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Women, Work, and the Future of Indian Agriculture: Feminisation, Technology, and the Vision of Viksit Bharat

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Abstract

Women have long served as the foundation of India's agricultural system, contributing significantly to crop production, livestock management, agroforestry, fisheries, and seed preservation. Despite their extensive involvement, their labour remains undervalued due to structural inequalities, limited land ownership, wage disparities, and restricted access to technology and institutional support. Recent trends show a clear feminisation of agriculture, driven by male migration to non-farm sectors and the increasing participation of both rural and urban women in farming and allied activities. Women now form the majority workforce in key crops such as tea, cotton, oilseeds, and vegetables, yet continue to face systemic barriers that limit their economic mobility and leadership opportunities. Institutional interventions—including Custom Hiring Centres, skill development initiatives, and women-focused technology innovations—demonstrate the transformative potential of equitable access to resources. Global examples from Kenya, Tanzania, and Ghana further highlight how technology designed with women's needs in mind can enhance productivity, income, and agency. India's policy framework, particularly through programmes such as the Mahila Kisan Sashaktikaran Pariyojana and the National Rural Livelihoods Mission, is gradually expanding women's autonomy, but deeper structural reforms are essential. As India advances toward the vision of Viksit Bharat 2047, integrating gender-responsive technologies, secure land rights, leadership opportunities, and inclusive market systems will be critical. Ensuring that women benefit equally from agricultural innovation is not only a step toward social equity but a cornerstone for building a resilient, productive, and sustainable agricultural future.

The Invisible Backbone of India's Food System

Across India's fields, orchards, coasts, and dairy sheds, women carry the agricultural economy on their shoulders. They sow, weed, harvest, transplant, process, preserve seeds, manage livestock, and nourish entire food systems. Yet, their contribution remains largely undocumented—an absence that reflects deep structural inequality rather than lack of work. What we often forget is that Indian agriculture survives because of women's labour,

knowledge, and resilience. As India prepares for the ambitious transformation toward **Viksit Bharat 2047**, the question is no longer whether women matter in agriculture—they always have. The real challenge is whether institutions, technologies, and policies will finally match their contribution.

A History of Contribution Without Recognition

Long before agriculture became formalised, early agrarian households relied on women's understanding of seeds, soils, seasonal cycles, and food preservation. Much of India's traditional ecological knowledge—crop rotation, mixed farming, seed conservation—originated in women's everyday observations. But with colonial land laws, land rights were systematically tied to male ownership. Even after Independence, reforms did little to acknowledge women as farmers. The Green Revolution modernised farming, but its benefits went mostly to male landowners, leaving women as informal labourers in a sector they sustained.

This historical sidelining explains the irony we still see today: millions of women work in agriculture, yet only a small fraction legally own the land they cultivate.

A Sector in Transition: The Feminisation of Agriculture

Something remarkable is happening in rural India. With men increasingly moving toward non-farm jobs, women have begun taking charge of agricultural responsibilities in ways not seen before. Between 2022 and 2024, rural male participation in agriculture declined from 51 percent to 49.4 percent. But instead of shrinking, the sector grew more stable, recording an overall participation of 59.8 percent in 2024. The reason is simple: women stepped in.

Whether managing fields, running livestock units, negotiating with traders, or organising seed banks, women have emerged as the quiet managers of India's largest economic sector. And this shift isn't limited to villages. Urban women are entering agriculture faster than urban men—with female participation rising from 11.1 percent in 2022 to 12.3 percent in 2024, while urban men remain below 5 percent. This points toward a new agricultural landscape where terrace farming, nurseries, floriculture, and urban hydroponics are increasingly shaped by women.

Where Women's Labour Keeps the System Running

Women play a dominant role in the cultivation of several major crops. Nearly half the workforce in tea plantations is female. Cotton fields depend on women for close to 47 percent of labour, oilseeds for 45 percent, and vegetable production for almost 40 percent. These tasks demand precision and stamina—yet they are often labelled “unskilled,” reinforcing wage gaps and limiting women's bargaining power.

Their presence is equally significant in allied sectors. According to the FAO, women form 21 percent of India's fish farmers and 24 percent of fish workers. They mend nets, process catch, manage feed, and handle post-harvest tasks—quietly sustaining coastal economies without recognition.

Barriers That Hold Women Back

Despite their indispensable role, women farmers continue to face systemic hurdles. Land ownership remains the largest barrier. Without legal titles, women struggle to access credit, crop insurance, or government subsidies. Wage disparities remain sharp, with women earning far less for the same labour as men. Social norms often confine them to repetitive, physically strenuous tasks—limiting both earnings and mobility. Leadership structures—from cooperatives to farmer producer organisations—often exclude women entirely. The result is a sector held together by women's labour yet shaped almost entirely by male decision-makers.

Institutions That Are Redefining Women's Access

Fortunately, several institutions have begun rewriting the script. Punjab Agricultural University and ICAR—Central Institute for Women in Agriculture have set up Custom Hiring Centres where women can rent modern machinery at affordable rates. These centres reduce drudgery, free time for income-generating work, and open pathways into entrepreneurship. When a woman operates a transplanter or a harvester, she is not just improving efficiency—she is stepping into a space from which she was historically excluded.

Training programmes by organisations such as the M.S. Swaminathan Research Foundation have accelerated this shift. Women who once spent hours doing manual work now operate mini-tractors, weeders, and processing machines. This transition from labour-intensive work to skill-intensive roles builds confidence and reshapes local gender norms.

What Global Innovations Teach Us

Around the world, women-centric agri-innovations are producing striking results. In Kenya and Tanzania, portable threshers replaced the backbreaking work of manual grain separation, dramatically improving productivity and income for women. In Ghana, where cultural norms restrict women's mobility, app-based livestock vaccination using drones ensured that animal healthcare reached every household—while also training young women as para-veterinarians. When technology acknowledges social barriers, it dismantles them.

A Story from India: Atram Padma Bai's Leadership

India has its own powerful examples. Atram Padma Bai began with a humble three-acre plot growing cotton, oilseeds, and pulses—barely earning enough to sustain her family. Instead of accepting a life of limited opportunities, she started a Hiring Center for Agricultural

Tools, offering low-income farmers access to basic equipment. Today, as sarpanch, she oversees eight villages and nearly 2,000 farmers. She has helped build all-weather roads, secured clean water access, and established rainwater reservoirs. Her story captures a fundamental truth: when women gain access to tools and decision-making, entire communities move forward.

Policy Support and the Promise of Viksit Bharat

Government initiatives such as the Mahila Kisan Sashaktikaran Pariyojana and the National Rural Livelihoods Mission have strengthened women's access to sustainable farming practices, market linkages, and collective institutions. But the ambition of Viksit Bharat demands more than support schemes. It requires making gender equality a core principle of agricultural policy—embedded in climate planning, digital agriculture, value chain development, and access to finance.

A developed India cannot emerge on unequal foundations. Women's empowerment is not a side agenda; it is central to economic growth, food security, and climate resilience. When women farmers receive equal access to resources, agricultural productivity rises. When women lead cooperatives, community wealth grows. When girls see women farming confidently, they imagine themselves in those spaces too. This is how transformation becomes intergenerational.

The Road Ahead: Toward a Gender-Responsive Agricultural Revolution

To build a truly inclusive agricultural future, India must prioritise land rights, gender-sensitive technology design, stronger market access, leadership opportunities, and formal recognition of women's unpaid labour. These changes are not difficult—they simply require institutions to acknowledge what has always been true: women are central to Indian agriculture, and the sector's future depends on how boldly the country invests in them.

A Future Built by Women Will Be a Stronger Future for India

The shift is already underway. With men migrating, women are emerging as cultivators, innovators, entrepreneurs, and protectors of agro-biodiversity. They sustain food systems, rebuild communities after climate shocks, and hold knowledge crucial for India's resilience. The task now is to match their contribution with rights, recognition, and resources. A gender-responsive agricultural transformation is not just a matter of fairness. It is one of India's strongest strategies for a resilient and prosperous future. When women rise, agriculture rises. And when agriculture rises, India steps closer to the promise of **Viksit Bharat**.

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