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DAIRY SECTOR IN INDIA

Opportunities in
Key States and Products

TITLE	Dairy Sector in India – Opportunities in Key States and Products	
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Message

Over the past 50 years, the dairy sector in the Netherlands has seen incredible transformation. In the 1960s, the average dairy-producing farm had approximately 9 cows, which is quite similar to the current situation in many parts of India. The two decades thereafter saw a shift from mixed farming to specialized farming; which continues to this day. As a result of this farm intensification, the average Dutch dairy farm has approximately 70 animals today; a staggering increase of more than 630%! Factors such as mechanization and the high use of inputs such as fertilizers and feed have all played their role in this astounding transformation.

The dairy sector in the Netherlands is the story of self-organization, accepting challenges, adapting to the need of the market and a dramatic transformation in a single generation. The so-called 'Approach of the Netherlands' where the private sector, Government, and research institutes work together on innovative solutions.

Whilst the increase in productivity has been an important factor in the Dutch dairy industry, sustainably increasing production is of even greater importance. The mantra of the Sustainable Dairy Chain goes "*If you can't measure it you can't manage it.*" The different stakeholders of the Sustainable Dairy Chain emphasize the following goals: the Dutch dairy chain targets a 20% reduction in greenhouse gases by 2020, the improvement in livestock health and welfare, preservation of grazing, and the protecting biodiversity and the environment. All are goals that the stakeholders strive to attain to ensure the Dairy Chain becomes more sustainable.

The Indian dairy sector is very diverse and at the same time, is at different stages of development in different parts of the country. India has some very well organized co-operatives, foreign and domestic companies. How they develop their supply chains and product lines varies from player to player. Then there are also the government organizations which have their own programs for small scale farmers. All have their different challenges.

This study is a joint effort of the Agriculture Department of the Embassy of Kingdom of the Netherlands, New Delhi and Yes Bank reflecting on the recent developments that have undergone in the sector of dairy focusing on states like Uttar Pradesh, Andhra Pradesh & Telangana and Maharashtra.

I congratulate YES BANK for their dedicated efforts in bringing out this volume whose work shaped this piece. We have no doubt it will be useful to policy analysts, policymakers, the research & development community at large. This study will also help to achieve commercial success by collaborating on mutually identified development projects & will contribute to respective bilateral goals for both India and Netherlands.

Wouter Verhey

Agricultural Counsellor

Netherlands Embassy in New Delhi



Foreword

India is the world's largest dairy producer, with 156 Mn MT of annual milk production, contributing over 18 % of global production. Dairy is Indian agriculture's single largest sub sector in value terms, generating annual revenue of over USD 70 Bn. Demographic dividend, changing lifestyle patterns, rise in disposable incomes, structural food habit changes and improved health consciousness are key growth drivers fuelling development of the dairy industry in India.

Multiple opportunities exist in India, across the post-production dairy value chain, in areas of storage, procurement, processing and packaging technologies. These opportunities offer tremendous scope for technology suppliers, processors and service providers to tap into one of the world's largest dairy markets. While, at the backend, private and cooperative dairy processors are actively investing in procurement infrastructure for consistent availability of good quality milk, at the front, the industry is rapidly diversifying into high-margin, value-added dairy products such as cheese, Ultra High Temperature (UHT) milk, ice cream and flavoured milk.

This YES BANK - Embassy of the Kingdom of Netherlands study '**Dairy Sector in India: Opportunities in Key States and Products**' provides an in-depth overview of the Indian dairy market and captures key potential opportunities across the post-harvest dairy value chain, both in terms of geographical as well as product-based opportunities. Additionally, the study profiles the milk production scenario, value chain structure, processing infrastructure scenario as well as recent developments and opportunities in key States of Uttar Pradesh, Andhra Pradesh, Telangana and Maharashtra. On the product front, cheese and UHT milk have been profiled in detail across market opportunity, competitive landscaping, products variants, key trends & key product technology suppliers fronts.

I am confident that the study will be of immense value to the Dutch dairy industry in recognizing the vast potential of India's dairy market, thereby enabling strong partnership opportunities between India and the Netherlands in the sector.

Sincerely,

Rana Kapoor

Managing Director & CEO 

Chairman 

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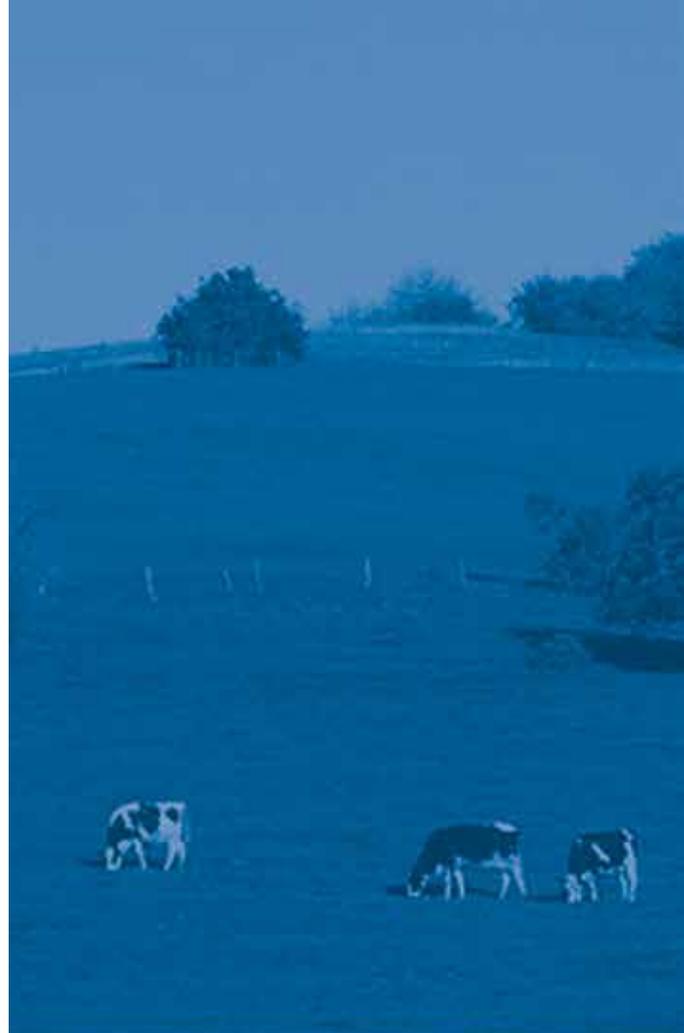
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Opportunities and Challenges of Dairy Processing Sector in India

“India is the leading milk producer in world, producing approximately 19% of the world’s total milk. Milk production in India is continuously increasing at a considerable rate. However, owing to factors such as increasing population, increasing income and consumer’s awareness, changing lifestyles and increasing expenditure on health the demand for milk has increased significantly. Thus, the primary challenge ahead of milk producers is to increase the milk production corroborating the increasing demand of milk. Majority of milk produced in India is consumed either as liquid milk or converted to traditional indigenous products but the manufacturing is largely scattered and unorganized. Thus, substantial scope lies in organized production of these indigenous products and extension of their shelf life, and to make these products available throughout the country. This will also cater to the needs of Indian diaspora round the globe. Further, the increasing emphasis on functional foods has also resulted in increasing the demand of milk derived nutraceuticals. Milk is known to possess numerous nutraceuticals and the challenge for the milk processors is to isolate and fractionate these nutraceuticals at commercial scale and make them available for the food industry to harness their benefits. Further, the nutraceutical values of non bovine milk remain completely unexploited.”

Dr. A.K. Srivastava, Director

ICAR-National Dairy Research Institute
Deemed University, Karnal-132 001, Haryana, India





Dutch Dairy Industry





Dutch Dairy Industry

Dairy is one of the most important agricultural sectors for the Netherlands. Dairy farming and processing are generating tens of thousands of jobs and adding billions of Euros in revenue to the Dutch economy. In 2014, Dutch dairy farming and the dairy industry had a production value of EUR 5 billion and EUR 7 billion, respectively. The sector's size is about 1/6 of the total Dutch food industry generating about 45,000 full time jobs. The introduction of the milk quota scheme in Europe in the early eighties curbed productivity improvements in dairy farming that were achieved through expansion. This led to accelerated development of operational efficiency, which was reflected in a steadily decreasing dairy herd and growing productivity per cow in the country. Investments in more effective roughage production, improved feed quality and genetic selection via breeding programmes were responsible for this.

18,000 farms and 1.6 million cows produce 12.7 billion kilos of milk per year. The Netherlands accounts for 8% of European milk production, fifth after Germany, the United Kingdom, France and Poland. 28 companies and 52 factories in the Netherlands process 98% of raw milk into dairy products like cheese, butter, pasteurized milk and milk powder. Most of the milk is processed within a cooperative structure. The largest cooperative, Friesland Campina, is in the top ten of dairy companies worldwide.

Cheese is by far the most important product category for the Dutch dairy sector contributing to almost 56% of the total milk utilization followed by milk powder and drinking and fresh milk products. The Netherlands has a long tradition of dairy consumption. Milk, cheese, yoghurt and dairy desserts are part of the daily diet for many Dutch people. Dutch per capita cheese consumption has for years exceeded the (relatively high) European average.

The European Union is the main destination for Dutch dairy products, accounting for more than two thirds of the total value of exports. Trade with Germany alone accounts for almost 24%. The Netherlands is also the most active EU member state in the world market, with a share of over 5% in world trade. The main destinations outside the EU are Russia, China, Nigeria and Saudi Arabia. Cheese remains by far the most important export product, accounting for over 46% of the value of exports.

The end of the milk quota in 2015 marks the beginning of another new era in the history of the Dutch dairy sector. This new phase will see opportunities arise from the growing global demand, and the Dutch dairy sector will continue to play a major role in the Netherlands' economy and export.

India has a need for high-level technology and knowledge to improve the efficiency and quality of the dairy chain. Dutch companies can play an important role here. Dutch expertise and technology in the area of the whole dairy chain is innovative and unique, given the reputation of The Netherlands of being the world's best performing dairy nation in terms of efficiency, sustainability and integral approach to the dairy chain.



1 Executive Summary





1 Executive Summary

India is the world leader in milk production, producing around 156 million MT of milk and growing at a CAGR of 4%. The Indian dairy market is amongst the largest and fastest growing markets in the world.

The growing population, changing lifestyle patterns, increasing disposable incomes and increasing health consciousness are the key growth drivers for milk and milk products in India. To tap this surging demand, most dairy players have entered the processed dairy products market with introduction of value added products like ice cream, flavored yogurt, butter (with variants), flavored milk, cheese etc. New value added dairy products, innovative packaging, cold chain and new processing technologies offer tremendous potential for technology suppliers, processors as well as service providers.

This report has been prepared basis an agreed scope of services with The Embassy of Netherlands. The report gives an overview of dairy market in India, dairy development in selected states, market of shortlisted products and potential opportunities in post harvest dairy value chain of selected states and products.

States and products were shortlisted to find out major potential opportunities in dairy value chain. Uttar Pradesh (UP), Maharashtra and combined states of Andhra Pradesh & Telangana (AP&TS) are selected for the study basis criteria of milk production, compounded annual growth rate (CAGR) of milk production in last five years, processing infrastructure and geographical representation. UHT Milk and Cheese are selected for the study basis market size, growth rates, available Dutch expertise and requirement of foreign technologies.

A comparative on major parameters related to milk production and processing for UP, AP&TS and Maharashtra is given in the table below.

Exhibit 1: Comparative on major parameters related to milk production and processing for UP, AP&TS and Maharashtra

Parameter	Unit	UP	AP&TS	Maharashtra	India
Milk production	million MT	26.1	14.6	9.7	155.5
Share of indigenous cow milk	%	18%	9%	14%	21%
Avg. yield for indigenous cow	per animal per kg per day	2.6	2.1	1.8	2.5
Share of cross bred cow milk	%	7%	20%	41%	25%
Avg. yield for cross bred cow	per animal per kg per day	7.1	7.4	7.2	6.8
Share of buffalo milk	%	69%	71%	42%	51%
Avg. yield for buffalo	per animal per kg per day	4.5	4.7	4.4	4.9
CAGR of milk production (20010-11 to 2014-15)	%	3.7%	4.6%	3.3%	3.7%
Per capita milk availability	Grams per day	318	413	219	307
Total milk processing capacity	million liters per day	25.0	7.8	26.6	120.6
Share of private sector capacity	%	90%	59%	73%	61%

Source: Basic Animal Husbandry & Fisheries Statistics, 2013 & 2014, YES BANK Analysis

Uttar Pradesh (UP) - Uttar Pradesh is the highest milk producing state of the country with production of 25.2 million MT (2014-2015) of milk. Approximately 30% of milk in UP is routed through organized channel and rest through unorganized channels like local milk vendors. Organized milk market in UP is dominated by liquid milk, powder and ghee with small contributions from fresh milk products like curd, butter milk and paneer.

The private sector has strong presence in the state with processing capacity of 22.6 million liters per day (about 90% of total milk processing capacity). Some of the large private players operating in the state are VRS Dairy, SMC Foods and Gopaljee Dairy. As per industry discussions, many private players have established milk processing plants in recent years. Namaste India is one of the major players in the state which has established its processing facility of capacity 900,000 liters/day in 2013. Major investments in the state are also happening to establish and strengthen milk procurement infrastructure.

Andhra Pradesh and Telangana (AP&TS) – AP&TS contributed 9.5% of India’s total milk production in 2014-15. AP&TS has recorded highest growth of around 6-8% per annum in terms of milk production and per capita availability in the last five years.

About 28-30% of the total milk production in AP&TS is under organized sector; approximately 40% is retained at village level and 30-32% still being marketed through informal channels. Of the marketable surplus, 60% of milk in the state is sold as liquid milk, 40% as other value added product such as Powder, Curd, Ice-cream, Butter & Cream etc. Private sector has a share of 59% in the total milk processing capacity of the state. Some of the major private players operating in AP&TS are Tirumala Milk Products Pvt. Ltd., Heritage Foods, Dodla Dairy and Creamline Dairy. AP&TS are one of the most dynamic markets going through expansion, consolidation as well as mergers & acquisitions such as Godrej Agrovet Ltd. (GAVL) buying out additional 26% stake in Creamline Dairy and Lactalis France venturing into Indian market by acquiring Tirumala Milk Products Ltd.



Maharashtra – Maharashtra produced 9.4 million MT (2014-2015) of milk during 2014-15 and is the 7th largest state in India in terms of milk production. The total registered milk processing capacity in Maharashtra is 26.6 million liters per day with 58% under private sector. Some of the major private players operating in the state are Parag Dairy, Schreiber Dynamix and Prabhat Dairy.

Some of the key opportunities that emerged during discussion with industry players and technology suppliers in the dairy value chain in selected states are listed below.

- **Milk Procurement** - Processors are investing in back end infrastructure to ensure availability of good quality raw milk. Companies also engage closely with farmers to provide veterinary and para-veterinary support, cattle breeding and nutrition management, to ensure better health of cattle and quality milk supply. Hence there is need for new technologies in adulterants testing, chilling and storage of raw milk along with technical expertise in farm management practices.
- **Processing** - Companies are diversifying into high margin value added products like Cheese, UHT milk, Ice cream, Whey based products etc. Majority demand of the traditional Indian dairy products like Curd, Paneer and Butter Milk is catered by the unorganized sector. With gradual shift of consumer towards packaged dairy products there will be demand for new economically viable technologies for manufacturing of these products.
- **Packaging** – There is potential to introduce new packaging format for dairy products in the market. Companies are looking out for innovative packaging solutions which are economically viable for value added dairy products like cheese, long shelf life milk, ice cream, flavored milk etc. to ensure better quality and improved shelf life.

Cheese and UHT Milk Market in India

Cheese market in India is estimated at 33,200 MT and valued at USD 224 million in 2015. Both retail and institutional market has equal contribution of about 50%. The Indian cheese market grew at a CAGR of 24.5% during 2010 to 2015, reaching a value of USD 224 million. The growth was mainly driven by the urban population, which accounted for about 80-90% of the total cheese consumption in India. The key players in the organized segment of the cheese market are Amul, Parag Milk Foods and Britannia accounting for 42%, 32% and 9%, respectively, of the cheese market.

UHT milk is a high value added dairy product and its market is growing with the increase in household income and urbanization. It is still a niche market but more consumers are experimenting with UHT milk due to its longer shelf life and ease of use. Total retail and food service market size of UHT milk in India is estimated at 241,200 MT in 2015. Retail sale has a higher share of 75% while foodservice sale contributes to remaining 25%. Two largest dairy cooperatives in India, Gujarat Co-operative Milk Marketing Federation Ltd (GCMMF) and Karnataka Cooperative Milk Producers Federation Ltd. (KMF) hold the largest share of 35% and 23% respectively in UHT milk market in 2015.

Multiple opportunities exist for development of new packaging formats, low cost processing and packaging machinery in cheese and UHT milk market.

2 Overview of Dairy Industry in India

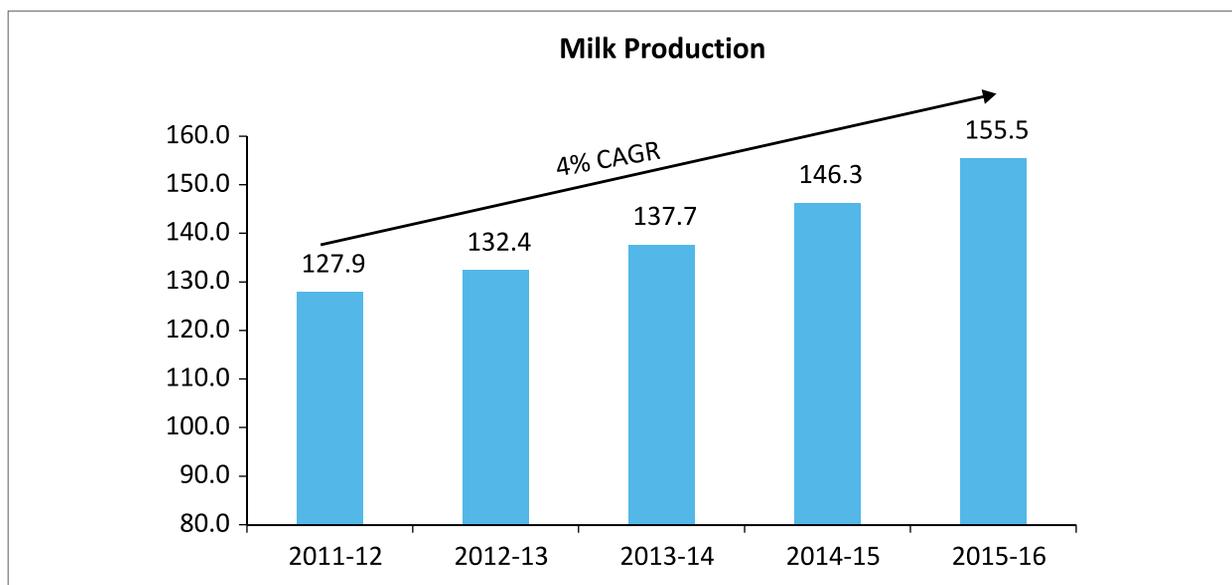




2 Overview of Dairy Industry in India

Indian dairy market is amongst the largest and fastest growing market in the world. India has been able to maintain its numero uno position in milk production during the past 18 years and milk production during 2015-16 stands at 155.5 million MT. Milk production recorded about 4% CAGR during the last five years. Strong farm gate prices and rising domestic demand for value-added dairy products are the major factors providing impetus to a steady increase in milk production.

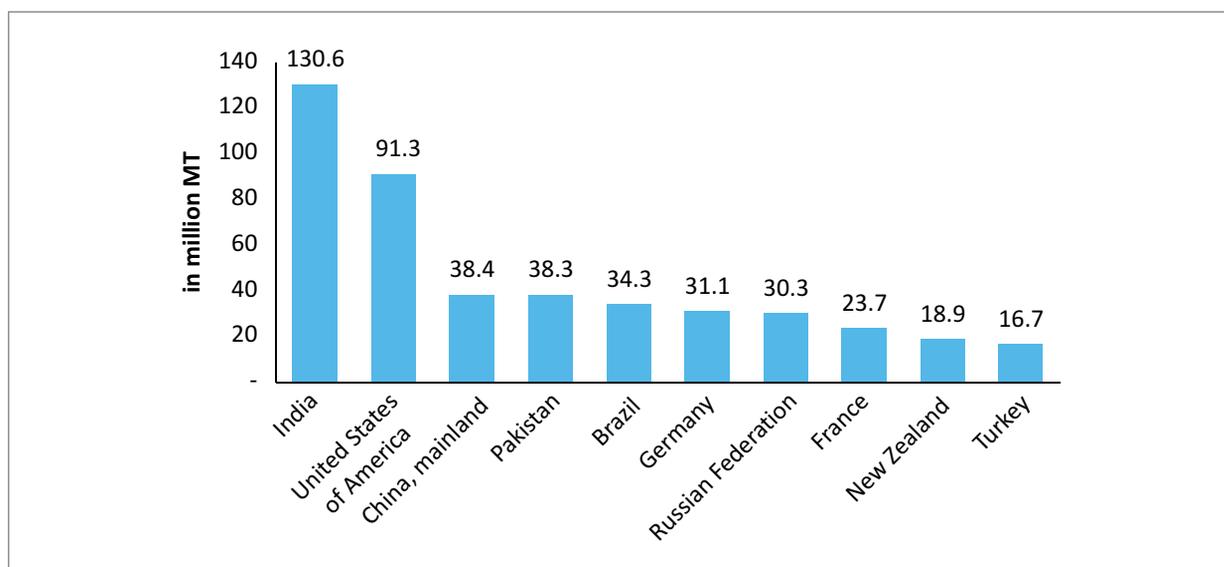
Exhibit 2: Trend in total milk production in India



Source: Basic Animal Husbandry & Fisheries Statistics, 2014, PTI

Growth in milk production in India outpaced other large milk producing nations such as the United States of America and China, which recorded only 2-3% CAGR during the past five years. However, per capita availability (302 grams/day) in India is significantly low compared with developed countries (831 grams/day).

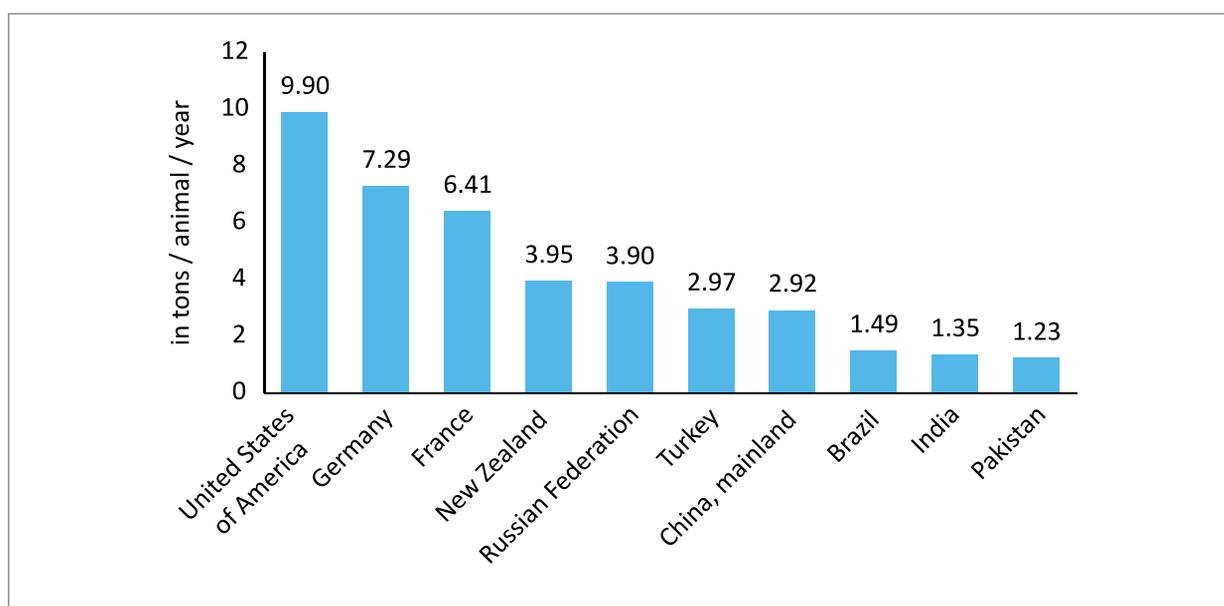
Exhibit 3: Cow and Buffalo milk production of top 10 countries in 2013



Source: FAOSTAT

Though India is the largest milk producing country but milk yield in the country is still very less as compared to other top milk producing countries like USA, Germany, France and New Zealand. High milk production in India is attributed to large population of cattle rather than good milk yields. Cow milk yield across the world's top milk producing countries is depicted in the graph below.

Exhibit 4: Cow milk yield across world's top milk producers (2013)



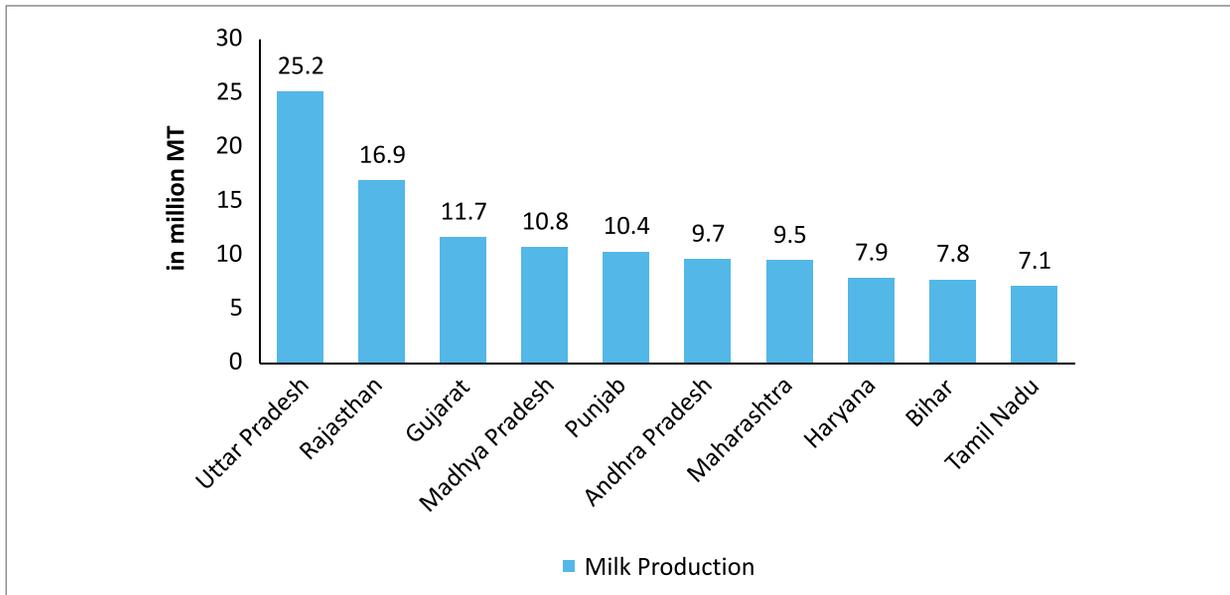
Source: FAOSTAT



2.1 Milk Production Scenario in India

Uttar Pradesh is the highest milk producing state contributing approximately 17.2% of the total milk production. Top 10 milk producing states together accounted for close to 80% of milk produced during 2014-15.

Exhibit 5: Top milk producing state in India during 2014-15



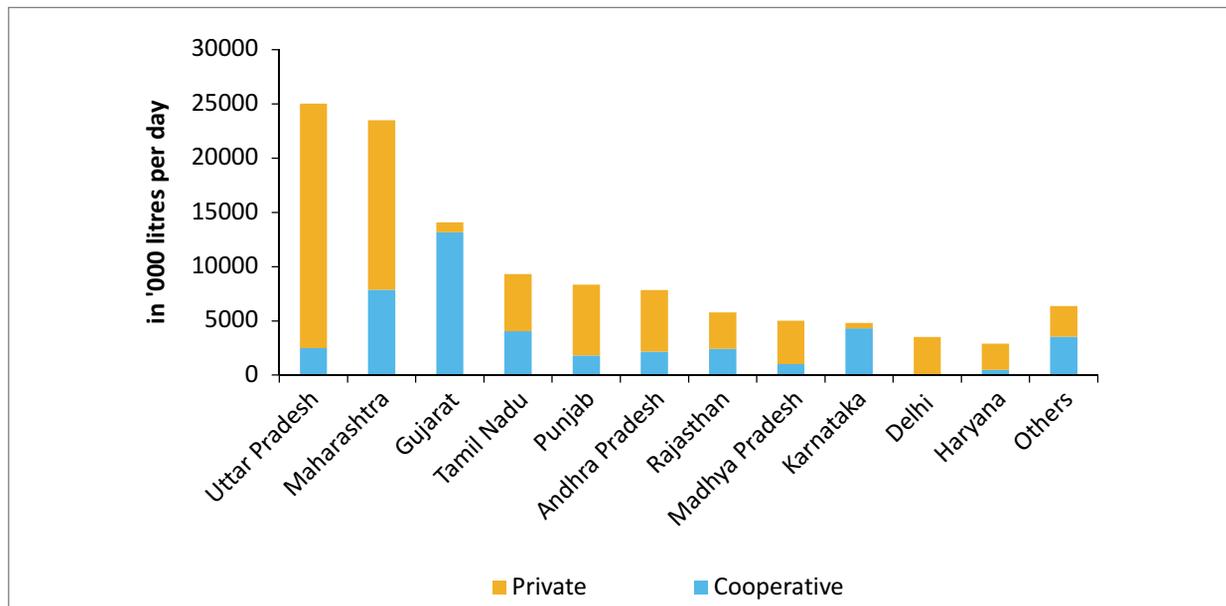
Source: Indiatat
Andhra Pradesh excluding new state of Telangana

2.2 Milk Processing Infrastructure

Milk processing capacity in the country has increased over the years due to increase in demand of good quality, hygienic and packaged milk and milk products. The registered processing capacity of plants was 120.5 million liters as on 31st March 2011. Of the total milk processed in the country, 65% to 70% is sold as liquid milk. The rest is processed into dairy products like cheese, butter, ghee, ice cream, curd etc.

Dairy cooperatives account for the major share of processed liquid milk marketed in India. According to National Dairy Development Board (NDDB), there were around 160,000 village dairy cooperative societies in the country in 2013-14 through which 12.5 million MT of milk was procured. At the end of March 2011, 1,065 units (including cooperatives, private and Government) were registered. Processing capacity of private players was highest at 73.3 million litres per day (61%) followed by cooperatives at 43.3 million liters per day (36%) and government players (3%).

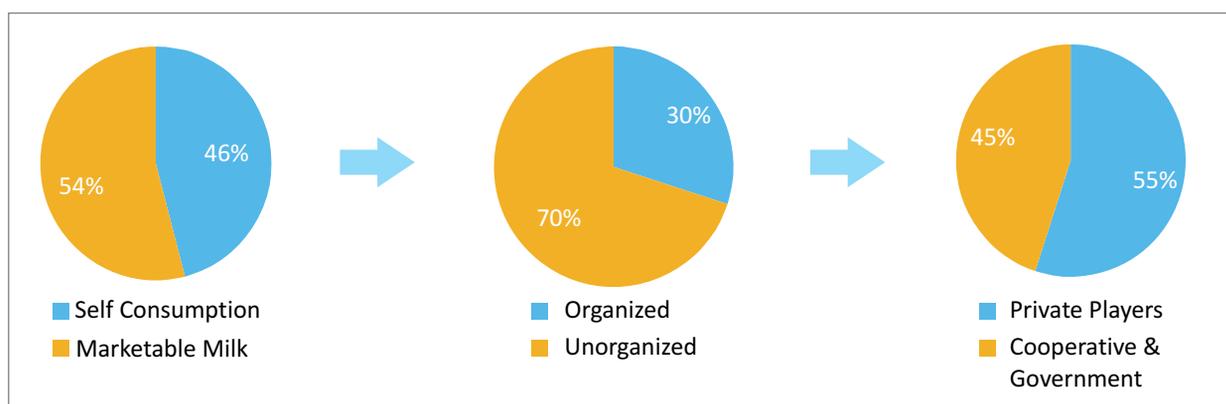
Exhibit 6: State wise capacities of cooperatives and private dairy as on March 2011



Source: Department of Animal Husbandry, Dairying and Fisheries 2013

2.3 Dairy Market in India

The dairy industry in India is still predominantly unorganized with approximately 30% of marketable milk being routed through the organized channel (2014). Private players account for approximately 55% of marketable surplus milk routed through the organized channel and rest 45% is procured by the cooperatives.



Source: IMARC

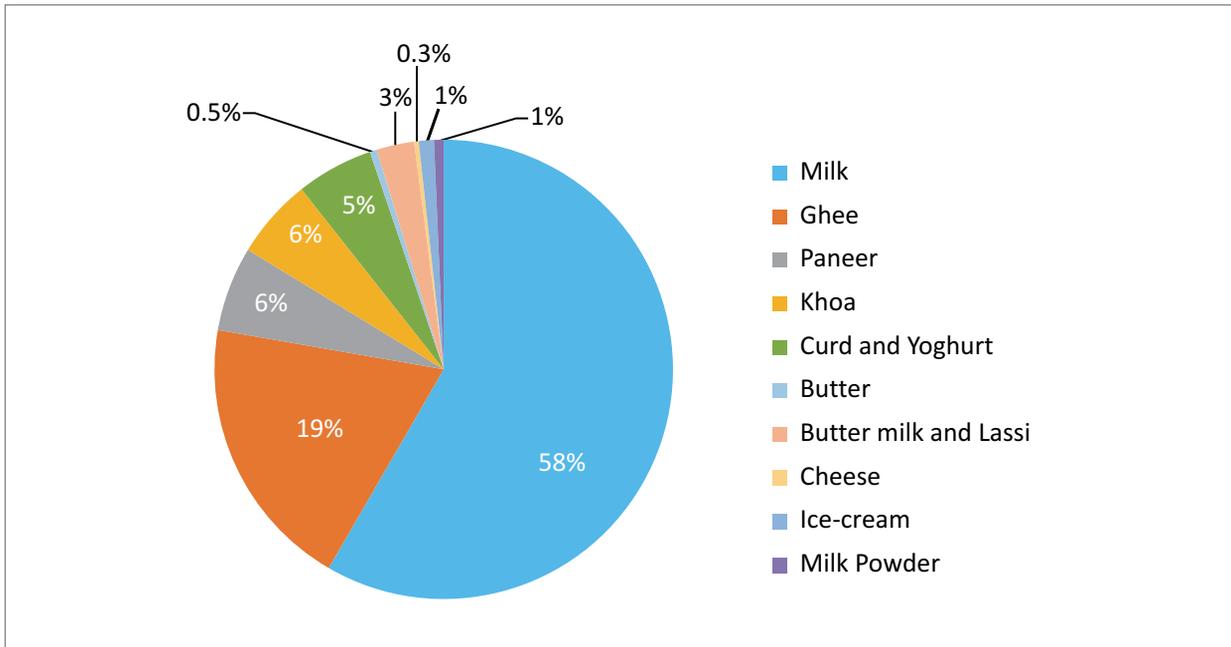
The Indian dairy industry was estimated at around INR 4,695 billion (USD 70 billion)¹ in 2014-15. Steep rise in farm gate prices of milk coupled with increasing consumption of value added dairy products has resulted in greater value growth than that of volume growth in the sector.

Fluid milk accounts for the largest product category accounting for approximately 60% of total dairy market. Ghee, paneer and khoa are the three other largest product categories. However, majority of these products are sold in unorganized segment which accounts for more than 90% in these products category.

¹ CRISIL Research



Exhibit 7: Market share of dairy products (2014-15)



Source: CRISIL Research

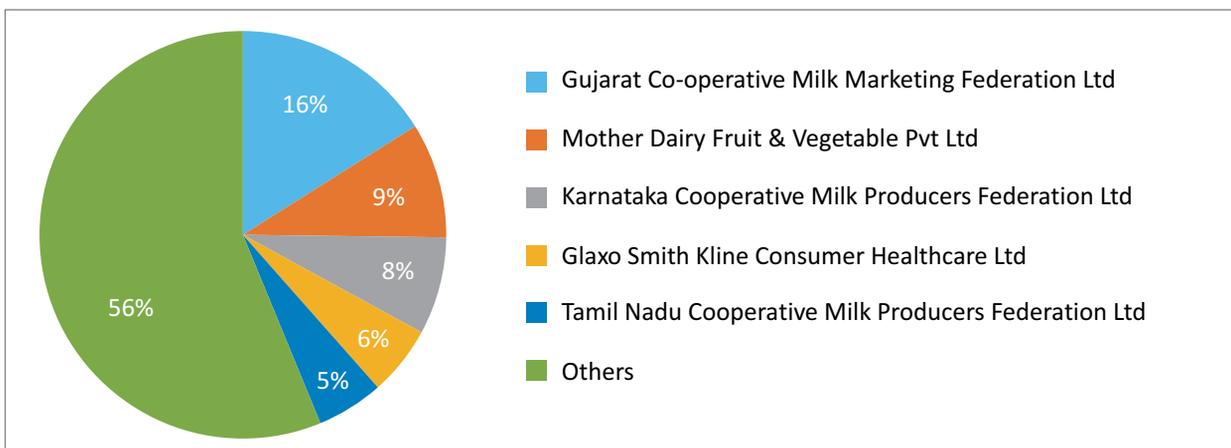
The dairy industry is expected to grow at 12-13% CAGR between 2015-16 and 2017-18. This growth will be mainly driven by rise in milk prices as well as change in product mix due to more focus on value added products.

2.3.1 Major Players in Retail Dairy Market

Gujarat Co-operative Milk Marketing Federation Ltd., which sells products under brand name AMUL, is the leading player in the dairy industry with a market share of 16% followed by Mother Dairy Fruit & Vegetable Pvt. Ltd. (9%), Karnataka Cooperative Milk Producers Federation Ltd. (8%) and GlaxoSmithKline Consumer Healthcare Limited (6%).

Some of the major private players include Hatsun Agro (2%), Heritage Foods (2%), Nestle India (2%), Mother Dairy Calcutta (2%), Hindustan Unilever (HUL) (1%), VRS Foods (0.9%), Britannia (0.7%) and Vadilal (0.7%).

Exhibit 8: Company shares in dairy products sales (2014)

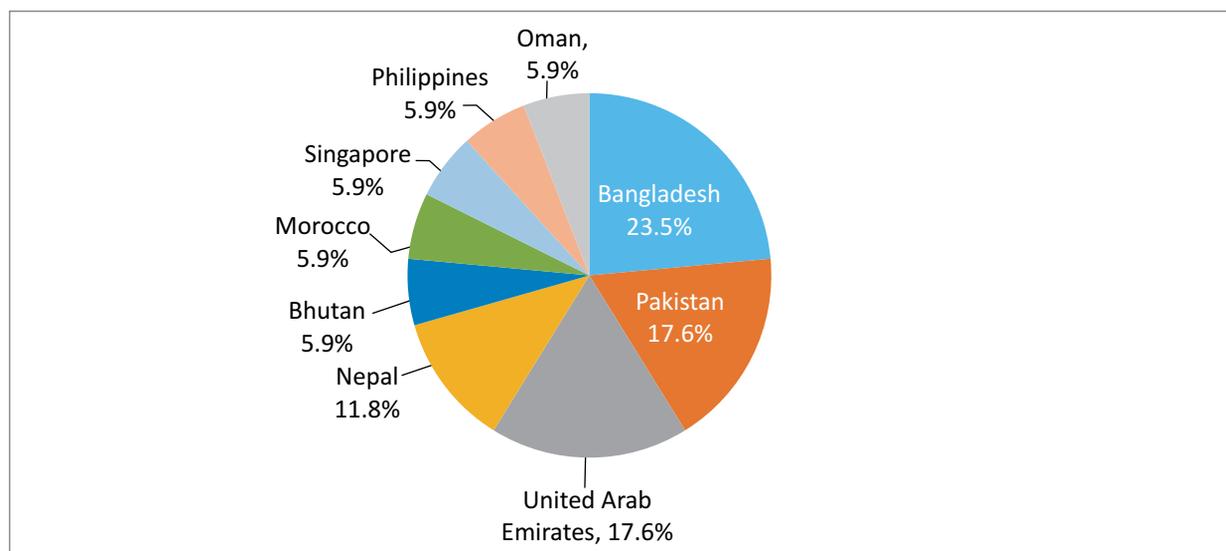


Source: Euromonitor

2.4 Exports of Dairy Products

India's export of Dairy products was 66,424 MT worth USD 0.17 billion during the year 2014-15. The major exports destinations included Bangladesh, Pakistan, UAE and Nepal.

Exhibit 9: Share of different regions in exports of dairy products (value terms)



Source: APEDA Agri Exchange

India's share in the global milk trade has traditionally been low, due to:

- ✓ Limited quantity available for exports, after accounting for domestic demand
- ✓ Regular bans on export of high-volume products like milk powder by the government
- ✓ Indian dairy products prices are not competitive in global markets



3 Dairy Industry Scenario in Selected States





3 Dairy Industry Scenario in Selected States

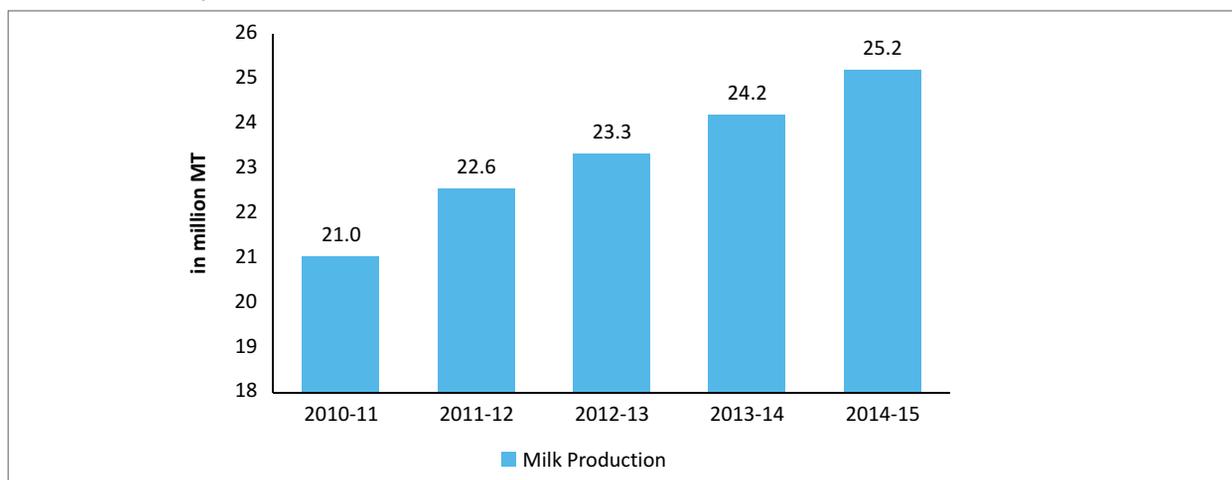
3.1 Dairy Industry in Uttar Pradesh

Uttar Pradesh (UP) has always been the top milk producing state in the country and currently 17.2% (25.2 million MT) of India's total milk production comes from UP. The state has largest buffalo (26%) and indigenous cow (15%) population in the country with per animal milk yield of 4.45 kg/day and 2.59 kg/day respectively. UP ranks 10th (5%) in terms of population of cross-bred cattle with per animal average yield of 7.09 kg/day. The contribution of buffaloes, indigenous cows and cross-bred cows in the state's milk production during 2013-14 was about 69%, 18% and 7% respectively.

3.1.1 Milk Production Scenario in Uttar Pradesh

Milk production in Uttar Pradesh has progressively grown over the last five years (2010-11 to 2014-15). During the year 2014-15, milk production in the state grew at 4.1%.

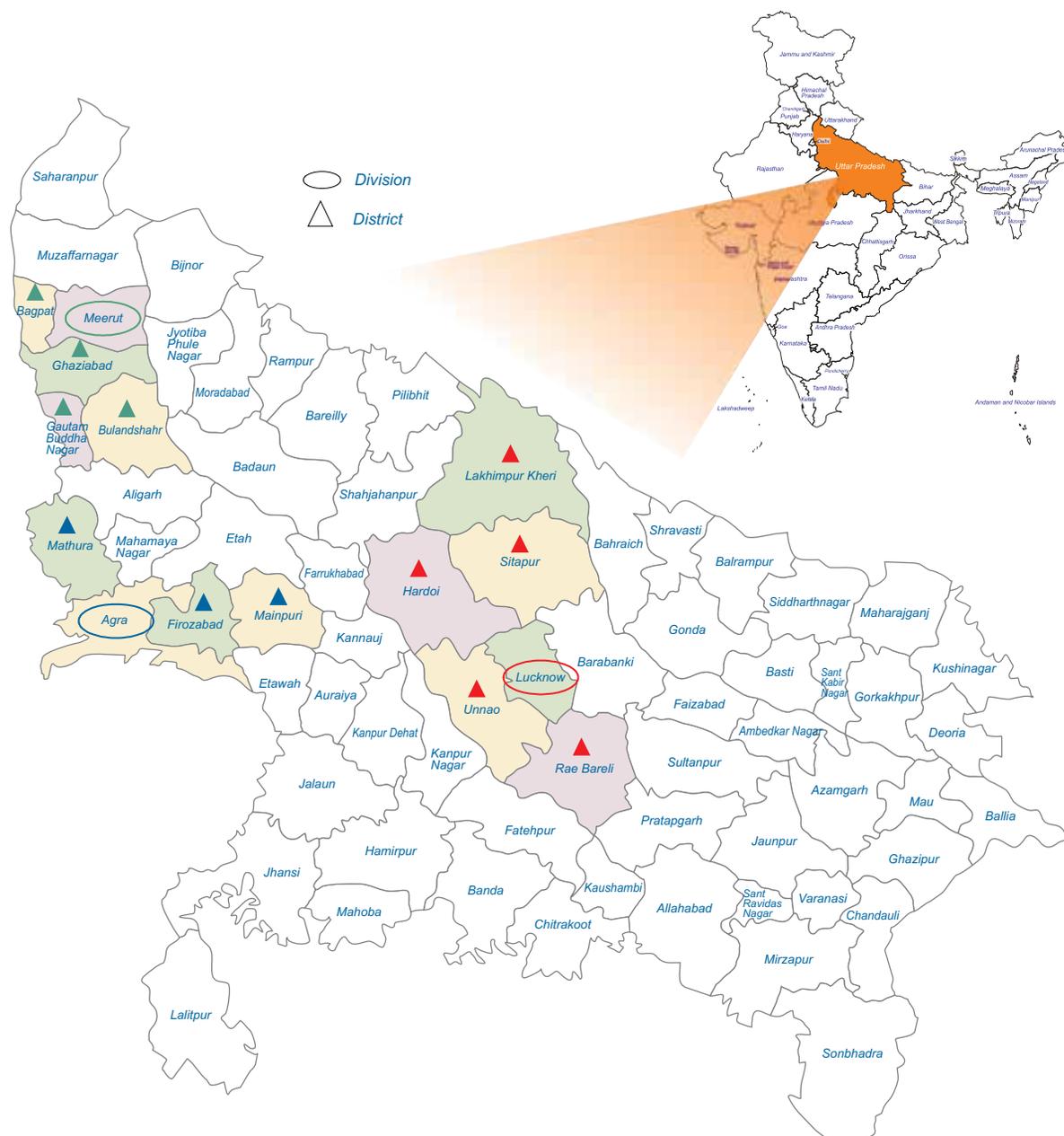
Exhibit 10: Milk production in UP from 2010-11 to 2014-15



Source: Basic Animal Husbandry and Fisheries Statistics, 2014

Meerut and Lucknow division accounted for about 13% and 10% respectively of total milk production of the state followed by Agra, Aligarh and Bareilly division each accounting for 7%.

Exhibit 11: Major Milk Producing Divisions in Uttar Pradesh (2012-13)



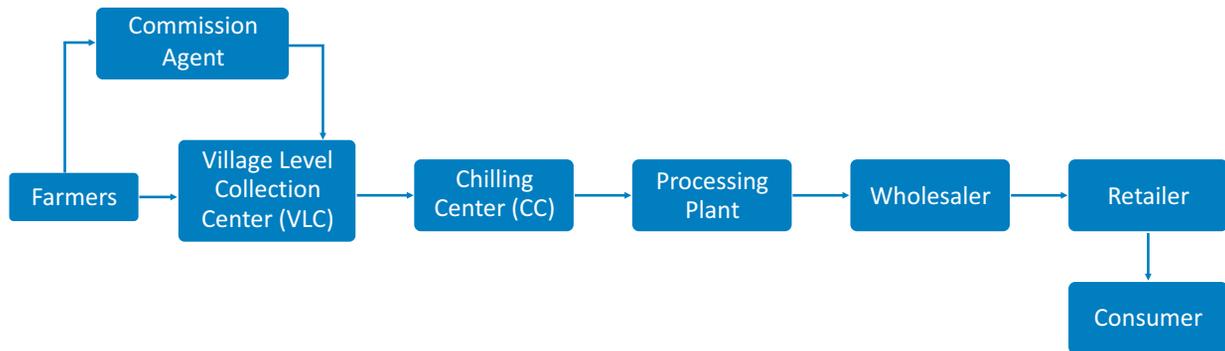
3.1.2 Dairy Value Chain in Uttar Pradesh

Milk production in Uttar Pradesh is approximately 70 million liters per day out of which about 30% of milk is routed through organized channel and rest through unorganized channels like local milk vendors. As per industry estimates, of the marketable surplus² (~50% of milk production), 67% of milk in the state is sold as liquid milk, 10% as traditional Indian sweets, 9% as milk powder, 6% as ghee and rest as curd, paneer, milk drinks and dairy whitener.

² Marketable surplus refers to the milk sold by farmers after their consumption either through organized or unorganized channel.



Private players in the state procure milk either through contractors and/or directly from farmers. Earlier the processors used to procure milk only from contractors but with increased focus on milk quality major companies like VRS Dairy, Gopaljee, C P Milk and Namaste India have now shifted to procurement of milk directly from farmers along with procuring milk from contractors. Dairy value chain of private players in Uttar Pradesh is depicted in the flow diagram below:



Farmers and Village Service Providers (VSP) – Majority of farmers in Uttar Pradesh are small, marginal or landless labour having one or two milch animals only. Farmers bring milk to Village Level Milk Collection Centers (VLCs) where it is collected in cans after testing. Farmers are paid basis Fat and SNF content in the milk. On an average farmer’s brings 5 liters to 10 liters of milk per day.

VLC is managed by a Village Service Provider (VSP) who is elected in a general village meeting. VSP gets about 4% of milk procurement price as commission. Payment is transferred by processors within 5 to 10 days in VSP account who gives payment to farmers. The processor’s vehicle collects milk twice (morning and evening) daily from VLCs and transports it to Milk Chilling Centers (MCCs). Each vehicle covers a range of ~60-70 Kms i.e. 15 villages. Milk is chilled below 4 degree Celcius at MCC and transported to the plant for processing.

Contractors/Commission Agents – Many companies purchase milk from contractors also. These contractors collect milk from individual farmers and supply it to the plant. The logistics and collection cost is borne by the contractor. But companies are facing challenges in terms of quality of milk while purchasing milk from contractors. Hence many companies are investing in building their own procurement infrastructure.

Processor – Milk from the chilling center is received at the plant post second level quality check at plant dock. Milk is stored and processed in to various products at plant. Mostly private players are selling milk and milk products under their own brand through distributors and retailers.

There are some players in the market like CP Milk and Foods Limited, Umang Dairies , GK dairy which are packaging milk and milk products on tolling basis for brands like Amul and Mother Dairy. In this model, company pays processing, packaging and labor charges to the hired plant.

Wholesaler/Distributor – Packed product is transported to the wholesaler/distributor from the plant. Gopaljee, a major dairy player, has created distribution hubs from where the distributor takes the products and transports to retailers. Milk is generally transported in insulated vans and frozen products like ice cream in reefer vans.

Retailer - A retailer buys from the wholesaler and sells to the consumer. Retailer gives daily demand to the wholesaler and payment is done on a daily basis.

An indicative cost mark-up across milk value chain in the state is given below.

Exhibit 12: Indicative cost mark-up across milk value chain in UP

Milk	Cumulative Price (INR per liter)
Procurement price from farmers (6.5% Fat & 9% SNF)	36.0
Procurement price for Full Cream Milk (6% Fat and 9% SNF)	33.2
Transportation charges from village to chilling center	1.2
VSP commission	1.4
Cost of capital investment	0.5
Procurement manpower cost	0.4
Chilling cost	0.5
Transportation cost from chilling center to plant	0.6
Processing cost	3.0
Dairy profit margin	4.0
Distributor Purchase Price	44.8
Distributor margin	1.0
Retailer Purchase Price	45.8
Retailer margin	2.0
Consumer Price	48

Source: Industry Sources

Additional wastages happening at wholesaler, retailer level are covered within the margins. These wastages are difficult to quantify as they differ from case to case basis.

3.1.3 Milk Processing Infrastructure in Uttar Pradesh

The total registered milk processing capacity in UP was 25 million liters per day as on 31st March 2011. Majority of the milk processing capacity in the state was under private sector (22.6 million liters per day). As per industry discussions, over the last 5 years, many small scale processing plants have come up in the state. These plants are generally setup by players who used to procure and supply milk to dairy plants. Namaste India is one the major private player which started its operation in 2013. Other major players like VRS Dairy, Gopaljee Dairy are expanding their processing facilities for diversifying in to new product categories and packaging formats. Major investments are also happening to establish and strengthen milk procurement infrastructure.



Some of the major private players operating in the state are given in the table below.

Exhibit 13: Major private milk players operating in UP

S No.	Name of the Company	Corporate Office	Plants	Installed Capacity in UP/ Total (LPD)	Products	Brand Name
1	VRS Foods Limited	New Delhi	Sahibabad, Sandila, Gulaothi (Uttar Pradesh), Malanpur (Madhya Pradesh)	2,500,000/3,500,000	Milk, Butter, Ghee, Paneer, Lassi, Dahi, Misthi Doi, SMP, WMP, Milk, Edible Grade Casein, Lactose, Demineralized Whey Powder, Butter, Ghee, Paneer, Lassi, Dahi, SMP	Paras, Paras Premium
2	Kwality Dairy India Limited	New Delhi	Softa, Palwal (Haryana) Bakra Mandi, Ajmer (Rajasthan) Sharanpur & Bulansahar (UP)	500,000/3,000,000	Ghee, Curd, Paneer, Milk, UHT Milk, Dairy whitener, Instant Dairy Creamer, SMP, Pasteurized Table Butter, Yoghurt, Sweet and Flavored Milk	Dairy Best
3	Sterling Agro Industries Ltd.	New Delhi	Kundli, Sonapat (Haryana) Malanpur (Madhya Pradesh) Kasganj (Uttar Pradesh)	1,200,000/2,800,000	Skimmed Milk Powder, Instant Skimmed Milk Powder, Partially Skimmed Milk Powder, Full Cream Milk Powder, Instant Full Cream Milk Powder, Butter Milk Powder, Instant Fat Filled Powder, Dairy Creamers, Dairy whiteners, all kind of Blended Milk Powders, Ghee, White Butter & Butter oil	Nova, A-One
4	Bhole Baba Milk Food Industries Limited	New Delhi	Agra, Mathura (Uttar Pradesh)	2,600,000/2,600,000	SMP, Ghee, Butter, Packaged Milk, Lactose, Whey Powder	Krishna
5	Milkfood Limited	New Delhi	Patiala (Punjab) Moradabad (Uttar Pradesh) Kapurthala & Hamira, Jalandar (Punjab) Bahadurgarh (Haryana)	500,000/1,500,000	Ghee, Dairy Creamer, SMP, WMP, Casein (Edible/Acid), Demineralized Whey Powder	Milkfood
6	G K Dairy and Milk Products Pvt. Ltd	New Delhi	Faridabad (Haryana) & Agra (Uttar Pradesh)	NA/1,400,000	Milk, Ghee, SMP, WMP, Butter, Cream, Flavored Milk, Curd, Lassi, UHT Milk	Gopaljee, Farm Fresh

S No.	Name of the Company	Corporate Office	Plants	Installed Capacity in UP/ Total (LPD)	Products	Brand Name
7	Gopaljee Dairy Foods Pvt. Ltd.	Noida, UP	Bulandshahar (Uttar Pradesh)	1,000,000/1,000,000	Butter, Ghee, SMP, Paneer, Curd, Flavored Milk, Milk	Ananda, Dairy India, G +, Gaudhan
8	Umang Dairies Ltd.	New Delhi	Gajraula (Uttar Pradesh)	900,000/900,000	Ghee, Milk Powder, Dairy Whiteners, Vending Premix, Fresh Cream	Dairy top, Umang, White Magik, Milk Star
9	Namaste India Foods Pvt. Ltd.	Kanpur, UP	Shivrajpur, Kanpur Nagar (Uttar Pradesh)	900,000/900,000	Milk, Butter Milk, SMP, Dairy Whitener, Ghee, Paneer	Namaste India
10	Anik Industries Ltd.	Indore, MP	Etah (Uttar Pradesh) & Dewas, Indore (Madhya Pradesh)	400,000/900,000	Ghee, SMP, Dairy Mix, Mango Drink, Dairy Whitener, Whole Milk Powder	Anik, Saurabh
11	Taj Milk Foods (P) Ltd.	New Delhi	Moradabad (Uttar Pradesh)	600,000/600,000	Dairy Whitener, Ghee, SMP, WMP, White Butter, Table Butter, Dairy Mix	Dairy Diamond
12	Nagar Dairy Pvt. Ltd.	Noida	Ghaziabad (Uttar Pradesh)	600,000/600,000	Ghee, SMP, Milk, Curd and Butter Milk (Job work for GCMMF)	Nagar
13	Mahaan Proteins Ltd. (Enhance Proteins Ltd.)	New Delhi	Kosi Kalan, Mathura (Uttar Pradesh)	600,000/600,000	Whey Proteins, Edible Casein, Lactose (pharma and edible grade), Ghee, Butter Milk Powder, Protein Concentrates, Hydrolyzed Proteins, Dairy Whitener, Cheese	Mahaan/ Enhance
14	Creamy Foods Limited (An associate company of SMC Foods Ltd.)	New Delhi	Khurja, Bulandshahr (Uttar Pradesh)	550,000/550,000	Ghee, Dairy Whitener, SMP, Butter	Madhusudan, Double Cow, Vasudev
15	Goldline Milk Food Limited	New Delhi	Kundli (Haryana) & Sikandrabad district Bulandshahr (Uttar Pradesh)	NA/500,000	Milk, Ghee, SMP	Dairy Fresh
16	C P Milk and Food Pvt. Ltd.	Lucknow	Lucknow (Uttar Pradesh)	500,000/500,000	Milk, Butter, Ghee, Curd, Butter Milk, Skimmed Milk Powder, Lassi	Gyan
17	Param Dairy Ltd.	New Delhi	Bulandshahr (Uttar Pradesh)	500,000/500,000	Milk, White Butter, Ghee, SMP, Paneer, Flavored Milk, Chhach	Param
18	Farmgate Agro Mich Pvt. Ltd. (Formerly known as Daily Foods India)	New Delhi	Kundli, Sonapat Distt (Haryana) Hapur (Uttar Pradesh)	NA/500,000	Ghee, Butter, Dairy Whitener, SMP, Full Cream Milk Powder, Instant Full Cream Milk Powder, Butter Oil	Rajat Premium, Rajat Gold, Dairy Angel



S No.	Name of the Company	Corporate Office	Plants	Installed Capacity in UP/ Total (LPD)	Products	Brand Name
19	Tasty Dairy Specialities Ltd	Kanpur	Jainpur (Uttar Pradesh)	400,000/400,000	Liquid Milk, White/ Salted Butter, Ghee, SMP, WMP, Paneer, Khoa, Peda, Instant Gulab Jamun Mix	Ujjwal, Shikhar, Verifresh
20	Shyam Dairy Products	Allahabad	Allahabad (Uttar Pradesh)	400,000/400,000	Milk, Ghee, SMP	Shyam
21	Premier Agri Foods (P) Ltd	Bareilly, UP	Bareilly (Uttar Pradesh)	400,000/400,000	SMP, WMP, Ghee, Butter, Dairy Whitener, Dairy Creamer	Prayag Gold
22	Ekta Dairy Private Limited	Fatehpur, UP	Fatehpur (Uttar Pradesh)	400,000/400,000	Liquid Milk, Pure Ghee, White Butter, Dairy Creamer, SMP, Skimmed Milk Concentrate	Navdeep Premium
23	Continental Milkose India Limited	New Delhi	Noida (Uttar Pradesh)	350,000/350,000	SMP, Milk Powder, Dairy Whitener, White Butter, Ghee, Malt based Food with Cocoa, Malt based Food without Cocoa, Health Energy Drink, Malted Milk Food with Cocoa, Weaning Food	Kirti, Gold Milk, Golden Heights
24	Keshav Milk Products Pvt. Ltd	New Delhi	Bareilly (Uttar Pradesh)	400,000/400,000	SMP, WMP, Plain and Salted Butter, Ghee, Concentrate Milk, Mawa	Dairy Foods, Krishma
25	Ajanta Raj Proteins Limited	Agra, UP	Fatehbad & Manikpura, Agra (Uttar Pradesh)	400,000/400,000	Butter, Ghee, Milk Cream, SMP, WMP	Mohak, Kamdhenu, Gold, Ajanta Premium
26	SMC Foods Ltd.	New Delhi	Saharanpur (Uttar Pradesh)	300,000/300,000	Ghee, Dairy Whitener, SMP, Curd, Paneer	Madhusudan, Double Cow, Vasudev
27	Dairy India (Earlier Shreeji Milk Foods Pvt. Ltd.)	New Delhi	Gajraula (Uttar Pradesh)	300,000/300,000	Butter, Ghee, Cream, SMP	Gaudhan
28	Kirpa Ram Dairy Pvt. Ltd.		Ghaziabad (Uttar Pradesh)	250,000/250,000	SMP, Ghee, Butter, Concentrated Milk	Liladhar
29	Samprash Foods Pvt Ltd.	Aligarh, UP	Aligarh (Uttar Pradesh)	200,000/200,000	Ghee, Butter, SMP, WMP, Dairy Whitener	Samprash
30	Harbansh Lal Food's Private Ltd.	New Delhi	Meerut (Uttar Pradesh)	150,000/150,000	Ghee, SMP, Instant Dairy Whitener, Full Cream Milk Powder, Instant Full Cream Milk Powder, White Butter, Cream	Padamshri

Source: Industry Sources, Various News Articles, Company Websites

3.1.4 Recent Dairy Sector Developments in Uttar Pradesh

Many private players are establishing milk processing plants in UP. Few existing players like VRS Dairy and Gopaljee are expanding their processing capacity. Major private players are mainly doing investments in expanding their milk procurement infrastructure or diversifying into new product categories like flavored milk, curd, UHT milk etc. Cooperatives like AMUL are also expanding in a big way in UP. Some of the recent dairy sector developments in the state are given below.

- Banaskantha District Co-operative Milk Producer's Union Ltd (Banas Dairy), a member union of the Gujarat Cooperative Milk Marketing Federation (GCMMF) that markets AMUL brand is establishing two plants of 0.5 million liters per day each in Lucknow and Kanpur in Uttar Pradesh.
- Banas dairy is also planning to establish a processing plant in Varanasi of 500,000 liters per day processing capacity expandable to 1million liters per day.
- ITC is planning to establish a milk processing unit in Uttar Pradesh in coming years.
- VRS Foods has invested around INR 3 billion for expansion of its dairy unit in Hardoi district in central UP from 350,000 liters per day to 1million liters per day of milk.
- Large players like VRS, Bhole Baba Dairy, established for quite some long time with capacities ranging from 2.5-3.5 million liters per day, have started with manufacturing of by-products like casein. However, due to recurrent export ban policies and lower international prices, these processors are looking looking at diversification into other products such as cheese, curd and flavored milk.
- Parag Milk Foods is foraying into UP market with Go products and 'Gowardhan Ghee'. The company is targeting INR 5 billion (USD 75 million) business from the state by 2017.

Anil Kumar Agrawal, AVP, V.R.S. Foods Ltd.

"Uttar Pradesh is highest milk producing state in the country. In 2014 -15, milk production in Uttar Pradesh was 25.2 million tonnes which accounts for 17.2% of the total milk produced in the country. In the last decade milk procurement pattern has changed a lot and now in most of the villages milk is purchased directly from the farmers by the companies.

In the coming years, milk procurement will become the single-most critical link in the dairy supply chain. Obtaining direct supplies of quality milk will require significant investment and long-term commitment, with dairy companies having to explore various models to strengthen their positions in upstream linkages.

As procurement from small and marginal dairy farmers will increasingly become a challenge for milk processors, the industry will see the emergence of farmer-owned dairy farms, with herd sizes ranging from 50 to 300 cattle.



Milk processors and other stakeholders in the chain will be key to develop medium-scale farmer-driven dairy farms. Dairy sector in UP is on a fast growth track due to elastic demand, economic growth and increasing preference for branded dairy products. Rising consumption coupled with better margins in the value added dairy products are driving growth and higher profitability for dairy players. As per Industry estimates, the share of value added dairy products in the milk and milk derivative segments is growing currently in UP at around 25% every year and is expected to grow at the same rate until 2020.

As Uttar Pradesh is having good source of water from rivers Ganges and Yamuna with availability of borewell water also at most of the places, green fodder is available almost throughout the year and farmers are willing to increase the milk production. Moreover, there is significant Government support for establishment of new projects in the form of various different schemes.”

3.2 Dairy Industry in Andhra Pradesh and Telangana

The state of Andhra Pradesh was bifurcated on 2nd June 2014 to form Telangana. However, most of the data available is for the combined states of Andhra Pradesh and Telangana (AP&TS). As such, across the document, we have referred to data for the two states combined as AP&TS data. For the components, where data was available for the states separately, it has been additionally provided and mentioned as Andhra Pradesh (AP) or Telangana (TS) data respectively.

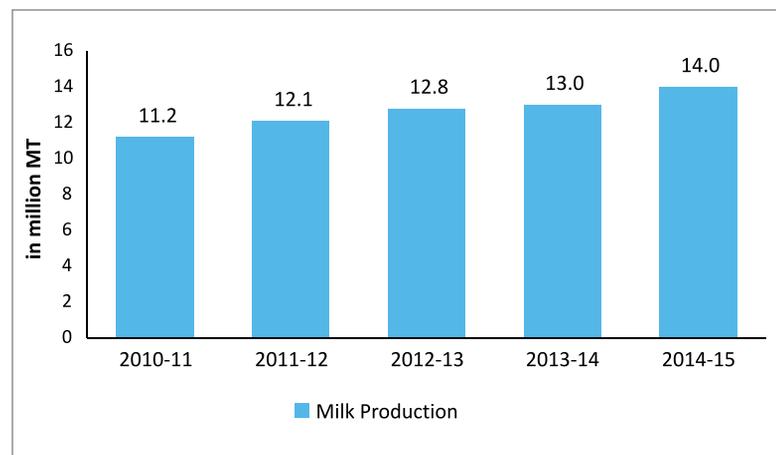
Andhra Pradesh and Telangana (AP&TS) together contribute 9.5% of India’s total milk production. Andhra Pradesh Dairy Development Cooperative Federation Ltd. (APDDCF) is the state cooperative which is making milk and milk products under the umbrella brand “Vijaya”.

AP&TS has buffalo population of 5.4 million ranking 2nd and indigenous population of 1.6 million ranking 9th in the country. The contribution of indigenous cows, cross-bred cows and buffaloes in milk production during 2013-14 was about 9%, 20%, 71% respectively.

3.2.1 Milk Production Scenario in Andhra Pradesh and Telangana

AP&TS are together the third largest milk producers among the states in India with total production of 14 million tons during 2014-15. AP contributed 9.7 million tons and Telangana contributed 4.3 million MT of milk in the year 2014-15. The annual growth rate of milk production for the combined states of Andhra Pradesh and Telangana during 2014-15 stands at 6.5%.

Exhibit 14: Milk production in Andhra Pradesh and Telangana from 2010-11 to 2014-15



Source: Economic Survey Andhra Pradesh 2014 -15

Milk Production in Andhra Pradesh and Telangana: (in Million MT)

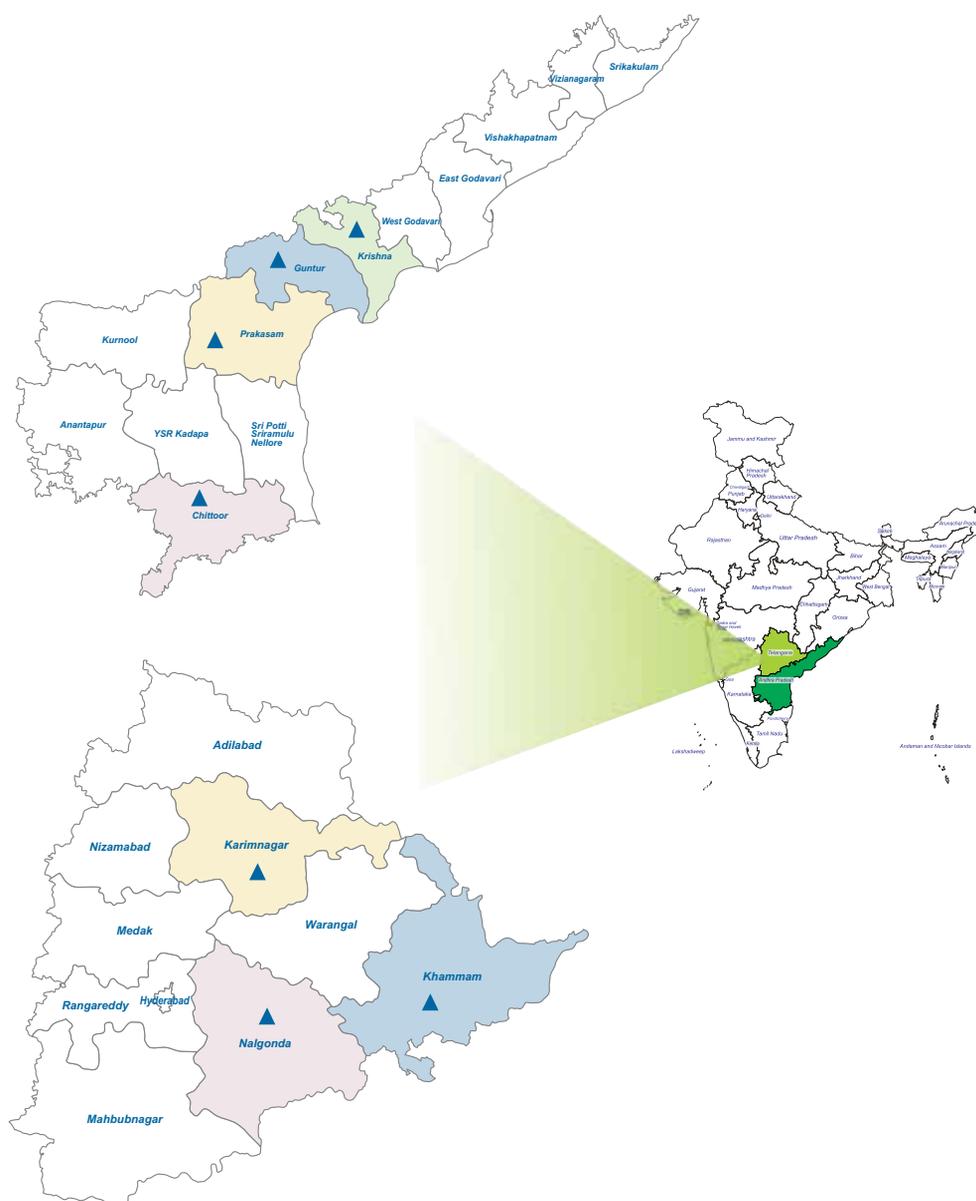
	2012-13	2013-14	2014-15
Andhra Pradesh	8.8	9.1	9.7
Telangana	3.9	3.9	4.3

Source: Economic Survey Andhra Pradesh 2014-15, Annual Report NDDB 2014-15, YES Bank Analysis

Krishna, Prakasam & Guntur are major milk producing districts contributing 11% each to milk production in AP followed by Chittoor (10%), East Godavari (9%) & West Godavari (9%).

In Telangana, major milk producing districts are Karimnagar (16%), Nalgonda (15%) and Khammam (14%).

Exhibit 15: Major milk producing districts in AP & Telangana (2014-15)



Source: Andhra Pradesh Food Processing Society, Statistical Yearbook 2015, Government of Telangana



3.2.2 Dairy Value Chain in Andhra Pradesh & Telangana

AP&TS are together the third largest milk producers among the states in India. The growth rate of milk production in combined states of Andhra Pradesh and Telangana is one of the highest in India at approximately 6-8% per annum. There are five main milk marketing channels in AP&TS. i.e.:

- The government cooperatives
- Mutually aided cooperative societies
- Private formal sector
- Informal sector
- Direct marketing

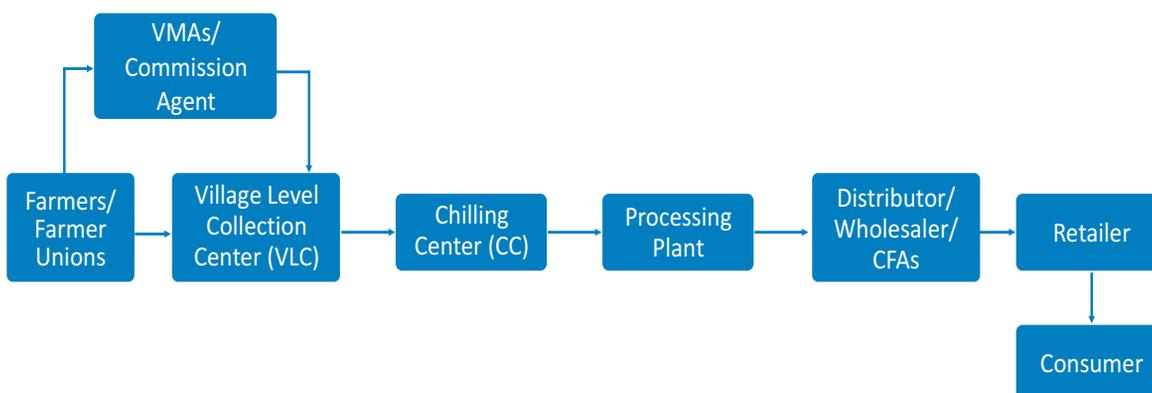
About 28-30% of the total milk production in AP&TS is under organized sector; approximately 40% is retained at village level and 30-32% is being marketed through informal channels. Of the marketable surplus, 60% of milk in the state is sold as liquid milk and 40% as other value added product such as Powder, Curd, Ice-cream, Butter & Cream etc.

Private players mostly outsource their daily milk procurement to “Contractors” who collect milk in the villages

Daily milk collection for private dairy happens through multiple channels such as:

- Bulk Milk Chilling Unit (BMCU)
- Milk Chilling Centers
- Franchisee Bulk Milk Chilling Units

There are approximately 179 BMCUs (2013) in AP&TS held by cooperatives. Some BMCUs are owned or funded by private sectors. Creamline Dairy, one of the major dairy players in the state, procures milk from 86 BMCUs and 38 milk chilling centers. Dairy value chain of private players in AP&TS is depicted in the flow diagram below:



Farmers and Farmer Unions – In cooperatives domain, Self Help Groups (SHGs) plays important role at Village Milk Procurement Centers (VMPCs) and operations of BMCUs at mandal level are also entrusted to SHGs and their federation. Farmers bring milk to VMPCs where the milk is collected in cans after testing. Farmers are paid basis Fat and SNF content in the milk.

Village Milk Activists (VMAs) get incentive which is based on commission. Payment is transferred by processors after a cycle of 10 days to farmers or Farmer Unions. Many private players keep 1 rupee/liter as a deposit in order to avoid poaching of farmers by competitors. This deposit money is paid to farmer quarterly/half yearly basis. Milk is chilled below 4 degree Celsius at BMCUs and transported to the plant for processing.

VMAs/Contractors/Commission Agents – There are various contractors who collects milk from farmer or group of farmers and supply to processing unit. The cost of transportation is normally borne either by dairy or contractor. They normally get a commission based on the quantity of milk.

Processor – After the milk is collected at village level, it is transported to processing unit. The milk is transported in tankers at a low temperature i.e. at 7 degree Celsius. The collected milk is then processed and packaged at processing unit. Based on the planning and market demand, the value added product such as curd, butter, powder is packaged under their brand name. Major private players include Heritage Dairy, Doodla Dairy, Creamline Dairy and Tirumala among others. These players also get their products packed on contract/tolling where they pay processing, packaging and labor charges to the hired plant.

Wholesaler/Distributor/Carrying and Forwarding Agent (CFA) – based on distribution channel such as B2B or B2C, the packed product is dispatched to modern trade, parlors, institutional sales (normally direct delivery) and to retail outlet by agents / distributor/CFA from the plant. Heritage, a major dairy player, has created distribution hubs from farm to fork. Heritage owned over 100 retail outlets, where package milk is sold as in-house brand to consumer. Milk is generally transported in insulated vans and frozen products like ice cream in reefer vans.

Retailer - Wholesaler forward packed product to retailer. Retail outlet may be a traditional shop, kiosk, parlor, modern trades or QSRs etc. Retailer gives daily demand to the wholesaler and payment is done on a daily basis.

Heritage Dairy Snap Shot: Value Chain

Procurement	Bulk Cooling/ Chilling units	Processing & Packaging Unit	Dairy Parlors	Agents & Distributor
1 million LPD	134	14	1,274	5,200

Source: Company Annual Report 2015

**Exhibit 16:** Indicative cost mark-up across the milk value chain in AP & TS

Milk	Cumulative Price (INR per liter)
Procurement price for Full Cream Milk (6% Fat and 9% SNF)	36
Transportation charges from village to BMCUs	1.0
VMAs commission	1.0
Cost of capital investment	0.5
Procurement manpower cost	0.5
Chilling cost	0.5
Transportation cost from chilling center to plant	1.5
Processing cost	2
Dairy Margin	4
Distributor Purchase Price	47.5
Distributor margin	1.5
Retailer Purchase Price	49
Retailer margin	2
Consumer Price	51

Source: Industry Sources

Additional wastages happening at wholesaler, retailer level are covered within the margins. These wastages are difficult to quantify as they differ from case to case basis.

3.2.3 Milk Processing Infrastructure in Andhra Pradesh and Telangana

The total registered milk processing capacity in AP&TS was 7.9 million liters per day as on 31st March 2011. Majority of the milk processing capacity in AP&TS was under private sector (5.7 million liters per day). Some of the major private players operating in the state are given in the table below.

Exhibit 17: Major private milk players operating in AP&TS

S No.	Name of the Company	Corporate Office	Plants	Installed Capacity in AP&TS/Total (LPD)	Products	Brand Name
1	Tirumala Milk Products Pvt. Ltd. (Acquired by Lactalis)	Madhapur, Hyderabad	Gundur in Nellore district (Andhra Pradesh)	1,500,000	Milk, Cream, Ghee, Khoa, Paneer, Butter milk, Curd, Flavored Milk, SMP	Tirumala
2	Heritage Foods (India) Limited	Hyderabad, AP	Across Andhra Pradesh, Tamilnadu, Karnataka & Maharashtra	AP- 500,000 lpd TS- 100,000 lpd Total- 1,500,000	Milk Flavored Milk, White Butter, Dairy Whitener, Ghee, SMP, Doodh Peda, Ice cream, Curd, Butter Milk, Paneer, Cheese	Heritage
3	Dodla Dairy Ltd.	Hyderabad, AP	Nellore, Badvel, Koppal, Palamaner, Penumur, Sattenapally, Sattenpally, Tanuku (AP & Karnataka)	AP&TS – 900,000 LPD	Milk, Curd, Butter Milk, Flavored Milk, Ghee, Paneer, Cooking Butter, Peda, Milk Powder	Dodla

S No.	Name of the Company	Corporate Office	Plants	Installed Capacity in AP&TS/Total (LPD)	Products	Brand Name
4	Creamline Dairy Products Ltd.	Hyderabad, AP	Uppal (Hyderabad), Thiruvallu, Madanapalle, Mallavalli, Hanuman Junction, Ongole, Nagpur MH	AP&TS- 800,000 LPD Total- 900,000 LPD	Milk, Curd, Butter Milk, Flavored Milk, Lassi, Paneer, Cooking Butter, Doodh Peda, Milk Cake, Malai Laddu, Milk Powder, Ice Cream	Jersey
5	Shah Motilal Foods Ltd.	Hyderabad, AP	Chitoor, Prakasam, Shamirpet	Telangana- 460,000	Butter, Cheese Powder, Ghee, SMP, WMP	Shah Motilal Foods Ltd.
6	Nakoda Dairy Pvt. Ltd.	Bangalore, Karnataka	Hyderabad (Andhra Pradesh)	AP- 150,000	SMP, WMP, Dairy Whitener, Dairy Creamer, Whey Powder, Butter, Ghee, AMF, Caseinates, Condensed Milk	Nakoda
7	Durga Dairy	Vijaywada	Guntur	NA	Milk, Ghee, Butter	Durga
8	Model Dairy Pvt Ltd	Krishna District	Krishna	NA	Milk, Paneer, Ghee, Lassi, Milk cake, Kalakand, Curd, Basundi, Butter	Model
9	Agrigold Dairy	Vijayawada	Keesara, Dub Acherai, Kanipakam	AP- 200,000 LPD	Milk, Flavored milk, Butter milk, Toned Milk, Ghee, Fresh cream milk, Curd, Paneer, Butter, Doodh peda, Lassi, Ice cream	Agri Gold
10	Nandi Milk Pvt Ltd	Kurnool	Nandyal	NA	Skim Milk, Toned milk, Double toned milk, standardized milk, Gold milk, Ghee	Nandi
11	Jyothi Dairies Pvt Ltd (Acquired by Hatsun)	Hyderabad	Chittoor, Hyderabad	AP&TS- 200,000 LPD	Milk, Toned milk, Standardized milk	Arokya
12	Sri Vyshnavi Foods Pvt. Ltd.	Khammam	Khammam Chennai	NA	Milk, Curd, Butter,ilk, Ghee, Sweets, Paneer, Lassi, Ice cream , SMP	Vyshnavi

Source: Industry Sources, Various News Articles, Company Websites

3.2.4 Recent Dairy Sector Developments in Andhra Pradesh & Telangana

AP&TS are one of the most dynamic markets going through expansion, consolidation as well as mergers & acquisitions. Both private and cooperative dairies are on expansion mode in terms of milk procurement, distribution and new product launch in the market. APDDCF has also expanded their existing processing capacity. Major private players are mainly expanding their milk procurement infrastructure. Some of the recent dairy sector developments in the state are given below.



- Le Group Lactalis, one of the global dairy giant, got direct entry into one of the fastest growing market via acquiring Tirumala Milk Products Pvt. Ltd in 2014. This deal is one of the largest dairy transactions in India and pegged at USD 275 million. Tirumala have 7 units and is touted to be the second largest dairy players in southern India with processing capacity of 1.7 million liters per day while Lactalis is present in 70 countries with 200 manufacturing units.
- Entry of large players in Andhra Pradesh such as AMUL in Hyderabad, ITC investment plan for southern India. Within the first three months of existence in Hyderabad market, AMUL grabbed a share of 6%. This has also lead to competitive pricing in the market.
- Expansion plan of Godrej Agrovet: Godrej Agrovet bought additional 26% taking its total holding in the Creamline dairy firm to 51%. Godrej Agrovet is one of the largest animal feed companies and is targeting Andhra as a major market for backward integration. Company wants to strengthen existing relationship with farmers for it compounded cattle feed supply. Creamline Dairy also desire to bring in new production technology and improves product distribution and availability.

B V K Reddy, CEO, Dodla Dairy

“Andhra Pradesh and Telangana has the unique advantage of both as milk producing as well as consuming states. As per the 2013-14 statistics, before bifurcation of the state, the annual milk production was 13 million MT making it the 3rd largest milk producing state in the country. Data for the same year also shows that the combined per capita availability of milk in AP & Telangana is 391 gms per day making it the 5th largest in the country.

Despite having this advantage dairy sector in AP & Telangana has its own challenges. The dairy farming still remains predominantly an unorganized sector in AP & Telagana. Small and medium farmers are risk averse, slow to adopting best farming practices such as optimal feeding, animal health & clean milk production.

In the recent months the dairy co-operatives, to get a foothold in the urban and semi-urban markets have triggered a price war which in turn has impacted the margins leading to reduction in the procurement prices. Producing companies, dairy farmers across small – medium and large segments have been adversely impacted due to this unhealthy price war.

Despite having a large number of private dairy product manufactures, who have been in the forefront of bringing in advanced procurement, processing and marketing methods the government policies and programmes at the centre and state level have been excluding private sector from the dairy eco systems which is detrimental to a healthy dairy sector.”

3.3 Dairy Industry in Maharashtra

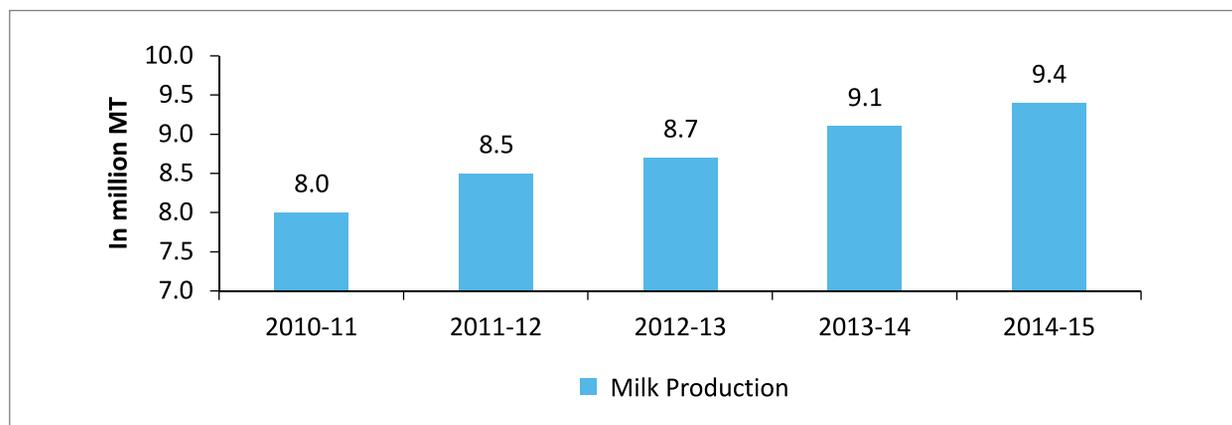
During last two decades, total milk production in Maharashtra has more than doubled from 3.9 million tonnes to 9.4 million tonnes in 2014-15 and the contribution of indigenous cows, cross-bred cows and buffaloes was about 14%, 41%, 42% respectively. The milk production has increased despite the fact that the state has maximum rain fed area amongst major milk producing states. It is partly due to increase in number of in-milk animals across all categories and also due to gradual shift from local cows to crossbred cows. Region wise, western Maharashtra - particularly Ahmednagar, Pune and Kolhapur districts account for 35% of state's milk production.

The total registered milk processing capacity in Maharashtra was 26.6 million liters per day as on 31st March 2011. Majority of the milk processing capacity in the state is under private sector (15.6 million liters per day). Some of the key private players based out of Maharashtra include Parag Milk Foods Limited, Schreiber Dynamix Dairies Limited and Prabhat Dairy Private Limited. Most of these players have adopted the AMUL cooperative model of milk procurement to increase their farmers' base.

3.3.1 Milk Production Scenario in Maharashtra

The state ranks seventh in India in milk production. The annual growth rate of milk production for the state for 2014-15 stands at 3.3%. The CAGR of milk production during 2010-11 to 2014-15 was 3.3% almost at par with national milk production growth.

Exhibit 18: Milk production in Maharashtra from 2010-11 to 2014-15

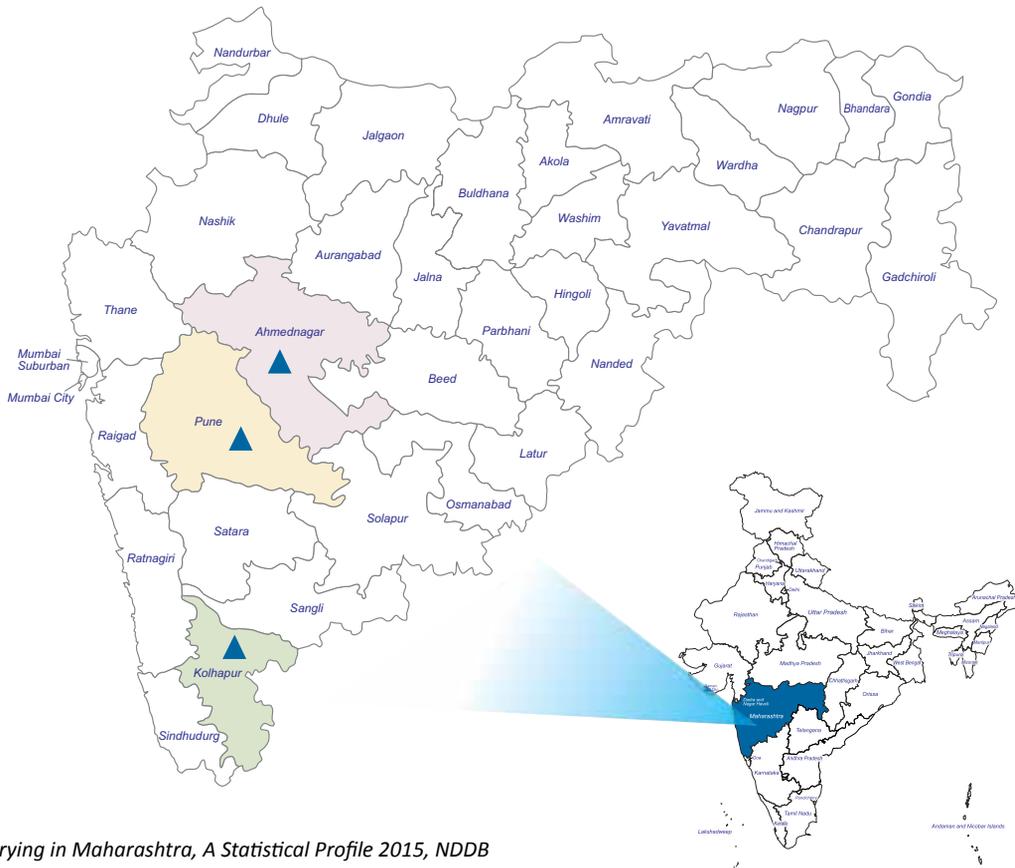


Source: *Dairying in Maharashtra, A Statistical Profile 2015, NDDB*



Ahmednagar, Pune and Kolhapur are the major milk producing districts in Maharashtra accounting for 36% of total milk production in the state.

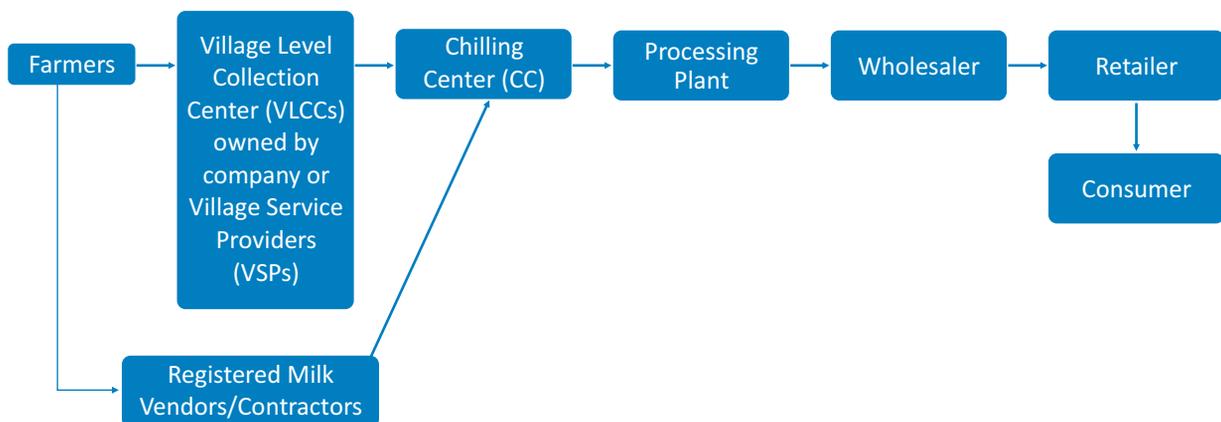
Exhibit 19: Major milk producing districts in Maharashtra (2013-14)



Source: *Dairying in Maharashtra, A Statistical Profile 2015, NDDB*

3.3.2 Dairy Value Chain in Maharashtra

Private players in the state procure milk either through registered milk vendors/contract suppliers or directly from farmers or both. These companies have been procuring milk either through their own collection centres and Bulk Milk Coolers (BMCs) or the ones managed by the service providers across various catchment regions. Dairy value chain of private players in Maharashtra is depicted in the flow diagram below:



Farmers and Village Service Providers

About 79% of the farmers of Maharashtra are small and marginal farmers with land holdings ranging from 0.45 – 1.5 hectares. They have been rearing one or two milch animals only. Farmers bring milk to collection centres owned by the players or are managed by service providers. Village Level Milk Collection Centers (VLCCs) are the centres where the milk is collected in cans after testing. Farmers are paid basis fat and SNF content in the milk.

The companies have been collecting milk through chilling centers and bulk milk coolers established by them. In most of the areas, private processors have established their own chilling centres and Bulk Milk Coolers. However, in certain regions, they have service providers managed centres where the service providers have the responsibility of collecting the milk and the infrastructure is also owned by them. Village Service Provider gets commission. Company vehicle collects milk twice (morning and evening) daily from VLCCs and transport it to Milk Chilling Centers (MCCs).

The companies have been maintaining good relationships with farmers and other milk vendors through various methods including milk quality and quantity based incentives, providing farmers with cattle feed and seeds, assisting with veterinary health-care, vaccinations, artificial insemination and facilitating loans to purchase cattle. Govind Milk and Milk Products, Parag Milk Foods have been setting up new collection centres for their manufacturing facilities and access new districts to procure raw milk.

Contractors/Registered Milk Vendors – Most of the private players like Prabhat, Indapur Dairy, Haldirams, Dinshaw’s Dairy Foods Limited purchase milk from contractors/registered milk vendors at village level which is then transported to nearby chilling centres/bulk milk coolers for chilling. The logistics and collection cost is borne by the contractor. But companies are facing challenges in terms of quality of milk while purchasing milk from contractors. Hence many companies are focusing on building their own integrated model by creating procurement infrastructure.

Processor – Chilled milk is transported to factory through milk tankers. Testing of milk is done at local village levels and also at factory before accepting the same for further processing. Milk is stored and processed in to various value added milk products at plant. Most of the private players are engaged in the processing of value added products like flavored milk, shrikhand, cheese, ghee, cheese, paneer, lassi and ice cream under their own brand. Apart from the retail sales, the companies are also involved in the institutional sales for the products especially SMP, fresh cream, butter, condensed milk and whey powders. These serve as raw material to other food industries like bakeries, confectioneries, pharmaceuticals, sweet makers, hotels. There are players like Scheriber Dynamix which are packaging milk and milk products on contractual basis for brands like Mother Dairy, Nestle etc. In this model, company pays processing, packaging and labor charges to the hired plant.

Wholesaler/Distributor – Over the years, the companies have developed a large distribution network to distribute their products. Through these distributors, the companies are able to serve a large number of retail outlets. Super stockists and dealers servicing various retail counters having a Pan India presence through both traditional and modern trade form the part of distribution channel of various companies like Parag Milk Foods and Govind Milk and Milk Products.



Retailer - A retailer buys from the wholesaler and sells to the consumer. Retailer gives daily demand to the wholesaler and payment is done on a daily basis. The products are also sold to retail customers through modern trade channels, which include supermarkets and hypermarkets along with local grocery shops.

An indicative cost mark up across the milk value chain in the state is given below.

Exhibit 20: Indicative cost mark up across the milk value chain in Maharashtra

Milk	Cumulative Price (INR per liter)
Procurement price for Cow Milk (3.5% fat & 8.5% SNF)	23.0
Transportation charges from village to chilling center	1.0
VSP commission	2.0
Cost of capital investment	1.0
Procurement manpower cost	0.5
Chilling cost	0.5
Transportation cost from chilling center to plant	0.5
Processing cost + Packaging Cost	3.0
Dairy Profit Margin	3.5
Distributor Purchase Price	35.0
Distributor margin	0.8
Retailer Purchase Price	35.8
Retailer margin	2
Consumer Price	38

Source: Industry Sources

Additional wastages happening at wholesaler, retailer level are covered within the margins. These wastages are difficult to quantify as they differ from case to case basis.

3.3.3 Milk Processing Infrastructure in Maharashtra

As per industry discussions, no concrete plans from existing private players on expansion or setting up of green field projects have been observed except few processors like Parag Milk Foods Private Limited and Prabhat Dairy Private Limited who are expanding in value added milk products category. Some of the key private players operating in the state are given in the table below.

Exhibit 21: Major private milk processors in Maharashtra

S No.	Name of the Company	Corporate Office	Plants	Installed Capacity in Maharashtra /Total (LPD)	Products	Brand Name
1	Parag Milk Foods Pvt. Ltd.	Mumbai	Manchar, Pune (Maharashtra) & Palamner (Andhra Pradesh)	12,00,000/20,00,000	Pasteurized Table Butter, Milk, Ghee, Processed Cheese, Mozzarella Cheese, SMP, Dairy Whitener, Gulabjamun Mix, Curd, Butter Milk	Gowardhan, Go & Pride of Cows
2	Indapur Dairy and Milk Products Limited	Indapur	Indapur, Pune	15,00,000/15,00,000	Ghee, Butter, WMP, SMP, Dairy Whitener, Flavoured Milk, Milk, Cow Milk	Sonai, Rajnandan
3	Prabhat Dairy Private Ltd.	Pune	Ahmednagar (Maharashtra)	15,00,000 /15,00,000	SMP, WMP, SCM, Dairy Whitener, Flavored Milk, Ghee, Milk, Butter, Cream, UHT Milk	Prabhat

S No.	Name of the Company	Corporate Office	Plants	Installed Capacity in Maharashtra /Total (LPD)	Products	Brand Name
4	Schreiber Dynamix Dairies Ltd.	Mumbai	Baramati (Maharashtra)	1,000,000/1,000,000	Cheese, Butter, Ghee, Dairy Whitener, Non-Dairy Creamer, Skimmed Milk Powder, Yogurt, Lactose, Casein and Whey Protein Concentrate. UHT Plain and Flavored Milk, Lassi, Juices & other proprietary products	Dynamix
5	Chitale Dairy	Sangli	Sangli (Maharashtra)	7 to 800,000/7 to 800,000	Milk, Butter, Ghee, Dahi, Shrikhand, SMP	Chitale
6	Govind Milk and Milk Products Pvt. Ltd.	Phaltan	Phaltan, Dist Satara (Maharashtra)	6,00,000/6,00,000	Milk, Butter, Ghee, Paneer, Shrikhand, Dahi, Lassi, Butter Milk, SMP, Flavored Milk	Govind
7	Swaraj India Industries Ltd.	Phaltan	Phaltan (Maharashtra)	6,00,000/6,00,000	Milk, Cream, Butter, SMP, WMP, Dairy Whitener	Choice of India
8	Dinshaws Dairy Foods Ltd	Gittikhadan	Nagpur (Maharashtra)	5,00,000/5,00,000	Ice cream, Ghee, Butter, Paneer, SMP, Dahi, Chasj, Lassi, Milk, Shrikhand	Dinshaw's
9	S R Thorat Milk Products Ltd.	Sangamner	Ahmednagar (Maharashtra)	3,50,000/3,50,000	Milk, Dahi, Ghee, Khoa, Paneer, SMP, Shrikhand, Curd and Butter Milk	Gangagiri
10	Dlecta Foods Pvt. Ltd.	Mumbai	NA	NA	Milk, Ghee, Milk Powder, Butter, Edible Lactose, Sweet Whey Powder, Whey Protein Concentrate (35%), Butter, Cheese, Baking Ingredients	Dlecta

Source: Industry Sources, Various News Articles, Company Websites

3.3.4 Recent Dairy Sector Developments in Maharashtra

- Amul dairy had commenced milk procurement operation by organizing cooperative societies in Maharashtra, with commissioning of its INR 1,800 million (USD 27 million) project in Virar with installed capacity of 1 million liters per day. The traffic management system for operations such as conveying of crates, robotic crate filling of milk pouches from high-speed milk packing machines, are controlled through a centralized computer monitoring system. The dairy has installed capacity to manufacture 200,000 liters of ice cream per day with a range of products. It has dedicated facility for fermented products to produce and pack 150,000 liters butter milk and 50,000 liters of curd.
- Maharashtra is planning to become the first state in the country to adopt the royalty mode in its milk processing sector. It is planning to allow private players to run its loss-making milk units and sell its products under the state's brand, Mahananda. The government would charge a royalty. The state plans to charge 18-24 paise for each litre of milk sold under the arrangement. To make the PPP arrangement attractive, the government plans to offer private players an assured consumer base in some sectors.



- Parag Milk Foods, a leading manufacturer and marketer of dairy-based branded food in India, is planning capital investment of INR 1,500 million (USD 22 million) to expand its production capacity at Manchar near Pune and Palamaner in Chittoor district of Andhra Pradesh as well as to introduce new lines of milk-based beverages. The company has firmed up an expansion plan to double the processing capacity to 3.6 million litres and to spread to new markets. The portfolio expansion includes new range of milk based beverages and nutritional value-added products. Part of the funds will be deployed in a research and development facility, which will help the company come out with its unique offerings.
- Prabhat Dairy Pvt. Ltd is looking to raise INR 5-6 billion (USD 75-90 million). The dairy intends to leverage their established brands to expand the retail consumer product offerings, and also increase the availability of their Prabhat, Milk Magic and Flava branded products in both existing markets and new markets across India. The company intends to invest in increasing the manufacturing capacities for their existing dairy products and to develop manufacturing capabilities for new high margin products with significant growth opportunities in India, such as cheese, shrikhand and paneer. The dairy has implemented additional capacity expansion at their Shirampur facility at Maharashtra for the manufacture of mozzarella cheese, cheddar cheese, processed cheese, paneer (cottage cheese) and shrikhand.
- Govind Milk and Milk Products Private Limited has undertaken capex towards existing capacity enhancement in FY15. Existing production capacities of Ghee and Paneer has been enhanced to 15 MT and 2 MT from 8 MT and 1 MT per day respectively. The company has also invested in setting up of BMCs and chilling centers.

Vivek Nirmal, Joint Managing Director, Prabhat Dairy Limited

“Today India is the largest producer of milk and Maharashtra is one of the major market for Dairy Products. In the last few years the demand for milk and milk products has grown tremendously due to changing lifestyle of consumers, growth in the food services industry, increasing urbanisation, rising need for convenience, better health awareness among endusers, etc. Hence many companies are entering the into the dairy Industry arena in Maharashtra.

Most of the dairy companies in Maharashtra have manufacturing excellence but the major issue is at the procurement level and to connect the farmers. Company like Prabhat Dairy has its own infrastructure to procure Milk. This is through setting up village collection points, bulk milk coolers and milk chilling centers to reach out dairy farmers directly. This reduces the dependence on agents/intermediaries where quantity and quality of raw milk is questionable and vary across lean and flush seasons. Setting up such a value chain requires lot of efforts supported by daily interaction with farmers, providing them fodder support and healthcare services. In Maharashtra, the scenario is changing and companies have started focusing on developing the value chain and earning farmers loyalty. In coming years the change can be seen.”

3.4 Key Challenges across States

- Industry players are facing challenge in procurement of good quality milk due to lack of cold chain infrastructure, adulteration, low quality control in the value chain and improper animal management practices.
- Due to regular bans on export of dairy products like milk powder and casein and low price competitiveness in global markets, a lot of processing capacity for these products is lying idle. With less demand of these products in domestic market industry is facing challenge to utilize this idle capacity.
- There are many small scale private dairy players operating in UP which are focusing mainly on pouch milk and are hesitant to make huge investments for value added dairy products.
- Majority of the market in Uttar Pradesh is unorganized with sale of milk and fresh dairy products like curd, paneer and ghee happening through local dairyman shops.
- Large number of small holder dairy farms poses a challenge in milk procurement and it is one of the major reason for high logistics cost thus in turn leading to high milk procurement price.
- Many small scale players are not technologically upgraded which pose a challenge for introduction of new technologies for processing and packaging.
- Marathwada and Vidarbha regions in Maharashtra are characterized by frequent droughts and low yielding livestock. Hence, dairying is more concentrated in western parts of the state. Most of the private players have concentrated their operations in western Maharashtra only limiting their expansion plans.
- Maharashtra has been struggling with droughts and water shortage for the last few years and this has resulted in shortage of both green and dry fodder with deficit of almost 5 million MT per annum of feed nutrient (expressed in dry matter form). Large scale commercial dairy farms with cross bred cows have been adversely affected in wake of increasing feed and fodder cost on account of these issues.
- High capital investment in dairy farm machinery has adversely impacted viability of large scale dairy farms.

3.5 Potential Opportunities in Post Harvest Dairy Value Chain in Selected States

In UP majority of the market (~70%) is still unorganized thus providing a huge opportunity as consumers are shifting towards packaged products. A large percentage of players in UP are small scale manufacturing milk and traditional dairy products (curd, butter milk and paneer) and generally install Indian machinery except for some major technical component.

AP&TS have taken dairy sector as one of the key areas of investment. There are ample opportunities in both backward and forward linkages of dairy value chain. Still, a major share of milk product is marketed through informal and under unorganized sector. Private sector in AP&TS is going through investment across dairy value chain from procurement to distribution. Milk procurement and storage, new value added dairy products, innovative packaging, cold chain and new processing technologies offer tremendous potential for technology suppliers, processors as well as service providers.



Basis discussion with major technology suppliers and industry players following opportunities have been identified in post harvest dairy value chain in the state.

Milk Procurement – Cooperatives and private dairy players are investing to establish/expand their back end infrastructure in order to ensure availability of good quality and sufficient quantity of raw milk. Hence there is need for new technologies in storage of raw milk, real time quality assessment, chilling and transportation.

Processing – Companies are diversifying into value added products like cheese, UHT milk, ice cream, flavored milk, whey based products etc. Most of the demand for traditional Indian dairy products like curd, paneer, butter milk is catered by the unorganized sector. With gradual shift of consumer towards packaged dairy products there will be demand for new economically viable technologies for manufacturing of these products.

High pressure pasteurization, lactose free milk for lactose intolerant consumer and other such innovative product is gaining popularity at global level and soon can find its way to Indian market.

Packaging – Better shelf life, enhanced nutrition level and ready to drink categories have revolutionized the packaging segment. Also, in order to attain product differentiation packaging comes in very handy. New technology with economic feasibility can easily find its way to Indian dairy sector.

Asceptic packaging is another area where there is potential for introduction of new technologies. Presently available machinery is highly capital intensive and should run at 10,000 bottles per hour for economically viable operation. Due to high initial investment and large scale many companies are not able to adopt ascpetic packaging.

Effluent Treatment – Indian government and other stakeholders are now very vigilant about air, water and land pollution. The government is also playing an important role in making people aware about environmental policies. Technologies for efficient effluent treatment in dairy plants providing zero discharge has good potential.

Dairy Farm Machinery – High capital investments has adversely impacted the viability of large scale dairy farms in India. Hence, low cost farm machinery is required which will help in automation of farm operations without substantially increasing the cost of milk production.



4 Assessment of Selected Products





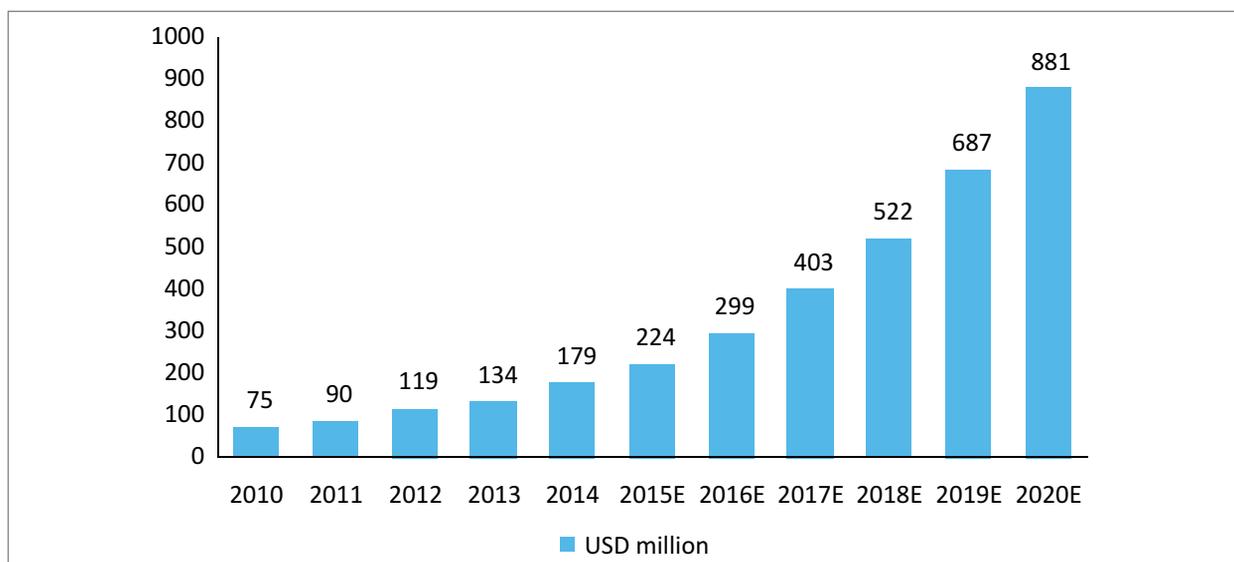
4 Assessment of Selected Products

4.1 Cheese

4.1.1 Cheese Market in India

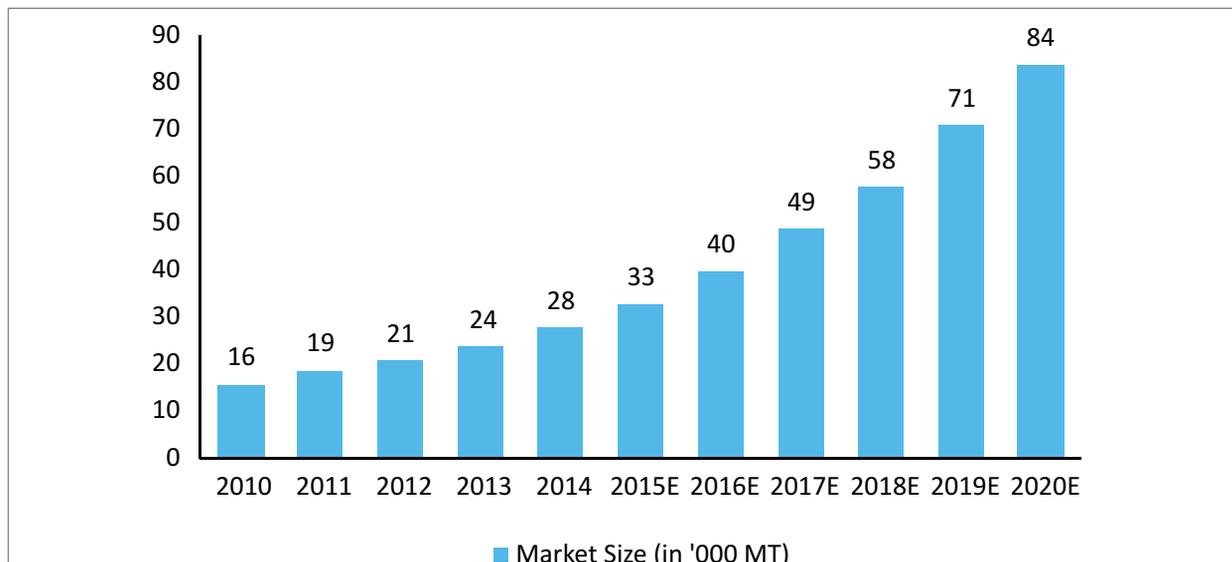
Cheese industry in India is at a nascent stage however, among the value-added dairy products, cheese segment is most promising, both in terms of consumer demand and business profitability. With increase in exposure to different varieties of cheese in food service outlets and increased visibility/access of several varieties of cheese in modern retail stores including hypermarkets and supermarkets, the consumption of cheese is on the rise. Total cheese market in India was estimated at 33,200 MT and valued at USD 224 million in 2015. Both retail and institutional market had equal contribution of about 50% each.

Exhibit 22: Sales value of cheese market in India



Source: IMARC, YES Bank Analysis

Exhibit 23: Sales volume of cheese market in India



Source: IMARC, YES Bank Analysis

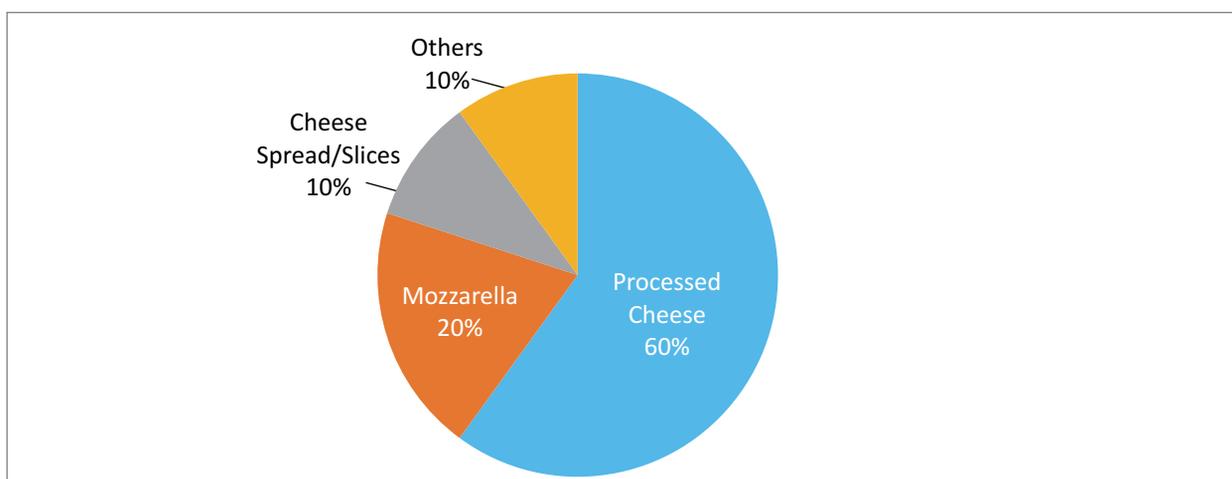
The Indian cheese market grew at a CAGR of 24.5% during 2010 to 2015, reaching a value of USD 224 million. The growth was mainly driven by the urban off-take which accounted for about 80-90% of the total cheese consumption in India. In recent years, demand for cheese has seen a very healthy growth rate, thus attracting both domestic and foreign players.

Total sales value of cheese is expected to grow at a CAGR of 31.5% from USD 224 million in 2015 to USD 881 million in 2020. Similarly, total sales volume of cheese is expected to increase from 33,200 MT in 2015 to 84,000 MT in 2020. Mumbai, Bengaluru and Delhi contribute around 30-40% of the total domestic consumption.

Market Share of Cheese Categories

Processed cheese accounts for 60% of the cheese market, followed by mozzarella and cheese spread / slices accounting for 20% and 10% respectively, and other cheese varieties accounting for the remaining 10%.

Exhibit 24: Market share of cheese categories in India (2014-15)



Source: CRISIL Research



Paneer is an Indian traditional soft cheese which is widely consumed in the country especially in Northern India. There is a huge market for paneer in the country but most of it is met by the unorganized players like local sweet maker or milkman. Domestic paneer market was estimated at INR 275-280 billion (USD 4 billion) in 2014-15 and has expanded at about 15% CAGR from 2009-10. The market is projected to grow at a CAGR of 13-14% over the next three years.

North India currently represents the country's' biggest paneer market accounting for 50% of the total consumption followed by West and Central India (22%), South India (18%) and East India (10%). Within the organized segment, Amul is the market leader, accounting for 28% of the organized paneer market. Other major players in the fresh and frozen paneer market include G. K. Dairy, Parag Milk Foods, Mother Dairy and the Punjab State Cooperative Milk Producers' Federation Limited ("Milkfed Punjab").

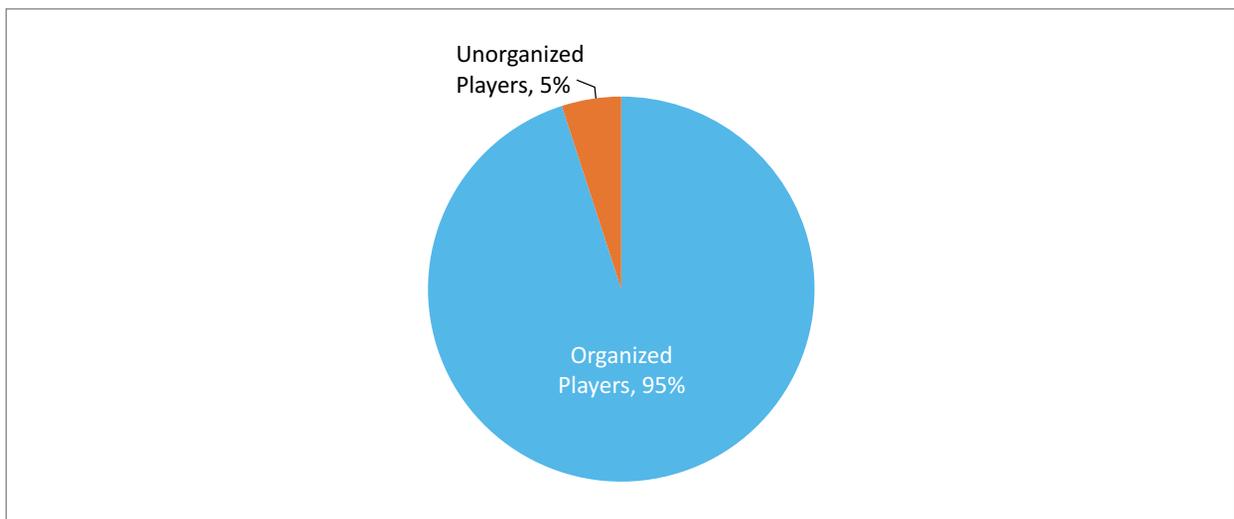
Growth is expected to be quite high in the Indian fast food market (grew by about 29% CAGR from 2011-12 to 2014-15) which use cheese across a wide number of fast food products such as pizza's, burgers, sandwiches is one the key drivers for the growth in Indian cheese market. Thus, with rising demand from the food service industry, growth in disposable incomes and increasing consumption of fast/instant food in India, cheese consumption is expected to continue to grow at a faster pace.

Further the current demand for cheese, both in the institutional and retail segment, is focused in the metro areas of India. With increasing disposable income and shift in food consumption trends in Tier 2 and Tier 3 cities, penetration of cheese is expected to increase rapidly in coming years.

4.1.2 Competitive Landscape

Indian cheese segment is dominated by cooperatives and regional players, with presence of only a few international players. Majority of the players are in organized segment. The imported cheese market currently accounts for a mere 3-5% of the total cheese market; however, this niche segment is also reporting faster growth rates. Dabon International, Krafts, Fromageries Bel and Arla Cheese are a few global brands present in India. Imported brands of cheese are majorly present in metropolitan cities like Delhi, Mumbai, Kolkata and Chennai.

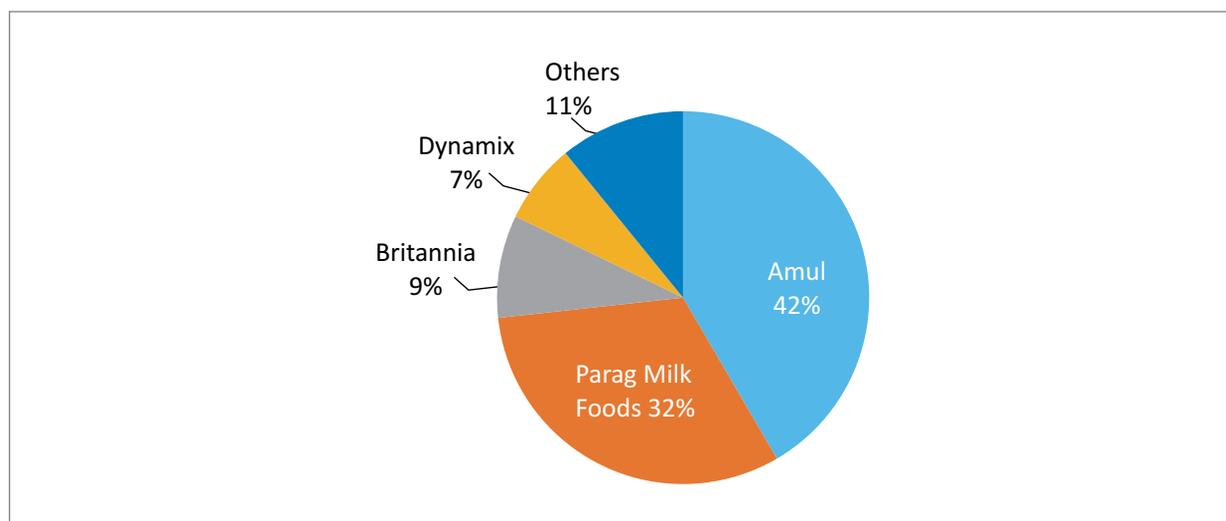
Exhibit 25: Market segmentation of Cheese market in India (2014-15)



Source: CRISIL Research

The key players in the organized segment of the cheese market are Amul, Parag Milk Foods and Britannia accounting for 42%, 32% and 9%, respectively, of the cheese market. Amul dominates the retail segment of the market, while Parag Milk Foods is the leader in the institutional segment of the market. All key players with their own manufacturing capacity have significant B2B portfolio.

Exhibit 26: Market shares of key players in the Indian cheese market (2014)



Source: CRISIL Research

Processing Capacity of Major Cheese Players

Amul which has the largest market share in the cheese segment has cheese production capacity of 40 MT per day. Cheese manufacturing capacity of Parag Milk Foods is also 40 MT per day. Other major players like Britannia, Mother Dairy get their cheese packed at Dynamix Dairy. Private players like Dabon and Prabhat have cheese manufacturing facility of 12 MT/day and 20 MT/day respectively.

Exhibit 27: Processing capacity of major cheese players

S No.	Player	Cheese Processing Capacity
1	Amul	40 MT/day
2	Parag Milk Foods	40 MT/day
3	Modern Dairies	15 MT/day
4	Dabon International	12 MT/day
5	Prabhat Dairy	12 MT/day

Source: Published News Articles and Industry Sources

Parag Milk Foods and Schreiber Dynamix have got the approval to export cheese to Russia. These companies got the requisite approvals from Rosselkhoznadzor, Russia's federal inspection agency, in April 2015 and will now be able to export. Russia has been looking to source milk products from alternative markets after Western nations imposed sanctions on the country for its role in the Ukraine crisis. European countries supplied 250,000 MT of Russia's annual demand of 290,000 MT of cheese before the ban. Currently, Russia is buying cheese from South American countries, Switzerland and through some other channels.



4.1.3 Cheese Variants Available in Indian Market

Exhibit 27: Processing capacity of major cheese players

Company /Brand	Cheese Variants
Amul	Cheddar, Emmental, Gouda, Mozzarella, Processed Cheese
Britannia	Cheddar, Cream, Processed Cheese and Cheese Spread
Gowardhan (Parag)	Cheddar, Mozzarella, and Processed Cheddar
Milky Mist	Cheddar Cheese, Cheese Blends, Cheese Spread, Mozzarella Cheese
Milkana (Dabon)	Creamed Cottage Cheese, Cheese Spread, Cheese Slice
Mother Dairy	Cheeses Slice, Cheese Cubes, and Cheese Spread
Choudhery Cheese Bazar	Mozzarella, Cheddar, Scarmozza, Cheddar, Gouda, Smoked Cheese, Feta, Emmental, Mascarpone, Edam, Ricotta, Parmesan
Flanders	Gouda, Kwark, Scamorza, Bocconcini, Mascarpone, Ricotta, Burrata
Organic Wild Acres	Gouda, Fetta, Ricotta, Halloumi
Passion Cheese	Gouda, Feta, Parmesan, Cheddar, Edam, Mozzarella, Processed Cheese, Emmental, Ricotta
Dairy Craft	Mozzarella, Bocconcini, Mascarpone, Scamorza, Ricotta, Processed Cheese, Cheddar
Exito Gourmet	Mozzarella, Bocconcini, Burrata, Mascarpone, Ricotta, Scamorza, Parmesan, Cheddar, Gouda, Edam, Emmental, Monterey Jack, Processed Cheese
La Ferme Cheese	Mozzarella, Feta, Ricotta, Lofabu, Auroblochon, and Parmesan

Source: USDA report on 'Cheese Demand Rising - New Market Opportunities' September 2015, YES Bank Analysis

Specialty cheese makers like Exito Gourmet, Flander's Dairy, ABC Farms, Himalaya International, Organic Wild Acres and Kodai Dairy are manufacturing different varieties of natural cheese like Cheddar, Gouda, Bocconcini, Ricotta, Mascarpone etc. Most of these players have small capacities ranging from 1-2 MT/day and are selling their cheese to high end retail stores such as Food Hall, Le Marche, Sugar and Spice, Godrej Natures Basket and through their own outlets.

4.1.3.1 Packaging Formats Available

Variety	Packaging Formats
Processed Cheese	Cheese Block(200g,400g, 1 kg) Cheese Tins (400g with an easy open end) Cheese Slices (40g, 200g,400g,750g), Cheese Chiplets (200g, 500g and 1 kg) Cheese Wedges (140g, 160g , 800g) 2.5 kgs institutional packs
Cheese Spread	Tub/Jar 200g(Plain), 100 gm tubes
Mozzarella Cheese	1 kg Pack, 200g pack, 2.5 kgs institutional packs
Shredded Cheese	150g re-sealable plastic pouches
Cheddar Cheese Powder	50g and 150g pack
Cheddar Cheese Slice	200g
Emmental Cheese	400 g pack
Gouda Cheese	250g, 1 kg

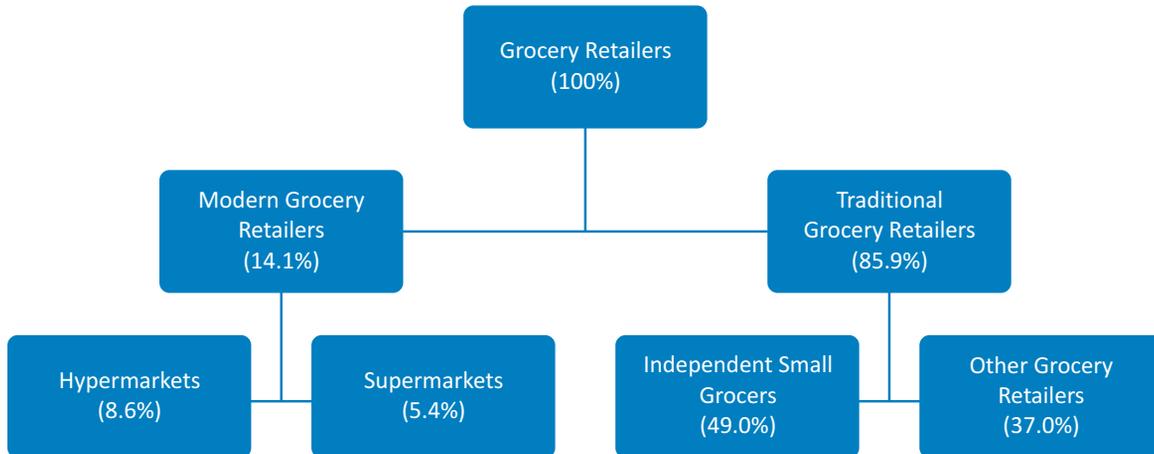
Source: YES Bank Analysis, Company Websites

4.1.4 Key Trends in Cheese Market

- Amul, Parag Milk Foods and Britannia are the key brands which are driving the growth of processed cheese market. Despite growing cheese demand, only 40 to 45 varieties of cheese are available in the Indian market, which is very low compared to other markets (the United States produces over 300 varieties).
- In 2014, the top 3 players in terms of market share were all domestic and accounted for a combined share of 83%. International cheese manufacturers such as Groupe Lactalis, Gebrüder Woerle and Kraft Foods have a negligible presence in the retail market and cater to an extremely niche consumer segment.
- Most of the domestic manufacturers like Parag Milk Foods, GCMMF have introduced different varieties of cheese in terms of packaging (spreadable processed cheese in squeezable tubes) and flavor to cater to customer demands. However, the presence of such cheese varieties remained limited to modern retail stores in urban cities. The success of these launches encouraged other manufacturers including regional cooperatives to diversify and introduce other cheese varieties.
- Most of the manufacturers are likely to focus on expanding their presence in modern retail stores to cater to urban consumers in particular. In addition, modern grocers also have proper refrigeration facilities.
- Many domestic players like Amul, Parag Milk Foods, Prabhat Dairy are planning to expand their existing cheese manufacturing capacity.
- Urban per capita consumption of cheese is 700 grams per year and the national average is 200 grams per year which is much lower than the world average of 7 kgs per year.
- With increased exposure to different varieties and forms of cheese in foodservice and modern retail formats, consumers have started to experiment more with cheese in food.
- The demand of cheese is also driven by young demography and growing urban middle class in India which is willing to try new varieties of cheese due to increased international exposure through travel and quick service restaurants.
- More middle to upper class Indian consumers are buying different varieties of imported and domestic cheese, such as Cheddar, Mozzarella, Parmesan, Emmenthal, Gouda, Ricotta and Feta generally through modern retailers and gourmet grocery stores.
- Gourmet restaurants and five star hotels constitute the major demand for imported cheese.

4.1.5 Distribution Format

Traditional grocery retailers account for a major share in retail distribution of cheese in India. Though cheese would continue to be sold mainly through traditional stores, modern grocers and gourmet grocery stores would continue to become the one stop shop for imported cheese varieties like Cheddar, Mozzarella, Parmesan, Emmenthal, Gouda, Ricotta, Feta, and Mascarpone.



4.1.6 Key Technology Suppliers of Cheese in India

Major dairy equipment suppliers like Tetra Pak and GEA which provide turnkey solutions for dairy plants have tie ups with international raw and processed cheese equipment manufacturers.

International suppliers also work through marketing firms which sell their equipments in India. Brief profile of some of the key players is provided below.

Technology Suppliers	Cheese Manufacturing Specific Solutions Provided
Stephan Machinery GmbH	Stephan Machinery, the market leader in processed cheese technology was founded in 1953 in Hameln (near Hanover, Germany). It offers advanced levels of processing solutions for processed cheese (slices, block), cheese spread, analogue cheese and fresh cheese manufacturing.
DIMA s.r.l	DIMA srl, is specialized in the design, construction and installation of machinery for production of any type of “pasta filata” cheese such as mozzarella, pizza-cheese, provolone, scamorza, bocconcini, kashkaval, oaxaca, ostiepok, analogue mozzarella, kashkaval. Its product range covers the entire production process of “pasta filata” cheeses: milk coagulation, by offering cheese vats of different typologies and capacities, curd slicers, cooking-stretching machines for traditional production with water or with steam cookers, moulding for all product sizes, cooling, hardening and brining lines with automation and patented systems, automatic feeding of the mozzarella, weighing and counting to feed the packaging machines.
OBRAM S.A.	OBRAM is a Polish company which provides comprehensive solutions for food and beverages business with key focus on dairy sector. The company was founded in 1976 as Research and Development Center for Dairy Equipment. In February 2015 Obram was acquired by Tetra Pak - the world’s leading food processing and packaging company. The company offers various solutions on ripening cheese production line, fresh cheese production line, cottage cheese production line alongwith CIP cleaning station, pasteurization sets and automatic system control.

Technology Suppliers	Cheese Manufacturing Specific Solutions Provided
Costruzioni Meccaniche e Tecnologia (CMT)	CMT provides wide range of equipments for production of pasta filata cheese. The company supplies cheese manufacturing vats, curd draining and maturation systems, stretching machines, steam stretching machines, salt dosage systems and hot water heaters, moulding machines, hardening and brining vats etc.
Tetra Pak Scanima A/S	Tetra Pak Scanima A/S is a leading manufacturer of high-shear mixing solutions for a wide range of demanding applications, including food processing, emulsion, and high-viscous ingredients. The company provides mixing solutions used for producing Mayonnaise and Processed Cheese.
Lekkerkerker Dairy & Food Equipment	Lekkerkerker Dairy & Food Equipment, formerly known as Machinehandel Lekkerkerker, is a family business which has specialised in dairy processing and packaging machinery since its foundation in 1996. It is engaged in the installation of new and rebuild production lines and the trade of second hand machinery. The company can deliver used reconditioned equipment for (soft/processed/hard/fresh) cheese production lines, pasteurisation units, filling and packaging machines, Aseptic/UHT/ESL equipment etc. It can be a single machine or a complete production line including startup/installation and technological training.

Source: Company Websites

4.2 Ultra High Temperature (UHT) Milk

4.2.1 UHT Milk Market in India

UHT milk is a high value added dairy product and its market is growing with the increase in household income and urbanization. It is still a niche market but more consumers are experimenting with UHT milk due to its longer shelf life and ease of use. While pouches account for 97-98% of the packaged milk, tetra packs and PET/glass bottles contribute 2-3% and 0.5%, respectively.

Total retail and food service market size of UHT milk in India was estimated at 241,200 MT in 2015. Retail sale had a higher share of 75% while foodservice sale contributed to remaining 25%. Retail market of UHT milk in India was estimated at 181,100 MT translating to USD 0.2 billion.

Exhibit 30: Retail Sales of UHT milk by category in volume and value terms (2015)

	Retail Sales (in '000 MT)	Retail Sales (In USD million)
UHT Milk	181.1	187.4
Fat Free/Semi Skimmed Milk	150.9	154.9
Full Fat Milk	30.3	32.5

Source: Euromonitor

UHT milk has grown at a CAGR of 14% in value terms during last five years. UHT milk is gaining popularity primarily because of convenience and is witnessing high growth in NE India and hilly areas where loose milk is not easily available.

Exhibit 31: % CAGR in volume and value terms during 2010-2015

	% CAGR in Volume Terms (2010-2015)	% CAGR in Value Terms (2010-2015)
UHT Milk	4.6%	14.2%
Fat Free/Semi Skimmed Milk	4.7%	14.4%
Full Fat Milk	4.0%	13.6%

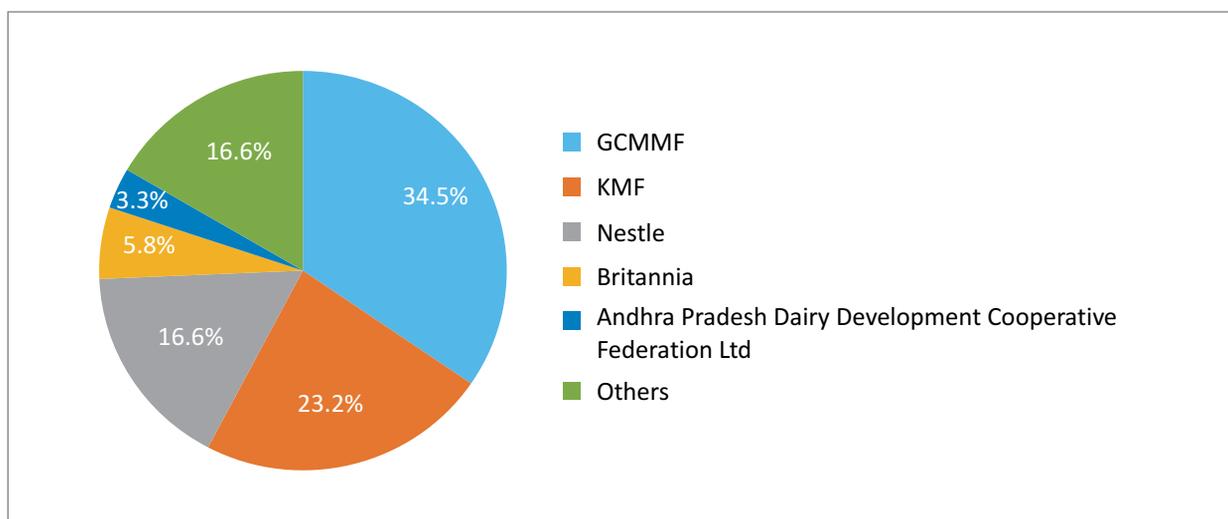
Source: Euromonitor

4.2.2 Competitive Landscape

Two largest dairy cooperatives in India, Gujarat Co-operative Milk Marketing Federation Ltd (GCMMF) and Karnataka Cooperative Milk Producers Federation Ltd. (KMF) hold the largest share of 35% and 23% respectively in UHT milk market in 2015. Their wide distribution network and strong brand image built for their brands AMUL and Nandini, helped them to maintain the lead.

Nestle and Britannia are key private players in the UHT milk segment, which are packaged in tetra packs. UHT milk segment has seen competition increasing with Danone and Parag entering the market in recent years.

Exhibit 32: Company share of retail UHT milk market in % value terms (2015)



Source: Euromonitor

4.2.3 UHT Milk Variants Available in Indian Market

Company /Brand	UHT Milk Variants
Amul	Standard Milk, Homogenized Toned Milk, High Calcium Double Toned Milk, Skimmed Milk, Amul Moti, Homogenized Toned Long Shelf Life Milk in Pouches
KMF	Double Toned Milk, Standardised Milk, Skimmed Milk, Cow Milk
Nestle	Toned Milk, Skim Milk
Britannia	Toned Milk
CavinKare	Standardized Milk, Toned Milk, Double Toned Milk, Diet Milk
Visakha dairy	Standardized milk, Double Toned milk, Toned Milk, Skimmed Milk
Kwality Limited	Standard milk, Toned milk, Double toned milk, Skimmed Milk
Parag Milk Food	Skimmed Milk, Double Toned Milk, Cow Milk
GK Dairy	Double Toned Milk
D'lecta Foods Pvt. Ltd.	Toned Milk, Double Toned Milk, Cow Milk

Source: YES Bank Analysis

4.2.3.1 Packaging Formats Available

Variety	Packaging Formats
UHT Milk	200ml, 500ml, 1 liter Tetra Pak 7gm, 10gm Tetra Pak Cups 250 ml, 200ml, 500ml, 1 litre pouch

Source: YES Bank Analysis

4.2.4 Key Trends in UHT Milk Market

- Increasing urbanization, convenience, growing health and hygiene awareness continued to drive middle class and higher class consumers to shift from loose milk to packaged milk in pouches and tetra pak. While urban consumers have started to buy UHT milk, rural consumers are gradually switching to packaged fresh milk from loose milk.
- UHT milk is perceived as bit expensive and its consumption remained restricted to consumers in urban areas. Urban consumers who prefer weekly visits to hypermarkets or supermarkets for their grocery shopping prefer UHT milk.
- Various state governments have introduced liquid milk as part of mid-day meals in government schools. UHT pouch milk has high shelf life due to which it is being preferred for distribution in schools under the scheme.
- UHT pouch milk market has grown to 500,000 to 600,000 liters per day. Andhra Pradesh Dairy Cooperative and Karnataka Milk Federation are the major players in this segment.
- UHT milk is gaining popularity primarily because of convenience and is witnessing high growth in NE India and hilly areas where loose milk is not easily available.

As per industry sources, one of the key consumers of UHT milk in India is Indian army which need long shelf life products as they serve in far flung areas with difficult terrains. Amul and Verka dairy in Punjab are amongst the major suppliers of UHT milk to army.



4.2.5 Key Technology Suppliers of UHT Milk in India

There are many domestic and international technology suppliers for Ultra High Treatment/Aseptic processing or packaging of milk. For packaging of UHT milk in brick cartons; Tetra Pak has a monopoly in the market. Apart from brick cartons multiple layered pouches are also being used and companies like IDMC, Goma Engineering provide technology solutions for the same.

Basis industry discussion, Tetra Pak patent license for brick packaging has expired recently which has opened up opportunities for other players in the market. Some of the key suppliers in processing and packaging machinery of UHT milk are given below.

Technology Suppliers	UHT Specific Solutions Provided
Tetra Pak India Pvt. Ltd.	<p>Tetra Pak is the world's leading food processing and packaging solutions company. It provides complete solutions for the processing, packaging and distribution of food products including dairy products, juices and nectars.</p> <p>Tetra Pak is pioneer in UHT processing and packaging technology. It provides advanced processing unit for continuous direct/indirect UHT treatment for milk and other food products.</p> <p>Tetra Pak also supplies aseptic packaging systems for packing milk in cartons which are made of renewable materials, recyclable paperboard and no refrigeration is needed when distributed and stored.</p>
GEA India	<p>GEA is one of the largest suppliers of technology for the food processing industry. GEA supplies processing and filling lines for milk and milk based drinks which include aseptic blow moulders, aseptic fillers, container sterilization for aseptic filling, extended shelf life fillers etc.</p>
IDMC	<p>IDMC provides complete pre-processing and aseptic packaging system and ancillary services in collaboration with Stork. IDMC-Stork & IDMC-Zhongya provide aseptic sterilizer & packaging machine while IDMC integrates preprocessing, secondary packaging & ancillary services. The range of products and services in this domain of IDMC includes:</p> <p>UHT lines to handle a wide variety of products from milk to juices, including products with particles, fibers and small pieces.</p> <p>Aseptic storage tanks, flexible linear filler with a capacity up to 24,000 bottles per hour, IDMC- Stork rotary fillers for juice and liquid products with a capacity up to 30,000 bottles per hour, Blow moulding machines with a flexibility to produce varying shapes from 0.2 to 3 litre, open or aseptic, mono or multilayered made out of varied grades of HDPE, PET, PP, etc.</p> <p>The company also provides an integrated solution for aseptic pouches covering milk, juices & all liquid foods.</p>
GOMA Engineering	<p>The company manufactures a wide array of food & beverages processing equipment such as Homogeniser, Pasteuriser, Sanitary Pumps, Cup Filling & Sealing Machine, Skid Mounted Process Modules. GOMA also manufactures UHT plant for packing in 3 layers and 5 layers pouch.</p>
REDA	<p>REDA has developed a large series of milk pasteurizing units and UHT lines for fluid milk and high viscosity products. The company provides solutions for indirect UHT system, direct UHT system, steriflex UHT system (direct-indirect type), plates UHT system and aseptic tanks.</p>

Technology Suppliers	UHT Specific Solutions Provided
Serac India	Serac has been in India for 20 years and operates through their agent Dynatech Marketing. Their main focus is in the dairy market and provides extended shelf life, ultra clean and aseptic filling solutions for liquid dairy products.
Lekkerkerker Dairy & Food Equipment	Lekkerkerker Dairy & Food Equipment, formerly known as Machinehandel Lekkerkerker, is a family business which has specialised in dairy processing and packaging machinery since its foundation in 1996. It is engaged in the installation of new and rebuild production lines and the trade of second hand machinery. The company can deliver used reconditioned equipment for (soft/processed/hard/fresh) cheese production lines, pasteurisation units, filling and packaging machines, Aseptic/UHT/ESL equipment etc. It can be a single machine or a complete production line including startup/installation and technological training.

Source: Company websites

4.3 Potential Opportunities in Cheese and UHT Milk Market in India

Basis industry discussions it has emerged that opportunities exist in low cost machinery for introduction of new packaging formats in cheese and UHT milk market. In cheese, majority of the processing and packaging machinery is procured from international technology suppliers. In UHT milk, packaging technology is primarily sourced from Tetra Pak but companies are diversifying in to different packaging formats like HDPE bottles and gable top packs for manufacturing extended shelf life milk.

Few companies are trying to expand their product portfolio by tying up with international companies. For instance, Parag Milk Foods has tied up with German cheese maker Hochland to import and market their cream cheese brand Almette in India, which will be co-branded as 'Go Almette'. This gives another opportunity for international players to enter into Indian market. Players are also planning to expand their processing capacity in cheese and UHT milk segment. Some of the specific opportunities are listed below.

- Dairy major Amul will invest INR 7.5 billion (USD 112 million) to triple its cheese production capacity. The investment will be made to set up a new cheese plant and to expand production capacity of its existing facility. Out of INR 7.5 billion, INR 6 billion will be invested in setting up of a new plant in Palanpur, Gujarat and INR 1.5 billion in expanding its current cheese processing capacity to 80 MT/day.
- Parag Milk Foods is raising up to INR 3 billion (USD 45 million) from a fresh issue to repay part of its working capital loan, enhance production capacity for cheese, whey and curd and expand its storing, handling and packing capacities.
- Companies are exploring packaging solutions for extended shelf life milk which will be cost effective as compared to UHT milk and have higher shelf life than pouch milk.
- Many companies including Cavin Kare, Nandini and Amul have introduced fresh milk in aseptic plastic pouches which offer a longer shelf life (upto 3-4 months) and packaging costs are lower than Tetra Pak brick carton packaging.
- As per industry sources, few players like Namaste India, Gopaljee, Hatsun Agro, Swaraj India and Punjab Sindh Dairy Products Pvt. Limited are planning to establish production lines for UHT/ Extended Shelf Life (ESL) Milk.



- Schreiber Dynamix has started its UHT plant operation in Fazilka Food Park, Punjab.
- Maharashtra-based private dairy player Prabhat Dairy, is setting up new production lines for value added dairy products like cheese, paneer and shrikhand at its Shirampur facility in Ahmednagar district of Maharashtra through its subsidiary Sunfresh Agro Industries Pvt Ltd. Investment on the cheese factory is expected to be around USD 4.5 million.
- Karnataka Milk Federation (KMF) is also planning to diversify its product portfolio and might plan to enter into Cheese and expand its product range/capacity in long shelf life milk.
- KK Milk Fresh India Limited might also come up with a cheese unit in Kanpur.

Mr. R.S Sodhi, Managing Director, GCMMF Ltd. (Amul)

“In India, cheese is amongst the fastest growing dairy product segments with double digit growth rate in value added dairy products categories. The cheese market in India is growing and we are looking at aggressively tapping this market. Therefore, we are tripling our cheese production capacity to 120 tonnes per day from 40 tonnes at present. We are planning to invest approximately USD 112 million to increase our existing capacity in cheese. A host of technological interventions for introducing new product technologically, packaging formats & supply chain interventions are required in the segment.”

Dr. Harsev Singh, Chief Executive Officer, Reliance Dairy Foods Ltd.

“Both UHT and Cheese market in India has great potential and are likely key drivers for growth of value added segment of dairy industry along with Flavoured Milk and Dahi/Yoghurt. Both of these products have witnessed robust growth in last five years. Changing life style and rising income level of middle class consumers in India is providing much needed impetus for the growth of this segment. While technological intervention is needed for adding more varieties of cheeses; import of packaging innovation will provide required strengths to attract different segment of consumers for strengthening the distribution network. The UHT segment needs more cost effective solutions in packaging of product as it is adding to consumer convenience and addressing their food safety concerns!”

Leon Verdes, Chief Financial Officer, Schreiber Dynamix Dairies Pvt. Ltd.

“Cheese market is growing at upwards of 20% approximately per year, which is mainly driven by India’s young demography and growing urban middle class. Over 70% of the total cheese market is processed cheese, which is mostly used by quick service restaurants and fast food chains for pizzas and burgers, however, demand remains strong for other variants as organized retailers, high-end hotels, and restaurants feature these products to aspirational consumers. The other factor driving the market is the rising awareness of the high nutritional value of cheese.

Schreiber Dynamix believes in constant innovation in various new applications of cheese is required which helps to grow volumes. An underdeveloped and inconsistent cold chain is a major challenge for high-quality cheese distribution.”

“The UHT Milk market is growing at very fast rate. Due to urbanization, young population and apartment culture in the country, people have less time for shopping and prefer to buy groceries in bulk. UHT milk facilitates the consumers to store milk for a long time which is the key reason for rapid increase of UHT milk market; this is driven by an increasing demand for packaged milk and value added products, thus also attracting market players to increase their investment in the dairy business.

Schreiber Dynamix believes the production of UHT milk in Tetra pack is fully safe and free of adulteration which is major challenge in the Indian market. Requirement of huge capital expenditure is a key challenge for the growth of UHT milk.”



Kingdom of the Netherlands

