



IUF Dairy Division



Indian Dairy Industry

Abstract

India is the world's largest producer of dairy products by volume, accounting for more than 13% of world's total milk production, and it also has the world's largest dairy herd. As the country consumes almost all of its own milk production, India was neither an active importer nor an exporter of dairy products prior to year 2000. However, since the implementation of Operation Flood Programme, the situation changed significantly and imports of dairy products reduced to very small quantities. From 2001, India has become a net exporter of dairy products and after 2003 India's dairy import has dipped while exports have increased at a fast rate. Yet the country's share in global dairy trade still remains at minor levels of 0.3 and 0.4 percent for exports and imports respectively. This is due to the direct consumption of liquid milk by the producer households as well as the demand for processed dairy products that has increased with the growth of income levels, which have left little dairy surpluses for export. Nevertheless, India consistently exports specialty products such as casein for food processing or pharmaceuticals. The Indian dairy sector is also different from other dairy producing countries as India places its emphasis on both cattle and buffalo milk. In 2010, the government and the National Dairy Development Board have drawn up a National Dairy Plan (NDP) that proposes to nearly double India's milk production by 2020. This plan will endeavour to increase the country's milk productivity, improve access to quality feeds and improve farmer access to the organised market. These goals will be achieved through activities that focus on increasing cooperative membership and growing the network of milk collection facilities throughout India.

Despite its huge production volume, India nevertheless faces a milk supply gap due to increasing demand from a growing middle class population. Estimation suggests that Indian dairy production is growing at a rate of about four percent per year, yet consumer demand is growing at approximately double that rate. Apart from the rapidly increasing demand for milk and dairy products, other reasons such as the increased cattle feed cost and low availability of dairy farm labour in the rural areas have also resulted in increase in the cost of production. On the other hand, the strong pressure from EU to open up its market as well as the proposed free trade agreement with Australia and New Zealand may also put India's dairy sector in the risk of being jeopardised. In order to maintain the development of its dairy industry, focus needs to be placed on several areas. First, cost of production has to be reduced through increasing productivity of animals, improve animal health care and breeding facilities and management of dairy animals. Second, Indian dairy industry needs to further develop proper dairy production, processing and marketing infrastructure, which is capable of meeting international quality requirements. Third, India can focus on buffalo milk based speciality products, such as Mozzarella cheese, in order to meet the needs of the target consumers.

Background Information

India is the world's largest producer of dairy products by volume and has the world's largest dairy herd. The country accounts for more than 13% of world's total milk production and is also the world's largest consumer of dairy products, consuming almost all of its own milk production. Dairying has been regarded as one of the activities that could contribute to alleviating the poverty and unemployment especially in the drought-prone and rain-fed areas. In India, about three-fourth of the population live in rural areas and about 38% of them are poor. Therefore among these people, as well as the large vegetarian segment of the country's population, dairy products provide a critical source of nutrition and animal protein to millions of people in India. ^{1 2}

Prior to year 2000, India was not noticed by most international dairy companies, as the country was neither an active importer nor an exporter of dairy products. Although India has imported some milk powder and butter oils as aid between 1970 and 1990, exports from India were insignificantly small and it was not until 2000 onwards, when Indian dairy products started having more presence in global markets. ³

Milk production in India has developed significantly in the past few decades from a low volume of 17 million tons in 1951 to 110 million tonnes in 2009. Currently, the Indian dairy market is growing at an annual rate of 7%. Despite the increase in production, a demand supply gap has become imminent in the dairy industry due to the changing consumption habits, dynamic demographic patterns, and the rapid urbanization of rural India. This means that there is an urgent need for the growth rate of the dairy sector to match the rapidly growing Indian economy. ⁴

Below are some key statistics for India's dairy industry:

Key Statistics:

Annual Milk Production (2008-9)⁵	108.5 Million Tonnes
Annual Export Volume (2008-9)⁶	70,790 Tonnes
Share of world dairy production (2010)⁷	15%
Share of world trade in dairy products (2003)⁸	0.3%
Milking herd size⁹	115.5 million
Number of milk producers' cooperative unions	170
Number of local dairy cooperatives	96,000
Number of state cooperatives¹⁰	15
Per capita consumption (Drinking milk)¹¹	250g/day
Estimated percentage of dairy farmers in organised sector¹²	40-50%
% of dairy produce consumed by unorganised sector¹³	65%
Dairy industry workforce¹⁴	75 million women/ 15 million men

Trade ^{15 16 17}

Despite having the world's largest milk production, India is a very minor player in the international market. Prior to the 1970s, India was primarily an import dependent country and anhydrous milk fat, butter and dry milk powders were imported to meet the needs of urban consumers. However, with the implementation of Operation Flood Programme in 1971 (see "Key Players and Ownership" section), the situation changed significantly and imports of dairy products reduced to very small quantities. In the 1990s imports and exports kept edging each other out, and from 2001, India has become a net exporter of dairy products. After 2003, India's dairy import has dipped while exports have increased at a fast rate, yet the country's share in global dairy trade still remains at minor levels of 0.3 and 0.4 percent for exports and imports respectively. This is due to the direct consumption of liquid milk by the producer households as well as the demand for processed dairy products that has increased with the growth of income levels, which have left little dairy surpluses for export. Nevertheless, India consistently exports specialty products such as casein for food processing or pharmaceuticals.

In 2009, around half of India's total dairy import by volume consist of butter and other dairy derived fats, followed by lactose (33 percent), and milk powder (eight percent). Import of milk and milk products is permitted without any quantitative limitations, although tariff rate quotas apply and import permits are required. On the other hand, in terms of exports, milk powders and baby food constituted more than 40 percent of India's total dairy exports by volume, followed by casein, milk and cream, butter and other fats, and other processed dairy products in 2009 (See Figure 1 for Indian dairy exports by product types). Almost all of India's dairy exports are meant for Asian and African countries. In Asia, neighbouring countries in South Asia and the Middle East are the main buyers. Around half of India's exported dairy products are shipped to Bangladesh, the United States, U.A.E, and Singapore (see Figures 2 and 3 for Indian dairy export volume and value by destination). Despite many efforts, India has not been able to breach the European markets, while the market in South America remains untapped. Export figures clearly illustrate that the Indian dairy export is still developing and the surpluses are not systemic nor consistent. However, there future outlook for export of Indian dairy products is rather positive, as indigenous milk products and desserts are becoming popular with the ethnic population spread all over the world and there is a strong likelihood that the export demand for these products will grow.

Figure 1. Indian Dairy Exports by Product Types (2008/9) ¹⁸

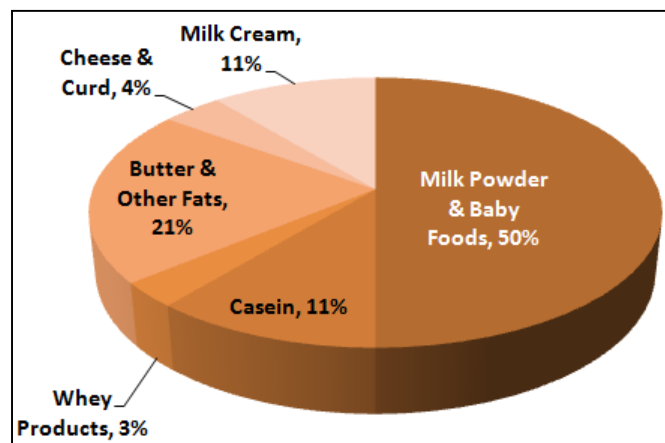


Figure 2. Exports of Indian Dairy Products by Country ¹⁹

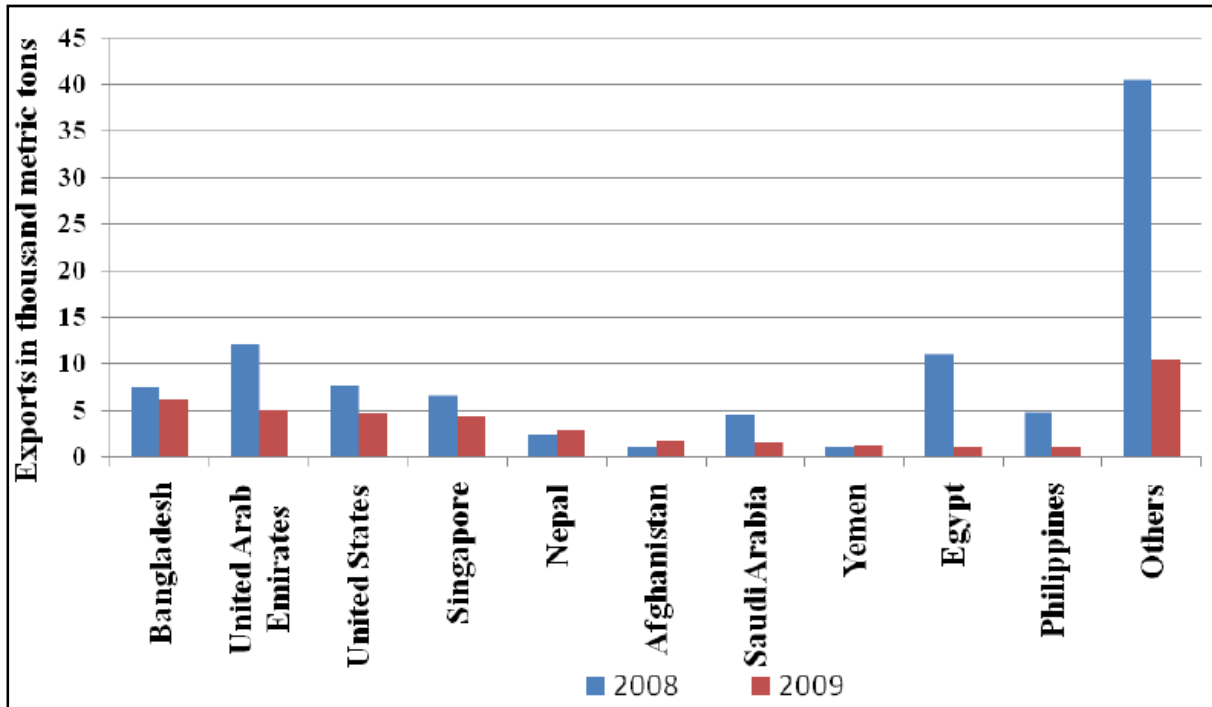
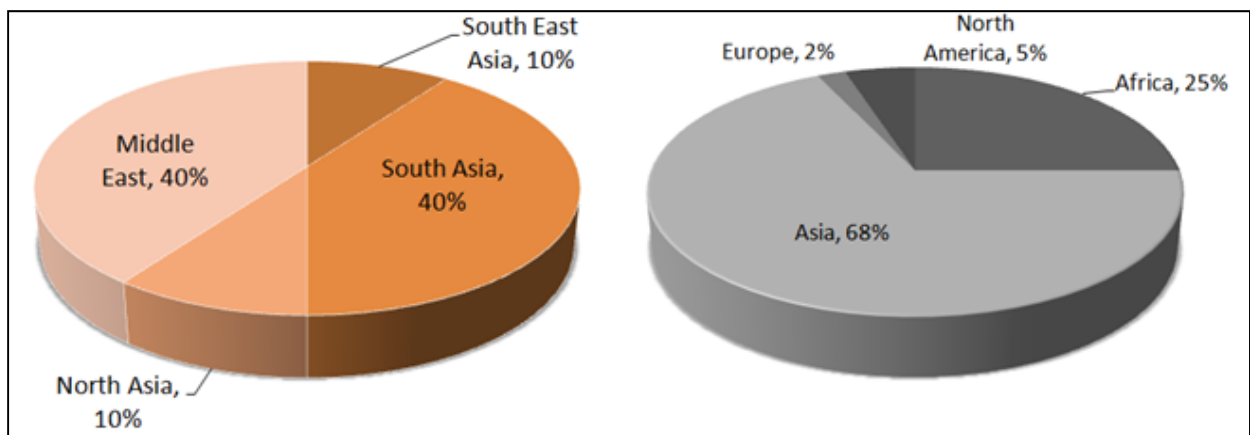


Figure 3. India's Dairy Export Destinations by Value and Dairy Exports in Asia by Value (2005/6) ²⁰



Key Players and Ownership

Production Policy and Regulation of Dairy Products ²¹

Dairy production in India runs on a low input-low output system, in which individual producers typically own less than five cattle or buffalo and use locally available feeds. This has resulted in yield levels that are below international averages but also the world's lowest production costs. As dairy product prices and income from milk collection continue to increase, farmers are slowly growing herd sizes and increasing their specialisation. In addition, interests from private sector investors have also facilitated construction of larger dairies through partnering with dairy processors.

Through implementing various incentive schemes, Indian policy makers are aiming to increase the country's dairy output. Examples of these schemes include the Ministry of Agriculture's research programs, imports of bovine semen and embryos, the National Project for Cattle and Buffalo Breeding, which focuses on improving Indian indigenous breeds with an allocation of USD 255 million. On the other hand, support is also offered by the private sector through activities such as artificial insemination services, training for veterinary care and other livestock management skills.

In 2010, the government and the National Dairy Development Board have drawn up a National Dairy Plan (NDP) that proposed an expenditure of around USD 378 million to nearly double India's milk production by 2020. This plan will endeavour to increase the country's milk productivity, improve access to quality feeds and improve farmer access to the organised market. These goals will be achieved through activities that focus on increasing cooperative membership and growing the network of milk collection facilities throughout India.

In addition, the new Food Safety and Standards Authority of India has consolidated various previous policies that set the sanitary requirements for food safety, machinery, premises, quality control, certification, packing, marking and labelling standards for all food products, including milk and milk products and aims to regulating food safety in India through one overarching regulation. The forthcoming regulation, named The Food Safety and Standards Regulation, is implemented in 2011. Although the Food Safety and Standards Authority of India sets the safety standards for both domestically produced and imported milk and dairy products, the Ministry of Agriculture's Department of Animal Husbandry, Dairying and Fisheries is the entity that is responsible for issuing sanitary permits for the import of livestock and dairy products into India.

Cooperative Movement in Dairying ²²

Immediately after India gained independence in 1947, the Milk Control Board was established to control the dairy supply and distribution chains. However, a number of issues emerged. First, the middlemen got hold of the sales profit and the share of producers in the sales declined. Second, as processing units were set up in cities, it became difficult for the milk to be procured and transported the production centres in the rural areas. Consequently, the yield of milk declined and imports of milk powder went up.

While the government was trying to deal with these problems, a cooperative was set up in the village of Kaira in Gujarat to collect, process and market milk. Subsequently, the Kaira Cooperative Union established a marketing agency named Gujarat Cooperative Milk Marketing Federation, which follows a three-layer structure that collects, processes and markets dairy products at village, district and state levels. The district units also provide technical support to the milk producers and a range of services such as feed, veterinary care, artificial insemination, education and training. These milk cooperatives of Gujarat today own the GCMMF, the largest food products business in India. GCMMF is also the largest exporter of dairy products from India and owns the brand Amul. The foundation of Indian dairy industry's cooperative movement was thus set and federal and egalitarian structure of these cooperatives ensured social and economic equity. The government then set up the National Dairy Development Board (NDDB) in 1965, which prepared a blueprint for a dairy revolution across the country. The revolution was known as Operation Flood,

Operation Flood Era ^{23 24 25}

India's dairy sector witnessed a spectacular growth between 1971 and 1996; the period was known as the Operation Flood era. An integrated cooperative programme aimed at developing the dairy industry was implemented in three phases, with The National Dairy Development Board designated by the Government of India as the implementing agency. The major objective was to provide an assured market round the year to the rural milk producers and to establish linkage between rural milk production and urban market through modern technology and professional management. The Operation Flood was one of the world's largest rural development programmes which ran for 26 years and eventually helped India to emerge as the world's largest milk producer. As part of the programme, around ten million farmers were enrolled as members of about 73000 milk cooperative societies. Since the implementation of this programme, milk production increased from 21 million tonnes in 1970 to nearly 69 million tonnes in 1996, at the compound growth rate of 4.5 per cent. By 1996, milk cooperatives attained a dominating share of the Indian dairy market - butter 96%, pasteurized liquid milk over 90%, milk powder 59% and processed cheese 85%. India was reckoned as a major threat in the dairying world. In retrospect, it was by no means an easy task.

Industry Structure, Production and Consumption

Industry Structure^{26 27}

While it is estimated that around 40 to 50 percent of Indian dairy farmers are employed by the organised sector, approximately 65 percent of milk in India is consumed (in fluid or processed forms) on farm or by the unorganised sector including local milk vendors, wholesalers, retailers, and the producers themselves. Of the total milk distributed jointly by both the organised and unorganised sector, around 46 percent of the milk is consumed in fluid form and the rest is processed into various milk products such as butter, yogurt and milk powder.

India's milk processing industry is small compared to the large amount of raw milk produced every year. Almost 55 percent of the milk produced is consumed by the producer household. Of the remaining, two-third is sold in informal markets and 15-16 percent of the total milk produced in India is processed by the organised market, including dairy cooperatives and the private sector. During 1999-2000, there were around 770 dairy processing units in the organised sector. Vendors and milk dealers dominate the informal market where the former generally procures milk from producers and sells them to urban households, while the latter supplies to private processing units. Of the milk that enters the formal and informal market, almost 45 percent is consumed in the raw form while the remaining is processed to produce ghee, khoa, butter, curd, milk powders, cottage cheese, etc. Please see below (Table 1) for an overview of India's milk production volume by State.

Production²⁸

The Indian dairy sector is different from other dairy producing countries as India places its emphasis on both cattle and buffalo milk. Out of all bovine population in India, 40 percent are indigenous cows, 46 percent are buffaloes and 14 percent are imported European or North American cattle crossbreeds. Out of the nation's total milk production, about 55 percent comes from buffaloes, and the remainder from dairy cows (See Table 2 for India's dairy product mix and Table 3 for dairy livestock population by species). Traditionally, buffalo milk has been preferred for its high milk fat content. However, as the organised sector procures more milk, dairy cattle becoming more popular due to their increased yields and shorter dry periods.

State	2008/9	State	2008/9	State	2008/9
All India	108,463	Madhya Pradesh	6,855	Uttar Pradesh	19,537
Andhra Pradesh	9,570	Maharashtra	7,455	West Bengal	4,176
Arunachal Pradesh	24	Manipur	78	A&N Islands	26
Assam	753	Meghalaya	77	Chandigarh	47
Bihar	5,934	Mizoram	17	D&N Haveli	4
Goa	59	Nagaland	53	Daman & Diu	1
Gujarat	8,386	Orissa	1,672	Delhi	285
Haryana	5,745	Punjab	9,387	Lakshadweep	2
Himachal Pradesh	884	Rajasthan	9,491	Pondicherry	46
J & K	1,498	Sikkim	49	Chhattisgarh	908
Karnataka	4,538	Tamil Nadu	5,673	Uttaranchal	1,230
Kerala	2,441	Tripura	96	Jharkhand	1,466

Table 1. Indian Milk Production by State (in thousand tonnes)²⁹

Consumption growth and industry response³⁰

Despite its huge production volume, India nevertheless faces a milk supply gap due to increasing demand from a growing middle class population. Estimation suggests that Indian dairy production is growing at a rate of about four percent per year, yet consumer demand is growing at approximately double that rate. In response to increasingly strong demand for milk products, the Indian dairy industry is growing its milk production in several ways. For example, dairy farmers have responded to increasing dairy prices by increasing herd sizes. In addition, those farmers working directly with buyers from the organised sector generally have access to modern extension services, which provide support for the dairy farmers to improve management, feeding, fertility and veterinary care. Many of these extension service providers offer artificial insemination services that aim to further improving milk yields with new dairy cattle genetics. Artificial insemination services are expected to grow in the future, as the government of India continues to develop protocols for imported genetics products. Finally, commercial dairies are also continuing with strengthening their presence in India.

Product	Percentage
Fluid Milk	46.0%
Ghee (clarified butter)	27.5%
Butter	6.5%
Yogurt	7.0%
Khoa (partially dehydrated condensed milk)	6.5%
Milk Powder	3.5%
Paneer (cottage cheese)	2.0%
Others, including Cream, Ice Cream	1.0%

Table 2. India's Dairy Product Mix (2009)³¹

Species	(In millions)
Cattle	185.2
Adult Female Cattle	64.5
Buffalo	97.9
Adult Female Buffalo	51
Total Bovines	283.1
Goat	124.4

Table 3. Dairy Livestock Population in India by Species (2003)³²

Development and Future Outlook

Trade^{33 34}

While the decade of 2000-10 has seen positive level of dairy exports from India, the next decade is predicted to be different and signs of change are already visible. Due to low global dairy prices and high domestic costs, India is finding it difficult to sustain exports of dairy products. On the other hand, factors such as the reintroduction of subsidies by European Union, devaluation of currency of New Zealand (a major dairy exporting country), combined with continuing global economic downturn, have made dairy imports into India attractive. It is predicted that dairy commodities will be the first large-scale imports and will be used by Indian dairy cooperatives and companies to make reconstituted milk and other branded dairy products. This may be followed by Imports of branded dairy products.

In the past, India has not been permitting free import of dairy products. As the country's dairy sector employs 90 million people, India has advocated that milk and cheese be excluded from the scope of free trade agreement under negotiations with the European Union. However, despite Indian government's fear about how small dairy farmers could suffer from import liberalization, India is now facing strong pressure to open up its market to dairy products from Europe. There are arguments suggesting that removing such tariff would leave India's farmers unable to withstand competition from European imports. Often these imports have been highly subsidized and can be sold at lower prices than domestically produced goods.

Other than the strong pressure from EU to open up its market, India's dairy sector may also become jeopardized by the proposed free trade agreement with Australia and New Zealand. India had entered into a Free Trade Agreement with South Korea and ten other countries in 2009. Currently the plan is to also reduce the tariff rate for New Zealand and Australia to encourage trade. It is feared that entering into a free trade agreement with Australia and New Zealand would bring adverse effects to the dairy sector in India, as the cost of milk production in Australia and New Zealand is far lower than in India due to their pastoral system. In contrast, in India dairy animals are raised by concentrate feed and fodder, therefore the cost of production is much higher.

Supply and Demand^{35 36}

A recent survey has revealed that on average, an Indian family allocates 17 per cent of the household food expenditure on milk and milk products, with rural families allocating 15 per cent and families in the urban area allocating over 18 per cent. As income continues to increase, it is predicted that the demand for milk is going to rise faster than seen in the previous decade. Moreover, the overall demand is growing rapidly compared to milk production. The higher GDP growth rate, enhanced income of rural households and the farm debt waiver are influencing the demand for milk both in the rural and urban areas.

Apart from the rapidly increasing demand for milk and dairy products, other reasons such as the increased cattle feed cost and low availability of dairy farm labour in the rural areas have also resulted in increase in the cost of production. It is estimated that the demand for milk will grow at

7% per annum at current rate of income growth, while the growth in milk production is likely to continue at the present rate of 4.4% in the near future.

A number of suggestions to the future development of India's dairy industry have been proposed by Karmakar & Banerjee (2006):

1. **Production Cost Reduction:** In order to increase the competitiveness of Indian dairy industry, efforts should be made to reduce cost of production. This can be achieved through increasing productivity of animals, improve animal health care and breeding facilities and management of dairy animals. The Government and dairy industry will need to play a vital role in this direction.
2. **Strategy and Infrastructure Development:** Indian dairy industry should further develop proper dairy production, processing and marketing infrastructure, which is capable of meeting international quality requirements. A comprehensive strategy for producing quality and safe dairy products should also be formulated with suitable legal backup.
3. **Focus on Specialty Products:** Dairy industry in India is unique with regard to the availability of buffalo milk. In this case, India can focus on buffalo milk based speciality products, such as Mozzarella cheese, in order to meet the needs of the target consumers.

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