate businesses and incomes.**

*Dilip (below), sitting next to the bore well, which is the source of water for irrigating his farm*

USER PROFILE
**Mosambi and Dilip Pawara**

*Location*
**Jarli, Dhadgaon, Nandurbar**

*Agriculture Landholding*
**1 acre**

*Type of Intervention*
**Drip and Mulch for growing high value fruits & vegetables**

*Year of Intervention*
**2021-22**

## Dilip's journey from a driver to an auto rickshaw fleet owner to a local economy enabler was propelled by crop diversification and improved techniques at his farm.

> Previously, I used to work as an auto driver, earning about INR 2k a month. Upon my father's death, I returned to farming but this time with CInI's support, I started growing high value vegetables and fruits. I invested my savings to **buy two rickshaw's and employed local drivers to ferry passengers and farmers carrying goods to the market.**
>
> DILIP PAWARA, DRIP AND MULCH USER

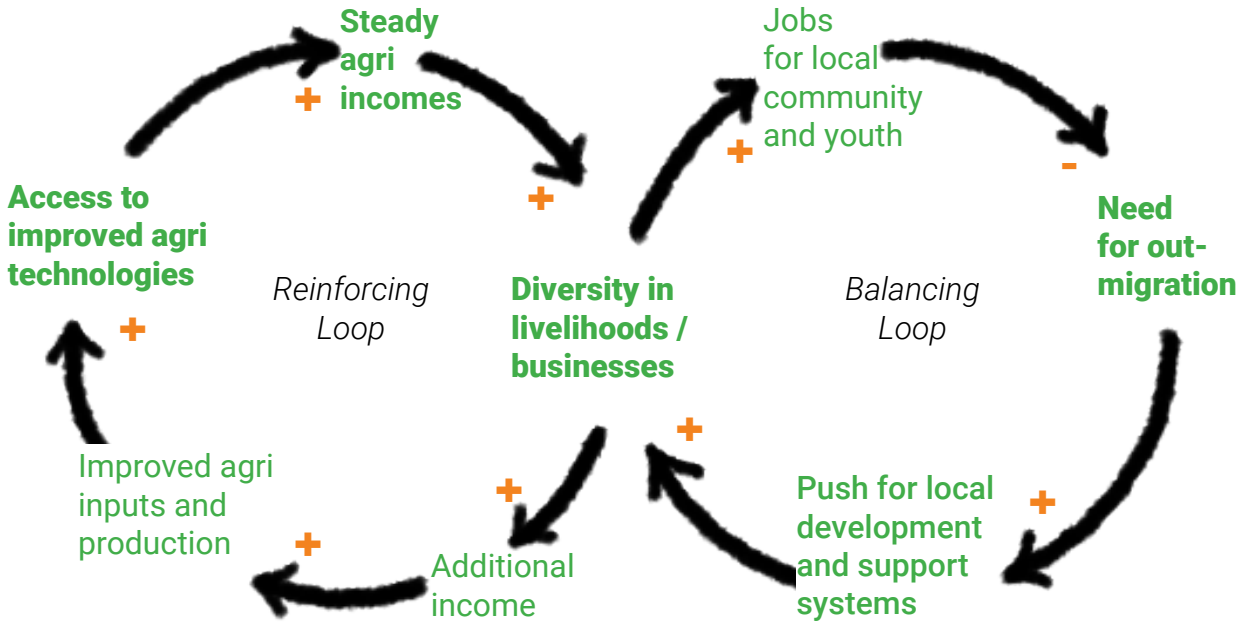
**INR 5.4L**
Total annual earnings from drip and mulching till date (~2.5 years)

**INR 1.8L**
Additional annual earnings from the auto business

## Dilip's contributions to local economy can be understood with this causal loop diagram

\+ Increase / Reinforcing action

\- Decrease / Balancing action




Access to improved technologies enables farmers to achieve steady incomes, which in turn allows them to diversify their livelihoods, generating additional income sources, improving agricultural inputs and production.

As farmers reinvest into diversified livelihoods, they contribute to the creation of local jobs. This reduces the need for migration and pushes for development of local systems.

CASE STUDY #5

# Investments by farmers to create safety nets for long term development needs

**For long term stability, farmers in Nandurbar have been reinvesting their agricultural incomes into assets and techniques like drip-mulch irrigation, crop diversification etc. that can safeguard them against climate and economic uncertainties.**

## USER PROFILE
**Malakya Deba Pawara**

*Location*
**Radhikalam, Dhadgaon, Nandurbar**

*Type of Intervention*
**Drip and Mulch technique for high value fruits & vegetables**

*Agriculture Landholding*
**1 acre**

*Year of Intervention*
**2021-22**

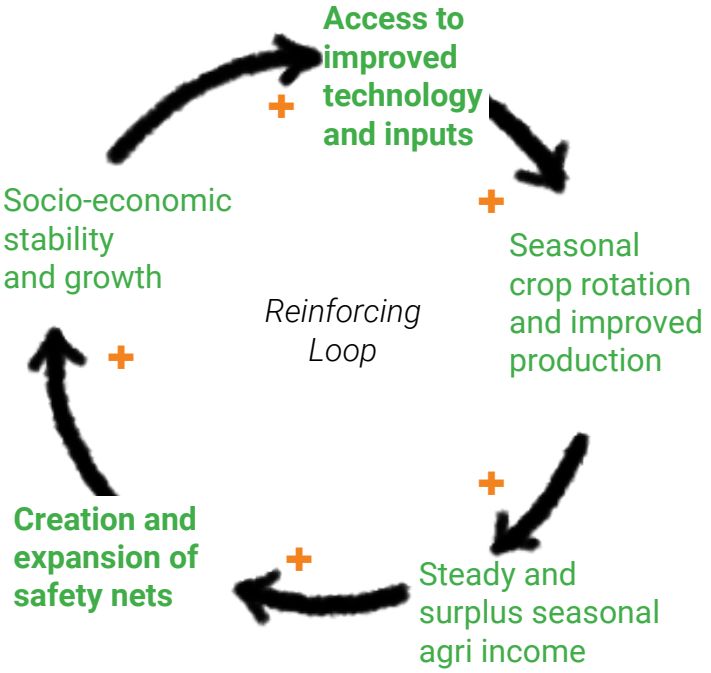
*Malkya, a mother of three and farmer*

**Malkya and her family first invested in the drip and mulch technique for high value vegetable farming in 2021. Since then, they have seen a steady increase in their annual income, which they have invested back judiciously into farming activities.**

> Earlier, we were using the drip and mulch technique on a small portion of land. Since then, we have **expanded the area under drip and mulch to 2.5 acres,** growing watermelon and chillies. With this income, we no longer have to mortgage our silver for loans. We are also able to **support our three children with higher education and are building our house.**
>
> MALAKYA DEBA PAWARA, DRIP & MULCH USER

**INR 3.5L**
Annual earnings from the sale of Watermelon and Chilli in 2 years

**2-2.5x**
Increase in the area under drip irrigation with mulching




## This causal loop diagram shows how farmer led investments in safety nets can drive long term stability.

**The reinforcing loop highlights how expanding drip and mulch cultivation, led to seasonal crop rotation and improved production, leading to steady and surplus agricultural income.**

**This income supports household needs, education, and infrastructure, thus fostering socio-economic growth. As stability increases, further investments in improved technology and inputs strengthen the cycle for farming families.**

CASE STUDY #6

# Investments for region wide adoption, development and growth

**For region wide growth, investments have been made by the wider ecosystem towards regional saturation, farmer institutions, market access and shared infrastructure.**

## USER PROFILE
## Bhanibai and Samari Vasave

*Location*
**Sakliumar, Akkalkuwa, Nandurbar**

*Agriculture Landholding*
**1 acre**

*Type of Intervention*
**Drip and Mulch technique for high value fruits & vegetables**

*Year of Intervention*
**2023-24**

**While CInI has supported many farmers in the Akkalkuwa region to adopt strawberry farming using drip and mulching technique, a major breakthrough was unlocking investments by the local government for the program.**

## 0.56 Acres

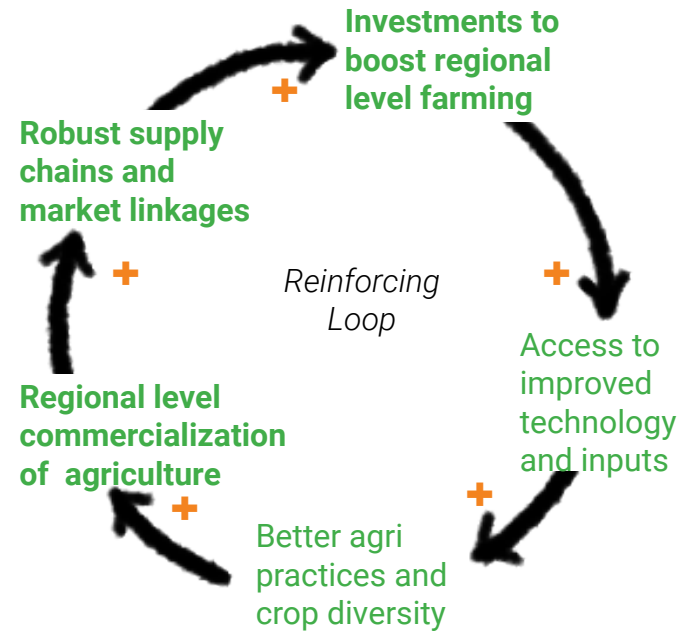
Total area under drip and mulch for strawberry cultivation in 2024

## INR 2.5L

Annual earnings from the sale of strawberries in 2024

> Initially, we started with only 5 strawberry farmers in the region, to prove out the business case. Overtime as the success rate increased, **farmers approached the District Magistrate to support them. Shortly after, 100 more farmers were supported financially by the district.** The region is now known for its high quality strawberries.
>
> SAMARIBAI VASAVE, DRIP & MULCH USER, AND STRAWBERRY FARMER

## This causal loop diagram shows how targeted interventions can drive regional agricultural growth




**The reinforcing loop shows how a small group of successful strawberry farmers attracted institutional support, leading to regional commercialization.**

**Access to improved technology and practices, strengthened market linkages and supply chains.**

**This spurred further investments in farming in the region, and transformed the region into a hub for high-quality strawberry production.**

# Emerging Needs

**While CInI's solutions have created strong foundations; evolving farmer needs, market conditions and climate stresses highlight the need for evolving support and innovation.**

**Promoting post harvest processing and value addition** activities through the integration of technology

Building the ecosystem through **backward and forward linkages**

Building long term **climate resilience** among marginal and smallholder farmers

## CInI has already deployed and tested various entrepreneur and FPC driven backward linkage solutions which provide inputs and services to farmers. It is now seeking to replicate and scale these models.

### Saplings and other Farm Inputs through Local Nurseries and Breeder Farms

CInI has incubated various entrepreneurs that operate local nurseries to provide saplings as per local needs of farmers. CInI has also incubated an FPC of over 2,500 farmers who provide essential inputs like seeds and irrigation equipment to farmers at affordable costs.

Furthermore, CInI has helped local entrepreneurs set up breeder farms for providing Osmanabadi bucks, and other inputs to farmers rearing goats.

### Custom Hiring Centers (CHC's)

The FPC also operates Custom Hiring Centers which provide mechanisation services, for example tractors at lower costs compared to the market.

**22**
Nurseries set up in the 2 blocks

**04**
Breeder farms established

**05**
CHCs formed to provide services

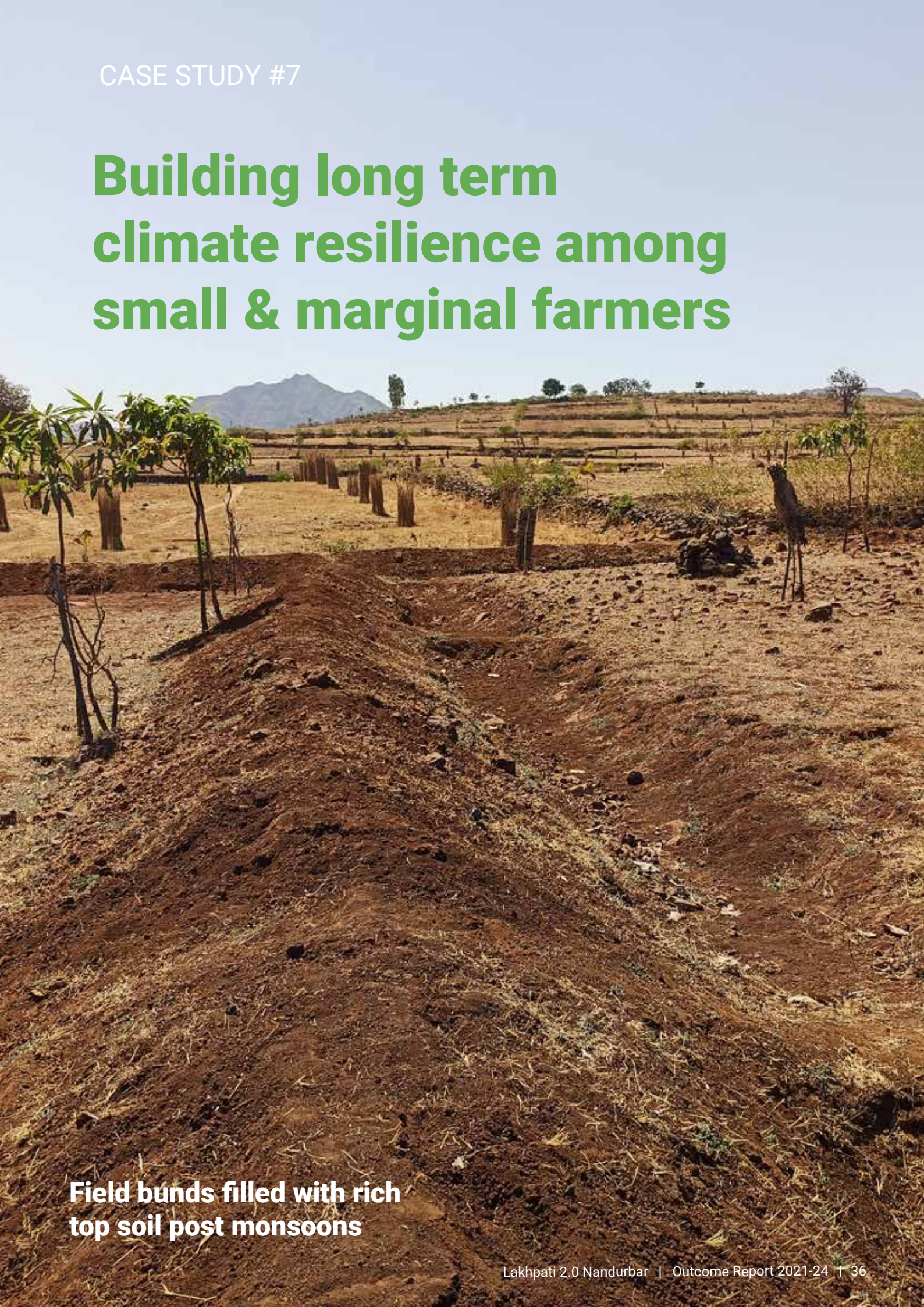
### Assistance in Building Market Linkages through the Farmer Producer Company

The FPC is assisting farmers in building improved market linkages. In a first experiment, the FPC facilitated a collective marketing model for a group of 66 farmers.

For strawberry farmers, the FPC is now assisting them to capture local markets with improved packaging and branding solutions.

CASE STUDY #7

# Building long term climate resilience among small & marginal farmers



**Field bunds filled with rich top soil post monsoons**

**Regions like Akkalkuwa in Nandurbar, are facing topographical changes over the years due to deforestation and climate change. Today, alongside improving farmer incomes there is a growing need to identify and deploy solutions that improve the region's soil, water access and overall biodiversity in the long run.**

## Field or Farm Bunding

Strong rains and winds blow away precious but loose soil on the hills of Akkalkuwa. As a result, soil is washed away downstream, making farm land devoid of natural nutrients.

Adopting a forward looking solution, CINI convinced a UG in the region to come together and improve 5 acres of their land collectively using natural techniques of field bunding.

In this solution, large trenches (10x1.5x06m) are dug around all sides of the land parcel. During monsoons, as water rushes through the fields, it is collected along with the rich top soil into the trenches, which can then be utilised by farmers during the agricultural seasons.

**23.5 Acres**

Land where field bunding has been carried out under the TAM program

## Soil Testing facilities for farmers

The CINI-TAM partnership made available soil testing facilities by Neoperk, at the doorstep of farmers, advising them on the precise quantities of farm inputs they should use to enrich their soil, and, prevent overuse and soil degradation.


## Bio-Inputs for Vegetable Farmers

While the CINI-TAM partnership has already made bio-inputs available to make farming more sustainable, improved coverage and robust of supply chains are critical.

*(Left) Field bunding work in progress in Akkalkuwa, (Right) Farmer testimonial for soil testing from Neoperk*

# Nandurbar

# Lakhpati

Meeting Aspirations of Small and Marginal Tribal Families in Dhadgaon and Akkalkuwa blocks, Nandurbar district, Maharashtra

**Outcome Assessment Report 2021-24**

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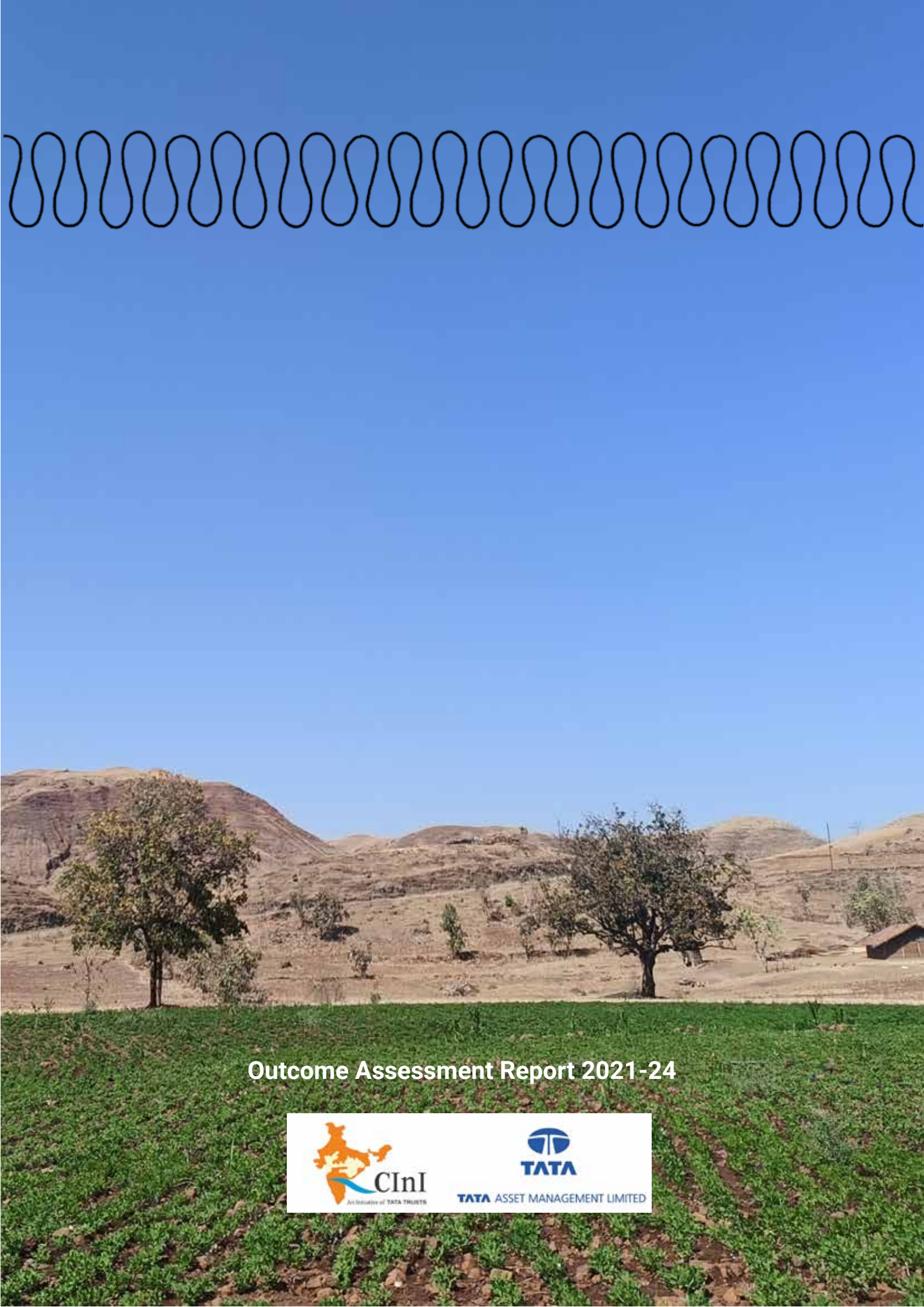

# Outcome Assessment Report 2021-24

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