Localising Climate Knowledge & Strategies: Perspectives of Small and Marginal Women Farmers from Gujarat

Climate Change in Women Farmers' Words

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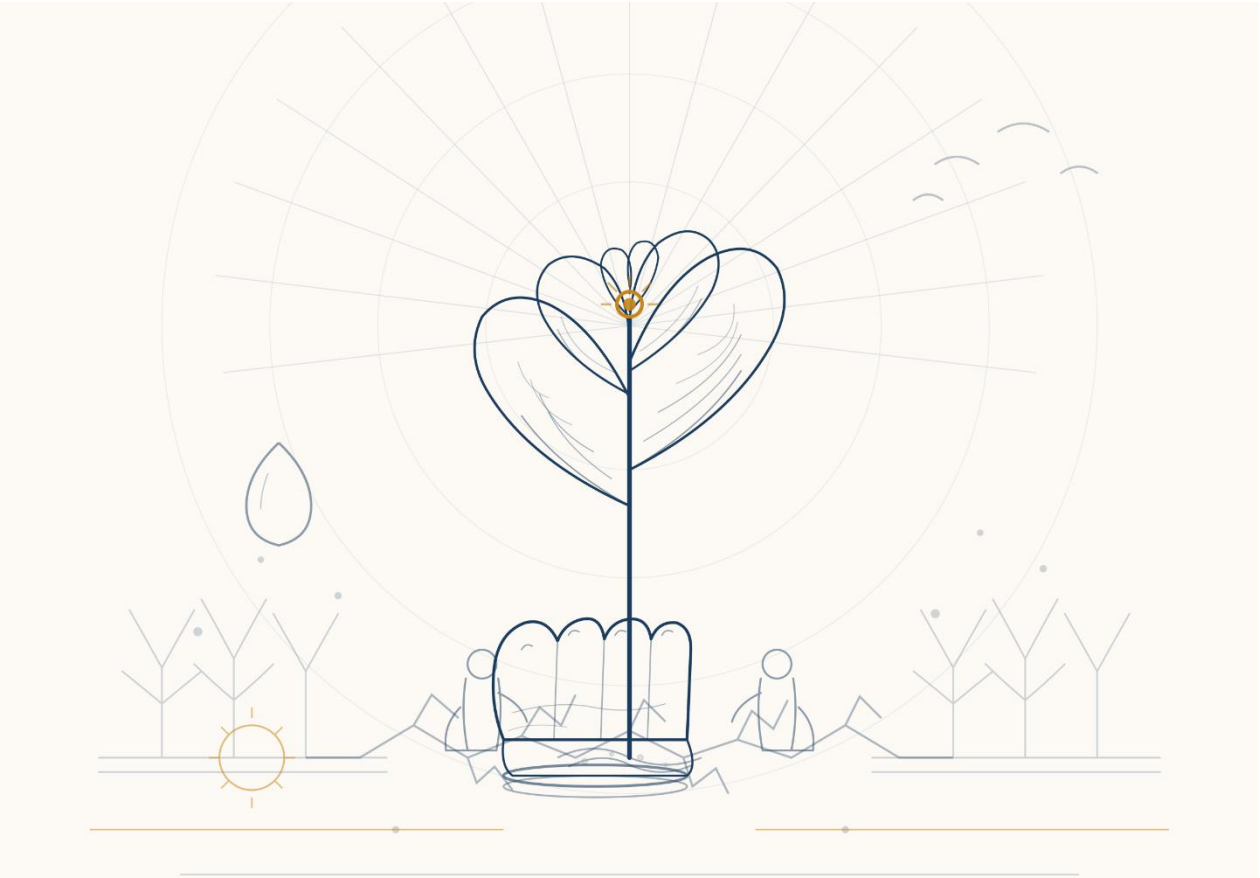

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PRINCIPAL INVESTIGATORS

Ms. Manisha Patel | Dr. Selvakumar Vellingiri

AUTHORS

Ms. Amrita Gupta, Ms. Neharika Mahajan, Ms. Manisha Patel, Dr. Selvakumar Vellingiri

Author Contributions

Dr. Selvakumar Vellingiri and Ms. Manisha Patel conceptualised the study, designed the research framework, developed the participatory research tools, and led field implementation and data collection. Ms. Amrita Gupta and Ms. Neharika Mahajan conducted data analysis and prepared the initial draft of the report. Dr. Selvakumar Vellingiri and Ms. Manisha Patel subsequently reviewed, edited, and finalised the report. All authors contributed to the interpretation of findings and approved the final version of the report.

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Ahmedabad, Gujarat 380015, India
Email: contact@utthangujarat.org | Website: www.utthangujarat.org

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Contents

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Ms. Manisha Patel · Dr. Selvakumar Vellingiri
Principal Investigators, Utthan
Connect: selva@utthangujarat.org

Executive Summary

76%	13.8%	236M+
of India's rural female workforce engaged in agriculture	women's share of agricultural land ownership in India	more women & girls facing food insecurity by 2050 (worst-case)

Climate change is reshaping agrarian livelihoods across India, with its impacts felt most acutely by small and marginal farmers. Within this group, women farmers experience climate stress in distinct and often invisible ways — shaped by unequal access to land, water, credit, technology, information, and decision-making power. While women contribute substantially to agricultural production, food security, and natural resource management, their knowledge, labour, and adaptive strategies remain largely underrepresented in climate research, policy, and programming. This study seeks to address that gap by foregrounding how small and marginal women farmers articulate climate change, experience its impacts, and respond through everyday practices of resilience.

Women farmers collectively articulate climate knowledge — moving beyond victimhood to voice and agency

About Utthan

Utthan, a grassroots organisation founded in 1981 in Gujarat, works with women and marginalised communities across the country. Rooted in principles of equity and justice, Utthan works to strengthen local leadership, expand access to rights and resources, and promote inclusive rural development. With a focus on water, livelihoods, gender equity, and natural resource management, Utthan co-creates solutions that are locally grounded and systemically relevant. This research emerges from Utthan's long-term engagement with women farmers and community institutions across diverse agro-climatic regions of Gujarat, and from a sustained commitment to feminist, participatory, and rights-based knowledge production.

Purpose and Objectives

The primary objective of this research is to document and analyse women farmers' lived experiences of climate change and to understand how climate variability intersects with gender, caste, land ownership, labour, and access to resources. Specifically, the study aims to:

- Capture how small and marginal women farmers perceive and articulate climate change in their own words and contexts

- Examine the differentiated impacts of climate stress on agriculture, livelihoods, health, care work, and food security
- Document women's adaptive and coping strategies, both individual and collective
- Identify gaps between women's lived realities and mainstream climate and agricultural interventions
- Generate evidence to inform gender-responsive, locally grounded climate adaptation strategies

Research Approach and Scope

The study adopts a qualitative, participatory, and feminist research methodology, centred on women's narratives and collective reflection. Fieldwork was conducted in Bhavnagar, Dahod, and Panchmahal districts of Gujarat, representing distinct agro-climatic zones and socio-economic contexts. Methods included focus group discussions, in-depth interviews, participatory tools, and key informant interviews with institutional stakeholders. The research prioritised ethical engagement, inclusivity, and the recognition of women farmers as knowledge holders rather than passive respondents.

Key Findings

- **Climate knowledge is localised and experiential.** Women farmers possess nuanced knowledge rooted in daily agricultural practices, observation of seasons, crop behaviour, water availability, and livestock health. Their articulation of climate change is closely tied to lived experience rather than abstract terminology.
- **Labour intensification without recognition.** Climate change has intensified women's labour burdens, increasing time spent on water collection, fodder gathering, unpaid care work, and farm labour, while access to productive resources remains constrained.
- **Compounded vulnerabilities.** Small and marginal women farmers face compounded vulnerabilities due to limited land ownership, insecure tenancy, lack of control over inputs and income, and restricted access to information, markets, and state support.
- **Active resilience strategies.** Women farmers actively engage in adaptive practices — including crop diversification, seed preservation, changes in sowing patterns, collective resource management, and mutual support through women's groups.
- **Gender-neutral policies are effectively gender-blind.** Mainstream climate and agricultural programmes often remain gender-neutral in design, failing to recognise women as farmers and overlooking their specific constraints, priorities, and capacities.
- **Collective institutions matter.** Platforms such as women's groups, water committees, and informal networks play a crucial role in building resilience, confidence, and decision-making power among women farmers.

Implications for Policy and Practice

The findings underscore the need to move beyond gender-neutral climate responses towards gender-responsive and women-centred approaches. Recognising women farmers as farmers, decision-makers, and climate actors is essential for effective adaptation. Policies and programmes must integrate women's knowledge, ensure access to land and resources, strengthen collective institutions, and address the structural inequalities that shape vulnerability. This report calls for a shift in how climate knowledge is produced, whose expertise is recognised, and how adaptation strategies are designed and implemented — placing small and marginal women farmers at the centre of climate resilience efforts.

CHAPTER 1

Introduction and Context

Women and girls form nearly half of the agricultural workforce in low- and middle-income countries (Mawia et al., 2025). They are the backbone of many food systems — planting, harvesting, processing, and selling — but their labour is often invisible and undervalued. In many cases, women are not even legally recognised as farmers. Farmland is rarely registered in their names, and they are routinely excluded from owning assets or accessing credit, training, or decision-making spaces. These systemic inequalities — both legal and cultural — deeply restrict women's access to agricultural resources, extension services, government support schemes, and even basic information on seeds and fertilisers. As a result, women are disproportionately burdened with food insecurity, unpaid and undervalued care work, and poor health outcomes (Mawia et al., 2025).

The climate crisis only worsens these existing inequalities. Research shows that climate change does not affect women and men equally — largely because of the different roles, responsibilities, and rights they hold in society (Huyer & Gumucio, 2020). Women are often portrayed solely as vulnerable victims of climate shocks. Yet, this framing misses a critical point: women possess deep environmental knowledge, extensive informal networks, and adaptive capacities that are key to building resilience. However, patriarchal norms and entrenched power structures continue to sideline women's agency, leadership, and potential (Huyer & Gumucio, 2020; Mawia et al., 2025; Puskur & Lecoutere, 2022).

A feminist climate justice approach offers a powerful alternative. Rooted in human rights, it calls for fair distribution of resources, inclusive decision-making, and accountability for historical and ongoing harms (Gender Snapshot, UN Women, 2025). It directly responds to the overlapping crises of poverty, hunger, conflict, and gender inequality exacerbated by climate change. Crucially, it centres the voices of grassroots women, Indigenous communities, and environmental human rights defenders — demanding systemic reform, equal land rights, and meaningful participation in shaping climate policies.

POLICY GAP

The Status of Women in Agrifood Systems (FAO 2023) noted that most agricultural and rural development policy documents acknowledge women's roles and challenges, but few explicitly address gender equality or women's rights, and even fewer encourage women's participation in the policy cycle. Only 39% of countries (25 out of 64) have established national coordination mechanisms to integrate gender equality into climate policymaking across sectors (Gender Snapshot, UN Women, 2025).

Despite the recognition of women's role in agri-systems and research showing that smallholding women farmers are disproportionately impacted by climate change (Puskur and Lecoutere, 2022), policies on gender equity in climate change and recognition of structural gender norms remain a significant challenge. Starting from the definition, there is a disconnect between broad, generalised definitions of climate change and the specific realities faced by women farmers. At the praxis level, there is a lack of understanding of how climate change is articulated in regional languages by farmers who bear the burden of resilience.

This is the premise on which this research began at **Utthan**. Founded in 1981 in Gujarat, Utthan empowers rural women and young girls with the perspectives, resources, and tools they need to assert their voices, access productive resources, and claim their bodily autonomy. Rooted in principles of equity and justice, Utthan works to strengthen local leadership and governance, expand access to rights and resources, and promote inclusive rural development.

Utthan closely works with smallholding women farmers (small and marginal farmers with landholdings of two and a half to five acres) and has seen that despite their resilience and adaptive practices, they are not recognised as experts in the agricultural domain. Given the impact of climate change on agricultural produce and ecology in the coastal and hilly regions where Utthan is working, Utthan sought to understand how women farmers perceive climate change and its impact — on their agricultural practices, their work, health, and well-being.

Conceptual Framework

This research adopts an integrated feminist systems lens. The starting point is the **Social-Ecological Systems (SES)** or **Coupled Human and Natural Systems (CHANS)** framework (Garcia & Uitto, 2025), which allows for a dynamic understanding of how human and ecological systems co-evolve. In applying the CHANS framework to the agricultural landscapes of Gujarat, the research foregrounds how gendered agricultural practices and climate impacts are mutually reinforcing.

However, the CHANS model often falls short in grappling with power — especially as it relates to gender, land rights, and institutional inequality. This research extends the systems framework by incorporating the **Social Relations Approach** developed by feminist economist **Naila Kabeer**. Kabeer's framework moves beyond identifying disparities to interrogate how institutions — households, markets, communities, and the state — actively produce and maintain gendered inequalities.

The work of **Bina Agarwal** is particularly critical here. Agarwal identifies the gender gap in land ownership as the most significant contributor to broader gendered disparities in economic wellbeing, social status, and empowerment. Without direct access to productive assets like land, women remain locked out of credit markets, agricultural subsidies, and formal recognition — relegated to the margins even as they become de facto household heads in the wake of male migration.

This analysis connects to **feminist political ecology** (Rocheleau, Thomas-Slayter, and Wangari, 1996; Elmhirst, 2011), which interrogates how gender and power shape access to and control over environmental resources. It challenges dominant climate discourses that are often technocratic and top-down — tending to romanticise women's 'traditional knowledge' while depoliticising their roles and rights. **Sumi Krishna** cautions about this romanticisation, pushing for a recognition that women's work and knowledge are shaped by — and shape — power relations within both households and communities.

This integrated framework — combining systems thinking, feminist political economy, and critical development studies — enables a more holistic understanding of climate vulnerability and response. Through this lens, the lived experiences of smallholder and Indigenous women farmers in Gujarat are not treated as anecdotal or supplementary, but as central to understanding and transforming the climate-agriculture-development nexus.

CHAPTER 2

Methodology

This research adopts a participatory, feminist qualitative approach to understand how small and marginal women farmers (SMWFs) in Gujarat perceive, articulate, and experience climate change. The study centres their voices, knowledge, and lived experiences to inform gender-responsive and locally grounded adaptation and mitigation strategies. Rather than imposing pre-defined categories or technical framings, the methodology seeks to co-generate insights with women farmers, grounded in their agroecological knowledge and everyday realities.

While climate change adaptation has increasingly entered the development discourse, women farmers are rarely recognised as key informants or experts. This study acknowledges that although SMWFs are already observing and responding to climate variability through traditional and adaptive practices, these efforts remain largely undocumented, undervalued, and unsupported by formal systems. The aim is to bridge this gap by eliciting women's own definitions of climate change, documenting their experiences as experts and knowledge creators, and co-imagining pathways to climate resilience through convergence of policy outreach and on-groundwork done by community-based organisations like Utthan.

Study Areas

The research focuses on two agro-climatic zones in Gujarat:

- **Zone 3 (Middle Gujarat — Tribal rainfed region):** including Dahod and Panchmahal districts of Gujarat
- **Zone 7 (South Saurashtra — Coastal and saline-prone areas):** including Bhavnagar district

These zones were selected due to their heightened vulnerability to climate stressors and the differential challenges they pose — such as saline intrusion, droughts, erratic rainfall, soil degradation, and declining productivity.

Research Objectives

- Elicit SMWFs' localised definitions and perceptions of climate change and environmental shifts in their own terms
- Identify climate hazards specific to each zone and their differentiated impacts on women's livelihoods and well-being
- Map seasonal workloads to understand how climate variability exacerbates women's time burdens across farming, livestock, and household labour
- Assess impacts on food and nutrition security, cropping systems, soil fertility, water availability, and animal health
- Document indigenous adaptation and mitigation strategies — including organic inputs, seed saving, crop diversification, water management, and collective coping
- Identify institutional, financial, and social barriers limiting women's capacity to adapt to climate change
- Understand support systems — family, sangathans, NGOs, and state mechanisms — that women rely on during climate crises
- Capture women's aspirations for climate-resilient futures and systemic support
- Enable comparative insights across agro-climatic zones to inform targeted programmatic interventions and policy recommendations

Research Design and Methods

Focus Group Discussions (FGDs)

FGDs were conducted using a participatory, gender-sensitive framework, facilitated in the local language (Gujarati). The sessions utilised Participatory Rural Appraisal (PRA) tools such as Seasonality Calendars and Climate Events Diaries to map the intersections of shifting weather patterns with agricultural productivity, livestock health, and domestic workloads. Future Visioning exercises and structured probing ensured that findings reflected not only participants' vulnerabilities but also their agency, institutional constraints, and specific requirements for building a climate-resilient future.

Across three locations, FGDs emerged as important spaces where women farmers, grassroots leaders, and community resource persons came together. In Dayal, the discussion brought together Krushi Sakhis, women farmers, and federation leaders. In Dhanpur, a broad cross-section of the Sangathan participated across multiple villages. The Khudra FGD brought agriculture into direct conversation with questions of rights and entitlements, with Krushi Sakhis, Para-Legal Workers, and women farmers from several villages.

In-Depth Interviews (IDIs)

Semi-structured individual interviews with SMWFs were conducted to capture granular, intergenerational knowledge on climate-induced livelihood transitions. Purposively sampled from two contrasting agro-climatic zones, these interviews served to document personal narratives and life histories that reveal the intersectional vulnerabilities of gender, landholding size, and environmental stress.

Key Informant Interviews (KIIs)

KIIs were conducted with institutional actors (government, NGOs, subject experts) to contextualise local responses within broader policy and programmatic frameworks and to understand policy concerns.

Table 1 Study Sites and Interviews Conducted

District	Block	Village	Participant(s)
FGDs — Coastal (South Saurashtra, Zone 7)			
Bhavnagar	Mahuva	Dayal	10
Bhavnagar	Ghogha	Juna Padar	10
Bhavnagar	Ghogha	Bhandar	14
FGDs — Tribal (Middle Gujarat, Zone 3)			
Panchmahal	Morva Hadaf	Rajayata	10
Dahod	Dhanpur	Dhanpur	10
Panchmahal	Morva Hadaf	Khudra	10
In-Depth Interviews (IDIs)			
Bhavnagar	Ghogha	Juna Padar	Woman Farmer (×2)
Panchmahal	Morva Hadaf	Rajayata	Woman Farmer (×2)
Key Informant Interviews (KIIs)			
Bhavnagar	Ghogha	Ghogha	Para-legal Worker, Samarthan Mahila Sangathan
Bhavnagar	Bhavnagar	Bhavnagar	Deputy Engineer, Irrigation Dept., Govt. of Gujarat
Bhavnagar	Bhavnagar	Bhavnagar	Enterprise Development Coordinator, Samarthan Credit Co-operative
Bhavnagar	Bhavnagar	Bhavnagar	ATMA, Bhavnagar
Bhavnagar	Ghogha	Bhandar	Sarpanch, Bhandar Village
Ahmedabad	Ahmedabad	Ahmedabad	Consultant, WGWLO
Ahmedabad	Ahmedabad	Ahmedabad	National Coalition for Natural Farming (NCNF)
Bhavnagar	Bhavnagar	Bhavnagar	CBO Worker / Community Facilitator, Utthan
Panchmahal	Morva Hadaf	Rajayata	Farmer (×2), Rajayata Village
Panchmahal	Panchmahal	Panchmahal	Member, Utthan
Dahod	Dahod	Dahod	Senior Scientist and Head, KVK

Sampling Criteria

For Women Farmers (SMWFs)

Gender and Functional Identity: The study adopts an inclusive definition of 'Women Farmers', recognising that legal land ownership in rural India remains deeply gendered. Participants were selected based on their roles as primary or co-farmers, regardless of whether their names appear in household land titles.

Operational Landholding: Marginal farmers: up to 1 hectare (approx. 2.5 acres); small farmers: 1 to 2 hectares (approx. 2.5 to 5 acres). This study purposely excluded semi-medium farmers to ensure focus on the most resource-constrained practitioners.

- Climate Vulnerability: Farmers from areas with recent exposure to climate hazards (past 5 years)
- Farming Experience: Active involvement in at least one full crop cycle and/or significant livestock-related activities
- Social Diversity: Intentional representation across caste, tribal, and backward communities
- Intergenerational Perspectives: Participants across various life stages to capture shifts in traditional knowledge
- Organisational Engagement: Balanced selection of members and non-members of local mahila sangathans

Data Collection and Analysis

All interviews were conducted in Gujarati and translated into English. Data collection occurred between November 2024 and November 2025. The study used grounded theory analysis where data was read, emerging thematic areas were coded, and differences and similarities across both regions were noted and documented.

Profile of Study Areas

Agro-Climatic Zone 3 (Middle Gujarat)

Zone 3 is a semi-arid to sub-humid region with medium to relatively high monsoon rainfall, but high intra-seasonal variability. Agriculture is predominantly rain-fed and cereal-based in its eastern tribal districts, including Dahod and Panchmahal (Anand Agricultural University & ICAR-CRIDA, 2011). Mean annual rainfall in Dahod is approximately 1,073 mm over 59 rainy days, with about 95% received during the southwest monsoon. Dahod is classified as a 'very high' heat-vulnerability district in the Gujarat State Action Plan on Climate Change. Dahod is overwhelmingly tribal (approximately 72% Scheduled Tribes) with low female literacy (approximately 49.8%). Panchmahal district has a normal southwest-monsoon rainfall of about 753 mm over 38 rainy days.

Key villages: Dhanpur (Dahod) — population 2,258 in 427 households; literacy rate approximately 45.7%; drought-prone and rain-fed. Rajayata (Panchmahal) — population 6,788; female literacy approximately 46.2%. Kuvajar (Panchmahal) — population 4,583; sex ratio 1,005 females per 1,000 males.

Agro-Climatic Zone 7 (South Saurashtra)

Zone 7 is characterised by dry sub-humid to semi-arid conditions, with pronounced seasonal variability in monsoon rainfall and frequent droughts. Normal annual rainfall for Bhavnagar district is about 598 mm, with roughly 90% received during the southwest monsoon over an average of about 31 rainy days. The

kharif portfolio is dominated by cotton, groundnut, and pearl millet; the rabi portfolio centres on wheat and onion.

Key villages: Dayal (Mahuva block) — population 7,238; female literacy approximately 38.5%; strongly agriculture-dependent. Bhandar (Ghogha block) — population 1,011; overall literacy approximately 62%. Juna Padar (Ghogha block) — population approximately 1,094; female literacy approximately 47.5%.

Field Photographs

Figure 1 *Climate Events Diary — participatory field exercise with women farmers*

CHAPTER 3

Findings

How Women Farmers Perceive, Articulate, and Experience Climate Change

GLOBAL CONTEXT — THE GENDER SNAPSHOT 2025 (UN WOMEN)

By 2050, under a worst-case climate scenario, up to 158.3 million more women and girls may live in extreme poverty globally as a result of climate change. Food insecurity may also rise significantly, affecting up to 236 million more women and girls. Despite these major concerns, women's issues and voices are often missing from the climate agenda.

This chapter presents the findings of this research, organised around five interconnected themes: (1) how women farmers perceive and articulate climate change; (2) the gendered dynamics of labour, land, and climate stress; (3) changes in livelihoods; (4) food security and nutrition; and (5) debt and aspirations.

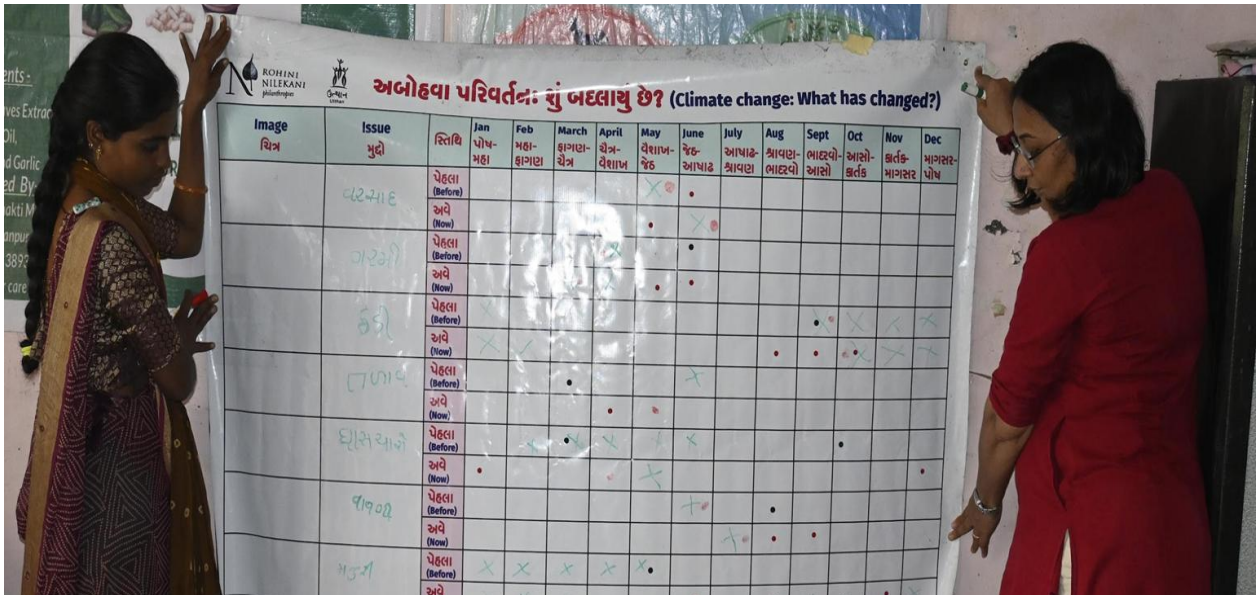
3.1 How Women Farmers Perceive and Articulate Climate Change

Huer and Gumucio (2020) share that climate change discourse tends to focus on women merely as 'vulnerable victims' rather than 'active agents' whose knowledge can become a significant aspect of resilience. However, Utthan views women farmers as knowledge holders, agents of change — emphasising community engagement, adaptive learning, and peer support (Bhatt et al., 2024). This section captures women's voices, their rhetorics, and understanding of climate change — not just to establish them as knowledge holders, but to enable a ground-up analysis of policies using their concerns and issues.

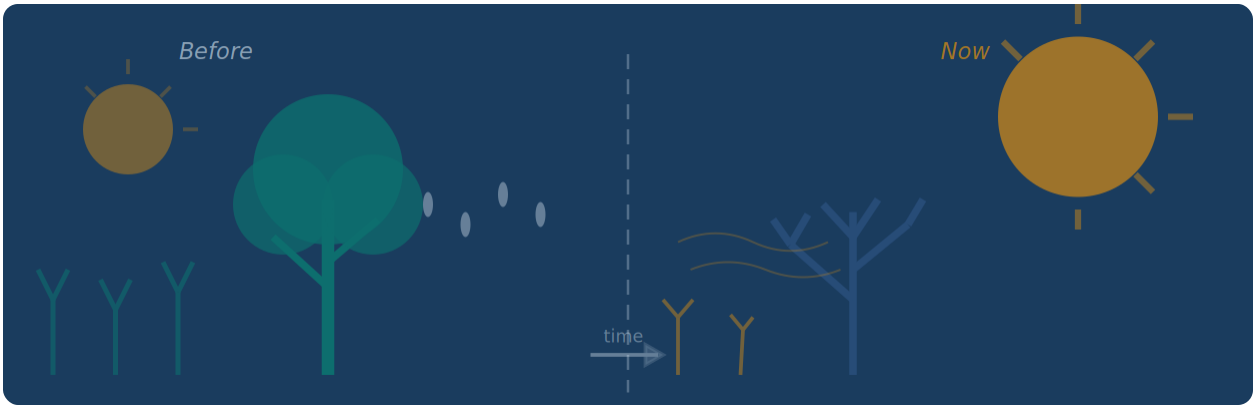
3.1.1 Perception of Climate Change: Voices of Women Farmers

The most immediate association of the word climate change or 'mausam parivartan' is the change in temperature, winds, and rain. Women farmers from both tribal and coastal regions shared that over the past ten years the heat had increased, and rains have become erratic with winds and cyclones becoming more frequent.

Figure 2 *Climate Calendar — seasonal mapping exercise with women farmers*



The Shrinking Winter Window



The shrinking winter — five months of cold compressed to 45 days, as experienced by women farmers in Gujarat

The most significant observation across both tribal and coastal regions is the 'shrinking' of the winter season. Participants consistently reported that the cool period, which historically lasted five months, has been truncated to approximately 45 to 60 days.

> *"It used to be colder back then. Let's say after Diwali, so November, December, January, February, and March — it used to last until March. It was still cold when Holi came. Now, the cold only lasts until February. A little bit remains, but the heat (garmi) has already started."*
>
> **— FGD with women farmers, Rajayata village, Morwa Hadaf block (Tribal)**

> *"Winter would start from the month of Aso [Sep-Oct] and last until Maha [Jan-Feb]. It would be very cold. And now, the heat starts from the middle of Maha [early Feb]. It is only cold for 45 days now."*
>
> **— FGD with women farmers, Dayal village, Bhavnagar (Coastal)**

The participants' description of heat starting in the 'middle of Maha' matches India Meteorological Department (IMD) data, which shows that February temperatures in Gujarat are increasingly 2°C to 4°C

above historical norms, effectively ending the biological winter prematurely. This aligns with the scientific phenomenon of 'Terminal Heat Stress'. According to Bhatt et al. (2025), a rapid spike in maximum and minimum temperatures during the grain-filling stage (February/March) can reduce wheat productivity by 8% to 10%.

Increased Heat and the Burden of Labour

Women farmers say that rising temperatures are not merely an environmental shift but a direct constraint on human productivity and health. The 'mid-day work gap' has widened as temperatures become unbearable earlier in the afternoon, forcing women to reorganise their entire domestic and professional schedules.

> *"We'd work the whole day, come home around 12, and go back around 2 or 2:30... now we cannot go again."*
>
> **— IDI, woman farmer, Rajayata village, Morwa Hadaf (Tribal)**

This inability to return to the fields by 2:30 PM aligns with research on the Wet-Bulb Globe Temperature (WBGT) and its impact on rural labour. According to Dash and Kjellstrom (2011), India is losing a significant percentage of daylight work hours due to heat stress, with women in manual agriculture being the most vulnerable.

> *"The heat (garmi) has increased. The tadko (harsh sun) is intense. People fall sick. And there wasn't so much illness back then. It has increased now."*
>
> **— FGD with women farmers, Juna Padar (Coastal)**

Erratic Rainfall and Cyclonic Activity

The erratic nature of rains is communicated in a twofold manner: the duration and timing of rain, and the amount of rain that falls. In addition, cyclonic weather conditions are more frequent in coastal areas.

> *"In the past, the rains were predictable. The rain would arrive around the 15th of Jeth [mid-June], and that was our signal to start farming. Back then, it rained consistently through both halves of Ashadh [June-July]. Now, things have changed. Sometimes the entire month of Ashadh passes completely dry, and the rain doesn't show up until Shravan [July-August]."*
>
> **— FGD, Khuvajar/Khudra village, Morwa Hadaf (Tribal)**

This experience of untimely and erratic rainfall matches the delayed withdrawal of the Indian Summer Monsoon (ISM). According to Bhowmick et al. (2019), the monsoon withdrawal has been shifting later into October, often resulting in 'unseasonal' rains during the harvest period, making the weather 'nakamo' — useless or detrimental — as it ruins the standing harvest rather than aiding the sowing process.

> *"Previously, the rains lasted for the full four-month season. Now, the pattern is erratic: either it rains continuously, or the monsoon stops as early as Shravan [August], forcing us to rely on supplemental irrigation (piyat). When the monsoon is insufficient, unseasonal rains often occur after Diwali. At that stage it is useless — it simply soaks and ruins the mature crops sitting in the fields."*
>
> **— FGD with women farmers, Dayal, Mahuva Taluka**

> *"There were no cyclones before, but now there are many. In the past, a cyclone would come only once or twice; now, we get them as frequently as the months change. As soon as the month begins, the wind arrives. Furthermore, lightning (vijli) has been striking every monsoon for the last five years."*
>
> **— FGD with women farmers, Dayal Village, Mahuva Taluka (Coastal)**

The participants' observation that cyclones were rare but are now frequent is supported by Murakami et al. (2017), who found a 52% increase in the frequency of severe cyclonic storms in the Arabian Sea. For coastal areas, the 'breaking of embankments' and subsequent saline flooding permanently alter soil composition through saline intrusion (Khan et al., 2020), making traditional farming impossible for years.

3.1.2 Impact on Work, Livelihoods, and Well-Being

Impact of climate change as articulated by farmers was not just visible changes — water scarcity and crop yields — but macro changes in flora and fauna and the overall impact of changes in type of farming, including mechanisation, hybrid seeds, and use of artificial fertilisers. All of these changes cumulatively impact food scarcity, change livelihoods with increasing out-migration, and lead to long-term health challenges like cancer, heat-related illness, high blood pressure, and vector-borne diseases.

Shortened Period Between Sowing and Harvesting Leads to Hybrid Seeds

> *"Farming has changed completely. The crops are becoming shorter. Now, if there is water, I plant onions. Thirty years ago, we primarily grew mustard (rai) and pearl millet (bajri). Back then, we would only plant onions after Diwali. Now, we use this new, short-duration millet because it is harvested quickly, allowing us to plant onions sooner. The old millet ripens too late. If we are late, we don't get a good price (bhav) for the onions."*
>
> **— FGD with women farmers, Juna Padar, Bhavnagar**

> *"The cotton crop was not grown here before. Nobody used to cultivate it. Instead, we grew a lot of pearl millet (bajra) and sorghum (jowar), so we got fodder from what we grew. Now with cotton, there is a shortage of fodder."*
>
> **— FGD with women farmers, Dayal, Mahuva Taluka**

Fertilisers Accompany Hybrid Seeds

> *"The reason for this change is that if my neighbor has a healthy crop, I want to grow one just like it. So, the use of fertilizer increases. In reality, things used to grow in the fields even without chemicals. These new hybrid seeds have less capacity to absorb nutrients naturally from the soil, so they require Urea fertilizer. In contrast, local seeds (desi biyaran) still produce fruit even if they don't receive Urea or DAP."*
>
> **— FGD with tribal farmers, Rajayata, Morwa Hadaf**

Seeds and Chemical Dependency

> *"Now, they use chemicals. Because of those chemicals, if the crop doesn't get water for ten days, it just dies. Native seeds are not affected that much, but hybrids get damaged. Earlier, when we grew*

> *our own grain, we would save the best seeds in our own pots. Now, we have to buy them. We pay 600, 800, or 1,200 rupees for seeds without even knowing how much will actually grow."*
>
> **— FGD with women farmers, Dhanpur (Tribal)**

The Debt Trap

> *"The seeds cost 2,500 rupees per kilo, but farmers have to buy them. Even after applying pesticides and fertilizer, it fails. If you have money, you spend it. If not, you still have to buy them, even if you have to borrow (uchina). We borrow from someone, but we have to get the seeds. They might give it on interest (vyaj). The interest is not fixed. It could be 4%, 5%, 3%, 10%."*
>
> **— FGD, Juna Pahar**

FIGURE 3 The Cycle of Disease – Debt – Degradation	
Heat Increase	Rising temperatures shorten viable working hours, damage crops, and harm human and livestock health.
Erratic Rainfall	Unpredictable monsoon onset, dry spells, and extreme events disrupt sowing and harvesting cycles.
Hybrid Seeds + Chemical Fertilisers	Market-promoted inputs yield short-term output but erode soil health, increase costs, and deepen debt.
Expensive Inputs → Debt	Seeds costing ₹600–₹2,500/kg force borrowing at 3–10% interest, trapping households in debt cycles.
Low Nutrition, Low Shelf Life	Hybrid grain spoils quickly; local varieties that lasted all year are being lost to market dependency.
Food & Livelihood Insecurity	Families shift from self-sufficiency (12 months) to market dependence (2–6 months of grain stored).
Out-Migration	Men migrate for work; women become de facto farm managers without land rights or institutional support.
Soil Degradation	Chemical residues harden soil and reduce water percolation, creating dependence on irrigation that women cannot independently access.
Rising Disease Burden	Heat and chemicals drive increasing rates of cancer, hypertension, and vector-borne disease in farming communities.

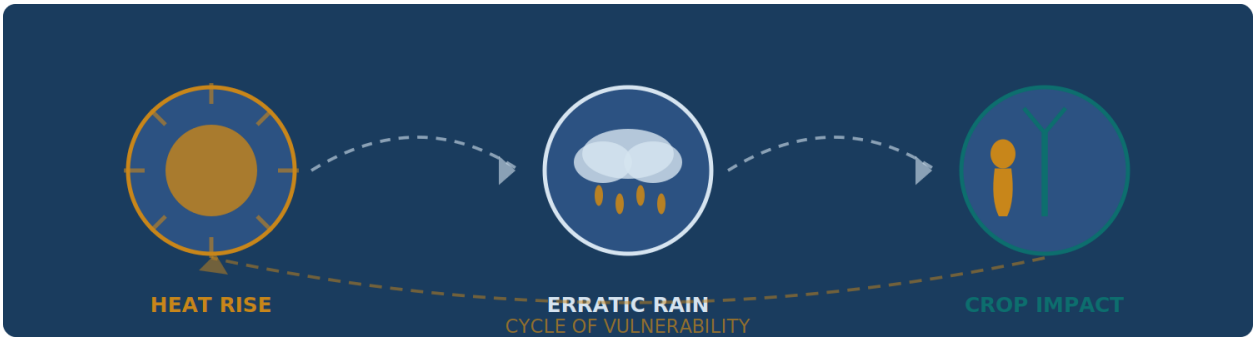
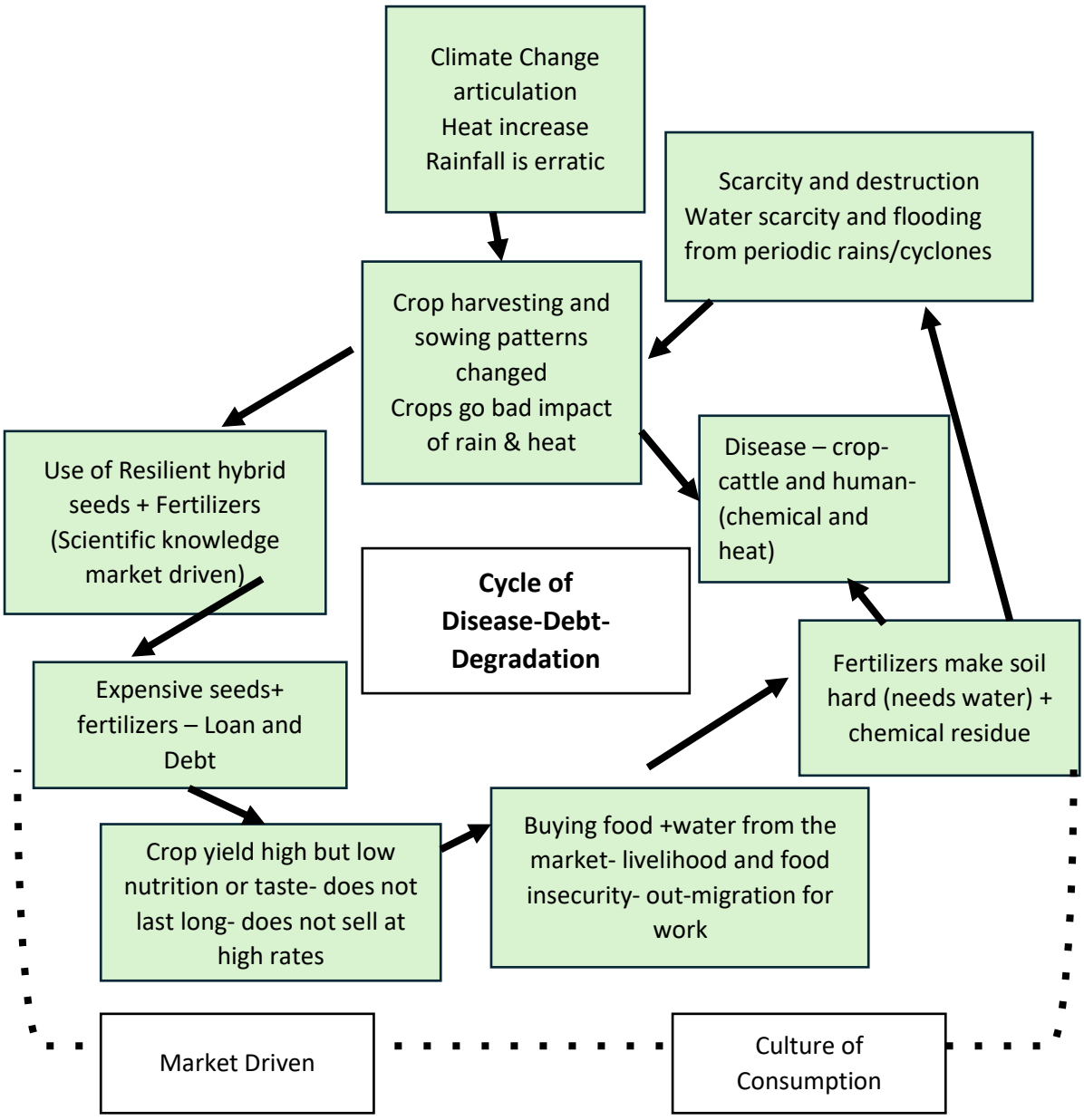


Figure 3 The interconnected cycle of climate vulnerability affecting women farmers



3.1.3 Emerging Narratives on Sustainability

All women farmers shared concerns about how climate change is causing agriculture to become unsustainable for the newer generation. They were worried that if the cost of production could not even be recovered, they needed to think of alternatives. However, they wished to continue their traditional occupation and were worried about how they would sustain it.

Amongst these voices, some farmers shared that they had returned to older methods of mix cropping and were trying new variants of crops like elephant foot yams (Suran), mushrooms, and flowering plants and fruits like dragon fruit. Others shared that they were observing changing rain patterns and sowing different variants — native maize, then mixed pigeon pea — and experimenting with soybean and cotton.

> *"When we cultivate Suran, no damage happens to it. It does not get any disease (rog). It is not affected by rain, nor by cold. Same for Turmeric/Ginger farming (Alasar ni kheti)."*
>
> **— Women farmer, Khudra, Morvahadaf**

Some farmers also shared that they had received training from Utthan and were practising seed treatment with 'beejamrut' and making traditional fertilisers 'jeevamrut'. These farmers were able to practise these initiatives as their husbands had agreed to these organic methods after Utthan's intervention — a critical point to note, as it underscores the gendered nature of access to resources and decision-making.

> *"My husband has to go out for work... I have to manage all the work by myself. The gold jewellery and the house are also in my husband's name. I cannot make decisions as the name on the property is his, but the home is hers to manage. The work is ours to do, but our name is not on it."*
>
> **— Rajayata, Morwa Hadaf (Tribal)**

3.2 Gender, Labour, Land, and Climate Change in Coastal and Tribal Gujarat

Across India, climate change has deepened long-standing inequalities in agriculture, labour, and access to natural resources. Women farmers — particularly those from smallholder, tribal, and coastal communities — are at the intersection of these pressures.

i) Land and Power

Women reaching for land rights — the most foundational barrier to climate resilience

Bina Agarwal's work shows that land ownership is a foundational basis of economic security, bargaining power, and resilience — especially for women. She argues that "ownership is not just about assets but about power and possibility." The data echoes this: women consistently describe land registered in a husband's or father-in-law's name, even when they do most of the agricultural labour.

> *"The work is ours to do, but our name is not on it."*
>
> **— Tribal woman farmer, Morwa Hadaf**

ii) Social Reproduction and Climate Stress

Federici and Shiva emphasise that women's unpaid care work — water collection, fuel gathering, cooking, childcare — intensifies with ecological stress. With rising heat, erratic rainfall, and degradation of soil and water in Gujarat, women report longer working hours, worsening health, and less time for rest.

iii) Feminist Climate Justice

Global institutions — including the UNFCCC Gender Action Plan, the CEDAW General Recommendation No. 37, the ADB Gender Equality Framework, and the GEF Gender Policy — affirm that climate action must address women's land rights, participation, and workloads. India's own National Action Plan on Climate Change identifies the need for gender-responsive adaptation, but women's testimonies show a persistent gap between policy intentions and lived realities.

Land Ownership, Gender Norms, and Decision-Making

Across both regions, land ownership is overwhelmingly male. A coastal labourer states the land is in her husband's joint name with his brothers. A tribal woman explains that land is registered in her father-in-law's name, and though she has worked on it for 30-40 years, it is 'tradition' for ownership to remain with men. In most FGDs, women say their sons will inherit land; daughters rarely do.

This aligns with Agarwal's findings that inheritance customs and patrilineal norms systematically exclude women. Without ownership, women have limited access to formal credit, irrigation schemes, compensation for climate losses, or crop insurance.

Who Decides What to Plant?

> *"I sow the seeds and apply fertilizer, but my husband decides which seeds to plant."*
>
> **— Tribal woman farmer**

This example illustrates a broader pattern of 'gendered agriculture', where women are often tasked with the manual and technical labour of farming but are excluded from strategic decisions. Despite this, women possess critical knowledge about seeds, soil moisture, crop rotation, and locally adapted varieties — knowledge that is essential for climate resilience.

Climate Change and the Intensification of Women's Labour

The physical toll of climate change became visible through deeper probing. Women described the intense, added labour that follows a climate shock:

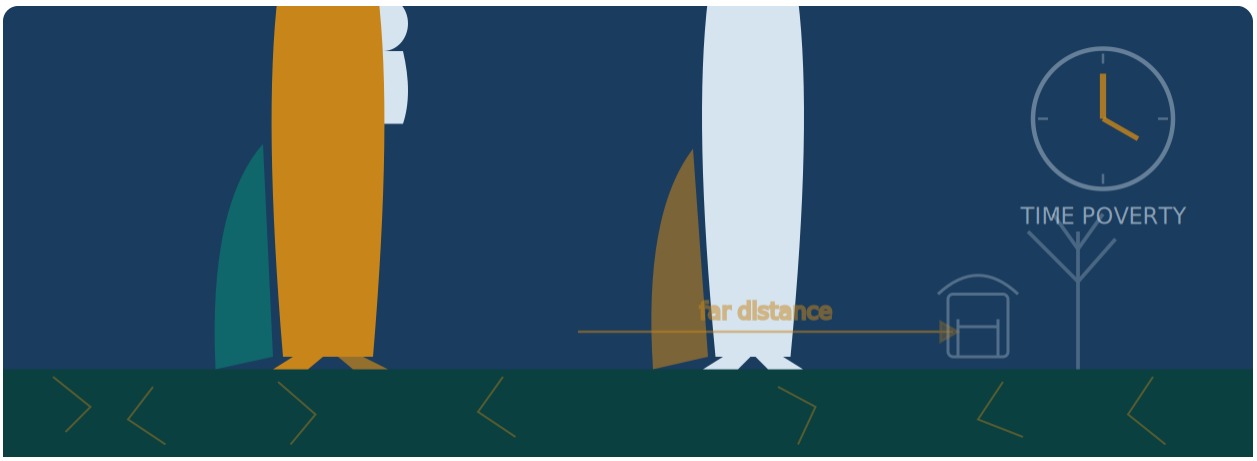
- After a storm: cleaning mud from the house, washing soiled clothes, fetching water from distant wells when electricity fails, and repairing damaged roofs and cattle sheds

- During droughts/after erratic rainfall: The back-breaking work of removing failed crops and re-preparing the fields, all while managing a household alone if a husband has migrated

When asked about the specific health impacts, their vocabulary was often limited to 'weakness' and 'dizziness'. This silence points to a normalised acceptance of poor health as part of a woman's lot in life. Yet their direct experiences align with what climate and health research is now documenting.

THE FEEDBACK LOOP

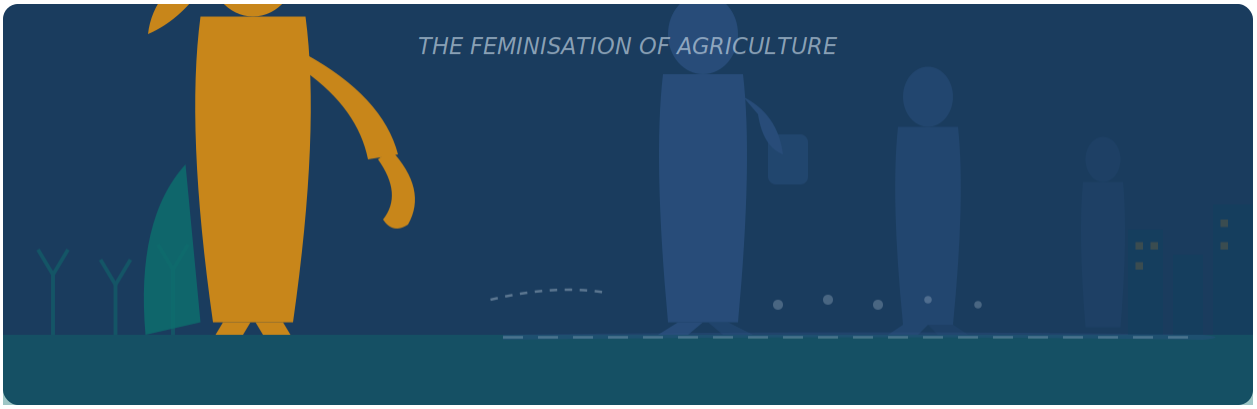
Climate change increases women's work → The increased work harms their health → Economic precarity forces them to work despite their failing health. This creates a dangerous cycle that is invisible to policymakers.



Women carry triple burdens: farm labour, water collection, and childcare — all intensified by climate change

> *"We prepared the land before the monsoon, but the heavy rain washed away all the farm yard manure. We prepared the land again and sowed bajra, and again the rain came and the seeds were washed away. We had no money left to buy seeds, so we sowed grass for fodder. That too was washed away. In the end, nothing remained in our hands. Each time we had to bend again, lift again, work again. This is not just crop loss — this is our bodies breaking from repeated hard work with no return."*
>
> **— Woman farmer, Mahuva**

Migration and the Feminisation of Agriculture



The feminisation of agriculture — men migrate for wages as women become de facto farm managers without rights

In many villages, men's migration has become a defining response to falling yields. With agriculture no longer reliable, men take up temporary work in masonry, shuttering, or diamond cutting in cities. Women explained that this shift is not a choice but a necessity, driven by droughts, storms, rising costs, and declining crop outputs.

> *"My husband goes for centering work... I have to manage all the work by myself."*
>
> **— Tribal woman farmer**

This reflects the growing phenomenon of the feminisation of agriculture — but in practice, it is a feminisation of responsibility rather than rights. Women manage the land, the animals, the sowing, the weeding, and the household, yet land titles remain with men, access to credit is limited, and agricultural extension services rarely reach them.

3.3 Livelihood Changes: Salinity, Water Scarcity, and Shifting Crops

Salinity intrusion and cracked earth — the slow creep of environmental degradation in coastal Gujarat

In coastal villages like Dayal, women describe salinity not as a technical issue but as a slow, creeping change that has entered their fields, their drinking water, and even the taste of their lives. With rising salinity, families can grow only one monsoon crop, usually a hardy millet or pulse, and even that is uncertain. For the remaining nine months of the year, the land lies fallow. Women repeatedly said that 'there is no work here for most of the year'.

3.3.2 Water Scarcity and Cost Burdens

Women from Dayal reported that for eight months a year, they purchase drinking water from tankers at ₹1,000 per tanker — sometimes 6-8 tankers a month per cluster of families — amounting to an estimated ₹10 lakhs a year spent by the village only on water.

> *"Water has become like gold. We buy it even when we do not have money."*
>
> **— Woman farmer, Dayal**

3.3.3 Fodder Crisis

Women in the coastal FGDs shared that fodder scarcity is a new and growing crisis. The shift from traditional cereals like bajra and jowar to cotton has reduced the availability of crop residues that once fed cattle. Cotton brings cash but not fodder, and the cost of buying fodder adds yet another layer of debt. For many women, losing cattle feels like losing a part of their household security.

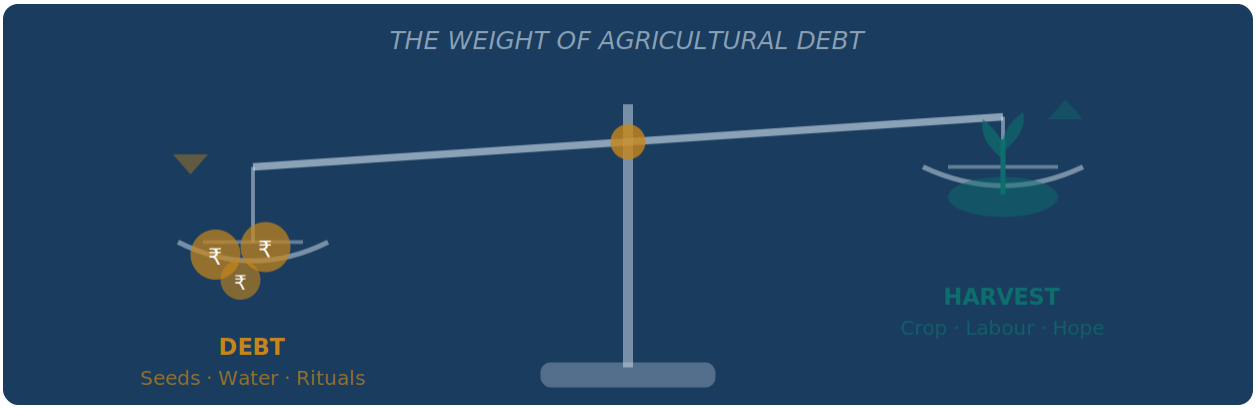
3.4 Food Security, Nutrition, and Changing Tastes

From twelve months of food sufficiency to two to six months — the collapse of household food sovereignty

In Dayal, several older women remembered when one acre of land could feed a family for an entire year. 'Grain lasted twelve months,' they said. 'We never bought from outside.' Now, self-sufficiency has shrunk to 2-6 months, due to erratic rains, replacement of local seeds with hybrid varieties, loss of soil moisture, and salinity intrusion.

Tribal women spoke with emotion about the taste of grains. They described desi maize as filling — soft, fragrant, and satisfying. The hybrid maize available now 'fills the stomach but not the heart.' This shift reflects what Vandana Shiva calls the loss of seed sovereignty — when farmers no longer control their seeds, they also lose part of their nutrition, culture, and identity.

3.5 Debt and Aspirations



Debt outweighs harvest — the economic trap that holds women farmers in cycles of precarity

Women across sites described borrowing as a normal part of life now. They take loans — sometimes at 2-10% interest — for seeds, water tankers, crop losses, fodder, daughters' weddings, and religious and social functions. This everyday dependence on debt fits what Cecile Jackson calls the 'hidden economy of survival'.

Across regions, men's wages are declining. Diamond workers who once earned ₹20,000 a month now work freelance with unstable earnings (In Bhavnagar). In 2025, 1,500 diamond industry units remain shut and about 1 lakh workers have lost their jobs. This increases pressure on women to fill income gaps through more labour. Meanwhile, social expectations — especially around weddings — have escalated, creating pressure to spend even if it means borrowing more.

3.5.2 Generational Anxiety

Across interviews, women expressed worry about the future of farming. This tension captures what feminist scholars describe as the 'survival ethic' — women's view of farming not only as an economic activity but as a responsibility tied to feeding families, caring for land, and sustaining culture. Even when farming becomes unviable, women hold onto it because it anchors their role and identity.

3.6 Emerging Analysis from Narratives of Women Farmers

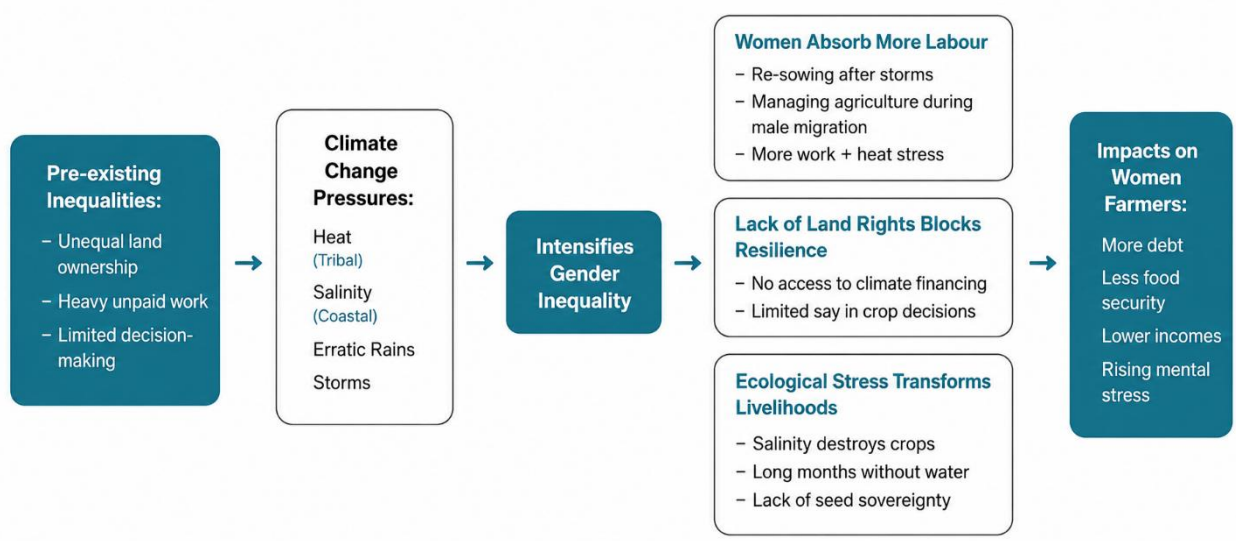
Resilience — women farmers nurturing life from the ground up, against all odds

The narratives in this section capture a simple but powerful truth: climate change intensifies gender inequality. When rain fails, women work more. When water becomes scarce, women walk further. When men migrate, women manage alone. When crops fail, women re-sow the fields. When food stores shrink, women eat less. And when debt grows, women carry the anxiety silently.

> *"The work is ours, but the name is not."*
>
> **— Tribal woman farmer**

This is what feminist scholar Bina Agarwal has long argued: without secure land rights, women are *'cultivators but not owners.'* They invest their labour in the soil but have no claim to the asset itself, locking them in a cycle of dependency. Feminist climate scholars like Ariel Salleh point out that this immense, life-sustaining work performed by women is often dismissed as 'unproductive' or simply 'women's work', rendering it invisible to policymakers.

Figure 4 Women *Farmers' Articulation of Climate Change and its Impact*



CHAPTER 4

Policies and their Interactions with Women Farmers

An Analysis

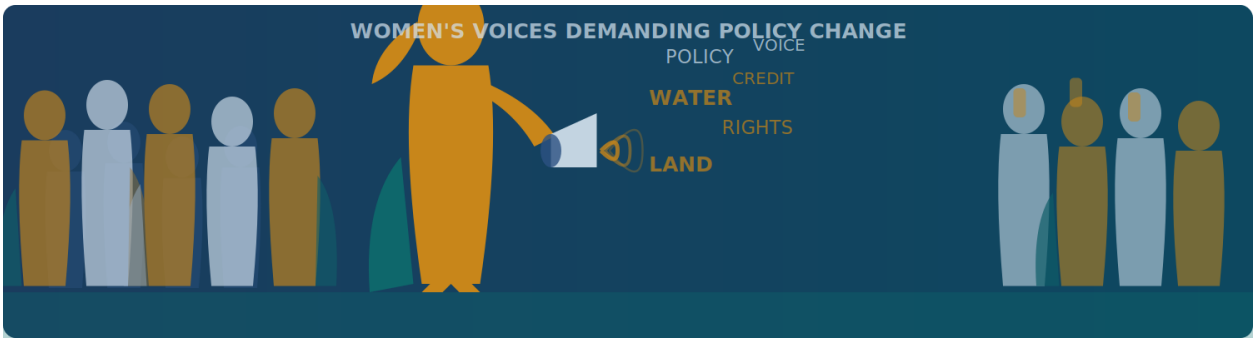
In India, women form 76% of the agricultural workforce most impacted by climate change (PLFS, 2023) but are not recognised as farmers and cannot access the relief or loans (IWWAGE, 2024; GirlsNotBrides, 2023). After years of being gender-blind, intergovernmental processes such as the UNFCCC, COPs, and the Lima Work Programme on Gender (LWPG, 2014) now emphasise the importance of integrating gender perspectives into policies.

However, regional data on the impact of climate change on women's work burden, workforce participation, health, and agency is inadequate to impact policymaking. An important critique that persists is that while India tries to promote climate-smart policies, the approach is not targeted at understanding the needs of small and marginal farmers who are mostly women. Policies also do not address specific needs of agro-climatic zones despite the mandate of state-level action plans (Sharma, 2023; Byravan and Rajan, 2012; Rattani et al., 2018).

KEY INFORMANT INSIGHT

As was said, the farm is always considered the man's farm (khetar), never the woman's farm. Now, slowly, laws have changed. In our home, we give a share to both the woman and the man. If I have a sister, she also gets a share. But this is not seen everywhere, and this bias is seen in many places. (KII with Climate Change Researcher)

4.1 Women Farmers' Voices on Climate Change and Policies: The Present Context



Women farmers demanding recognition — as knowledge holders, farmers, and rights-bearing citizens

4.1.1 Policies Exist but are Not Addressing Women's Strategic Needs

If we analyse what women farmers are articulating as their need to mitigate and combat the effects of climate change using the Gender and Development (GAD) approach and Kabeer's social relations approach, we see that while there are policies addressing some practical needs (access to water, seeds, housing), there are no laws that address their strategic needs, primary among which are land rights, ownership and control over productive resources including own income, credit, relevant knowledge and skills, access to markets, mobility, and decision-making ability (Kapoor, 2011).

Data from the 2015-16 Indian Agriculture Census shows that women own only 13.8% of agricultural land even as 76.2% of the rural female workforce is engaged in agriculture (IWWAGE, 2024). Government schemes and programmes exist in response to most climate change-related agricultural shocks. However, access to and information about these schemes is online, and application requires farmers to be registered — both of which deny women's access.

KEY INFORMANT INSIGHT

Women farmers and smallholders remain marginalised by requirements like land ownership and costs associated with certification and inputs. There is also inadequate extension support to help farmers during transition phases to natural or organic farming. (KII, Government Functionary)

Table 2 Policies Existing but Not Addressing Women Farmers' Strategic Needs

Women's Articulation of Climate Change and Issues Faced	Existing Policies and Their Focus	What is Missing
Erratic rainfall and increased heat impact well-being, agriculture, pests, and soil — worsened by chemical fertilisers.	1. Scheme for encouraging adoption of organic farming (Dept. of Agriculture, Gujarat) 2. Scheme for financial assistance towards indigenous cows under Natural Farming 3. Gujarat Organic Products Certification Agency (GOPCA) 4. NICRA — National Innovation on Climate Resilience Agriculture (CRIDA/KVK)	*Most agricultural interventions are designed around land ownership. This implicitly excludes women, as land titles are predominantly held by men. Seasonal male outmigration forces women to handle full cultivation in joint holdings, but policies recognise only titled (male) holders. Application through i-Khedut portal creates digital access barriers; rural women have low access to digital devices and functional literacy. Heat action plan*

Women's Articulation of Climate Change and Issues Faced	Existing Policies and Their Focus	What is Missing
	5. Scheme for farmer smartphone purchase for weather/pest information access 6. Assistance for heavy farm equipment; TALIM training scheme 7. Incentive assistance to SC/ST farmers; Sub-mission on Seeds and Planting Material 8. Comprehensive Agriculture Business Policy (2025) — AI, drones, organic farming 9. ATMA — Agricultural Technology Management Agency extension sub-mission 10. Gujarat State Action Plan on Climate Change and Human Health (2022–27)	*data and early warning systems are online only, further limiting women's access.*
Water scarcity and irrigation challenges; salinity intrusion in coastal areas.	11. NRM — Natural Resource Management: deepened water bodies and micro-irrigation training via KVK 12. Community water tank/storage structure for drip irrigation (Dept. of Agriculture) 13. Micro Irrigation Scheme — drip, sprinkler, rain gun systems (GGRC) 14. Bandhara Irrigation Scheme and Check Dams for high-salinity coastal areas 15. PM-KUSUM Scheme — solar pumps and renewable energy for agriculture	*Interventions are limited to designated 'model villages' and are not disseminated to surrounding areas. Micro-irrigation schemes face gaps in reach, particularly for women smallholders. Women are not recognised as landholders, limiting eligibility. Scheme targets at district level are often insufficient to cover all interested farmers, particularly smallholder and women farmers.*
Cyclones damage crops and daily life.	16. Pradhan Mantri Dhan Dhanya Krishi Yojana (2025) — support to farmers with less than 2 hectares	*Compensation is available only to registered farmers — women cannot access independently. Scheme targets only 100 low-productivity districts, excluding Gujarat's coastal area. Compensation criteria and communication may be inadequate (e.g., 30% crop damage threshold for cyclone relief, as noted in KIIs).*
Impact on livelihoods and food security.	17. Scheme for assistance to farmers bringing goods to market committees (Director, Agriculture Marketing & Rural Finance)	*No specific schemes target women farmers to sell produce or establish women-farmer markets. Access requires titular landholding; registration of animals is always in male names. Women lack individual*

Women's Articulation of Climate Change and Issues Faced	Existing Policies and Their Focus	What is Missing
	18. Pradhan Mantri Dhan Dhanya Krishi Yojana (2025) 19. Minimum Support Price (MSP) and Price Support Scheme (PSS) for key crops 20. Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS) 21. Subsidy Scheme for Desi Cows — ₹900/month per cow to natural farming practitioners (since 2020)	*records for i-Khedut. MSP imposes strict quantity limits and transport costs that exclude interior smallholders. MNREGS has not been active recently in Dahod (as reported in FGDs).*

4.1.2 Women Farmers' Resilience and Adaptation Get Ignored

While acknowledging women's need for access to resources and information is a critical element that all stakeholders agree to, recognition of women's knowledge as 'critical knowledge for agricultural practices' is missing in the policy scenario. Women are recognised for their work but still believed to be victims of climate change who have low information and no agency. Women's mapping of climate change or strategies to mitigate the impact of climate change may be exactly similar to the strategies that scientists and researchers are also recommending — but are they recognised as knowledge?

Women's knowledge systems are not just practical — they carry a deep ethic of *co-living*, of respect for all forms of life, and of healing rather than exploiting the earth. As ecofeminist thinkers like **Vandana Shiva** remind us, women have long cared for seeds, soils, and water in ways that honour biodiversity and nurture interdependence. But this knowledge is rarely seen as expert knowledge in policy spaces.

Table 3 Comparative Picture: Women Farmers, Government, and Researchers on Climate Change Mitigation

Women Farmers' Voices on Mitigation	Government / Agricultural Scientists' Perspective	Climate Change Researchers' Perspective
Rain mapping: *"The rain used to come around the 15th of Jeth and farming would begin... It used to rain in the first 15 days of Ashadh and the second 15 days as well."* **Planned diversification and multi-cropping:** *"When we cultivate Suran, no damage happens to it — not from rain, not from cold. Same for Turmeric/Ginger farming. I also plan to plant Dragon Fruit." (FGD, Women Farmers, Tribal, Khudra, Morwa Hadaf)*	**Farmers are frequently assumed to be male and under-informed — a bias that ignores the knowledge and contributions of women cultivators.** *"I feel that farmers still lack the understanding to change their cropping system according to the changed climate. They should opt more for mixed farming and intercropping. This way, if the rain is good, both crops will survive."*	**From the perspective of climate change researchers, farmers (assumed male) are seen as poorly organised and copying ideas without checking suitability to their land.** *"Once the cotton is out and water falls on it, my entire crop would fail. Now we plant soybeans because soybeans are not as affected by unseasonal rains. If it rains, your production might be slightly less, but you will get something… In English, they call this niche shifting; your cropping pattern changes."*

4.1.3 Government Efforts Exist but Women are Expected to Demand Services

Multiple policies exist but are not reaching women. Conversations with policy implementers revealed that they are trying to reach out to women farmers, holding farmer trainings and melas as well as adopting villages to implement schemes on natural farming, multi-cropping, and drip irrigation. However, they face human resource challenges and are unable to reach all farmers.

> **GOVERNMENT OFFICIAL**
>
> *Yes, we tell all the farmers who come to us about these things. More than 5,000 farmers come here. We provide advisory every Tuesday and Friday... There are more than 7 lakh farmers. I cannot train everyone. I cannot give this information to everyone... But everyone has a phone. We have SMS data for more than 60,000 farmers. We can send SMS to them. (Government Official, ATMA)*

> **GOVERNMENT FUNCTIONARY**
>
> *The staff assigned to these projects go to the fields, but they are so burdened with work that they don't have enough time to properly explain things and guide the farmers. The same person who conducts training is also responsible for beneficiary selection, and all these tasks fall on them. (Government Functionary, Agricultural Extension Scheme)*

These statements reveal that despite the existence of programmes, the onus is placed on women to demand services — even though they do not have legal rights on their land, digital access, decision-making ability, and have limited mobility. Existing government extension systems are constrained in their outreach and are not able to reach marginalised groups (Barooah et al., 2023).

4.2 Local-Level Efforts: Addressing Women as Agents of Change

Local efforts from community-based organisations like Utthan, networks like WGWLO, and Samarthan Mahila Bachat ane Dhiran Sahakari Mandali Ltd work at a micro level addressing strategic needs of women — for example, the right to land, credit, and other resources — while engaging to collaborate on natural and sustainable farming methods. However, their reach and access are also limited, and there is a need for more efficient and strategic coordination with government policies and schemes.

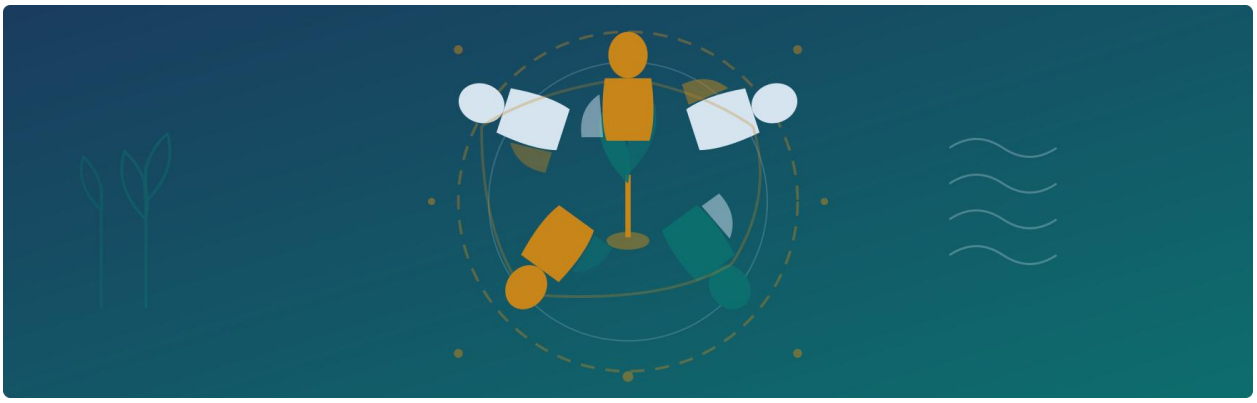
LOCAL ECOSYSTEM	Key Actors Working with Women Farmers
Krushi Sakhi	Women agriculture leaders providing on-farm training, bio-pesticide and fertiliser demonstrations, and linking women farmers to government schemes.
Nyay Sakhi / Para-Legal Workers	Para-legal workers operating Swa Bhoomi Kendras at block level. 43 legal clinics have resulted in 1,297 women securing 720 acres of land.
Community Seed Banks	Women-managed banks storing traditional seed varieties for climate-resilient agriculture. Members contribute and borrow seeds (e.g., return 1.5 kg per 1 kg borrowed).
Samarthan Mahila Credit Co-operative (Utthan)	Inclusive financial services — micro-loans, agri-rental services, and financial and digital literacy for women farmers.
National Coalition for Natural Farming (NCNF)	Platform uniting farmers, civil society, researchers, and policy advocates to strengthen and scale natural farming across India.
Krishi Vigyan Kendra (KVK)	Government agricultural knowledge centres providing technical inputs, demonstration farms, and extension support to farming communities.

Krishi SAKHI - lead the grassroots movement towards sustainable agriculture +leadership
Continuous on-farm training on crops, demonstration on production of bio-pesticides and fertilizers. They use scientific agricultural approaches and significance of traditional seeds and advocate for food and nutritional security. This knowledge is disseminated through flipcharts, posters, videos, films, etc. Help women access schemes like aadhar, widow pension etc
Krishi Vigyan Kendra
Samarthan Mahila Bachat ane Dhiran Sahakari Mandali (Utthan promoted) enables Inclusive financial services like Micro Loans, Agri Rental Services Financial & Digital Literacy
The National Coalition for Natural Farming (NCNF) platform that brings together farmers, civil society organizations, researchers, and policy advocates to strengthen and scale natural farming practices in
NYAY SAKHI - Para Legal Workers
The PLWs have a Swa Bhoomi Kendra (a model developed by Utthan & WGWLO members) at the office of the Mamlatdar (Land Revenue Officer) at the Block level that serves as a bridge between women farmers and the government system.
Nyay Sakhis work on women's land rights, violence redressal and promotes sustainable agricultural practices. 43 legal clinics at SBK have resulted in 1297 women securing 720 acres of land
COMMUNITY SEED BANK (Promoted by WGWLO)
For climate-resilient agriculture. A women or community-managed seed bank stores traditional seeds of different varieties from every area.
Women contribute and take back seeds eg 1 kg was given, they would take back 1.5 kg.Good seeds are also tagged to separate it before harvesting to be used for the seed bank
Agricultural Technology Management Agency

CHAPTER 5

Summary of Findings and Analysis

CHANS Lens and Social Relations Approach



GLOBAL RISK CONTEXT — WORLD ECONOMIC FORUM, 2025

Five out of the top 10 most severe risks to mankind are climate-linked: extreme weather events, critical change to Earth systems, biodiversity loss and ecosystem collapse, natural resource shortages, and pollution. Closely related is a sixth risk — involuntary migration — which is evident from this research as well.

5.1 Analysis Using the CHANS Systems Approach

Agriculture is dependent on monsoon, heat, and soil composition — all of which have been impacted by climate change. A CHANS systems approach to mapping interaction between human (farmer) and natural systems (land, soil, water) is critical to understand climate change and its systemic impact.

This research has reiterated that climate change is a human creation and a fallout of development (Garcia and Uitto, 2025). Agriculture is bearing the impact of market-promoted 'scientific and chemical' methods which give short-term income returns but do not ensure food security, well-being, or soil sustenance. Sustainable agricultural practices are present but are still on the sidelines of agriculture and need mainstreaming.

5.2 Gender Analysis Using the Social Relations Framework

The CHANS systems approach needs to be deepened with a social and economic systems analysis using a gender lens. The social relations framework adopted here looks at how distribution of responsibilities and resources impacts the social relations of gender in society and how they are visible through the institutions that constitute society (Kabeer, 1994).

Agricultural policies in India are often described as 'gender-neutral,' but in practice, they operate as gender-blind. Gender neutrality assumes that all farmers have equal access to land, resources, information, and institutional support. However, this assumption does not reflect the structural realities of agrarian systems. Women contribute a substantial share of agricultural labour, yet remain largely excluded from land ownership, formal farmer recognition, and access to institutional support systems such as credit, crop insurance, extension services, and climate advisories.

This structural mismatch between who farms and who policies recognise represents a fundamental design failure. Most agricultural schemes are formally available to all farmers but are operationally linked to land titles, digital registration systems, and asset ownership — predominantly controlled by men. Women farmers, despite being active cultivators, are systematically excluded from accessing benefits, subsidies, and climate adaptation support.

Addressing this gap requires moving beyond gender-neutral approaches towards gender-responsive and gender-intelligent agricultural policy design. Inclusion is not achieved by adding women as beneficiaries, but by redesigning systems to recognise women as farmers, knowledge-holders, and decision-makers. This requires policy attention to five interconnected dimensions: access to assets; agency in decision-making; time constraints shaped by unpaid care work; differential exposure to climate risks; and equitable access to economic and institutional returns.

5.3 Key Findings — CHANS Lens

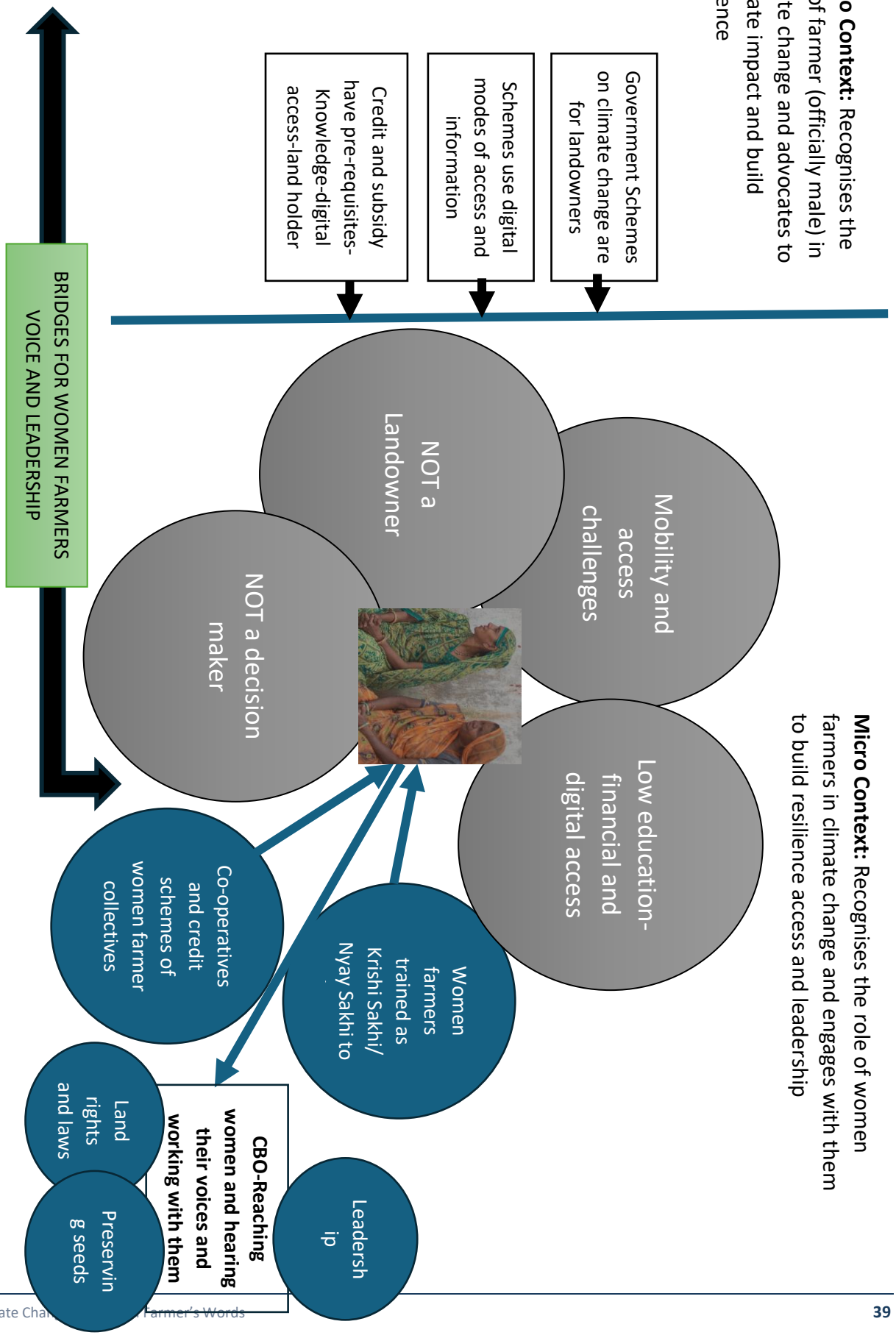
- **Human-Nature Feedback and Ecosystem Disruption:** Development interventions disrupt ecosystems, contributing to increased groundwater salinity, which undermines agricultural productivity. These are part of a feedback loop where human actions degrade nature, and degraded nature undermines human livelihoods.
- **Unsustainable Mitigation Practices Add Stress:** Some climate 'solutions' — heavy use of chemical fertilisers and hybrid seeds — harm the very ecological systems they aim to help. This intensifies long-term pressure on soils, reduces biodiversity, and compromises sustainability.
- **Gendered Resource Pressures Are Systemic:** Salinisation, water scarcity, and loss of fodder are deeply shaped by social relations (who owns land, who makes decisions). Women's capacity to adapt is constrained by unequal power, reinforcing vulnerability in the coupled system.
- **Local, Traditional Knowledge as Adaptive Mapping:** Women farmers map weather and climate change through lived experience. Their strategies combine indigenous and hybrid seeds, and mix-cropping, balancing household food needs with crops that can generate income.
- **Income Uncertainty Drives Ecological Trade-Offs:** Crop failures create economic stress. To secure at least some yield, farmers use chemical fertilisers — which increase output temporarily but erode soil health. Even with fertilisers, overall production is low, forcing families to purchase both food and fodder.
- **Women as a Stabilising Subsystem:** In this coupled human-natural system, women absorb systemic shocks: they re-sow crops, weed aggressively, and repair fields after storms. Their labour acts as a buffer for both household survival and the farm system's ecological functioning.
- **Community-Based Eco-Work as a Positive Coupling:** Local organisations (CBOs) and outreach workers (Krushi Sakhi) support ecological farming — promoting jeevamrut, beejamrut, indigenous seed banking, and non-chemical practices. These represent a positive coupling: social practice strengthens natural resilience.

- **Policy Limitations on Scaling Sustainability:** The government promotes sustainable methods, but rollout is limited due to resource shortages. Extension services use radio, TV, demonstrations — but are not yet sufficiently embedded at the local level to transform the entire coupled system.

5.4 Key Findings — Social Relations Approach

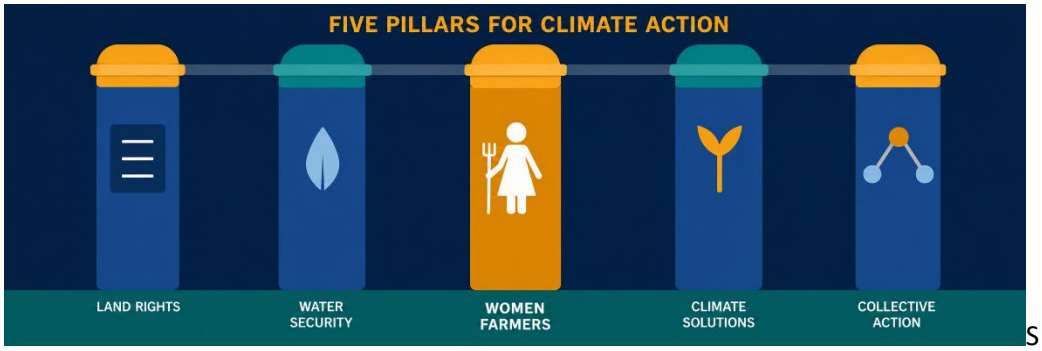
- **Women Do Most of the Work,But Have Little Recognition:** Women report doing nearly all farm tasks. When climate shocks hit, they also clean up, replant, and restore fields, while continuing household and caretaking duties. Climate change has increased their workload, reducing personal time (time poverty).
- **Heat Impacts Health and Work, but No Relief:** High temperatures make work very tiring. Because crop yields have dropped, families can't afford to hire extra labour; women must continue working even when physically exhausted.
- **Limited Decision-Making Over Key Farm Choices:** Men decide which seeds to buy, when to use fertiliser, and which crops to grow — women are rarely involved in these strategic decisions.
- **Seed Knowledge, But Diminishing Control:** Women still save seeds from past harvests, especially traditional varieties. Yet, because traditional seeds can't always survive storms and cyclones, men increasingly buy hybrid seeds from the market. Women are leading efforts to revive ecological farming: they make jeevamrut and beejamrut, and community extension workers (Krushi Sakhi) who help promote these practices are women.
- **Unequal Land Rights:** Land ownership almost always remains in male hands, even when women work that land for decades. In many places, a single plot is fragmented among multiple male heirs, diluting women's bargaining power.
- **Barriers to Credit, Subsidies, and Social Support:** Many women are not aware of government schemes for credit or subsidies. When they are aware, the money usually goes to whoever is the legal, registered landholder — typically a male.
- **Women's Institutions Help — but Dependency Remains:** Women-led collectives and CBOs support farming via training, seed conservation, and legal rights. However, many programmes still require approval or 'consent' from male family members before women can fully participate.
- **Intergenerational Tension and the 'Survival Ethic':** Many older women feel a strong moral responsibility to pass farming on to their children, even though farming is now much harder. This reflects the 'survival ethic': the belief that farming isn't just a livelihood, but a duty.

Figure 5 *Locating Women Farmers in the Context of Climate Change*



5.5 Recommendations and Way Forward

Globally and locally, the Sustainable Development Goals (SDGs) project an integrated pathway to understand the structural impact of policies and systems. This framework shows how the environment serves as the bedrock of sustainability — not just for food but for healthy air and water. The authors have integrated gender equality (SDG 5) as a central pillar, with SDG 17 facilitating a participatory approach to partnerships. Having a gender lens in the central axis of this model will ensure: inclusion of a gender lens to understand differential access and strategies; assessment of societal norms and their impact on gendered social relations; and how a gendered analysis and partnership approach can lead to implementation of gender-inclusive climate policies which mainstream sustainable agricultural practices.



Five pillars for gender-just climate action — the way forward for inclusive agricultural policy

MACRO LEVEL — Recommendations for Government	
Participatory Climate Mapping	Conduct gender-disaggregated participatory mapping of climate experiences and mitigation strategies across all agro-climatic zones, feeding into NAPCC, SAPCC, and the Gujarat State Action Plan on Climate Change and Human Health.
Women-Led Climate Action	Document and mainstream women's knowledge of sowing seasons, multi-cropping, local crop varieties, wild edibles, seed selection, storage, bio-fertilisers, and pest management — traditions currently undocumented.
Bridge Structural Gender Gaps	Ensure 30% gender-budgeting allocations for women farmers are actively monitored; simplify i-Khedut access; provide community-level digital support; recognise de facto women farmers regardless of land title.
Skill Centres and Local Markets	Establish public-private-CBO skill centres with mentorships and certification for skilled organic/sustainable farmers; gram panchayats to organise local seasonal organic produce markets for women farmers.
Gender-Focused Climate Finance	Develop agro-climatic-zone-led climate financing at micro level; build innovative public-private partnerships for climate proofing at gram sabha level; incentivise SHGs for sustainable practices.
MICRO LEVEL — Recommendations for CBOs, Co-operatives, and Networks	
Amplify Women's Voices	Produce evidence-based advocacy materials documenting women farmers' success stories, climate knowledge, and mitigation strategies for gram sabhas, cooperative meetings, and national forums.
Link Agricultural Distress to Social Indicators	Map early child marriage, education distress, migration trends, and women's time poverty in relation to climate change to strengthen policy linkages and social protection advocacy.

Create Peer-Knowledge Models	Record organic farming collectives, seed banks, land rights claims, and revived crop varieties as best-practice narratives for state-level scale-up and peer learning.
Promote Women-Led Collectives	Institutionalise women-led seed banks under gender budgeting; support women's representation in Farmer Producer Organisations (FPOs); recognise women-led vermicompost units as SMEs.
Bridge the Information Access Gap	Advocate for vernacular community call centres at gram sabha level, managed by women and men farmers, providing extension services, scheme information, and digital and financial literacy.
Integrate Gender Norms in Agriculture Training	Ensure sustainability programmes address land rights, joint household decision-making, women's mobility, and sharing of domestic work as foundational to resilience.

Knowledge rooted in community wisdom — references that ground this research in feminist, participatory scholarship

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The work is ours to do,
but our name is not on it.

— Tribal woman farmer, Morwa Hadaf, Gujarat

Referring to the land title document — registered in her husband's name, despite decades of farming the same land.

ABOUT UTTHAN

Utthan is a grassroots organisation founded in 1981 in Gujarat, India. Working with women and marginalised communities for over four decades, Utthan empowers rural women with the perspectives, resources, and tools they need to assert their voices, access productive resources, and claim their rights. With a focus on water, livelihoods, gender equity, and natural resource management, Utthan co-creates locally grounded and systemically relevant solutions.

CONTACT

36, Chitrakut Twins, Near Management Enclave
Nehru Park, Vastrapur, Ahmedabad, Gujarat 380015
contact@utthangujarat.org
www.utthangujarat.org

ABOUT THIS RESEARCH

This report documents how small and marginal women farmers in Gujarat, India, perceive, articulate, and respond to climate change. Drawing on focus group discussions, in-depth interviews, and key informant interviews across two agro-climatic zones — coastal Bhavnagar and tribal Dahod and Panchmahal — the research centres women's voices, ecological knowledge, and adaptive strategies as its primary source of evidence.

The study argues that women farmers are not passive victims of climate change but active knowledge-holders and resilience-builders whose expertise must be placed at the centre of climate policy and agricultural programming.

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