

# **National Action Plan for Dairy Development**

# **VISION-2022**



**Department of Animal Husbandry, Dairying & Fisheries**  
**Ministry of Agriculture and Farmers' Welfare**  
**Government of India**  
**January, 2018**



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GOVERNMENT OF INDIA  
12 JAN 2018



### MESSAGE

Indian Dairy Sector has played a vital role, not only in providing nutrition support but helped the landless marginal farmers to earn livelihood. Over the decades, the Dairy Sector of the country has put India on the World Map primarily driven by the Cooperative Structure approach.

With gradual shift towards a technology driven environment, there exists a case for adopting advance systems and strengthening the existing one to meet the future challenges.

Vision Document- 2022 is designed to address the problem of low productivity and inadequacy of infrastructure at different levels with greater emphasis over welfare of 70 million milk producers who are mainly landless and marginal farmer comprises of 30% women.

The National Action Plan for Dairy Development 2022 attempts to enhance this endeavour by giving higher priority to judicious use of resources through adoption of modern technologies which will ultimately help all the stakeholders involved including the milk producers. The entire plan has been envisioned with an objective to double farmer's income from dairying. The success of these efforts depends on the active participation of States to implement activities in a systematic and efficient manner. Initiating this effort, Department of Animal Husbandry, Dairying & Fisheries has launched a new scheme namely, Dairy Processing & Infrastructure Development Fund (DIDF) with an outlay of Rs.10881 crore for modernising the existing old dairy infrastructure and creation of new State of art dairy infrastructure.

I complement the officials involved in the formulation of Vision Document- 2022 for Dairy Development and hope that under the guidance of Shri Devendra Chaudhry, Secretary (Animal Husbandry, Dairying & Fisheries), the concerned implementing agencies will work hard to achieve the specified goals in a time bound manner.

  
(Radha Mohan Singh)

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**KRISHNA RAJ**



**MINISTER OF STATE  
FOR  
AGRICULTURE & FARMERS WELFARE  
GOVERNMENT OF INDIA**

## **MESSAGE**

It gives me pleasure that India ranks first among the world's milk producing Nations since 1998. Approximately 70 million rural households in the country are engaged in milk production. Milk contributes close to a third of the gross income of rural households and in the case of those without land, nearly half of their gross income. Organised milk procurement, processing and marketing helps farmers to earn remunerative price and enable them to have better economic, social and nutritional status of living.

Due to increase in population, rise in per capita income, changing lifestyle, food habits, export opportunities etc., the demand for milk and milk products is expected to continue & rise. The demand of milk would be met through domestic sources by increasing the milk production at the pace required through implementation of various schemes in the area of dairy development in the country. At the same time, the country needs to upgrade its infrastructure at the village level particularly for more milk procurement and production of high valued milk products.

It gives me fair amount of satisfaction that Department of Animal Husbandry, Dairying & Fisheries has prepared The National Action Plan for Dairy Development for 2022 to fill the gap in the infrastructure required to handle the increased coverage and milk production not only to meet the demand of milk and milk products but also to fulfil the objective of doubling the farmers income.

I sincerely hope that all the stake holders and individuals involved in the implementation of the action plan will make all efforts to make it a great success.

**(Krishna Raj)**





**DEVENDRA CHAUDHRY, IAS**  
**SECRETARY**

**GOVERNMENT OF INDIA**  
**MINISTER OF AGRICULTURE & FARMERS WELFARE**  
**DEPARTMENT OF ANIMAL HUSBANDRY,**  
**DAIRYING & FISHERIES**  
**KRISHI BHAWAN, NEW DELHI-110001**

## Message

Dairy sector in India has demonstrated a significant growth in past 10 years with milk production increasing at the rate of 4.8% CAGR, reaching 155 million MT in 2015-16. In the same period, the per capita availability of milk in India has increased from 233 gms per day to 337 gms per day. India ranks first in milk production, accounting for 19 % of world production. Livestock in general and dairying in particular play a vital role in the Indian economy and also in the socio-economic development of millions of rural households. Within Livestock sub-sector, dairying is an important economic activity accounting for about 67 percent of the value of output of Livestock sub-sector in agriculture, which is higher than the value of output of wheat and paddy together.

The Indian dairy industry is estimated at around USD 70 Bn in 2014-15, of which the organised sector is about USD 12 Bn. Demand Supply Gap is expected to be prominent over the next few years. Increase in future demand is expected due to higher consumption of value added products. The Union Government has pledged to double the farmers income in next five years. Dairy sector plays an important role towards achieving this mission of the Government.

To fulfill the mandate of the Government this Department has prepared a National Action Plan on Dairy Development. The Plan envisaged increasing the coverage of number of villages from 1.86 lakh to 2.57 lakh by 2022 and 3.2 lakh by 2023-24. The farmer members coverage is envisaged to increase from 16 million to 19 million by 2022 and 28 million by 2023-24 through setting up of village level infrastructure for milk procurement, increasing milk processing & milk product manufacturing and marketing capacities.

National Action Plan for Dairy Development is targeted to increase organised milk handling from 20% at present to 41% by 2022 to 50% by 2023-24. The milk handling by cooperatives has been targeted to increase from 10% to 20% and private sector from 10% to 30%. Based on the National Action Plan, this Vision Document has been prepared.

I express my pleasure on publication of the Vision Document and hope this will show a road map for future development of dairy sector towards doubling of farmers' income and also to fulfil the demand for safe and hygienic milk & milk products to millions of consumers.

A handwritten signature in blue ink, appearing to be 'DC', written over a light blue circular stamp.

**(Devendra Chaudhry)**  
Secretary (ADF)





**MIHIR KUMAR SINGH**



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## FOREWORD

India is the world's largest producer of milk with annual production of about 155.49 million tonnes (2015-16), most of which is consumed domestically by India's 1.2 billion largely vegetarian population for whom milk and milk products are an important part of food and nutritional security. Share of India's dairy export is about 1 percent of the global dairy trade.

2. During the last decade (2001 to 2010), the world milk production increased from 589.5 million tonnes to 745.5 million tonnes, an increase of 26.46%, whereas, milk production in India has grown 51.2%, i.e, from 80.6 million tonnes to 121.85 million tonnes.

3. The rise in per capita income, changing lifestyle, food habits, export opportunities have increased the demand for milk & milk products in the country. On the supply side too, owing to various breed development interventions being implemented and focussed approach expected to be adopted by state departments for implementing various strategies of dairy development across country, milk production is expected to increase by 8.56% every year.

4. National Action Plan for Dairy envisages target of 254.5 Million MT by 2022 and 300 Million MT by 2023-24 from existing 155.5 Million MT requiring an annual growth rate of 8.56% which would lead to increase in per capita availability of milk from current level of 337 grams per day to 515 grams per day by 2022 and to 592 grams per day in 2023-24 addressing the substantial nutritional requirement of growing population. To achieve the desired milk production targets, average In-milk animal productivity would be required to grow annually at the rate of 4.7% to 6.14kgPD by 2022 and to 6.7 KgPD by 2023-24 from existing 4.65 KgPD

5. I wish that this Vision Document will be immensely helpful for the dairy sector involving Cooperatives, Private and Producer Companies in preparing their future plans for dairy development.

  
(Mihir Kumar Singh)



## EXECUTIVE SUMMARY

1. Dairy sector in India has demonstrated a significant growth in past 10 years with milk production increasing at the rate of 4.8% CAGR, reaching 163.7 million MT in 2016-17. In the same period, the per capita availability of milk in India has increased from 233 gms per day to 351 gms per day. India ranks first in milk production, accounting for 20 % of world production. The importance of dairying in a country like India hardly needs emphasizing. Livestock in general and dairying in particular play a vital role in the Indian economy and also in the socio-economic development of millions of rural households. Within Livestock sub-sector, dairying is an important economic activity accounting for about 67 percent of the value of output of Livestock sub-sector in agriculture. The value of output of milk produced in the country (Rs. 5,49,587 Cr in 2015-16) is higher than the value of output of wheat and paddy together.

2. There are three key drivers of increasing milk demand: (i) population growth (ii) urbanization and (iii) income growth. Thus drivers are very strongly in operation presently due to which the demand for milk is expected to continue to rise. Indian dairying has a large and growing domestic market in which the consumption of milk has been rising commensurate with increase in the purchasing power of people, increasing urbanization, changing food habits are life-styles as well as demographic growth. Further, Milk with its varied benefits is the only source of protein for the largely vegetarian population of the country. Further, factors such as increased consumer interest in high protein diets and increasing awareness & availability of dairy products through channels such as organised retail chain are also driving this growth. Therefore, there is need for interventions to strengthen the Indian Dairy Sector in order to meet the rising demand of milk and valued added milk products. This has to be achieved through Cooperative and organised Private sector.

3. Therefore the Department of Animal Husbandry, Dairying and Fisheries (DAHD&F), Ministry of Agriculture and Farmers Welfare, has prepared a National Action Plan (NAP) till 2021-22 and 2023-24 taking into account the existing

coverage of milk potential villages, farmer members, farmers income, growth of milk production, milk procurement, existing milk chilling, processing infrastructure with Cooperatives and MPCs, consumption pattern etc.

4. The NAP has two key goals:

a) To increase the national milk production from 163.7 MMT in 2016-17 to 254.55 MMT by 2021-22 for meeting the increasing milk demand by domestic milk production and also ensuring nutritional security at household level

b) To endeavour to double milk farmers income at farm level by 2021-22 by providing the milk farmer with greater access to the organised milk processing sector

5. The milk production which is envisaged to be 254.55 Million MT by 2021-22 and 300 Million MT by 2023-24 from existing 163.7 Million MT will be requiring an annual growth rate of 9.2%. This would lead to increase in per capita availability of milk from current level of 352 grams per day to 515 and 592 grams per day in 2021-22 and 2023-24 respectively (adjusted for population growth) addressing the substantial nutritional requirement of growing population. To achieve the desired milk production targets, average In-milk animal productivity would also be required to grow annually at the rate of 4.7% to 6.14 KgPD by 2021-22 and 6.7 KgPD by 2023-24 from existing 4.65 KgPD in 2015-16.

6. Currently, 48% of total milk produced is either consumed at the producer level or sold to non-producers in the rural area. The balance 52% of the milk (marketable surplus) is available for sale to consumers in urban centres. Of this 52%, currently, about 40% of the milk sold is handled by the organised sector (Dairy Cooperatives & Producer companies-20% & Private Dairies- 19%) and the remaining 60% by the unorganised sector. In the interests of livelihoods and economic well-being of the milk producers, it is essential to provide rural milk producers with greater access to the organised milk processing sector by increasing their coverage. It has been envisaged that by the end of 2021-22 and 2023-24 the surplus milk available with farmer will be 60% of total production and milk handled by

organised sector of this surplus milk will be 52% & 8% respectively for organised and unorganised sectors.

7. Dairying as an occupation is subsidiary to agriculture and is an important source of livelihood for small and marginal farmers and landless labourers. The Hon'ble Prime Minister has given the vision of to doubling the farmer's income by 2022. To achieve this goal, milk sector can play a key role. Accordingly, in order to achieve higher farmer income through dairying in the country by 2021-22, increased ratio of productive animals in the overall bovine population and increase in productivity level of bovines would be key so as to have increased marketable surplus and hence higher income potential/productivity at the farm level. Assuming a net income of about Rs. 8.63 per litre (20% of milk procurement price i.e. Rs. 43.14 per litre), it has

been estimated that in a period of five years, net income of farmer will be Rs. 1306 per month in 2021-22 from current income of Rs. 516 per month (i.e Rs. 6.44 per litre). However, due to increase in value addition, the income of farmers is expected to increase by additional 6% (30% of liquid milk converted into milk product would attract 20% additional realization and payment to the farmers).

8. The increase in marketable surplus at farm level would need to be procured by the organised sector. Subsequently, this would require creation of additional chilling capacities, milk processing infrastructure along with additional drying capacities & dairy products manufacturing infrastructure and Feed & Feed supplement infrastructure. Details of component wise targets envisaged as per NAP by Cooperatives, Private and Producer Companies is as given below:

Particulars	Processing Capacity (LLPD)	Chilling Capacity (LLPD)	Value added Products (MTPD)	Milk Powder Plant (MTPD)	Cattle Feed Plant (MTPD)
2015-16	1420	767	7918	2961	15662
2021-22	36890	2886	18253	6044	19884
2023-24	5345	4260	20534	8401	21300
Additional requirement (2021-22)	2269	2120	10335	3083	4222
Additional requirement (2023-24)	3925	3493	12616	5440	5638

Total investment requirement for Cooperative, Producer Company and Private Player is given below:

Particulars	Unit	Cooperative				Producer Companies				Private			
		Gap		Investment requirement (Rs in crore)		Gap		Investment requirement (Rs in crore)		Gap		Investment requirement (Rs in crore)	
		2021-22	2023-24	2021-22	2023-24	2021-22	2023-24	2021-22	2023-24	2021-22	2023-24	2021-22	2023-24
Processing Capacity	LLPD	897	1412	17946	28249	112	162	2250	3250	1259	2350	25188	46994
Drying Capacity	MTPD	444	590	666	885	120	150	180	225	2519	4699	3778	7049
Cattle feed plant	MTPD	2022	2699	802	1071	200	240	80	96	2000	2699	800	1103
Value added products	MTPD	3786	5046	946	1262	1008	1262	252	315	5541	6308	1385	1577
Multi Milk Product	Nos	29697	48138	594	963	3600	5200	72	104	46542	81428	931	1629
Visi Coolers	Nos	160857	260746	483	782	19500	28165	58	84	252100	441067	756	1323
Milk Marketing Distribution Tankers (10KL)	Nos	5939	9628	891	1444	720	1040	108	156	9308	16286	1396	2443
Milk Transportation tankers	Nos	3712	6017	557	903	450	650	67	97	5818	10178	873	1527
DCS/MCC	Nos	85021	156874	850	1569	18596	21903	186	219				
Chilling Capacity	Nos	35954	59036	3595	5904	5000	7000	500	700	65027	08637	6503	10864
Working Capital	LLPD	2598	3159	909	1106	315	341	110	119	4072	5344	1425	1870
Transport Subsidy	LLPD	186	301	677	1098	-	-	-	-			-	-
Manpower Development	-	-	-	288	476	-	-	-	-			-	-
<b>Total Investment requirement</b>				29204	<b>45710</b>			3863	<b>5367</b>			43035	<b>76378</b>



# Significance of Dairy Sector

## 1. COUNTRY PROFILE

### 1.1 Geographic and Demographic profile

- 1.1.1 India is the seventh-largest country in the world, with a total area of 3.28 million square kilometres. It is situated north of the equator between 6°4' (8°4' for mainland) to 37°6' north latitude and 68°7' to 97°25' east longitude. The climate of India comprises a wide range of weather conditions across a vast geographic scale and varied topography. It is home to an extraordinary variety of climatic regions, ranging from tropical in the south to temperate and alpine in the Himalayan north, where elevated regions receive sustained winter snowfall. Its climate is strongly influenced by the Himalayas and the Thar Desert.
- 1.1.2 In 2015, the Indian economy was the world's seventh largest based on nominal GDP and is the third largest economy in the World in terms of Purchasing Power Parity (PPP).
- 1.1.3 Housing over 1.2 Billion human population', India is the world's second-most populous country. Indian economy is primarily agrarian with 68% of its population residing in rural areas and depending directly or indirectly on agriculture for their livelihood. State wise total household, rural household and rural population etc provided at **Annex 1**.
- 1.1.4 Currently India is the world's largest producer and consumer of milk accounting for 19% of the world milk production and consisting of about 57 % of world buffalo and 16% of world cattle population. According to the livestock census 2012, the country has 133.2 million adult female cattle and buffalo

and 88.35 million in milk cattle and buffaloes. The average productivity of in milk cattle and buffalo in the country is about 4.65 KgPD (2015-16) which is far below as compared to the productivity levels of In-milk animals in dairy developed nations. In 2012 the average productivity of cows in Israel was 38 KgPD, in the US 32 KgPD, in Canada 29 KgPD, in Denmark 28 KgPD, in the Netherlands 25 KgPD and in France 22 KgPD which is the result of implementation of systematic genetic improvement programmes for longer period of time. Country wise Milk Production is provided at **Annex 2**. State wise MAH, Milk Production, Per capita availability, in-milk animals and productivity etc is provided at **Annex 3**.

- 1.1.5 As per the Economic Survey, 2016-17, Government of India, projected a GDP growth of 6.75% to 7.50% in 2017-18 and projected real GDP growth in 2016-17 at 6.5 per cent. The growth rate for the agriculture and allied sectors is estimated to be 4.1 per cent for 2016-17 which indicates modest pick-up as compared to previous year. Livestock contributes to about 25% of Agriculture & Allied GDP. Milk accounts for about 67% of total value of output from livestock. In 2014-15, value of milk output (₹4923 billion) in India was more than the combined value of Paddy (₹2310 billion) & Wheat (₹1296 billion). State wise GSDP, PCI, Gross Value Added by Livestock Sector is provided at **Annex 4**.
- 1.1.6 Dairying plays a major role in Indian rural economy. Dairying in India is more than a business; it has broader social and

economic dimensions. About 70 million rural households are engaged in dairying, one of every two rural households with women playing a vital role. According to “Situation Assessment Survey”, the livestock sector contributes significantly to rural income—about 26 % in case of the poorest households and about 12% in case of overall rural income. Further, animal holding has been found to be more equitable as compared to land holding as 85% of the Indian farmers, who are marginal, and small, own only 45% of farm land but 75% of bovines.

## 1.2 Indian Dairy Sector

1.2.1 Milk production in India has come a long way over the years from a low volume of 17 Million MT in 1951 to 163.7 million MT in 2016-17.



Currently India is the world's largest producer and consumer of milk accounting for 19% of the world milk production.

1.2.2 Though Dairying is more labour intensive than crop production, it provides a remunerative outlet for family labour. Ample labour and small land base encourage farmers to practice dairying as an occupation subsidiary to agriculture. Further besides being a source of income for rural households, it also ensures nutritional security of the family addressing issues like malnutrition. Studies show that households owning milch animals in rural areas consume almost three times more milk than the families which are not into dairying. Brief profile of dairy sector is indicated in the table below:

**Table 1: Brief Profile of Indian Dairy Sector**

No.	Particular	Unit	Figure
1.	Total Bovine population (LC 2012)	Million	299.6
2.	Adult Female Bovine (LC 2012)	Million	133.3
3.	In-milk Bovine population (2015)	Million	88.35
4.	In-milk animal productivity (2015)	KgPD	4.65
5.	Milk Production (2015-16)	MMT	155.5
6.	Per capita availability of milk (2015-16)	gm PD	337
7.	Rural retention (2015-16)	-	48% of milk production
8.	Marketable Surplus (2015-16)	-	52% of milk production

1.2.3 According to the livestock census 2012, the country has 133.2 million adult female cattle and buffalo. The average productivity of cattle and buffalo in the country is about 4.65 KgPD (2015-16) which is far below as compared to the productivity levels of In-milk

animals in dairy developed nations.

1.2.4 The Indian dairy sector is characterised more by 'production by masses' than 'mass production'. Unlike leading milk producing countries in the world, large proportion (95%) of milk producers in the country hold 1

to 5 animals per household. The demand for milk hitherto has been met largely by huge number of cattle and buffaloes. However, limited availability of feed and fodder resources and implication of climate changes will not permit further increase in cattle and buffaloes population in the country. On the other hand, the vast diverse population of cattle and buffaloes offers great prospects for increasing the milk production, as their productivity are relatively quite low. Thus, the only option to meet the growing demand for milk will be to increase the productivity of cattle and buffaloes and increase the ratio of productive animals in the overall bovine population. State wise category wise number of in-milk animals during 2015-16 is provided at Annex 5.

### 1.3 Role of Farmer Producer Organizations

- 1.3.1 Organisation of producers, especially small and marginal farmers, into Producer Organisations has emerged as one of the most effective pathways to address the many challenges of agriculture but most importantly, improved access to market, investments, technology and inputs. Cooperatives are one form of organizations where the producers amass to an autonomous association voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise. As collectives, these cooperatives (a form of Farmer Producer Organisation) strive towards managing and owning of enterprises related to procuring, processing and retailing of their produce.
- 1.3.2 Further tending to the needs of Farmer Producer Organisation, Companies (Amendment) Act, 2002 was introduced which enabled Farmer Producer

Organisations to be registered under Companies Act, 1956 and be called Producer companies. Producer Companies which are registered under a Central Act, have the flexibility to operate with greater professionalism and autonomy and not have the constraints faced by cooperatives which function under state cooperative laws. Organisations owned and controlled by farmers/ producers are the most appropriate institutional form to mobilize farmers and build their capacity to collectively leverage their production and marketing strength.

- 1.3.3 In dairying sector also, FPOs, primarily dairy cooperatives & producer companies play an important role in integration of small & marginal farmers in modern dairy value chain. FPOs have enabled member control throughout the dairy value chain- i.e. milk procurement, processing & marketing and are seen to address issues such as inclusion, income and livelihood. It helps in creating sustainable rural employment though dairying for small & marginal farmers and landless labourers.
- 1.3.4 FPOs offer smallholder farmers a better market opportunity for their produce and provide them with services such as better training in natural resource management, better access to information, technologies, innovations and extension services. In India, about 16 million households are directly getting benefit of dairying through Cooperatives which is about 23% of total rural households engaged in dairying in rural areas. The major socio-economic developments observed in rural areas due to intervention of Dairy Cooperatives viz. increase in farmers' income, employment generation, availability of credit to poor farmers, women empowerment, introduction

of improved technology, enhanced nutritional security etc.

There are 210 Dairy Cooperative Milk Unions and five major Milk Producer Companies in India, together covering about 1.86 lakhs villages, reaching out to 16.1 million milk producers and procuring about 442 LKgpD of milk. By virtue of their social and organizational design, Cooperatives procure milk from various parts of its operational area, even venture to procure from villages which are not economically viable so as to bring socio-economic development of small & marginal farmers and landless labourers through dairying. Cooperatives and Producer Companies are village institutions functioning democratically with active involvement of farmer's in decision making related to its operations.

- 1.3.5 Private sector, large MNCs and retail chains are rapidly expanding their operations purely on commercial lines and in last 20 years have created capacities equal to that set up by cooperatives in more than 30 years. While the private sector grows, it is in the interests

of livelihoods and inclusiveness that cooperatives retain their existing share of the milk handled by organized sector. Therefore, Part IX A of the Companies Act was constituted as important tool to promote Producer Companies for significant and substantial strengthening of the existing dairy cooperatives. State-wise coverage of Cooperatives and Producer Companies is at **Annex 5**. State wise processing and chilling infrastructure under Cooperatives and PCs is provided at **Annex 7**.

#### 1.4 Present Status

##### 1.4.1 Coverage

- 1.4.2 Currently, 48% of total milk produced is either consumed at the producer level or sold to non-producers in the rural area. The balance 52% of the milk (marketable surplus) is available for sale to consumers in urban centres. Currently, about 40% of the milk sold is handled by the organised sector (Dairy Cooperatives-20%, Producer companies-1% & Private Dairies- 19%) and the remaining 60% by the unorganised sector.

- 1.4.3 In India, Dairy Cooperatives including other Producer Owned Organisation (i.e. Producer Companies) play a major role of integration of producers in the modern dairy value chain. Producer Owned Organisations have enabled member control throughout the dairy value chain- i.e. milk procurement, processing & marketing and are seen to address issues such as inclusion, income and livelihood. There are 210 Dairy Cooperative Milk Unions and nine major Milk Producer Companies in India. State wise Milk procurement, sale and no. of farmer member is provided at **Annex 8**.



1.4.4 Coverage under organised sector (as on 2015-16) is provided in the table:

**Table 2: Coverage under organised sector (as on 2015-16)**

No.	Particular	Unit	Cooperative	Producer Company	Private
1.	DCS/ MCC organised	Lakh	1.76	0.067	1.43
2.	Members covered	Lakh	155	3.33	50.17
3.	% of women member	%	31%	--	--
4.	Milk Procured	LLPD	440.7	20	430



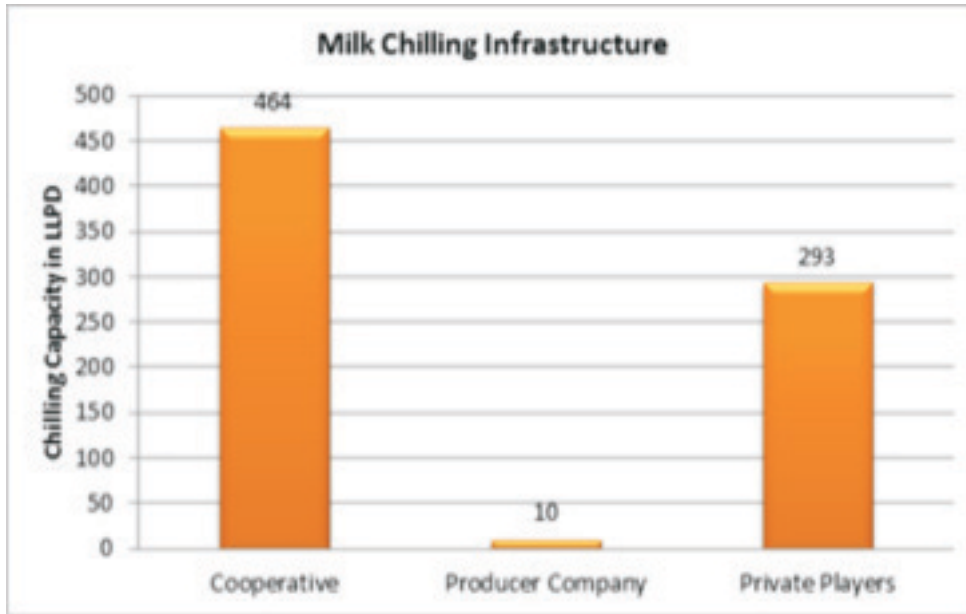
## 1.5 Chilling infrastructure created at village level

1.5.1 Milk being highly perishable and considering the tropical climate of India, handling of raw milk is the most critical activity of entire dairy value chain. Poor handling of raw milk at village level with non-existent or inadequate chilling facilities impacts subsequently the quality and safety of processed milk and milk products. Therefore, to maintain the quality

and safety of milk, it is essential to maintain a proper cold chain from the time of milk collection till it reaches the processing facility. In case of organised sector, milk from individual producers is collected at the village dairy cooperative society/ milk pooling point in either cans or poured directly in bulk milk cooler. The chilled milk collected is thereafter transported in insulated tankers directly to a dairy plant for processing or a chilling centre, where it is chilled and then transported to a dairy plant in insulated tankers.

1.5.2 Collection of milk at DCSs/ milk pooling point directly in BMCs results in much superior quality of milk than chilling it at the Chilling Centres, as in the former case the waiting time at the DCSs and transportation time are saved. This result in bacterial growth in the milk is restricted at the point of milk production reducing souring and other quality deterioration of milk. This improves quality of milk received at the Dairy Plant which leads to manufacturing of quality milk & milk products. State-wise existing chilling capacity is provided at **Annex 8**.

1.5.3 Total chilling infrastructure available with organised sector is indicated in the graph below:



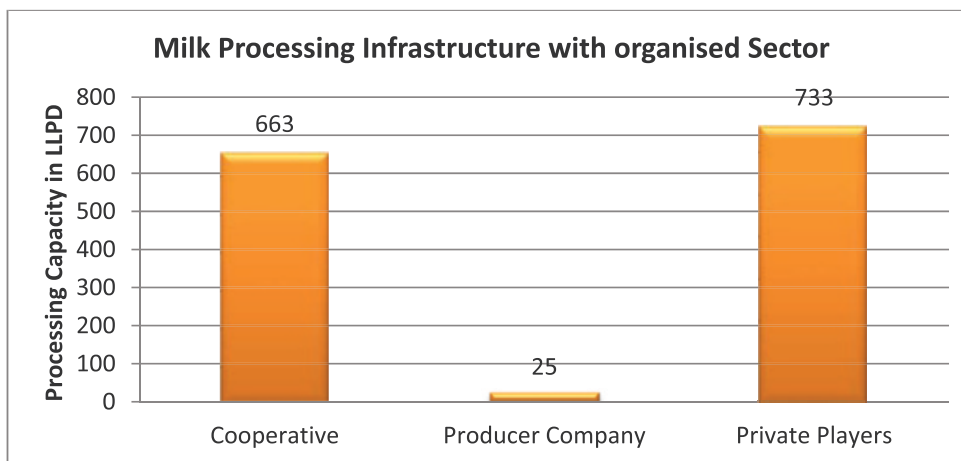
### 1.6 Processing infrastructure

1.6.1 The Chilled milk is transported in insulated tankers to the Processing Plants where it is pasteurised and packed to be sold as packed liquid milk and processed further into different milk products.

1.6.2 At present, most of the milk processing plants with Cooperatives are old and majority

of these plants have never been expanded and/or modernised. These plants are operating with old technology, which may not be energy efficient in comparison to available modern technologies. Therefore, there is urgent need to create/ upgrade/ modernise the milk processing infrastructure with the Cooperatives.

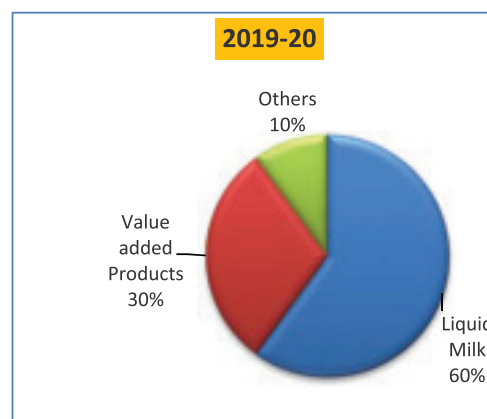
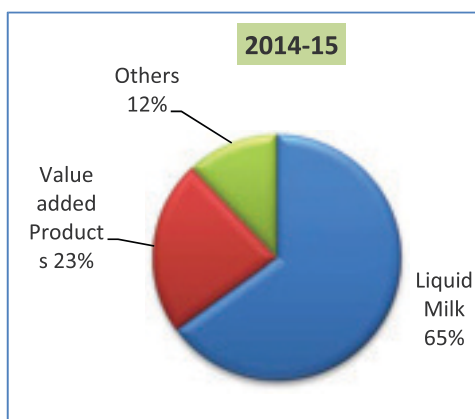
1.6.3 Total milk processing infrastructure available with organised sector is indicated in the graph below:



1.6.4 The Indian market for dairy products has grown rapidly over the last few decades and is anticipated to be growing at a faster rate due to shift in consumption of dairy products among urban population with focus being on value-added products in place of liquid milk. Due to growing urbanisation and changing food habits, Milk Cooperatives now need to focus on expanding their product mix to

include value added products like UHT milk, cheese, ice creams etc. by creating facilities in their dairy processing plants. Information on sale of VAP state-wise is given at **Annex 10**.

1.6.5 Current share of VAP in Organised Dairy Market (As per Rabo Bank Industry Note #537, Feb 2016) and future estimate has been indicated in the graph below:



## 1.7 Role of Private Players in Dairy Sector

1.7.1 Post 1991, when the era of reform in industrial licensing began, the private sector companies have made an impressive growth in building capacities for processing milk and milk derivatives. They made large investment in dairy sector creating capacities which surpassed the combined capacity of the dairy cooperatives and the government dairies in past 20 years. Some of these private players are now much larger than some cooperative dairies and they have large potential for growth. Since Private Sector functions purely on commercial lines with an aim to earn maximum profit, the social responsibility towards farmer's development is largely affected. The Private Players prefer to procure mil through vendors affecting the farmer's getting remunerative price. However, growth in

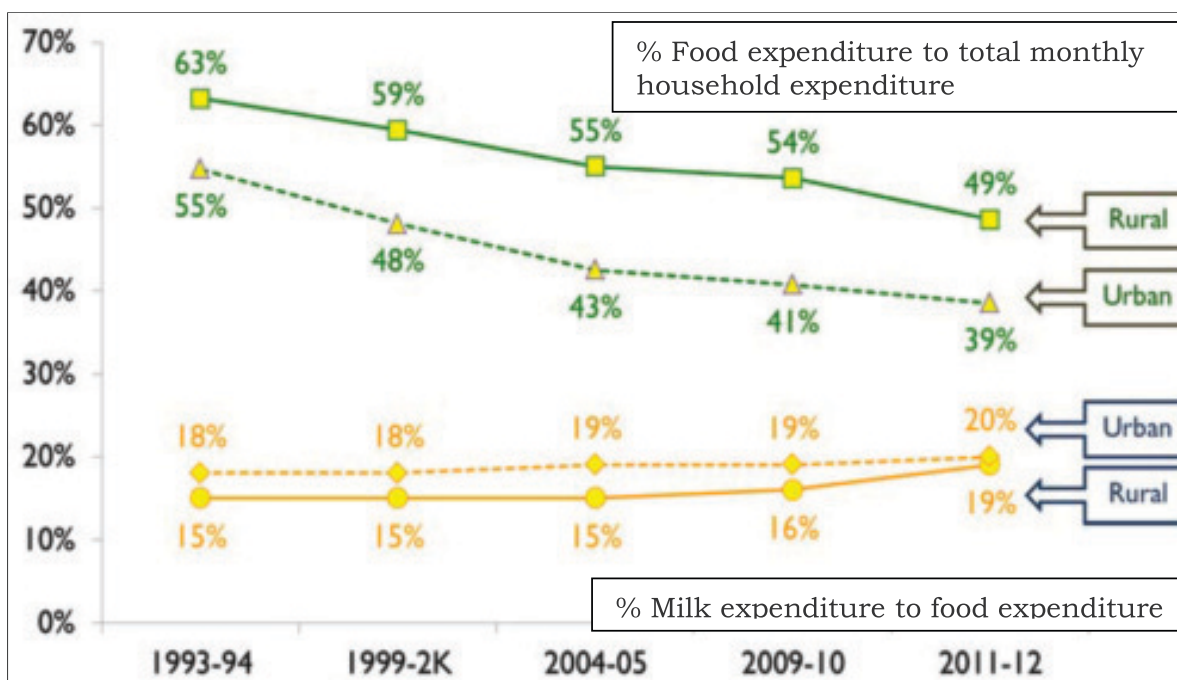
Private Sector provides market access to large number of farmer's. Total dairy infrastructure with private companies as on March 2011 is 732.5 Lakh LPD. State-wise capacities of private players are given at **Annex 11**.

## 2. GROWTH RATE TARGET

2.1 Indian dairying has a large and growing domestic market. The consumption of milk has been rising, commensurate with increase in the purchasing power of people, increasing urbanization, changing food habits & life-styles and demographic growth. Milk with its varied benefits is the only source of animal protein for the largely vegetarian population of the country. Further, factors such as increased consumer interest in high protein diets and increasing awareness & availability of dairy products

through channels such as organised retail chain are also driving this growth. Share of milk expenditure to total food expenditure is 20% in urban and 19% in case of rural population (Consumer Expenditure Surveys, NSSO, Govt.

of India). Share of milk expenditure to total food expenditure has risen over the past decades not only in case of urban population but also in case of rural population (**refer graph below**).



2.2 The demand for milk has been rising not only due to increase in per capita consumption, but also from enlargement of 'milk consuming population base'. Human population is expected to rise to 1354 Million in 2022 from a level of 1193 million of 2011 (expected growth rate: 1.2% per annum). According to United Nation, India will surpass China in 2022 in total size of population. With 1.6 children per woman as fertility rate in China, and with 2.5 children per woman in India, India is projected to reach a total population size of 1.4 billion in 2022, when China's population will peak. On the economy front, Indian economy is expected to continue to register GDP growth rate of 7.0 to 8 percent per annum. India's fast growing and relatively

productive cities have led to Increased growth rate in India's per capita income. Thus sustained economic growth and increase in per capita income is expected to boost milk demand substantially in the country.

2.3 Demand projections for milk relate to future requirements arising out of growth in population, increased per capita income and changes in income distribution.

2.4 As per the report of the Working Group on Crop Husbandry, Agricultural Inputs, Demand and Supply Projections and Agricultural Statistics for the 12th FYP (2012-17) published in Oct, 2011 (Page no. 52), a Behavioural Approach method was adopted for estimating the future milk demand.



This approach is based on the behavior of consumption on account of changing per capita income in a growing economy and the elasticity of consumption of various items to changes in income.

## 2.5 Rationale for parameters used

2.5.1 The Organization of Economic Cooperation and Development (OECD) projected a GDP growth of 5.8% for India during a period of 2015-16 to 2033-34. The same has been taken for milk demand projection.

2.5.2 The expenditure elasticity for milk, which had been estimated as 0.94 as per Srivastava et al, 2013, Vol. 68, No. 4, Indian Journal of Agriculture Economics has been assumed for this exercise. This has been found to be most relevant as it reflects the latest trends.

2.5.3 Further, it is conjectured that over a longer time-frame, the growth in GDP would lead to increased growth in per capita income and hence, expenditure elasticity of milk would taper-off in long-run.

2.5.4 Since import/ export of dairy commodities are negligible, it may be presumed that the



milk produced domestically has been consumed within the country. Hence, the base year per capita demand was taken at 333 grams per day (base: total milk production and projected population).

2.5.5 Considering the FAO document “World Agriculture Towards 2030/2050” ESA working paper No.12-03, June 2012, wherein the per capita milk consumption in developed countries have been assumed at 215 kg/year i.e., 589 grams/ day in 2030 (milk equivalent excluding butter), we find that our projection for per capita consumption at 614 gms/day in 2033-34 is justified.

2.5.6 The parameters considered for the projection are given below:

Parameter	GDP growth (in real term) (%)	Population growth (%)	Growth in per capita income (%) (y)	Expenditure elasticity ( $\eta$ )
2015 -16 to 2020-21	5.8	1.32	4.5	0.94
2015 -16 to 2021-22	5.8	1.31	4.5	0.85
2015 -16 to 2025-26	5.8	1.24	4.56	0.70
2015 -16 to 2028-29	5.8	1.21	4.59	0.70
2015 -16 to 2032-33	5.8	1.19	4.6	0.70
2015 -16 to 2033-34	5.8	1.19	4.6	0.70

2.5.7 Accordingly, the projected demand (Dt) for milk is furnished as under.

Year	Per capita demand (grams/day) (D <sub>0</sub> )	Population (million) (P <sub>t</sub> )	Demand (million tonnes)
2015-16 (actual)	333	1280.2	156
2020-21	409	1366.8	204
2021-22	417	1384.1	211
2025-26	456	1447.9	241
2028-29	502	1497.6	274
2032-33	571	1566.5	327
2033-34	590	1584.3	341

2.5.8 Some regions in India have not had the full benefit of the White Revolution that brought prosperity to millions of farmers. While the overall production of milk has to increase to meet the growing demand, dairying has also to drive economic change for the rural poor, particularly women. Indian dairying sector mainly comprises of smallholder milk producers who are primarily small and marginal farmers including landless labourers.

2.5.9 In the interests of livelihood and economic well-being of the milk producers, it is essential to provide rural milk producers with greater access to the organised milk processing sector. This would not only ensure remunerative prices to farmers for their produce but also encourage more

farmers to adopt dairying as a source of livelihood.

2.5.10 Currently, on average producers pour about 2.8 litre of milk per day at dairy cooperative society and earns a gross income of Rs. 85 per day. However, feeding cost itself comprises of about 70% of the total milk price. Overall, farmer earns only 20-30 % of milk price as net daily income which comes about Rs. 516 per month.

2.5.11 However, in order to double the farmers income at household level, it is imperative that in-milk animal productivity is enhanced thereby increasing the available marketable surplus at household level. Further milk price paid to farmers also need to be raised so as make dairying a sustainable livelihood option in future.



2.5.12 The increased milk production at the country level will lead to increase in milk marketable surplus subsequently leading to increase in the share of organised sector in milk production. Further increase in coverage of the villages would also lead to increased procurement which would need to be supported by creation of cold chain infrastructure at village level as milk has to be immediately chilled after milking in order to avoid bacterial growth which is critical for maintaining the quality of milk.

2.5.13 The increased handling of milk by organised sector would require establishment of additional milk processing infrastructure along with modernisation and refurbishment of existing plants. It is estimated that by 2020, the share of Value Added Products (VAP) in the organised milk market is likely to increase from current 23% to 30%, the major reason being changing consumption pattern of Urban population in India. Further VAP bring in higher profits for dairy companies than liquid milk which provides a window passing higher profitability to farmers in form of milk procurement price. The dairy cooperatives have had largely stuck to basic milk, butter, processed cheese slice and ice cream for many decades. Therefore, though a large portion of milk would be sold as processed packed liquid milk, focus would be made to enhance the share of dairy cooperatives in Value Added Products segment. This would require creation of additional infrastructure for Value Added Products.

### 3. CHALLENGES

3.1 Though India has become the largest milk producing country in the world, still this sector faces numerous challenges, which hinder the optimum growth in milk production, access of milk producers to

organised market, processing of milk & Value Added Products and availability of quality milk & milk products to consumers. Some of the major challenges being faced by Indian Dairy sector are given below:

- Low Productivity of Indian bovine
- Imbalanced feeding to animals
- Limited access of milk producers to organized sector
- Age old infrastructure operating on obsolete technology
- Lack of organised credit system
- Lack of manufacturing facilities for Value Added Products.
- Lack of efficient chilling infrastructure at village level
- Lack of penetration in smaller cities/ towns in terms of milk marketing
- Lack of efficient cold chain distribution network.

### 4. VISION STATEMENT

4.1 “Enabling sustainable growth of dairy sector by doubling of farmers' income engaged in dairying, thereby paving way for nutritional security, economic prosperity and livelihood support.”



## 5. OBJECTIVES

- 5.1 Department of Animal Husbandry, Dairying and Fisheries (DAHD&F), Ministry of Agriculture and Farmers Welfare, has prepared a National Action Plan (NAP) for 2021-22 and 2023-24 taking into account the existing coverage of milk potential villages, farmer members, farmer income, growth of milk production, milk procurement, existing milk chilling, processing infrastructure with Cooperatives and Producer companies, consumption pattern etc. NAP was shared with all the states requesting them to submit State Action Plan (SAP) in line with NAP and most of states have prepared their respective SAP, which are in congruence with NAP. Targets under NAP provided at **Annex 12, 13 and 14** respectively.
- 5.2 NAP has been formulated with following objectives –
- To increase the national milk production from 163.7 MMT in 2016-17 to 254.55 MMT by 2021-22 for meeting the increasing milk demand by domestic milk production and also ensuring nutritional security at household level
  - To double milk producers' income at farm level by 2021-22 by providing rural milk producers with greater access to the organised milk processing sector

## 6. STRATEGY

### 6.1 Doubling Farmer Income

- 6.1.1 Dairying is an occupation subsidiary to agriculture and an important source of livelihood for small & marginal farmers and landless labourers. It is aimed to double the farmer's income through dairying in the country by 2021-22. Increased number of productive animals (preferably in existing herd size) and increase in productivity level of bovines would lead increased marketable surplus at the farm level.

- 6.1.2 It has been envisaged that milk sold per farmer will grow to 151.37 litres/month (5.05 litre per day) in 2021-22 and 178.40 litres per month (5.95 litre per day) in 2023-24 from existing 80 litres per month (@ 2.67 litre per day).
- 6.1.3 Procurement price projected to grow to Rs.43.14 per litre by 2021-22 and Rs. 47.56 per litre by 2023-24 from Rs. 32.19 per litre (in absolute term increase of Rs. 10.95 per litre in by 2021-22 and Rs. 15.37 per litre by 2023-24 and annual growth of 5%). Similarly, sales price of milk will grow to Rs.61.64 per litre by 2021-22 and Rs. 67.96 per litre by 2023-24 from existing Rs. 46.00 per litre (in absolute term increase of Rs.21.96 per litre in eight years). Procurement price as share of consumer rupee in 2021-22 and 2023-24 will be about 70% (same as that of the current figure of 70%). But with the higher conversion of liquid milk into value added products along-with automation of dairy infrastructure and introduction of energy efficient systems in dairy plant and machineries, it is expected that 80% of the consumer rupee can be transferred to farmers as procurement price by 2021-22 & 2023-24.
- 6.1.4 Assuming a net income of about Rs. 8.63 per litre in 2021-22 and 9.5 per litre in 2023-24 (20% of milk procurement price i.e. Rs.43.14 per litre and Rs. 47.56 per litre), it is estimated that in a period of six and eight years, net income of farmer will be Rs.1306 per month in 2021-22 and Rs. 1697 per month in 2023-24 from current income of Rs. 516 per month (i.e Rs. 6.44 per litre). It is expected that with the higher conversion of liquid milk into value added products and the automatic and energy sufficient systems in place the income of farmers would increase by additional 6% by 2021-22.



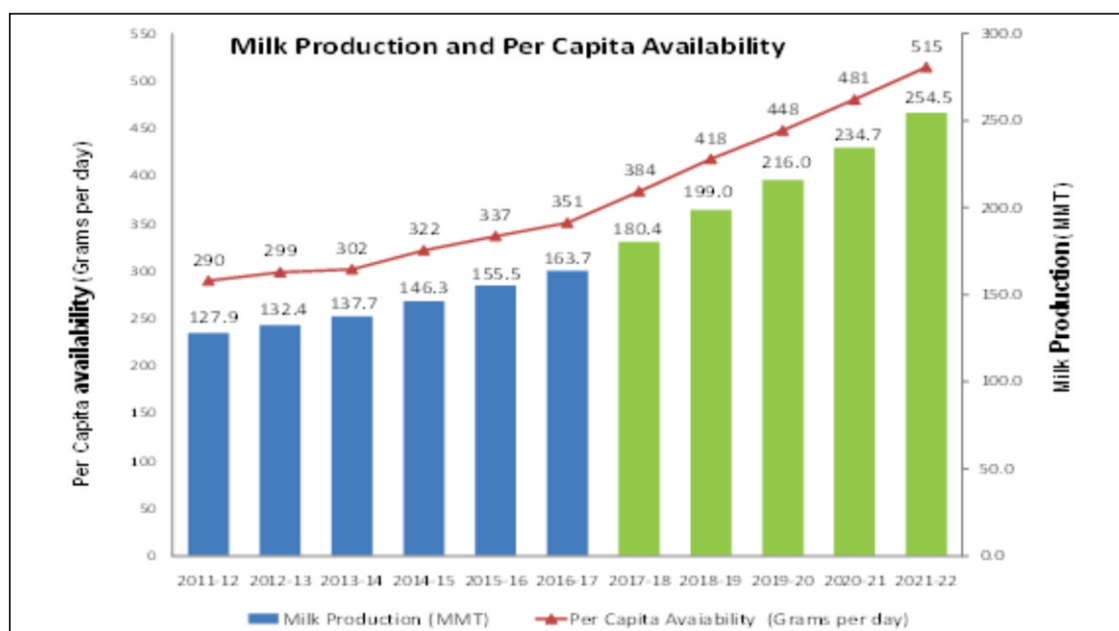
## 6.2 Milk & Milk Products Production

### 6.2.1 Higher Production, Higher Per Capita Availability

6.2.1.1 At present, the three drivers of demand - population growth, urbanization and income growth are very strongly in operation due to which there is need to increase milk production in the country. Milk production has been estimated taking into account the growing population of the country and the requirement of milk that will be needed to meet the rural and urban milk demand. Human population is estimated to grow to 1354.26 million by 2021-22 and 1389 million by 2023-24 from

existing 1254 million during 2015-16 assuming at a CAGR of 1.29% per annum. This would lead to increased demand for milk & milk products.

5.2.1.2 The milk production is envisaged to be 254.55 Million MT by 2021-22 and 300 Million MT by 2023-24 from existing 163.7 Million MT at a CAGR of 9.2%. Milk production of 300 MMT would lead to increase in per capita availability of milk from current level of 352 grams per day to 515 grams per day in 2021-22 and 592 grams per day in 2023-24 addressing the substantial nutritional requirement of human diet. Milk Production & per capita milk availability in 2021-22 is indicated in the graph below:

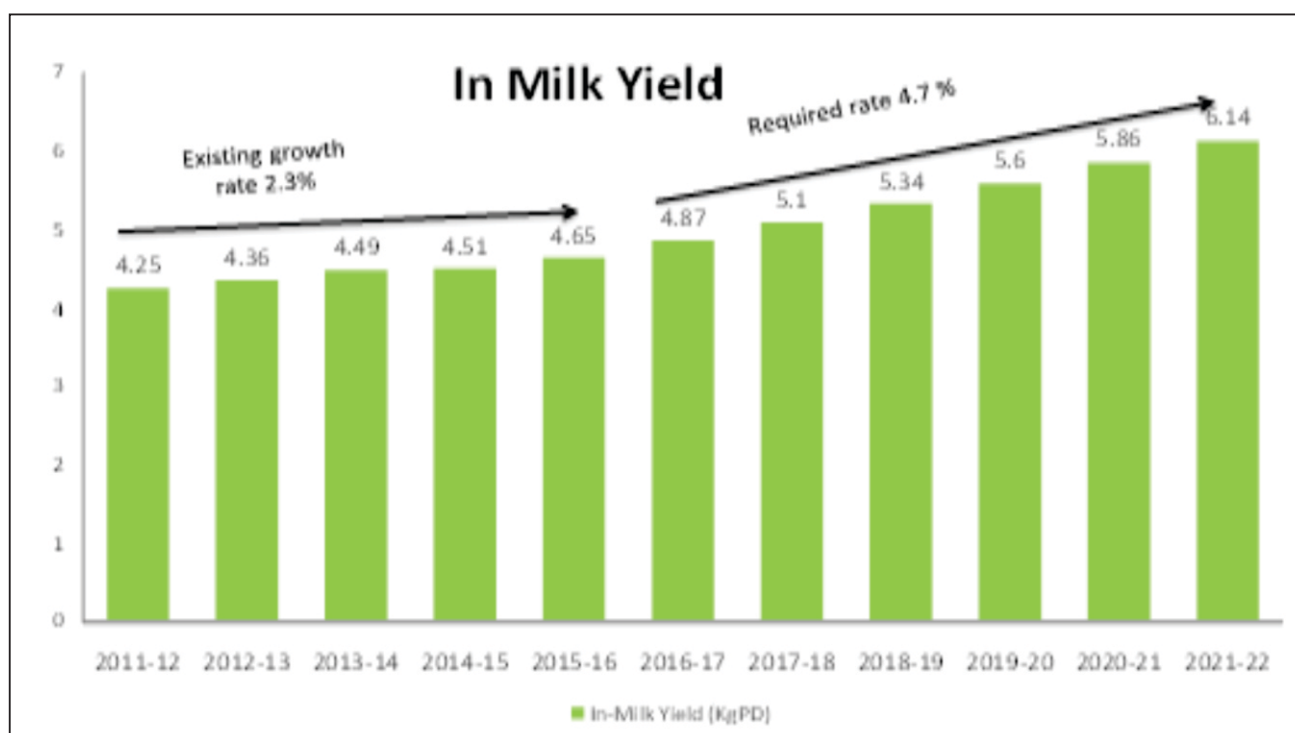


6.2.1.2 It is a major challenge to achieve this level of growth in a short period of time and therefore it necessitates a scientific, systematic and strategic intervention in dairy sector to increase milk production to meet rapidly growing demand for milk by exploiting untapped dairy potential in various parts of the country.

6.2.1.3 To achieve the desired milk production targets, average In-milk animal productivity would be required to grow annually at the rate of 4.7% to 6.14 KgPD by 2021-22 and 6.7 KgPD by 2023-24 from existing 4.65 KgPD. It is estimated that the In-milk bovine population would grow to 109.62 million and 117.38 million from current level of 88.35 million registering annual growth of 3.66% in next 6 and 8 years respectively. CAGR of In-milk bovine population in last five years was only 2%. However, with the present



constraint of feed and water resources, it would not be feasible to increase the absolute number of bovine population. Therefore, it would be required to increase the In-milk animal productivity and share of productive animals in total bovine population to increase the targeted milk production. Graphical representation of past trends and future estimates is given in the graph below:









### 6.3 Increasing Productivity per Indigenous and Non-Descript Cattle

#### 6.3.1 Rashtriya Gokul Mission (RGM)

- a) Super elite population of 7 indigenous breeds to be developed through MOET & IVF technology (Sahiwal, Gir, Tharparkar, Red Sindhi, Rathi, Kankrej & Hariana)
- b) Selective breeding among pure bred animals i.e. 40 breeds of cattle
- c) Upgrading the graded cattle with pure bred semen of that particular breed
- d) Conversion of Non-Descript cattle into defined breeds through upgrading (50% of the ND to be upgraded with 7 dairy breeds and remaining 50% to be upgraded with other 33 breeds in order of their priority)

6.3.2 For increasing the milk production in the country, it is necessary that AI network is enhanced to bring more female bovine under the ambit of AI services, along with improving the efficiency of current AI delivery services.

6.3.3 Therefore, AI coverage will be increased to cover about 65% of the total breedable bovines by 2021-22 from present 26%. All the states would have to work out clear cut strategies drawing action plan to improve AI coverage along with ensuring efficiency of current system.

6.3.4 It is assumed that by 2021-22 about 40% of the milk would be consumed locally at rural production centres and the remaining 60% would be available for meeting the urban demand.

6.3.5 Various breed development interventions being implemented under various government schemes like NDP I & Rashtriya Gokul Mission along with a focussed approach would need to be adopted by the State Departments for implementing various strategies of dairy development across country to achieve the targeted milk production by 2021-22 and 2023-24 in the country.

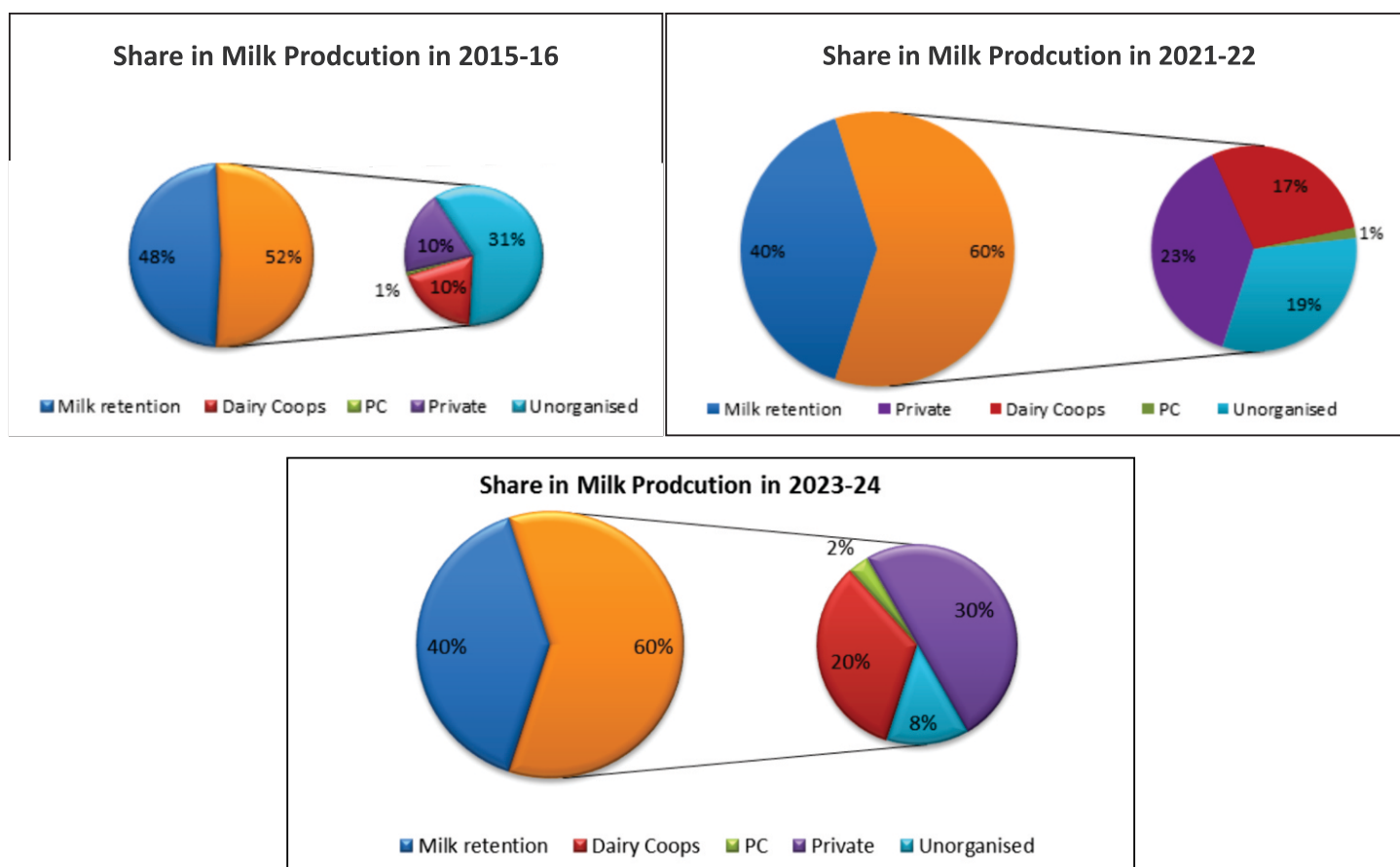
**Table 3: Projections for Milk production**

Year	No. of In milk Bovine (in million)	Milk Yield per animal/day (Litre)	Milk Production (MMT)	Marketable Surplus (MMT)
2009-10	67.62	4.72	116.4	61
2010-11	69.88	4.78	121.8	63
2011-12	82.36	4.25	127.9	67
2012-13	83.15	4.36	132.4	69
2013-14	84.07	4.49	137.7	72
2014-15	85.66	4.68	146.3	76
<b>2015-16</b>	<b>88.35</b>	<b>4.65</b>	<b>155.5</b>	<b>81</b>
2016-17	90.49	5.11	168.8	101
2017-18	93.80	5.35	183.3	110
2018-19	97.23	5.61	198.9	119
2019-20	100.79	5.87	216.0	130
2020-21	104.48	6.15	234.5	141
2021-22	108.31	6.44	254.5	153
2022-23	112.27	6.74	276.3	166
<b>2023-24</b>	<b>116.38</b>	<b>7.06</b>	<b>300.0</b>	<b>180</b>

## 6.4 Increasing Coverage under organised sector

6.4.1 Currently, 48% of total milk produced is either consumed at the producer level or sold to non-producers in the rural area. The balance 52% of the milk (marketable surplus) is

available for sale to consumers in urban centres. Currently, about 40% of the milk sold is handled by the organised sector and the remaining 60% by the unorganised sector. The share of organised and unorganised sector in milk production is as represented below:



6.4.2 In the interests of livelihood and economic well-being of the milk producers, it is essential to provide rural milk producers with greater access to the organised milk processing sector. This would not only ensure remunerative prices to farmers for their produce but also encourage more farmers to adopt dairying as a source of livelihood. In order to make dairying a sustainable

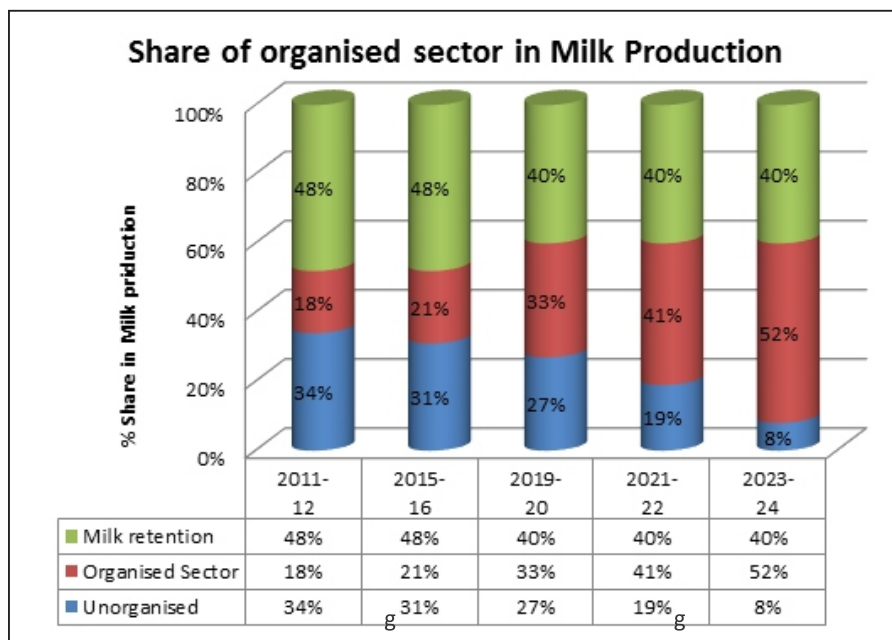
livelihood option, it is essential to bring more farmers into the fold of organised sector which would eventually provide rural milk producers with greater access to the organised milk processing sector. The organised milk processing sector only cover about 40% of milk; of which cooperatives cater to approximately 80% of the consumers with its packed liquid milk and retail milk products varieties in contrast to the Private Dairy Industry mainly selling

commodities in domestic and international market and milk products reaching about 20% of the consumers in the domestic market. The rest 60% of the market is unorganised and is covered by sellers leading to poor quality and improper pricing of milk. The cooperatives with its well laid pricing policy based on cost of production and strict quality assurance policy, transfer 75-85% of sale price of milk and milk products to the farmers after adjusting procurement processing, industry and administrative cost. The Private Dairy Industry collects milk mainly through the vendor/middleman, leading to transfer of non-remunerative price to the farmers and since they are mainly dependent upon export market, any decline international market may lead to irregularity in income of the milk producers. The cooperative thus plays a greater role in providing stability to market by providing remunerative price to the farmers

as well as ensuring reasonable price to the consumers.

6.4.3 It would be, therefore, necessary for Dairy Cooperatives as well as Milk Producer Companies to consolidate their efforts to increase their penetration in the existing villages as well as expand their area of operation to uncovered villages. Currently, Dairy cooperative societies along with Producer Companies cover about 1.85 villages.

6.4.4 There are about 3.2 lakh villages which have milk production above 200 KgPD (estimated based on the village wise In-milk population as per LC 2012 and In-milk animal productivity as per TCD 2015). Thus, there are about 1.35 villages which have potential for dairying and are yet to be covered by Dairy Cooperatives or Producer Companies. Current share of organised sector in milk production and the desired future growth is indicated by the graph below:



## 6.5 Increasing Cooperatives Coverage

6.5.1 Dairy cooperative would need to expand their coverage to new uncovered areas so as to bring more milk producers under the fold

of organised sector, thereby providing rural milk producers with greater access to organised milk processing sector. Dairy Cooperatives would need to increase their

share in milk production from current level of 10% to 20%. For this they would have to increase their milk procurement to 1183 LKgPD by 2021-22 and 1644 LKgPD by 2023-24 (28% and 33% of milk marketable surplus respectively).

- 6.5.2 It has been envisioned that dairy cooperative would cover 2.57 lakh by 2021-22 and 3.29 lakh dairy cooperative societies (at a CAGR of 8.1%) by 2023-24 from existing level of 1.76 lakh and Procurement per DCS would be 460 KgPD in 2021-22 and 500 KgPD in 2023-24 from existing level of 250 KgPD.
- 6.5.3 It has been envisaged to enrol 192.91 lakh milk producers by 2021-22 and 207.5 lakh milk producers (at a CAGR of 3.7%) by 2023-24 from current level of 155 lakh (last 5 years CAGR is 2%). Procurement per producer member would be 6.13 KgPD in 2021-22 and 7.9 KgPD in 2023-24 from existing level of 2.8 KgPD (about 3 times increase in milk pouring). Among organised players, Cooperatives share in organised sector by 2023-24 is estimated to be 39% whereas Private and Producer Companies share is estimated to be 58% and 4% respectively.
- 6.5.4 The Department has proposed to source financial assistance from JICA, NABARD and World Bank apart from Central and State Governments schemes for meeting the infrastructural requirement by 2023-24.
- 6.5.5 Of the major milk producing states in the country, the states of Gujarat, Karnataka, Maharashtra, Rajasthan, Tamil Nadu and Andhra Pradesh where the present coverage of dairy cooperatives in terms of quantity of milk procured, villages and membership is relatively high. They together account for 77% of total milk collected by dairy cooperatives in the country. Since the coverage is very high, there is not much scope for increasing the members or organizing new villages level dairy cooperative societies. Under this situation, milk procurement can only be increased by increasing the contribution of milk per member, which can be achieved through increasing share of productive animals in the existing herd and their productivity.
- 6.5.6 In states like Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Orissa, West Bengal, Bihar, Chhattisgarh and Jharkhand where the dairy cooperative coverage is moderate or low, a separate set of strategies need to be devised for increasing milk procurement by dairy cooperatives. The existing dairy cooperative institutional structure in these states may have some limitations. To address the same, alternative forms of institutions like Producer Companies, Farmers' Producers Organizations, Self Help Groups, etc. will have to be evolved and promoted, besides establishing/ strengthening the existing dairy cooperatives.
- 6.5.7 The role of women in dairying cannot be over-emphasized. Women engagement in dairy activities at household level is about 60-70%. Like feminization of agriculture, milk production activity in rural areas has also been getting increasingly feminized. Therefore, engaging more women in dairy institutions would be an appropriate strategy for their empowerment. The involvement of women in cooperatives provides them economic & financial empowerment. At institutional level also, various studies have indicated that cooperatives managed by the women are generally better performed.
- 6.5.8 The regional level analysis indicates that the share of women in cooperative membership has been low in eastern and northern regions. Therefore, special efforts are required in these regions to increase the women membership in dairy cooperatives

## 6.6 Increasing Private Organised Sector

- 6.6.1 The current procurement by private players is about 430 LKgPD. Private player's procurement by 2021-22 and 2023-24 is estimated to have share of 23% and 30% respectively of total milk production i.e. 1594 LKgPD in 2021-22 and 2466 LKgPD in 2023-24 which would require an annual growth rate of about 24%. For 2015-16, it has been assumed that per Milk collection centre & vendor procure about 300 LPD of milk from about 35 pourers (each pouring about 8.57 LPD)
- 6.6.2 Milk procurement per MCC has been projected to gradually increase from 300 litre per day in 2015-16 to 475 litre per day in 2021-22 and 525 litre per day in 2023-24 and based on this, the number of MCC/ vendor has been arrived. Subsequently, number of MCC members has been arrived considering 35 members per MCC. By 2021-22 and 2023-24, it has been assumed that each member

will be pouring about 13.6 litre per day and 15.00 litre per day respectively of milk from exiting 8.57 litre per day.

## 6.7 Increasing Producer Company Coverage

- 6.7.1 At present, Milk Producer Companies are present in 5 States with milk procurement of 20 LKgPD in 2015-16 from 3.3 lakh members pouring milk @ 6 litres per day. It has been envisaged that by 2023-24, Producer Companies will be procuring milk in 20 states with cumulative procurement of 150 LKgPD which would require annual growth of about 29%. By 2021-22 & 2023-24, it has been assumed that each member will be pouring 9.6 litres per day and 10 Litre per day of milk respectively.
- 6.7.2 The Department has proposed financial assistance from JICA, NABARD and World Bank apart for meeting the infrastructural requirement from Central and State Govt. by 2021-22 and 2023-24

**Table 4: Summary of estimated milk procurement by Cooperatives, Private Companies and Private in 2021-22 and 2023-24**

Year	Milk Procurement (LLPD)			
	Coops	Private	Producer Companies	Unorganised Player
2009-10	257.00	257.00	-	1144.30
2010-11	294.00	294.00	-	1147.23
2011-12	310.00	310.00	-	1202.14
2012-13	348.00	348.00	-	1190.25
2013-14	361.00	361.00	-	1239.75
2014-15	374.00	374.00	-	1336.27
2015-16	423.00	430.06	20.00	1324.45
<b>2023-24</b>	<b>1643.90</b>	<b>2465.89</b>	<b>150.00</b>	<b>671.77</b>

## 6.8 Supporting Dairy Equipment Manufacturing Industry

6.8.1 The Indian dairy sector has witnessed a phenomenal growth where milk production today stands at 155.5 million tonnes per annum or 4620 litres per day (LLPD) and marketable surplus is 52% i.e. 2400 LLPD. The present chilling and processing capacity can handle only 757 LLPD and 1396 LLPD respectively. Further, 60% of the existing dairy plants are over 30 years old and needs modernisation with newer technology in plant & machinery, energy efficient systems, new packaging technology, efficient energy system etc.

6.8.2 The proposed National Action Plan aims at meeting the projected demand of about 254.5 million tonnes by 2021-22 and 300 million tonnes of milk by 2023-24 and envisages the share of the organised sector in milk processing rising from the current 30 per cent to about 65 per cent. To meet this 65 per cent level by 2021-22 and 2023-24, hi-tech processing facilities would be required as the objective of National Dairy Plan is not only to increase the milk production but also to bridge the wide gap between milk production and processing. Statistics indicate an exponential demand for dairy equipment's in the coming years with completely automated dairy processing plants and processing lines for new products. Emphasis will be on energy efficient equipment's. Technology, price, delivery and performance standards would determine the market for any dairy equipment. Other important factors would be upgrading, add-ons and after sales service. Most of the dairy units are now looking into the improvement of sanitary and hygienic conditions by adopting ISO certification as well as HACCP programmes. The Sanitary and Phyto-Sanitary (SPS) measures are

becoming mandatory for export and serious efforts have to be made to achieve the international standards of quality.

6.8.3 India's recent progress in dairy equipment manufacturer has been remarkable. Though it still imports advanced machinery from regions like Europe and Italy around 70-80% of machinery is now being produced in India. However, dairy equipment industry in India is still confined to certain categories such as road milk tankers, storage tanks, bulk milk coolers, small homogenisers, milk pasteurisers, milk vending machines and liquid milk packaging system etc. Equipment for packaging of butter, cheese, paneer and other traditional products needs attention with an eye on the industry's need for small and large-scale operations.

## 6.9 Infrastructure Gap by 2021-22 and 2023-24

6.9.1 The enhanced milk procurement by organised sector would require creation of additional chilling capacities, milk processing infrastructure along with additional drying capacities & dairy products manufacturing infrastructure and Feed & Feed supplement infrastructure.

6.9.2 As on March 2016, total chilling capacity with Dairy Cooperatives, Producer Companies and Private is 46.4 Million LPD, 10 Million LPD and 29.3 Million LPD respectively. An additional chilling capacity of 212 Million LPD and 349.3 Million LPD would be required by 2021-22 and 2023-24 respectively.



6.9.3 Presently Dairy Cooperatives, Producer Companies and Private dairies have milk processing capacity of about 66 Million LPD, 2.5 Million LPD and 73 Million LPD respectively. Most of the processing capacities with Dairy Cooperatives are functioning on age old technology and need expansion & renovation in the context of expanding production & demand. In view of above, it becomes imperative that the dairy plants with dairy cooperatives be refurbished with new energy saving technology along with creation of 226.9 Million LPD and 392.4 Million LPD processing infrastructure by 2021-22 and 2023-24 respectively.

6.9.4 In addition to above, additional drying capacity of 3083 MTPD and 5439 MTPD and infrastructure for Value Added Products of 10335 MTPD and 12616 MTPD capacity would need to be created by 2021-22 and 2023-24 respectively.

6.9.5 The increased milk production would require support in terms of Feed & Feed Supplements. Therefore, Cattle Feed Plants of 4222 MTPD and 5638 MTPD Capacity would also need to be installed to provide input services to farmers at village level by 2021-22 and 2023-24 respectively.

6.9.6 Milk chilling and processing capacity of cooperatives, private and producer companies by 2021-22 and 2023-24 have been estimated considering following assumptions:

- i. Milk chilling capacity by 2021-22 and 2023-24 would be same as the projected milk procurement volume. Gap in chilling capacity will be filled by installing 2 KL BMC @ Rs. 10 lakh per unit.
- ii. For Cooperatives, yearly requirement of processing capacity has been estimated by gradually increasing the capacity utilisation

from current 65% to 80%. For Producer Company and Private, requirement of processing capacity by 2021-22 and 2023-24 has been estimated based on 80% capacity utilisation.

iii. The gap in processing capacity will be filled by strengthening/creating new processing capacity on an average @ Rs. 20 crore per one lakh litre plant.

iv. Currently Chilling capacities in case of PCs have been calculated assuming 40% of existing plant capacity.

Gap Analysis is provided at Annex 15. Abstract of investment envisaged for cooperatives, Producer companies and Private players as per NAP is attached at **Annex 16**.

## 7. POLICY LEVEL INTERVENTIONS

### 7.1 Better Governance of Cooperative Sector

7.1.1 Government of India actively supports Cooperative sector by introducing enabling environment through means of various acts and amendments in the existing acts. National Policy on Cooperatives has been prepared by Ministry of Agriculture and Farmers' Welfare, Department of Agriculture & Cooperation, with an objective to facilitate all round development of the cooperatives in the country. According to this policy, cooperatives need to be provided necessary support, encouragement and assistance so as to ensure that they work as autonomous, self-reliant and democratically managed institutions.

7.1.2 Some of the acts and amendments introduced by Gol to support cooperatives are given below:

7.1.2.1 **The Multi State Cooperative Societies Act 2002** (39 of 2002): It was an Act introduced to

consolidate and amend the law relating to co-operative societies, with objects not confined to one State and serving the interests of members in more than one State. It helped to facilitate the voluntary formation and democratic functioning of co-operatives as people's institutions based on self-help and mutual aid and to enable them to promote their economic and social betterment and to provide functional autonomy without any limitations of state boundaries.

**7.1.2.2 The Constitution (Ninety Seventh Amendments) Act 2011** relating to the co-

operatives is aimed to encourage economic activities of cooperatives which in turn help progress of rural India. It is expected to not only ensure autonomous and democratic functioning of cooperatives, but also the accountability of the management to the members and other stakeholders. The amendment of the Constitution makes it obligatory for the states to ensure autonomy of cooperatives, facilitate voluntary formation, independent decision-making and democratic control and functioning of the cooperatives. It also ensures holding regular elections under the supervision of autonomous authorities, five-year term for functionaries and independent audit.

**7.2 Fact of Milk Production**

**7.2.1** Government of India also supports dairy sector by implementing various schemes. Various Government Schemes related to Dairy Development and Animal Husbandry being implemented as given below:

- a. National Dairy Plan Phase I (NDPI)
- b. National Programme on Bovine Breeding and Dairy Development (NPBBDD)
- c. National Livestock Mission (NLM)



- d. Livestock Health & Disease Control (LH&DC)
- e. Dairy Entrepreneurship Development Scheme (DEDS)
- f. Rashtriya Krishi Vikas Yojana (RKVY)
- g. National Rural Livelihood Mission (NRLM)
- h. Scheme for Cold Chain, Value addition and Preservation Infrastructure
- i. Dairy Development Schemes of NABARD, et al

**7.2.2** The fund available under above scheme is quite inadequate to fill the gap in infrastructure for doubling the farmer's income. Therefore, Department is exploring investment from various organisation on soft terms like JICA, NABARD, World Bank etc.





## 8. POTENTIAL RISKS AND MITIGATION MEASURES

There are some potential risks that may adversely affect the milk production in India. Some of the risks are given below:

**Table 5: Potential Risks envisaged & possible mitigation measures**

Potential Risks	Mitigation Measures
Increased availability of milk will lead to increased supply of milk in the market decreasing the consumer's price subsequently leading to decrease in producer's price hampering their income.	India would have to explore possible export opportunities for which it would be necessary to create suitable infrastructure and produce dairy products meeting the international standards.
Increased bovine population would put increased pressure on fodder and water resources.	Measures would need to be taken to increase the productivity of existing in-milk animals and also to increase the ratio of productive bovines in the overall bovine population. Appropriate interventions for conservation of feed and fodder would need to be adopted along with promoting use of high yield fodder variety.
Increased bovine population would require more input services like Animal Health care, Artificial Insemination, Vaccinations facilities etc.	State government would need to put efforts towards putting in place efficient animal breeding & health delivery systems.
Increase in bovine population might impact the environment through methane emission etc.	Balanced Ration helps in reducing the methane emission. Programmes to promote feeding of balanced ration among milk producers

1. FMD is highly infectious, trans-boundary viral disease of dairy having adverse impact on milk production and greatly affects small holder milk producers. It is largely believed that the productivity of the high yielding animals is compromised as much as 25% for

the entire remaining life animals. Central Government initiated Food and Mouth Disease Control Programme under Centrally Sponsored Scheme 'Livestock Health and Disease Control (LH&DC)' with 100% Central funding, coordination and monitoring

wherein procurement of vaccine, developing specification of vaccine, assessing quality of vaccine, vaccination schedule, sero-monitoring etc., were carried out by DADF. During the last two decades the programme had undertaken systematic vaccinations and expanded to contiguous areas so much so that now it covers some 351 districts and led to significant drop in outbreaks of FMD. However, currently the funding pattern of scheme has been changed to 60-40 fund

sharing basis between the Centre and the States. Thus now the states would have to synchronize their efforts to continue the delivery of mass vaccination for FMD and other diseases and accord priority to animal health services to gradually cover 100% bovine population. State wise information on agricultural laborers and permanent pasture and cultivable wasteland is provided at **Annex 17 and 18** respectively.



# ANNEXURES



## Annex 1. State wise total household, rural household, rural population etc

No.	State	No. of villages (as per census 2011)	Area (square Km)	Total Household (lakh Nos.)	Rural Household (Lakh Nos.)	Total population (lakh Nos.)	Rural population (lakh Nos.)
1	ANDHRA PRADESH	16158	160205	127	90	494	348
2	BIHAR	39073	94163	189	169	1041	923
3	CHHATTISGARH	19567	135192	57	44	255	196
4	GUJARAT	17843	196244	122	68	604	347
5	HARYANA	6642	44212	49	30	254	165
6	JHARKHAND	29492	79716	63	47	330	251
7	KARNATAKA	27397	191791	134	79	611	375
8	KERALA	15962	38852	79	41	334	175
9	MADHYA PRADESH	51929	308252	151	111	726	526
10	MAHARASHTRA	40959	307713	244	132	1124	616
11	ODISHA	47677	155707	96	81	420	350
12	PUNJAB	12168	50362	55	34	277	173
13	RAJASTHAN	43264	342239	127	95	685	515
14	TAMIL NADU	15049	130060	185	95	721	372
15	TELANGANA	10128	114840	84	52	352	216
16	UTTAR PRADESH	97814	240928	334	257	1998	1553
17	UTTARAKHAND	15745	53483	21	14	101	70
18	WEST BENGAL	37478	88752	204	138	913	622
19	ANDAMAN & NICOBAR ISLANDS	396	8249	1	1	4	2
20	ARUNACHAL PRADESH	5258	83743	3	2	14	11
21	ASSAM	25372	78438	64	54	312	268
22	CHANDIGARH	5	114	2	0.07	11	0.28
23	DADRA & NAGAR HAVELI	65	491	1	0.36	3	2
24	DAMAN & DIU	19	111	1	0.13	2	1
25	GOA	320	3702	3	1	15	6
26	HIMACHAL PRADESH	17882	55673	15	13	69	62
27	JAMMU & KASHMIR	6337	222236	21	16	125	91
28	LAKSHADWEEP	6	30	0.12	0.03	1	0.14
29	MANIPUR	2379	22327	5	3	26	17
30	MEGHALAYA	6459	22429	5	4	30	24
31	MIZORAM	704	21081	2	1	11	5
32	NAGALAND	1400	16579	4	3	20	14
33	NCT OF DELHI	103	1483	34	1	168	4
34	PUDUCHERRY	90	490	3	1	12	4
35	SIKKIM	425	7096	1	1	6	5
36	TRIPURA	863	10486	9	6	37	27
	<b>Grand Total</b>	<b>612428</b>	<b>3287469</b>	<b>2495</b>	<b>1686</b>	<b>12106</b>	<b>8335</b>

## Annex 2. Top Ten Milk Producing Countries (2013 in Million Tonnes)

S.No.	Country	Milk Production	% of total World Milk production
1	India	135.6	17.6
2	United States of America	91.3	11.8
3	China	80.8	10.5
4	Pakistan	39.1	5.1
5	Brazil	34.4	4.5
6	Germany	31.1	4.0
7	Russian Federation	30.5	4.0
8	France	24.6	3.2
9	New Zealand	18.9	2.4
10	Turkey	18.2	2.4

Source:faostat

**Annex 3. State wise GSDP, PCI, Gross value added by livestock sector**

No.	State	GSDP	Per capita income (In Rs)	GVA-Agriculture and allied	GVA Livestock
1	ANDHRA PRADESH	60337625	119608	16408561	4936055
2	BIHAR	41350321	36964	8095024	2247038
3	CHHATTISGARH	23631782	87354	3948847	352208
4	GUJARAT	89592671	141405	13540660	2698910
5	HARYANA	44186426	165728	7990228	2836137
6	JHARKHAND	24195500	68083	3632150	594001
7	KARNATAKA	104014794	162014	11693156	2157428
8	KERALA	52677438	155005	5921796	1656104
9	MADHYA PRADESH	56505343	72778	19770912	2550711
10	MAHARASHTRA	179212165	152853	16475655	3972829
11	ODISHA	33232913	75593	5569454	913005
12	PUNJAB	36801089	126606	9285716	2638842
13	RAJASTHAN	61219447	84837	15044394	5356257
14	TAMIL NADU	121266799	161111	13143892	4765971
15	TELANGANA	58311725	157031	7459975	3286500
16	UTTAR PRADESH	115379459	54658	28212490	8233666
17	UTTARAKHAND	18409131	171663	1715039	447222
18	WEST BENGAL	72897449	78903	-	-
19	ANDAMAN & NICOBAR ISLANDS	-	-	-	-
20	ARUNACHAL PRADESH	1947253	128447	788274	42249
21	ASSAM	19809800	60621	3855548	173478
22	CHANDIGARH	3030444	268656	17264	14912
23	DADRA & NAGAR HAVELI	-	-	-	-
24	DAMAN & DIU	-	-	-	-
25	GOA	4554755	304666	319733	29627
26	HIMACHAL PRADESH	10436879	147330	1514981	110304
27	JAMMU & KASHMIR	10268051	77559	1856481	405294
28	LAKSHADWEEP	-	-	-	-
29	MANIPUR	1804276	58442	383140	75483
30	MEGHALAYA	2730451	83474	413131	75374
31	MIZORAM	1102074	93136	217010	45590
32	NAGALAND	1841424	89607	607897	123800
33	NCT OF DELHI	55874526	305092	311220	200771
34	PUDUCHERRY	2653346	188582	129392	51880
35	SIKKIM	1663678	259950	159217	22925
36	TRIPURA	2966662	77358	799825	88176

## Annex 4. State wise MAH, Milk Production, Per capita availability, In-milk animals & productivity

No.	State	No. of potential villages	MAH (Lakh Nos.)	Milk production (2015-16) ('000 MT) (As per TCD 2016)	Per Capita Availability of Milk (KgPD)	In-milk population ('000 Nos)	In-milk Productivity (KgPD)
1	ANDHRA PRADESH	11716	24.34	10817	475	5456	5.43
2	BIHAR	23307	63.11	8288	219	5104	4.34
3	CHHATTISGARH	3653	18.35	1277	133	1416	2.38
4	GUJARAT	16337	31.86	12262	545	6274	5.23
5	HARYANA	6423	20.87	8381	877	2844	8.03
6	JHARKHAND	4925	17.35	1812	152	1792	2.62
7	KARNATAKA	19023	29.83	6344	282	4613	3.72
8	KERALA	7556	3.34	2650	200	699	9.87
9	MADHYA PRADESH	31446	54.81	12148	428	9003	3.51
10	MAHARASHTRA	21831	41.03	10153	239	5403	5.02
11	ODISHA	5813	24.13	1930	124	2139	2.47
12	PUNJAB	11702	17.95	10774	1032	3401	8.63
13	RAJASTHAN	35105	54.50	18500	704	8409	5.40
14	TAMIL NADU	11833	22.25	7244	283	3329	5.96
15	TELANGANA	8434	10.48	4442	475	3001	4.05
16	UTTAR PRADESH	67291	155.45	26387	335	16586	4.15
17	UTTARAKHAND	4611	9.01	1656	434	1045	4.21
18	WEST BENGAL	13335	41.41	5038	145	3569	3.77
19	ANDAMAN & NICOBAR ISLANDS	74	0.04	15	87	8	4.61
20	ARUNACHAL PRADESH	76	0.91	50	105	73	1.89
21	ASSAM	2542	27.39	843	70	1569	1.43
22	CHANDIGARH	12	0.01	43	93	16	7.28
23	DADRA & NAGAR HAVELI	0	0.03	9	72	0.00	-
24	DAMAN & DIU	0	0.00	1	10	0.41	4.74
25	GOA	158	0.26	54	74	32	4.65
26	HIMACHAL PRADESH	5291	7.81	1283	505	920	3.69
27	JAMMU & KASHMIR	5371	9.86	2273	395	1019	5.93
28	LAKSHADWEEP	4	0.00	3	113	0.58	3.83
29	MANIPUR	177	0.37	79	76	72	3.01
30	MEGHALAYA	161	0.97	84	83	134	1.71
31	MIZORAM	9	0.05	22	57	11	5.41
32	NAGALAND	263	0.12	77	89	52	4.02
33	NCT OF DELHI	141	0.21	281	36	140	5.48
34	PUDUCHERRY	95	0.11	48	108	22	5.90
35	SIKKIM	300	0.49	67	282	33	5.49
36	TRIPURA	541	2.01	152	109	168	2.28
	<b>Grand Total</b>	<b>319556</b>	<b>691</b>	<b>155491</b>	<b>337</b>	<b>88355</b>	<b>4.65</b>



**Annex 5. State wise Number of In-Milk Animals During 2015-16 (figures in 000 nos.)**

(Source: BAHS 2016)

No.	States/UTs	Cattle (in 000 nos.)				Buffalo (in 000 nos.)	
		Exotic	Crossbred Exotic	Indigenous	Non-Descript	Indigenous Buffalo	Non-Descript Buffalo
1	Andhra Pradesh	2.43	913.54	118.83	727.69	2101.70	1591.36
2	Arunachal Pradesh	0.00	7.05	65.23	0.00	0.42	0.00
3	Assam	0.00	163.51	0.00	1309.41	96.09	0.00
4	Bihar	0.00	1104.02	1941.16	0.00	2058.97	0.00
5	Chhattisgarh	4.22	45.96	416.35	759.85	52.86	136.84
6	Goa	0.00	10.27	0.00	8.78	0.00	12.58
7	Gujarat	0.00	806.53	1286.25	560.07	2781.48	839.35
8	Haryana	38.91	364.93	127.02	53.53	1900.84	358.45
9	Himachal Pradesh	7.66	404.68	2.72	217.43	141.94	145.30
10	Jammu & Kashmir	0.00	504.97	0.00	275.15	50.86	187.62
11	Jharkhand	12.48	147.74	192.00	1178.96	73.19	187.50
12	Karnataka	0.00	1391.14	924.33	598.91	987.98	710.56
13	Kerala	0.42	668.14	2.59	21.28	4.71	2.34
14	Madhya Pradesh	18.43	428.10	635.43	4218.42	823.98	2879.08
15	Maharashtra	11.94	1536.15	332.85	1325.12	928.62	1268.71
16	Manipur	1.00	14.64	0.00	44.67	0.00	11.49
17	Meghalaya	0.00	15.23	116.66	0.00	2.52	0.00
18	Mizoram	0.00	7.64	0.00	3.50	0.00	0.00
19	Nagaland	0.00	28.90	0.00	18.56	0.00	4.23
20	Odisha	0.00	368.13	193.81	1402.41	29.92	144.55
21	Punjab	114.38	504.97	74.68	22.13	1874.48	810.03
22	Rajasthan	0.00	784.97	1445.91	1592.73	2766.78	1818.49
23	Sikkim	0.00	32.52	0.77	0.00	0.00	0.00
24	Tamil Nadu	19.38	2424.58	621.49	0.00	168.03	95.96
25	Telangana	12.01	192.28	86.10	894.91	779.91	1036.24
26	Tripura	0.00	30.09	0.00	136.54	0.00	1.78
27	Uttar Pradesh	123.62	1103.24	3040.67	1682.33	8249.21	2387.01
28	Uttarakhand	5.80	215.45	33.97	333.71	204.58	251.60
29	West Bengal	0.00	768.46	2680.38	0.00	120.49	0.00
30	A&N Islands	2.85	1.44	3.27	0.00	0.78	0.00
31	Chandigarh	3.43	0.00	0.00	0.43	12.35	0.00
32	D.& N. Haveli	0.00	0.00	0.00	0.00	0.00	0.00
33	Daman & Diu	0.00	0.15	0.00	0.00	0.00	0.26
34	Delhi	0.00	22.10	23.11	0.00	95.20	0.00
35	Lakshadweep	0.00	0.24	0.00	0.34	0.00	0.00
36	Puducherry	0.00	20.90	0.00	0.55	0.00	0.86
<b>All India</b>		<b>378.98</b>	<b>15032.65</b>	<b>14365.56</b>	<b>17387.42</b>	<b>26307.89</b>	<b>14882.19</b>

For breed-wise bovine population information refer to the following link-  
<http://dahd.nic.in/Division/statistics/animal-husbandry-statistics-division>

## Annex 6. State-wise coverage of cooperative and PC (Producer Company)

No.	State	Vill covered ('000)			Member covered ('000)			Women Member covered ('000)			Milk Procurement (TKgPD)		
		Coop	PC	Total	Coop	PC	Total	Coop	PC	Total	Coop	PC	Total
1	ANDHRA PRADESH	6.21	1.07	7.27	714	57	771	134	57	191	1317	266	1583
2	BIHAR	19.48	0.00	19.48	1003	0	1003	171		171	1738	0	1738
3	CHHATTISGARH	0.87	0.00	0.87	35	0	35	7		7	74	0	74
4	GUJARAT	16.34	2.09	18.43	3420	88	3508	1153	19	1171	17504	571	18075
5	HARYANA	5.79	0.00	5.79	297	0	297	83		83	450	0	450
6	JHARKHAND	0.74	0.00	0.74	9	0	9	2		2	44	0	44
7	KARNATAKA	16.27	0.00	16.27	2400	0	2400	825		825	6478	0	6478
8	KERALA	3.24	0.00	3.24	940	0	940	225		225	1092	0	1092
9	MADHYA PRADESH	8.34	0.00	8.34	321	0	321	93		93	1020	0	1020
10	MAHARASHTRA	13.72	0.00	13.72	1757	0	1757	443		443	3603	0	3603
11	ODISHA	5.55	0.00	5.55	268	0	268	118		118	526	0	526
12	PUNJAB	8.36	0.91	9.27	401	31	432	60	6	65	1396	159	1555
13	RAJASTHAN	20.88	2.77	23.64	762	89	851	282	36	318	2614	570	3184
14	TAMIL NADU	10.99	0.00	10.99	1923	0	1923	735		735	3047	0	3047
15	TELANGANA	2.06	0.00	2.06	113	0	113	44		44	518	0	518
16	UTTAR PRADESH	27.21	2.15	29.35	877	61	938	208	17	224	325	368	693
17	UTTARAKHAND	3.93	0.00	3.93	153	0	153	73		73	159	0	159
18	WEST BENGAL	4.20	0.00	4.20	286	0	286	84		84	160	0	160
19	ANDAMAN & NICOBAR ISLANDS	0.00	0	0.00	0	0	0			0	0	0	0
20	ARUNACHAL PRADESH	0.00	0	0.00	0	0	0			0	0	0	0
21	ASSAM	0.35	0	0.35	12	0	12	2		2	22	0	22
22	CHANDIGARH	0.00	0	0.00	0	0	0			0	0	0	0
23	DADRA & NAGAR HAVELI	0.00	0	0.00	0	0	0			0	0	0	0
24	DAMAN & DIU	0.00	0	0.00	0	0	0			0	0	0	0
25	GOA	0.16	0	0.16	19	0	19	3		3	66	0	66
26	HIMACHAL PRADESH	1.01	0	1.01	35	0	35	14		14	56	0	56
27	JAMMU & KASHMIR	0.39	0	0.39	0	0	0	1		1	12	0	12
28	LAKSHADWEEP	0.00	0	0.00	0	0	0			0	0	0	0
29	MANIPUR	0.00	0	0.00	0	0	0			0	0	0	0
30	MEGHALAYA	0.08	0	0.08	4	0	4	0		0	0	0	0
31	MIZORAM	0.01	0	0.01	1	0	1	1		1	6	0	6
32	NAGALAND	0.06	0	0.06	2	0	2	0		0	3	0	3
33	NCT OF DELHI	0.00	0	0.00	0	0	0	-			0	0	0
34	PUDUCHERRY	0.09	0	0.09	38	0	38	17		17	43	0	43
35	SIKKIM	0.29	0	0.29	10	0	10	2		2	27	0	27
36	TRIPURA	0.12	0	0.12	6	0	6	1		1	6	0	6
	<b>Grand Total</b>	<b>177</b>	<b>9</b>	<b>186</b>	<b>15805</b>	<b>326</b>	<b>16131</b>	<b>4779</b>	<b>133</b>	<b>4912</b>	<b>42308</b>	<b>1934</b>	<b>44242</b>

**Annex 7. State-wise processing and chilling infrastructure under cooperative & PC**

No.	State	Chilling infrastructure capacity (KL) (as on March 2016)			No. of Plants (as on March 2016) Coop	Processing Capacity (Million LPD) (as on March 2016) Coop
		Coop	PC	Total		
1	ANDHRA PRADESH	1791	353	2144	16	2.6
2	BIHAR	1600	0	1600	20	3.1
3	CHHATTISGARH	52	0	52	8	0.16
4	GUJARAT	21408	841	22249	33	28.42
5	HARYANA	571	0	571	6	0.94
6	JHARKHAND	60	0	60	2	0.11
7	KARNATAKA	4725	0	4725	23	5.41
8	KERALA	986	0	986	13	1.77
9	MADHYA PRADESH	1170	0	1170	17	1.36
10	MAHARASHTRA	2949	0	2949	36	7.14
11	ODISHA	733	0	733	12	0.6
12	PUNJAB	1757	150	1907	10	1.91
13	RAJASTHAN	3841	360	4201	20	2
14	TAMIL NADU	2622	0	2622	21	3.51
15	TELANGANA	316	0	316	10	1.07
16	UTTAR PRADESH	935	621	1556	18	2.32
17	UTTARAKHAND	156	0	156	9	0.25
18	WEST BENGAL	366	0	366	11	1.65
19	ANDAMAN & NICOBAR ISLANDS	0	0	0		
20	ARUNACHAL PRADESH	0	0	0		
21	ASSAM	0	0	0	1	0.06
22	CHANDIGARH	0	0	0		
23	DADRA & NAGAR HAVELI	0	0	0		
24	DAMAN & DIU	0	0	0		
25	GOA	44	0	44	1	0.11
26	HIMACHAL PRADESH	187	0	187	3	0.07
27	JAMMU & KASHMIR	33	0	33	2	0.02
28	LAKSHADWEEP	0	0	0		
29	MANIPUR	0	0	0		
30	MEGHALAYA	0	0	0		
31	MIZORAM	0	0	0		
32	NAGALAND	1	0	1	1	0.01
33	NCT OF DELHI	0	0	0	1	1
34	PUDUCHERRY	35	0	35	1	0.05
35	SIKKIM	18	0	18	1	0.04
36	TRIPURA	2	0	2	1	0.02
	<b>Grand Total</b>	<b>46355</b>	<b>2325</b>	<b>48680</b>	<b>297.00</b>	<b>65.70</b>

### Annex 8. State-wise Cooperatives Milk Procurement, Sale and Numbers of Farmer Members (2015-16)

State	Milk Procurement (TKgPD)	Milk Sale (TLPD)	Farmer Members (No.)
Assam	21.8	42	15817
Bihar	1725.5	880	1003557
Jharkhand	61.3	339	1279
Meghalaya	11.0	12	4031
Mizoram	6.5	5	950
Nagaland	2.7	4	1956
Odisha	524.5	406	279964
Sikkim	26.8	31	11707
Tripura	5.0	11	5867
West Bengal	158.2	1186	252041
Haryana	450.3	335	305395
Himachal Pradesh	56.6	23	36439
Jammu & Kashmir	12.0	14	7000
Punjab	1392.0	965	398887
Rajasthan	2602.8	2084	762825
Uttarakhand	172.8	145	152866
Uttar Pradesh	322.3	689	877977
Andhra Pradesh	1332.0	1139	648752
Karnataka	6479.6	3344	2400107
Kerala	1098.8	1264	939582
Puducherry	42.9	99	37580
Tamilnadu	3039.5	2059	1922909
Telangana	712.0	790	127038
Chhattisgarh	74.4	132	35159
Goa	65.9	83	19100
Gujarat	17481.0	4749	3451671
Madhya Pradesh	1029.2	795	320859
Maharashtra	3645.9	4469	1814282
Delhi	0.0	6033	0
<b>All India</b>	<b>42553</b>	<b>32128</b>	<b>15835597</b>

## Annex 9. State wise existing chilling capacity in India (As on 2015-16)

### A. Dairy Cooperatives

No.	State	Existing BMC capacity		Existing Chilling Centre capacity		Total Chilling capacity (KL)
		Physical No.	Capacity (KL)	Physical No.	Capacity (KL)	
1	Andhra Pradesh	253	1143	30	648	1791
2	Bihar	357	1310	14	290	1600
3	Chhattisgarh	24	26.5	5	25	52
4	Gujarat	5360	15493	55	5915	21408
5	Haryana	165	231	17	340	571
6	Jharkhand	20	50	1	10	60
7	Karnataka	1008	2680	46	2045	4725
8	Kerala	307	881	6	105	986
9	Madhya Pradesh	406	603.5	53	566	1170
10	Maharashtra	710	1358.5	49	1590	2949
11	Odisha	368	645	5	88	733
12	Punjab	599	1167	42	590	1757
13	Rajasthan	1443	2886	55	955	3841
14	Tamil Nadu	273	1177	35	1445	2622
15	Telangana	25	146	15	170	316
16	Uttar Pradesh	346	365	22	570	935
17	Uttarakhand	26	81	9	75	156
18	West Bengal	151	244	12	122	366
19	Assam	0	0	0	0	0
20	Goa	30	44	0	0	44
21	Himachal Pradesh	99	103	18	85	187
22	Jammu & Kashmir	14	33	0	0	33
23	Mizoram	0	0	0	0	0
24	Nagaland	1	1	0	0	1
25	Pondicherry	7	35	0	0	35
26	Sikkim	31	18	0	0	18
27	Tripura	1	2	0	0	2
	<b>Total</b>	<b>12024</b>	<b>30723</b>	<b>489</b>	<b>15633</b>	<b>46355</b>

### B. Producer Companies

No.	State	Existing BMC capacity		Existing Chilling Centre capacity		Total Chilling capacity (KL)
		Physical No.	Capacity (KL)	Physical No.	Capacity (KL)	
1	Andhra Pradesh	121	333	1	20	353
2	Gujarat	149	701	3	140	841
3	Punjab	0	0	7	150	150
4	Rajasthan	0	0	18	360	360
5	Uttar Pradesh	353	486	9	135	621
	<b>Total</b>	<b>623</b>	<b>1520</b>	<b>38</b>	<b>805</b>	<b>2325</b>

### Annex 10. State-wise sale of VAP

S.No.	States/UTs	Ice-cream in (000' litre)	Processed Cheese (MT)	Unprocessed Cheese (MT)	Paneer (MT)	Gulab Jamun (MT)	Table Butter (MT)	Flavoured milk (000' litre)	Shrikhand (MT)	Dairy Whitener (MT)	Lassi (MT)	Long Shelf Milk (TLPD)
1	Andhra Pradesh				161.3			525.9			1955.9	2.6
2	Assam				98.2		10.5	1.2			2.7	
3	Bihar	1738.7	0.4		4210.5	1718.6	109.3	229.7		1.0	4107.8	
4	Chhattisgarh				20.4			7.2	7.6		35.9	
5	Goa	39.4			10.9			113.7	4.5		71.9	
6	Gujarat	43732.5	14830.1	391.0	9008.9	156.3	52045.7	15294.7	5163.4	63526.6	932.2	19.1
7	Haryana				537.1		312.8	377.9			3936.9	
8	Himachal Pradesh				75.3		24.0	34.8				
9	Jharkhand				464.3		13.1	3.0			633.9	
10	Karnataka	3954.0		344.7	1719.9		571.3	2286.0		496.7	3532.8	212.6
11	Kerala	810.7					39.9	88.8				
12	Madhya Pradesh				198.4		68.1	655.2	332.0		681.8	
13	Maharashtra	601.0	167.5	151.0	895.9	13.8	466.6	1208.9	3381.7		3149.4	
14	Mizoram				12.8		7.1				17.6	
15	Nagaland	18.9									309.0	
16	Odisha	615.6			1285.2		14.3	1380.1			899.4	
17	Punjab	201.9	161.1		2355.1		541.3	1285.3			13446.6	
18	Rajasthan	129.7	40.3		1488.5	7.8	176.7	96.2	319.8		1869.1	
19	Sikkim	8.1			31.3							
20	Tamil Nadu	6871.7	0.4		74.2	27.7	197.2	13130.8				39.8
21	Tripura	12			15.9							
22	Uttar Pradesh				196.7	1.0	584.1	395.5	0.3		47.1	
23	Uttarakhand				571.6		105.7					
24	West Bengal	4983.3			807.2						134.9	
25	Delhi		221.0		920.0		565.0				3933.0	47.1
26	Puducherry	2186.0			10.4			194.7	0.0		27.5	
	<b>Total</b>	<b>65892.7</b>	<b>15420.8</b>	<b>886.7</b>	<b>25170.0</b>	<b>1948.6</b>	<b>55845.6</b>	<b>37309.5</b>	<b>9209.3</b>	<b>64024.3</b>	<b>39725.4</b>	<b>321.2</b>

## Annex 11. State-wise Dairy Plants (Number and Capacity) with Private Players

(source: BAHS 2013)

State	No.	Capacity in TLPD
Andhra Pradesh	39	5693
Bihar	2	400
Chhattisgarh	0	0
Delhi	1	3500
Goa	3	270
Gujarat	15	917
Haryana	31	2417
Himachal Pradesh	4	545
J&K	1	30
Karnataka	8	485
Kerala	10	373
Madhya Pradesh	35	4013
Maharashtra	276	15641
Odisha	2	75
Puducherry	0	0
Punjab	64	6529
Rajasthan	20	3361
Sikkim	0	0
Tamil Nadu	26	5289
Tripura	0	0
Uttar Pradesh	216	22569
West Bengal	12	1145
<b>Total</b>	<b>765</b>	<b>73252</b>

## Annex 12. Targets under National Action Plan for Dairy Development

Year	Population (in millions)	Growth Rate (%) in population	Milk Production (MMT)	Growth Rate in Milk Production (%)	Per Capita availability/year (in ltrs)	Milk Consumption (MMT)		Marketable Surplus (LLPD) (52% of milk production)	Milk Procurement by (LLPD)				% coverage of milk production			
						Rural	Urban		Cooperatives	Private	Producer Companies	Organised Milk Marketing	Cooperatives	Private	Producer Companies	Organised Milk Marketing
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2009-10	1166.23	1.39	116.4	3.74	99.6	42.6	73.8	1658.30	257.00	257.00		1144.30	8.06	8.06		35.88
2010-11	1186.00	1.70	121.8	4.64	102.6	44.6	77.2	1735.23	294.00	294.00		1147.23	8.81	8.81		34.38
2011-12	1210.57	2.07	127.9	5.01	105.9	49.1	78.8	1822.14	310.00	310.00		1202.14	8.85	8.85		34.31
2012-13	1213.37	0.23	132.4	3.52	109.1	50.8	81.6	1886.25	348.00	348.00		1190.25	9.59	9.59		32.81
2013-14	1223.58	0.84	137.7	4.00	112.1	52.9	84.8	1961.75	361.00	361.00		1239.75	9.57	9.57		32.86
2014-15	1238.99	1.25	146.3	6.25	117.5	56.2	90.1	2084.27	374.00	374.00		1336.27	9.33	9.33		33.34
<b>2015-16</b>	<b>1254.02</b>	<b>1.22</b>	<b>155.5</b>	<b>6.28</b>	<b>127.8</b>	<b>59.7</b>	<b>95.8</b>	<b>2215.20</b>	<b>440.69</b>	<b>430.06</b>	<b>20.00</b>	<b>1324.45</b>	<b>10.34</b>	<b>10.10</b>	<b>0.47</b>	<b>31.09</b>
<b>%CAGR</b>		<b>1.29</b>		<b>4.78</b>	<b>4.02</b>	<b>5.80</b>	<b>4.46</b>	<b>4.95</b>	<b>9.19</b>	<b>8.79</b>		<b>2.49</b>	<b>9.14</b>	<b>9.14</b>		
<b>Projected Targets</b>																
2016-17	1270.20	1.29	163.7	5.28	128.87	63.2	100.5	2690.85	503.79	618.78	24.95	1643.33	11.23	11.57	0.56	36.64
2017-18	1286.58	1.29	180.4	10.20	140.21	70.0	110.4	2965.28	602.86	655.07	32.58	1674.77	12.20	13.25	0.66	33.89
2018-19	1303.18	1.29	199.0	10.29	152.67	77.6	121.4	3270.41	722.01	827.85	42.58	1677.97	13.25	15.19	0.78	30.78
2019-20	1319.99	1.29	216.0	8.56	163.62	84.7	131.3	3550.36	851.15	1029.80	54.77	1614.64	14.38	17.40	0.93	27.29
2020-21	1337.02	1.29	234.5	8.66	175.37	92.4	142.1	3854.34	1003.39	1281.02	70.46	1499.46	15.62	19.94	1.10	23.34
<b>2021-22</b>	<b>1354.26</b>	<b>1.29</b>	<b>254.5</b>	<b>8.46</b>	<b>187.96</b>	<b>100.8</b>	<b>153.7</b>	<b>4184.35</b>	<b>1182.88</b>	<b>1593.54</b>	<b>90.64</b>	<b>1317.29</b>	<b>16.96</b>	<b>22.85</b>	<b>1.30</b>	<b>18.89</b>
2022-23	1371.73	1.29	276.3	8.56	201.45	110.0	166.4	4542.61	1394.46	1982.29	116.60	1049.25	18.42	26.18	1.54	13.86
<b>2023-24</b>	<b>1389.43</b>	<b>1.29</b>	<b>300.0</b>	<b>8.56</b>	<b>215.92</b>	<b>120.0</b>	<b>180.0</b>	<b>4931.55</b>	<b>1643.84</b>	<b>2455.80</b>	<b>150.00</b>	<b>671.77</b>	<b>20.00</b>	<b>30.00</b>	<b>1.82</b>	<b>8.17</b>
<b>%CAGR</b>		<b>1.29</b>		<b>9.04</b>	<b>6.79</b>	<b>9.12</b>	<b>0.51</b>	<b>10.65</b>	<b>17.89</b>	<b>24.40</b>	<b>28.64</b>	<b>-6.55</b>	<b>8.59</b>	<b>14.59</b>	<b>18.50</b>	<b>-13.92</b>



**Annex 13. Targets under National Action Plan for Dairy Development- Plan- Farmer Income**

Year	Milk Production (MMT)	Milk Production from Cattle and Buffalo	No. of In milk Bovine (in million)	No. of Farmer Member owning bovine (in million)					Milk Yield per animal/day (ltr)	Milch animal per farmer (in nos.)	Ltrs of milk per farmer per day	Marketable Milk (52% of milk per farmer) (ltrs/day)	Milk Sold per farmer (ltrs/month)	Procurement Price (Rs./ltr) (6% fat & 9% SNF)	Sale Price (Rs./ltr) (6% fat & 9% SNF)	Farmer Income (@20% of proc.price) Rs./ltr	Average Income per month per farmer (Rs.)
				Cooperatives	Private	Producer company	Un-organised	Total									
	1		2	3	5	4	6	7	8	9	10	11	12	13	14	15	16
2009-10	116.4	-	67.62	14.02	4.05	-	63.09	80.00	4.72	0.85	3.99	1.99	59.79	20.37	28.36	4.07	243.60
2010-11	121.8	-	69.88	14.46	4.20	-	62.54	80.00	4.78	0.87	4.17	2.09	62.57	22.76	31.20	4.55	284.81
2011-12	127.9	-	82.36	14.78	4.35	-	62.11	80.00	4.25	1.03	4.38	2.19	65.70	24.49	34.92	4.90	321.81
2012-13	132.4	-	83.15	15.12	4.51	-	61.67	80.00	4.36	1.04	4.53	2.27	68.01	26.40	37.62	5.28	359.11
2013-14	137.7	-	84.07	15.45	4.67	-	61.21	80.00	4.49	1.05	4.72	2.36	70.74	30.47	42.45	6.09	431.07
2014-15	146.3	141.1	85.66	15.40	4.84	-	61.15	80.00	4.51	1.07	4.83	2.42	72.50	31.87	45.40	6.37	462.11
<b>2015-16</b>	<b>155.5</b>	<b>150.0</b>	<b>88.35</b>	<b>15.50</b>	<b>5.02</b>	<b>0.35</b>	<b>60.92</b>	<b>80.00</b>	<b>4.65</b>	<b>1.09</b>	<b>5.14</b>	<b>2.67</b>	<b>80.14</b>	<b>32.19</b>	<b>46.00</b>	<b>6.44</b>	<b>515.92</b>
<b>Projected Targets</b>																	
2016-17	163.7	162.8	91.58	16.08	6.45	0.40	57.07	80.00	4.87	1.13	5.58	3.35	100.38	33.80	48.30	6.76	679
2017-18	180.4	176.8	94.94	16.67	7.88	0.55	54.90	80.00	5.10	1.17	6.05	3.63	108.98	35.49	50.72	7.10	774
2018-19	199.0	191.9	98.41	17.29	9.31	0.60	52.80	80.00	5.34	1.22	6.57	3.94	118.31	37.26	53.25	7.45	882
2019-20	216.0	208.4	102.02	17.93	10.74	0.80	50.53	80.00	5.60	1.26	7.14	4.28	128.44	39.13	55.91	7.83	1005
2020-21	234.7	226.2	105.75	18.60	12.17	1.00	48.23	80.00	5.86	1.31	7.75	4.65	139.43	41.08	58.71	8.22	1146
<b>2021-22</b>	<b>254.5</b>	<b>245.6</b>	<b>109.62</b>	<b>19.29</b>	<b>13.60</b>	<b>1.20</b>	<b>45.91</b>	<b>80.00</b>	<b>6.14</b>	<b>1.35</b>	<b>8.41</b>	<b>5.05</b>	<b>151.37</b>	<b>43.14</b>	<b>61.64</b>	<b>8.63</b>	<b>1306</b>
2022-23	276.3	266.6	113.64	20.01	15.03	1.40	43.56	80.00	6.43	1.40	9.13	5.48	164.33	45.29	64.73	9.06	1489
<b>2023-24</b>	<b>300.0</b>	<b>289.4</b>	<b>117.80</b>	<b>20.75</b>	<b>16.44</b>	<b>1.50</b>	<b>41.31</b>	<b>80.00</b>	<b>6.73</b>	<b>1.45</b>	<b>9.91</b>	<b>5.95</b>	<b>178.40</b>	<b>47.56</b>	<b>67.96</b>	<b>9.51</b>	<b>1697</b>
<b>%CAGR</b>	<b>9.04</b>	<b>9.04</b>	<b>3.66</b>						<b>4.73</b>					<b>5.00</b>	<b>5.00</b>	<b>5.00</b>	<b>72.0</b>

## Annex 14. Targets under National Action Plan for Dairy Development

### A. Cooperative

Year	Milch animal per farmer (in nos.)	No. of In milk Bovine (in million)	Milk Procurement by Cooperatives (LLPD)	Milk Yield per animal/day (ltr)	Dairy Cooperative Societies (Lakh)	Milk Procurement per DCS (Ltr/day)	Milk Producer Members (Lakh)	Milk procurement per member (Ltr/day)	Milk procurement per member (Ltr/month)	Procurement Price (Rs./ltr) (6% fat & 9% SNF)	Farmer Income (@20% of proc.price) Rs./ltr	Average Income per month per farmer (Rs.)
	1	2	3	4	5	6	7	8	9	10	11	12
2009-10	0.85		257	4.72	1.40	183.57	140.19	1.83	55.00	20.37	4.07	224.06
2010-11	0.87	74.84	294	4.78	1.43	205.59	144.64	2.03	60.98	22.76	4.55	277.58
2011-12	1.03	75.90	310	4.25	1.49	208.05	147.82	2.10	62.97	24.49	4.90	308.15
2012-13	1.04		348	4.36	1.56	223.60	151.15	2.30	69.07	26.40	5.28	364.69
2013-14	1.05	67.62	361	4.49	1.63	227.76	154.52	2.34	70.09	30.47	6.09	427.12
2014-15	1.07	69.88	374	4.68	1.66	225.30	153.99	2.43	72.86	31.87	6.37	464.42
<b>2015-16</b>	<b>1.15</b>	<b>17.79</b>	<b>440.69</b>	<b>4.76</b>	<b>1.76</b>	<b>250.00</b>	<b>155.00</b>	<b>2.84</b>	<b>85.29</b>	<b>32.19</b>	<b>6.44</b>	<b>549.13</b>
<b>%CAGR</b>			<b>8.78</b>		<b>3.93</b>	<b>5.40</b>	<b>1.69</b>	<b>7.72</b>		<b>10.63</b>	<b>7.37</b>	
<b>Projected Targets</b>												
2016-17	1.18	18.97	503.79	5.27	1.92	270.00	160.76	3.23	96.95	33.80	6.76	635.54
2017-18	1.20	20.01	602.86	5.89	2.04	300.00	166.73	3.67	110.20	35.49	7.10	769.95
2018-19	1.24	21.44	722.01	6.48	2.12	340.00	172.92	4.18	125.26	37.26	7.45	933.56
2019-20	1.28	22.96	851.15	7.13	2.24	380.00	179.34	4.75	142.38	39.13	7.83	1114.18
2020-21	1.32	24.55	1004.29	7.86	2.39	420.00	186.00	5.39	161.84	41.08	8.22	1330.95
<b>2021-22</b>	<b>1.36</b>	<b>26.24</b>	<b>1182.83</b>	<b>8.67</b>	<b>2.57</b>	<b>460.00</b>	<b>192.91</b>	<b>6.13</b>	<b>183.95</b>	<b>43.14</b>	<b>8.63</b>	<b>1587.00</b>
2022-23	1.40	28.01	1394.41	9.57	2.91	480.00	200.07	6.97	209.09	45.29	9.06	1894.15
<b>2023-24</b>	<b>1.45</b>	<b>30.09</b>	<b>1643.84</b>	<b>10.51</b>	<b>3.29</b>	<b>500.00</b>	<b>207.50</b>	<b>7.92</b>	<b>237.67</b>	<b>47.56</b>	<b>9.51</b>	<b>2260.65</b>
<b>%CAGR</b>			<b>28.07</b>		<b>10.35</b>	<b>14.73</b>	<b>5.21</b>	<b>20.32</b>		<b>7.07</b>		<b>29.79</b>

**B. Private**

Year	Milch animal per farmer (in nos.)	No. of In milk Bovine (in million)	Milk Procurement by Private (LLPD)	Milk Yield per animal/day (ltr)	Milk Collection Center & vendor (MCC&V) (in lakh)	Milk Procurement per MCC&V (in ltrs/day)	MCC Members (Lakh)	Milk procurement per member (Ltr/day)	Milk procurement per member per month (Ltr/month)	Procurement Price (Rs./ltr) (6% fat & 9% SNF)	Farmer Income (@20% of proc.price) Rs./ltr	Average Income per month per farmer (Rs.)
2015-16	2.50	12.55	430	6.59	1.43	300.00	50.17	8.57	257.14	32.19	6.44	1655.49
<b>Projected Targets</b>												
2016-17	2.55	14.69	534.98	7.00	1.65	325.00	57.61	9.29	278.57	33.80	6.76	1883.12
2017-18	2.60	17.30	665.49	7.40	1.90	350.00	66.55	10.00	300.00	35.49	7.10	2129.37
2018-19	2.65	20.48	827.84	7.78	2.21	375.00	77.26	10.71	321.43	37.26	7.45	2395.54
2019-20	2.75	24.78	1029.80	7.99	2.57	400.00	90.11	11.43	342.86	39.13	7.83	2683.00
2020-21	2.85	28.40	1281.02	8.68	2.85	450.00	99.64	12.86	385.71	41.08	8.22	3169.30
<b>2021-22</b>	<b>2.90</b>	<b>34.05</b>	<b>1593.54</b>	<b>9.00</b>	<b>3.35</b>	<b>475.00</b>	<b>117.42</b>	<b>13.57</b>	<b>407.14</b>	<b>43.14</b>	<b>8.63</b>	<b>3512.64</b>
2022-23	2.95	40.93	1982.29	9.31	3.96	500.00	138.76	14.29	428.57	45.29	9.06	3882.39
<b>2023-24</b>	<b>3.00</b>	<b>49.32</b>	<b>2465.89</b>	<b>9.62</b>	<b>4.70</b>	<b>525.00</b>	<b>164.39</b>	<b>15.00</b>	<b>450.00</b>	<b>47.56</b>	<b>9.51</b>	<b>4280.34</b>
<b>%CAGR</b>			<b>24.40</b>		<b>16.02</b>	<b>7.27</b>	<b>16.02</b>	<b>7.46</b>	<b>7.27</b>	<b>5.00</b>	<b>5.00</b>	<b>12.63</b>

**C. Producer Company**

Year	Milch animal per farmer (in nos.)	No. of In milk Bovine (in million)	Milk Procurement by PC (LLPD)	Milk Yield per animal/day (ltr)	Milk Collection Center (in lakh)	Milk Procurement per MMC (in ltrs/day)	MCC Members (Lakh)	Milk procurement per member (Ltr/day)	Milk procurement per member per month (Ltr/month)	Procurement Price (Rs./ltr) (6% fat & 9% SNF)	Farmer Income (@20% of proc.price) Rs./ltr	Average Income per month per farmer (Rs.)
2015-16	2.00	0.67	20.00	5.78	0.067	300.00	3.33	6.0	180.18	32.19	6.44	1160.00
<b>Projected Targets</b>												
2016-17	2.10	0.84	25.73	5.89	0.08	325.00	4.00	6.43	192.96	33.80	6.76	1304.41
2017-18	2.15	1.08	45.00	8.05	0.13	350.00	5.00	9.00	270.00	35.49	7.10	1916.43
2018-19	2.20	1.54	60.00	7.49	0.16	375.00	7.00	8.57	257.14	37.26	7.45	1916.43
2019-20	2.25	2.03	80.00	7.60	0.19	425.00	9.00	8.89	266.67	39.13	7.83	2086.78
2020-21	2.30	2.53	100.00	7.60	0.22	450.00	11.00	9.09	272.73	41.08	8.22	2240.92
<b>2021-22</b>	<b>2.30</b>	<b>2.88</b>	<b>120.00</b>	<b>8.03</b>	<b>0.25</b>	<b>475.00</b>	<b>12.50</b>	<b>9.60</b>	<b>288.00</b>	<b>43.14</b>	<b>8.63</b>	<b>2484.73</b>
2022-23	2.35	3.29	130.00	7.60	0.26	500.00	14.00	9.29	278.57	45.29	9.06	2523.55
<b>2023-24</b>	<b>2.40</b>	<b>3.60</b>	<b>150.00</b>	<b>8.01</b>	<b>0.29</b>	<b>525.00</b>	<b>15.00</b>	<b>10.00</b>	<b>300.00</b>	<b>47.56</b>	<b>9.51</b>	<b>2853.56</b>
<b>%CAGR</b>			<b>16.25</b>		<b>20.97</b>	<b>7.28</b>	<b>28.42</b>	<b>7.28</b>	<b>7.28</b>	<b>5.00</b>	<b>5.00</b>	<b>12.65</b>

## Annex 15. Gap Analysis

### A. Cooperative

Year	Milk Procurement by Cooperatives (LLPD)	Processing Capacity (LLPD)	Chilling Capacity (LLPD)	Dairy Cooperative Society (lakhs)	Milk Producer Members (Lakh)	Cattle Feed Plant (MTPD)	Milk Powder Plant(MTPD)	Value added Products (MTPD)
	1	2	3	4	5	6	7	8
2015-16	440.46	662.96	463.79	1.72	155.0	15662	1496	3167
Projected Targets								
2016-17	503.79	764.61	503.79	1.97	160.8	15999	1570	3798
2017-18	602.86	881.84	602.86	2.79	166.7	16336	1644	4429
2018-19	722.01	1017.05	722.01	3.38	172.9	16673	1718	5060
2019-20	851.15	1173.00	851.15	2.24	179.3	17010	1792	5691
2020-21	1004.29	1352.85	1004.29	2.39	186.0	17347	1866	6322
<b>2021-22</b>	<b>1182.83</b>	<b>1560.27</b>	<b>1182.83</b>	<b>2.57</b>	<b>192.9</b>	<b>17684</b>	<b>1940</b>	<b>6953</b>
2022-23	1394.41	1799.51	1394.41	2.91	200.1	18021	2014	7584
<b>2023-24</b>	<b>1643.84</b>	<b>2075.42</b>	<b>1643.84</b>	<b>3.29</b>	<b>207.5</b>	<b>18361</b>	<b>2086</b>	<b>8214</b>
<b>GAP</b>	<b>1203.38</b>	<b>1412.46</b>	<b>1180.05</b>	<b>1.57</b>	<b>52.50</b>	<b>2699</b>	<b>590.00</b>	<b>5046.40</b>

### Assumptions:-

Gradual increase to 80% of the capacity utilization is considered for processing capacity  
80% of milk procurement is the requirement of chilling capacity with 80% capacity utilisation i.e. equivalent to milk procurement Targets as per JICA proposal of NDDB

**B. Private**

Year	Milk Procurement by Private (LLPD)	Processing Capacity (LLPD)	Chilling Capacity (LLPD)	Milk Collection Center & vendor (MCC&V) (in lakh)	MCC Members (Lakh)	Cattle Feed Plant (MTPD)	Milk Powder Plant(MTPD)	Value added Products (MTPD)
2015-16	430.00	732.52	293.01	1.43	50.17	NA	1465	3959
Projected Targets								
2016-17	534.98	668.72	534.98	1.65	57.61	100	1337	4500
2017-18	665.49	831.86	665.49	1.90	66.55	500	1664	5500
2018-19	827.84	1034.80	827.84	2.21	77.26	800	2070	6500
2019-20	1029.80	1287.25	1029.80	2.57	90.11	1200	2574	7500
2020-21	1281.02	1601.28	1281.02	2.85	99.64	1500	3203	8500
<b>2021-22</b>	<b>1593.54</b>	<b>1991.92</b>	<b>1593.54</b>	<b>3.35</b>	<b>117.42</b>	<b>2000</b>	<b>3984</b>	<b>9500</b>
2022-23	1982.29	2477.87	1982.29	3.96	138.76	2300	4956	10000
2023-24	2465.89	3082.36	2465.89	4.70	164.39	2699	6165	10267
<b>GAP</b>	<b>2035.89</b>	<b>2349.84</b>	<b>2172.88</b>	<b>1.14</b>	<b>114.22</b>	<b>2699</b>	<b>4700</b>	<b>6308</b>

**Assumptions:-**

80% of the capacity utilization is considered for processing capacity

80% of milk procurement is the requirement of chilling capacity with 80% capacity utilisation i.e. equivalent to milk procurement

40% of the processing capacity is considered as chilling capacity available as on 2015-16

Milk Powder plant considered at 20% of the milk procurement

**C. Producer Company**

Year	Milk Procurement by Producer Company (LLPD)	Processing Capacity (LLPD)	Chilling Capacity (LLPD)	Milk Collection Center (MCC) (in lakh)	MCC Members (Lakh)	Cattle Feed Plant (MTPD)	Milk Powder Plant(MTPD)	Value added Products (MTPD)
2015-16	20.00	25.00	10.00	0.07	3.33			791.8
Projected Targets								
2016-17	25.73	32.16	25.73	0.08	4.00	40	20	800
2017-18	45.00	56.25	45.00	0.13	5.00	60	50	1000
2018-19	60.00	75.00	60.00	0.16	7.00	100	65	1200
2019-20	80.00	100.00	80.00	0.19	9.00	140	80	1400
2020-21	90.00	112.50	90.00	0.22	11.00	180	100	1600
<b>2021-22</b>	<b>110.00</b>	<b>137.50</b>	<b>110.00</b>	<b>0.25</b>	<b>12.50</b>	<b>200</b>	<b>120</b>	<b>1800</b>
2022-23	130.00	162.50	130.00	0.26	14.00	220	130	1900
2023-24	150.00	187.50	150.00	0.29	15.00	240	150	2053.4
<b>GAP</b>	<b>130.00</b>	<b>162.50</b>	<b>140.00</b>	<b>0.22</b>	<b>11.67</b>	<b>240.00</b>	<b>150.00</b>	<b>1261.60</b>

**Assumptions:-**

80% of the capacity utilization is considered for processing capacity

80% of milk procurement is the requirement of chilling capacity

40% of the processing capacity is considered as chilling capacity available as on 2015-16

**Annex 16. Abstract of investment envisaged as per NAP****A. Cooperatives**

Particulars	Gap	Unit	Unit Cost	Unit	Amount (Rs in crore)
Processing Capacity	1412	LLPD	20	Crore/LL	28249
Drying Capacity	590	MTPD	1.5	Crore/MT	885
Cattle feed plant	2699	MTPD	40	lakh/MT	1071
Value added products	5046	MTPD	25	lakh/MT	1262
Multi Milk Product	48138	Nos	2	lakh/unit	963
Visi Coolers	260746	Nos	0.3	lakh/unit	782
Milk Marketing Distribution Tankers (10KL)	9628	Nos	15	lakh/ tanker	1444
Milk Transportation tankers	6017	Nos	15	lakh/ tanker	903
DCS	156874	Nos	1	lakh/MCC	1569
Chilling Capacity	59036	Nos	10	lakh/BMC	5904
Transport Subsidy	301	LLPD	1	Rs 1/ltr/yr	1098
Manpower Development					476
Working Capital	3159	LLPD	35	per litre	1106
<b>Total Investment requirement</b>					<b>45710</b>

**B. Producer Companies**

Particulars	Gap	Unit	Unit Cost	Unit	Amount (Rs in crore)
Processing Capacity	162	LLPD	20	Crore/LL	3250
Drying Capacity	150	MTPD	1.5	Crore/MT	225
Cattle feed plant	240	MTPD	40	lakh/MT	96
Value added products	1262	MTPD	25	lakh/MT	315
Multi Milk Product	5200	Nos	2	lakh/unit	104
Visi Coolers	28165	Nos	0.3	lakh/unit	84
Milk Marketing Distribution Tankers (10KL)	1040	Nos	15	lakh/ tanker	156
Milk Transportation tankers	650	Nos	15	lakh/ tanker	97
Milk Collection Center	21903	Nos	1	lakh/MCC	219
Milk Chilling Capacity	7000	Nos	10	lakh/BMC	700
Working Capital	341	LLPD	35	per litre	119
<b>Total Investment requirement</b>					<b>5367</b>

### C. Private Players

Particulars	Gap	Unit	Unit Cost	Unit	Amount (Rs in crore)
Processing Capacity	2350	LLPD	20	Crore/LL	46994
Drying Capacity	4699	MTPD	2	Crore/MT	7049
Cattle feed plant	2699	MTPD	41	lakh/MT	1103
Value added products	6308	MTPD	25	lakh/MT	1577
Multi Milk Product	81428	Nos	2	lakh/unit	1629
Visi Coolers	441067	Nos	0.3	lakh/unit	1323
Milk Marketing Distribution Tankers (10KL)	16286	Nos	15	lakh/ tanker	2443
Milk Transportation tankers	10178	Nos	15	lakh/ tanker	1527
Milk Chilling Capacity	108637	Nos	10	lakh/BMC	10864
Working Capital	5344	LLPD	35	per litre	1870
<b>Total Investment requirement</b>					<b>76378</b>



**Annex 17. State-wise information on agricultural labourers as per census 2011**

(source: <https://data.gov.in/resources/state-wise-comparative-data-landless-agricultural-workers-census-2001-and-2011from/download> )

State	Total Landless agricultural labourers (Census 2011) in Lakh
Andaman & Nicobar Islands	0.05
Andhra Pradesh	169.68
Arunachal Pradesh	0.36
Assam	18.45
Bihar	183.46
Chandigarh	0.02
Chhattisgarh	50.92
Dadra & Nagar Haveli	0.18
Daman & Diu	0.01
Delhi	0.39
Goa	0.27
Gujarat	68.39
Haryana	15.28
Himachal Pradesh	1.75
Jammu & Kashmir	5.48
Jharkhand	44.36
Karnataka	71.56
Kerala	13.23
Lakshadweep	NA
Madhya Pradesh	121.92
Maharashtra	134.86
Manipur(Excl.3 Sub-Divisions)	1.15
Meghalaya	1.98
Mizoram	0.42
Nagaland	0.63
Odisha	67.40
Pondicherry	0.68
Punjab	15.88
Rajasthan	49.40
Sikkim	0.26
Tamil Nadu	96.07
Tripura	3.54
Uttar Pradesh	199.39
Uttarakhand	4.03
West Bengal	101.89
<b>India</b>	<b>1443.34</b>

## Annex 18. State-wise area under Permanent Pasture and Culturable wasteland in 2013-14

(Source: extracted from <http://eands.dacnet.nic.in/> of Directorate of Economics and Statistics, Department of Agriculture, Cooperation and Farmers' Welfare)

No.	State/ Union Territory	Geographical Area (2013-14)	Permanent pastures & other grazing lands (000' Ha)(2013-14)	Culturable waste land (000' Ha) (2013-14)
1	Andhra Pradesh	16020	212	392
2	Arunachal Pradesh	8374	18	63
3	Assam	7844	168	144
4	Bihar	9416	15	45
5	Chhattisgarh	13519	882	349
6	Goa	370	1	53
7	Gujarat	19602	851	1960
8	Haryana	4421	26	18
9	Himachal Pradesh	5567	1510	122
10	Jammu & Kashmir	22224	114	134
11	Jharkhand	7972	114	353
12	Karnataka	19179	906	411
13	Kerala	3886	0	97
14	Madhya Pradesh	30825	1291	1008
15	Maharashtra	30771	1242	915
16	Manipur	2233	1	1
17	Meghalaya	2243		391
18	Mizoram	2108	5	7
19	Nagaland	1658		70
20	Odisha	15571	524	575
21	Punjab	5036	5	6
22	Rajasthan	34224	1694	4000
23	Sikkim*	710		4
24	Tamil Nadu	13006	110	328
25	Telangana	11487	302	178
26	Tripura	1049	1	3
27	Uttarakhand	5348	192	317
28	Uttar Pradesh	24093	65	410
29	West Bengal	8875	2	18
30	Andman & Nicobar Island	825	4	3
31	Chandigarh	11		
32	Dadar & Nagar Haveli	49	1	0
33	Daman & Diu	11		0
34	Delhi	148	0	10
35	Lakshadweep	3		
36	Puducherry	48		5
	<b>All India</b>	<b>328726</b>	<b>10258</b>	<b>12388</b>



