

The Contribution of the Dairy Industry to Western Uttar Pradesh's Rural Economic Development

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Abstract

The dairy industry contributes significantly to India's diversified and rapidly emerging economy, generating employment both directly and indirectly while improving the livelihoods of marginal and small-scale milk producers. In many Indian states, dairy cooperatives and private dairies anticipate that this vital sector will continue to strengthen milk production. Various government, financial, technological, and organizational factors—along with social, economic, and personal development indicators—shape the growth of milk production in the country.

Several challenges influence milk production in India, including fluctuating milk prices, cattle management practices, per capita income levels, personal development, rural-to-urban migration, shrinking landholdings, labour shortages, delayed payments, and limited awareness regarding optimal resource utilization. A distinct characteristic of the Indian dairy sector is that the majority of production is carried out by small, often unskilled farmers who lack adequate knowledge of the financial dimensions of dairy operations. Despite these challenges, dairy farming holds substantial potential to create new opportunities, stimulate rural development, and evolve into a promising business enterprise.

Western Uttar Pradesh stands out as a region with considerable potential for milk production. The presence of both cooperative and private dairies has fostered healthy competition while establishing organized systems for marketing milk to households. These dairies also provide essential technical inputs, including artificial insemination services, veterinary care, and other critical support. Against this backdrop, the present study aims to provide an overview of the economic contribution of milk production in Western Uttar Pradesh, relying exclusively on secondary data sources.

Keywords: Milk Products, Emerging Economy, Dairy Industry and Economic development.

1. Introduction

In India, dairy farming is widely regarded as an important instrument for economic and social development. Besides supplying nutritious food to a large segment of the population, the dairy sector plays a vital role in enhancing household incomes and generating meaningful employment opportunities in rural areas. The sector makes a significant contribution to the Indian economy through income

generation, employment creation, value addition, poverty reduction, nutritional security, women's empowerment, and foreign exchange earnings. It has emerged as an effective tool for alleviating poverty and improving access to nutrition among rural families while creating new avenues for employment at the household level.

India continues to be the world's top milk producer, far ahead of nations like the US, Pakistan, China, and Brazil, according to data from the Food and Agriculture Organization. India now contributes over 23% of the world's milk output, making it the largest milk producer in the world. India possesses the largest dairy animal population in the world, including both cows and buffaloes, making the dairy sector a cornerstone of agricultural growth.

According to National Accounts Statistics, dairy is currently India's largest agricultural commodity, directly employing over 8 crore farmers and contributing 5% of the country's GDP. Over 8 crore rural families, many of which are small and marginal farmers, are impacted by the industry. Dairy is a powerful force for inclusive growth as women are heavily involved in both production and collecting. Women make up around 70% of the dairy labour, making them the backbone of the sector.

As of 2025, around 1.72 crore (17.2 million) farmers were members of various dairy cooperative societies and milk producer groups, demonstrating the size of the cooperative industry. With over 2.35 lakh villages covered and 1.72 crore (17.2 million) registered farmer members, India's vast cooperative network—a key pillar of the dairy industry—indicates a high level of organization in rural regions.

India's dairy industry has grown remarkably during the last ten years. From 146.30 million tonnes in 2014–15 to 239.30 million tonnes in 2023–2024, milk output increased by 63.56%. This indicates that throughout the past ten years, the nation has maintained an outstanding yearly growth rate of 5.7%. Over the past ten years, there has been a significant increase in the amount of milk available per person in India. In 2023–2024, the per capita supply increased by 48% to more than 471 grams per person per day. This is significantly more than the global average of about 322 grams per person per day.

With a strong emphasis on buffaloes and cows, Uttar Pradesh is India's leading milk producer, producing 16.2% of the country's milk. Western UP is the center of Uttar Pradesh's dairy industry, producing about half of the state's total milk. Western UP includes major cities like Meerut, Ghaziabad, Baghpat, Muzaffarnagar, Shamli, Saharanpur, Hapur, Gautam Budh nagar, Bulandshahar, Agra, Mathura, Aligarh, Bijnore etc. Despite current low processing levels in comparison to national averages, government policies (such as UP Dairy Development and Milk Production Promotion Policy-2022) aim to increase processing, value addition, and export. Important places like Meerut and Gautam Budh nagar have set up private and cooperative processing facilities, utilizing infrastructure and fertile terrain for expansion including unions like Gagol Dugdh Utpadak Sahakari Sangh, NABARD, Parag dairy facility, Param dairy facility, etc. With only 10% milk processed (vs. 17% national average), there's huge scope for growth, supported by food parks and cold chains. The government aims to triple milk output and become a leading dairy exporter by 2047.

2. Importance of the Study

India is endowed with the largest population of milch animals globally and is the world's leading producer of milk. The dairy sector plays a critical role in the agrarian economy, with milk producers forming its foundational base. Enhancement of milk production is closely linked to the adoption of improved animal husbandry practices, assured availability of balanced and nutritious fodder, and provision of remunerative and stable milk prices.

Dairy farming serves as an important source of supplementary income, particularly for small and marginal farmers and landless agricultural labourers. It operates predominantly as an allied activity to agriculture; wherein dairy animals are largely sustained on crop residues and agricultural by-products.

Given its significant contribution to income generation, employment, and nutritional security, dairying has been identified as a key driver of inclusive growth and rural economic transformation. India, with a population exceeding one billion, is marked by substantial diversity in food consumption patterns, cultural practices, and socio-religious traditions, which further influences demand and production dynamics in the dairy sector.

Western Uttar Pradesh (WUP) is the principal milk-producing sub-region of the State and a strategic driver of the region's rural economy. Uttar Pradesh is the country's largest milk-producing State, accounting for about 16.2% of national milk production (2023–24). The State produced in the order of 38–39 lakh tonnes (\approx 38.8 million tonnes) of milk in 2023–24 (UP share of national output; BAHS/DAHD & NDDB datasets).

Regionally, approximately half of Uttar Pradesh's milk production originates in Western Uttar Pradesh, reflecting concentration of livestock density, dairy husbandry practices and market access in districts of the western belt. This geographic concentration underpins WUP's outsized contribution to the State and national dairy supply chain.

Thus, the dairy industry constitutes a crucial component of the economic development of Western Uttar Pradesh. The present study provides valuable insights for dairy farmers, dairy enterprises, and policymakers by emphasizing the necessity for targeted policy interventions and the strengthening of basic infrastructural amenities in the region. Moreover, the dairy sector in Western Uttar Pradesh plays a pivotal role in employment generation and makes a notable contribution to public revenue, thereby reinforcing its importance in the regional economic framework.

3. Research Objectives

The following goals guided the design of the current study:

- To analyse India's milk production trends and patterns.
- To assess the current status and scale of dairy industry activities in rural areas of western Uttar Pradesh.
- To examine the contribution of dairy farming to household income, employment generation, and livelihood security in the region.
- To evaluate the role of dairy-related infrastructure, cooperatives, and market linkages in supporting rural economic development.
- To identify the major challenges limiting the dairy industry's contribution to rural economic development in western Uttar Pradesh.
- To propose strategies for strengthening the dairy industry's impact on sustainable rural development in the region.

4. Research Methodology

The study was carried out in the western Uttar Pradesh region during the 2024–25 academic year. The objective of the study was to analyze the current state of dairy practices in the selected area. Owing to the district's predominantly rural population and reliance on traditional agricultural methods, livestock rearing—particularly cattle—plays a vital role in the local economy. Judgemental and simple random

sampling was used in the research, which was conducted using the survey method. This study utilizes a descriptive methodology based on stakeholder engagement and secondary data analysis. Qualitative inputs were obtained through structured discussions with key actors in dairy development in Western Uttar Pradesh, including government dairy authorities, extension personnel, dairy industry employees, and private milk processors. Quantitative data were sourced from official livestock records published by the Department of Animal Husbandry, Dairying and Fisheries, Government of India, covering milk production, dairy animal population, and productivity indicators.

5. Analysis

This section presents the major strength and weaknesses faced by dairy producers in the study area. The tables summarize and illustrate the opportunities and threats reported by farmers during the survey. In addition, the producers' recommendations are systematically listed and organized to provide a clearer understanding of the prevailing conditions in the dairy sector.

5.1. Dairy Industry in India

Dairy Industry in India

India is the largest producer and consumer of milk in the world, producing about 187 million tonnes annually. Dairy contributes around 4.2% to India's GDP and nearly 20% of agricultural output, growing at about 5% per year.

India has over 300 million bovines, including cattle and buffaloes. Buffaloes produce nearly half of India's milk, while cows and goats contribute the rest. Most milk comes from small, family-owned farms with fewer than 10 animals. Indigenous cows produce less milk than cross-bred and exotic cows, but their milk is considered more nutritious.

Milk consumption varies across regions—higher in northwest India and lower in the northeast. Urban households consume more milk than rural ones. As incomes rise, milk consumption also increases. Among dairy products, ghee is the most consumed. Demand for pasteurised milk from the organised sector is increasing.

India is largely self-sufficient in milk production. The sector expanded rapidly after independence, especially through cooperatives like Amul, led by Verghese Kurien. Dairy development is regulated by the Department of Animal Husbandry and Dairying and food safety by FSSAI.

Milk adulteration remains a serious issue, though most samples are safe. Common problems include contamination with toxins and antibiotics. Strong laws exist, including severe punishment for adulteration.

Dairy farming has environmental impacts, such as water pollution and methane emissions. New guidelines require environmental monitoring and proper waste management.

India places high import duties on dairy products to protect domestic farmers and restricts imports for religious and safety reasons. Dairy exports are limited due to high domestic demand, though some products are exported to countries like the UAE and the US.

Milk Production trends in India (2014–2025)

India continues to be the largest milk producer in the world. Over the past decade, milk production in the country has shown strong and consistent growth:

- In 2014–15, India produced 146.3 million tonnes of milk. Press Information Bureau
- By 2023–24, milk production had risen to 239.30 million tonnes, marking a growth of 63.56% over the 2014–15 level. Press Information Bureau

- This increase reflects an average annual growth rate of approximately 5.7% over the decade. Press Information Bureau
- Recent estimates also indicate that in 2024–25, total milk production in India further increased to around 247.87–248 million tonnes. The Times of India+1
- Per Capita Availability: Per capita availability of milk has also improved over this period. In 2023–24, it was more than 471 grams per person per day, significantly higher than earlier years. Press Information Bureau
- By 2024–25, it reached approximately 485 grams per person per day according to recent data.

S No	Year	Milk Production (million tonnes)
1	2014-15	146.3
2	2015-16	155.4
3	2016-17	165.4
4	2017-18	176.4
5	2018-19	187.7
6	2019-20	199.9
7	2020-21	212.8
8	2021-22	221.5
9	2022-23	230.58
10	2023-24	239.30
11	2024-25	247.9

Table 1: Milk Production trends in Indian Dairy Industry (in million tonnes)

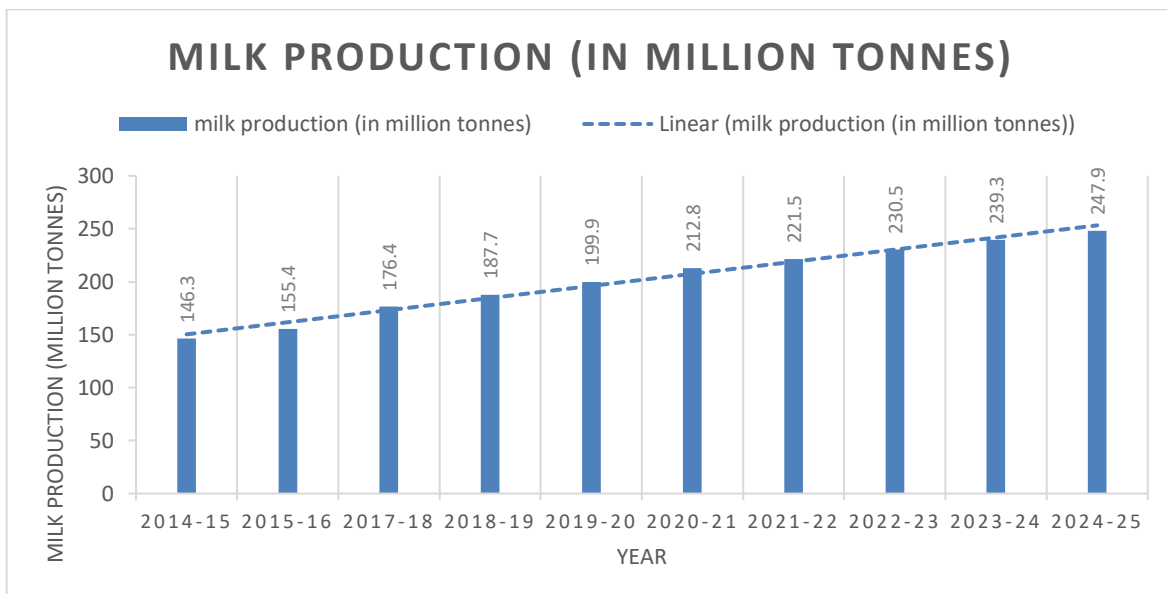


Chart 1: Milk Production trends in Indian Dairy Industry (in million tonnes)

5.2. Dairy Industry in Uttar Pradesh

Uttar Pradesh (UP) occupies a dominant position in India’s dairy sector, consistently ranking as the largest milk-producing state. The state’s leadership is underpinned by a vast bovine population,

especially buffaloes, a predominantly smallholder production system, and sustained government intervention aimed at productivity enhancement and commercialization.

Uttar Pradesh has the largest population of in-milk buffaloes and cows in India. Buffalo milk constitutes a major share of total output due to its higher fat content and consumer preference. Dairy production is predominantly smallholder-driven, with most rural households owning fewer than five milch animals.

Western Uttar Pradesh functions as the principal dairy belt, contributing over half of the state's milk output, supported by better market access, higher animal productivity, and stronger cooperative and private sector presence.

The growth of the dairy sector in UP has been significantly influenced by government-led initiatives, including:

- Kamdhenu Yojna, which promotes dairy entrepreneurship through capital subsidies and access to credit for large and modern dairy units.
- National Dairy Plan (NDP) implemented by the National Dairy Development Board (NDDB), focusing on genetic improvement, fodder development, and strengthening milk procurement systems.
- State-level dairy and livestock development policies aimed at increasing yields, reducing intermediation, and expanding cold-chain and processing capacity.

UP hosts a growing number of organized dairy players, including cooperatives and private firms such as Ananda Dairy, which operate large processing facilities and integrate thousands of farmers into formal value chains. These entities have improved price realization for farmers and enhanced quality control and market penetration. The livestock and dairy sector contribute substantially to Uttar Pradesh's Gross State Domestic Product (GSDP) and remains a critical source of supplementary income, employment, and nutritional security in rural areas. The sector's resilience has also made it an important stabilizer during periods of agricultural distress.

Uttar Pradesh's dairy industry is characterized by scale, steady growth, and institutional support. With milk production rising from about 25 million tonnes in 2014–15 to nearly 39 million tonnes by 2024–25, the state has consolidated its role as the backbone of India's dairy economy. Continued investment in productivity, animal health, and value addition will be critical for sustaining this growth in the long term.

Milk Production trends in Uttar Pradesh (2014–2025)

Milk production in Uttar Pradesh has shown a steady and sustained increase over the last decade, reflecting improvements in animal productivity, expansion of organized dairy infrastructure, and policy support. Uttar Pradesh is consistently India's largest milk-producing state, making up about 16–16.6% of the country's total milk output.

S No	Year	Milk Production (lakh tonnes)
1	2014-15	250.2
2	2015-16	234.5
3	2016-17	277.7
4	2017-18	290.5
5	2018-19	301.2
6	2019-20	318.6
7	2020-21	322.9

8	2021-22	328.6
9	2022-23	365.2
10	2023-24	387.5
11	2024-25	399.2

Table 2: Milk Production trends in Uttar Pradesh Dairy Industry (in lakh tonnes)

5.3. Dairy Industry in Western Uttar Pradesh

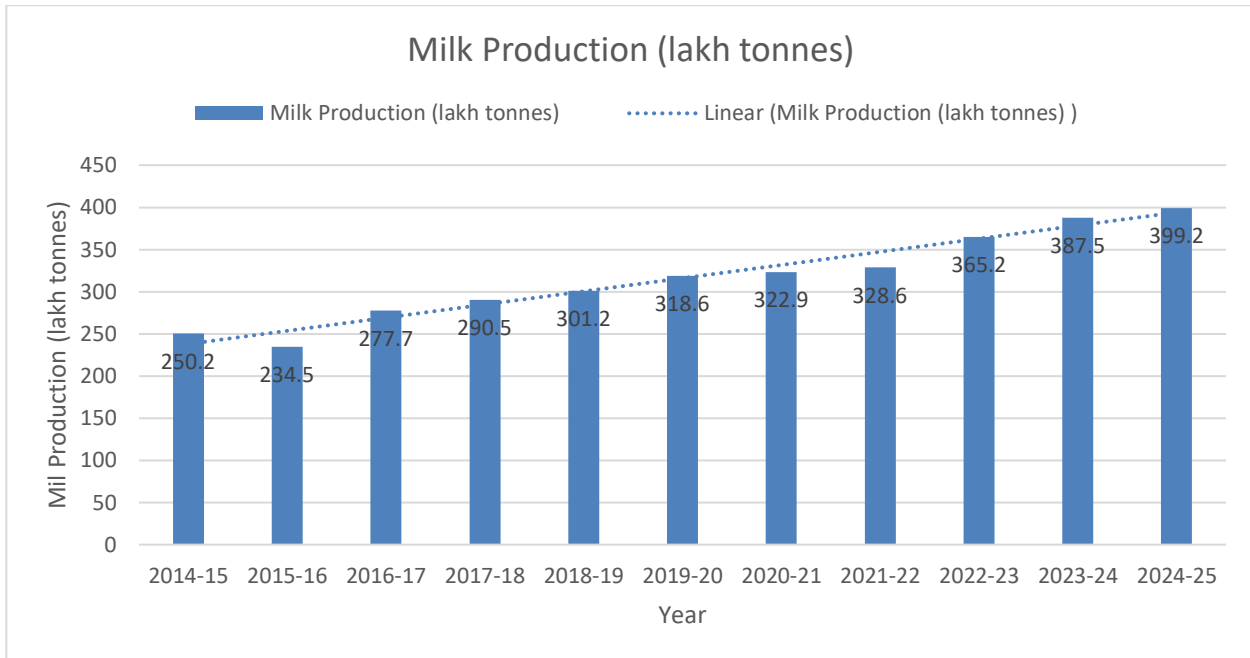


Chart 2: Milk Production trends in Uttar Pradesh Dairy Industry (in lakh tonnes)

5.3. Dairy Industry in Western Uttar Pradesh

Western UP supplies roughly half of UP’s milk. Regional breakdowns in the state investment/dairy sector note ~50% of Uttar Pradesh’s milk production comes from Western UP (Western UP also holds ~37% of the state’s livestock). This makes Western UP the single most important milk basket inside the state. invest.up.gov.in

Top livestock / dairy districts (Western UP prominence): Bulandshahr, Meerut, Muzaffarnagar, Saharanpur, Baghpat and adjoining districts are repeatedly cited as major contributors to UP’s livestock/dairy output. These districts feature high bovine densities, active cooperatives and large smallholder participation. The Times of India+1

Organised procurement & cooperatives: NDDDB and the Ministry data show India-wide organized dairy cooperative procurement runs into the tens of thousands of tonnes/day; Uttar Pradesh hosts a large share of dairy cooperative societies and procures large volumes through them. (National cooperative counts and procurement by state are published by NDDDB / Ministry.) Cooperation Ministry+1

Operational picture — value chain & challenges

- **Smallholder dominated:** Most milk in Western UP comes from smallholder farmers (1–5 cattle), sold either to local cooperatives, private collectors or direct to local chilling/processing centres.

invest.up.gov.in+1

- **Challenges:** seasonality of yield, feed/forage shortage during lean months, cold-chain gaps at village level, variable veterinary service access, and limited value-added processing at local level. invest.up.gov.in+1
- **Opportunities:** expansion of chilling centres, farmer aggregation (FPOs/co-ops), animal health & breed improvement, commercial fodder value chains, investment in value-added processing (cheese, UHT, ghee, paneer) and export-oriented units. State policy changes (tax/GST reductions on some dairy products) aim to boost processing/market development. [The Times of](#)

Top Milk Producing Districts in Western Uttar Pradesh

Western UP Districts	Status	Role in Milk Production
Bulandshahr	Principal dairy hub — often called the dairy capital of North India. #1 milk producer in UP (often India too).	Identified as a top milk-producing district in state reports. (Exact district tonnes in BAHS / district tables.)
Meerut	Major producer and processor cluster; strong cooperative activity. High production and strong dairy economy.	Named among top livestock/dairy districts; official district tonnes available in BAHS district tables.
Muzaffarnagar	High bovine density and significant milk volumes.	Frequently listed among leading districts; numeric tables in BAHS/DAHD.
Saharanpur	Important dairy and livestock contributor in upper-west belt. Among top contributors.	Cited in state reporting as a top contributor; BAHS has district figures.
Baghpat	Significant smallholder milk production supplying nearby urban markets.	Identified in state/press lists; exact tonnes in district tables.
(Other nearby districts often included) — Ghaziabad, Shamli, Muzaffarnagar border districts	Contribute to the Western UP milk belt and processing clusters.	Regional / cluster figures available in state briefs; district numbers in BAHS/India Stat.

Table 3: Top Milk Producing Districts in Western Uttar Pradesh

6. Conclusion

The present study highlights the critical role of the dairy sector in fostering rural economic development in Western Uttar Pradesh. As the most significant milk-producing region within India’s largest milk-producing state, Western Uttar Pradesh occupies a strategic position in the national dairy economy. The findings clearly indicate that dairy farming serves not only as a source of nutritional security but also as a major contributor to household income, employment generation, and livelihood sustainability for small and marginal farmers.

India's dairy sector has demonstrated robust and sustained growth over the past decade, supported by rising milk production, improved per capita availability, and expanding cooperative and private sector participation. Uttar Pradesh, and particularly its western region, has emerged as a backbone of this growth due to high livestock density, favourable agro-climatic conditions, and better access to markets and processing facilities. The presence of organized cooperatives, private dairies, and institutional support mechanisms has enhanced farmers' market integration and price realization.

Despite these strengths, the study identifies several structural and operational challenges limiting the full potential of the dairy industry in Western Uttar Pradesh. These include small herd sizes, feed and fodder shortages, seasonal fluctuations in milk yield, inadequate cold-chain infrastructure at the village level, delayed payments in certain channels, and limited adoption of modern dairy management practices. Additionally, low levels of milk processing and value addition constrain income enhancement opportunities for producers.

The analysis underscores the need for targeted policy interventions aimed at strengthening dairy infrastructure, improving access to veterinary and extension services, promoting breed improvement and fodder development, and expanding organized milk procurement and processing capacity. Encouraging farmer producer organizations (FPOs), enhancing cooperative efficiency, and fostering private investment in value-added dairy products can significantly boost rural incomes and employment.

In conclusion, the dairy sector holds immense potential as an engine of inclusive and sustainable rural development in Western Uttar Pradesh. With appropriate policy support, technological adoption, and institutional strengthening, dairying can play a transformative role in improving the socio-economic conditions of rural households while contributing substantially to state and national economic growth

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