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Popular Article

Development of Milk Industry in India

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Introduction

India has a long and rich tradition of dairying, where milk and milk products have been an integral part of its culture, economy, and nutrition. Milk occupies a special position in the Indian diet as an essential source of animal protein, calcium, and other nutrients, particularly for vegetarians. The Indian dairy sector has undergone remarkable transformation since independence, evolving from a subsistence-oriented activity into one of the world's largest and most organized industries.

Today, India stands as the **largest producer of milk in the world**, contributing nearly **24% of global milk production**. This achievement, however, was not spontaneous—it was the result of decades of policy interventions, cooperative movements, technological innovations, and infrastructure development that collectively transformed rural livelihoods and ensured nutritional security for millions.

India today stands as the **largest producer and consumer of milk in the world**, a position it has retained since 1998. The growth trajectory of the Indian dairy sector over the last five decades has been remarkable, reflecting the success of various national programs such as Operation Flood, the National Dairy Plan, and several breed improvement and clean milk production initiatives.

National Milk Production Trends

According to the **Department of Animal Husbandry and Dairying (DAHD, Government of India, 2025)**, India's total milk production reached a **record 239.3 million tonnes in 2023–24**, representing a **4% increase** over the previous year (230.58 million tonnes



in 2022–23). In 2014–15, milk production stood at **146.3 million tonnes**, which means production has increased by nearly **63.6% over the last decade**.

This steady growth reflects improvements in animal productivity, veterinary health coverage, feeding practices, and expansion of organized milk procurement systems. India alone contributes approximately **24% of the global milk output**, underscoring its pivotal role in global dairy economics.

Year	Milk Production (Million Tonnes)	Growth (%)
2014–15	146.3	—
2018–19	187.7	5.8
2020–21	209.9	6.3
2022–23	230.6	4.5
2023–24	239.3	4.0

Source: DAHD, Annual Report 2024–25; Economic Times (2024)

Per Capita Availability

Parallel to production growth, **per capita availability of milk** has also shown a sharp upward trend—from **178 grams per day in 1991–92** to **471 grams per day in 2023–24**. This improvement has directly contributed to enhanced nutritional security in both rural and urban populations. The national average now exceeds the global average of about **333 grams per day (FAO, 2023)**.

Regional Distribution

Milk production in India is unevenly distributed across states due to variations in livestock population, feed availability, and cooperative infrastructure. The top five milk-producing states together contribute over **54% of national production**.

State	Share in National Production (%)
Uttar Pradesh	16.21
Rajasthan	14.51
Madhya Pradesh	8.91
Gujarat	7.65
Maharashtra	6.71

Source: The Print (2024); DAHD, 2024

Maharashtra, which contributes around **6.7% of India's milk output**, is emerging as a key region for milk processing and value-added dairy enterprises such as cheese, paneer, shrikhand, and ice cream manufacturing.



As per the **Food and Agriculture Organization (FAO, 2023)**, global milk production was approximately **966.6 million tonnes** in 2023. India's contribution of nearly **one-fourth of this total** highlights its dominance in the global dairy landscape.

However, despite this high total production, the **average milk yield per animal** in India remains below that of developed countries—indicating significant potential for productivity enhancement through genetic improvement, better feeding management, and animal health services.

The livestock sector contributes about **30.2% of the Gross Value Added (GVA)** of India's agriculture and allied sectors, with milk alone accounting for nearly **two-thirds of livestock output**. The dairy industry contributes approximately **5% to India's total GDP**, providing direct and indirect employment to **more than 80 million rural households**, the majority of whom are small or marginal f

The White Revolution and Operation Flood

The most significant milestone in the development of India's milk industry was the launch of **Operation Flood** in **1970**, spearheaded by the **National Dairy Development Board (NDDB)** under the leadership of **Dr. Verghese Kurien**, often referred to as the *Father of the White Revolution*.

Operation Flood was the world's largest dairy development program and was implemented in three phases (1970–1996). Its objectives were to create a nationwide milk grid, link rural milk producers to urban consumers, and ensure remunerative prices for farmers and reasonable rates for consumers.

Key features of Operation Flood:

1. **Creation of Dairy Cooperatives:** Village-level dairy cooperative societies were organized, where farmers pooled milk and shared profits collectively.
2. **Milk Collection and Processing Infrastructure:** Establishment of chilling centers, pasteurization plants, and transport networks to ensure safe milk handling.
3. **National Milk Grid:** A system that connected milk surplus regions with deficit urban areas, balancing seasonal and regional variations in supply and demand.
4. **Technical Inputs:** Introduction of cross-breeding programs, veterinary services, artificial insemination, and cattle feed production.

Impact of Operation Flood:

- Milk production increased from **22 million tonnes in 1970** to **over 75 million tonnes by 1998**.
- Per capita milk availability more than doubled.



- Rural income generation and women's participation in the dairy sector increased significantly.
- India achieved self-sufficiency in milk production and became the **largest milk producer in the world** by 1998, surpassing the United States.

Post-Liberalization Growth and Private Sector Participation

After the economic liberalization of 1991, the dairy industry witnessed increased participation from the private sector. Earlier, cooperatives such as **Amul**, **Mother Dairy**, and **Nandini** dominated the organized sector. Post-1991, many private companies like **Nestlé**, **Hatsun Agro**, **Heritage Foods**, **Parag Milk Foods**, and **Britannia** entered the dairy market. Key changes in this period included:

- **Product Diversification:** Expansion from liquid milk to value-added products such as cheese, yogurt, paneer, butter, ghee, flavored milk, ice cream, and probiotic drinks.
- **Technological Advancement:** Adoption of modern processing technologies, cold chain systems, and quality testing laboratories.
- **Brand Development:** Emergence of branded dairy products that assured consumers of safety and quality.
- **Export Potential:** Growth of export markets for ghee, milk powder, casein, and traditional Indian sweets.

Recent Developments and Trends

1. Rise of Value-Added Dairy Products

Consumers' preference has gradually shifted from raw milk to processed and packaged dairy items. The demand for products like **lassi**, **yogurt**, **probiotic curd**, **cheese**, **flavored milk**, and **ice cream** has grown rapidly, especially in urban areas.

2. Technological and Digital Advancements

The use of **Automatic Milk Collection Units (AMCUs)**, **bulk milk coolers**, **mobile milk testing kits**, and **IoT-based sensors** has improved efficiency and transparency in milk collection and quality monitoring.

3. Focus on Clean Milk Production

Government programs like the **National Programme for Dairy Development (NPDD)** and **Rashtriya Gokul Mission** emphasize **clean milk production**, improved animal health, and genetic improvement of indigenous breeds.



4. Role of Women and Self-Help Groups

More than **70% of workforce in the dairy sector** are women. Women's dairy cooperatives and self-help groups have strengthened socio-economic empowerment at the grassroots level.

5. Export and Global Competitiveness

India's dairy export has been increasing steadily, with major markets in the Middle East, Bangladesh, Bhutan, and Nepal. The focus is now on achieving international quality standards like **ISO**, **FSSAI**, and **Codex Alimentarius** for global competitiveness.

Government Policies and Support

Several government initiatives have been instrumental in the industry's continued growth:

1. **National Dairy Plan (NDP-I & II):** Aims to increase milk production through breed improvement, ration balancing, and infrastructure support.
2. **Rashtriya Gokul Mission:** Focuses on conservation and genetic upgradation of indigenous cattle breeds.
3. **Dairy Entrepreneurship Development Scheme (DEDS):** Provides financial assistance for setting up dairy farms, processing units, and cold storage.
4. **National Programme for Dairy Development (NPDD):** Supports cooperative and private dairy sectors to strengthen infrastructure and promote clean milk production.
5. **Atmanirbhar Bharat Initiative:** Encourages private investment in dairy processing, packaging, and export under the "Make in India" framework.

Challenges Facing the Indian Dairy Industry

Despite its tremendous progress, the Indian dairy sector continues to face several challenges:

- **Low Productivity of Animals:** Average milk yield of Indian cattle remains below global standards.
- **Unorganized Sector Dominance:** Nearly 65% of milk is handled by the unorganized sector, leading to quality and safety concerns.
- **Supply Chain and Cold Storage Gaps:** Inadequate refrigeration and logistics result in milk spoilage and wastage.
- **Feed and Fodder Shortage:** Poor-quality feed reduces milk yield and affects animal health.
- **Price Fluctuations:** Seasonal variations in milk supply affect farmer incomes.
- **Environmental Concerns:** Methane emissions and waste management issues are emerging sustainability challenges.



Future Prospects

The future of India's milk industry lies in modernization, sustainability, and global integration. Some key areas for growth include:

- Promoting **value-added and functional dairy products** like fortified milk, probiotic curd, and lactose-free products.
- Strengthening **cold chain logistics** and **digital traceability** from farm to consumer.
- Enhancing **research in animal nutrition, genetics, and disease control**.
- Encouraging **climate-resilient dairy farming** and renewable energy adoption.
- Expanding export opportunities through compliance with international standards.

Conclusion

The development of the milk industry in India is one of the most remarkable success stories in agricultural history. From being a milk-deficient country in the 1950s to becoming the **world leader in milk production**, India's journey reflects the power of cooperative efforts, visionary leadership, and rural participation. Today, the dairy sector not only contributes nearly **5% to India's GDP** but also serves as a **lifeline for over 80 million rural households**. With continued government support, technological innovation, and sustainable practices, India's dairy industry is poised to remain a global leader and a model for inclusive rural development.

