

# From Farm to Market: The need for Reorienting the Livestock Value Chain for Small and Marginal Farmers

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## Introduction

Livestock plays a vital role in the livelihoods of millions of small and marginal farmers in an agrarian country like India (Panda *et al.*, 2026). It contributes significantly to household income, nutritional security, employment generation, and women's empowerment. A large proportion of India's livestock is reared by smallholders who depend on dairy animals, goats, sheep, pigs, and backyard poultry as important sources of income. However, despite being the backbone of the livestock sector, these farmers often receive only a small share of the consumer rupee because of inefficiencies in the existing livestock value chain.

The livestock sector is witnessing rapid changes driven by urbanization, rising incomes, changing consumer preferences, food-safety concerns, climate change, and technological advancements (Komarek *et al.*, 2021; Saravanaraj and Kannan, 2025). Yet millions of livestock producers continue to earn modest incomes despite the growing demand for milk, meat, eggs and other animal products. The challenge is therefore not production alone; it also lies in the inefficiencies within the livestock value chain. Weak linkages among producers, markets, processors and consumers prevent farmers from realizing the full value of their animals and products (Hatab *et al.*, 2022).

Transforming livestock systems requires moving beyond simply increasing herd size or production to building integrated value chains that enhance productivity, reduce losses, improve market access and create value at every stage. These developments call for a reorientation of the livestock value chain to make it more inclusive, efficient, resilient and profitable for small and marginal farmers (Bilotto *et al.*, 2024; Kazanski *et al.*, 2025).

## What is the Livestock Value Chain?

The livestock value chain can be defined as the full range of activities involving different stakeholders required to bring livestock and livestock products such as live animals, day-old chicks, milk, meat, eggs and manure to final consumers through different stages of production, processing, marketing and delivery. It can also be viewed as a market-focused collaboration among different stakeholders who produce, process and market value-added products (Chadda *et al.*, 2024).

Value chain analysis provides a comprehensive understanding of the interconnected activities involved in delivering a product or service from its point of origin to the consumer (Chadda *et al.*, 2025). It also helps identify weak

links and potential areas for improving production and marketing efficiency (DineshKumar, 2019).

The livestock value chain generally includes:

- Input supply, including feed, breeding and veterinary services
- Livestock production
- Collection and aggregation
- Processing and value addition
- Storage and transportation
- Marketing and retailing
- Consumer services and feedback

Each of these stages influences the quality, price, safety and ultimate value of livestock products.

## Why is Reorientation Necessary?

### Low Share of Farmers in Consumer Price:

Smallholder farmers often sell their livestock and livestock products through multiple intermediaries, which reduce their profit margins. For smallholder farmers in a country like India, obtaining a fair return for their produce has become increasingly challenging, with intermediaries often playing a significant role in the market system (Ramakrishna and Lilly Grace Eunice, 2024). Direct market linkages and farmer-owned enterprises can improve farmers' incomes while reducing their dependence on middlemen. Increasing the farmers' share of the consumer price is essential for making livestock farming more profitable and sustainable. Reducing unnecessary intermediaries, strengthening farmer organizations, promoting value addition and developing efficient market infrastructure can help livestock producers receive a fairer share of the value created along the supply chain.

### Fragmented Production System:

Livestock production in India is largely carried out by numerous small and marginal farmers, each producing relatively small quantities of milk, meat, eggs or other animal products. These producers often operate independently with limited coordination, making it difficult to achieve economies of scale, maintain consistent product quality and efficiently access larger markets (Chadda *et al.*, 2024). Fragmented production is therefore an important constraint to the efficiency and profitability of the livestock sector. Promoting farmer collectivization, improving infrastructure and strengthening market linkages can transform fragmented production into a more integrated and competitive livestock value chain that benefits both producers and consumers.

**Rising Demand for Quality and Safe Animal**

**Products:** The growing demand for quality and safe animal products presents a significant opportunity for smallholder livestock farmers. As the foundation of the livestock value chain, farmers have an important role in producing safe, nutritious and sustainable animal products. Realizing this opportunity, however, requires better access to veterinary services, modern technologies, infrastructure, producer organizations, finance and markets. Through effective veterinary extension, value-chain integration and supportive policies, smallholder farmers can improve product quality, enhance household income and contribute to food security, public health and sustainable livestock development (Komarek *et al.*, 2021; Hatab *et al.*, 2022).

**Inadequate Processing and Value Addition:**

Livestock production is an important source of income, nutrition and employment for millions of smallholder farmers. However, many farmers continue to sell raw milk, live animals, fresh meat or eggs with little or no processing. Consequently, they capture only a small portion of the value ultimately paid by consumers. Processing and value addition improve product quality, increase shelf life, create market differentiation and generate higher returns. Inadequate processing infrastructure and limited opportunities for value addition therefore remain major constraints to the growth and profitability of smallholder livestock enterprises (Chadda *et al.*, 2024).

**Weak Market Infrastructure:** Weak market infrastructure is another major bottleneck in the livestock value chain. Inadequate collection centres, poor transportation, limited cold-chain facilities, weak market-information systems and insufficient processing facilities can reduce product quality, increase marketing costs and lower farmers' incomes. Strengthening market infrastructure through investment, producer organizations, digital technologies and effective veterinary extension can improve market access, reduce post-harvest losses and enhance the overall competitiveness and sustainability of the livestock sector (Muthukumar *et al.*, 2021).

**Climate Change and Disease Risks:** Climate change and disease risks are increasingly affecting the efficiency, sustainability and profitability of livestock production and marketing. Smallholder farmers are particularly vulnerable because of their limited resources and inadequate access to technologies, veterinary services and organized markets. Climate-smart livestock practices, improved animal-health management, stronger biosecurity, disease surveillance and participation in organized value chains can help reduce these risks and strengthen farmers' resilience. Investments in veterinary services and climate-resilient infrastructure are therefore essential for protecting livelihoods and maintaining a sustainable livestock value chain (Hatab *et al.*, 2022; Bilotto *et al.*, 2024).

**Digital Transformation:** Digital transformation is creating new opportunities across the livestock value chain by improving efficiency, transparency and connectivity. Digital technologies can provide smallholder farmers with timely information on animal health, production practices, markets, prices, financial services and veterinary support. Although limited digital literacy and inadequate infrastructure remain challenges, affordable technologies, supportive policies and effective veterinary extension can accelerate their adoption. A digitally connected livestock value chain can empower farmers, improve productivity, strengthen traceability and enhance access to markets (Muthukumar *et al.*, 2021; Chadda *et al.*, 2024).

**Key Areas for Reorienting the Livestock Value Chain**

**Strengthening Input Services:** Quality input services form the foundation of a productive and competitive livestock value chain. Smallholder farmers require access to quality breeding services, affordable and balanced feed and fodder, timely veterinary healthcare, vaccination, disease surveillance, mobile veterinary services and reliable advisory support. Strengthening these services can help farmers overcome production constraints, reduce animal losses, improve productivity and produce better-quality livestock products. Veterinary extension has an important role in connecting farmers with these services and technologies (Saravanaraj & Kannan, 2025).

**Farmer Collectives:** Farmer collectives can play a major role in creating an inclusive and efficient livestock value chain. Organizing smallholder farmers through dairy cooperatives, Farmer Producer Organizations (FPOs), Self-Help Groups (SHGs) and producer companies can create economies of scale, improve access to finance and technology, strengthen bargaining power and facilitate processing and value addition. Collective action can enable farmers who individually produce small quantities to participate more effectively in larger and better-organized markets. Promoting farmer collectives is therefore an important strategy for improving the livelihoods of smallholder livestock farmers (Chadda *et al.*, 2024).

**Encouraging Value Addition:** Value addition is one of the most effective strategies for increasing the profitability and sustainability of livestock enterprises. Instead of selling only raw products, farmers and farmer organizations can process and transform them into higher-value products with improved quality, longer shelf life and greater market demand. For smallholder farmers, village-level value addition can create opportunities for entrepreneurship, employment generation, income diversification and reduction of post-harvest losses. More importantly, it can help retain a greater share of the consumer rupee within rural communities (Muthukumar *et al.*, 2021).

**Improving Market Linkages:** Market linkages connect livestock producers with processors, retailers,

institutional buyers and consumers. Weak market linkages often result in smallholder farmers depending heavily on intermediaries, having limited bargaining power and receiving lower prices. Strengthening these linkages can enable farmers to sell livestock products more efficiently, obtain better prices, and reduce marketing costs. Direct marketing, digital platforms, institutional procurement, organized retail partnerships and farmer collectives can contribute to a more efficient and transparent livestock marketing system (Muthukumar *et al.*, 2021; Ramakrishna and Lilly Grace Eunice, 2024).

**Strengthening Cold Chain and Logistics:** A cold chain is a temperature-controlled supply system that preserves product freshness, nutritional quality and safety during collection, storage, transportation, processing and marketing. Livestock products such as milk, meat and eggs are highly perishable and require efficient cold-chain and logistics systems to maintain their quality and safety from production to consumption. For smallholder farmers, inadequate cold-chain infrastructure can result in post-harvest losses, deterioration in product quality, lower prices, and restricted access to organized markets. Strengthening cold-chain and logistics facilities is therefore important for improving the efficiency, profitability and competitiveness of the livestock value chain (Department of Animal Husbandry and Dairying [DAHD], 2022; MuthuKumar *et al.*, 2021).

**Promoting Food Safety and Traceability:** Food safety and traceability are increasingly important components of a modern livestock value chain. Animal identification systems, digital traceability, hygienic production practices, quality certification and residue monitoring can improve transparency and accountability from farm to fork. For smallholder farmers, compliance with food-safety and quality requirements can improve market access, enhance consumer confidence, increase product value and create opportunities in high-value markets. Effective veterinary extension and strong farmer organizations can help small producers understand and adopt these practices (Muthukumar *et al.*, 2021).

**Leveraging Digital Technologies:** Digital technologies such as mobile applications, Artificial Intelligence (AI), the Internet of Things (IoT), blockchain, digital payments and online marketplaces are creating new opportunities across livestock value chains. They can help farmers access information, monitor animal health, make informed production decisions, obtain veterinary advice, access financial services and connect with markets (Afrifa *et al.*, 2026). For smallholder farmers, these technologies offer an opportunity to overcome traditional constraints related to distance, information, veterinary support, finance and market access. Investment in digital infrastructure, farmer capacity building and veterinary extension support will be important for ensuring that small and marginal farmers are not left behind in this transformation (Manzoor *et al.*, 2025).

**Inclusive Financing:** Access to adequate and affordable finance is a critical driver of livestock-sector growth. Smallholder farmers often face financial constraints that limit their ability to purchase quality breeding stock, balanced feed, veterinary medicines, housing, machinery and other essential inputs. Limited access to institutional credit may force farmers to depend on informal lenders charging high interest rates, thereby reducing farm profitability. Inclusive financing aims to provide accessible, affordable, and timely financial services that enable smallholder farmers to invest in improved production systems, manage risks, adopt new technologies and participate more effectively in the livestock value chain (Chadda *et al.*, (2024).

## Conclusion

The future of livestock development depends not only on producing more but also on creating greater value from every animal and every livestock product. Efficient value chains enable producers to earn better incomes, processors to develop competitive enterprises, consumers to access safe and affordable products and the economy to benefit from increased employment and market opportunities. For a rapidly growing economy like India, strengthening livestock value chains is not simply an agricultural priority; it is also a strategic investment in food and nutritional security, rural livelihoods, economic resilience and sustainable development. Modernizing the livestock value chain while keeping small and marginal farmers at its centre can help meet the demands of tomorrow's markets while improving the livelihoods of millions of livestock-dependent households. Thus, a farmer-centric, market-driven, inclusive and sustainable livestock value chain is the key for enhancing income, resilience and livelihoods of small and marginal livestock farmers while ensuring safe and high-quality animal products for consumers.

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