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Chapter 9

Extension and Advisory Services Strategies to Address Gender Issues

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Abstract

This paper explores how agricultural extension and advisory services can better address gender issues in India. Women make up around 64 per cent of India's agricultural workforce and perform most farming tasks from planting to harvesting, yet they remain underrepresented in training, decision making, and access to information. Although about 73 per cent of rural women are engaged in agriculture, only around 12 to 14 per cent own agricultural land, limiting their eligibility for institutional support and extension schemes. Barriers such as social norms, insecure land rights, limited mobility, and the digital divide continue to restrict women's participation. The paper reviews these challenges and examines strategies used globally and within India to make extension more inclusive. Particular attention is given to the ICAR Gender Strategy for the National Agricultural Research, Education and Extension System (NAREES), which provides a national framework to engage women more effectively in research, training, and farm advisory programmes. It highlights the importance of capacity building, digital inclusion, participatory approaches, and support for women's enterprises. The study concludes that extension systems must not only reach women but also empower them as active participants and leaders in agriculture. When gender equality is integrated into every stage of planning and implementation, extension services can contribute to more productive and equitable farming communities.

Keywords: Gender equality, Women farmers, Agricultural extension, Advisory services, Gender Strategy, Empowerment, India.

1. Introduction

Why gender matters in extension and advisory systems

Globally, participation in agrifood systems has declined for both genders since 2005, with 36% of working women and 38% of working men employed in the sector by 2019. The sector remains especially important in developing regions: in sub-Saharan Africa, 66% of employed women and 60% of men work in agrifood systems, while in southern Asia the share is 71% for women and 47% for men,.Women's agricultural labour in India spans nearly all stages of production except ploughing, including preparation, planting, harvesting, processing, and labour-intensive tasks, yet their roles are often undervalued and excluded from the core remit of EAS [1].

This exclusion persists despite constitutional guarantees and policy commitments to equality, revealing a disconnect between formal mandates and lived realities in patriarchal contexts (Strategies to Promote Gender Sensitisation in India). The result is a systemic underdelivery of advisories, inputs, and institutional support to women farmers, and limited representation and recognition of women in extension staffing and leadership [2]. Recent studies indicate that women constitute approximately 30 per cent of all farm workers, with around 73 per cent of rural women engaged in agricultural labour. Despite this substantial involvement, women landowners account for only about 14 per cent of all landholders, reflecting persistent inequalities in access to resources and decision-making power [3].

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India's agricultural extension system is at an inflection point. On one hand, national and global shifts toward demand-driven and market-responsive extension create opportunities to better tailor services to women's needs [2]. On the other, structural barriers, mobility constraints, social norms, land and asset inequalities, digital divides, and institutional biases, undercut women's participation and outcomes [4, 5]. This article stations India within a broader evidence base while foregrounding the countrys' strategies, particularly the ICAR Gender Strategy for National Agricultural Research, Education, and Extension System (NAREES), to lay out a coherent pathway for gender-equitable EAS modernization [4].

2. The gendered landscape of agricultural extension: evidence and contradictions

Persistent access gaps and institutional biases

A landmark review by FAO on 24 "successful" programs concluded that rural women's access to extension services remained very poor and the number of women extension agents extremely low. This paradox is echoed across contexts such as increasing the number of women agents is necessary but not sufficient; programs must also address small-scale producers' needs and the gendered targeting patterns that privilege large-scale, male-dominated commodities.

The AKIS approach introduced by the World Bank improved attention to gender in research and personnel policies, but the shift toward fee-for-service advisories overlooked women producers' income constraints and reinforced inequities in access to information.Empirical data show regular shortfalls in women's extension access relative to men across regions as exemplified by Ethiopia (20% women vs. 27% men), India (18% women-headed households vs. 29% men-headed households), and Ghana (2% women-headed households vs. 12% men-headed households) [2]. In Tanzania, male agents visited women farmers less frequently, a pattern later corroborated by census data.

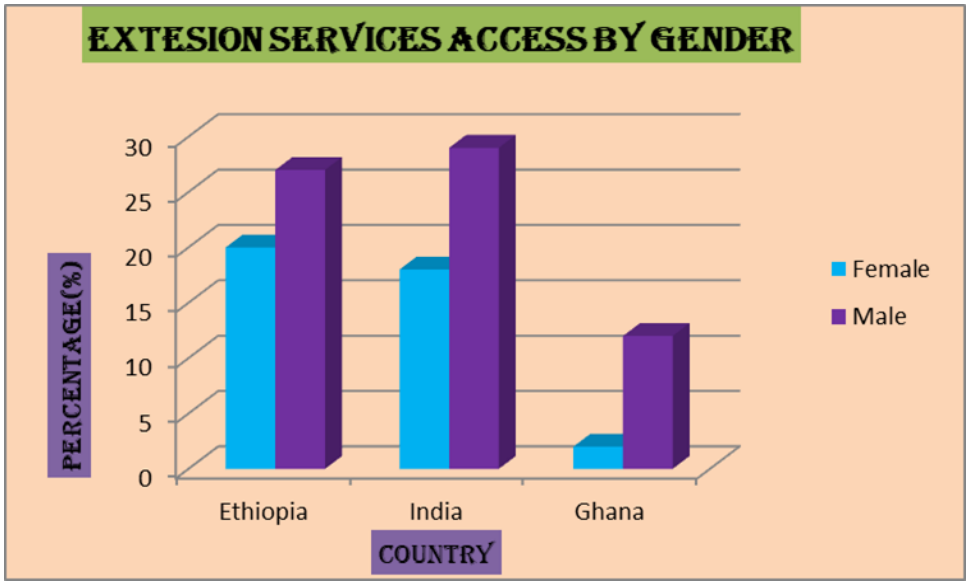

Figure 1: Women's Extension Access Relative To Men Across Regions

Study on Gender disparities in agricultural extension among smallholders in Western Uganda reported a significant gender disparity when it comes to accessing extension services. The graph below shows evidence from different sources of extension services, 90% of the female farmers accessing through farmer group extension services. This is an indication that, female farmers were better off in farmer group extension This is consistent with the results by [6, 7].

Who counts as a "farmer"? Definitions that erase women's roles

Prevailing definitions of "farmer" as household head, landowner, or primary farm income earner, systematically misrecognize women's agricultural labour and decision-making.The household-head definition aligns with a unitary model of households and the "altruistic dictator," glossing over intra-household bargaining and women's production roles.Land ownership, a key criterion for access to EAS and other productive resources, is unequally distributed; women's land rights are weaker and plots smaller, which compounds their exclusion from extension, credit, and producer associations [5]. However, studies show evidences that strengthened land rights for women with higher productivity, conservation investments, income control, bargaining power, and even reduced vulnerability to domestic violence with over 66 per cent of women obtain income from agriculture and agri-related opportunities [8].

Income-based definitions also marginalize women by focusing on cash earnings rather than agricultural activity, despite pooled or independent incomes within households.Gendered crop labels ("men's crops," "women's crops") oversimplify reality; Doss's work in Ghana shows most crops cannot be cleanly assigned by gender, and associations are often temporal and context-driven.Irrigation and technology changes can trigger appropriation of women-associated crops by men, illustrating that resource control is dynamic and power-laden.

Gendered experiences of extension workers and clients

At the frontline, paternalistic implementation persists, even among NGOs viewing women as objects of development rather than agents.Women extension workers report inferiority complexes when their voices are dismissed, verbal abuse, and constraints on mobility or

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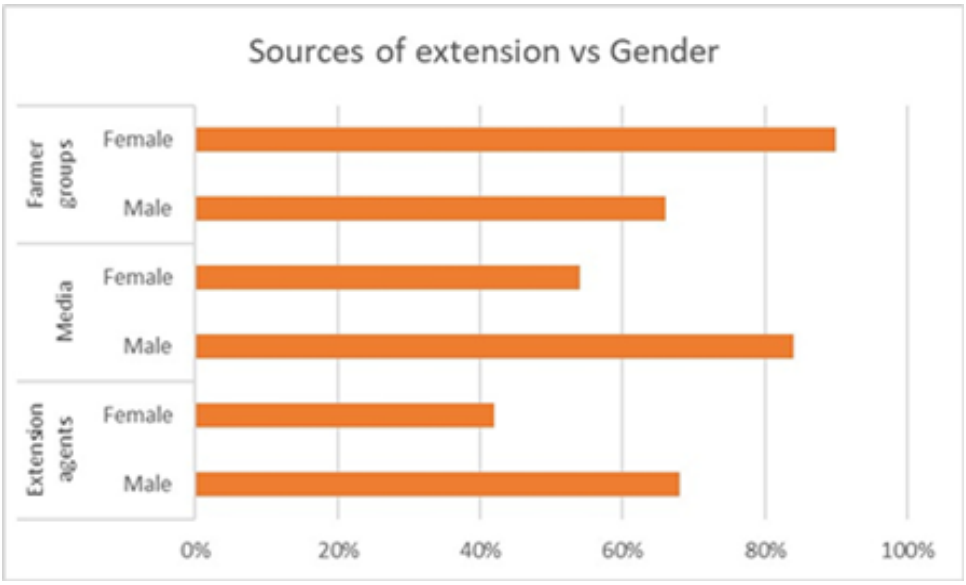


Figure 2: Gender by Extension Services Category [6]

Figure 3: Percentage of Female in Agriculture in Kenya, [8]

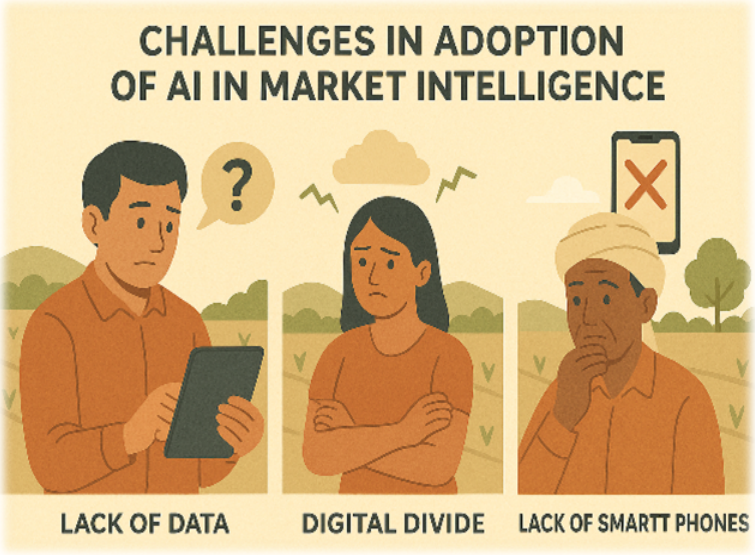
working at night due to cultural norms, affecting performance and retention [9]. These pressures make extension work less attractive for women and perpetuate male-dominated staffing.

Training access is pivotal: where women extension workers receive regular training, they can outperform male counterparts, yet the scarcity of gender-responsive training and leadership pathways keeps women sidelined [10]. Recruitment criteria favor men due to travel demands and interaction with male landowners, further entrenching bias.Even in India, women extension workers are expected to be empathic while simultaneously powerful and mobile, an often-contradictory standard under hegemonic masculinities.

Digital divides and gendered ICT realities

ICTs are increasingly central to extension delivery; however, gendered access and digital literacy gaps limit impact. In India, poor internet connectivity (81.67%), low literacy (80%), and difficulties using ICT devices (66.67%) impede rural women's effective use of digital extension services, curtailing knowledge dissemination and participation in innovation [1]. Women extension workers in South Africa and Iraq showed higher ICT literacy due to recent training exposure, demonstrating how cohort effects and education access shape ICT competencies.In Iran, women extension workers predominantly access materials via television (60%), then internet (27.7%), reflecting platform-specific reach and constraints.

For women farmers, low ICT utilization is compounded by the limited number of female extension workers, restricting trusted pathways for learning. Radio remains a powerful, low-cost ICT familiar to rural households; when linked with internet and mobile phones, digital radio can deliver localized content and support distance education tailored to women.In India, Digital Green's community video approach—co-created and screened through women's SHGs and village platforms exemplifies participatory, locally adapted ICT-enabled extension that engages both women and men across the content lifecycle.



3. Extension techniques and advisory methods: participation and exclusion

Group-based extension: promise and pitfalls

EAS often leverages group delivery, cluster extension, farmer development groups, farmer field schools (FFSs), and FTCs to scale advisories.While such approaches facilitate diffusion via model farmers and social networks, gender biases among development agents and group norms can perpetuate inequality if not deliberately addressed.Women's participation in extension meetings and cooperatives is consistently lower than men's, and leadership positions remain male-dominated, limiting women's voice and agenda-setting [2].

Evidence suggests context-driven choices between mixed-sex and single-sex groups: mixed groups can broaden women's access to networks and resources yet reproduce gendered behaviors; single-sex groups can build confidence and leadership but risk reinforcing stereotypes if not strategically designed [11]. Gender-equitable EAS requires flexibility to toggle between and within these strategies based on local social norms, with extension agents trained to analyze gender dynamics and deploy techniques that elicit participation from both women and men [2].

Accounting for time and mobility

Women shoulder disproportionate unpaid care and household labor, constraining their time and mobility for training and meetings; in India, women spend 354 minutes per day on household activities compared with 36 minutes for men, underscoring the need for convenient, short-duration, childcare-supported, and locally delivered extension formats.Participatory scheduling, transport support, and crèche facilities become not just add-ons but equity enablers within program design [4].

Policy mandates versus implementation the enabling environment gap

India's and other countries' policies increasingly recognize gender inequalities and commit to mainstreaming gender across sectors. India's National Agriculture Policy acknowledges women as farmers requiring structural, functional, and institutional measures to build capacity (Department of Agriculture & Cooperation, Ministry of Agriculture). Ghana's FASDEP II and Kenya's NASEP embed gender directives within extension strategies.

Yet implementation falters due to understaffing, weak inter-ministerial linkages, limited authority of gender units, and insufficient budgets.Zambia cut gender-related funding under tight budgets; Mozambique's gender unit remained isolated with little decision-making power; Tanzania's "Kilimo Kwanza" barely integrated gender despite available sex-disaggregated data.Ghana's WIAD, while advisory with limited power, has advanced sex-disaggregated data collection and good practice centers with IFAD support. hese gaps reflect deeper institutional biases and a lack of political will to translate policy rhetoric into operational change.

Monitoring outcomes not just participation is essential. Indicators must track whether gender gaps in extension access are narrowing, whether women's adoption and productivity gains improve, and whether EAS impacts livelihoods meaningfully and equitably (Reducing the Gender Gap in EAS). Without robust evaluation, mandates risk becoming performative rather than transformative.

4. Gender-equitable EAS in practice: strategies and principles

World Bank/IFPRI gender-responsive approaches

Extension agents have developed strategies to navigate cultural barriers, such as meeting women in groups, engaging husbands to explain visits, addressing women in public forums, and coordinating with women's affairs offices; district governments instituted gender analysis during needs assessments, in-service gender training for staff, and awards to recognize women agents' high-quality work [2]. The Ministry of Agriculture diversified extension packages, including women's development packages emphasizing poultry, small ruminants, and home

gardens, important but insufficient if they reinforce stereotypes about "women's activities" and exclude women from commercial and cash crop advisories [12].

Principles for modernizing EAS with gender equity

A best-fit gender review identifies core principles for modernizing EAS: increase women's representation in extension (through quotas, incentives, modified criteria, and leadership training); equip all officers, women and men, with gender analysis and participatory skills; adapt techniques to local gender norms affecting time, mobility, and literacy; deliver cross-sectoral programming linking food production to nutrition; collect sex-disaggregated data systematically; and evaluate impacts on reducing gender disparities in productivity and adoption.

Critical gaps and future priorities

Future programming should interrogate: the private sector's effectiveness in reaching women; the comparative advantage of public, private, and NGO EAS; gender-responsive climate-smart agriculture given differential access to resources; youth inclusion strategies that encourage girls into agri-sciences; and the potential of ICTs to capture and respond to women's needs.

5. The ICAR Gender Strategy: a unifying framework for India's NAREES

Vision, pillars, and scope

ICAR's Gender Strategy for NAREES aims to mainstream gender equity across research, education, and extension, centring six pillars: awareness and social norms change; capacity building and entrepreneurship; institutional support and extension reforms; access to resources and technologies; market and financial inclusion; and monitoring, impact assessment, and learning [4]. It positions gender equity not as a standalone project but as a core institutional priority embedded in ICAR institutes, CAUs, and SAUs, complemented by cross-institute collaboration and a repository at ICAR-CIWA [1].

Research and education strategy

Key commitments include: structured gender trainings for scientists, faculties, researchers, and students; integrating gender responsiveness as a criterion in proposals, reviews, and performance evaluations; participatory research prioritization with women farmers as co-producers of knowledge; mandatory gender lectures in all training programs; curricula integration of gender perspectives; and support for women-led research using participatory tools [4].

The strategy mandates gender-disaggregated data collection at national, state, and institutional levels, and the creation of a National Information System for Women in Agriculture (NISWA) portal and app hosted at ICAR-CIWA, including institute-level gender factsheets and annual report chapters on gender research and extension [4]. Technology development focuses on drudgery reduction (time-motion studies, ergonomics, safety), multi-location trials with large user groups of rural women (greater than 50), and checklists for women-friendliness of tools and implements [4].

Resource-efficient, gender-responsive technologies emphasize climate-smart, nutri-sensitive practices aligning with women's varietal and processing preferences (e.g., shorter duration, lower cooking time, higher processing yields), validation with rural women before release, and checklists for gender responsiveness of production technologies and packages of practices (PoPs). Precision agriculture is to be made accessible across literacy and language levels, involving women in development and validation with large user groups [4]. Dissemination frameworks position women farmers and their organizations as direct beneficiaries, with gender-responsive modules for broader reach. Monitoring, evaluation, and impact assessment track participation, adoption, workload changes, productivity, health, empowerment, yield and income gains, nutrition and livelihood security, and social impacts backed by gender audit requirements in project proposals and final reports [4].

Extension strategy

On the extension side, ICAR proposes: the "Krishika Shakti" national campaign to highlight women's roles in climate-smart, nutri-sensitive integrated farming systems; regular media campaigns on shared caregiving, land rights, digital literacy, unpaid work recognition, women's leadership and safety; and promotion of functional clothing to reduce occupational hazards [4]. Capacity building includes gender-sensitive training modules covering technical know-how, leadership, nutrition, health, occupational safety, and rights; delivering trainings at convenient times and locations, with transport and childcare; and encouraging women to share experiences in every forum [4].

Awards and recognition mechanisms institutionalize the "Krishika Shakti Award" across levels, linked to access to credit, markets, and entitlements. Gender-sensitive extension environments require mandatory gender perspectives in curricula, participatory, crop- and region-tailored extension models, digital platforms for timely and cost-effective advisories, and checklists to assess gender sensitivity of models and methods [4]. Awareness and access to government schemes are advanced through localized campaigns integrated into Krishika Shakti, focusing on credit, subsidies, and benefits for women [4].

Participatory extension and institutional support engage women leaders and volunteers across the cycle from problem identification to monitoring sensitising cadres like Krishi Sakhi, Pashu Sakhi, Jal Sakhi, and Matsy Sakhi to dedicate days to work with small and marginal women farmers, reporting to Panchayats; and establishing Krishika Cells at block/cluster levels for coordination, grievance redressal, data collection, and scheme facilitation [4].Convergence with NGOs, W-FPOs/FPOs, and private organizations is emphasized to drive women-led development [4].

Students are integrated into extension through pre-placement orientation, RAWE, and "One Student One Family," with assignments documenting gender issues and solutions for academic credit [4]. Access to innovative technologies includes demonstrations and trainings in local languages, digital literacy, women-friendly apps and online safety, and women-led machine banks and resource centers at Panchayat

level to improve access and reduce drudgery and occupational risks [4].

Collectives SHGs, WFIGs, W-FPOs/FPCs are strengthened through training and collective action; technology licensing fees are reduced for resource-poor women and women collectives [4]. Entrepreneurship support features gender-sensitive skill development, mentorship, finance, and market linkages, with a database tracking impacts of women-led agri-enterprises; underprivileged women (landless, tribal, single, marginal) receive tailored training, literacy modules, free transport, mentorship via incubation hubs and mobile units, and recognition through awards [4]. Market access strategies include literacy programs, e-commerce linkages, public procurement pathways, and dedicated women's marketplaces via Agriculture Departments and ATMA [4]. Monitoring and documentation assess participation, empowerment, economic gains, agricultural outputs, techno-socio-economic empowerment, and social impact, with case studies for replication [4].

6. Integrating ICT and inclusive content delivery: lessons for India

While ICTs can democratize information flows, their efficacy depends on content relevance, accessibility, and social legitimacy. In contexts of limited infrastructure, radio remains a scalable medium especially when augmented by digital tools to deliver localized, language-appropriate programming and distance education for rural women.In India, Digital Green operationalizes community video co-production and public screenings through SHGs and village platforms; engagement of women and men across content selection, filming, and dissemination strengthens adoption and peer learning.These approaches align with ICAR's emphasis on women-centered dissemination frameworks and digital platforms tailored to literacy, language, and safety needs [4].

However, bridging the digital divide requires tackling structural barriers connectivity, literacy, device access and increasing the number and capacity of female extension workers to serve as trusted intermediaries [1]. India's strategy should prioritize low-cost, ubiquitous channels, build digital literacy systematically, and validate tools with large cohorts of rural women to ensure usability and acceptance [4].

7. Community-based and transformative approaches

Community conversations, couples training, household coaching, mentoring, and women's development groups have demonstrated promise for transforming constraining gender relations and empowering women.In Ethiopia, the plurality of extension methods, individual/group visits, meetings, model farmers, development groups, demonstration plots, field days, and digital tools, creates reach but does not automatically ensure equity; gender must influence the choice of method and its implementation.Addressing the perpetuation of inequality within group approaches requires strengthening development agents' capacity to diagnose gender issues and deploy gender-transformative strategies [13].

For India, adopting similar community extension approaches and embedding them within Panchayat structures, SHGs, and W-FPOs aligns with ICAR's participatory mandate. Coupled with cross-sectoral programming (agriculture-nutrition linkages), these approaches can center women's agency, address time/mobility constraints, and build accountability to women farmers [4].

8. Implementation levers: aligning policy, institutions, and practice in India

Institutional reforms and staffing

Recruitment and retention of women extension officers require changes to criteria, incentives, postings, safety provisions, housing, medical, and schooling facilities, addressing the realities of married women, family mobility, and security. ATMA's quota (30% women on governing boards) is a step toward representation, but without concurrent capacity building, mentorship, and organizational culture change, token presence will not translate into service equity.ICAR's emphasis on institutional culture of equality, participatory tools, and gender audits can mitigate marginalization risks identified in evaluations [4].

Data systems and accountability

A systemic lack of consolidated, sex-disaggregated data constrains evidence-based programming and learning (Reducing the Gender Gap in EAS). NISWA's architecture gender factsheets, centralized repositories of women-friendly technologies, and institutional reporting should be implemented with clear data standards, periodic audits, and public dashboards to enable transparency and peer benchmarking across ICAR institutes, CAUs, and SAUs [4].Indicators should capture reduction in gender gaps in extension access, adoption rates, productivity, income, workload and health outcomes, and empowerment metrics beyond mere participation counts [2, 4].

Market, finance, and enterprise pathways

Economic empowerment requires downstream linkages: reduced licensing fees for women collectives; targeted finance and incubation; branding and value addition; e-commerce integration; public procurement opportunities; and dedicated women's marketplaces [4]. These mechanisms translate advisories into enterprise viability, addressing the critique that extension information often fails to yield sustainable enterprises due to a lack of complementary inputs and resources, especially for women.

9. Discussion: Toward a gender learning approach for India's AIS

Agricultural Innovation Systems (AIS) are most effective when they adopt "gender learning", attuning to the complexity of gender roles and relations, and focusing on transforming institutions rather than merely empowering individuals in isolation [14]. For India, adopting gender learning implies: iterative, participatory diagnostics; co-production of knowledge with women farmers; institutional reflexivity and accountability; and continuous adaptation of extension methods to socio-cultural diversity. Framing EAS within AIS shifts the unit of change from the woman farmer alone to the institutions, networks, and norms that shape access, voice, and benefit flows [14].

This approach also challenges stereotypes embedded in extension packages, such as relegating women to home gardens and poultry, by recognizing and supporting women's roles across cash and food crops, commercial value chains, and precision technologies [12]. Ultimately, gender-equitable EAS is not ancillary to productivity and resilience, it is foundational to them.

10. Conclusion: A roadmap for gender-equitable EAS in India

The evidence is unequivocal: gender-blind extension systems systematically under-serve women, thereby constraining agricultural productivity, resilience, and inclusiveness. In India, the ICAR Gender Strategy offers a comprehensive, operational framework to mainstream equity across research, education, and extension. Its success, however, hinges on institutional political will, cross-sectoral convergence, rigorous data systems, participatory co-design, and attention to the everyday constraints women face like time, mobility, literacy, safety, and social norms.

To paraphrase the call to action embedded across the sources: increasing the number of women extension agents matters, but only as part of a larger transformation that equips all agents with gender competencies, centres women as direct beneficiaries of technology and advisories, and measures impact on closing gender gaps. India's EAS can meet this moment by grounding innovation in gender learning, embedding accountability through NISWA, and building market-ready pathways for women's enterprise. When women farmers (Krishika) shape the agenda, the entire agri-food system stands to gain.

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