Gender-Inclusive Climate Resilience Practices in Livestock: An Indian Perspective

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ABSTRACT

Climate change poses significant challenges to the livestock sector in India, particularly impacting smallholder farmers and women, who play a vital yet under-recognized role in livestock production. Increasing temperature extremes, erratic rainfall, droughts, floods, and emerging livestock diseases have intensified the vulnerability of rural livelihoods. Climate change disproportionately affects women in livestock-based livelihoods due to limited access to resources, decision-making, and adaptive technologies. Within this context, it is critical to adopt gender-inclusive climate resilience practices that empower women while ensuring sustainable livestock development.

INTRODUCTION

The livestock sector in India is indeed considered a sunrise sector, experiencing rapid growth and holding significant potential for future economic development. The livestock sector is a vital part of rural farmers' livelihood and is predominantly managed by women. Women are actively involved in key animal husbandry tasks such as fodder collection, feeding, watering, healthcare, general management, compost preparation, milking, as well as household-level processing and value addition of livestock products (Dudi *et al*., 2019). The role of women in livestock production systems differs across regions, with the distribution of livestock ownership between men and women being strongly influenced by social, cultural,

and economic factors (IFAD, 2010). Due to entrenched social norms, women often lack control over livestock assets, access to information, extension services, credit, and markets. These disparities reduce their adaptive capacity and make them more vulnerable to climate-induced shocks. Climate change further exacerbates this gender gap. For instance, drought and fodder scarcity increase women's labor burdens, while heat stress reduces milk yields, affecting household income and nutrition. Hence, climate action in the livestock sector must be gender-inclusive, ensuring that resilience-building strategies address women's specific constraints and strengths.

Gender-Inclusive Climate Resilience Practices

Gender-inclusive climate resilience practices involve strategies that recognize and address the distinct needs, roles, and contributions of women and men in adapting to climate change. These practices promote equitable access to resources, knowledge, and decision-making, enhancing the adaptive capacity of entire communities and ensuring more sustainable and inclusive climate responses. There is a critical need for gender-inclusive climate resilience practices to address the disproportionate climate risks faced by women in livestock. Ensuring equitable access to resources, technology, training, and decision-making empowers women, strengthens adaptive capacity, and promotes sustainable livestock-based livelihoods amid increasing climate variability and extreme weather in rural India.

Key Gender-Inclusive Climate Resilience Practices in the livestock sector include

1. **Participatory Climate Risk Assessments:** Integrating women's perspectives into climate risk assessment is crucial for identifying localized vulnerabilities and coping mechanisms. Participatory Rural Appraisal (PRA) methods such as seasonal calendars, resource mapping, and vulnerability ranking should actively involve women farmers. This participatory approach allows for the inclusion of women's traditional knowledge on animal husbandry and resource management, which is critical for planning effective adaptation strategies.

2. **Promotion of Climate-Resilient Livestock Breeds:** Climate-resilient breeds that are drought-tolerant, heat-resistant, and disease-resistant can help sustain livestock productivity under stress conditions. Indigenous breeds like Sahiwal (cattle), Malabari (goat), and Kadaknath (poultry) have shown better adaptability to changing climates (ICAR-NBAGR, 2020). Promoting these breeds through women self-help groups (SHGs) and livestock producer collectives helps improve income and reduce vulnerability while conserving biodiversity.

3. **Gender-Sensitive Early Warning Systems and Advisory Services:** Women often have limited access to formal extension systems and climate information. Gender-sensitive dissemination channels such as community radio, voice-based mobile advisories in local languages, and women farmer facilitators can bridge this gap. For example, the *e-Dairy Mitra* initiative in Gujarat sends climate-smart dairy advisories to SHG women using simple mobile messages. Integrating early warning systems for heat waves, disease outbreaks, or fodder scarcity into these platforms enhances preparedness and response.

4. **Climate-Smart Capacity Building for Women:** Empowering women with knowledge and skills is essential for climate adaptation. Training programs on water conservation, fodder cultivation,

livestock disease management, rotational grazing, and use of renewable energy (e.g., solar dryers, biogas units) must be tailored for women's schedules and literacy levels. Institutions like Krishi Vigyan Kendras (KVKs), State Animal Husbandry Departments, and NGOs should prioritize inclusive training modules and ensure women's participation through childcare support, transport facilitation, and timing adjustments.

5. **Adoption of Women-Centric Livestock Technologies:** Climate-resilient technologies that reduce drudgery and improve efficiency can greatly benefit women. These include:

- Chaff Cutter and feed mixers to reduce manual labor
- Portable water troughs and rainwater harvesting systems
- Clean energy options like solar lighting and biogas for cooking and poultry heating
- Low-cost sheds for thermoregulation and animal welfare

Scaling such technologies through women-led enterprises or cooperatives enhances access, ownership, and sustainability.

6. **Securing Women's Access to Productive Resources:** Legal and institutional barriers often hinder women's ownership of land, livestock, and commons like grazing lands. Strengthening women's property rights enhances their investment in long-term adaptive practices. Initiatives like joint land titles under Pradhan Mantri Awas Yojana - Gramin (PMAY-G) and livestock asset transfer programs (e.g., Heifer International India) can improve women's agency and resilience. Additionally, access to credit, livestock insurance, and climate risk financing tailored to women's needs is vital for building financial resilience.

7. **Inclusive Livestock Producer Organizations and Cooperatives:** Women's inclusion in Farmer Producer Organizations (FPOs), dairy cooperatives, and self-help collectives enables collective risk sharing, resource access, and market linkage. Climate-resilient fodder banks, breed improvement services, and value addition units managed by women groups can increase adaptive capacity and income. For example, women-run poultry collectives in Odisha and goat rearing clusters in Rajasthan have shown strong results in climate adaptation and empowerment.

8. **Gender-Responsive Livestock Policies and Programs:** Mainstreaming gender in livestock and climate policies ensures structural support. The National Livestock Mission (NLM), Rashtriya Gokul Mission, and National Adaptation Fund for Climate Change (NAFCC) should integrate gender budgeting and gender audits. Program guidelines should mandate women's representation in planning bodies, and allocate specific funds for women's climate resilience initiatives in livestock.

9. **Gender-Disaggregated Monitoring and Evaluation:** Tracking the impact of climate-resilient livestock interventions on women's livelihoods requires sex-disaggregated data. Indicators should include women's participation in decision-making, income control, access to services, and workload changes. Gender audits and feedback loops must be integrated into program cycles to ensure accountability and course correction.

CONCLUSION

Integrating gender into climate resilience practices in the livestock sector is not just a

matter of equity, but also effectiveness. Women possess deep knowledge of animal care and local ecosystems, and empowering them through inclusive approaches enhances household and community-level resilience. India's livestock policies and climate strategies must recognize women as agents of change and ensure that they have equal access to resources, services, and decision-making platforms. By centering gender in climate adaptation, we not only safeguard livestock-based livelihoods but also advance women's empowerment and sustainable rural development.

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