



Milk-Driven Prosperity: Enhancing Rural Livelihoods through Dairy Ventures

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Milk can be found in three different forms: as a fresh product (in the form of milk or by-products of milk), in powdered forms, and as a collection of proteins and lipids that are synthesized and are found in industrial goods. According to figures provided by the Food and Agriculture Organization of the United Nations (FAO 2019), more than eighty percent of the world's population regularly participates in the consumption of dairy products. The dairy industry is an essential component in the process of boosting rural economies and enhancing people's standard of living all over the world. The dairy industry makes a significant contribution to sustainable development in a variety of ways, including the provision of necessary nutrition and the creation of employment opportunities. Dairy production by smallholder farmers is an essential component in the maintenance of rural livelihoods all over the world. The dairy industry not only generates cash, but it also makes a substantial contribution to the safety of food and nutrition.

India's national economy greatly benefits from the dairy sector, which provides direct assistance to over 80 million farmers. It is the greatest agricultural product in terms of size, constituting 5% of the country's GDP. The dairy industry has had a compound annual growth rate (CAGR) of 6.2% from 146.31 million tons (MT) in 2014-15 to 209.96 MT in 2020-21, with a CAGR of 6.4% over the last five years. The projected market size by 2026 is \$314 billion.

India has the top position globally in terms of both milk production and consumption. India has the biggest dairy herd worldwide, with a staggering 302.3 million bovines according to the 2019 census. India's milk output has had a significant growth of 51% during the last eight years, namely between 2014-15 and 2021-22. In the fiscal year 2021-22, India accounted for 24% of the worldwide milk output and supported a workforce of 80 million people. In fiscal year 2022, milk production reached a total of 221.06 million metric tons, showing an increase over the previous year's output of 209.9 million metric tons in 2021. The nation had a minor decline in the growth rate of milk production, dropping from around 5.8 percent in 2021 to roughly 5.29 percent in 2022.

The Importance of Smallholder Dairying in India

A consistent source of revenue for smallholder farmers is provided by dairy farming, which is a form of income generation. Milk and animal sales, as well as the use of manure, are all sources of income generated. These contributions are used to support home necessities, educational opportunities, and medical treatment.

According to Chand *et al.* (2015), dairy products have a high concentration of vitamins, minerals, and other vital nutrients. Milk's increased availability contributes to a more varied diet and an overall improvement in health. Because of dairy farming, families are able to reap the benefits of increased food crop harvests.

The dairy farmers have accumulated a significant number of live assets throughout the course of their careers. These assets contribute to the resilience of households as well as the advancement of the socioeconomic system.

In the financial year 2020-21, Livestock accounted for 30.13% of the Agriculture Sector's share at constant prices, while it contributed 4.9% to the overall Gross Value Added (GVA). The per-capita milk availability in 2021-22 is 444 grammes per day, which represents a 17-gram increase compared to the previous year. • The five states in India with the highest milk production are Rajasthan (15.05%), Uttar Pradesh (14.93%), Madhya Pradesh (8.6%), Gujarat (7.56%), and Andhra Pradesh (6.97%). Collectively, they account for 53.11% of the overall milk output. The global milk production is increasing at a pace of 2%, whereas in India, it is expanding at a rate exceeding 6%. India exported 108,711.27 metric tons of dairy products to the globe, seeing a growth rate of 19.45%. The value of these exports increased from \$395 million in April-December 2021 to \$471 million in April-December 2022 of the current fiscal year (FY 2022-23). The primary export destinations in the fiscal year 2021-22 were Bangladesh, the United Arab Emirates, Bahrain, Malaysia, Saudi Arabia, and Qatar. India's export of butter, ghee, and dairy spreads in the year 2021-2022 amounted to \$171.2 million, with a total weight of 33,020.77 metric tons. The main countries that received these exports were the United Arab Emirates, United States, Saudi Arabia, Singapore, and Australia. India's cheese exports in the fiscal year 2021-22 amounted to 7,648.69 metric tons, valued at \$37.2 million. The main recipients of these exports were the United Arab Emirates, Bhutan, the United States, Singapore, and Saudi Arabia. India sent 46,285.54 metric tons of Skimmed Milk Powder (SMP) valued at \$132.69 million during the 2021-22 period. The primary recipients of these exports were Bangladesh, Malaysia, the United Arab Emirates, Afghanistan, and Bhutan. The market for SMP (Symmetric Multiprocessing) is projected to see a compound annual growth rate (CAGR) of around 13% from 2021 to 2026. • Enhanced The percentage of return for dairy products is predicted to be between 20% and 30%. The cheese market is projected to reach \$1.5 billion, with a compound annual growth rate (CAGR) of 18% from 2021 to 2026. The yoghurt market in India is projected to reach \$6.02 billion, with a compound annual growth rate (CAGR) of 15.3% from 2021 to 2026.

Development of India's Dairy Industry

Operation Flood (OF): In 1970, India launched Operation Flood, a revolutionary programme with the objective of increasing milk output. India's principal objective was to achieve self-sufficiency in dairy products and minimize its reliance on milk imports.

In terms of its impact and accomplishments, OF was able to facilitate milk collecting, processing, and distribution through the strategic organization of dairy cooperatives. The production of milk in India rapidly increased, and by the year 1998, it had become the greatest milk producer in the world, providing 22% of the total global output.

Milk Availability on a Per-Capita Basis: Between the years 1991 and 2018, there was a notable advancement in the availability of milk on a per-capita basis. There was an increase in consumption from 178 grammes per day to 394 grammes per day.

In order to empower rural households, dairying has become a lifeline for farmers who are economically disadvantaged and do not have access to land. It offered a reliable source of income, which improved people's standard of living and helped alleviate poverty.

Key Contributions of Dairy Ventures

Empowering Smallholder Farmers: Small dairy producers frequently experience economic difficulties as a result of the fragmentation of their land holdings and the scarcity of resources. Cooperative dairy farms offer a solution to the problem by bringing together numerous producers. Milk is gathered, processed, and sold by these cooperatives that operate at the village level. There is a reduction in the role of middlemen thanks to the cooperative model, which guarantees fair prices for farmers.

Nutrition and Food Security: Proteins, vitamins, and minerals are just some of the necessary components that may be found in abundance in dairy products. The consumption of dairy products is common among more than 80 percent of the world's population. Milk's increased availability contributes to a more varied diet and an overall improvement in health.

Poverty Reduction: In rural areas, dairy farming provides a reliable source of income for households. It makes a contribution to both the economic stability and the social well-being of the community by reducing the poverty gap.

Gender Equality and Livelihoods: Milking, processing, and other dairy-related operations are all activities in which women get involved. The empowerment of women through the growth of livestock contributes to the advancement of socioeconomic conditions and gender equality.

Economic Growth and Livestock Development: Rural economies are stimulated by dairy business initiatives. In addition to providing employment possibilities and additional sources of income, livestock growth is beneficial to millions of households.

Environmental Sustainability: Environmental consequences are reduced by the use of sustainable dairy techniques. There has been a rise in the awareness of the effects that intensive dairying has on the environment.

Challenges in Dairying

- One of the most significant issues that dairy producers confront is obtaining high-quality feed and fodder for their cows. Inadequate availability to healthy feed has an impact on both milk production and overall animal health. India now confronts a deficit of 23.4 percent for dry fodder, 11.24 percent for green fodder, and 28.9 percent for concentrates (IGFRI Annual Report, 2019). Currently, the nation produces fodder on barely 5% of its cultivable land. With the growing popularity of high-breed animals, there is an enormous need for high-quality feed and fodder to suit the nutritional needs of milking cows. A large number of useless dairy cows compete for feed and fodder with productive dairy animals. Small and marginal farmers, as well as agricultural laborers involved in dairy farming, lack the financial resources to acquire necessary feeds and fodder, thus their animals go hungry. In traditional dairy production methods, feed expenses may account for up to 70% of overall expenditures. Consequently, high-cost feeding has an impact on the profitability of dairy production.
- The issues are connected to supply chain management, such as poor logistics, a lack of effective cold storage facilities, and insufficient transportation infrastructure. These issues cause post-harvest losses and quality decline. Investment in cold chain facilities, milk collecting centers, and transportation networks is critical to increasing supply chain efficiency and reducing waste. According to Assocham, around 3% of milk produced is wasted yearly.
- Despite being the world's greatest milk producer, India's milk processing sector is very tiny, processing about 10% of total milk in dairy facilities. The unorganized sector, which includes milkmen and sellers, handles a large amount of milk production, resulting in inefficiencies in processing and distribution.

- Limited access to appropriate education and training programmes for dairy farmers and workers impedes the adoption of best practices, contemporary methods, and technology.
- Climate change presents issues for the dairy industry, altering feed availability, water supplies, and overall sustainability. Developing climate-smart dairy farming techniques, encouraging resource conservation, and implementing renewable energy solutions may all help to ensure the sector's long-term survival. Sustainable dairy production techniques, waste management, and reducing carbon footprint are critical concerns that the Indian dairy sector must face. Promoting environmentally responsible activities helps assure long-term sustainability.

Conclusion

It is not just about dairy products that milk-driven prosperity is about; rather, it is about improving lives, creating equity, and building resilient rural communities. Entrepreneurship in the dairy industry contributes to rural livelihoods in a variety of ways, including economic empowerment and nutrition security. As we mark World Milk Day, let us acknowledge the enormous influence that dairy businesses have had and continue to work towards a future that is brighter and more successful.

References

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