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Mainstreaming gender for sustainable and improved livestock production in India

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Abstract

The livestock sector plays a significant role in the rural economy, contributing to income generation, nutritional security, and employment, particularly for smallholders and marginal farmers in India. Women constitute a substantial proportion of the livestock workforce, actively participating in activities such as feeding, milking, healthcare, and overall management. Despite their extensive involvement, their contributions remain undervalued and inadequately reflected in policies, programmes, and institutional frameworks. The paper highlights the gender-based disparities that limit women's access to productive resources, credit, extension services, training, and decision-making platforms. Socio-cultural norms, mobility constraints, and gender biases further exacerbate these challenges, restricting women's ability to fully benefit from livestock-based livelihoods. Key determinants for successful livestock interventions include equitable access to resources, gender-sensitive training and extension services, enhanced decision-making power, reduced workload through labour-saving technologies, and improved access to markets and value chains. Furthermore, it stresses the role of gender analysis in designing, implementing, and evaluating effective interventions. Overall, mainstreaming gender in livestock production enhances productivity, strengthens resilience, promotes equity, and contributes to women's empowerment, thereby fostering inclusive and sustainable rural development in India.

Keywords: Gender mainstreaming, sustainable livestock production, India

Introduction

Livestock production plays a vital role in India's rural economy, contributing significantly to household income, nutritional security, and employment generation. India is one of the largest producers of milk, eggs, meat, and fish globally, with dairying being the single largest contributor within the livestock sector. The steady growth of livestock, often higher than crop agriculture has made it a reliable source of income, especially for smallholders, landless farmers, and women. In recent years, the livestock sector has contributed around 4.5–5.0% to India's total GDP and approximately 28–30% of the agricultural GDP (DAHD, 2024) ^[2]. The milk production now stands at 247.87 million tonnes (2024-25) and the per capita availability has increased to 485 g/ day. The sector serves as a critical livelihood source for smallholder and marginal farmers, particularly in rainfed and resource-poor regions where crop agriculture alone is insufficient to sustain livelihoods. Women constitute a substantial proportion of the workforce in livestock rearing, actively engaged in feeding, breeding, healthcare, milking, and overall management practices (Rathod *et al.*, 2011) ^[23]. Furthermore, livestock ownership patterns especially for small stock and poultry appear more equitable than that of other assets like land, capital, and knowledge. Their indigenous knowledge and day-to-day involvement make them central to the efficiency and sustainability of livestock systems. Despite women's predominant involvement in livestock management and production, their contributions remain undervalued and inadequately reflected in national policies and planning frameworks (Manjula *et al.*, 2017) ^[15].

The role of women in livestock production systems varies from zone to zone, and the division of livestock ownership between men and women is closely linked to social, cultural, and

economic factors (IFAD, 2010) ^[8]. Despite their critical contributions, women often face systemic constraints such as limited access to productive resources, extension and veterinary services, institutional credit, training opportunities, and decision-making platforms. Socio-cultural norms and gender biases further restrict their mobility, ownership rights, and recognition as farmers. These disparities not only limit women's potential but also hinder the overall productivity and resilience of the livestock sector. Gender aspects can be viewed from two complementary perspectives: practical needs, which include improved access to technologies and enhanced welfare, and strategic needs, which involve reforms in policies and regulations aimed at achieving long-term advancement in women's status and empowerment (Dudi *et al.*, 2019) ^[3].

Gender mainstreaming in livestock production seeks to address these inequities by integrating gender perspectives into policies, programs, and institutional frameworks. It emphasizes equitable access to assets, capacity building, technology dissemination, and recognition of women's roles in livestock value chains. In the Indian context, adopting gender-responsive approaches is essential for enhancing livestock productivity, ensuring sustainability, and improving resilience to climate and economic shocks. This review highlights the importance of mainstreaming gender to foster inclusive, efficient, and sustainable livestock production systems while advancing broader goals of poverty reduction, food security, and women's empowerment.

Women's Role in Livestock Sector

Women play a pivotal role in the livestock sector in India, contributing significantly to dairy, small ruminant, and poultry production systems. In the dairy sector, women are actively involved in routine activities such as feeding, milking, cleaning of sheds, processing of milk, and care of calves. They also take care the health of pregnant and sick animals. Their consistent engagement ensures productivity and quality, making dairying a reliable source of income and nutrition for rural households. Women account for approximately 60–90% of the total labour in livestock-related activities, particularly in labour-intensive and non-mechanized tasks (FAO, 2011) ^[5]. Mishra *et al.* (2008) ^[17] further observed that women predominantly perform key livestock operations, including fodder collection (88%), cleaning of animals and sheds (67%), feeding (79%), milking (46%), and the provision of traditional healthcare practices (67%). Singh and Srivastava (2018) ^[26] reported that women actively participated in most livestock-related activities, with particularly high involvement in fodder collection (66.66%), feeding (77.78%), shed cleaning (91.67%), milking (97.22%), and milk processing (97.22%), while their participation was relatively low in healthcare (13.88%) and marketing of produce (6.66%).

In small ruminant production, particularly goats and sheep, women undertake responsibilities including grazing, stall-feeding, watering, healthcare management, and kid/lamb rearing. Backyard poultry is another domain where women's participation is highly prominent. They manage feeding, housing, disease control, and marketing of eggs and birds at

the household level. Studies indicate that women contribute approximately 60–85% of the total labour involved in poultry-related activities (Kumar *et al.*, 2012) ^[13]. Their involvement is especially high in routine tasks such as feeding (70–90%), watering (65–85%), shed cleaning (75–95%), and egg collection (80–95%) (Niranjan *et al.*, 2008) ^[18]. In addition, women actively engage in chick rearing (60–80%) and traditional healthcare practices (50–70%) (Rathod & Chander, 2014) ^[24]. Overall, women constitute about 49% of the workforce in the rural livestock sector, and their time contribution (45.8%) is significantly higher compared to the crop sector (27.2%) (Kumar *et al.*, 2022; Time Use Survey, 2019) ^[13, 19]. The All India Coordinated Research Project on Women in Agriculture, ICAR-CIWA study (2024) ^[7], also revealed considerable variation in women's participation in the dairy and poultry sectors, ranging from 39.79% in Rajasthan to 94.36% in Arunachal Pradesh, Assam, and Sikkim for dairy, and from 21.74% in Punjab to 99.18% in Arunachal Pradesh, Assam, and Sikkim for poultry.

Despite their significant involvement in activities such as feeding, milking, shed cleaning, animal healthcare, and the marketing of small livestock, women often remain largely invisible in research, extension, and policymaking processes (Chayal *et al.*, 2009) ^[1]. This invisibility is further reinforced by gender-blind data systems, limited representation in farmer organizations, and inadequate recognition of women as primary livestock keepers rather than as helpers. As a result, their specific needs, constraints, and knowledge systems are frequently overlooked in the design and implementation of livestock development programmes. Addressing these gender disparities within livestock systems is essential for enhancing productivity, strengthening livelihoods, improving nutrition, promoting equity, and ensuring long-term sustainability (Elias *et al.*, 2024) ^[4]. Integrating gender-responsive approaches—such as inclusive extension services, targeted capacity building, improved access to resources, and recognition of women's roles—can significantly enhance the effectiveness and impact of livestock interventions while fostering more resilient and equitable rural communities.

Gender Issues in livestock production

Women and men livestock keepers often have distinct needs, priorities, and roles, which shape their access to livelihood opportunities and the constraints they face (Vijayalakshmy *et al.*, 2023) ^[28]. These differences become particularly evident in the context of emerging challenges such as limited access to markets, services, and technical information, as well as recurring risks like droughts, floods, and livestock diseases. Additional pressures arise from competing resource use, policy environments that tend to favour large-scale producers or external markets, and the presence of weak institutional support systems. In most livestock production systems, women contribute substantially to labour across a wide range of activities. However, their involvement does not necessarily translate into decision-making authority, especially regarding the sale or use of animals and animal products. Likewise, although women actively participate in production processes, they often lack ownership and control over key productive resources such as livestock, land, and water.

Table 1: Gender-based constraints, needs and opportunities in livestock production

Gender-Based Constraints	Gender-Specific Needs	Opportunities for Intervention
Limited ownership and control over livestock and productive assets by women	Ensure joint or individual ownership rights over livestock and assets	Promote joint asset ownership models and women-led livestock enterprises
Restricted access to credit, insurance, and financial services	Improved access to institutional credit, subsidies, and insurance schemes	Strengthen women's inclusion in Self-Help Groups (SHGs) and microfinance institutions
Limited access to training, extension services, and technical knowledge	Gender-responsive training and extension services tailored to women's needs	Develop women-centric extension models and deploy female extension workers
High workload and time burden due to multiple responsibilities	Introduction of labour-saving technologies and improved infrastructure	Promote drudgery-reducing tools and technologies (e.g., fodder choppers, water access)
Limited mobility and socio-cultural restrictions	Localized and accessible service delivery mechanisms	Organize village-level trainings and doorstep veterinary services
Low participation in decision-making and control over income	Enhanced agency in household and enterprise-level decisions	Encourage joint decision-making and direct income transfer mechanisms
Poor access to markets and value chains	Capacity building in marketing, value addition, and entrepreneurship	Facilitate women's participation in producer groups, cooperatives, and value chains
Gender bias in extension systems and male-dominated institutions	Inclusive and gender-sensitive institutional frameworks	Mainstream gender in livestock policies and programmes
Lack of recognition of women's contributions	Formal recognition and documentation of women's roles	Use gender-disaggregated data and promote women as primary livestock farmers
Limited access to improved breeds, feed, and veterinary services	Equitable access to inputs, technologies, and animal health services	Strengthen last-mile delivery systems targeting women livestock keepers
Low literacy and awareness levels	Use of simple, visual, and participatory learning tools	Promote ICT-based advisories, mobile apps, and community resource persons
Vulnerability to climate risks and shocks	Access to climate-resilient livestock practices and risk mitigation tools	Promote diversified livestock systems and climate-smart practices

Key Determinants of Successful Livestock Interventions

1. Gender Roles and Division of Labour: Gender roles and the division of labour are critical determinants in the success of livestock interventions, as they shape who performs specific tasks, controls resources, and benefits from outcomes (Gianna *et al.*, 2022) ^[6]. Understanding the distinct roles played by women and men in livestock management is therefore, fundamental. In many rural households, women are primarily responsible for routine livestock activities such as feeding, milking, cleaning sheds, and caring for young animals, while men often manage tasks related to marketing, financial decisions, and large livestock (Kathiriya *et al.*, 2013) ^[11]. Although the activities performed by women are often perceived as low-skilled, they are in fact crucial for ensuring the survival, health, and productivity of livestock. Activities such as vaccination, deworming, grazing, procurement of fodder and medicines, and taking animals to veterinary dispensaries are typically handled by men, as these tasks require greater mobility, access to information and technologies, and more interaction with markets and external institutions. Despite this division of labour, livestock production and management largely remain household-based activities, with flexible sharing of responsibilities between women and men. However, women's access to information and training in modern livestock management and dairying is often limited and indirect, which constrains their participation and reduces their efficiency. Interventions must recognize and build upon these roles to avoid reinforcing inequalities.

Effective livestock interventions must therefore adopt gender-sensitive approaches that recognize and address these disparities. Promoting shared responsibilities, ensuring women's inclusion in capacity-building programmes, and enhancing their access to resources and information are essential. Recognizing and redistributing labour more equitably not only improves productivity but also contributes to empowerment, social equity, and sustainable livestock development.

2. Access to Resources and Assets: Access to productive resources and assets is a fundamental factor influencing the

success of livestock interventions, especially in a gender-sensitive framework (Vijayamba, 2024) ^[29]. In India, women play a vital role in livestock rearing, yet they often have limited ownership and control over key assets such as land, livestock, housing, and productive inputs. This disparity restricts their ability to make independent decisions, access institutional credit, and benefit fully from livestock-based livelihoods. Women's access to essential services such as veterinary care, quality feed, breeding services, and financial resources is also frequently constrained due to socio-cultural norms, limited mobility, and inadequate institutional support (Suresh *et al.*, 2008) ^[26]. Without secure access to these resources, their productivity remains suboptimal, and the sustainability of livestock interventions is compromised.

To ensure effective and inclusive livestock development, interventions must focus on enhancing women's ownership and control over assets. This can be achieved through measures such as joint asset ownership, access to credit and insurance services, inclusion in government schemes, and support for women-led producer groups or cooperatives. Facilitating access to inputs, infrastructure, and markets further strengthens their capacity to manage livestock enterprises efficiently. Improving women's access to resources and assets not only increases productivity and income but also enhances their bargaining power, resilience, and overall socio-economic status, contributing to more equitable and sustainable livestock systems.

3. Access to Training, Extension, and Information: Livestock production is typically a joint activity involving both men and women; however, men generally have greater access to technology and training, largely due to their dominant position as household heads and their higher mobility outside the home. Access to training, extension, and information is thus a crucial determinant of the success of livestock interventions, particularly from a gender perspective (Kathiriya *et al.*, 2014) ^[12]. In many parts of India, women's access to these services remains limited due to socio-cultural barriers, mobility constraints, lower literacy levels, and the male-oriented design of extension systems. As a result,

despite their significant involvement in day-to-day livestock management, women often lack exposure to improved practices, technologies, and innovations.

For livestock interventions to be effective and inclusive, training and extension services must be gender-responsive and tailored to women's needs. This includes organizing training programmes at convenient times and locations, using participatory and visual methods to overcome literacy barriers, and ensuring the presence of female extension workers to facilitate better communication and comfort. Information dissemination channels should also be diversified through self-help groups (SHGs), farmer producer organizations (FPOs), mobile-based advisories, and community-based approaches.

Livestock interventions should be designed to reach women effectively by:

- Conducting trainings at convenient times and locations
- Using participatory and visual methods to overcome literacy barriers
- Promoting women-friendly extension systems, including female extension workers

4. Decision-Making Power and Control over Income: A critical factor for successful livestock interventions is the extent to which women have decision-making authority and control over income generated from livestock activities. Although women contribute substantially to routine livestock management—such as feeding, milking, and care, they often have limited influence over key decisions related to the sale of animals and products, use of income, and investment in inputs or technologies (Patel *et al.*, 2016) ^[22]. This imbalance reduces their incentives, restricts their economic empowerment, and can limit the overall effectiveness of livestock interventions.

To address this, interventions must be designed to strengthen women's agency within the household and the livestock value chain. Promoting joint decision-making between men and women can help ensure more equitable participation in planning and resource allocation. Additionally, mechanisms should be established to enable women's direct access to income, such as payments into women-controlled bank accounts, involvement in self-help groups (SHGs), and support for women-led livestock enterprises. Enhancing financial literacy, ownership rights over livestock assets, and access to markets further strengthens women's control over income. When women have greater decision-making power and financial autonomy, it not only improves household welfare and nutrition but also leads to more sustainable and productive livestock systems.

5. Socio-Cultural Norms and Gender Constraints: Traditional norms may restrict women's mobility, participation in markets, and access to services. Recognizing and addressing these socio-cultural barriers is essential for inclusive programme design. Successful livestock interventions depend significantly on understanding and addressing socio-cultural norms and gender-based constraints. In many rural contexts, women play a central role in livestock management; however, their access to resources, decision-making power, mobility, and participation in training programmes is often restricted by prevailing social norms. These constraints limit their ability to adopt improved technologies and practices.

Effective interventions must therefore incorporate gender-sensitive approaches, including inclusive training, flexible programme schedules, and recognition of women's

indigenous knowledge. Enhancing women's access to credit, inputs, extension services, and markets is equally important. Engaging men and community leaders in gender sensitization can help shift entrenched norms and promote equitable participation. Additionally, designing interventions that reduce women's labour burden through appropriate technologies can improve efficiency and outcomes. Addressing these socio-cultural and gender dimensions ensures not only higher adoption rates but also sustainable livelihood improvements and enhanced empowerment within livestock systems.

6. Time and Workload Considerations: Women often face a “triple burden” of household, farm, and livestock responsibilities. Introducing labour-saving technologies (e.g., improved feeding systems, water access) can reduce drudgery and improve efficiency. Time and workload are critical determinants of the success of livestock interventions, particularly in smallholder and rural production systems where labour is often constrained (Mehra and Rojas, 2008) ^[16]. Women, who contribute substantially to livestock management activities, frequently shoulder multiple responsibilities, including household chores, childcare, and farm work. This disproportionate workload limits their availability to participate in training programmes, adopt improved practices, or engage in market-oriented activities. Therefore, livestock interventions must be designed with sensitivity to existing time burdens and labour dynamics. Introducing labour-saving technologies, such as improved feeding systems, mechanized equipment, and efficient housing structures, can significantly reduce drudgery. Scheduling training and extension activities at convenient times and locations is equally important to ensure inclusivity. Additionally, promoting equitable intra-household labour distribution can help balance workloads. Recognizing and addressing time poverty not only enhances participation but also improves productivity, adoption rates, and the overall effectiveness of livestock development initiatives.

7. Access to Markets and Value Chains: Women's participation in livestock value chains is often limited to production, with minimal involvement in processing, value addition, and marketing. Strengthening their role across the value chain can improve income and empowerment. Access to markets and efficient value chains is a crucial determinant of successful livestock interventions, as it directly influences income generation and livelihood sustainability. Smallholder farmers, particularly women, often face barriers such as limited market information, poor infrastructure, lack of transportation, and restricted mobility, which hinder their ability to sell livestock products at competitive prices. Additionally, their participation in higher-value segments of the value chain is often constrained by limited access to credit, inputs, storage, and processing facilities.

Effective interventions should focus on strengthening market linkages, promoting producer groups or cooperatives, and enhancing access to timely market information (Panda *et al.*, 2025a) ^[21]. Capacity building in value addition, quality control, and entrepreneurship can further improve profitability. Ensuring inclusive value chains by integrating women and marginalized groups into decision-making and marketing processes is essential. Improved access to markets not only enhances income but also incentivizes adoption of improved livestock practices, thereby contributing to overall rural development and economic empowerment.

8. Institutional Support and Policy Environment: Gender-sensitive policies, inclusive institutions, and targeted schemes are necessary to support women livestock farmers. This includes access to self-help groups (SHGs), cooperatives, and government programs. Institutional support and a conducive policy environment are fundamental to the success and sustainability of livestock interventions. Strong institutions, including extension systems, research organizations, cooperatives, and financial services, play a vital role in delivering inputs, technology, training, and advisory services to livestock keepers (Jadoun *et al.*, 2021)^[10]. However, gaps in outreach, especially to women and smallholders, often limit the effectiveness of these services.

Supportive policies that promote equitable access to resources, credit, insurance, and markets are essential to address such disparities. Gender-responsive policies can enhance women's participation by recognizing their roles, ensuring land and asset ownership rights, and facilitating their inclusion in decision-making processes. Additionally, coordinated efforts among government agencies, non-governmental organizations, and private sector actors can strengthen service delivery and value chain integration. A robust institutional framework, backed by inclusive and well-implemented policies, creates an enabling environment that enhances productivity, resilience, and livelihood outcomes in livestock systems.

9. Capacity Building and Skill Development: Tailored capacity-building initiatives focusing on technical skills, entrepreneurship, and financial literacy can significantly enhance women's participation and leadership in livestock enterprises. Capacity building and skill development are essential for enhancing the effectiveness and sustainability of livestock interventions. Livestock farmers, particularly women and smallholders, often lack access to technical knowledge, modern practices, and managerial skills necessary for improved productivity and profitability.

Targeted training programmes on scientific feeding, breeding, health management, and value addition can significantly enhance their competencies. Moreover, developing entrepreneurial and financial literacy skills enables farmers to better engage with markets and manage resources efficiently (Jadoun, 2019)^[9]. It is important that training approaches are participatory, context-specific, and inclusive, taking into account literacy levels, local languages, and socio-cultural constraints. Regular follow-up support, demonstrations, and exposure visits further reinforce learning and adoption of improved practices. Strengthening the capacity of extension personnel to deliver gender-sensitive and need-based services is equally important. Overall, investing in human capital through continuous skill development empowers livestock keepers, improves adoption rates of innovations, and contributes to sustainable livelihood enhancement.

10. Technology Adoption and Innovation: Promoting gender-friendly and locally adaptable technologies ensures higher adoption rates. Women should be involved in the design, testing, and dissemination of innovations. Technology adoption and innovation are critical drivers of successful livestock interventions, as they enhance productivity, efficiency, and resilience of production systems. However, the uptake of improved technologies—such as scientific feeding practices, improved breeds, vaccination protocols, and digital advisory services—remains uneven, particularly among smallholders and women farmers. Barriers such as limited

awareness, inadequate access to inputs, financial constraints, and socio-cultural restrictions often hinder adoption.

Therefore, interventions must promote need-based, affordable, and user-friendly technologies tailored to local conditions. Participatory approaches, including on-farm demonstrations, farmer field schools, and peer learning, can significantly improve understanding and acceptance (Dudi *et al.*, 2019)^[3]. Integrating indigenous knowledge with modern innovations further strengthens relevance and sustainability. Additionally, strengthening extension services and leveraging information and communication technologies (ICTs) can accelerate dissemination. Ensuring equitable access to technologies and fostering an enabling environment for innovation ultimately leads to higher adoption rates, improved livestock productivity, and enhanced livelihoods.

11. Risk Management and Climate Resilience: Livestock interventions must incorporate climate-resilient practices (e.g., drought-tolerant fodder, diversified livestock systems) while considering women's vulnerability to climate shocks. Risk management and climate resilience are vital components of successful livestock interventions, particularly in the context of increasing climate variability and extreme weather events. Livestock systems are highly vulnerable to risks such as droughts, floods, disease outbreaks, and feed scarcity, which can significantly affect productivity and livelihoods.

Effective interventions should promote climate-resilient practices, including diversified livestock systems, improved fodder management, water conservation, and the use of stress-tolerant breeds. Strengthening animal health services and early warning systems can help mitigate disease-related risks. Additionally, access to livestock insurance, credit, and social safety nets enhances farmers' capacity to cope with uncertainties. Integrating indigenous knowledge with scientific approaches further improves adaptive capacity. It is also important to adopt gender-responsive strategies, as women often face greater vulnerability due to limited access to resources. Building resilience through proactive risk management ensures sustainable livestock production, livelihood security, and long-term adaptation to changing climatic conditions (Panda *et al.*, 2025b)^[20].

12. Monitoring, Evaluation, and Gender Indicators: Use of gender-disaggregated data and indicators is essential to track progress and ensure that interventions are effectively addressing gender gaps. Monitoring and evaluation (M&E) are essential for assessing the effectiveness, efficiency, and impact of livestock interventions. Integrating gender indicators within M&E frameworks ensures that outcomes are equitable and inclusive. Gender-sensitive indicators help track changes in women's participation, access to resources, decision-making power, income control, and workload distribution. Without such indicators, the contributions and benefits for women often remain underreported. Effective M&E systems should include both quantitative and qualitative measures, capturing not only productivity gains but also social and empowerment outcomes.

Participatory monitoring approaches, involving both men and women, enhance transparency and relevance. Regular data collection, analysis, and feedback mechanisms enable timely course corrections and improved programme design. Additionally, disaggregating data by gender, age, and socio-economic status provides deeper insights into differential impacts. Overall, incorporating gender-responsive M&E frameworks strengthens accountability, promotes inclusive

development, and ensures that livestock interventions contribute meaningfully to both livelihood enhancement and women's empowerment.

Gender Analysis in Livestock Production

Gender analysis in livestock production is essential for ensuring that development interventions are equitable, effective, and sustainable. It is a systematic approach to understanding the roles, responsibilities, access to resources, and decision-making power of men and women within livestock systems. It helps identify gender-based disparities that influence productivity, efficiency, and equitable benefit sharing. In many contexts, women contribute significantly to routine livestock management activities, yet they often have limited access to land, credit, extension services, and market opportunities.

The rationale for conducting gender analysis lies in the recognition that men and women perform distinct yet complementary roles within livestock systems, and that these roles are shaped by socio-cultural norms and institutional structures. Despite women's substantial contributions to activities such as feeding, milking, and animal care, they often face constraints in accessing productive resources, extension services, credit, and market opportunities. These disparities can limit overall productivity and hinder the equitable distribution of benefits. Therefore, gender analysis is necessary to identify such gaps and to design interventions that are responsive to the needs and priorities of both men and women (Dudi *et al.*, 2019)^[3].

A comprehensive gender analysis examines key dimensions such as division of labour, access and control over resources, participation in training and institutions, and intra-household decision-making. It also considers socio-cultural norms and constraints that restrict women's mobility and participation. By highlighting these gaps, gender analysis informs the design of inclusive and targeted interventions that address the specific needs of both men and women (Rout *et al.*, 2025)^[25]. Data collection methods may include household surveys, focus group discussions, participatory rural appraisal techniques, and stakeholder consultations, ensuring representation of both men and women.

The insights generated from gender analysis inform the development of gender-responsive strategies, such as inclusive capacity-building programmes, targeted extension services, and policies that enhance women's access to resources and decision-making. Ultimately, integrating gender analysis into livestock production systems leads to improved productivity, enhanced livelihood outcomes, and greater social equity.

Conclusion

Mainstreaming gender in livestock production is fundamental to achieving sustainable development and improved livelihood outcomes in India. Women constitute a significant proportion of the livestock workforce, contributing extensively to animal care, management, and value addition, yet their roles often remain under-recognized and inadequately supported. Addressing gender disparities in access to resources, technologies, training, and decision-making is essential for enhancing productivity and ensuring equitable benefit sharing. Gender-responsive interventions that consider socio-cultural norms, workload distribution, and institutional constraints can significantly improve adoption and impact. Strengthening capacity building, promoting inclusive value chains, and integrating gender-sensitive

monitoring frameworks further reinforce effectiveness. Additionally, supportive policies and institutional mechanisms play a crucial role in creating an enabling environment for women's participation and empowerment. Ultimately, mainstreaming gender not only enhances livestock productivity and resilience but also contributes to women's empowerment, nutritional security, and inclusive rural development in India.

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Not available

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References

1. Chayal K, Daaka BL, Suwalka RL. Analysis of role performed by farm women in dairy farming. *Indian J Dairy Sci.* 2009;62:491-494.
2. DAHD. Annual Report 2023-24. Department of Animal Husbandry and Dairying, Government of India. 2024.
3. Dudi K, Devi I, Kumar R. Contribution and issues of women in livestock sector of India: a review. 2029;9(8):37-48.
4. Elias M, Zaremba H, Tavenner K, Ragasa C, Valencia AMP, Choudhury A, *et al.* Towards gender equality in forestry, livestock, fisheries and aquaculture. *Glob Food Secur.* 2024;41:100761.
5. FAO. The role of women in agriculture. *ESA Working Paper No. 11-02.* 2011.
6. Gianna BP, Domingas RP, Julie B, Natasha S. Gender relations in livestock production and animal-source food acquisition and consumption among smallholders in rural Timor-Leste: a mixed-methods exploration. *J Rural Stud.* 2022;89:222-234.
7. ICAR-CIWA. Annual Report. ICAR-Central Institute for Women in Agriculture, Bhubaneswar. 2024.
8. International Fund for Agricultural Development. Gender and livestock tools for design: livestock thematic papers. Rome: IFAD; 2010.
9. Jadoun YS. Gender mainstreaming through livestock entrepreneurship. *Indian J Ext Educ.* 2021;55(2):61-69.
10. Jadoun YS, Chadda A, Singh J, Kansal SK, Singh A. Women empowerment through livestock based self-help groups. *Int J Livest Res.* 2021;11(6):1-10.
11. Kathiriyar JB, Damasia DM, Kabaria BB. Role of rural women in dairy farming of Rajkot district, Tamil Nadu. *J Vet Anim Sci.* 2013;9(4):239-247.
12. Kathiriyar JB, Saradava DA, Sanepara DP, Kabaria BB. Training needs of dairy farming women and constraints faced by rural women: a case study of Gujarat. *Int J Agric Sci Vet Med.* 2014;2(2):ISSN 2320-3730.
13. Kumar A, Sarkar A, Kumar N, Tanuja S, Pandey PS. Measuring participation and contribution of rural men and women in Indian agriculture. *Econ Polit Wkly.* 2022;LVII(26-27):21-24.
14. Kumar S, Singh RV, Meena BS. Participation of farm women in poultry farming activities. *Indian J Poult Sci.* 2012;47(2):228-231.
15. Manjula M, Rengalakshmi R, Thachinamurthy K. Gender and policies in livestock production—issues and opportunities. *LEISA.* 2017;19(3).
16. Mehra R, Rojas MH. Women, food security and agriculture in a global marketplace. A significant shift: document of International Centre for Research on

Women. 2008.

17. Mishra S, Sharma S, Vasudevan P, Bhatt RK, Pandey S, Singh M. Gender participation and role of women in livestock management practices in Bundelkhand region of Central India. *Int J Rural Stud*. 2008;15(1):1-9.
18. Niranjana M, Saxena VK, Gupta JP, Rajkumar U. Backyard poultry farming in rural India: a gender-based perspective. *Indian J Gender Stud*. 2008;15(2):235-251.
19. NSO. Time use in India-2019. National Statistical Office, Ministry of Statistics and Programme Implementation, Government of India. 2020.
20. Panda AK, Mohapatra A, Swain BB. Gender-inclusive climate resilience practices in livestock: an Indian perspective. *Vigyan Varta*. 2025b;6(8):184-187.
21. Panda AK, Sarkar A, Devi M, Moharana G. Empowering women for agricultural development in India. *Int J Agric Ext Soc Dev*. 2025a;8(5):715-721.
22. Patel SJ, Patel MD, Patel JH, Patel AS, Gelani RN. Role of women gender in the livestock sector: a review. *J Livest Sci*. 2016;7:92-96.
23. Rathod PK, Nikam TR, Sariput L, Vajreshwari S, Amit H. Participation of rural women in dairy farming in Karnataka. *Indian Res J Ext Edu*. 2011;11(2):31-35.
24. Rathod P, Chander M. Role of women in backyard poultry farming: a field study in Karnataka. *Indian J Anim Sci*. 2014;84(5):560-563.
25. Rout DS, Deb A, Bhadra P, Nandy A, Mahapatra A. Gender-based comparative analysis of agricultural participation among Bonda men and women. *Int J Environ Sci*. 2025;11(6):640-647.
26. Singh B, Srivastava S. Women's involvement in agriculture and livestock activities in arid region of Rajasthan, India. *Ann Arid Zone*. 2018;55(1-2):37-43.
27. Suresh A, Gupta DC, Mann JS, Singh VK. Effect of socio-economic and agro-ecological factors on structure and ownership of livestock: evidence from Rajasthan. *Indian J Agric Econ*. 2008;63(2):244-264.
28. Vijayalakshmy K, Chakraborty S, Biswal J, Rahman H. The role of rural Indian women in livestock production. *Eur J Human Soc Sci*. 2023;3(1):91-98.
29. Vijayamba R. Women's ownership of livestock assets: evidence from Karnataka. *J Agr Stud*. 2024;14(1). DOI: 10.25003/RAS.14.01.0005.

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