

SOCIO-TECHNICAL INNOVATION BUNDLES (STIBS) FOR ENHANCING WOMEN’S RESILIENCE AND EMPOWERMENT: A CASE STUDY OF UTTHAN’S INTERVENTIONS IN BHAVNAGAR DISTRICT, GUJARAT

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A COLLABORATIVE RESEARCH BETWEEN ISST AND UTTHAN

RESEARCH LEADS: ANWESHAA GHOSH, MUBASHIRA ZAIDI AND PALLAVI SOBTI-RAJPAL

RESEARCHERS: BHAVANA DAS AND RITU BHATT



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Chapter 1: Introduction

The study titled 'Socio-Technical Innovation Bundles for Women Farmers' Resilience and Empowerment: A Case Study of Utthan' aims to unpack and understand the combination of interventions involving bundling of technological, technical and other social and behavioral innovations by Utthan that aim to make women farmers resilient and empowered. The primary research questions center on examining the processes of designing and implementing STIBs. They inquire about the effectiveness of these strategies in mitigating structural gender disparities and assess their influence on women's resilience and empowerment. Utthan is a non-profit organization in Gujarat working in the coastal and tribal districts of Bhavnagar, Amreli, Bharuch, Dahod, Panchmahal, and Mahisagar, focused on empowering small and marginal women farmers in Gujarat. Their unique approach combines sustainable agriculture, gender sensitization, and women's land rights realisation through legal interventions, exemplifying Socio-Technical Innovation Bundles (STIBs) by empowering women with knowledge, technical skills, and support

to secure land rights. They view women as knowledge holders, agents of change, emphasizing community engagement, adaptive learning, and peer support. The lead farmer-to-farmer approach enhances knowledge transfer, fostering sustainability. Thus, Utthan's holistic model which promotes resilience and gender equity among women farmers facing socio-cultural and economic barriers, was found to be most suitable for this research.

The methodology used in this research to develop the case study is qualitative but incorporates multi methods including FGDs, in-depth interviews and key informant interviews. The entire research design is influenced by a combination of the feminist social reproduction theory (SRT) and gender-responsive intersectionality frameworks. Social reproduction involves sustaining and supporting human life through caregiving tasks including childcare, and household chores, but also subsistence agriculture and farming, tasks that are predominantly carried out by women. However, SRT recognizes that caregiving activities are often dominated by profit-driven capitalism and patriarchal social relations, leading to a crisis in caregiving and environmental degradation, affecting marginalized populations and women in particular. Furthermore, the gender intersectional approach will bring a focus on social power structures that dominate the use and access to material and non-material resources in agriculture. Using both these frames, the study aims to understand if socio-technical innovations can help in addressing the evolving crisis, especially for women farmers, impacting labour conditions, societal outcomes, environmental factors, and community resilience. Utthan has been using these frames in various ways in its interventions and therefore a case study on its interventions using qualitative methods will be an effective learning exercise in terms of exploring processes, challenges, and outcomes of such interventions.

Chapter 2: Methodology and Sample

This case study is located in two villages of Hathab and Bhumbhali based in Bhavnagar district in Gujarat. These villages were selected based on the discussions with Utthan's team in Ahmedabad and Bhavnagar district who shared that these two villages were having the best practices of Utthan's socio-technological innovative bundling (STIBs) interventions, which was the main criteria for this case study. The Bundling was a consciously designed decision based on Utthan's past experiences of gender and livelihoods and the intersections of the two. It is drawn from a

strong belief that women's agency building (her voice, leadership, control over resources & bodily autonomy) and technical knowledge, skill building must go hand in hand. In this case, agency was a key lever, in enabling the impactful use of perspective, skills and tools to equitably partake in decision making and actions to transition to sustainable agriculture. The interventions have resulted in a shift from inorganic farming towards sustainable farming for women farmers (WF) through peer to peer learning, facilitated by technical training of WF by Krushi Sakhis (KS) and facilitating access to land rights for women farmers with support from Para-legal workers (PLWs) of the Utthan incubated Women's Federations.

For this case study, a qualitative methodology was adopted using a purposive sampling for focused data collection due to time limitations. The local Utthan team identified the KSs, WFs and other KIs with whom in-depth interviews (IDIs) and focused group discussions (FGDs) were conducted. All The IDIs and FGDs were conducted using semi-structured interview schedules, prepared individually for KS, WF and PLW. These were developed by the researchers with inputs from ISST and Utthan.

Women Farmers (WFs): The WFs are women who work in the farms registered in the name of their husbands or in-laws. Utthan has engaged a total of 180 women farmers in each village. These women are trained with technical knowledge to shift towards sustainable farming and ensure food security. Utthan further works towards creating awareness regarding the importance of land rights and helps these women to register the lands they have been working on, in their names.

Krushi Sakhis (KS): The KSs, members of the Utthan incubated local Women's Federation are lead farmers trained in the STIBs approaches. They identify Women Farmers (WFs) in their respective villages, carry forward the Socio-technical interventions by training & handholding the WFs to shift towards sustainable farming, promote food security and access land rights. Each village has 2 KSs and each KS supports a group of 90 WFs, organised into Women Farmer groups.

Para-legal Workers (PLWs): The PLW is a member of the Utthan incubated local Women's Federation, who along with the KSs raise awareness on women's land rights & identify women to support in claiming their right to land, which lends dignity, recognize them as farmers and supports accessing benefits of govt schemes. They are from the villages/local area itself and the selection is community-driven. They possess local knowledge and understanding, and a commitment to serve the specific issue. Basic literacy skills are important so as to deal with paperwork, complex revenue procedure and how personal operates vis a vis the women's rights to assets. Each PLW serve a cluster of 5 villages. The PLWs provide socio-legal-psychological support to the women farmers. They further bridge the gap between the Women farmers and the government system (Revenue officials at village/block/district office), facilitating easy access to the govt. spaces for marginalized women farmers.

IDIs were conducted with KSs, WFs and PLWs and FGDs were conducted first with the KS and WF to understand the local context of the village and level of Utthan's intervention in the particular village in order to have a more focused and in-depth interviews with the WFs. One of the

researchers knew the local language (Gujarati) while the other researcher used an interpreter from Utthan's local office for better communication. Further, four key informants were also interviewed for the case study. The data collection was conducted in the two sites from 28th November 2023 to 2nd December 2023.



Photo 1: In-depth Interview with a Women Farmer from Bhumbali



Photo 2: FGDs with women farmers in Hathab

The following tools were undertaken for the case study:

- **Secondary research analysis** consisted of a **comprehensive review of key program documents shared by Utthan and desk-review of literature around STIBs**. This was done prior to the fieldwork to understand Utthan's program design and intervention, local context, etc. and to understand what STIBs entailed. The review of documents was also used to design the data collection tools.
- **Focused Group Discussion:** FGDs were conducted with women farmers (WFs) and KSs separately to explore their experiences with Sustainable farming, understand gender-specific challenges, and assess the impact of STIBs on their farming practices and resilience.

The questions on FGDs focused on attitudes, beliefs and changes the WFs and KSs have experienced through the implementation of the Utthan's interventions.

- **In-depth interviews with WFs, KSs and Para-Legal Workers (PLWs):** Semi-structured in-depth interviews were conducted with the WFs, KSs and the PLWs from both the villages in Bhavnagar block.
 - a. The in-depth interviews with WFs focused on work and asset ownership, unpaid and carework, farming practices and division of labour, decision making related to agriculture and household, Utthan's Intervention in the village, post intervention changes and women's understanding of their land rights.
 - b. The in-depth interviews with KSs focused on their roles and responsibilities as a KS and their integration with PLWs to connect them to the WFs to ensure their access to land rights.
 - c. Additionally, the in-depth interviews with the PLWs focused on their roles and responsibilities, the challenges faced by them and their learnings as well as the impact of their work.
- **Key Informant Interviews (KII):** 4 KIIs were conducted. 1 each with a PLW from Mahua block, the Deputy Mamlatdar of Bhavnagar block, Utthan's Area Manager, Coastal Area Programme (the Program Implementer) and lastly with the Home Science scientist at Krishi Vikas Kendra (KVK), Bhavnagar. The questions for the KIIs focused on their

collaboration with Utthan and the impact of their interventions.



Photo 3: Key informant interview in progress in Bhumbhali

Table 1: Methodology - Sampling Structure

Research Tool/Area	Hathab	Bhumbhali	Any other	Total
FGD with WF	1 (17 participants)	1 (6 participants)		2
FGD with KS	1			1
IDI with WF	2	2		4
IDI with KS	2	2		4
IDI with PLW	1	1		2

KI interviews		2	2 (in Bhavnagar)	4
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Verbal consent was taken from all research participants before recording and photographing the interviews and FGDs. Detailed field notes were taken and discussed every evening by the researchers, along with the recorded interviews. The researchers then presented their findings with ISST and Utthan during an online analysis workshop to sharpen their analysis before writing the case study.

Chapter 3: Context and Profile

3.1. Utthan: About the Organization

Utthan’s journey began in 1981, when four women chose to work in the desolate Bhal region of Gujarat, helping marginalized communities to self-organize around critical livelihood issues. It is a grassroots-based institution with a mission to empower women and young girls by providing them with the perspective, resources and tools they need to amplify their voice, gain access and control over productive resources, entitlements & services, and take control of their bodily autonomy. To create systemic change and drive sustainable impact, Utthan also facilitates partnerships and synergies with various stakeholders and engages in evidence-based advocacy and policy dialogue while continuously taking up its own organizational development.

Prioritizing community-based and community-led transformation has been pivotal in building a critical mass of local leaders; amongst women, men and youth. Utthan's practice areas are very much aligned with the Sustainable Development Goals and are demonstrative of grounded and women-led action to address women's human rights issues which are deeply intertwined with issues of security, climate change, biodiversity, water security, resource distribution and governance.

The challenge being addressed by Utthan: Women and young girls face significantly disproportionate challenges due to social, economic, political, and environmental marginalization. This creates overlapping and interdependent systems of oppression, discrimination and

disadvantage. The adverse impacts of poverty, hunger, resourcelessness, violence and climate change on women and girls are most acute. As a result, their voices are more than often ignored and silenced and their needs neglected. This adversely impacts their ability to take decisions at individual, household, community or societal level. This inequity is perpetuated in society and associated structures, as a whole. Any development or growth therefore remains inequitable, incomplete and unsustainable.

Utthan works on building their agency at individual, household, community and societal level through enabling control over assets, body & voice. This in turn enables them to shape their own destinies and provides them the confidence to partake in the creation of a more just & equitable society. Presently, Utthan directly impacts the lives of over 8.5 lakh individuals in six districts of the western state of Gujarat in India. It aspires to scale this positive influence to at least 25 lakh individuals by 2027.

Utthan has been working with small groups of women farmers on watershed, sustainable practices, women's land rights since 2000. These efforts included indigenous seed augmentation (making the seed variety better), kharif maize stabilization, promotion of local/salt tolerant & climate resistant varieties, horticulture farms (*vadis*), crab/lobster/prawn cultivation with fisherwomen. In 2018, the program on STIBs was taken up on a large scale with 5000 women farmers based in a more structured design – the systematic bundling of rights and sustainable practices through the support of lead farmers in the villages. Utthan then, started to actively focus on large scale sustainable practices, land rights, MGNREGA, access to schemes etc., while simultaneously building leadership skills of the women farmers and strengthening their identity as farmers and knowledge bearers of sustainable agriculture. Eventually, in 2021, Utthan further strengthened the program '**Women farmers lead towards food security, sustainable agriculture, claiming women's rights & entitlements**' in three districts- Bhavnagar, Mahisagar, Dahod. This roll out saw the systematic bundling of rights and sustainable practices under the leadership of 58 KSs (lead women farmers who are mobilizers & onground trainers) & Utthan's field team. This case study is based on the program's intervention in two villages, Hathab and Bhumbali of the Bhavnagar district, Gujarat.

Scalability of the STIBs Program:

Utthan sees the scalability of the STIBs approach at several levels: for its own scale up, adoption/adaptation by peers and having a deep value at the global policy level.

At the Utthan level, scalability encompasses a twofold strategy: horizontal expansion and vertical deepening. In the pursuit of horizontal expansion, the program seeks to extend its reach to more women farmers in a block, to new blocks, extending beyond the current six blocks, new districts, and even states, transcending current geographical boundaries. With a current participant base of 5000 women, Utthan envisions significantly increasing this number, aiming to empower a larger demography. Simultaneously, the program strives for vertical deepening by enhancing the skills and capabilities of the existing 5000 women through initiatives such as promoting solar technologies, support in areas like bio input production, enhancing other aspects of their livelihood basket, financial & digital literacy, fostering a comprehensive, sustainable and growth oriented approach to women's empowerment.

This approach and experiential learning outcomes for a lasting impact has an important scope for adoption by peers, those working on a single bundle approach, interested in better bundling of livelihood interventions by the way of appropriate adaptation to different communities, geographies, ecologies etc. A critical aspect of Utthan's scalability vision is promoting technologies and creating support system for easy transition to sustainable agriculture. One of the key support systems that Utthan deems important is the establishment of sustainable agricultural enterprises and Bio Input Resource Centers (BRCs). The model of Utthan is designed to enable women-led federations to take charge of key aspects of agricultural commerce, including grading, packaging, marketing, and the acquisition of machinery. The ultimate goal is to create decentralized hubs at the village level, such as BRCs which would make bio inputs available at the village level. The set up of agri-tool banks (shared pool of agricultural tools and equipment) will help women farmers house and rent out drudgery reducing tools and equipment and larger equipment which small and marginal farmers may not be able to purchase, individually. This would encourage & catalyze the adoption of sustainable agriculture

practices, fostering economic independence and self-sufficiency within the communities. The strategic integration of these scalability initiatives aligns with the evolving experiences of KSSs over the past two years, enhancing the feasibility of achieving these transformative aspirations.

Crucially, Utthan's commitment to sustainability extends beyond its organizational lifespan. The program aims to instill leadership and ownership among the women participants, ensuring the continuity of its impact through women-led federations, even in the absence of Utthan. By addressing both the breadth and depth of its interventions, Utthan's scalability strategy positions the program as a catalyst for holistic empowerment and sustainable development, leaving an enduring legacy in the communities it serves.

At the state policy level, the experience of the STIBs approach provides a promising impetus to better integrate the 2030 Agenda into India's national planning instruments, policies, strategies and financial frameworks. There is global recognition of the need for integrated responses and solutions to deal with multiple crises we are faced with, today and the application of the STIBS approach will be extremely helpful for governments to develop policies that integrate the economic, social and environmental dimensions of sustainable development.

3.2 Profile of Study Sites:

3.2.1 Hathab

Hathab is the largest village in the Bhavnagar district of Gujarat in terms of population. The village predominantly has small and marginal farmers from the Koli (OBC) community. It is a coastal village and salinity of land and water pose the biggest challenge to the people of the village. The primary means of livelihood is agriculture, diamond cutting, agri-labour, animal husbandry (around 2-3 cows/ buffaloes per household) and construction labour. Women in the villages engage in farm and allied work whereas the men mostly migrate to diamond cutting factories or engage as wage labour in construction sites at Bhavnagar. They engage in daily migration even during the agricultural seasons because they have smaller lands and scarcity of water for irrigation. The

village had a population of approx 1277 households as per the census 2011 and most of them live in nuclear family structures.

The farmers in the village engage in agricultural activities mostly during the Kharif season that lasts from mid-June to September, during which they grow Pearl millet (*Bajari*). sapodilla (*chikoo*)



Photo 4: IDI with woman farmer in Hathab

Socio economic profile of the Women Farmers associated with Utthan in Hathab:

The average age of women farmers associated, is 41.3 years with minimum 22 and maximum 70 years of age (n=192). Primary occupation of around 99% of the women farmers in this village is working on their family's lands, 1% are home based workers. Average land size in acre owned by them is 0.66 with minimum 0.2 and maximum 2.8 acres. 57.3% of the women are illiterate, 36% have completed primary schooling, 5.2% have completed secondary schooling, 1.5% have completed higher secondary, and none are graduates. 14% of the total women are widows. 99.5% of them have Aadhar cards. 40.6% of them have job cards. 99% of them have bank accounts.

52.6% of them have Ayushman cards¹. None are members of the village SHGs but most of them are members of Utthan incubated Sangathans. Utthan strives to extend Sangathan’s members to 100% by the end of 3 years.

Categories	% of WFs (n=192)
Household heads	24.5%
Aadhar card ²	99.5%
Job card ³	40.6%
Bank account	99%
Ayushman card	52.6%
Women having name in the land documents	14.1%
Growing only kharif	61.9%
Fully rain dependent	57.8%
Members of government SHGs	0%

(Source: Baseline survey by Utthan, 2022.)

3.2.2 Bhumbhali

Bhumbhali predominantly has medium to big farmers. The Kharag Patel (OBC) is the dominant caste in this village. The primary means of livelihood here is agriculture, animal husbandry and construction labour. It is a coastal village as well, however the salinity of the water is higher than Hathab. due to high salinity the groundwater is not available for irrigation purposes, hence farmers can produce crops only in Kharif season. The land size in Hathab village is comparatively bigger

¹ Ayushman Bharat PM-JAY is the world's largest health assurance scheme, offering a Rs. 5 lakh annual health cover for secondary and tertiary care hospitalization to over 12 crore economically disadvantaged families in India. Eligibility is determined by the Socio-Economic Caste Census 2011 criteria.

² Aadhaar is a 12-digit unique identity number available to all Indian residents voluntarily, based on biometrics. It aims to eliminate duplicate and fake identities, offering easy online verification and authentication.

³ Job Card is a key document that records workers’ entitlements under MGNREGA. It legally empowers the registered households to apply for work, ensures transparency and protects workers against fraud.

than Bhumbhali, however, Utthan is working with small and marginal farmers. In Bhumbhali, the farming land is at a considerable distance (2-3 kms) from the residential areas.

Transition to sustainable farming in Hathab was easier than Bhumbhali because of smaller land size leading to lower input costs, as majority of their produce is for self-consumption. However, in Bhumbhali, the transition took more time because of its larger land size and cash crop production by the farmers. In land partnership with big farmers where the produce is for profit, they use more chemicals such that with lesser efforts more production is achieved as opposed to sustainable farming. Moreover, the WFs mentioned that production is low in sustainable farming for the initial few years but the reduced cost of cultivation results in an increase in disposable income. Cultivation cost reduction is due to transitioning away from expensive chemical inputs to cheaper bio inputs, lower energy costs, and improved resource efficiency emanating from improved soil health, water conservation, increased biodiversity, which lead to long-term benefits. However since large scale production is not directly visible, there is a resistance towards sudden shift to sustainable farming as there is uncertainty of the yield. Having mentioned this, it is crucial to understand that while sustainable farming might initially require more effort in implementation of sustainable practices, such as organic fertilizers and integrated pest management; the long term benefits can include comparable or even higher production levels (as per the experience of the participants of this research). Additionally, sustainable agriculture seeks to integrate a healthy environment, economic profitability, and social equity.

Socio Economic profile of the Women Farmers associated with Utthan in Bhumbhali:

The average age of women farmers associated with Utthan from Bhumbhali is 43 years with minimum 20 and maximum 75 years of age (n=200). Primary occupation of the around 11% of the women farmers in this village is agricultural wage labourers, rest of them work on their family’s lands. Average land size in acres owned by them is 2 with minimum 0.5 and maximum 6 acres. 55% of the women are illiterate, 6.5% can read and write, 32% have completed primary schooling, 4% have completed secondary schooling, 1% have completed higher secondary, and only 1.5% are graduates. 10.5% of the total women are widows.

Categories	% of WFs (n=200)
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Household heads	6%
Aadhar card	100%
Job card	35.5%
Bank account	98.5%
Ayushman card	36%
Women having name in the land documents	9%
Growing only kharif	67.5%
Fully rain dependent	61.5%
Members of government SHGs	7%

(Source: Baseline survey by Utthan, 2022.)

3.3. Socio-Technical Innovation Bundles (STIBs)

The Socio-technical Innovations Bundles are mechanisms in which social, technical, technological methods are explored, identified, developed, bundled and implemented to mitigate challenges in agriculture affected by climate change and undertake practices that create climate resilience, especially women farmers with no social security and access to resources overcome these challenges.

Utthan's 13 PoPs (Package of Practices) were defined by combining local knowledge of women farmers (who have been making efforts to transition 2018 onwards) and the Utthan team (having education in the field, on field experience with small and marginal farmers and several being farmers themselves) with the scientific practices defined by Agricultural Universities. From this package, Utthan considers all these important for a transition but 8 of these POPs listed below (see Table 2) are defined as compulsory for the transition. These POPs along with perspective sessions on identity of women as farmers, their crucial role in agriculture, importance of land ownership, strategies to facilitate household decision making, have been put together in a Manual. The KSSs are trained on the use of this manual along with various aids. They, in turn, disseminate this knowledge to WFs through on farm and off farm teaching methods including easy to understand flipcharts, games, discussions and on field demonstrations.

The Peer-to-Peer learning model being facilitated through the KSs, the strategic positioning of the PLWs and facilitating WFs to become members of the Women's Federations are the social interventions that coupled with the technical knowledge (soil testing, making of organic fertilizer, seed treatment, sowing techniques etc.) and technological assistance (tools for plucking vegetables, mulching, drip irrigation etc.) form the STIB for the WFs to shift towards sustainable farming and adopt practices that promote climate resilience & women's empowerment indicators.

Chapter 4: Thematic Areas of the Social-Technical Innovation Bundles

4.1. Utthan's 13 Package of Practices (PoPs) – Technical Inputs

The package of 13 sustainable farming practices, derived from the scientific module used by the Agriculture Universities of Gujarat, underwent adaptation based on the practical insights from the Utthan team and the farmers collaborating with Utthan. For example, the University module advocated the preparation and addition of Jeevamrut⁴, local farmers recommended enhancing its quality by incorporating buttermilk. Similarly, the prescribed seasonal and seed recommendations from the university were adjusted according to the farmers' experiential wisdom, such as favoring local seed varieties for maize instead of the 555 variety. Agricultural experts were consulted in formulating these practices, with the overarching goal of augmenting production, reducing costs, and enhancing income, particularly focusing on staple food crops in the coastal region of Gujarat. Utthan provides farmers with specific guidance on sustainable and efficient farming trainings by Krushi Sakhis.

Eight practices were designated as compulsory, essential for transition to the sustainable agriculture initiative. Failure to adhere to these practices would compromise sustainability, impede cost reduction, and hinder increased production. For example, using organic fertilizers like Jeevamrut, is crucial for the successful transition to sustainable agriculture. Similarly adopting line sowing method can result in saving 2 kg additional seeds per acre resulting in decreased cost of seeds, so it was also made compulsory. Notably, the production improvement is anticipated only

⁴ Jeevamrut is organic fertilizer made by mixing cow dung, cow urine, water, and adding jaggery and gram flour. It acts as a bio stimulant by promoting the activity of microorganisms and also increases the population of native earthworms.

Beejamrit is a fermented microbial solution and is applied as a seed treatment. It is effective in protecting young roots from fungus and helps in healthy growth of plants.

after two years of consistent adherence to these practices, justifying their compulsory status. Non-negotiable practices are recommended to farmers to ensure efficient and sustainable crop production. Additionally, other recommended practices extend beyond the fundamental requirements, striving to enhance soil health, promote biodiversity, conserve water, and establish better market prices of the yield.

The table below lists the 13 POPs alongside the compulsory 8 POPs with Utthan’s perspective in enabling this shift.

Table 2: List of Utthan’s PoPs for shift towards sustainable agriculture

Sr.no.	Types of POP	Compulsory POPs	Utthan’s Perspective
1.	Soil and Water Testing		Soil testing to identify deficiencies and recommend appropriate soil additions, such as organic matter or gypsum, to improve soil fertility, structure and water-holding capacity. Water testing in coastal regions help gauge salinity levels, facilitating well-informed decisions aimed at optimizing crop production.
2.	Use of farm yard manure	✓	Ensure effective land preparation by selecting the appropriate tilling method, utilizing organic manure or compost (FYM), determining optimal quantities of manure, and implementing soil leveling practices. Avoid the use of Diammonium Phosphate (DAP) in the land preparation process
3.	Selection of better quality of seed	✓	Use of Certified/improved variety/locally available traditional seed (No hybrid seeds)
4.	Seed treatment with culture	✓	Adoption of organic crop-specific seed treatment such as Beejamrut and Trichoderma
5.	Sowing method	✓	Promote line Sowing for better germination, reduce seed requirements, and facilitate intercultural operation.
6.	Mixed cropping	✓	Promote mixed cropping for improved soil health, optimize resource use, and enhance resilience to pests and diseases
7.	Mulching		Promote mulching through organic methods for conserving water, temperature regulation, weed suppression, prevent soil erosion, and improving soil structure.
8.	Interculture and weeding	✓	Promote regular monitoring, timely weeding, mechanical methods of weeding and timely interculture to enhance nutrient availability, water conservation and crop yield.

9.	Crop protection through organic pesticides	✓	Crop protection through production and use of organic pesticides for specific diseases/crops-Dashparni, Neemastra, Agniastra, use of traps such as trap crops, pheromone traps etc
10.	Use of organic manure for Plant growth	✓	Promote use of organic manure (Jivamrut) by providing guidance on application time, frequency, and quantity.
11.	Proper time to harvest		Promote timely harvesting based on days of maturity, maturity indicators, and the adoption of various harvesting methods and promoting use of automated reaper instead of manual harvesting.
12.	Cleaning and Grading		Proper cleaning and grading (for good seeds specially that are not cross pollinated and for sale of surplus product in the market)
13.	Method of Storage		Revival of traditional methods (stopping chemical use for storage and using herbs/plants and document traditional ways of storage in specific areas)

4.2. Training- Technical Innovations

Training is an essential technical tool used by Utthan, to build a body of learnings for sharing and exchange. This strengthens its team as a resource pool with core competencies for influence and growth in their field interventions. This further facilitates the strengthening of the leaders and institutions for collective prioritization and planning.

Capacity building of KSs:

To lead the grassroots movement towards sustainable agriculture, KS were imparted various on-farm and off-farm trainings of approximately 20 days. These trainings were not only aimed at cultivating an understanding of scientific and sustainable Package of Practices (PoP) but also included various sessions on developing gendered perspective of agriculture and nurturing women's leadership in sustainable agriculture. KSs also underwent training to deepen their comprehension of women as farmers. This includes cultivating leadership skills to secure rightful space, voice, and identity, along with developing strategies for equitable work distribution and fostering sustainable agriculture. The KSs were also exposed to best practices and methodologies through visits to agriculture universities, government/non-government initiatives in progressive sustainable agriculture, and successful projects. To equip them for their roles and enhance their

skills in training delivery, they also underwent Training of Trainers (TOT). The KSs undergo on-farm trainings as well.

Knowledge transfer by KSs to WFs:

The knowledge transfer by KSs to small & marginal WFs is done through continuous trainings in all the agricultural seasons crop wise. Krushi Sakhis also provide on-farm trainings to demonstrate production of bio pesticides and fertilizers. Along with scientific agricultural approaches, they also emphasize the significance of traditional seeds and advocate for food and nutritional security.

The knowledge acquired by KS is disseminated to the WFs through various tools like flipcharts, posters, videos, films etc. The training module also consists of various methods of teaching and learning through audio-visual stimulation. These modules were developed by Utthan in collaboration/consultation with subject matter experts. In the trainings, WFs also sing songs related to farming, fostering a sense of solidarity and sisterhood among the participants. KSs show various videos and documentaries on tablet (provided by Utthan, 1 tablet is shared by 2 KS) like one of the videos highlighted the importance of earthworms for soil health, showing them as vital allies to farmers. It also showed the impacts of urea usage in agriculture, which has altered their natural habitat and degraded soil quality, threatening the viability of sustainable farming. The film promoted the use of vermicompost rather than urea. These videos are visually appealing to the WFs and help them understand the importance of the natural bacteria and worms along with educating them on these matters. Other videos include methods of preparing Jeevamrut (manure), Beejamrut (organic substance for seed treatment), the importance of these practices and how it would help in shifting towards sustainable farming, etc.

Creative and culturally sensitive approaches like skits are also used for raising awareness on sustainable agriculture practices, women's identity as farmers, and women's land rights to reach larger community within village.

Tools to Disseminate Knowledge to WFs by KSs:

KSs employ a visual aid strategy using two plates – one green and one red. On the red plate, they place fake currency notes representing the costs per item in chemical farming. This includes expenses on chemical fertilizers, insecticides, visits to agro centers etc. On the green plate, they

arrange notes indicating the expenses involved in sustainable farming items such as jeevamrut and beejamrut. They ask the women farmers questions like, “How much do you spend on Urea?” which results in active discussion among the women during the activity. Upon completing this activity, the women farmers become more aware about the stark contrast between the high costs of chemical farming and the comparatively lower expenses in sustainable farming. This method is particularly effective as many of the women are illiterate, and using tangible currency notes provide a vivid and comprehensible way for them to understand the financial differences between the two approaches of farming.

Similarly in another activity, women are asked to hold up a chain (or something similar, as demonstrated by the KS on the right Photo 7 below). Using this symbolic chain, they emphasize the importance of women holding each other's hands and standing united. The message conveyed is that women must act as peers, learning from one another and providing mutual support. It is through this collaborative effort that women can uplift each other and collectively rise to greater heights.



Photo 5: KSs with the tools they use in their trainings to WFs - chain, stick, red plate and green plate, currency notes.

4.3. Social Interventions

The Social Interventions in Utthan entails the implementation of Peer-to-Peer Learning, Training conducted by the KSs and the role played by the PLWs in advancing WFs understanding of Land Rights.

4.3.1. Peer-to-Peer Learning Model

The genesis of the peer-to-peer learning model can be traced back to Utthan's founding phase. Capacitation of Water Committees for example is a case in point where women & men leaders were supported to build their socio, technical, leadership and communication skills to sensitize others. Between 1984 to 1994, efforts in mangrove restoration and *salvadora persica (pilu)* cultivation for wasteland regeneration and income generation was taken up. Post 1996, Utthan took up several endeavors in agriculture by promoting scientific package of practices, resource conservation technologies and crop stabilization. With time, biodiversity conservation, promoting, climate resilient, salt tolerant indigenous crop and fruit varieties, seed and fodder banking were taken up in collaboration with Women's Federations. These were accompanied by agricultural improvements, addressing concerns such as soil health, increased agricultural returns, and cost reduction through sustainable farming practices & technologies

The pivotal shift to integrate women's land and property rights emerged during a land rights workshop held in 2002, led by Prof. Bina Agarwal, a feminist economist and scholar who has written extensively on women's land rights issue in the sub-continent. This shift aimed to tackle the invisibilization of women in land and property ownership and the challenges faced by all types of women in securing land from their families. The initiative sought to comprehend the resources and tools at women's disposal and explored the intricacies of revenue laws and rights. Utthan cofounded the Working Group of Women & Land Ownership in 2003, a network which learnt and advocated together. By 2004, Utthan added an important practice area on facilitating land rights realization directly through its team and then by 2006-07 through paralegal cadre of women leaders.

From 2006 onwards, the scope expanded beyond land-owning farmers to include agricultural laborers, fisherfolk, and gender consideration of public lands. This inclusive approach also examined issues related to access to private and public land in the context of industrial

development. The movement evolved into a people's initiative, addressing concerns raised by women during public hearings on industrial projects impacting common and private lands. At this time, an important conversation was how to close the circle of women's deep involvement in agri operations, her knowledge in agriculture, her access & control over resources, scope to apply sustainable agriculture techniques and the consequent increase in earnings from agriculture. In 2018, Utthan achieved a significant milestone by consolidating its knowledge and experience through bundling. It compiled insights from women farmers, its past experiences, agriculture experts and the ICAR (Indian Council of Agricultural Research) network's institutional knowledge to develop tools that prioritized a gender perspective rather than solely focusing on technical aspects. The focus shifted towards a multi layered approach by building the identity and socio-technical skills of women farmers, drawing on the accumulated knowledge from various years to implement large-scale practices. **Utthan was clear that any technical skill transfer or livelihood enhancement should be accompanied by building agency of women farmers and gender sensitization at the community level.**

The emphasis on prioritizing hand-holding support for farmers in the first 3-4 years emphasized the significance of commencing sustainable farming on a small portion of the landholding and then gradually transitioning to larger plots. The program's expansion in 2021 reflected a holistic approach, delving deeply into addressing important issues such as food security, land rights, women's identity as farmer, sustainable farming techniques, and leveraging government resources, entitlements, and schemes. Utthan's progression leading to the introduction of the KS concept in 2021 highlighted the dynamic and evolving nature of the program.

Central to the success of these initiatives is the peer-to-peer learning model. Women leaders played a pivotal role in facilitating change, with PLWs and KSs assuming active leadership roles. Through this model, women were not only recipients of knowledge but also contributors, creating a sustainable framework for the dissemination of STIBs and fostering a collective environment where women empower each other. The transfer of knowledge from Utthan team to KSs too, played a foundational role in success of the transfer from KS to WF.

The Peer-to-Peer learning model of Utthan is a social intervention to build community agency through participatory communication; build awareness and transfer skills in sustainable farming.

The existing Women’s Groups (*Mahila Mandals*)⁵ of the Federations and outreach through Utthan’s field team led to the mobilization of interested farmers based on a set of indicators including land holding, socio-economic marginalisation, income levels etc.

In the 2018-21 phase, Utthan took on farm demonstrative work to support sustainable agriculture. The outcome built trust in the initiative giving an entry point to deepen work. When women observe that their neighbour has achieved a favourable price for her crops while they have not, curiosity sparks a conversation. She then inquires about methods employed. This interaction becomes the catalyst for spreading awareness about the benefits and techniques of sustainable farming. KSs guide the WFs in transitioning to *takau kheti* (sustainable farming) while ensuring food security.



Photo 6: Hansaben (KS, Bhumbali) with one of the many recognitions she received for Sustainable Farming Practices from ATMA, Krushi university at Anand and Gujarat Organic Products Certification Agency (GOPCA)

⁵ The Mahila Mandals are village level groups created by Utthan under Federation. Federations are incubated by Utthan for the collectivization and empowerment of marginalized women in order to create a gender just and violence free society.

One of the KSs narrated that Utthan would not have been able to directly reach 90 women in each village in a span of a year. Having KSs from their own community makes it easier for people to trust and come forward. This not only facilitates building rapport but also benefits from the KSs' knowledge of their village and community, providing a kickstart to the work. In the initial five to six months, there were only 5 women with her, but now there are 90. The 5 women would spread the word to another five and looking at the results they would get on farms, others would also get motivated to join them.

Moreover, all the KSs possess tablets provided by Utthan, which they use for data entry, capturing photos, and showing videos to the WFs. Alongside their regular phones used for communication, this technological inclusion has contributed to increased digital literacy. As a result, they feel empowered and assert that they will no longer be dependent on others.

4.3.2. Role of Krushi Sakhis

Utthan has adopted a structured participatory selection process for engaging the Krushi Sakhis. The master women farmers (MT) who had previously received training from Utthan, and other competent and willing women farmers were called to a meeting during this process. From each village, women farmers were provisionally selected for the position of Krushi Sakhi based on their attitude, expertise, and capacity for helping others during the women farmer meetings. These women farmers were then subjected to a systematic evaluation based on their personal level of adoption of a sustainable agricultural package of practices (POPs). In the evaluation, each woman farmer was asked about the adoption of 13 POPs in the last Kharif season. The number of POPs adopted within the 13 POPs is taken into account for the scoring. Each POP adoption is scored with 1 mark, and each individual woman farmer's score was computed against the maximum score, i.e., 15. This helped the Utthan team to realise and select only the women farmers who really "adopted the POPs at their household level". Each woman's score was plotted and shared with the Utthan field team, and that allowed them to understand the strength and weaknesses of each KS at each POP level. This systematic process helped the team to select potential women farmers as the KS and also realised that only based on the "interest and interpersonal skills of the women farmers" will not help in the Farmer-to-Farmer-Extension (F2FE) system. Utthan learnt and advocates that non-profits must use the combination of the participatory process along with quantitative evaluation while adopting the peer-peer learning model in any context.



Photo 7: In-depth interview with Krushi Sakhi, Hathab

Each village has 2 KSs and each KS has a group consisting of 90 WFs who are willing to transit towards sustainable agriculture. The women farmers have been part of sustainable agriculture program since year 2018-2021 (phase I). At that time, these women farmers got engaged with Utthan through Mahila mandals operating at village level which are part of Federation. Some of the women who were not part of Mahila mandal also joined the initiative due to their interest in practicing sustainable agriculture and mobilization efforts by Utthan team and women leaders. Utthan team members undertake monthly review and planning meetings with all of the KS, during which the KS reports on their progress and challenges and monthly plans are developed. The role of KS primarily includes facilitating community mobilization, providing agricultural training, ensuring access to resources, and advocating for the rights of women in agriculture. In essence, KSs contribute to building the capacities of WFs and fostering sustainable agricultural practices.

Apart from giving training, they also help the women farmers get access to various government schemes such as Ayushman card, widow pension, Kisan credit card etc. The KSs also act as the connecting dots between the WFs and the PLWs. PLW facilitate engagement between WFs and KSs through their training sessions.

4.3.3. Role of Para-legal Workers (PLW)

As per the annual Periodic Labour Force Survey (PLFS) Report 2021-22, agriculture had the highest estimated percentage distribution of female workers in India, ie. 62.9 %. However, social norms embedded in deep rooted patriarchy restrict women from owning land on their names. Therefore, the PLWs are another strategic social intervention from Utthan to ensure that WFs are not just workers in the farms but also have access to land rights and exercise their agency in decision making towards farm related activities. PLWs play a crucial role in raising awareness about women's land rights and cultivating a strong sense of identity among women as farmers during these training sessions.

The PLWs are selected from amongst the Federation membership/based on their interest. They are selected based on their capability, past work record and resilience to drive socio-legal transformation in the villages. The PLWs are selected through recommendations from the Federation, considering their local knowledge, cultural understanding, and their keen interest and commitment to work for the issue. Each PLW is then assigned responsibility of 5 villages. The PLWs connect with the KSs to pursue their intervention in the villages. The KSs who are residents of the same village themselves introduce PLWs to women farmers during their trainings which help them connect with the WFs, take up legal literacy and facilitate land rights realization. Their journey from building rapport with the WFs to informing them regarding their land rights hence begins.

At times, the PLWs are also women who have either been survivors of domestic violence or have shown exemplary resilience while facing day to day challenges in their lives, sharing their lived experiences with the WFs also help them build a sense of trust and confidence. The PLWs also connect the women with the *Nyay Samiti (Justice Committees)*, of the Utthan incubated Women's Federations, where WFs can report instances of domestic violence, intimate partner violence, violence against widowed farmers for demanding land rights etc for socio-legal counselling and support.

“Now men come and tell me that we want to register lands in our wives’ names. Earlier they did not come, now they have started to. All this has improved because of awareness.” Earlier men, especially *Rajput Darbar* men, did not even let us enter the village and they would say, “we would beat you, leave

this work.” Earlier Darbar women did not even come to the meetings now a few have started to come. There’s still a long way to go.” - Gavuben Chudasma, PLW, Samarthan Mahila Sangathan

The PLWs also have a desk at the *Mamlatdar*’s (Land Revenue Officer) Office at the Block level called as ‘*Swa Bhoomi Kendra*’ (SBK) where they bridge the gap between the women farmers and the government system. While the constant transfer of the Revenue Officers pose a challenge to the PLW in terms of building rapport and explaining their work to the new incoming officer, the Deputy Mamlatdar at Bhavnagar block mentioned during his interview that the PLWs are like the extended arms of the system. Additionally, there was an instance, where the positive impact of the PLW’s work led to one of the Mamlatdar requesting a PLW to institutionalize the SBK to the next block he was getting posted to.



Photo 8: PLW, Gauben at her *Swa-Bhoomi Kendra* desk at the Block Office, Bhavnagar

“Now, we are at a stage, where we inform the Mamlatdar about the GRs and we tell them about various land laws, sometimes” - Gavuben Chudasma, PLW

The strategic positioning of the PLW within the ecosystem of the Women's Federation by Utthan, work with marginalized women farmers and the government system, have made them crucial implementers of women's access to land rights.

4.4. Climate Change:

Climate change has major implications towards food security and livelihood of small farmers. The women farmers in Bhumbhali mentioned that they have been farming since they were young girls at their natal families and they have been able to observe the shift in climate as well as its impact in agriculture. Since most of the farmers are dependent on rain for producing a good yield, anything more or less than the seasonal amount of required precipitation causes damage to their fields. Moreover, earlier the river was perennial for 12 months but has dried up now, resulting in no water in the canals.

For instance, in June 2023, there was continuous heavy rainfall for 32 days, resulting in the washout of Jowar and Bajara crops, necessitating a second sowing. However, a subsequent 40-day dry spell hindered its growth. Late sowing due to the rains also affected many crops while the subsequent lack of rain impacted their development. The prolonged absence of rain prevented the use of jeevamrut on farms, as it requires a slightly wet environment and needs to be mixed with damp soil. The heavy rains further caused groundnut crops to shrink and wither. Additionally, due to Utthan's awareness work on food security, people had also cultivated pulses, but these crops were washed away by the rain as well. Since pulses are typically grown once a year and stored for the entire year, the failure this season forced people to rely on the market. Some families might not purchase pulses, deeming them expensive and unnecessary. Moreover, families prefer traditional green gram as they find hybrid green gram to lack the desired *mithaas* (flavorsome). They mentioned hybrid green gram also makes khichdi tasteless. Therefore, if there is no vegetable due to crop failure, families will only eat roti with green chillies or chutney, kadhi and khichdi, therefore lacking a nutritional diet.

“If our crops fail due to rain, and we have to rely on the market to purchase food, we would prefer not to buy items like pulses, even though they serve as additional nutritional support, because they are expensive.” - Lalitaben Baraiya, FGD WFs, Hathab

“We love having khichdi made from traditional mung seeds rather than the one with hybrid seeds, which is tasteless. There is a clear difference in taste; khichdi from traditional seeds is very sweet and satisfying.” - Shantuben Baraiya, FGD WFs, Hathab

Some women farmers mentioned that due to unexpected rains that have become very frequent nowadays, vegetables rot. They went ahead explaining that if the roots of the crops get more water than they require, the plant cannot get oxygen from the roots. Further, when the weather is cloudy accompanied by unexpected rain, the plants do not get the sunlight that is required. All of these damage the crop.

Additionally, the erratic rainfall pattern, characterized by heavy rain followed by a prolonged dry period, is anticipated to result in significant water shortages during the upcoming summer, impacting drinking water availability. The declining water levels in wells pose a threat to the upcoming rabi crop, as people have had to sow reduced quantities. This decrease in agricultural activities is also affecting the availability of farm labour jobs, leaving some individuals with no choice but to depend on MGNREGA⁶ if work opportunities arise. Unfortunately, the labor-intensive nature of MGNREGA work is coupled with lower wages, and at times, workers may not receive their due payments. In certain farm settings, laborers are compensated not only with wages but also receive 1 kg of the harvested produce, such as onions, other vegetables, or fruits.

Moreover, being a coastal area, the salinity of water and land is already high and negatively impacts agriculture, however the WFs mentioned, if it does not rain timely, the water in the wells becomes extremely salty as well because of the sun. They further shared that if it rains in July, water in the well is sweet but by January-February it starts becoming saline again because water from the above level is fetched already. It affects cooking as *daal* (Lentil) does not get cooked properly, khichdi becomes red etc. and disturbs the taste of food. Due to high salinity, crops do not grow well and production is affected as well. Consequently, affecting the crops to be grown in the next season as well. The women farmers complained of more storms now than before. They

⁶ Mahatma Gandhi National Rural Employment Guarantee Act 2005 (MGNREGA) is a government act that aims to enhance livelihood security in rural areas by providing at least 100 days of wage employment in a financial year to at least one member of every household whose adult members volunteer to do unskilled manual work. Women are guaranteed one third of the jobs made available under the MGNREGA.

mentioned the untimely nature of the storms which was not the case previously, due to which the crops get damaged, entire big branches of trees fall down damaging the fruits.

The presence of a lignite factory near the village has further contributed to the water salinity since the last fifteen years. The carbon emitted by factories resulted in poor soil health. The extensive felling of trees and the release of heavy chemicals by factories have heightened pollution levels, creating uncertainty in rainfall patterns. This environmental imbalance is adversely impacting crops, diminishing their quality and escalating maintenance expenses, leading to increased reliance on the market for self-consumption.

Besides, the effects of climate change have not been limited to human life alone; if the crops fail, there's a lack of fodder for livestock, and the absence of rain exacerbates the water shortage for animals. In such situations, maintaining livestock becomes expensive.

4.4.1. Climate change leading to increase in unpaid labour:

The effect of climate change is gendered as it increases the disproportionate burden of unpaid labour on the women farmers who bear the responsibilities like clearing the debris of fallen branches or damaged crops after heavy rains and fetching water from wells when water pumps become dysfunctional during power cuts. This effect aligns with social reproduction theory's (SRT) assertion that care work is often overlooked and undervalued particularly when linked to environmental challenges. Rains also accentuate the cooking burden on women in the sense that the firewoods and sticks get wet and damp forcing them to cook on gas stove instead of earthen chulhas which they prefer, as the quantity of food that can be prepared on gas stove is much lesser than on a chulha (bigger rotis can be prepared on chulha saving time that would be needed to prepare more rotis on gas stove). If their harvest is affected by heavy rains, they will further lose out on income and that will force the men of the household to migrate for work (discussed in the next section) also leads to time poverty and increase in the burden of unpaid labour of women.

4.4.2. Impact of climate change on men's waged work patterns:

Limited land size combined with water scarcity, salinity, erratic rainfall patterns, and increased frequency of extreme weather events in Bhavnagar has resulted in men going to nearby blocks/

cities for daily labor work while women typically stay at home to take care of family and farm activities. This scenario aligns with the social reproduction theory (SRT), which posits that care work, including responsibilities related to family and farm tasks, disproportionately falls on women. Women bear the burden of preparing meals and handling additional chores to support the male labor force engaged in physically demanding jobs like construction and shipbreaking. This division of labor accentuates the gendered dynamics inherent in social reproduction, where women's unpaid labor is crucial for sustaining not only the family but also the broader societal structure.

Men have to travel longer distances to find paid work exacerbating the time poverty experienced by women, as they not only manage existing responsibilities but also take on extra tasks due to the absence of men. This dynamic reflects the 'crisis of care' described by Fraser (2017), emphasizing how the hierarchy in economic paradigms biases resource allocation towards market production, thereby straining the social-reproductive responsibilities primarily shouldered by women. The study resonates with Floro's (2012) insight that environmental challenges are intertwined with social reproduction crises, leading to an overburdening of women in contexts like Bhavnagar. SRT's emphasis on understanding agriculture not only as a production process but as a social and cultural system deeply connected to the reproduction of individuals and societies contributes to an enhanced understanding of gendered implications of climate-induced migration within the broader context of social reproduction and intersectionality.

“Our husbands go to construction sites if there is a bad monsoon season. When they return, they are completely unrecognizable, covered in dust and cement. Washing their clothes becomes exhausting; our hands hurt from so much effort of washing for a long time. Not to mention, our soap costs go up as well. Haha.” - Jasumati ben, FGDs KS, Hathab

“Earlier, my husband used to help me in preparing dinner by cutting vegetables. But if he has to go out of the village for work, he comes back so tired that he doesn't help me. Instead, I have to do additional duties to take care of him” - Labhuben baraiya, FGD KS, Hathab

4.5. Utthan's STIB Model – what worked, what did not work, and tactics adopted to overcome challenges

4.5.1. Examples of interventions adopted on farms by WFs:

- **Soil testing:** Due to lack of knowledge, limited understanding of the significance of the test, inadequate guidance for interpreting results, and information delivery delays, farmers avoided undertaking soil tests. After getting understanding from Utthan, many WFs collected soil samples themselves and sent it for testing. Now WFs have better understanding about salinity and various nutrient levels in the soil like nitrogen, phosphorus, potassium, salinity etc. enabling them to make informed decisions on use of organic fertilizers. From each village 30 samples were collected and sent for soil testing that represented soil characteristics within the village.
- **Crop selection in line with soil type:** Following Utthan's intervention, WFs have acquired knowledge about suitable crops for different soil types. They can now distinguish between various soil types, including kaali (black), madhyam kali (medium black), retaal (sandy), and goralu (white). This understanding allows them to make informed decisions about the types of crops that thrive in their soil type. As a result, these women assess their soil conditions and strategically choose crops that are well-suited to the specific soil type.
- **Organic fertilizer/ Farm yard manure/ Compost :** The WFs have adopted a structured composting process in place of conventional method of composting. Instead of creating unregulated compost heaps in open spaces, they have now adopted a systematic and scientific method of digging measured pits and adding specific elements to it. This scientific approach, taught by Utthan has improved quality of compost, increased nutrient content, enhanced soil health, and saved costs.
- **Tilling technique:** Previously, the WFs lacked the technical knowledge to determine the appropriate tilling depth for different crops. This resulted in random tilling practices. However, with new knowledge, they now comprehend the specific requirements for each crop. For instance, they recognize that peanuts benefit from deep tilling, whereas millet requires less invasive tillage. This informed

understanding has not only prevented crop damage but has also led to increased production, improved crop quality, and resolved previous issues related to crop drying.

- **Mix cropping:** After receiving training on mix cropping, they have adopted it on their farms, gaining insight on its significance. They now understand that pairing crops symbiotically provides nutritional benefits and allows cultivation in a more condensed area, optimizing land use. This not only boosts agricultural productivity but also signifies a more efficient and sustainable resource use. They've acquired technical knowledge on the best crops to mix, leading them to produce Bajra for selling and grow mung for consumption. This approach maximizes nutritional values and minimizes land usage for two different crops. Additionally, they are also now able to grow pulses for their own consumption.
- **Less dependence on chemical inputs:** WFs have recognized the harm chemicals pose to insects, plants, livestock, and human health and they are concerned about the potential harm of consuming crops treated with chemical insecticides and pesticides. WFs have observed a shift in disease patterns, noting that diseases like cancer and diabetes were not prevalent in the past. However, there is an increasing occurrence of these diseases due to the use of chemicals in farming practices. Realizing the ill effects of chemicals on crops, they have shifted to homemade jeevamrut (organic manure) as a cost-effective, natural alternative to avoid health hazards associated with commercial pesticides.
- Motivation for sustainable agriculture comes from the desire to consume organic food, improve soil health, and enhance personal well-being. WFs are motivated to share their learnings from KS with other farmers, urging them to adopt sustainable farming practices. The satisfaction lies in avoiding chemical-induced diseases, and they firmly believe that sustainable farming is the only viable option. The benefits include improved life expectancy, health for future generations, and inspiration for others to follow suit.
- Previously, the farmers heavily relied on chemical inputs, believing it would enhance their crop yields. Utthan conveyed to people the advantages of transitioning to sustainable farming. WFs shared that chemical usage by one farmer may contaminate adjacent farms. Therefore, educating other WFs about the benefits of sustainable practices is crucial.
- WFs elaborated on the detrimental consequences of chemicals, emphasizing that the excessive application of chemical fertilizers over time has led to soil hardening, lack of organic matter and beneficial microorganisms in the soil. But after adopting sustainable

agriculture practices taught by Utthan, the soil structure has improved and earthworms are back.

“During the training, I realized the crucial role of land selection in farming practices. For instance, crops like bajri require specific types of land. Previously, we used to plant it where peanuts were grown the previous year, but now we understand the importance of choosing the right land for each crop.” - Labhuben baraiya, KS

4.5.2. Impact of the interventions on farming

To understand the impact of the interventions on farming, the report analyses and highlights the multifaceted positive changes brought about by sustainable farming practices and the support provided by Utthan, leading to improved agricultural productivity, economic empowerment of women, and a shift towards environmentally friendly and sustainable farming methods.

- **Diverse Positive Impacts:** The WFs and KSs expressed various positive impacts on their farms since adopting sustainable farming practices. These include a reduction in weeding, water savings through drip irrigation, and a decrease in labor needed on the farms.
- **Creeper Method Success Story:** One WF shared her success story after being trained in the creeper method of growing vegetables. This method, supported by materials provided by Utthan, has not only improved the quality of vegetables but also inspired others in the community to adopt the same method.
- **Seed Treatment and Selection:** Technical input regarding seed treatment and selection has been beneficial in protecting plants from insects and diseases. The use of organic seed treatment has led to better crop growth, preventing issues like rotting or fungal infections.
- **Improved Farming Practices:** Learning practices such as line sowing has made it easier for WFs to remove weeds efficiently, reducing the time spent on this task. The softer texture of the soil also contributes to easier plowing and an overall reduction in farming costs.
- **Crop Diversity and Resilience:** The use of beejamrut and jivamrut, along with the adoption of specific seed varieties like ‘Samruddhi’ bajra, has resulted in reduced crop failures and increased resilience to environmental factors like wind and rainfall. This has contributed to better yields and increased profitability.
- **Knowledge Transformation:** Before Utthan's intervention, WFs farmed independently. However, now they actively seek advice from KSs on things like crop selection, seasonal planting, nutrient quantities in jivamrut, new seed varieties, innovative cultivation techniques, and the importance of restoring soil nutrients through crop rotation.
- **Income Increase and Mindset Shift:** Women's income has increased, and they are now viewed as agents of socio-economic change within their households. There is also a shift from income-oriented farming to prioritizing food security. This change allows them to avoid purchasing chemically treated items, opting for home-grown organic produce.

- **Contributions to Decision-Making:** Women now actively contribute to farm-related decision-making processes, indicating an empowerment shift and increased involvement in shaping the direction of their agricultural activities.

"Before, men would dismiss our input, saying, 'What do you understand? I'm getting Urea today, and we'll use that.' However, after excessive use of Urea made the soil hard, they eventually acknowledged that we were right." - FGDs with KS in Hathab

4.5.3. Impact outside farm related activities:

The impact of Utthan's interventions have not just been limited to farm activities but in their personal lives as well. The WFs mentioned that their financial literacy has improved. They have been saving more through reduction in cost of production. Their overall health has improved because of eating naturally grown food. They mentioned that the Bajra grown by them has more content of Zinc which is beneficial for women during pregnancy. The women also mentioned that they have started shifting their focus from wage labour to working on their own farms. A woman mentioned her brother has started working on his own farm rather than going for diamond cutting where the income was lesser. The positive impact on their farms has motivated other women farmers to get connected with Utthan for these interventions. Thereby, facilitating the peer to peer learning model of Utthan.

"My husband, once a diamond cutter, and I decided to transition into farming to cultivate vegetables. Persuading him to join me in this venture proved successful, and the shift has significantly improved our financial situation. Unlike the limited benefits we derived from the diamond industry, our farm not only provides sustenance but also allows us to accumulate savings. With the combined efforts of my husband, our child, and myself, we are now engaged in agricultural activities, cultivating the land and enjoying the fruits of our labor." - Shilpaben dhapa, WF

"One of the woman farmer's husband was a vegetable vendor and would buy from agri market at wholesale prices and sell in bhavnagar market. But now he is focussing full-time on the farm which is generating more income by growing drumsticks and brinjals. If we are able to even help 2 people like this, it's a significant change in their lives." - Labhuben baraiya, KS

Additionally, men in the households have begun supporting the women in agricultural related activities after noticing better agricultural productivity and higher market value, as opposed to earlier when only the women worked in the farms. Moreover, violence has

reduced as a result of association with PLWs and the collective power and the social positioning of the women farmers which has made men fearful that any instance of violence will not be tolerated and the women will approach the Nyay Samiti for justice, which will cause them trouble.

Earlier today, before coming to this interview, my husband told me, "Don't worry about the household chores or the farm work. Focus on your meeting." Even though there were laborers on our farm handling the harvest, he assured me that I should prioritize the meeting without any concerns. - Lilaben, FGDs KS

Owing to awareness generation by PLWs and the KSs, access to schemes like PM kisan, Farming equipment support has become better. Many households have got themselves registered under the schemes and food security has also improved.

Moreover, the KSs believe that they have earned recognition and respect in the village. Through their efforts, they have successfully involved and trained 90 women, contributing significantly to their prestige in the community. They also attend Village Development Committee (VDC) meetings once in two months where they present their work on sustainable agriculture and discuss issues related to village development. VDC is established by Utthan for planning and implementing development activities within a village. The committee consists of members from the Panchayat, social leaders of the village, educationists, PLWs, KSs, and WFs.

There is a growing participation of women in the VDC meetings that happen through Utthan once in two months where they share their concerns and viewpoints. Women have achieved greater self-dependence. However, it is worth noting that when asked to share an example about increased independence, one woman shared that she can now independently arrange marriage for her son with bride of her choice. This raises a broader question: is this newfound agency empower women to respect and honor the choices made by others?

They are actively involved in decision-making on farms, a shift in the paradigm from the past practices when such matters were solely determined by the in-laws.

Women are now actively engaging outside their homes, building connections with the larger community. In contrast to the past, where household chores limited their interactions, they have now started assisting each other, visiting each other's farms, and participating in meetings and

other activities outside their homes. The KSs have experienced increased mobility, with the capability to travel alone to Ahmedabad. Earlier they would only be able to go to Bhavnagar with men. Women have gained more freedom to venture outside their homes, a shift facilitated by men granting them increased independence.

Photo 9: A 65 years old KS uses the tablet to do Utthan’s work and show videos to the WFs.



4.5.4 Improved decision making within family and the community

The interventions towards Sustainable Farming practices have also impacted women farmers’ decision making ability. The reduced cost of production, better yield and higher selling price of the produce has resulted in valuing the women farmers as ‘agents of change’ within their households and the larger community. This is also a result of the fact that these women are the direct receivers of the training provided by Utthan which gives them a technical edge in farms over the men as well.

Earlier, the men in the household dismissed women’s opinion regarding farm related activities and questioned their knowledge. In the initial stages of trainings as well, they had reservations regarding the women attending meetings. They asked the women regarding the purpose of the meetings. Older women (Mother-in-laws) in the families also showed resistance towards women attending these meetings. But having reaped the benefits of sustainable farming has gradually led to a behavioural change amongst the men and older women in the families and created more acceptance towards the opinions of women farmers. The WFs mentioned now they have support from their families, the community as well as the Panchayat.

“In the past, men used to question women about their knowledge of organic farming, expressing concerns about potential insect damage during the early stages of intervention. They would bring pesticides from agricultural stores. Nowadays, the scenario has changed, and men are seeking advice on when to start preparing jeevamrut from us” - Kundanben dhapa, KS

"Previously, men had strong egos, undervaluing the work of women and dismissing their importance. The perception was that men, by going outside and procuring goods from the market, held a higher status, while women were marginalized. A transformation has occurred; men now recognize the worth of women. Initially, there was little support, with men reacting negatively when women mentioned work or training. Despite this resistance, women persisted. In the past, decisions were dictated solely by men on the farms, but now there is a shift. We engage in discussions, deliberate on everything, and consider the mutual benefits of our actions." - Kundanben

"They used to think I was just going out for a stroll. My mother-in-law would say, 'You have too many meetings!' Then I took her with me to the meetings twice, and she realized that these were important and provided valuable learning. Today, when I called you here for the interview, she herself came and told me to sit in the backyard and comfortably give the interview."

- Labhuben, Baraiya, KS

One of the WFs also mentioned that along with shift in decision making process regarding farm related activities, there has also been a shift towards equal access to the income from the farms. Household negotiation power has gone up and decision making on farm has risen manifold.

"Income from farms is kept in a place where both of them know and can use it anytime. Both if take any amount from it, tell each other that they have taken xyz amount. Both move ahead together" - Shilpaben Dhapa (Indepth Interview, WF)

Furthermore, with the initiation of men's involvement in agricultural activities, women are relieved from the early morning chores in preparation for their husband's departure to waged work. This has afforded them additional time for rest and leisure. The shift in responsibilities has resulted in husbands assisting with household chores. Previously, their employment at the diamond factory necessitated early departures at 7 in the morning and late returns at 7 in the evening, leaving them fatigued and disinclined to contribute to household tasks. Presently, both partners can manage their agricultural duties collaboratively, fostering shared responsibilities and allowing them to spend quality time together.

Chapter 5: Challenges and Lessons Learnt

Embarking on this initiative 1.5-2 years ago, the project faced initial hurdles in achieving widespread participation due to geographical dispersion. To counter this challenge, KS initiated hamlet-wise meetings, ensuring smaller, more accessible groups. Initially, women exhibited hesitancy towards soil testing, primarily due to the associated cost of Rs. 150. Overcoming this barrier required persistent encouragement and explanations from KSs. The scheduling of meetings posed another challenge, as some women were uncomfortable with morning timings, necessitating alignment with the availability of Women Facilitators (WFs). House-to-house invitations by KSs precede each meeting, addressing the initial issue of inconsistent attendance by women. Significantly, overcoming gender norms related to mobility and low participation in decision-making processes was an ongoing challenge. Furthermore, women's caregiving responsibilities, aligning with traditional roles, were addressed by their ability to bring children to meetings, ensuring their consistent participation.

On the other hand, PLWs encounter a significant hurdle stemming from their restricted literacy and limited familiarity with intricate revenue-related matters, which are inherently complex. Even officials such as Mamlatdars and Collectors find themselves exhausted when confronted with complex land cases. While PLWs possess fundamental knowledge concerning widow rights and land distribution, a formidable area of study remains the evolving landscape of rules governing feedback, stamp duties, affidavits, and document registration. The transition to online platforms has further accentuated the need for comprehensive training, particularly in identifying diverse documents, understanding case nuances, and comprehending the myriad processes associated with distinct categories of cases. Understanding the specific document requirements for cases, including birth certificates and Aadhar cards, proves to be challenging. Temporal delays in judicial decisions and protracted timelines adopted by revenue officers, often extending beyond the lifetimes of individuals involved, add an additional layer of complexity to the responsibilities of PLWs.

Above are some instances of the challenges faced by the Utthan program in engaging with systemic discrimination of women in the communities that have resulted in norms and practices that exclude women from growth and development. The KS's and PLW's have worked around these systemic discriminations to change, push and adjust the gendered practices from within. However, the

challenge of promoting sustainable agriculture is multifaceted, with several interrelated factors hindering the uptake and limiting the impact of interventions, some of these factors being external to the program and often more difficult to influence. Firstly, the prevalent lack of decision-making power among Women Farmers, attributed to inadequate land ownership and poor access to essential resources, hampers the swift adoption of sustainable agricultural practices. Achieving equitable access to resources, particularly priced assets such as land in a patriarchal can take generations.

In the context of sustainable agricultural practices, the slow progress is exacerbated by external factors such as climatic changes affecting agriculture and water availability. Moreover, the transition towards sustainable agriculture faces a prolonged period due to the time required for improving degraded soils. This extended timeframe is a barrier to achieving complete adoption of sustainable practices. The labor-intensive nature of sustainable agriculture poses another challenge, coupled with a dependency on resources like dung and cattle urine, which may not always be readily available. Additionally, the lack of sustainable agriculture in contiguous lands creates discontinuities, making it harder for interventions to manifest broad-scale effects. In the context of small landholders, these challenges are accentuated, as income security becomes a core issue. This financial uncertainty makes it difficult for them to prioritize food security and take risks associated with transitioning to sustainable agriculture. Additionally, the lack of substantial support further hinders this group's ability to successfully navigate the transition towards sustainable practices.

Another factor to be noted is the absence of a comprehensive approach to sustainable agriculture across the government and market ecosystem that contributes to the limited impact of interventions. Addressing these challenges necessitates a holistic approach that considers both external factors and the specific needs of different segments within the agricultural landscape.

Chapter 6: Summary and Conclusion

The ‘Theory of Change’ (ToC) on Utthan’s STIBs for empowering women farmers is presented in the Annexure 3 of this report. The tool of ToC has been used to summarize Utthan’s STIB interventions and provides a comprehensive understanding of Utthan's STIB interventions. It begins by articulating the *raison d'etre* by identifying the problem perceived by Utthan, and subsequently elucidating key barriers that impede women's empowerment and resilience in the Bhavnagar context. The ToC then meticulously outlines Utthan's specific STIB interventions, offering a structured view of their activities. Following this, it delineates the observed outcomes and expected outputs, leading towards a broader consideration of long-term impacts. This strategic use of the ToC technique enhances clarity and effectiveness in presenting the intricacies of Utthan's efforts to empower women farmers.

As discussed in this report previously and identified in the problem statement of the ToC, climate change significantly affects the food security and livelihoods of smallholder farmers, particularly in lower- and middle-income countries (LMICs). In India, 73.2% of women are involved in agricultural work, but only 12.8% have land ownership. The gendered impact of climate change is evident, as women, with limited capacity and lacking safety nets for response, adaptation, and mitigation, become more vulnerable to its effects. These challenges not only hinder Women's Economic Empowerment but also contribute to a cyclic pattern of resource scarcity and subsequent shocks. Utthan's STIBs program also reveals the crucial role of women's access to land rights in impeding women from being recognized as farmers, limiting access to vital information, credit, and market linkages, intensifying their vulnerability. This leads to poor human development indicators for women, such as impacting food security, health, and perpetuating cycles of indebtedness and poverty. Barriers, detailed in the ToC, highlight the intersection of gender and socio-cultural norms are institutionalized and reinforced by market and state systems, negatively impacting women by limiting their access to property rights and subjecting them to control mechanisms and violence for non-conformity. Additionally, the devaluation of women's household work, often unpaid, stems from societal expectations that position women as primary caregivers. The vulnerability of women farmers is heightened by the absence of political will in the

governance system, which fails to recognize women as workers, further perpetuating gendered notions.

Besides, inadequate services such as education, security, social welfare fails to make women, their families and the community aware of women's land rights. Poor access to technical skills (scientific methods of agriculture) and services (access to mobile, social media, technology, etc.) for knowledge building, furthers the impact on women's devaluation as citizens and workers. Moreover, the civil bodies that undertake a majority of the awareness and gender responsive efforts are often over-burdened and under-resourced. Having mentioned this, sustainable/eco-friendly agricultural practices are time consuming as opposed to chemical farming and therefore, considered a deterrent to profit making values of the market. Moreover, it adds to women's time poverty and hence women are hesitant of making the switch to sustainable farming. Also, inadequate access to safety nets and inappropriate response mechanisms to combat failure in agriculture also adds to this hesitancy. The study also finds that internalized notion of patriarchy and strict conformation and adherence to obstructive social and cultural norms also create barriers in women adapting to new knowledge and technology.

Having recognized the multi-layered and multi-faceted vulnerability of women farmers, Utthan intervenes within the communities they work with by identifying women farmers and building their capacities as Lead farmers or KSs, (who are women from the community itself), who in turn identify and collectivize 90 WFs under each of them, Utthan trains the KSs with the technical inputs of the 13 POPs – testing soil health, preparation of Jeevamrut and Beejamrut are essential technical interventions in promoting the shift towards sustainable farming. They build knowledge towards the benefits of sustainable farming and the negative impacts of using chemical fertilizers in farming using mixed participatory methods such as the use of A/V materials, etc; to educate and inform WF who have had negligible formal education. Additionally, they also introduce women to the concept of food security and the health and economic benefits from consuming organic food.

While training is an essential technical intervention, its successful achievement is attributed to bundling it with the social interventions of collectivizing Women Farmers (WFs) by the KSs in the form of Mahila Khedut Juth (MKJ). These SHGs are also part of the *Bachat Mandal* of the

women-led *sangathans* (collectives) established by Utthan. The collectivization not only acts as an accelerator for the process of shifting to sustainable farming through the Peer-to-Peer Learning model but also enables a feeling of solidarity and sisterhood amongst the WFs, creating a social support structure for WFs. This support system for WFs within their own community facilitates learning from each other's practices and sharing the challenges they face in the farms, as well as in their personal lives. Utthan further converges with the government and other Non-government institutions eg- AATMA, KVK etc and conducts exposure visits for the WFs whereby they observe demonstrations of different techniques of sustainable farming. These linkages also help selected and interested WFs to receive better variety of seeds, tool kits etc. free of cost for experimentation. Apart from farm related interventions, Utthan provides a socio-legal security to the women in the community by making them aware of the services of the *Nyay Samiti* of the *Sangathans* established by Utthan. They feel empowered as they can reach out to the Sangathan in instances of violence against them. Women's access to land rights is crucial in Utthan's quest to empower WF. As such, the KSs also connect WF with the PLWs who help women in registering their names on land documents. The KSs play an integral role in identifying and prioritizing women farmers who are widowed or in need of immediate access to land rights because of layers of marginalization. As mentioned, the strategic positioning of the PLWs bridge the gap between the community of WFs and the government systems in building access to land rights.

With these STIBS (also see Outcomes in ToC Annexe 3), the WFs reported increased decision-making power in farm related activities. They are seen as 'Agents of Change' within their families who have been able to bring a shift in sustainable farming, leading to reduction in cost of production as well as higher selling prices from their produce. They also shared that this has led to some increased mobility for them as they are now able to visit the local market for personal needs. WF also shared that with increasing access to land rights and support from collectives, incidences of domestic violence are also reducing. One also observes how Utthan's version of STIBs has empowered women working as KSs, PLWs, with Nyay Samitis and Arthik Samitis, and being members of sanghathans (collectives). They express that their work has also enhanced negotiating power within their families and communities. Their self-confidence and self-esteem have grown as they network with the police, lawyers, and doctors as part of their work. Moreover, the capacity to assist others, particularly vulnerable women, by registering them for welfare

schemes like the Ayushman Bharat card, widow pension, and accompanying a woman survivor of violence to the police or the lawyer, has cultivated a sense of respect for them in their communities, making them proud of their achievements and struggles.

This case study underscores that providing technical training alone in agriculture is insufficient for women farmers. Structural barriers, including societal norms, hinder women's roles in families and communities, limiting access to markets and social protection schemes, thereby increasing their vulnerability. Economic gains, without concurrent socio-political reforms, do not yield sustainable results when working with Women Farmers (WFs). Utthan's approach involves bundling socio-technical interventions concurrently, creating an interdependent, evolving, and permeable system. This ecosystem, including interventions at various levels through KS and support from PLWs, *Nyay Samiti*, *Arthik Samiti*, etc., has effectively empowered women farmers. Solidarity and collectivization have improved women's lives through support and peer-to-peer learning, leading to increased decision-making in agricultural practices, economic gains, food security, access to land rights, enhanced mobility, and reduced violence against women in communities. Therefore, to transform women's roles as farmers and citizens and make them climate change resilient, the strategic integration of various empowering tools and systems across family, community, market, and state, such as STIBs, is crucial for achieving women's economic empowerment in its true sense.

Annexure I: Interview guides

WF IDI

About them:

14. Name
15. Age
16. Social category
17. Highest formal education completed
18. How important is education for you?

19. What are your children studying and from where?
20. Household size and who all are in the family
21. Who is the head of your household?
22. Occupation of the respondent
23. Any engagement in paid work for the respondent (Over the last 12 months) - up to three
24. Primary source of Income of the household
25. Secondary source of Income of the household
26. Do you have land registered in your name? If not, then on whose name? Is it jointly owned?
27. Is she part of any collective like womens' group, self help group etc? As what? Does she hold any positions in the community?

Work and asset ownership:

28. What does a regular day in your life look like?
29. How many hours do you spend on the farm? How many hours does your husband or other male family members spend on the farm?
30. What activities do you do on the farm?
31. Do you have livestock? Which? How many hours do you spend on the same
32. Who owns and manages the livestock?
33. Any other asset ownership like jewelry, land, agri assets like tractor etc.

Unpaid and care work:

34. What unpaid tasks are you involved in at home - cleaning, cooking, etc.
35. What unpaid tasks are you involved outside the home - fetching water, taking care of livestock, firewood collection, ration, etc.
36. What direct or indirect care work are they involved in? - childcare, elderly care, sick or disabled members of the family, etc.
37. How many hours on an average do you spend on a typical day on unpaid and care work?

About their farming:

38. Which other family members are involved in farming along with you? (high season help in case of denial)
39. What is the average land size you own?
40. Which crops do you grow?
41. In how many seasons do you grow crops? Which ones ?
42. Do you get engaged in seasonal employment?
43. What are your sources of Irrigation? Cost of irrigation - how much?

44. Where do you purchase the seeds from? Who purchases them?
45. Where do you sell the crops? Who sells them?
46. Do you use pesticides and Insecticides?
47. What farming instruments do you use? (Weeder, sprayer, pump, tractor etc)
48. Who do you take farming related advice from?
49. Do you have a KCC card?
50. Have you taken any loan? What purpose? What amount? Where did you source the loan from?
(Moneylender, SHG, Bank, relatives, friends etc)
51. In case of an emergency, where would you source money from? (Savings, relatives, friends, SHGs, panchayat, moneylender, not able to recover etc), with or without interest?
52. In the last 5-10 years, have you experienced climate change in terms of changed seed quality, changed production, rainfall, soil health, quality of crop etc and more? Take it up in detail. What exactly are the changes? Shift to other instruments because of it. What kind of problems are faced and how do you deal with them?
53. How do unexpected events like unexpected drought or heavy rainfall add to your burden on and off the farm?

Decision making related to agriculture :

54. Who is the primary decision maker with regards to farming activities- what crop to grow, where to buy seeds from, where to sell the crop etc.
55. What are the kinds of crops that you grow, now that you have a say in what to grow vs what the men used to grow.
56. When growing crops, what do you think of the kind to be grown? (better earning, food security, own consumption, healthy, environment friendly etc)How do you make these choices?
57. Who has control over that income from the farm?
58. Do you have a say in how the income will be used/invested further?
59. Does better yield and profit in income lead to better negotiating power for yourself- personal consumption, economic decisions for the household, in the market and interventions in the community?

60. Are you part of any collective or FPO? What is your role or activities that you have undertaken as part of these collectives?

Decision making in the household :

61. Who has the most say in the following decisions?
- d. Where to educate children from
 - e. Purchasing assets
 - f. How much to spend on social events like marriage, death
 - g. When to consult a doctor
 - h. What to cook on a daily basis
 - i. Whether to take a loan or not, from where to take a loan

Utthan's intervention in the village :

62. What specific interventions of Utthan did you implement? Why?
63. Out of the 13 POPs, which ones do you implement on your farm?
64. Are there any interventions that did not work for you? Why?
65. How and in what ways has Utthan's Peer to Peer learning model helped you?
66. How did you come to know about the Krishi Sakhi? Did she approach you?
67. What role did the Krishi Sakhi have in your farming?
68. How long did it take you to get used to the shift that the intervention demanded?
69. Do you participate in the gram sabhas?
70. What resources did you need, how did you get access to these resources?
71. What is the impact of the STIBs on
- a. Agriculture:
 - i. Better production and less cost
 - ii. Access to water

- iii. Improved seed variety through seed treatment
 - iv. Improved soil health and reduced salinity
 - v. More cropping seasons
 - vi. More savings
 - vii. Access to instruments like Weeders & Sprayers used & how does that help
 - viii. Organic compost
 - ix. Kitchen garden
 - x. Access to market
 - xi. Crop protection
- b. Income and livelihood changes post intervention:
- xii. Effect on migration
- c. Other changes:
- xiii. Financial literacy
 - xiv. Better health outcomes
 - xv. Reduced migration
 - xvi. Reduced violence
 - xvii. Access to schemes like PM- Kisan
 - xviii. Improved food security
 - xix. More leisure time
 - xx. Ability to use time and energy in doing other things - leadership roles, go to meetings, etc.

Post intervention changes:

72. In

- d. Community/ society
- e. Village
- f. Family - Within household
- g. Within self (agency, time, health)

Land Rights:

- 73. Were you aware of your rights?
- 74. Is the land in your name?
- 75. How did you get your rights on the land?
- 76. For how many years did you struggle for this right?
- 77. Did you know where to go, whom to reach out for legal/ financial support?
- 78. What kind of issues did you face in order to avail the rights that you deserve? (corruption, documentation, lack of cooperation from govt officials, lack of money, time, awareness)

Mapping Individual interventions with direct results:

- Capacity building workshops - Participation in Gram Sabha
- Exposure visits - Mixed cropping

KS IDI

- 79. Name
- 80. Age
- 81. Social category
- 82. Highest formal education completed

83. Household size
84. Family members
85. Gender of the household head
86. Are you a farmer? If yes, since how many years?
87. Do you have land registered in your name? If yes, since how long? If not, then whose name is on the land?
88. What did you do prior to becoming a Krishi sakhi?
89. Experience as a Krishi Sakhi
90. How did you get connected with Utthan?
91. How did you get selected as a Sakhi?
92. What motivated you to join as a Sakhi? What motivated you to continue being a Sakhi?
93. How did you start the work in the village? (organizing women farmers going house to house, raising awareness camps etc)
94. How does the peer-to-peer learning model unfold for you?
95. What is their work site - the context of their work. The social profile of the context - the caste/class, other marginalisations and intersections, vulnerabilities - including climatic or environmental etc.
96. Who do they consider to be women farmers?
97. How many women farmers did you start working with and now how many do you have?
98. What types of training do you undergo in your sessions with Utthan (what all are you taught?), and how frequently are these sessions conducted?
99. How does gender remain a consistent theme when receiving training on agricultural practices?
How is gender integrated into such training?
100. How do you take forward to the women farmers, what you learnt from the training?
101. What are the activities/ interventions you facilitated for the women farmers in the village?

102. How?
103. What works and what does not work? (Villagers not wanting to do soil testing because of costs, low participation in awareness sessions due to scattered geographies)
104. What kind of measure do you take when something does not work out? How do you adapt to that? How do you resolve those issues and ensure successful outcomes? (Women were not attending the VDC meetings during the sowing season, so the meeting times were adjusted.)
105. What are the visible and invisible impacts resulting from your interventions in the village? (indepth)
106. What was the status of the women farmers before you started the work and after that?
107. How do you take follow ups from women farmers?
108. How do you report back to Utthan?
109. What are the spillovers of these women farmer groups to other women of the village?
110. How do you think climate change is impacting women? In terms of agriculture, employment, household burden, economic opportunity etc.
111. What are the challenges that 1) You and 2) Women farmers face on farm and as a KS?
112. What are the challenges that 1) You and 2) Women farmers face as women, in homes with regards to unpaid care work etc.
113. Do you get support from the Gram panchayat, Sarpanch, your family and community?
114. What personal benefits do you derive from this position and your work, such as gaining respect within society or establishing an identity as a farmer leader?
115. How does a gendered perspective constantly flow in all your interventions with women?
116. What transformations do you observe in society and among women regarding altered attitudes and beliefs following your intervention?
117. Land rights?
- h. How do you work with the PLW? What is the division of work, roles and responsibilities?

- i. What is your scope of work on land rights?
- j. Why are land rights important for you?
- k. In how many villages are you working on land rights?
- l. Number of women reached through your program on land rights?
- m. What are your major learnings from working on land rights
- n. What are the issues that you face?
- o. What are the challenges of working with govt officials?
- p. What positive changes do you see in women who have got their rights?
- q. Why do you think after these many years of efforts we have not been able to secure women's land rights?

PLW IDI

About herself:

- 118. Name
- 119. Village
- 120. Age
- 121. Education
- 122. Social category
- 123. Hh size and family members
- 124. Gender of the hh head
- 125. Primary source of Income
- 126. Secondary source of Income
- 127. What did you do prior to becoming a PLW?
- 128. Years of experience as a PLW
- 129. How many hours a day/ days per week do you spend on your work as a PLW?
- 130. What does a regular day in your life look like?
- 131. Are you a farmer? No of years as a farmer
- 132. Do you have land registered in your name?

133. If yes, how did you get it on your name? If no, why not?

About work:

134. How did you come to know about Utthan? How did you get associated with them?

135. What motivated you to become a PLW?

136. How does the peer to peer learning model unfold for you?

137. In how many villages are you working? Name them.

138. How many women have you been able to reach through your program?

139. Why are land rights important for you?

140. How do you receive training from Utthan? What kinds of training are given?

141. How does gender flow throughout the various aspects of land rights in the training? Give some example

142. How do you carry forward your learnings from the training to other women farmers?

143. What are the kind of women who come to you with their land issue? Who are these women? How do they come to you? Do they know when you will be available and how to approach you?

144. How do they come to know about it?

145. What is your operating model?

146. How do you start working on a particular case?

147. How do you go ahead with the case?

148. How do you report back to Utthan?

149. How frequently do you take follow ups?

150. What is the role of VDCs in facilitating the work you do?

151. What is the role of Swa bhoomi kendra? How does having it help?

Challenges faced and learnings:

152. What do you think are the challenges that women farmers face?

153. What are the challenges that you face? In terms of your own work? In terms of PLW's work and how do you manage both?

154. What works and what does not work ?

155. How do you address and resolve the work related challenges that come in your way?

156. What insights have you gained personally? Learnings from the experience

157. How have you benefited from working as a PLW?

158. How have your views on gender evolved since embarking on your journey as a paralegal?

159. What do you understand about gendered dynamics and the impact of patriarchy based on your trainings?
160. How is the experience of working with the government officials? Which officials all do you come in contact with as a part of your job?
161. Learnings and challenges of working with government people.

Impact:

162. How do you define success? What does success mean to you?
163. In what aspects there is a significant change after women get their land rights? Give examples
164. What are the benefits of women getting their rights on
- r. Agriculture
 - s. Decision making in the household
 - t. Burden in household (unpaid work)
 - u. Income generating activities
 - v. Society/ community

Annexure II: FGD Guides

FGDs KSs:

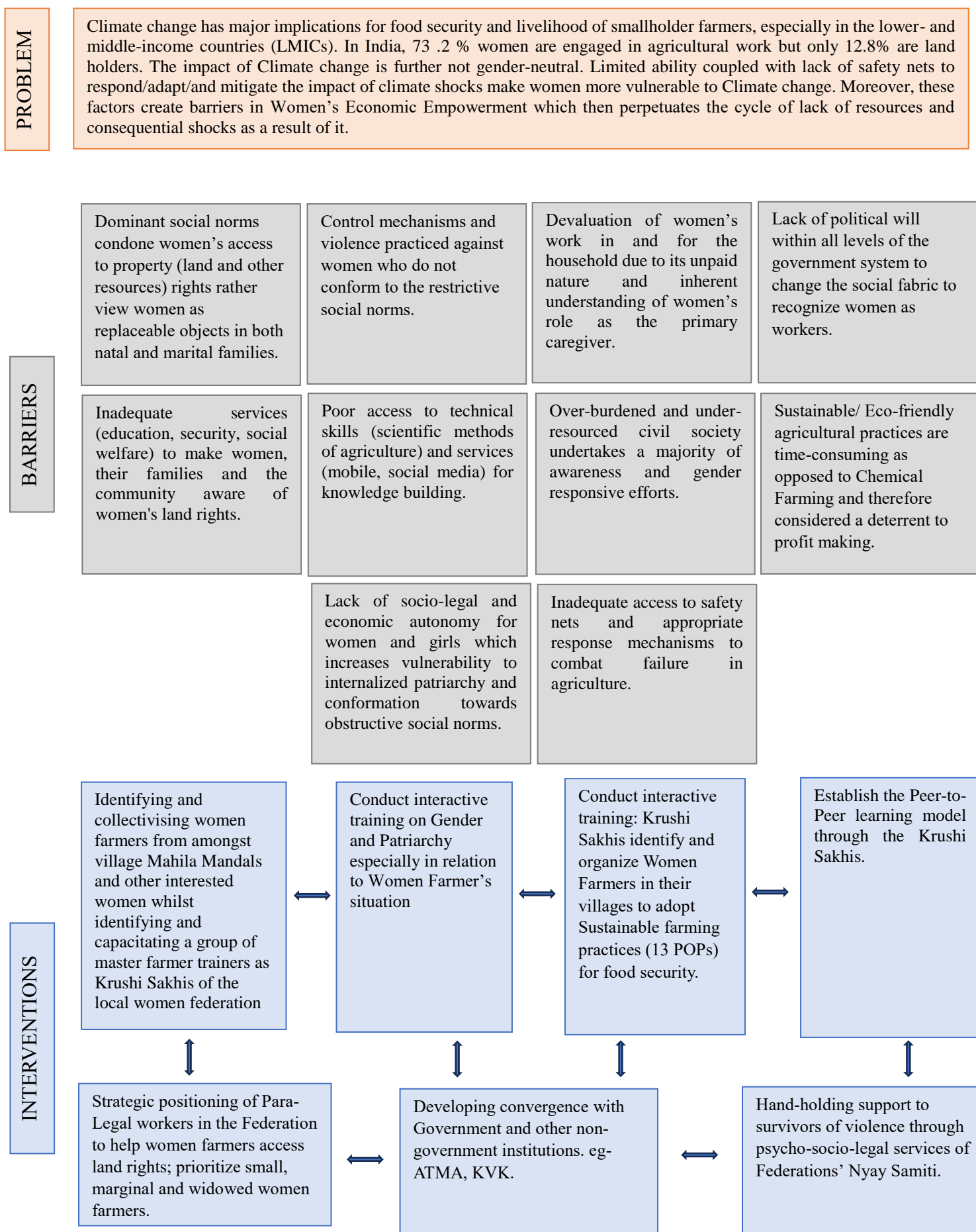
165. What motivates you to work as a KS?
166. What are the positive changes in terms of beliefs and attitudes you see in
- w. Yourself (interest to learn new things, attending more workshops, stepping out of homes,
 - x. Your household (reduced migration)
 - y. Community as a result of becoming a Krishi Sakhi? (participation of women in gram sabha)
167. What are the positive changes in terms of knowledge and skills you see in
- z. Yourself (reduced dependence on men for fertilizer because of knowledge of making own fertilizer, increased income etc.)
 - aa. Your household
 - bb. Community
168. How does climate change impact women? In what ways?

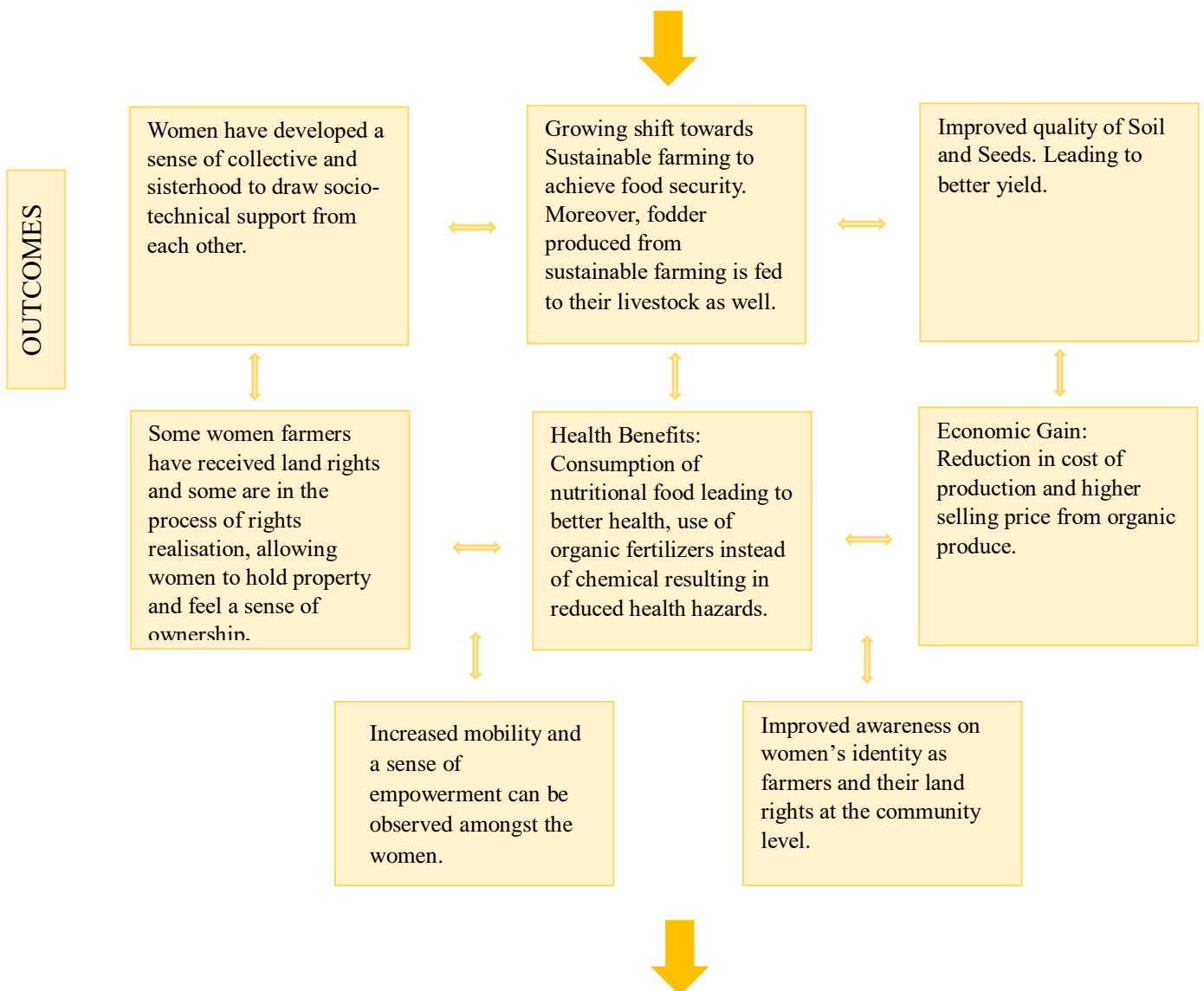
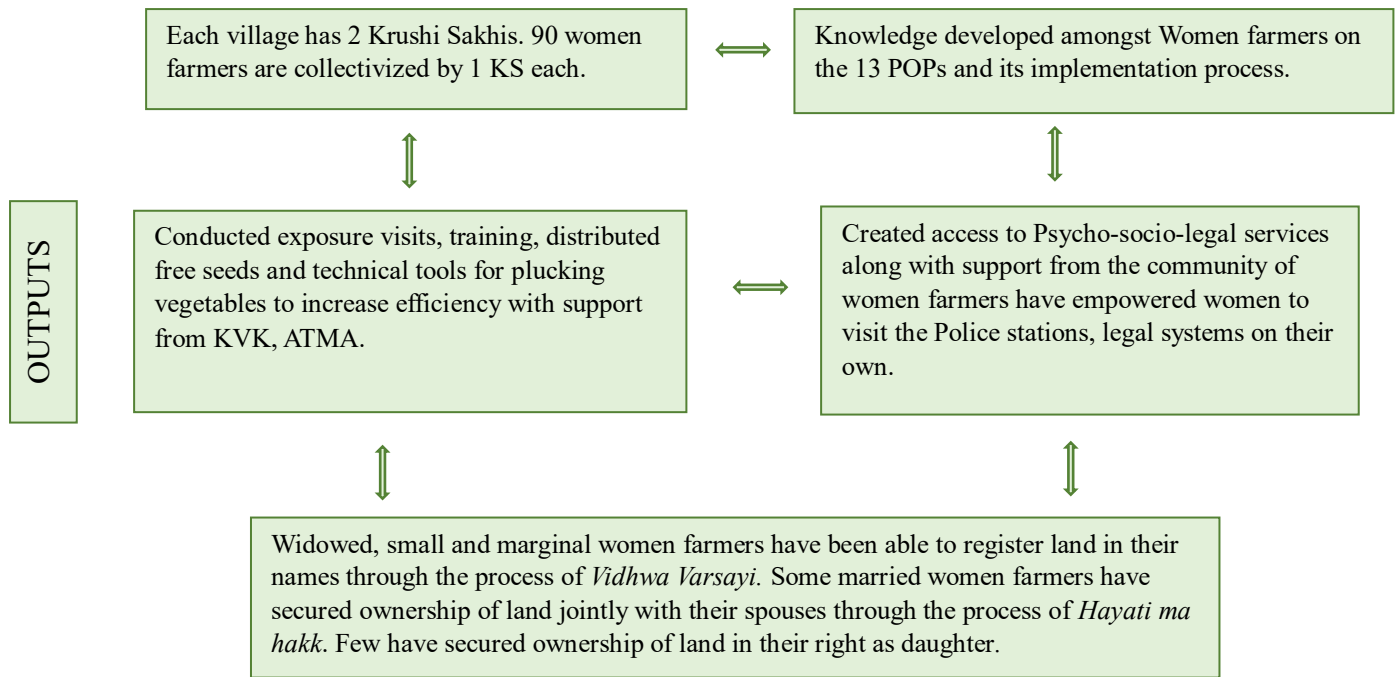
169. How does your work mitigate that? How does it make women more resilient and empowered?
170. How do you bring change in the larger community?
171. How has becoming a KS helped boost your confidence?

FGDs WFs:

1. How was your experience with farming pre Utthan's intervention (STIBs)?
2. How was your experience with farming post Utthan's intervention (STIBs)? – understand farm productivity
3. What have you learnt or would like to pass down as a crucial knowledge through practice of STIBs in farming?
4. What are the benefits of implementing STIBs?
5. What are the challenges of implementing STIBs?
6. How do you access the market for your farm products?
7. Has there been a change in market linkage after Utthan's intervention?
8. What changes have you observed in the context of your workload – both paid (farming) and unpaid (livestock rearing, household work etc) post implementation of STIBs?
9. Do you think implementation of STIBs could help other women farmers? Why/Why not?

ANNEXURE III: Utthan's STIBs for Empowering Women Farmers – A Theory of Change





IMPACT

Women farmers have developed knowledge on technical skills of sustainable farming and have become the agents of change in their families leading to their increased participation in decision making processes regarding their agricultural practices. Additionally, they have also collectivised and developed a sense of sisterhood, acting as a support system and safety net in times of need.



SUPER IMPACTS

Women Farmers are bringing in food security within their families and community.

Women Farmers are able to understand the need for access to land rights: receive benefits and subsidies from govt schemes.