

How FPOs are changing sustainable agriculture in India: From farmer collectives to climate-resilient business hubs

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INTRODUCTION

Indian agriculture is standing at a critical crossroads. Climate hazards such as heat waves, droughts, erratic rainfall, and floods are no longer rare events, rather they are becoming the new normal. Small and marginal farmers, who make up over 85% of India's farming population, are the most vulnerable to these changes. As climate risks intensify, traditional farming practices alone are no longer enough to ensure stable incomes or food security. In this challenging landscape, Farmer Producer Organizations (FPOs) are emerging as a powerful solution. Once seen primarily as platforms for collective marketing, FPOs are now evolving into Climate-resilient Agribusiness Hubs that support sustainability, resilience, and long-term growth.

Beyond Market Linkages: FPOs as Drivers of Climate Resilience

Initially, FPOs were promoted to help farmers achieve economies of scale namely, pooling produce, accessing better markets, and strengthening bargaining power (Fig. 1). While these objectives remain important, their role has expanded significantly. Today, many FPOs facilitate:

- Access to extension and advisory services
- Collective decision-making on crop planning
- Risk-sharing during climate and market shocks
- Investments in climate-smart technologies



Fig. 1 FPOs as Drivers of Climate Resilience

By working together, farmers can better manage uncertainties that would be overwhelming at an individual level. Although challenges remain such as limited technical expertise, funding constraints, and climate literacy, wherein FPOs are increasingly proving their value, especially in India's semi-arid regions.

Understanding Climate-Stress Moments: A Game Changer

A key shift in climate-resilient planning is the recognition of critical climate-stress moments especially when farming systems are especially vulnerable (Fig. 2). These include:

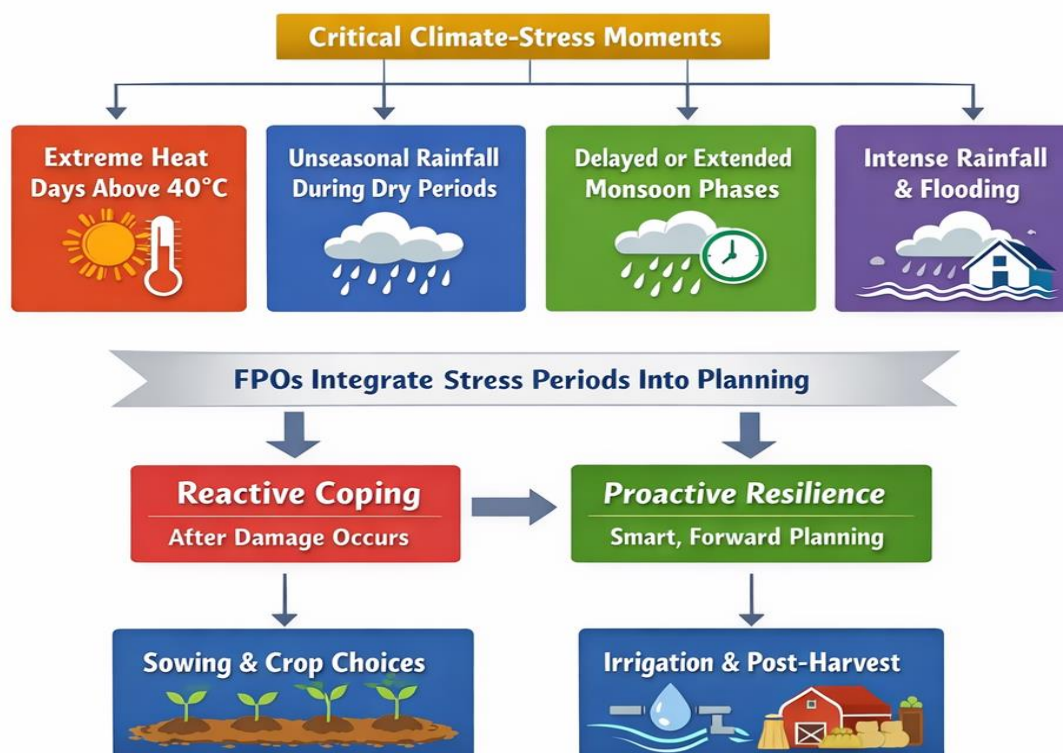


Fig. 2 Critical Climate-Stress Moments

When FPOs integrate these stress periods into their production and business planning, they move from reactive coping (responding after damage occurs) to proactive resilience-building. This enables smarter decisions on sowing windows, crop choices, irrigation scheduling, and post-harvest management.

Collective Efficiency: Strength in Numbers

One of the strongest advantages of FPOs lies in collective efficiency (Fig. 3). By reducing transaction costs and fostering cooperation, FPOs help farmers:

- Secure better prices through collective marketing
- Access quality inputs at lower costs
- Invest in shared infrastructure such as storage and processing units



Fig. 3 Collective Efficiency of FPOs

These benefits are particularly crucial during climate extremes, when individual farmers often lack the capacity to absorb losses or stabilize incomes. Collective infrastructure reduces post-harvest losses and improves value realization, strengthening the overall sustainability of farming systems.

Digital Tools and Agri-Tech: Enabling Smarter Decisions

Digital innovations are helping FPOs adopt data-driven decision-making (Fig. 4) When agri-tech solutions are embedded within institutional structures like FPOs, common adoption barriers viz., cost, scale, and knowledge gaps are significantly reduced. This ensures that climate-smart practices are not only effective, but also inclusive.



Fig. 4 Digital Tools for Climate-Smart Farming

Climate-Smart Infrastructure and Collective Investments

Across India, FPOs are increasingly investing in shared infrastructure such as:

- Drying and storage facilities
- Irrigation systems
- Mechanical harvesters
- Primary processing units

These investments not only improve quality and market returns but also protect farmers from climate-induced losses. In semi-arid regions, combining productivity-enhancing practices with soil health improvement, efficient water use, and income diversification has proven especially effective in building robust livelihoods. Most FPOs currently adopt gradual adaptation strategies, such as improved pest management and soil health practices. Over time, these incremental changes can pave the way for transformative adaptation, including protected cultivation or shifts in business models signalling a transition from short-term survival to long-term resilience planning (Fig. 5(A-I))

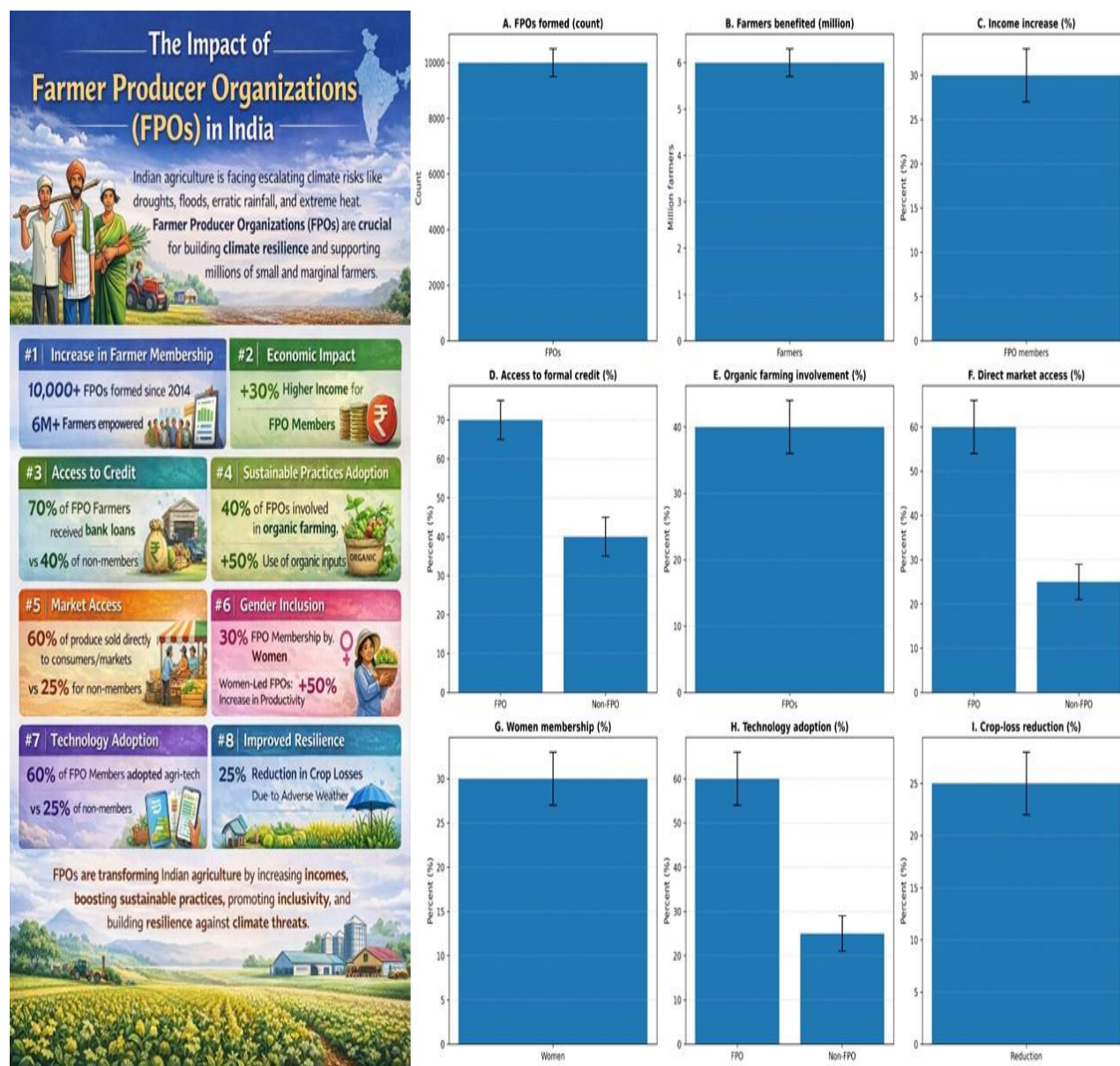


Fig. 5(A–I). Farmer Producer Organizations (FPOs) and outcomes linked to sustainability and market performance in India. (A) Cumulative FPOs formed under the Government of India’s flagship scheme (Ministry of Agriculture & Farmers Welfare, Government of India, 2025); (B) Farmers mobilized/benefited in million (Ministry of Agriculture & Farmers Welfare, Government of India, 2025); (C) Indicative income gain for FPO members relative to non-members (Press Information Bureau, Government of India, 2025); (D) Access to formal credit (share reporting bank loans) for FPO v/s non-FPO farmers (National Bank for Agriculture and Rural Development, 2022); (E) FPO engagement in organic/organic-oriented initiatives (Padaliya, M., 2022); (F) Direct to consumer/retail market participation for FPO v/s non-FPO farmers (Patil, S., 2025); (G) Women’s share in FPO membership (Padaliya, M., 2022); (H) Adoption of farm technologies (e.g., precision tools/climate-

resilient varieties) among FPO v/s non-FPO farmers (Patil, S., 2025) and; (I) Reported reduction in crop losses associated with climate shocks among FPO-linked farmers (Press Information Bureau, Government of India, 2025).

Case Studies

- Sahyadri Farmer Producer Company (Maharashtra): One of India's largest FPOs, it focuses on high-value horticulture (grapes, bananas, etc.), uses a dense network of automated weather stations for climate resilience planning, and exports directly to international markets.
- Dharani Cooperative (Telangana): This FPO promotes organic millet farming, which enhances incomes and market access while focusing on locally appropriate, sustainable crops.
- SEEDS FPC Limited (Tamil Nadu): This women-majority FPO provides significant savings on quality inputs, offers credit facilities, and organizes regular capacity-building programs, leading to increased annual incomes for members.

Conclusion: FPOs at the Heart of Climate-Smart Agriculture

FPOs in India are no longer just marketing collectives. They are evolving into climate-smart agribusiness platforms that integrate climate information, digital tools, infrastructure development, and advisory services into their operations. As climate uncertainty grows, the future of sustainable agriculture lies in strengthening these institutions through supportive policies, capacity building, climate-smart investments, and convergence with technology and extension systems. When profitability and resilience go hand in hand, FPOs can play a transformative role in ensuring sustainable rural livelihoods, resilient agriculture, and long-term food security for India.

Reference

- Padaliya, M., Devi, G., & Raju, N. (2022). Farmer producer organizations way for enhancing rural livelihood. Gujarat Journal of Extension Education, 34(1), 90-96.
- Patil, S., Mehta, M., Pancholi, G., & Saxena, A. (2025). Unveiling the dynamics of farmer producer organizations in India: a systematic review of status, challenges, and future directions. Humanities and Social Sciences Communications, 12(1), 1-17.

