



SCOPING STUDY

Gender Role in Agriculture, Climate Change and Food Security

April 2025



Empowering Women Farmers for a Climate-Resilient Future

Bridging the Gender Gap in Agriculture

Women play a vital role in India's agricultural sector, contributing significantly to crop production, horticulture, and more. Yet, despite their crucial contributions, women face numerous challenges such as unequal wages, limited access to technology, and

underrepresentation in decision-making roles. As climate change intensifies, women bear the brunt of its impact, managing farms and households with minimal support.

The Need for Gender-Responsive CSA

A shift towards Climate Resilient and Sustainable Agriculture (CSA)¹ that prioritizes women concerns can drive a **20–30% increase** in agricultural output, improve food security, and reduce malnutrition by up to 17%. By strengthening Farmer Producer Collectives (FPCs) and equipping women with access to resources and leadership opportunities, we can build a more resilient, sustainable agricultural future.

Study Goals



Strengthen women's roles in leadership, CSA, and agri value chain



Identify knowledge gaps and improve access to technology



Collaborate with partners to enhance climate resilience for women farmers

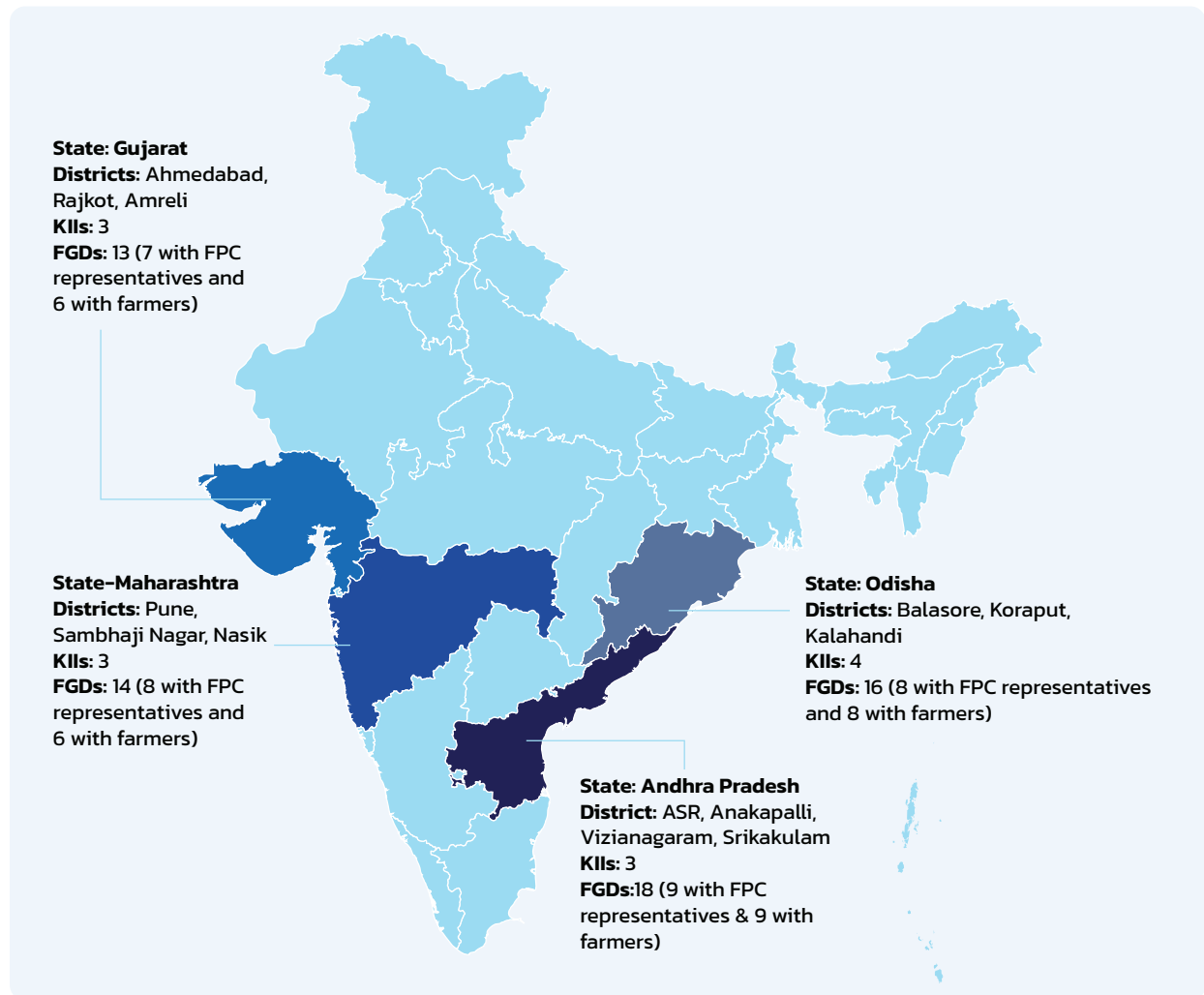
Research framework

The study employed a **qualitative research approach** combining secondary and primary data to explore the women's role at farmer collectives' level, women's role in CSA, and identification of key stakeholders in the ecosystem. Primary research included **61**

Focus Group Discussions (FGDs) and **13 Key Informant Interviews (KIIs)** conducted across **Andhra Pradesh, Gujarat, Maharashtra, and Odisha**. FGDs were organized with both **FPO representatives (326 –73% women)** and **farmers (376 –86% women)**. A purposive sampling strategy was used to select 31 diverse FPCs, ensuring representation of women-led, active, and institutionally supported collectives.

¹ CSA: Climate Resilient and Sustainable Agriculture

Sample sites of the study



FPCs: Driving Growth Across 4 States

Geographical Spread of FPCs

The study covered **31 FPCs (Women, Men and Mixed)** across **13 districts** in **Andhra Pradesh, Gujarat, Maharashtra, and Odisha**.



Organizational Structure & Gender Representation

State	BoD, Min-Max (%)	Women Shareholders (%) (Min- Max)
All	20-100	48-100
Andhra Pradesh	20-100	29-100
Gujarat	0-100	8-100
Maharashtra	13-100	9-100
Odisha	10-100	29-100

Women-led FPCs have significantly higher **female shareholder representation (up to 100%)** and greater BoD inclusion. **Women's active participation** is found to be stronger in women-led FPCs.

Farmer Demographics



47%

were small and marginal farmers (<2.5 acres), often lacking access to CSA practices.

53%

were progressive farmers, typically owning larger plots (>2.5 acres) and adopting advanced practices.

FPCs and Commodities dealt

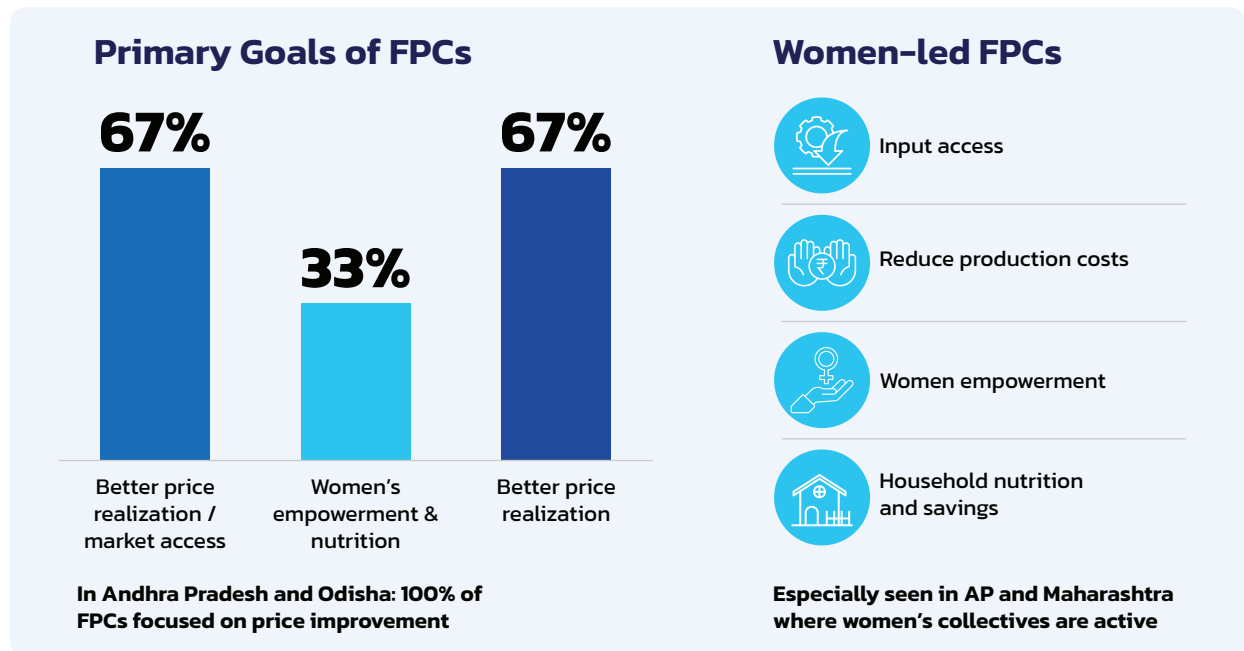
Women & mixed FPCs focused more on **food crops** (e.g., millets, pulses, maize) and **plantation crops** (coffee, black pepper). **Men-led FPCs** prioritized **cash crops** (cotton, sugarcane, sunflower), which demand more capital but yield higher profits. This gendered trend suggests men have better **market access and financial leverage**, while women concentrate on **nutritional and sustainable farming**. The FPC profile highlights meaningful differences in **gender representation, financial strength, and crop focus**. Women-led FPCs emerge as **financially stronger, more inclusive**, and central to **sustainable agriculture**, though still limited in high-return value chains.

Type of commodities

Type of FPC	Food Crops	Cash Crops	Plantation Crops
Women FPCs 	Millets (including pearl millets and bajra), sorghum, pulses (black gram & arhar), maize, vegetables, onion, paddy	Sesame, turmeric, groundnut	Coffee, black pepper
Mixed FPCs 	Turmeric, custard apple, all millets, tamarind, ginger, cumin seeds, paddy, groundnut, vegetables, soyabean, maize, sweet corn	Broomsticks, carnelian flowers, forest produce	Black pepper, coffee, coconut, betel vine, areca nut, pomegranate, cashew
Men FPCs 	Maize, vegetables	Ginger, groundnut, safflower, sunflower, sugarcane, pomegranate	Cotton

Key Findings – FPCs' Evolution, Performance, Gender Dynamics and Climate Change Effects and Adaptation

Rationale for Formation of FPCs



Across four states, most FPCs were formed with the **primary goal of improving market access and price realization**, often by cutting out intermediaries. **Over two-thirds** of FPCs aimed to **secure better prices**, while **half sought to reduce input costs**. In **Andhra Pradesh and Odisha**, all FPCs reported price improvement as their main driver.

Women's empowerment and improved nutrition emerged as key rationales for around **one-third** of FPCs, particularly in **AP and Maharashtra** where women's collectives are stronger. Women-led FPCs formed to improve **access to seeds, reduce production costs, save time, and enhance household savings**.

Gender-Specific Performance:

Some women-led FPCs have performed relatively better than others in marketing (7),

processing (7), CSA (6), and governance (4) due to their strong **social capital**, such as SHGs and farmer clubs. These FPCs play a critical role in **sustainable agriculture and seed systems**, including reviving millets through collective action.

Stronger financial performance by women FPCs: Among different types of FPCs, **women FPCs** demonstrate stronger financial performance, with turnover ranging from ₹0–310 lakh (₹90 lakh on average) and average share capital as ₹9 lakhs—highest among the 3 categories of FPCs.

Women make FPC's operations more efficient: Women FPCs demonstrate a higher degree of efficiency in **marketing (procurement), processing, CSA adoption, and governance**, mainly due to strong social networks (SHGs, farmer clubs).

Areas Where FPCs Are Struggling

FPCs across all states face structural, and operational constraints. Almost all FPCs reported challenges in business growth, including low margins, seasonal activities, reliable markets access.



Business Growth

Low margins, seasonal activities, lack of planning, capital access



Operational

Limited access to credit, infrastructure, technical training, reliable markets



Governance

Weak CSA adoption, low transparency, limited decision-making among women



Network Access

Restricted access to wider networks, especially in Gujarat and Odisha

Challenges in Scaling women led FPCs: Due to limited access to finance and capacity-building support, most of the **women FPCs** struggle with business growth, governance and operations. **In mixed FPCs**, governance concerns are lower due to distributed decision-making areas where women ensure production, operational and distribution and procurement related tasks while men dominate in key positions as CEOs, directors working on availing market access and

financial services. **Men FPCs** show much higher mobilization issues to run their operations smoothly, with limited awareness among their shareholders, especially women shareholders.

Gender Dynamics in Struggles

Almost all women FPCs face barriers in **business growth**, operations, and governance—primarily due to **finance gaps and capacity-building needs**. **Mixed FPCs** have fewer governance issues but often suffer from **gendered leadership gaps**. **Men-led FPCs** struggle with **internal conflicts**, **member mobilization**, and **low inclusion of women**.

Ecosystem Support to FPCs

All FPCs received some form of ecosystem support, though access and quality varied. **Women-led FPCs** gained support primarily from **NGOs and SHGs**, especially in **value addition, marketing, and small-scale decentralized credit**. These FPCs are more receptive to **low-risk, low-cost loans** aligned with their conservative growth strategies. In contrast, some **men-led FPCs** preferred **self-investment with minimal external borrowing**.

Enablers of participation: Training, information and market linkage has emerged as the strongest enabler influencing women's participations in the value chain as found in more than 2/3rd of the FPCs. At least 1/3rd of the FPCs identify availability of technical resources and assets, collective learning, and alignment with gender norms as enablers propelling women's participation in the value-chain.

Women's Representation in FPCs

Lower involvement of youth in FPCs: Young men migrate to industrial hubs for job opportunities, while young women face stricter gender and social norms to engage in other activities. Proportion of young women, especially married, is found to be low in FPCs. Thus, limited involvement in SHGs, high risk agriculture, social norms and reproduction responsibilities restrict youth participation in FPCs.

Women's Representation in FPCs



Women's representation is stronger in women-led FPCs



not just in shareholding



but also in decision-making roles

However, gaps in perceived adequacy of representation still exist, especially in mixed and male-led FPCs.

Building on leadership skills: Women showing relatively higher involvement in the FPCs, are also involved in community work and have strong awareness and agency. Many of them hold responsible positions of Anganwadi worker, ASHA worker, community volunteer of any NGO, etc.

Concentration of Women in the Agricultural Value-Chain

Women's roles are more **concentrated at the input and production level**, with fewer opportunities in **processing, value addition, and marketing**.

Concentration of Women in the Agricultural Value-Chain



INPUT & PRODUCTION



PROCESSING & VALUE ADDITION



MARKETING

Women-led FPCs outperform in collective action, sustainable agriculture, and governance, yet face greater challenges in business growth due to structural finance gaps.

FPCs have made significant stride in marketing and sustainability practices, especially where strong ecosystem support exists. **Women-led FPCs outperform in collective action, sustainable agriculture, and governance**, yet face greater challenges in business growth due to structural finance gaps.

Climate Change Effects and Adaptation

Observed Effects of Climate Change on Agriculture



Unpredictable Rainfall & Delayed Monsoons

Disrupts sowing & harvesting cycles → leads to crop loss and planning difficulties.



Extreme Temperatures (Hot & Cold)

Disrupts working hours & increases work burden, especially for women
Increases health risks during peak agricultural activity periods.



Dry Spells & High Humidity

Declining crop yields, Lower milk production. Deteriorating soil health.



Pest & Weed Infestation

Traditional control methods are becoming ineffective.
Farmers spend more on inputs → rising production costs.



Frequent Re-sowing

Erratic rains damage seeds.
Farmers are forced to sow multiple times, increasing time and cost.

Climate change deepens existing gender inequalities in agriculture:

- **Increased labour burden** for women due to longer hours/shift in the work hours in degraded
- **Limited access** to CSA training, credit, and extension services for women farmers
- **High labour (more time) requirements** of organic farming methods disproportionately impact women
- **Exclusion from financial tools** like crop insurance (PMFBY) and Kisan Credit Cards (KCC)

Adaptation Strategies by Farmers and FPCs

Despite challenges, farmers and FPCs are innovating and adopting local strategies to build climate resilience:

Farm-Level Practices:

Shift to **low-water crops** and **organic farming** methods



Use of **bio-fertilizers**, **vermicompost**, and **mulching** to restore soil health



Adoption of **drip irrigation**, **rainwater harvesting**, and **intercropping**



Emphasis on **crop rotation** to improve yield sustainability



FPC-Led Initiatives:

Promotion of **Climate-Smart Agriculture (CSA)** through trainings, demo plots, and exposure visits



Support for organic input supply via **bio-input shops** or at a lower price



Reviving traditional crops like **millets** and **climate resilient crop varieties**



Facilitation of **linkages to markets** and **government schemes**



Note: Women-led and mixed FPCs are more proactive in CSA promotion than male-dominated FPCs.

Key Insights

Based on in-depth FGDs and KIs, insights on the current state and future potential of Farmer Producer Companies (FPCs) emerge around three core areas:

Capacity Building Needs of FPCs: A Deep Dive into Ground-Level Realities

FPCs across four states face significant yet varied challenges in their journey toward sustainability and effectiveness. These revolve around five critical pillars: **institutional governance, operational management, financial access, infrastructure readiness, and member mobilization.**

The common aspects observed across FPCs is **weaker institutional backbone**—poor governance structure, weak leadership training, limited access to timely data, and non-inclusive operational planning. This underlines the need for customized and regular handholding support of FPCs based on their maturity level and local realities.

Gender Dynamics: Unequal Roles, Unequal Rewards

Women are undeniably central to FPC operations, especially in production and processing. However, their roles remain largely functional & undervalued and they are underrepresented in leadership, decision-making, and market-facing functions.

- **Women's Participation vs. Influence:** While participation is visibly high in states like Andhra Pradesh and parts of Odisha and Maharashtra (20%–100%), decision-making remains male-dominated. In Gujarat, despite some leadership positions, women rarely influence strategic decisions.

Key Barriers:



Time Constraints: The “triple burden” of farm work, household duties, and care responsibilities leaves women with little time for meetings, training, or leadership roles.



Mobility & Safety: Lack of safe space and social restrictions reduce their ability to attend capacity-building events or explore market opportunities.



Knowledge Gaps: Limited access to formal training, time poverty and mobility, keeps women in execution roles with minimal exposure to finance, governance, or digital tools.



Social Norms: Young and married women often face cultural pressure to avoid public or leadership roles, further marginalizing them within FPCs.

Functional vs. Strategic Roles:

Women are heavily involved in labour-intensive tasks—procurement, processing, and packaging—but seldom in pricing, marketing, or business development. Their influence over FPC decisions is minimal, despite their contribution.

Gendered credit behaviour with the male-dominated FPOs often indicate either a reluctance to take loans, citing stress and a preference for self-investment, or pursue larger loan amounts for establishing centralized infrastructure and systems. In contrast, female-dominated FPOs are generally more open and

receptive to borrowing, though the preference is for smaller ticket size.

Labour intensive roles with concentration in low-paid, and labour-intensive nodes

such as farm-based production, processing, and packaging; **gender stereotyping in task allocation**; and **intra-node gender gaps in participation**.

Climate-Smart Agriculture (CSA): Uneven Adoption, Gendered Challenges

FPCs across the states have begun to introduce CSA practices, but adoption is inconsistent and often gender biased.

State	CSA practices promoted by FPC
Andhra Pradesh	<ul style="list-style-type: none"> • Crop & soil management: Crop rotation, line sowing, multi-cropping, intercropping, and bio-fertilizers • Nutritional security: Increased cultivation of millets for household nutrition • Water conservation: Rainwater harvesting
Gujarat	<ul style="list-style-type: none"> • Capacity -building & knowledge sharing: Training on organic farming, exposure visits, and an organic farm school • Soil & input management: Soil testing and organic input shops • Irrigation & pest management: Drip irrigation and mulching, solar traps and pheromone traps.
Maharashtra	<ul style="list-style-type: none"> • Bio-input & soil management: Bio-inputs, vermicomposting, and annual soil testing • Post-harvest & value addition: Solar driers and aerators, demo plots, and training on bio-input preparation and organic farming • Training & Exposure: Exposure visits and knowledge-sharing sessions.
Odisha	<ul style="list-style-type: none"> • Waste & resource utilization: Cattle waste utilization in farming • Post-harvest & dairy management: Adoption of solar freezers • Sustainable input & pest control: Bio-pesticides and fertilizers through FPC input businesses • Water & technology adoption: Use of solar powered devices • Diversification & traditional practices: Crop diversification, mushroom cultivation using leftover paddy straw, and local indigenous pest control methods.



Role of FPCs: Most FPCs act as **information facilitators**, organizing some training and helping with access to inputs. However, their ability to link CSA products to stable markets is limited.



Gender-Specific Barriers: Women face **higher labor burdens** in CSA due to climate stress, have **limited investment capacity**, and are often **excluded from market interactions due to poor networks of reliable buyers**. Their lower digital literacy and restricted mobility further compound these issues.



Adoption Challenges Across States: Common barriers include unstable organic markets, poor credit access, lack of structured training, minimal tech integration, and weak linkages with government schemes.

CSA adoption and marketing gaps: Women and mixed FPCs perform considerably better in promoting the adoption of CSA than their counterparts. Marketing remains the biggest challenge for all the FPCs.

Recommendations

This section elaborates on strategic, actionable recommendations informed by the study findings. It offers a forward-looking roadmap to strengthen FPCs, mainstream women's leadership, and enhance climate resilience through CSA. The intent is to guide policymakers, practitioners, and stakeholders in creating inclusive, resilient and sustainable agricultural systems.

As women play a vital yet underrecognized role across the agricultural value chain—from production to processing to marketing. They often face systemic barriers: limited decision-making authority, restricted mobility, lack of land ownership (and thus credit access), and poor access to training and markets. Strengthening their participation through institutional mechanisms that enhance autonomy, skill development, and financial inclusion is not just a matter of equity—it's essential for agricultural resilience and transformation.

FPC- vehicle of change of women farmers to access markets, training, and financial services. They can enable small and marginal women farmers to negotiate better prices, adopt sustainable practices, and access new technologies. When empowered within FPCs, women have shown strong leadership in CSA, post-harvest management, and value-chain strengthening (FAO, 2019). However, most FPCs still lack gender-inclusive systems and

services. Women remain underrepresented in decision-making and leadership, with existing programs often not suited to their specific needs. Addressing these institutional gaps is critical to fostering inclusive and resilient food systems.

Policy-Level Interventions



Tailored Support Models: Classify FPOs by maturity and design differentiated support structures, including clear exit strategies from government support.



Operational Grants: Provide core funding for salaries, registration, and administrative costs to ensure operational stability.



Licensing Flexibility: Remove constraints like B.Sc. (Agri) requirements for fertilizer licenses to promote inclusive entrepreneurship.



Contextual Insurance Schemes: Shift from crop-specific to region-specific insurance models for better alignment with local climate realities.



Gender accommodative spaces: Inclusive spaces for women in public places (market) and for transportation



Reservation of FPC members and women in local agricultural governing bodies such as APMC Board

Capacity Building

Business Management



Institutional Strengthening: Conduct village and FIG-level visioning exercises; develop Annual Action Plans (AAPs) with active participation from BoDs and CEOs.



Compliance with Market Standards: Offer training on market regulations, licensing, and export-readiness.



Gender-Focused Branding: Promote women-driven value chains with ethical branding to appeal to conscious consumers and reduce the gender wage gap.

Financial Management



Inclusive Financial Literacy: Expand training beyond CEOs to include BoDs and members on financial planning, risk management, and investment.



Digital Literacy: Promote use of apps like Tally or Vyapar to digitize operations and improve financial transparency.



Compliance Training: Address non-compliance issues through residential programs using resources from organisations such as Centre for Sustainable Agriculture and Krishi Vigyan Kendra (KVKs).

Women's Leadership Development



Gender-Sensitive Governance: Mandate women's representation in boards and key committees, backed by targeted leadership training.



Value-Chain Integration: Upskill women in procurement, quality control, and aggregation for deeper engagement in the agri-value chain.

Climate-Smart Agriculture (CSA)



Localized CSA Packages: Develop practical, contextual Packages of Practices (PoPs) using field demonstrations and peer learning.



Technology Adoption: Train women in drone usage, mobile-based advisories, and digital farming tools to increase participation in tech-enabled agriculture and improve traceability.

ICRISAT: It enables FPOs to adopt climate-resilient technologies and better agronomic practices by partnering with state governments to implement farmer-centric PoPs (Packages of Practices).

Council on Energy, Environment and Water (CEEW): It maps energy needs, assesses techno-economic viability, and collaborates with FPOs to implement DRE (Decentralized Renewable Energy) interventions in Gujarat by integrating clean energy solutions into agricultural value chains.

Partnership & Networking

Marketing

Diversify Market Access: Reduce dependency on APMCs by facilitating bulk sales, e-marketplaces, and retail partnerships. **Odisha Millet Mission** serves as a successful model.

Odisha Millet Mission (OMM): OMM is creating Market Linkages for Millets by end-to-end value chain approach, from production support to market development, focusing on decentralized mechanisms.

Women Peer Networks

- **Mentorship & Peer Learning:** Implement structured mentorship, exposure visits, and leadership training. Use mobile-based and video platforms for knowledge sharing.
- **Women-Led Models:** Foster women-exclusive clusters and CSA initiatives within male-dominated FPOs to create alternate leadership pathways.

Virtual neighbours: Leverage platforms like **Virtual Neighbours** for digital knowledge sharing and market place access for women farmers.

CSA Market Ecosystem

- **Build Organic Market Linkages:** Collaborate with private and public agencies for branding and certification of CSA products to improve adoption and pricing.

Leverage government support: Tap into support from PKVY (Paramparagat Krishi Vikas Yojana), and state-level organic missions, SMART project in Maharashtra, and explore e-market place such as Jaivik kheti.

- **Simplify Certification Processes:** Work with certification bodies to ease access to organic labels and reduce farmer dropout from CSA programs.

Collaborate with accredited certification agencies: Partner with Agricultural and processed food products export development Authority (APEDA)-recognized bodies like EcoCert, OneCert, Control Union, etc., for inspection, training, and certification services.

Financial Access

Enable Credit Linkages: Form alliances with financial institutions to design farmer-friendly loan products. **Samunnati** is a successful model for inclusive agri-financing.

Samunnati: It provides customized financial products such as trade credit, invoice financing, and input financing based on FPOs' transaction data and crop cycles. By de-risking FPO loans through partnerships and using cash-flow-based assessments rather than traditional collateral methods, Samunnati bridges the credit gap.

Digital Solutions for Traceability: Promote agri-tech platforms such as AryaShakti app for real-time tracking, transparency, and improved market credibility.

Access to resources

Inclusive and diverse infrastructure development

There's a requirement of diversifying assets and access to gender inclusive infrastructures in areas such as for post-harvest, value-addition, transportation and aggregation systems, clean

energy technologies, and digital infrastructure, gender accommodative spaces and women-centric technologies.

Common resource pool

Adopt a shared professional services model, by hiring technical experts to support compliances and statutory obligations of FPOs.

Tailor-made financial services

Access to credit through tailored financial instruments, and dedicated credit lines to fulfill the unique needs of smallholder and women-led FPOs.

The SMART (State of Maharashtra's Agribusiness and Rural Transformation) project has been facilitating critical infrastructure support, grants, and co-investment models for FPOs to unlock capital for agribusiness ventures.

The Abhayam Krishi Kendras (AKKs), through training and knowledge building, are encouraging certified women agripreneurs as the last-mile delivery entity to facilitate adoption of sustainable farming.

Way Forward

A Call for Strategic, Inclusive Interventions

The success of FPCs depends not just on technical interventions but on **transformative ecosystem support**—grounded in local realities, collaborations among stakeholders, inclusive of women and their aspirations, and oriented towards climate resilience. Context specific and tailor-made, gender equitable, and practical CSA adoption planning is not just desirable—they are imperative for sustainable future.

Empowering women through **institutionalized gender-inclusive training**, financial access, and knowledge sharing is key to transforming FPCs into inclusive and climate-resilient organizations. The recommendations outlined aim to catalyse that transformation—ensuring equitable participation and representation, flexible capacity-building models (considering time and mobility constraints), **safe spaces for gender accommodation and leadership development**, sustainable growth, and climate adaptability at every level of the Agri-value chain.

Partnership with women peer networks, financial institutions, and other ecosystem players would help promote women's confidence, exposure, and collective agency around CSA adoption, farmgate procurement opportunities, organic certification acquisition, branding and value-realization of commodities.

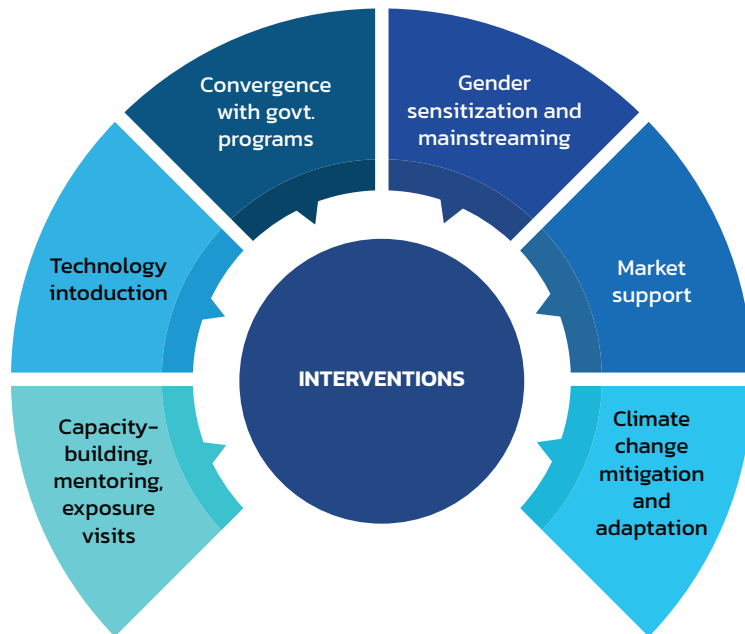
About FWWB India

Friends of Women's World Banking, India (FWWB), founded in 1981, empowers women and agri-collectives from low-income households by providing financial and capacity-building services, fostering self-reliance, and addressing barriers like gender, poverty, and limited access to knowledge and resources.

Agriculture Capacity Building and Climate Action

FWWB focuses on strengthening grassroots institutions through capacity building, leadership development, and financial literacy. FWWB promotes inclusive governance and works with banks to improve women's access to credit and renewable energy technologies. It also implements mentorship programs and exposure visits to develop women's confidence in entrepreneurship, governance, and market negotiation.

Programmatic Approach



Presence in
9 States
and Union Territories

Worked with more than
95 FPCs
and 150 Women Farmer
Groups

Impacted
65000
farmers
(22000 women farmers)

Catalytic Funding – Agriculture and Climate Finance Program

This program strengthens the ecosystem of FPOs and agri-focused social enterprises by offering need-based financial solutions, across rural India. Customized financial products are tailored to the specific business models and growth stages of FPOs and affiliated institutions. Importantly, the program combines timely credit delivery

with capacity-building, technical assistance, and continuous handholding support to maximize impact.

In the coming years, FWFB aims to comprehensively understand, nurture, document, and build evidence by designing a capacity-building strategy and support gender focused farmer collectives. It also aims to promote climate resilience in agriculture, as it poses a significant threat to global food security and establish itself as a resource institution in the space of gender and smart agriculture space.





Friends of Women's World Banking, India

Address: 101, Sakar 1, Opp Gandhigram Railway Station,
Ashram Road, Ahmedabad 380009

