

Assessment of the Status of Dairying & Potential to Improve Socio-Economic Status of the Milk Producers & Convergence of all Central & State Schemes at District level in India

(Consolidated Report)

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Sardar Patel University, Vallabh Vidyanagar (Gujarat)*

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Foreword

Dairy development in India has been acclaimed as one of the most successful development programmes under the world's largest integrated dairy development programme 'Operation Flood'. India ranks first in the world in milk production, which has increased to 176.35 million tonnes in 2017-18 from 17 million tonnes in 1950-51. Nearly 51 per cent of milk production is contributed by buffalo followed by cow (24%), cow non-descript (21%) and goats (4%). The per capita availability of the milk in the country has also increased significantly from 130 grams/day in 1950-51 to as increased to 355 gram per day in 2013-14 as against the world average of 293.7 grams per day during 2016-17. This represents sustained growth in the availability of milk and milk products for our growing population. Dairying has become an important secondary source of income for millions of rural families and has assumed the most important role in providing employment and income generating opportunities particularly for marginal and women farmers.

There are large interregional and interstate variations in milk production as well as in per capita availability in India. The largest producer of milk is Uttar Pradesh which produces 17.6 per cent of the total milk production in the country followed by Rajasthan (10.5%) and Andhra Pradesh (9.6%). More than 71 percent of national milk production comes from these major eight milk producing states, viz. Uttar Pradesh, Rajasthan, Andhra Pradesh, Gujarat, Punjab, Madhya Pradesh, Maharashtra and Haryana. Only 9 States are having per-capita availability more than the national average of 355 gm/day in the year 2016-17. Major milk-producing states in the country have good resource endowment and infrastructure, while eastern states are lagging behind in terms of dairy development. The government has initiated various dairy development programs, especially for the eastern and hilly regions. Since the animal productivity and per capita milk availability are low in these eastern states of India, there is ample scope for increasing productivity through control of animal disease, scientific management and up-gradation of genetic resources, development of processing and marketing facilities.

It is well recognised that while western, northern and southern parts of India have progressed significantly in dairy development while the eastern part of the country has lagged far behind in dairy development. The demand for milk and dairy products is expected to grow at a higher rate compared to the previous decade due to accelerated economic growth. According to various estimates, the demand for milk and milk products is expected to grow at an annual incremental rate of 8-9 million tonnes, as against the present rise of about 5 million tonnes. To achieve the above growth, it is believed that the growth has to be inclusive and geographically more diffused. Quantum jump in milk production is possible through increase in productivity, and linking small holders to

dairy cooperatives/producer groups/SHGs with forward linkages with milk processing. This means that the areas which have low levels of productivity, preponderance of low yielding non-descript animals, but rich in resource endowment and presence of good markets would require attention of the policy makers for initiating a focussed program for the study area. Therefore, a comprehensive assessment of the present status of dairy development and potential for growth from the perspective of regional and national consideration needs to be drawn up for dairy development.

There are plethora of state and central government schemes that provide forward and backward linkages for promotion of dairying involving milk producers. Apart from the government programs, the state milk federations and the milk unions have evolved a variety of schemes that provide incentives to the milk producers. Given the diversity in social and economic contexts, district level milk unions have drawn up schemes to promote dairy development, which are funded through various ingenious ways (partly through profits generated in milk business, partly through token cess/user fee or through charity (synonymous with welfare). Some anecdotal evidence suggests that the Banaskantha union of Gujarat had evolved some 20 different schemes to their producer members. Needless to say, the schemes are intended to provide impetus for milk production. Convergence of different state and central governments programs in a given geography provide forward and backward linkages to any development program enhancing efficiency in implementation. Convergence of different programs also enhances sustainability. In view of same, the Ministry of Agriculture and Farmers Welfare, Government of India entrusted this study to our Centre, covering seven eastern and two western states of India, viz. Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, Eastern UP, West Bengal, Gujarat, and Rajasthan. The study is based on both primary and secondary level data. The study came out with important and relevant policy implications which would help to enhance efficiency of implementation benefitting the milk producers.

I am thankful to authors and their research team for putting in a lot of efforts to complete this excellent piece of work. I also thank the Directorate of Economics and Statistics, Ministry of Agriculture and Farmers Welfare, Government of India for the unstinted cooperation and support. I hope this report will be useful for policy makers and researchers.

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The study on “**Assessment of the Status of Dairying and Potential to Improve Socio-Economic Status of the Milk Producers and Convergence of all Central & State Schemes at District level in India**” covering seven eastern and two western states of India, viz. Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, Eastern UP, West Bengal, Gujarat, and Rajasthan has been carried out at the Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat, as entrusted by the Ministry of Agriculture and Farmers Welfare, Government of India, New Delhi.

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List of Abbreviations

APEDA	- Agricultural and Processed Food Products Export Development Authority
ASMM	- Area Specific Mineral Mixture
A.I.	- Artificial Insemination
A.I.C.	- Artificial Insemination Centre
Av.	- Average
BANAS DAIRY	- Banaskantha District Cooperative Milk Producers' Union Limited
BDO	- Block Development Officer
BEN	- Beneficiary
BRGF	- Backward Regions Grant Fund Programme
CB	- Cross Breed
DADF	- Department of Animal Husbandry, Dairying and Fisheries, New Delhi
DCS	- Dairy Cooperative Society
DES	- Directorate of Economics and Statistics
DM	- Dry Matter
DPAP	- Drought Prone Area Programme
EIA	- End Implementing Agency
FDG	- Focus Group Discussion
GCA	- Gross Cropped Area
GCOMMF	- Gujarat Co-operative Milk Marketing Federation Limited
GDP	- Gross Domestic Product
GIA	- Gross Irrigated Area
GNP	- Gross National Product
GOA	- Government of Assam
GOB	- Government of Bihar
GOC	- Government of Chhattisgarh
GOJ	- Government of Jharkhand
GOO	- Government of Odisha
GOUP	- Government of Uttar Pradesh
GOR	- Government of Rajasthan
GOG	- Government of Gujarat
GOI	- Government of India
GRO	- Grievance Redressal Officer
GVA	- Gross Value of Agriculture
GVO	- Gross Value of Output
ha	- Hectare
HH/hh	- Household
I.I.	- Irrigation Intensity
IDA	- International Development Association
INAPH	- Information Network for Animal Productivity and Health
ISP	- International Organization for Standardization
kg	- kilograms
KVK	- Krishi Vigyan Kendra
KM	- Krishi Mahotsav
LTPD	- Litres per day
LRP	- Local Resource person
mha	- Million hectares
MOA	- Ministry of Agriculture
MU	- Milk Union (district level)

mt	- Metric Tonnes
NA	- Not Available
NBEN	- Non-Beneficiary
NCDFI	- National Cooperative Dairy Federation of India
NDDDB	- National Dairy Development Board
NDP	- National Dairy Plan
Nos	- Numbers
OF	- Operation Flood
PCs	- Producers Company
PDCS	- Primary Dairy Cooperative Society (village level)
PDO	- Project Development Objective
PMC	- Project Management Cell
PMU	- Project Management Unit
Prodvty.	- Productivity
PSC	- Project Steering Committee
RBP	- Ration Balancing Programme
SC	- Scheduled Caste
SNF	- Solid Not Fat
ST	- Scheduled Tribe
SUMUL	- Surat Milk Union Limited
SWOT	- Strength, Weakness, Opportunity and Threat
TE	- Triennium Endings
VAP	- Village Awareness Programme
Y	- Yield

(A) Institution / Farms etc.

V.D	- Veterinary Dispensaries
F.A.V.C.	- First Aid Veterinary Centre
DISP	- Dispensary
AVI	- Animal Vaccine Institute
ICDP	- Intensive Cattle Development Programme
IPDP	- Intensive Poultry Development Project
ISDP	- Intensive Sheep Development Project
ICBP	- Intensive Cattle Breeding Programme
CBF	- Cattle Breeding Farm
PBF	- Poultry Breeding Farm
SBF	- Sheep Breeding Farm
Dist.	- District
B.K	- Banaskantha
S.K	- Sabarkantha
P.M	- Panchmahal
GDDC	- Gujarat Dairy Development Corporation
L.I. Centre	- Livestock Inspector Centre

(B) Words related to Budget

Sec.	- Section (Section -I , Section - II)
CFT	- Coming for First Time
Cont/ Conti	- Continuous
Co on AH	- Capital Outlay on Animal Husbandry
Co on DD	- Capital Outlay on Dairy Development
C.C	- Cent age Charges
S.C.A	- Special Central Assistance

(C) Plan / Report / Programmer/ Scheme		
SNP	-	Sate Normal Plan
TASP	-	Tribal Area Sub Plan
SCP	-	Special Component Plan
BADP	-	Border Area Development Plan
CSS	-	Centrally Sponsored Scheme
ADP	-	Annual Development Plan
OFF	-	Operation Flood Programme
(D)		
DAH	-	Director of Animal Husbandry
JD	-	Joint Director of Animal Husbandry
DD	-	Deputy Director of Animal Husbandry
AD	-	Assistant Director of Animal Husbandry
VO	-	Veterinary Officer
Supdt	-	Superintendent
Sr	-	Senior
Jr	-	Junior
CL	-	Clerk
CL	-	Class
(E) Weight / Measurement etc.		
Kg	-	Kilogram
M.T.	-	Metric Tone
Km	-	Kilometer
Hect. Or Hec.	-	Hectare
No.	-	Number
Rs.	-	Rupees
(F) Diseases / Vaccine		
R.P.	-	Rinderpest
F.M.D.	-	Foot and Mouth Disease
T.B.	-	Tuberculosis
H.S.	-	Hamorrhagic Septicemia
B.Q.	-	Black Quarter
E.T.	-	Enterotoxaemia
F.D.R.D.	-	Freeze Dried Ranikhet Disease
(G) Others		
A.I	-	Artificial Insemination
L.N. 2	-	Liquid Nitrogen
S.C.	-	Scheduled Caste
S.T.	-	Scheduled Tribe
SF/MF/AL	-	Small Farmer, Marginal Farmer, Agricultural Laborer
A.H.	-	Animal Husbandry
M.V.Sc.	-	Master in Veterinary Science
NPCBB	-	National Project on Cattle and Buffalo Breeding
IACBP	-	Indo-Australian Cattle Breeding Project IACBP
PDU	-	Private Dairy Unit
UP	-	Uttar Pradesh
WB	-	West Bengal

Introduction

1.1 Introduction

Animal husbandry in India is closely interwoven with agriculture and obviously plays an important role in the national economy and also in the socio-economic development of millions rural households (Vaidyanathan, 1989; Mishra, 1995; Chawla, *et al*, 2004; Sharma, 2004; Birthal, 2016). Livestock rearing is one of the most important economic activities in the rural areas of the country providing supplementary income for most of the families dependent on agriculture. In many cases, livestock is also a central component of small holder risk management strategies (Randolph et al., 2007). Apart from providing a subsidiary income to the families, rearing of livestock such as cattle, buffaloes, sheep, goats, pigs, poultry etc. is a source of protein supplement to the family members of the household in the form of milk, eggs and meat. This sector has created a significant impact on equity in terms of employment and poverty alleviation as well. In fact level of rural poverty is significantly higher in states where livestock sector is underdeveloped (Singh and Meena, 2012). This is the sector where the poor contribute to growth directly instead of getting benefit from growth generated elsewhere.

Importance of livestock in general and dairying in particular hardly needs emphasis in a country like India. It is one of the important sub-sectors of agriculture, next only to field crops (Saxena, et al., 2002). The growth of the dairy sector during the last three decades has also been impressive, at more than 5 percent per annum; although the country has emerged as the largest producer of milk only in the '90s (Jha, 2004). This has not only placed the industry first in the world, but also represents sustained growth in the availability of milk and milk products for the burgeoning population of the country. Most important, dairying has become an important secondary source of income for millions of rural families and for millions more, has assumed the most important role in providing employment and income.

1.2 Contribution of Livestock Sector to the National Economy

India is endowed with a significant proportion of the world's livestock population (Prabaharan, 2002; Sharma and Sharma, 2002). India stands at first position in terms of cattle and buffalo population in the world. The population of cattle and buffalo in India was 218 million and 115 million in 2012 which accounts for 14.7 per cent and 58 per cent share respectively of world cattle and buffalo population, most of which are milch cows and milch buffaloes (GOI, 2004). This sector provides regular employment to 9.8 million peoples in principal status and 8.6 million people in subsidiary status. More importantly, women constitute 71 percent of the labour force in livestock farming (GOI, 2002).

Livestock sector of India has grown tremendously in the past five decades. From a subsistence activity until 1970s, animal husbandry has grown to emerge as the largest agricultural activity accounting for over one fourth of the agricultural gross domestic product. Its value of output now equals to that of food grains. By controlling 64 per cent of the bovine, 70 per cent of ovine, 73 per cent of caprine and 70 per cent of the poultry population, the small holders make a substantial contribution to livestock production (GOI, 2014). Animal husbandry and dairying sector contributes about 25.8 percent of the gross value added from total agriculture, forestry and fishing sectors and its overall contribution to the total GVA of the country was about 4.6 per cent in 2016-17, at current prices. The share of GVA of livestock sector to total agriculture (crops & livestock) has increased from 23.8 per cent in 2011-12 to 26.2 per cent in 2016-17 at constant prices. At current prices, same share has increased from 22.0 per cent in 2012-13 to 25.8 per cent in 2016-17 (Table 1.1).

The dairy subsector occupies an important place in the agricultural economy of India as milk is the second largest agricultural commodity in contributing to Gross National Product (GNP), next only to rice. Among the sub-sectors of livestock sector, dairy and meat group (poultry meat) are high growth sectors and is reflected in the growing importance of the contribution of these sub-sectors in the

livestock economy. While the two third of total value of output from livestock sector during 2014-15 was accounted by milk group followed by one fifth share by meat group. The use of dung as fuel also significantly contributed in total value of out of livestock sector by 5.54 per cent (Table 1.2).

Table 1.1: Percentage contribution of Livestock in Total Agriculture GVA

Year	GVA at Constant(2011-12) Basic Prices					GVA at Current Basic Prices				
	GVA-Ag		GVA-livestock			GVA-Ag		GVA-livestock		
	Rs. In Cr	% to total GVA	Rs. In Cr	% to total GVA	% to Agriculture	Rs. In Cr	% to total GVA	Rs. In Cr	% to total GVA	% to Agriculture
2011-12	982026	12.1	327301	4.0	23.8	982026	12.1	327301	4.0	23.8
2012-13	983809	11.5	344375	4.0	22.6	1088814	11.8	368823	4.0	22.0
2013-14	1037060	11.4	363558	4.0	22.6	1248776	12.1	422733	4.1	21.9
2014-15	998425	10.3	390449	4.0	24.3	1292874	11.2	510411	4.4	24.4
2015-16	966345	9.2	421369	4.0	26.1	1327997	10.6	584070	4.6	26.2
2016-17	1033008	9.2	448964	4.0	26.2	1530137	11.1	639912	4.6	25.8

Source: www.daht.nic.in.

Table 1.2: Value of Output from Livestock Sector (at current prices)

Item	Value of Output from Livestock sector (at current prices)					
	2014-15		2015-16		2016-17	
	Rs. Crore	% to total	Rs. Crore	% to total	Rs. Crore	% to total
1 Milk Group	495835	66.75	560777	67.15	614387	66.93
2 Meat Group	154152	20.75	173840	20.82	194454	21.18
3 Eggs	24382	3.28	26274	3.15	29557	3.22
5 Dung	45455	6.12	48451	5.80	50883	5.54
7 Increment in stock	15474	2.08	17854	2.14	20249	2.21
Value of Output (Livestock Sector)	742807	100	835157	100	917910	100

Source: www.nddb.coop

1.3 Planwise Outlay and Expenditure under Dairying

Animal husbandry and dairying programme have attained considerable importance in various Five Year Plans (FYP) and several schemes/projects have been taken up by the States and the Centre for the development of this sector. Animal husbandry and dairying is a state subject, and bulk of the investment for their development comes from the state governments (GOI, 2012). The central government contributes about 10 per cent to the total investment through central and centrally-sponsored schemes as to supplement state governments' resources. In absolute terms, total outlay for animal husbandry and dairying increased

over the plan periods. However, as per cent of the total plan outlay, the share of animal husbandry and dairy development declined from 1.1 per cent during first FYP to 0.4 per cent during VI FYP and further to 0.3 per cent in the subsequent FYPs. As proportion of the total outlay for the agricultural sector, the share of livestock fell from 11.2 per cent in II FYP to 3.6 per cent in IX FYP but increased to 9.3 per cent during XI FYP. The share of livestock in the planned investment has never been commensurate with its contribution to GDP or Ag GDP (Table 1.3).

Table 1.3: Planned and Actual Expenditure on Animal Husbandry and Dairy Development during various Five-Year Plan periods (Rs. Crores at current prices)-All India

Plan	Animal Husbandry		Dairy Development		Total		% AH&D to total agriculture outlay	% AH&D to total outlay
	Planned	Actual	Planned	Actual	Planned	Actual		
First (1950-55)	14.2	8.2	7.8	7.8	22	16	6.2	1.1
Second (1955-60)	38.5	21.4	17.4	12.1	55.9	33.5	11.2	1.2
Third (1960-65)	54.4	43.4	36.1	33.6	90.5	77	8.3	1.1
Fourth (1967-72)	94.1	75.5	139	78.8	233.1	154.3	10	1.5
Fifth (1975-80)	NA	178.4	NA	NA	437.5	232.5	9	1.1
Sixth (1980-85)	60.5	39.1	336.1	298.3	396.6	337.4	7	0.4
Seventh (1985-90)	165.2	102.4	302.8	374.4	467.9	476.8	4.4	0.3
Eighth (1992-97)	400	305.4	900	818.1	1300	1123.5	5.8	0.3
Ninth (1997-2002)	1076.1	445.8	469.5	146.9	1545.6	592.7	3.6	0.3
Tenth (2002-07)	1384	1419.4	361	285.8	1745	1705.2	11.87	0.12
Eleventh (2007-12)	4323	1101.3	580	262.4	4903	1363.7	9.23	-

Source: GOI (2012).

Since IV FYP the emphasis had been on dairy development to support the 'Operation Flood' programme. With the end of Operation Flood program, the allocation to dairy development slowed down, reaching to about 30 per cent in the XI FYP. Animal health and veterinary services now receive about 30 per cent of the total funds. In XI Plan, the centrally sponsored schemes (animal health and disease control and National Project for Livestock Development) accounted for a major share of the outlay for animal husbandry. Small ruminants, piggery, feed and fodder development, research, education and training did not receive adequate financial support. There has been a large gap between planned and actual expenditure in case of animal husbandry in most plan periods, except during Xth FYP (Table 1.4).

Table 1.4: Outlay and Expenditure of Central and Centrally Sponsored Schemes under Animal Husbandry and Dairying Sector from First Plan - All India (Rs. in crore)

Plan/Year	Total Plan	Animal Husbandry		Dairy Development		Total (AH & DD)	
		Outlay	Exp.	Outlay	Exp.	Outlay	Exp.
First Plan (1950-55)	1960	14.19	8.22	7.81	7.78	22	16
Second Plan (1955-60)	4600	38.5	21.42	17.44	12.05	55.94	33.47
Third Plan (1960-65)	8576.5	54.44	43.4	36.08	33.6	90.52	77
Annual Plan (1966-67)	6625.4	41.33	34	26.14	25.7	67.47	59.7
Fourth Plan (1967-72)	15778.8	94.1	75.51	139	78.75	233.1	154.26
Fifth Plan	39426.2	-	178.43	-	-	437.54	232.46
Sixth Plan (1980-85)	97500	60.46	39.08	336.1	298.34	396.56	337.42
Seventh Plan (1985-90)	180000	165.19	102.35	302.75	374.43	467.94	476.78
Annual Plan (1990-91)	-	43.71	36.18	79.67	41.43	123.38	77.61
Annual Plan (1991-92)	-	57.97	43.28	97.49	77.99	155.46	121.27
Eighth Plan (1992-97)	434100.1	400	305.43	900	818.05	1300	1123.48
Ninth Plan (1997-2002)	1677.88	772.02	445.84	251.95	146.85	1023.97	592.69
Tenth Plan (2002-07)	2500	1425.87	1421.89	289.54	285.79	1715.41	1707.68
Eleventh Plan	8174	4870.53	2330.8	580	576.31	5450.53	2907.11
2007-08	910	350.92	338.14	88.5	111.5	439.42	449.63
2008-09	1000	481	444.54	98	97.9	579	542.64
2009-10	1100	558.29	435.84	101.1	85.93	659.39	521.77
2010-11	1300	792.15	668.75	87.76	84.77	879.91	753.52
2011-12	1600	874.36	722.88	250.25	196.21	1124.61	919.09
Twelfth Plan	14179	7829	-	3781	-	-	-
2012-13	1910	1063.1	881.45	392	523.51	1455.1	889.61
2013-14	2025	1051.49	917.16	580	501.59	1631.49	1418.75
2014-15	2174	1118.57	768.37	843.99	648.42	1962.56	1416.79
2015-16	1491	400.43	395.35	116.44	119.13	516.87	514.48
2016-17	1600	627	624	674	674	1301	1298
2017-18	2921	964	896	1321	1155	2285	2051

Source: GOI (2018a).

However, despite of its rising share in agricultural GDP, the livestock sector has not received as much policy attention as it deserves. Its share in the total public spending on agricultural and allied activities has never been in congruence with its income contribution. In absolute terms, spending on the livestock sector increased by about 27 percent between TE 1992-93 and TE 2008-09, but as a share of the total spending on the agricultural sector it declined continuously, from 13.6 percent in TE 1992-93 to 4.6 per cent in TE 2008-09 (Table 1.5). Livestock expenditure as a proportion of the value of output of livestock also declined from 3.6 per cent to 2.3 per cent during this period. For faster growth and holistic development of the livestock sector, the public spending on livestock has to be raised and prioritised, taking into consideration the emerging

challenges and regional imbalances. During the 1990s and also earlier, the allocation of livestock investment was biased towards dairy development, which, however, was corrected to a large extent during the 2000s. The share of dairy development in total livestock expenditure fell from about 40% in the 1990s to 25 per cent towards the late 2000s.

Table 1.5: Public Spending on Livestock Sector in India

Particulars	TE1992-93	TE2000-01	TE2008-09
Total spending (Rs crore at 2004-05 prices) ^a	3,739.60	4,156.10	4,726.10
Public spending % of total agricultural spending	13.6	9.9	4.6
Public spending as % of livestock VOP	3.6	2.8	2.3
Composition of public spending (%) Dairy development	41.5	38.6	25.0
Veterinary services and animal health	23.7	24.1	29.1
Cattle and buffalo development	14.0	11.7	10.5
Sheep and wool development	2.7	2.4	2.0
Piggery development	1.8	0.5	0.4
Poultry development	3.1	2.4	2.4
Fodder development	0.9	1.0	1.0
Direction and administration	4.2	8.7	19.1
Research, education and extension	2.2	3.0	3.0
Others	5.8	7.6	7.5

Note: a: Spending includes both revenue and capital expenditure.

Source: BIRTHAL and NEGI, 2012.

1.4 Dairy Development in India

Dairy development in India has been acclaimed as one of the most successful development programmes under the world's largest integrated dairy development programme 'Operation Flood' (Shiyani, 1996; NAAS, 2003). India ranks first in the world¹ in milk production, which has increased to 176.3 million tonnes in 2017-18 from 17 million tonnes in 1950-51. Nearly 51 per cent of milk production is contributed by buffalo followed by cow (45%) and goats (4%).

Dairying has become an important secondary source of income for millions of poor and rural families and has assumed the most important role in providing employment and income generating opportunities particularly for marginal and women farmers (Patel, 2003). Most of the

¹ Forecast by FAO indicate that the world's milk production in 2016 would be 817 million tonnes, while that of India would be 160.4 million tonnes (NCAER, 2017).

milk is produced by animals reared by small, marginal farmers and landless labourers. It has been witnessed over the years that the stability in dairy income is far stronger than the income realised from agricultural activities (Kumar and Shah, 2016). Milk has always played a critical role in addressing hunger and malnutrition (Kumar, 2016). While more than 75 million households in India are engaged in dairy farming, about 16.6 million farmers have been brought under the ambit of 1,85,903 village level dairy corporative societies up to March 2017 (<http://dahd.nic.in>).

The dairy co-operatives have made good impact on the social and economic life of the people in the state. The impact of the White Revolution can be seen in the villages in the form of generation of funds for community development and social welfare, creation of self-employment opportunities, ensuring distributive justice and removal of the evil of untouchability. This silent social revolution has been relatively smooth and hence even unnoticed by the conservative community. The dairy cooperative movement has been central to the development of dairying in India. The inspiration for this movement was the success of the *Khaira* District Cooperative Milk Producers Union known as Amul. Founded in 1946, in response to the exploitation of districts dairy farmers, Amul grew rapidly from its initial base of two societies and two hundred litres of milk. That growth, however, posed a challenge that threatened its existence as flush season production of milk exceeded the demand. Yet the cooperatives success depended on accepting the farmer milk year round. For the dairy development in India, institutions of national Importance i.e. National Dairy Development Board (NDDB) was established by the act of Parliament in 1965 in Anand, Gujarat. Also a Federation of Cooperative Societies (NCDFI) was formed which is located at Anand, Gujarat.

National Dairy Development Board²:

The National Dairy Development Board (NDDB) was founded in 1965 to replace exploitation with empowerment, tradition with modernity,

² <http://www.nddb.coop/about/genesis>

stagnation with growth, transforming dairying into an instrument for the development of India's rural people. NDDDB began its operations with the mission of making dairying a vehicle to a better future for millions of grassroots milk producers. The mission achieved thrust and direction with the launching of "Operation Flood", a programme extending over 26 years and which used World Bank loan to finance India's emergence as the world's largest milk producing nation. Operation Flood's third phase was completed in 1996 and has to its credit a number of significant achievements.

As per NDDDB Annual Report 2016-17, India's 177314 village dairy cooperatives federated into 198 milk unions and 22 federations procured on an average 42.84 million kg of milk every day having 16.30 million farmers presently members of village dairy cooperatives. Since its inception, the Dairy Board has planned and spearheaded India's dairy programmes by placing dairy development in the hands of milk producers and the professionals they employ to manage their cooperatives. In addition, NDDDB also promotes other commodity-based cooperatives, allied industries and veterinary biological on an intensive and nation-wide basis.

National Cooperative Dairy Federation of India Limited³:

National Cooperative Dairy Federation of India Limited (NCDFI), based at Anand (Gujarat), is the apex body of the dairy and oilseeds growers cooperatives of the country. It has 27 State Cooperative Dairy and Oilseeds Growers Cooperative Federations as its members. The National Dairy Development Board (NDDDB) is an institutional member of the NCDFI. The primary objective of NCDFI is to facilitate the working of dairy cooperatives through coordination, networking and advocacy. The objectives of the NCDFI are to promote the dairy and oilseeds/edible oil industry on cooperative lines; and to coordinate, help, develop and facilitate the working of dairy and oilseeds growers cooperatives and affiliated organizations. Important activities of NCDFI includes; coordinating sale of milk and milk products of its members to the Ministry

³ <http://www.indiadairy.coop/index.html>

of Defence and other para-military organizations; providing assistance to the members in dealing and negotiations with governments, national and international organizations and private and public undertakings, on behalf of the members. NCDFI annually coordinates the sale of about Rs.800 crores worth of dairy products of leading cooperative brands to the armed forces. NCDFI also functions as C&F agent for Frozen Semen Doses produced by Sabarmati Ashram *Gaushala*, Animal Breeding Centre, Alamadhi Semen Station and Rahuri Semen Station. Recently, NCDFI has launched an eMarket portal “NCDFIeMarket.com” for trading of dairy and agricultural commodities online. During April to November the business transacted was about Rs.380 crores. NCDFI has its head office located at Anand, Gujarat; and offices at Delhi, Ahmedabad, Raibareli and Chennai; NCDFI is a paperless office with its operations being fully computerized.

1.5 Cooperative Dairy Sector in India

Dairy cooperatives⁴ have played an important role in improving farmers’ access to markets (Birthal and Negi, 2012; Birthal, 2016). During the last two and half decades, the number of dairy milk cooperatives in India has increased significantly. Between 1980-81 to 2017-18, the number of village dairy cooperatives has increased from 13284 to 185903 with an associated increase in dairy members from 1.75 million to 16.574 million and milk procured from less than 1.0 million tonne to 17.36 million tonnes, equivalent to about 10 per cent of the total milk produced in the country (Table 1.6, Fig. 1.1 to 1.3). During 2015-16, there were about 5.01 million women members in dairy cooperatives, while numbers of all women dairy cooperatives have increased to 32092 across the country (18.77 % to total). Out of the total milk procured, about 75.42 per cent milk is sold as liquid and the rest is converted into value added products. The dairy cooperatives are federated into unions⁵ at the district level & further into federations at the state level.

⁴ A Dairy Cooperative Society (DCS) is the grass root/village level cooperative institution where members supply their surplus milk and buy the various services provided by the cooperative.

⁵ Milk Producers’ Cooperative Unions: A Cooperative Union is the district level institution formed by the union of village level Dairy cooperative Societies for the purpose of collection, processing, marketing of milk and for organising services for the benefit of members.

Table 1.6: Growth of Dairy Cooperatives Societies in India

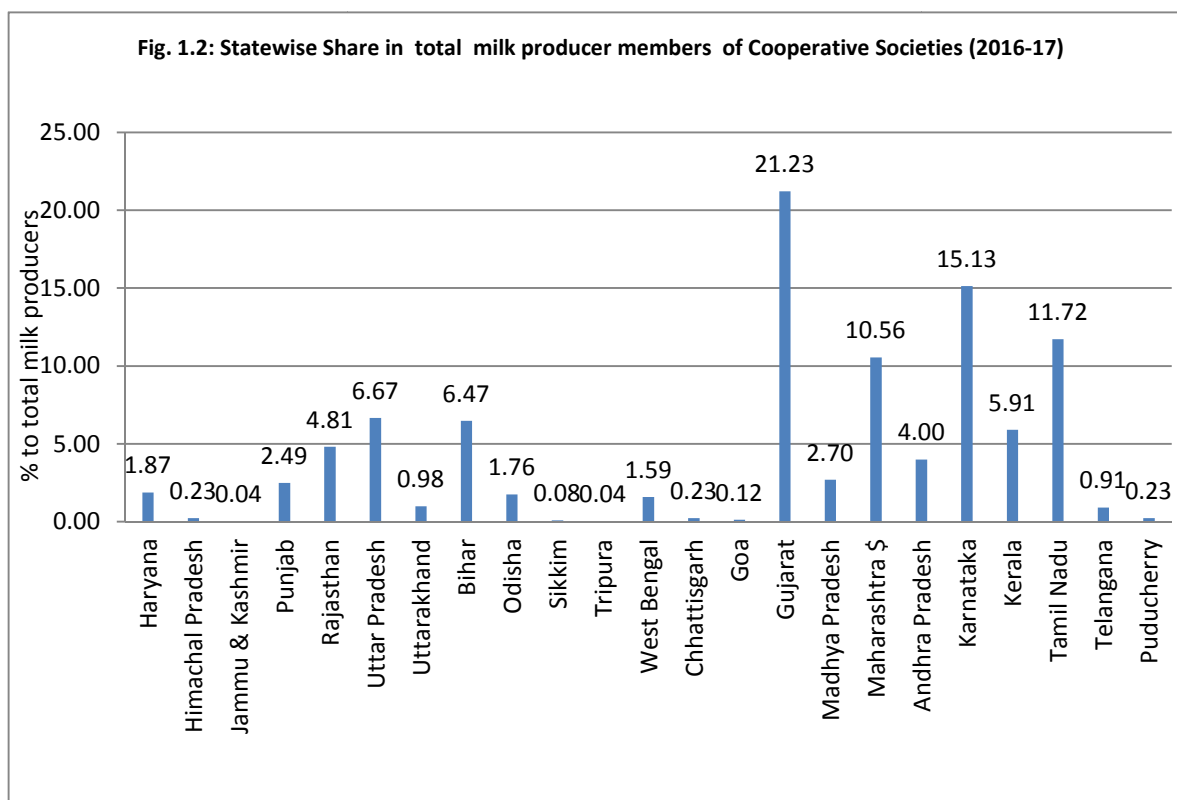
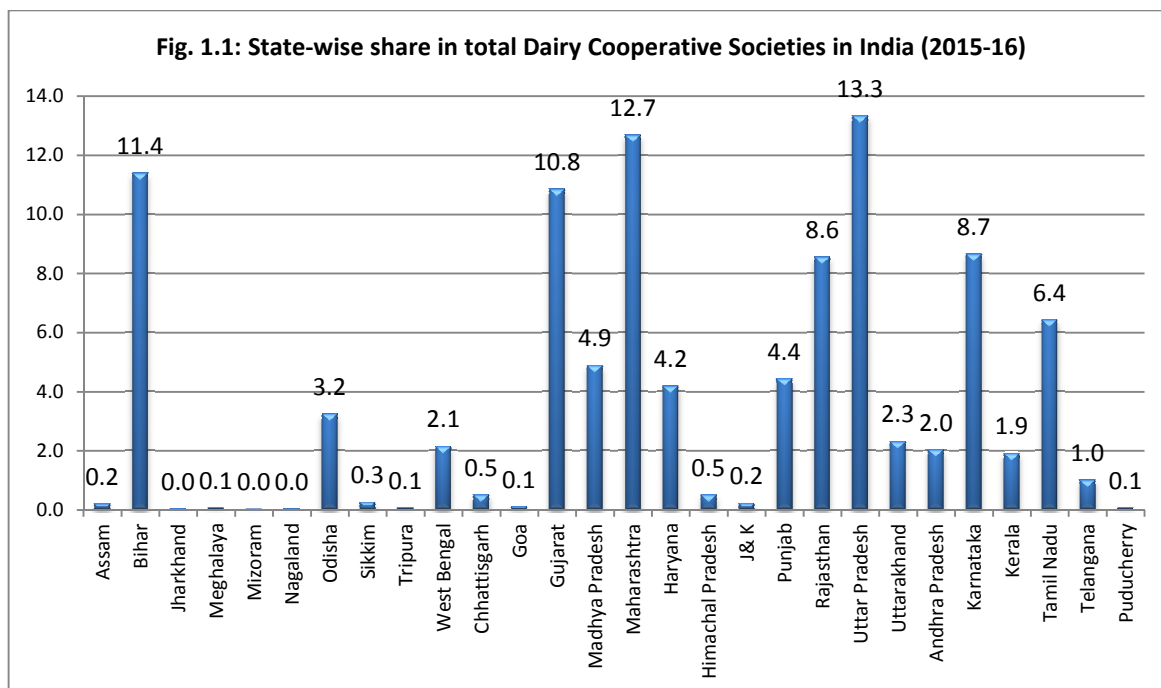
Particulars	980-81	990-91	2000-01	2013-14	2015-16	2017-18
Dairy cooperatives (Nos.)	13284	63415	92206	165835	170992	185903
Members (in thousands)	1747	7482	10738	15399	15835	16574
Milk Procurement (000 kg/day)	2562	9702	16504	37953	42557	47563
Milk procured (million tonnes)	0.94	3.54	6.02	13.85	15.53	17.36
% of milk output procured	3.0	6.6	7.5	9.5	10.0	9.84

Source: NDDDB (2016, 2018, various issues & Authors Calculations).

Cooperative sector in dairy production have played an important role in the development of the Indian dairy sector by linking village cooperative dairy producers with the markets and providing fair cost and quality inputs and services to the farmers. Inter-state comparison indicates that despite of significant growth at National level, cooperatives have remained centred on a few states. Therefore, distribution of benefits has been uneven. Gujarat with the share of 8 per cent in the country's milk production accounts for about 11 per cent the total village level cooperatives, 21.80 per cent of the members and 42 per cent of the milk procurement (2015-16). In terms of procurement, Karnataka stands next (15.23 %) followed by Maharashtra (8.56 %), Rajasthan (6.12 %) and Tamil Nadu (7.14 %). Together, these states including Gujarat accounts for more than three fourth of the total milk procurement, which is more than twice of their share in milk production. These states also account for close to three fourth of the processing capacity in the cooperative sector.

The 'white revolution' was driven by demand (Delgado et al., 2001); starting with the cooperative milk producers union, Amul (mainly women) in Anand (Khaira district of Gujarat). Dairy cooperatives account for the major share of processed liquid milk marketed in the country. Milk is processed and marketed by milk producer's cooperative unions, which federate into state cooperative milk marketing federations. The Amul model has helped India to emerge as the largest milk producer in the world. More than 15.8 million milk producers pour their milk in 1.7 lakh dairy cooperative societies across the country. Their milk is processed in 184 District Co-operative Unions and marketed by 22 State Marketing

Federations, ensuring a better life for millions. The Amul Model of dairy development is a three-tiered structure with the dairy cooperative societies at the village level federated under a milk union at the district level and a federation of member unions at the state level.



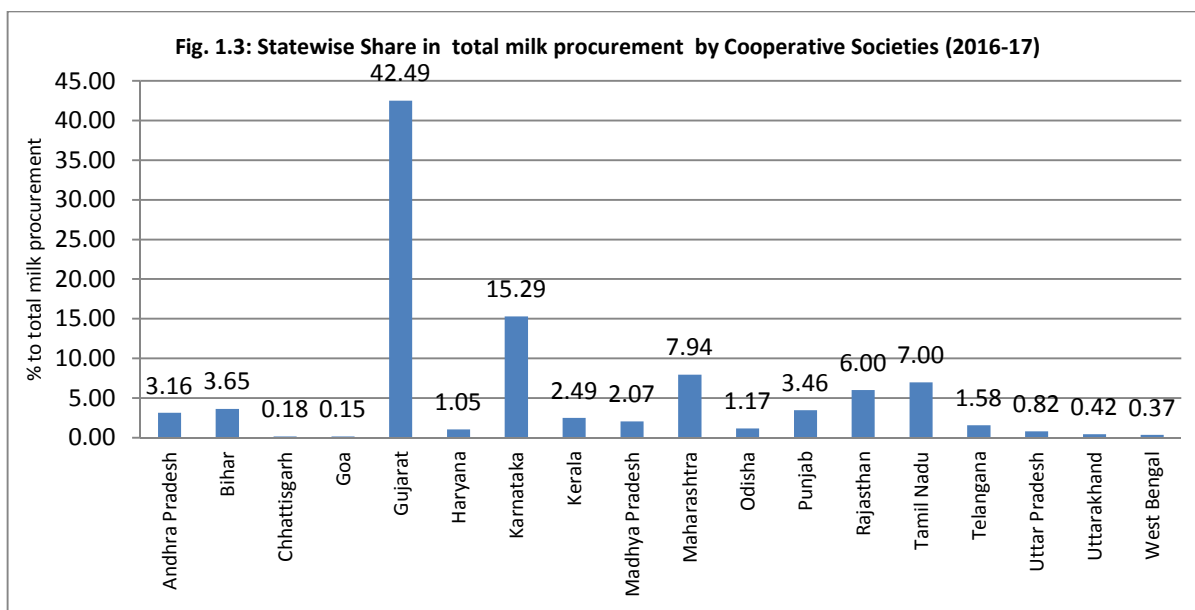


Table 1.7: Share of Major States in Total Milk Procurement by Cooperative sector

States/ Regions	Share of Major States in Total Milk Procurement by Cooperative sector in India					
	1980-81	1990-91	2000-01	2010-11	2015-16	2016-17
Haryana	1.29	0.97	1.67	1.95	1.06	1.05
Himachal Pradesh	0.00	0.14	0.15	0.23	0.13	0.15
J & K	0.00	0.11	0.00	0.00	0.03	0.04
Punjab	2.93	4.06	5.53	3.96	3.27	3.46
Rajasthan	5.39	3.75	5.37	6.22	6.12	6.00
Uttar Pradesh	2.50	3.94	4.79	1.92	0.76	0.82
Uttarakhand	0.00	0.00	0.00	0.00	0.41	0.37
North	12.10	12.98	17.51	14.29	11.77	11.89
Assam	0.00	0.04	0.02	0.02	0.05	0.06
Bihar	0.12	0.98	2.00	4.16	4.06	3.65
Jharkhand	0.00	0.00	0.00	0.02	0.14	0.20
Meghalaya	0.00	0.00	0.00	0.00	0.03	0.03
Mizoram	0.00	0.00	0.00	0.00	0.02	0.01
Nagaland	0.00	0.01	0.02	0.01	0.01	0.01
Odisha	0.00	0.42	0.57	1.05	1.23	1.17
Sikkim	0.00	0.04	0.04	0.07	0.07	0.08
Tripura	0.00	0.03	0.01	0.01	0.01	0.01
West Bengal	1.21	0.54	1.24	1.04	0.37	0.37
East	1.33	2.06	3.89	6.38	5.99	5.59
Chhattisgarh	0.00	0.00	0.00	0.10	0.17	0.18
Goa	0.00	0.16	0.19	0.15	0.16	0.15
Gujarat	52.46	31.97	27.67	34.97	41.07	42.49
Madhya Pradesh	2.65	2.64	1.93	2.25	2.42	2.07
Maharashtra	6.44	19.29	18.05	11.59	8.56	7.94
West	61.55	54.07	47.85	49.04	52.39	52.83
Andhra Pradesh	3.08	7.86	5.33	5.24	3.13	3.16
Karnataka	10.19	9.45	11.43	14.29	15.23	15.29
Kerala	0.00	1.91	3.91	2.63	2.58	2.49
Tamil Nadu	11.75	11.40	9.80	8.01	7.14	7
Telangana	0.00	0.00	0.00	0.00	1.67	1.58
Pondicherry	0.00	0.27	0.27	0.13	0.10	0.12
South	25.02	30.89	30.75	30.29	29.86	29.64

Source: NDDB (Annual Reports, various issues).

Dairy cooperatives are very strong in Gujarat and adjoining regions. Gujarat had recorded the highest share of number of producer members (21.23%) in country followed by Karnataka and Tamilnadu. However, as compared to share of producer members to total in country in 2000-01, share of Gujarat and Tamil had state has declined, while that of Rajasthan and Karnataka has improved in 2016-17 as compared to the year 2000-01 (Table 1.7). In case of milk procurement by cooperative societies, share of Gujarat in total milk procurement by cooperative sector was the highest (42.49 %), followed by Karnataka (15.29%) and Maharashtra (7.94%) during the 2016-17. Gujarat has increased its share from 27.67 percent in the 2000-01 to 42.49 percent in 2016-17. Karnataka and Rajasthan have also improved their share while Maharashtra has lost its share between 2000-01 and 2016-17.

1.6 Growth and Compositional Changes in Livestock Population:

India holds more than a quarter of world's bovine population (Kishore, et al., 2016). The livestock population in the country has increased significantly over the period of time. It has increased from 292.8 million in 1951 to 512.1million in 2012 (Table 1.8), while the total livestock in the country showing overall decrease in 2012 over 2007, i.e. from 529.70 million in 2007 to 512.1 million in 2012. There were some changes in the composition of livestock at national level at broad groups like bovine, ovine and other livestock during the last six decades. The proportion of bovine population (includes cattle and buffalo) declined from nearly 68 per cent in 1951 to 58.5 per cent in 2012, while the proportion of ovines (sheep and goat) increased from about 29.5 per cent in 1951 to 39.11 per cent in 2012. The share of other animals has also decreased from 2.7 per cent to 2.4 per cent during corresponding period. The population of bovine stock consisting of cattle and buffalo increased at zero rate during 1992-1997 and then registered decline in 2003, increase in 2007 and then again declined in 2012. Between the two species, buffaloes stock increased much faster rate than of cattle population indicating the rising importance of buffaloes because of higher

price for buffalo milk and substitution of drought animals with mechanical power in the country. The livestock density per hectare of net sown area has increased from 2.45 in 1951 to then 3.42 in 1997 and 3.63 in 2012.

Thus, trends in the composition of bovine and milch animal stock over the years indicate that the breedable cow and buffalo population is important from the milk production point of view. The composition of bovine breeding stock has improved in terms of increased share of in-milk animals in breeding stock as well as in total adult females. While the adult females among cattle account for about 38.4 per cent, while that of buffalo, same was 52 per cent. The rise in buffalo numbers is seen even more clearly in terms of ratio of buffalo to cows in the stock of adult females, or the milch animals. The ratio of milch buffalo to milch cows increased from 0.39 in 1951 to 0.79 in 1997 and then declined to 0.74 in 2012. Thus trends in size and composition of the bovine stock in the country show that the shift is taking place in favour of the bovines as milch animals (Table 1.8).

Table 1.8: Livestock Population in India by Species (1951-2012)

Species	Livestock Population in India by Species (In Million Numbers)												
	1951	1956	1961	1966	1972	1977	1982	1987	1992	1997	2003	2007\$	2012
Cattle	155.3	158.7	175.6	176.2	178.3	180	192.5	199.7	204.6	198.9	185.2	199.1	199.9
Adult Female Cattle	54.4	47.3	51	51.8	53.4	54.6	59.2	62.1	64.4	64.4	64.5	73.0	76.7
Buffalo	43.4	44.9	51.2	53	57.4	62	69.8	76	84.2	89.9	97.9	105.3	108.7
Adult Female Buffalo	21	21.7	24.3	25.4	28.6	31.3	32.5	39.1	43.8	46.8	51	54.5	56.6
Total Bovines	198.7	203.6	226.8	229.2	235.7	242	262.2	275.7	288.8	288.8	283.1	304.4	299.6
Sheep	39.1	39.3	40.2	42.4	40	41	48.8	45.7	50.8	57.5	61.5	71.6	65.1
Goat	47.2	55.4	60.9	64.6	67.5	75.6	95.3	110.2	115.3	122.7	124.4	140.5	135.2
Horses & Ponies	1.5	1.5	1.3	1.1	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.6	0.6
Camels	0.6	0.8	0.9	1	1.1	1.1	1.1	1	1	0.9	0.6	0.5	0.4
Pigs	4.4	4.9	5.2	5	6.9	7.6	10.1	10.6	12.8	13.3	13.5	11.1	10.3
Mules	0.1	0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2
Donkeys	1.3	1.1	1.1	1.1	1	1	1	1	1	0.9	0.7	0.4	0.3
Yak	NC	NC	0	0	0	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1
Mithun	NA	NA	NA	NA	NA	NA	NA	NA	0.2	0.2	0.3	0.3	0.3
Total Livestock	292.9	306.6	336.5	344.5	353.2	369.4	419.6	445.2	470.9	485.4	485	529.7	512.1
Poultry *	73.5	94.8	114.2	115.4	138.5	159.2	207.7	275.3	307.1	347.6	489	648.8	729.2

Notes: NC : Not Collected; NA: Not Available * Includes Chicken, ducks, turkey & other birds; \$ Provisional derived from village level totals.

Source: GOI (2016).

Across the India states, livestock population has increased substantially in Gujarat (15.36%), Uttar Pradesh (14.01%), Assam (10.77%), Punjab (9.57%) Bihar (8.56%); Sikkim (7.96%), Meghalaya (7.41%), and Chhattisgarh (4.34%) in 2012 over 2007. There are significant regional variations in total livestock and bovine population. The highest livestock population was recorded in Uttar Pradesh, followed by Rajasthan, Andhra Pradesh, Madhya Pradesh and Bihar which together accounts for one half of the total livestock in the country. In case of bovine stock, Uttar Pradesh accounts for highest share of 18.38 per cent of total bovine stock in India (2012) followed by Rajasthan, Madhya Pradesh, Bihar and Gujarat.

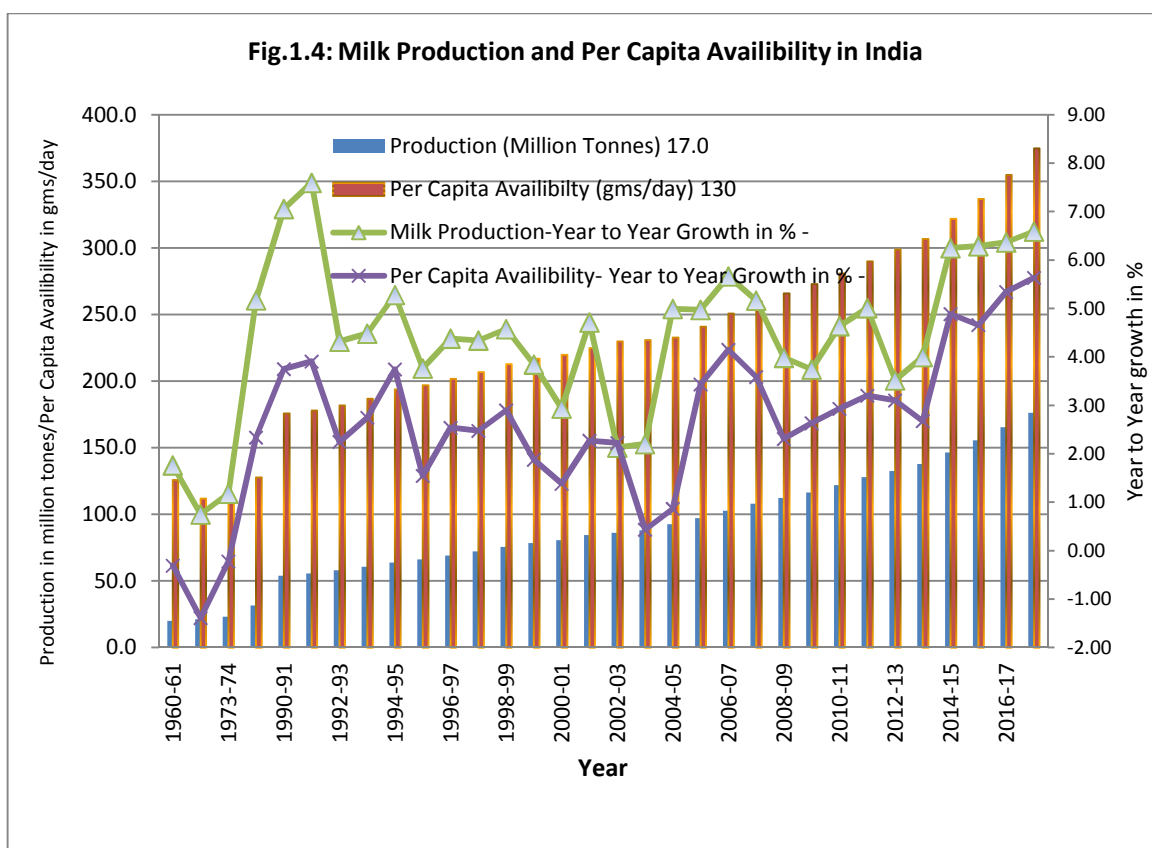
Table 1.9: Milch Animal Population by States (2012)

State / UT's	Adult Female Bovine Population by States (2012) (In thousands)						Total Livestock	
	Crossbred Over 2 1/2 years	Indigenous Over 3 years	Total Cows	Female Buffalo >3 years	Total Cows & Buffaloes	% to all India total	(000)	% to all India total
A & N Islands	8	10	18	2	20	0.02	155	0.03
Andhra Pradesh	1251	2228	3479	5763	9241	6.93	56099	10.96
Arunachal Pradesh	11	133	144	1	145	0.11	1413	0.28
Assam	175	3335	3531	157	3688	2.77	19082	3.73
Bihar	2023	3959	5982	4017	9999	7.50	32939	6.43
Chandigarh	5	1	6	10	16	0.01	24	0.00
Chhattisgarh	89	3238	3327	409	3736	2.80	15044	2.94
D & N Haveli	0	9	9	1	10	0.01	50	0.01
Daman & Diu	0	1	1	0	1	0.00	5	0.00
Goa	10	14	25	16	41	0.03	146	0.03
Gujarat	1048	3092	4141	5646	9787	7.34	27128	5.30
Haryana	522	322	844	2914	3758	2.82	8820	1.72
Himachal Pradesh	549	403	952	423	1375	1.03	4844	0.95
J&K	703	525	1228	417	1644	1.23	9201	1.80
Jharkhand	137	2486	2622	398	3020	2.27	18053	3.53
Karnataka	1829	2540	4369	2056	6425	4.82	27702	5.41
Kerala	630	36	666	10	676	0.51	2735	0.53
Lakshadweep	0	2	2	0	2	0.00	50	0.01
Madhya Pradesh	415	6538	6954	4251	11204	8.41	36333	7.10
Maharashtra	2138	3302	5440	3359	8799	6.60	32489	6.34
Manipur	20	77	96	23	119	0.09	696	0.14
Meghalaya	19	333	352	4	357	0.27	1958	0.38
Mizoram	6	10	16	2	18	0.01	312	0.06
Nagaland	52	38	90	9	99	0.07	911	0.18
NCT Of Delhi	32	15	47	95	142	0.11	360	0.07
Odisha	575	2884	3459	250	3709	2.78	20732	4.05
Pondicherry	31	1	32	1	33	0.02	120	0.02
Punjab	1182	115	1297	2805	4101	3.08	8117	1.59
Rajasthan	929	5540	6470	6933	13403	10.06	57732	11.27
Sikkim	57	5	62	0	62	0.05	292	0.06
Tamilnadu	3411	1074	4485	423	4908	3.68	22723	4.44
Tripura	54	289	343	4	347	0.26	1936	0.38
Uttar Pradesh	1828	7241	9069	15432	24501	18.38	68715	13.42
Uttarakhand	259	548	807	582	1389	1.04	4795	0.94
West Bengal	1270	5053	6323	172	6494	4.87	30348	5.93
ALL	21268	55417	76685	56586	133271	100.00	512057	100.0

Source: GOI (2016)

1.7 Growth in Milk Production and Productivity:

The dairy sector has witnessed a quantum jump in all areas, including milk production, processing and/or marketing during the last three decades. Milk production in India increased from 17 million tonnes in 1950-51 to 176.3 million tonnes in 2017-18 (Fig 1.4, Table 1.10). From being a receipt of massive material support from the World Food Programme and European Economic Community in the 1960s & early 1970s, India has positioned itself as the world’s largest producer of milk (Sharma, 2004) and contributes 19 per cent of the World's total milk production. Milk production was stagnant during the decades of 1950s and 1960s and annual production growth was negative for many years.



During last two years, compensating dairy farmers to some extent from the losses in crop sector and elsewhere due to two consecutive poor monsoon years, India continues to be the largest producer of milk in the world. Milk production has gone up from 11.2 million tonnes during 2008-09 to 146.3 million tonnes during 2014-15, and further to 176.3 million

tons in 2017-18 with an annual growth rate of 6.6 per cent achieved over the previous year during the last two years. It has achieved a significant jump in the annual growth rate over the previous years from 3.94 per cent during 2008-09 to 6.6 percent during 2017-18.

However, all the states are not doing well and the growth in milk production varies widely in various regions and among states within the regions (Table 1.11). The western and central Indian states have done well in terms of growth in milk production during 2017-18, while the North eastern and eastern states, due to their regional peculiarities, are trying to catch up. Rajasthan (12.7 per cent) and Maharashtra (6.3 per cent) have achieved a higher growth rate during 2017-18 among all the western regional states while Madhya Pradesh has achieved significant higher growth rate (8.3 per cent) in milk production among the two central regional states of Madhya Pradesh and Chhattisgarh during 2017-18. Eastern regions of the country needs special attention as it seems to be lagging behind in dairying states such as Punjab, Gujarat and Karnataka (Kumar, 2016). Bihar (5.2 per cent) in the eastern region and Sikkim, Arunachal Pradesh, Tripura and Mizoram in the North Eastern region have performed not better during the years. Andhra Pradesh (7.8 percent) in the southern region and Jammu and Kashmir (1.4 per cent), Himachal Pradesh (0.8 per cent) and Haryana (5.6 per cent) among the northern regional states have achieved a growth rate that is higher than the national average during 2017-18. In case of milk procurement, during the period from 2009-10 to 2017-18, the central and western Indian regions have done well in milk production at 8.7 per cent and 7.58 per cent, respectively (Table 1.11, Fig. 1.5). The sector is witnessing more action from private dairies, which are likely to continue, especially in the area of milk procurement. They are now shifting their strategies to source milk directly from farmer and not through contractors. Simultaneously, they are continuing their focus on production and marketing of value added milk and milk products.

Table 1.10: Milk Production and Per Capita Availability in India

Year	Production		Per Capita Availability	
	Million Tonnes)	Year to Year Growth in %	gms/day	Year to Year Growth in %
1950-51	17.0	-	130	-
1960-61	20.0	1.76	126	-0.31
1968-69	21.2	0.75	112	-1.39
1973-74	23.2	1.18	110	-0.22
1980-81	31.6	5.17	128	2.34
1990-91	53.9	7.06	176	3.75
1991-92	55.6	7.59	178	3.91
1992-93	58.0	4.32	182	2.25
1993-94	60.6	4.48	187	2.75
1994-95	63.8	5.28	194	3.74
1995-96	66.2	3.76	197	1.55
1996-97	69.1	4.38	202	2.54
1997-98	72.1	4.34	207	2.48
1998-99	75.4	4.58	213	2.90
1999-00	78.3	3.85	217	1.88
2000-01	80.6	2.94	220	1.38
2001-02	84.4	4.71	225	2.27
2002-03	86.2	2.13	230	2.22
2003-04	88.1	2.20	231	0.43
2004-05	92.5	4.99	233	0.87
2005-06	97.1	4.97	241	3.43
2006-07	102.6	5.66	251	4.15
2007-08	107.9	5.17	260	3.59
2008-09	112.2	3.99	266	2.31
2009-10	116.4	3.74	273	2.63
2010-11	121.8	4.64	281	2.93
2011-12	127.9	5.01	290	3.20
2012-13	132.4	3.52	299	3.10
2013-14	137.7	4.00	307	2.68
2014-15	146.3	6.25	322	4.89
2015-16	155.5	6.29	337	4.66
2016-17	165.4	6.37	355	5.34
2017-18	176.3	6.59	375	5.63

Source: GOI (2016).

Though India stands at first position in terms of cattle and buffalo population in the world, the productivity of dairy animals in India is very low as compared to other countries (Table 1.12). The reason cited for this is inappropriate feeding as well as inadequate supplies of quality feeds and fodder in addition to the low genetic profile of the Indigenous breeds. It is not be possible to achieve higher productivity in a milch animal by merely increasing its genetic potential, due attention needs to be given on proper feeding of milch animal.

Table 1.11: State-wise Milk Production in India

State	Milk Production (000 tonnes)					% to all India Total
	2001-02	2005-06	2010-11	2016-17	2017-18	
Andhra Pradesh	5814	7624	11203	12177.94	13724.99	7.8
Arunachal Pradesh	42	48	28	52.53	54.02	0.0
Assam	682	747	790	861.27	871.89	0.5
Bihar	2664	5060	6517	8711.07	9241.5	5.2
Goa	45	56	60	51.36	54.88	0.0
Gujarat	5862	6960	9321	12784.12	13569.06	7.7
Haryana	4978	5299	6267	8974.75	9809	5.6
Himachal Pradesh	756	869	1102	1329.11	1392.18	0.8
J & K	1360	1400	1609	2376.09	2459.79	1.4
Karnataka	4797	4022	5114	6562.15	7136.66	4.0
Kerala	2718	2063	2645	2520.34	2575.98	1.5
Madhya Pradesh	5283	6283	7514	13445.32	14713.17	8.3
Maharashtra	6094	6769	8044	10402.15	11102.29	6.3
Manipur	68	77	78	78.82	81.66	0.0
Meghalaya	66	73	79	83.96	85.03	0.0
Mizoram	14	15	11	24.16	25.02	0.0
Nagaland	57	74	76	79.37	74.09	0.0
Orissa	929	1342	1671	2003.42	2087.96	1.2
Punjab	7932	8909	9423	11282.06	11854.88	6.7
Rajasthan	7758	8713	13234	20849.59	22427.1	12.7
Sikkim	37	48	43	54.35	58.67	0.0
Tamil Nadu	4988	5474	6831	7556.35	7741.82	4.4
Tripura	90	87	104	159.59	174.26	0.1
Uttar Pradesh	14648	17356	21031	27769.74	29051.72	16.5
West Bengal	3515	3891	4471	5182.6	5388.61	3.1
A&N Islands	23	20	25	16.14	16.99	0.0
Chandigarh	43	46	45	36.39	42.3	0.0
D&N Haveli	8	5	11	7.5	7.5	0.0
Daman & Diu	1	1	1	0.62	0.83	0.0
Delhi	294	310	480	279.11	279.11	0.2
Lakshadweep	2	2	2	3.24	2.55	0.0
Pondicherry	37	43	47	48.31	48.68	0.0
Chhattisgarh	795	839	1029	1373.55	1469.38	0.8
Uttarakhand	1066	1206	1383	1692.42	1741.69	1.0
Jharkhand	940	1335	1555	1893.8	2015.62	1.1
Telangana	-	-	-	4681.09	4965.37	2.8
All India	84406	97066	121848	165404.38	176346.25	100.0

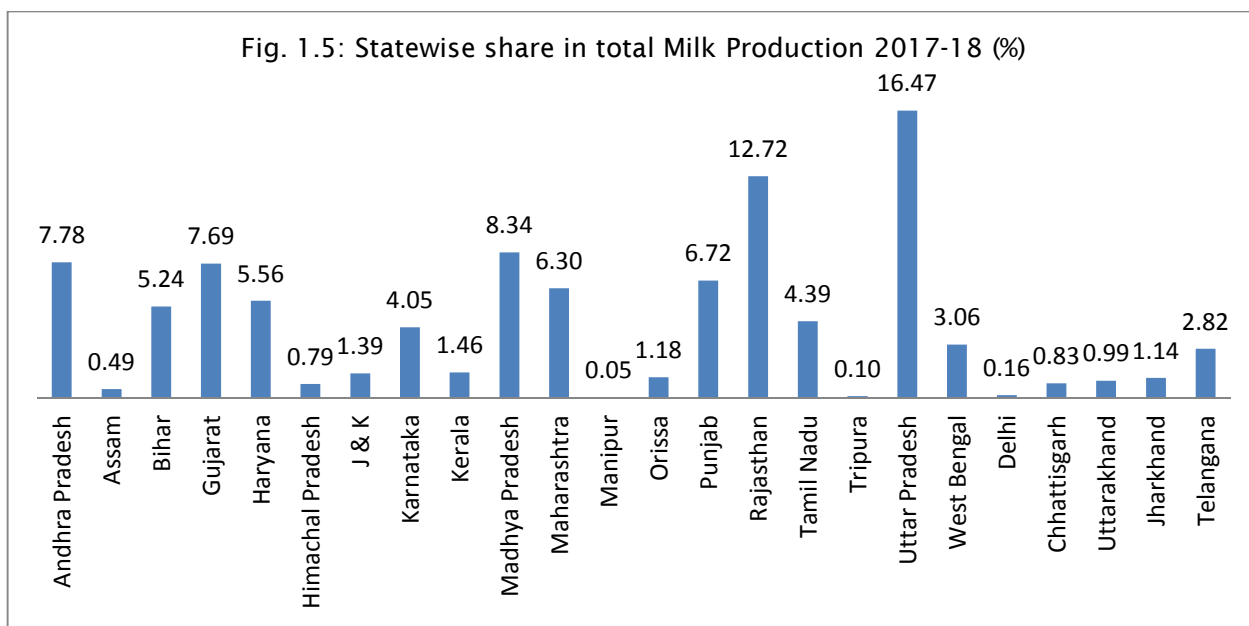
Source: GOI (2018).

Table 1.12: Milk Yield in India and other Selected Countries (2012)

Country	Yield (kg/animal)	
	Cow	Buffalo
India	1196.0	1709.8
Israel	11579.7	NA
Canada	8816.8	NA
Denmark	8529.3	NA
USA	9841.3	NA
Saudi Arabia	10802.5	NA
South Korea	9895.8	NA
Pakistan	1263.5	1971.0
Sri Lanka	842.9	654.5
World average	2318.7	1612.4

Note: N.A. Not Available

Source: <http://www.fao.org/faostat/es/>.

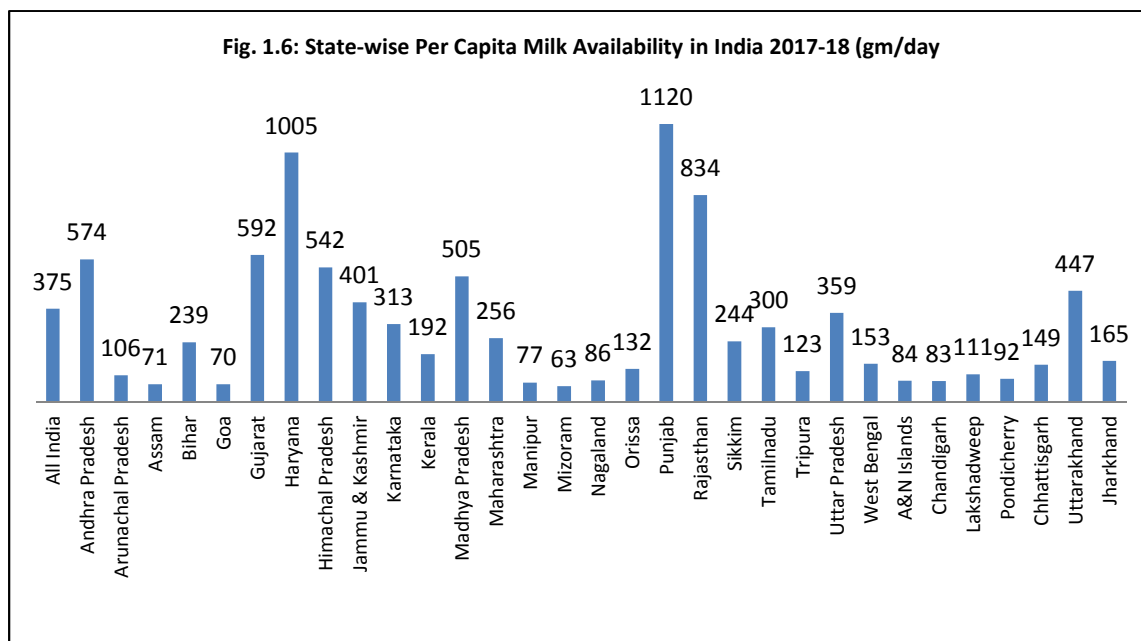


1.8 Per Capita Milk Availability in India:

The per capita availability of the milk in the country has also increased significantly from 130 grams/day in 1950-51 to as increased to 375 gram per day in 2017-18 as against the world average of 294 grams per day during 2013. This represents sustained growth in the availability of milk and milk products for our growing population. However, there are large interregional and interstate variations in milk production as well as in per capita availability in India. The largest producer of milk is Uttar Pradesh which produces 16.5 per cent of the total milk production in the country followed by Rajasthan (12.7) and Gujarat (7.7 %). About 70 percent of national milk production comes from the major eight milk producing states, viz. Uttar Pradesh, Rajasthan, Andhra Pradesh, Gujarat, Punjab, Madhya Pradesh, Maharashtra and Haryana (Fig. 1.5). However, only 12 States were having per-capita availability more than the national average of 300 gm/day in the year 2017-18 (see, Fig. 1.6).

The major milk-producing states in the country have good resource endowment and infrastructure, while eastern states are lagging behind in terms of dairy development. The country's estimated demand for milk is likely to be about 155 million tonnes by 2016-17 and around 200 million tonnes in 2021-22 (NDDDB, 2014 & 2014a). To meet the growing demand, there is a need to increase the annual incremental milk production from 4

million tonnes per year in past 10 years to 7.8 million tonnes in the next 8 years (210 million by 2021-22). To meet the growing demand, it is necessary to maintain the annual growth of over 4 per cent in the next 15 years. It is therefore, imperative to increase productivity of milch animals.



1.9 Status of Availability of Feed and Fodder

Feed accounts for 65-70 per cent of the total cost of production and maintenance of the animals. There is a direct relation between the nutritional status of the animals and the type of feed fed. For getting the best results, feeding of animal needs planned, scientific, practical as well as economical approach. Livestock feeds are generally classified as roughages and concentrates. Roughages are further classified into green fodder and dry fodder. Green fodder are cultivated and harvested for feeding the animals in the form of forage (cut green and fed fresh), silage (preserved under anaerobic condition) and hay (dehydrated green fodder). The estimates of fodder production in the country vary widely. Fodder production and its utilization depend on various factors like cropping pattern followed, climatic condition of the area as well as the socio-economic conditions of the household and type of livestock reared. The cattle and buffaloes are normally fed on the fodder available from

cultivated areas, supplemented to a small extent by harvested grasses. The total area under cultivated fodders was 9.13 thousand hectares in 2014-15, which accounts for hardly 9.47 per cent of gross cropped area (Table 1.13). While share of area under permanent pastures and other grazing land was hardly 10.63 per cent.

Table 1.13: State-wise Area under Fodder Cultivation and Permanent Pastures and Other Grazing Lands in India (000 ha)

States/UTs	Fodder Crops (2014-15)*		Permanent Pastures and Other Grazing Land (2014-15)	
	(000 ha)	% to GCA	(000 ha)	% to GCA
Andaman and Nicobar Islands		0.00	4	0.00
Andhra Pradesh	64	0.07	214	0.22
Arunachal Pradesh		0.00	18	0.02
Assam	4	0.00	167	0.17
Bihar	20	0.02	15	0.02
Chandigarh	0	0.00		0.00
Chhattisgarh	0	0.00	887	0.92
Dadra and Nagar Haveli	0	0.00	1	0.00
Daman and Diu	0	0.00	0	0.00
Delhi	1	0.00	0	0.00
Goa	0	0.00	1	0.00
Gujarat	850	0.88	851	0.88
Haryana	420	0.44	25	0.03
Himachal Pradesh	9	0.01	1510	1.57
Jammu and Kashmir	53	0.05	112	0.12
Jharkhand	0	0.00	114	0.12
Karnataka	28	0.03	904	0.94
Kerala	6	0.01	0	0.00
Lakshadweep	0	0.00	0	0.00
Madhya Pradesh	367	0.38	1303	1.35
Maharashtra	969	1.00	1249	1.29
Manipur	0	0.00	1	0.00
Meghalaya	0	0.00		0.00
Mizoram	0	0.00	11	0.01
Nagaland	0	0.00		0.00
Odisha	0	0.00	524	0.54
Pondicherry	0	0.00		0.00
Punjab	498	0.52	5	0.01
Rajasthan	4928	5.11	1674	1.74
Sikkim	0	0.00		0.00
Tamil Nadu	91	0.09	108	0.11
Telangana	27	0.03	299	0.31
Tripura	0	0.00	1	0.00
Uttar Pradesh	767	0.80	65	0.07
Uttarakhand	32	0.03	192	0.20
West Bengal	3	0.00	2	0.00
India	9137	9.47	10258	10.63

Source: www.indiastat.com

The major sources of fodder supply are crop residues, cultivated fodder and fodder from common property resources like forests, permanent pastures and grazing lands. At present, there is huge gap between demand and supply of animal feed and fodder (see, Tables 1.14

to 1.17). The increased growth of livestock particularly that of genetically upgraded animals, has further aggravated the situation. Additionally, the quality of the available fodder is also poor, being deficient in energy, protein and minerals. The pattern of deficit varies in different parts of the country. For instance, the green fodder availability in Western Himalayan, Upper Gangetic Plains and Eastern Plateau and Hilly Zones is more than 60 per cent of the actual requirement. In Trans Gangetic Plains, the feed availability is between 40 and 60 per cent of the requirement and in the remaining zones, the figure is below 40 per cent. In case of dry fodder, availability is over 60 per cent in the Eastern Himalayan, Middle Gangetic Plains, Upper Gangetic Plains, East Coast Plains and Hilly Zones. In Trans Gangetic Plains, Eastern Plateau and Hills and Central Plateau and Hills, the availability is in the range of 40-60 per cent, while in the remaining zones of the country the availability is below 40 per cent. The regional deficits are more important than the national deficit, especially for fodder, which is not economical to transport over long distances.

Table 1.14: Supply and Demand of Green and Dry Fodder

(Figures in million tonnes)

Year	Supply		Demand		Deficit as % of Demand	
	Green	Dry	Green	Dry	Green	Dry
1995	379.3	421	947	526	59.95	19.95
2000	384.5	428	988	549	61.10	21.93
2005	389.9	443	1025	569	61.96	22.08
2010	395.2	451	1061	589	62.76	23.46
2015	400.6	466	1097	609	63.50	23.56
2020	405.9	473	1134	630	64.21	24.81
2025	411.3	488	1170	650	64.87	24.92

Source: www.indiastat.com

Table 1.15: Availability, Requirement & Deficit of Crude Protein (CP) & Total Digestible Nutrients (TDN) including CP & TDN from concentrates

Year	Crude Protein CP and Total Digestible Nutrients TDN <i>(Figures in million tonnes)</i>					
	Requirement		Availability		Deficit (%)	
	CP	TDN	CP	TDN	CP	TDN
2000	44.49	321.29	30.81	242.42	30.75	24.55
2005	46.12	333.11	32.62	253.63	29.27	23.86
2010	47.76	344.93	34.18	262.02	28.44	24.04
2015	49.39	356.73	35.98	273.24	27.15	23.41
2020	51.04	368.61	37.50	281.23	26.52	23.70
2025	52.68	380.49	39.31	292.45	25.38	23.14

Source: www.indiastat.com

Table 1.16: Availability, requirements and deficit of concentrates for livestock

Particulars	Availability, requirements and deficit of concentrates for livestock (<i>million tonnes</i>)				
	2002-03	2003-04	2004-05	2005-06	2006-07
Available	41.96	43.14	44.35	45.63	48.27
Required	117.44	120.52	123.59	127.09	130.55
Deficit (%)	64.27	64.21	64.12	64.10	63.03

Source: www.indiastat.com

Table 1.17: State-wise Availability and Requirement of Fodder in India (2008)

States/UTs	<i>(Dry Matter in Million Tonnes)</i>			
	Availability		Requirement	
	Crop Residues	Greens	Crop Residues	Greens
Andhra Pradesh	15.69	4.88	31.71	16.91
Arunachal Pradesh	0.47	1.57	1	0.53
Assam	5.82	0.95	12.39	6.61
Bihar	16.23	0.81	23.49	12.53
Chhattisgarh	9.93	2.83	14.93	7.96
Goa	0.13	0.05	0.15	0.08
Gujarat	10.61	14.48	22.32	11.9
Haryana	8.75	6.57	9.95	5.31
Himachal Pradesh	2.3	1.98	4.6	2.45
Jammu and Kashmir	2.53	0.64	6.79	3.62
Jharkhand	4.1	0.88	13.59	7.25
Karnataka	14.59	3.55	20.66	11.02
Kerala	0.71	0.39	2.91	1.55
Madhya Pradesh	24.3	11.65	37.41	19.95
Maharashtra	22.21	25.12	33.68	17.96
Manipur	0.36	0	0.72	0.38
Meghalaya	0.31	0.4	1.17	0.62
Mizoram	0.15	0.5	0.06	0.03
Nagaland	0.56	0.3	0.74	0.4
Orissa	12.25	2.46	22.27	11.88
Punjab	13.71	7.38	10.58	5.64
Rajasthan	21.67	33.53	33.53	17.88
Sikkim	0.23	0.01	0.25	0.13
Tamil Nadu	7.01	3.7	16.46	8.78
Tripura	0.53	0.19	1.09	0.58
Uttar Pradesh	42.07	15.73	57.19	30.5
Uttarakhand	2.05	1.73	4.9	2.61
West Bengal	13.77	0.51	30.3	16.16
A& N Islands	0.02	0	0.11	0.06
Chandigarh	0	0	0.04	0.02
Dadra & Nagar Haveli	0.04	0.2	0.8	0.4
Daman and Diu	0.01	0	0.1	0
Delhi	0.09	0.1	0.43	0.23
Lakshadweep	0	0	0.1	0
Pondicherry	0.06	0.01	0.11	0.06
India	253.26	142.82	415.83	221.63

In animal feed supply, coarse cereals have a major role and these account for about 17 per cent of the total cereals (Table 1.18). Production of these cereals is hovering around 47 million tonnes. Maize accounts for around 60 per cent of the total coarse cereals produced in the India. Most of the coarse cereals in the developed countries are mainly used for cattle feed and some of the cereals like barley are used in breweries. However, in

India their use is mainly for direct consumption mostly by poor in the villages.

Table 1.18: Production of Coarse Cereals in India

Crops	Production of Coarse Cereals in India (<i>Figures in million tonnes</i>)								
	1950-51	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11	2015-16	2017-18
Coarse Cereals	15.38	23.74	30.55	29.02	32.7	31.08	43.4	38.4	46.99
Total Cereals	219.9	203.5	226.3	242.2	236.9	185.74	226.25	235.83	259.59
Coarse cereals % to total cereals	6.99	11.67	13.50	11.98	13.80	16.73	19.18	16.28	18.10
Maize % to total coarse cereals	0.79	2.00	3.31	2.87	3.76	6.48	9.60	8.90	6.11

Source: GOI DES (2017-18)

Compound feed plays an important role in improvement in milk yields of cattle and buffalo by offering balanced diet. Driven by the strong growth in dairy industry, compound feed volumes have increased at an average rate of 6 per cent between 2007-08 to 2012-13. Based on the number of productive dairy animals and the current-requirement (0.5 kg), the current estimated compound feed requirement is 65-70 million tonnes, while current production amounts are sufficient to feed only about 7 per cent of the total breedable animals in India. Current consumption volumes are approximately 7.5 million tonnes. The actual market is much smaller because a large portion of this market is serviced by the unorganized (grazing) sector. The three key types of cattle-feed producers are (a) Home-mixers, (b) Dairy cooperatives; and (c) Private sector manufacturers of compound cattle feed. There would still be a significant gap between market potential and supply. Many of cooperatives have also set up their own modern computerized feed Plants. They have modern milk processing plants from which they produce and market pasteurized milk, butter, butter oil, chocolate, and other value added products. The feed production from cooperatives is about 2.5 million tonnes per year (Table 1.19).

Table 1.19: Region-wise Cattle Feed Production in India

Region	States	Private Sector (million MT/year)	Cooperative Sector (million MT/year)	Total (million MT/year)	% Share
Western	Gujarat, Maharashtra, Goa, Madhya Pradesh	1.80	1.70	3.50	48%
Northern	Punjab, Haryana, UP, Uttarakhand, Rajasthan	0.80	0.42	1.22	17%
Southern	Karnataka, AP, TN, Kerala, Pondicherry	1.20	1.11	2.31	31%
Eastern	Bihar, Jharkhand, Odisha, WB, Assam	0.20	0.10	0.30	4%

Source: FASR (2015), Yes Bank (https://www.yesbank.in/.../indian_feed_industry-_revitalizing_nutritional_security.pdf)

1.10 Veterinary Infrastructure and Manpower⁶:

Improving animal health and veterinary services has been a priority on India's livestock development agenda. As its share in total spending increased gradually, veterinary infrastructure and manpower has grown considerably (see, Birthal and Negi, 2012). Between 1982 and 2010, the number of veterinary institutions (hospitals, polyclinics, dispensaries, stockman centres and mobile dispensaries) increased 1.6 times and the number of field veterinarians by almost three times. The number of livestock units per veterinarian declined from more than 15,540 in 1982 to less than 7,000 in 2010 (Table 1.20).

Table 1.20: Veterinary Infrastructure and Manpower in India

Year	No. of Veterinary Institutions	No. of Veterinarians	Cattle equivalent units per Veterinary Institutions	Cattle Equivalent Units per Veterinaries
1982	33323	18000	8394	15540
1992	40586	33600	7632	9219
1997	50846	37200	6129	8377
2003	51973	38100	5926	8084
2007	52757	40421	6310	8236
2010	54906	50772	6375	6894

Source: Birthal and Negi (2012).

But there is considerable regional variation in veterinary infrastructure and manpower. Livestock units per veterinary institution are high in some of the poorest states such as Jharkhand, Bihar, Madhya Pradesh and Chhattisgarh. High income states such as Punjab and Haryana, on the other hand, have relatively better infrastructure and less number of livestock units per veterinary institution. The delivery of

⁶ For more details, please see Birthal and Negi (2012).

veterinary services, however, remains weak. Shortage of manpower, poor supplies of medicines, vaccines and equipment are the often-cited reasons for inefficiency in the delivery of services. The focus on animal health has been largely on provision of curative services and not much attention has been paid to preventive mechanisms. The recent emergence of avian influenza has attracted considerable attention to the need for developing an efficient delivery system. Further, with imminent changes in climate, the severity and pattern of animal diseases are likely to be altered, implying a need for preparing the livestock sector to cope with climate change. It, therefore, becomes imperative to emphasise developing early-warning systems and mechanisms for preventive disease management. It may be noted that India could control rinderpest because efforts and investment were effectively targeted. The immunisation programme against foot and mouth disease has been reported to be successful in some states.

1.11 Need of the Study:

In spite of sustained growth in milk production, the demand for milk is outpacing its supply. Gandhi and Zhou (2010) have projected the demand for milk to grow faster than its annual production. The increasing demand-supply gap may lead to sharp rise in the prices of milk. Mishra and Roy (2011) have shown that rising price of milk has been the most important contributor to food price inflation in India since 1998. The demand for milk and dairy products is expected to grow at a higher rate compared to the previous decade due to accelerated economic growth. According to various estimates, the demand for milk and milk products is expected to grow at an annual incremental rate of 8-9 million tonnes, as against the present rise of about 5 million tonnes. Datta and Ganguly (2002) estimated Indian milk demand for 2020 under various GDP growth rates. The study reported that if the current growth continues for the next twenty years (the nation has been growing at a rate between 5 and 7 percent over past five years), milk consumption is likely to more than double by 2020.

To achieve the above growth, it is believed that the growth has to be inclusive and geographically more diffused. Quantum jump in milk production is possible through increase in productivity, and linking small holders to dairy cooperatives/producer groups/SHGs with forward linkages with milk processing. This means that the areas which have low levels of productivity, preponderance of low yielding non-descript animals, but rich in resource endowment and presence of good markets would require attention of the policy makers for initiating a focussed program for the study area. It is well recognised that western, northern and southern parts of India have progressed significantly in dairy development while the eastern part of the country has lagged far behind in dairy development. Quantum jump in milk production is possible through increase in productivity, and linking small holders to dairy cooperatives/producer groups/SHGs with forward linkages with milk processing. This means that the areas which have low levels of productivity, preponderance of low yielding non-descript animals, but rich in resource endowment and presence of good markets would require attention of the policy makers for initiating a focussed program for the study area. Therefore, a comprehensive assessment of the present status of dairy development in the study area and potential for growth from the perspective of regional and national consideration needs to be drawn up for dairy development.

Beside, despite of impressive growth in milk production during the past three decades, productivity of dairy animals continues to remain very low and milk marketing system is primitive (Rajendran and Mohanty, 2004; Sarkar and Ghosh, 2010). Currently, more than 80 per cent of the milk produced in the country is marketed by the unorganised sector (private organisations) and less than 20 per cent is marketed by the organised sector (government or cooperative societies). But, both organised and unorganised sectors in the dairy industry of the country face a lot of constraints. Therefore, it is essential to study the various types of constraints faced by the both cooperative and no cooperative dairy producers.

Besides, the need for ascertaining different program of the central and state government relating to dairying, at the localised level (say, district level), arises from the fact that (i) there is presently no documentation on the different schemes of the state and central governments related to dairying, (ii) how far these schemes are mutually related, (iii) what is the system to converge them at the local level and how is the convergence process is enforced. This need to be studied from the perspective of a district so that the multiplicity of different schemes are known, target population are identified, conditions for their implementation are specified and who are the coordinating and controlling departments of the government. The convergence of all state and central government schemes at the implementation level, in a given territory, would bring about improvement in milk production sector in a manner that will be sustainable, while ensuring social and economic improvements of the dairy farmers. Therefore, the present study was undertaken in the seven eastern states and two western states of India.

1.12. About Study Area:

1.12.1 Eastern States of India

Eastern seven states of India are physically contiguous, socio-economically homogeneous and have moderate to low development status. This area covers about 22 per cent of national geographic area, 184 districts, 2.5 lakh villages accounting for 42 per cent of total villages and 34 per cent of the population in the country. According to Census of India 2011, the population density in the study area was 567 persons/square kilometre as compared to national average of 368 persons/square kilometre. Urbanisation is relatively low (19%) compared to the national average of 31%. Similarly, the growth in urbanisation seems to be relatively lower in comparison to national trend. During 2001-2011, there was a substantial reduction of about 9 million cultivators in the country, the programme area accounts for nearly half (about 4 million) of them. In 2011, the cultivators' population declined by 7% at the national level and stood at 33%. In the study area, the cultivators' population was 28% in

2011. The fall in cultivators in the study area is sharper – a reduction of 9% from 2001 to 2011. The shift from cultivators to agriculture labourers is significant in these states as compared to national shift. There is a critical need for generating adequate employment opportunities for these groups of population. The proportion of main workers (36%) is low in the study area as compared to national average of 45%, whereas the proportions of marginal workers and non-workers are relatively higher. While half of the marginal workers seeking/ available for another work at the country level, it is much higher in the study area. This phenomenon suggests that there is a crisis of gainful employment round the year. The population below poverty line (BPL) in the study area was 41.1 per cent of total population – higher than the national average of 29.5 per cent. About 60 percent of the country's BPL population belongs to the study area and it is as high as 64% in the rural areas. The average annual per capita income in the study area at Rs. 46,028, 40% lower than the national average of Rs. 74,920 and so is average the per capita expenditure per month.

These eastern states together accounts for 18 per cent of national milk production, as against their share of 27 per cent in country's female animal population. The area has predominantly indigenous cows, mostly non-descript. The animal population density is higher (45 per square kilometre) as against the national density of 36 animals per square kilometre. The productivity levels of milch animals are quite low. Share of non-descript indigenous cows in this area is about two-thirds of total cow population. This shows that the genetic pool of the milch animal population is of low quality. The growth-analysis of in-milk animal population and productivity indicates that while the growth in animal population is higher than the national average, the growth in productivity is less than the national average. This trend is applicable across all the species, signifying sharp increase in low-yielding animal population and thus, constraining limited resources like feed, fodder, land and water.

1.12.2 Western States of India

Rajasthan and Gujarat are the north-western states of India, accounts together for about 17 per cent of total geographical area of the country. Rajasthan is considered as “Denmark of India” while Gujarat is known for ‘Amul pattern’ where dairy cooperatives are very strong. The cooperative sector has been the key driver of the tremendous increase in Gujarat’s milk production. It is no surprise that Gujarat, the birthplace of India’s white revolution, has a thriving milk cooperative sector. The largest dairy co-operative in India, Amul, is based in Anand, Gujarat. "Amul" pattern is well known and accepted by all the states in our country and some of the other countries also. The total milk production in Rajasthan was 18.5 million tonnes in 2015-16, ranks second in India. Gujarat ranks third among the milk producing states in India, achieving 122.62 lakh MT in 2015-16. Both states together accounts for about 20 per cent to national milk production while cooperative coverage found to be the significant having around 25 percent of members registered in these two states. While in case of procurement of milk by cooperative societies, Gujarat cooperatives societies procure more than 41 percent of milk produced while corresponding figure for Rajasthan was only around 6 per cent. Gujarat has high-quality, high-yielding breeds of cattle and buffaloes Gir and Kankrej breeds in cows, and Mehsani, Jafarbadi and Surti breeds in buffaloes were known for their high milk yielding capacity Rajasthan state has three native cattle breeds viz Rathi, Tharparker and Nagori, having great deal of endurance.

The above observations indicate that the status of dairy development in the eastern states of India is low in comparison to western states of the country, despite the fact that this region has relatively superior resource endowment. The dairy cooperative structure in the area has been weak in comparison to elsewhere in the country. The coverage of dairy cooperatives in terms of villages, milk producers and share of milk procurement in surplus milk is low. The diffusion of growth of the livestock sector, specifically milk production suggests that there are inter-regional variations in the realised growth. Particularly, growth in milk

production has been low in eastern part of the country. This region holds promise for stimulating growth and contributing towards achieving national goal, given the resources (particularly fodder and water) available in the eastern states of India for milk production. It has abundant natural feed resources, lush green sub-tropical forests and huge water bodies, sustaining various types of aquatic plants; which can be utilised as suitable cattle feed with proper processing. There is immense potentiality for using agricultural wastes e.g. paddy straw, jute wastes and vegetable wastes as cheap and economical cattle ration. Preponderance of indigenous animals in the study area would minimise the impact of climate change as they are more resilient to temperature change. The increased volume of milk through these animals would also help in reducing pressure from the states where crossbred cows are in majority and may face an adverse impact of climate change – in sync with the proposed programme on “Bringing Green Revolution in Eastern India” – a sub-scheme of RKVY. With this backdrop, the present study was undertaken with following specific objectives.

1.13 Objectives of the study:

- a) To assess the present status of dairying with reference to animal distribution, milk production, consumption and marketable surplus.
- b) To identify the constraints in dairy development from supply side, institutional deficiency and processing infrastructure.
- c) To identify different central and state government schemes related to dairy development at district level and document technical as well as operational details of the schemes and understand how convergence is ensured.
- d) To highlight the facilitating factors that could help promoting dairy development to improve socio economic status of the milk producers.
- e) To suggest broad areas for focussed interventions for promoting dairy development in the selected state and the way forward.
- f) To suggest suitable policy measures to ensure compliance of effective convergence of various schemes for the benefits of dairy farmers.

1.14 Data and Methodology:

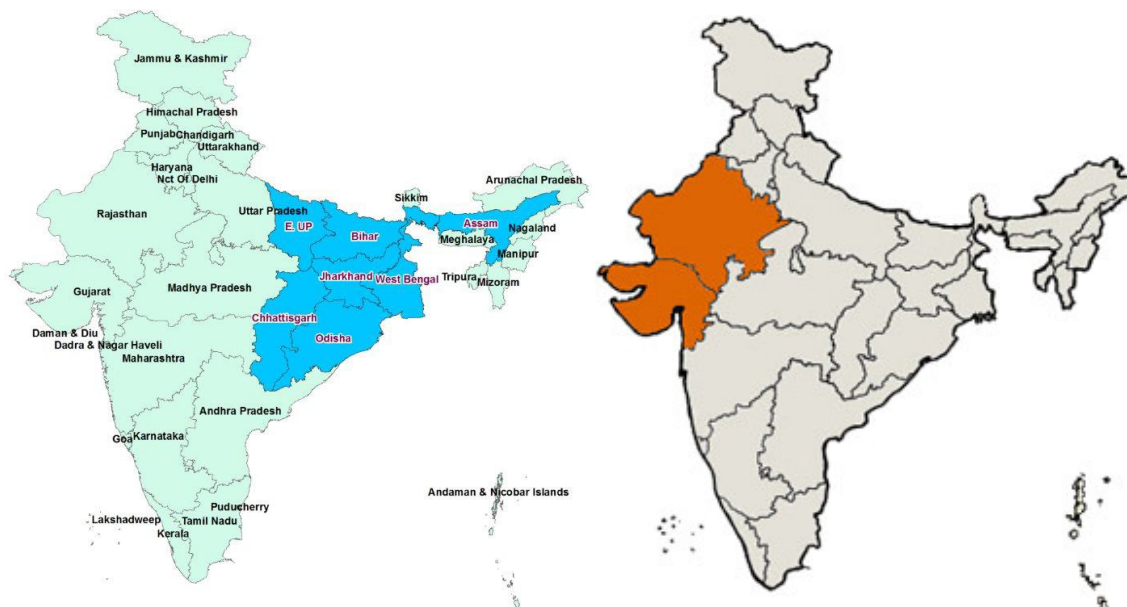
The study is based on both, the secondary and primary level data. The secondary data pertain to dairy development efforts, various schemes implemented and in force, changes in size and composition of livestock population and milch animals as well as milk production across regions, per capita milk availability, infrastructure available, related data will be compiled from the offices of the NDDB and State Department of Animal Husbandry and Dairying as well as from the government publications such as *Livestock Census (Department of Animal Husbandry)*, *Economic Surveys* and related web sites. Besides tabular analysis, annual compound growth rates were calculated to indicate an increase or decrease in livestock populations and other related parameters during inter census periods/years.

For the study, primary data were collected from the selected Milk producers, Primary Dairy Cooperative Societies and Milk Unions through structured and pre-tested schedules/questionnaires.

1.14.1 Study Area:

- The study was conducted in nine states of India comprised of seven eastern states and two western states of India (Map 1.1) by the respective AER Centre, as given below.
 - Assam (AERC, Jorhat)
 - Bihar (AERC, Bhagalpur)
 - Chhattisgarh (AERC, Jabalpur)
 - Jharkhand (AERC, Bhagalpur)
 - Odisha (AERC, Waltair)
 - Eastern UP (AERC, Allahabad)
 - West Bengal (AERC, Visva Bharti)
 - Gujarat (AERC, Sardar Patel University, VVN)
 - Rajasthan (AERC, Sardar Patel University, VVN)

Map 1.1: Location Map of Selected Study Area



1.14.2 Sampling Framework

The primary data were collected from the 2160 sample milk producers/farmers selected on the basis of the sampling design described below and as presented in Tables 1.21 to 1.22.

1) Selection of Milk Union/District Milk Union/District (MU/DU/D):

- Four milk unions/district milk unions/districts were selected in each selected State, i.e. one from each region. In case of non-availability of adequate number of milk unions, desired sample respondents were contacted from another milk union to make decided sample.
- It was attempted that the milk unions/district milk unions/ districts were selected from different regions/zones in order to capture holistic macro picture at the state level.
- On the basis of 100 potential districts list prepared by the NDDB, Anand- One milk union/district milk union/district each from three categories i.e. High, Moderate, Low and one from either non-categorized/from region not covered were selected.

Table 1.21: Sampling Framework

DU/D	District Unions/ District DU1/D1				DU2/D2				DU3/D3				DU4/D4			
Rank	High				Moderate				Low				Not Classified/Low			
Villages	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16
Location	close	close	away	away	close	close	away	away	close	close	away	away	close	close	away	away
DC/NDC	DC	NDC	DC	NDC	DC	NDC	DC	NDC	DC	NDC	DC	NDC	DC	NDC	DC	NDC
Small	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Medium	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Large	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Total sample	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	60				60				60				60			

Note: DU- District Union; If PDCS (primary Dairy Cooperative Society) members are not available, take Non DC. Villages: 16; Milk Producers- 240; PDCS- 08 (or whatever available); Milk Unions-04 (or whatever available).

II) Selection of Villages:

- From each milk union/district milk union/district, four village/Village clusters (one cluster of 2-3 villages) were selected.
 - Two villages nearer to the MU/DU/D place: One village having dairy cooperative and one village without dairy cooperative- both located nearby.
 - Two villages about 25-50 kms away from the MU/DU/D place: One village having dairy cooperative and one village without dairy cooperative- both located nearby.
- Wherever, cooperative union/primary dairy cooperative society was not in existence, data were collected from villages not having primary dairy cooperative society.
- Milk Producer Company/Private Dairy/Agent were treated as non-cooperative agency.
- Total numbers of selected villages in the State were 16 villages.

Table 1.22: Total numbers of Selected DCS and NDCS Milk Producers

Sl	Selected States	Districts/ Milk Unions	DCS				NDCS			
			S	M	L	Total	S	M	L	Total
1	Assam	Nagaon	10	10	10	30	10	10	10	30
		Barpeta	10	10	10	30	10	10	10	30
		Kamrup	10	10	10	30	10	10	10	30
		Jorhat	10	10	10	30	10	10	10	30
		Assam	40	40	40	120	40	40	40	120
2	Bihar	Begusarai	10	10	10	30	10	10	10	30
		Nalanda	10	10	10	30	10	10	10	30
		Bhagalpur	10	10	10	30	10	10	10	30
		Banka	10	10	10	30	10	10	10	30
		Bihar	40	40	40	120	40	40	40	120
3	Chhatisgarh	Bilaspur	10	10	10	30	10	10	10	30
		Durg	10	10	10	30	10	10	10	30
		Raipur	10	10	10	30	10	10	10	30
		Rajnandgaon	10	10	10	30	10	10	10	30
		Chhatisgarh	40	40	40	120	40	40	40	120
4	Gujarat	Junagadh	10	10	10	30	10	10	10	30
		Bharuch	10	10	10	30	10	10	10	30
		Dahod/PM	10	10	10	30	10	10	10	30
		Mehsana	10	10	10	30	10	10	10	30
		Gujarat	40	40	40	120	40	40	40	120
5	Jharkhand	Ranchi	10	10	10	30	10	10	10	30
		Hazaribagh	10	10	10	30	10	10	10	30
		Lohardaga	10	10	10	30	10	10	10	30
		Deoghar	10	10	10	30	10	10	10	30
		Jharkhand	40	40	40	120	40	40	40	120
6	Odisha	Cuttack	20	20	20	60	20	20	20	60
		Dhenkanal	20	20	20	60	20	20	20	60
		Odisha	40	40	40	120	40	40	40	120
7	Rajasthan	Hanumangarh	10	10	10	30	10	10	10	30
		Ajmer	10	10	10	30	10	10	10	30
		Bharatpur	10	10	10	30	10	10	10	30
		Jalour	10	10	10	30	10	10	10	30
		Rajasthan	40	40	40	120	40	40	40	120
8	Eastern UP	Allahabad	10	10	10	30	10	10	10	30
		Gorakhpur	10	10	10	30	10	10	10	30
		Varanasi	10	10	10	30	10	10	10	30
		Faizabad	10	10	10	30	10	10	10	30
		Eastern UP	40	40	40	120	40	40	40	120
9	West Bengal	Ichhamati MU	10	10	10	30	10	10	10	30
		Kishan MU	10	10	10	30	10	10	10	30
		KangsabatiMU	10	10	10	30	10	10	10	30
		Sundarban MU	10	10	10	30	10	10	10	30
		West Bengal	40	40	40	120	40	40	40	120
10	All India	All India	360	360	360	1080	360	360	360	1080
										All India

III) Selection of Milk Producers:

- From each selected village/village clusters, 15 milk producers were selected randomly. Total sample size of milk producers in State was 240.
- The milk producers were categorized as follows as per holding of number of bovine population (cattle and buffalos)- random selection from total milk producers list (without village census)
 - Small Milk Producers (1-2 Milch animal),
 - Medium Milk Producers (3-5 Milch animal) and
 - Large Milk Producers (above 5 Milch animal)
- Data on parameters related cost of milk production were collected from 03 milk producers from each village (one each from three categories), thus total 48 milk producers.
- Wherever, DCS dairy respondents were not available in adequate number, same were adjusted with more number of respondents from NDCS group.

Data collection from District Milk Union & PDCS:

- Officials of every District Milk Union and Primary Dairy Cooperative Society were interviewed and data were collected.

1.14.3 Survey Schedules:

The different survey schedules for the collection of data have been developed. Four types of survey schedules were canvassed in the study area.

- **Household Survey Schedule 1.0:** To collect the information from the selected milk producers (covering both those are members of PDCS and non members of such any cooperative society) on structured interview schedules on some selected parameters such as: socio-economic characteristics, cropping pattern of sample household, herd strength & cattle shed, details of breedable animals on survey date, milk production, use and sale, seasonwise milk yield (per day), availability of water for dairy, labour use

pattern in dairy/ involvement of rural men and women in dairy activities, feed and fodder per animal at the time of survey (kg/animal/day), veterinary and breeding expenditure during last one year, awareness about the various schemes, service delivery, constraints faced in dairy and suggestion/s for improvement in adoption of dairy schemes, various aspects of rearing of animals and feeding pattern constraints, perception, awareness about RBP, etc. from the sample milk producer.

- **Household Schedule-Cost of Milk Production 2.0:** In order to estimate the cost of milk production, this schedule was canvassed among the few selected milk producer households in addition to the information collected in Schedule 1.0.
- **Primary Dairy Cooperative Society/Private Dairy Unit Schedule/Agent Schedule 3.0:** The desired information from the respondent society/unit/agent was collected in this schedule on selected aspects such as : total number of members enrolled, availability of some facilities, monthwise milk collection and rate paid, concentrates supplied by the society/firm during last one year, veterinary and breeding services provided by society/firm during last one year, any outbreak of disease of livestock during the past one year, training arranged/provided by society during last one year, details of development programmes/support, effect of programmes on key variables, general opinion, perception, constraints and suggestions regarding particular program, constraints faced by PDCS/ private firm
- **Milk Unions 4.0:** This schedule was designed to collect the information from milk unions on related parameters such as: districts, villages and PDCS covered, details on milk collection/procurement, different programs/ schemes, year wise average cost of processing of milk (Rs/litre) dairy plant, production and marketing of different product, constraints faced, potential for future and suggestions

1.15 Limitations of the Study

The study is based on both primary and secondary level of data and hence the accuracy of results depends on the accuracy with which the data were generated. The study was confined to only one agricultural year (2015-16) as mentioned in milk producer's questionnaire and households' survey schedule which was collected in 2016-17. Due to paucity of decentralized data, certain analyses have been limited to some extent level. For instance, growth in milk consumption or employment related data are truly aggregative and therefore the link with macro observation with that of the primary data could not be established. This apart, to understand the process of industrialization, time series data on milk production and incidence of milch animal holding at either village or district level is not available. Due to unwillingness of the officers of some selected District Milk Cooperative Unions and Milk Producer Company, various aspects such as association of milk producer, purchase of milk, sale of processed product, benefits given to milk producer and constraints faced by them could not be covered. Also constraints faced by the selected PDCS, PDU and Milk Unions could not be presented in this report. Odisha state report was not prepared by the AERC, Vishakhapatnam, thus major issues related to Odisha could not be highlighted.

1.16 Organization of Report

The present study report is divided into nine chapters including this introductory chapter. The introductory chapter presents the introductory notes, need and scope of the study and sets out the main objectives of the study. It is also present the data and methodology used for selection of districts/blocks/sample households, sample size, analytical and conceptual framework and concepts used in the study. Chapter two presents macro overview of dairy development in the selected seven north eastern and two western states of India. It analyse the major trends in dairy sector, GDP, livestock production and milk productivity by using secondary data. The review of status of dairy development Institutions in selected States of India is presented in Chapter III. Chapter IV covers

government programmes & policies for development of dairy/ animal husbandry sector at national as well as state level.. It is also deals with the convergence of the government schemes. Chapter V presents the profile selected primary dairy producers. Chapter VI covers the issues related to cost of milk production and awareness about the schemes among selected households, while issues related to marketing of milk is discussed in Chapter VII. Chapter VIII presents the various kinds of constraints faced by selected households in production and marketing of milk and suggestions given by them. Last chapter presents the conclusions and recommendations emerged from the study.

The next chapter presents the dairy development in selected States of India.

Dairy Development in Selected States of India

2.1 Introduction

As mentioned in earlier chapter, there are large interregional and interstate variations in milk production as well as in per capita availability in India. Major milk-producing states in the country have good resource endowment and infrastructure, while eastern states are lagging behind in terms of dairy development. Therefore this chapter presents the dairy development in seven eastern and two western selected states of India

2.2 Dairy Development in Assam

The dairy development in Assam was initiated in the latter part of the second Five Year Plan period with the basic concept of developing the dairy industry in the State through establishment of Town Milk supply Scheme almost in all important towns of Assam to feed the consumers hygienic, clean milk at reasonable price. Till February 1982, the Dairy development activities were carried out by the Director of Animal Husbandry and Veterinary Department. To expand the role of dairy activities in the State economy, the Govt. of Assam created a separate Directorate of Dairy Development bifurcating it from the A.H & Veterinary Department during the year 1982. The primary focus areas of dairy development in Assam are (a) Procurement, processing and distribution of milk aiming at economic upliftment of rural milk producers and help urban consumers to get quality milk at a reasonable price; (b) Developing adequate infrastructure to ensure procurement and processing of milk produces in the State, (c) Organizing milk producers for efficient procurement, processing and marketing, (d) Awareness among the milk producers, traders and consumers regarding clean milk production and consumption, (e) To modernize the supply of inputs like AI, feed, fodder, animal health coverage and training etc. to the Dairy farmers in the milk shed areas linked with milk supply schemes and plans and (f) To help the

villagers in marketing their produce by setting up of suitable transport and marketing organization.

2.2.1 Role of Dairy Sector in the Assam Economy

Assam economy continues to be an agrarian economy as more than 85 per cent of the population is living in the rural areas and about 52 per cent of the total labour force is found to be engaged in agriculture and allied activities. Dairy sector has significant impact on employment generation in the State and plays a vital role in income generation of both the rural and semi-urban economy. Animal Husbandry and Veterinary and Dairy Development Department of the State have been implementing various developmental programmes to create gainful employment/income opportunities in the rural areas with the objectives of boosting up of the socio-economic condition of the rural masses and enhancing the volume of livestock in the State so as to reduce the gap between demand and supply of these products. Assam, with vast natural endowment, has the enormous potentiality for the development of dairy sector. NDDDB is reported to be keen to reach out to more farmers and create the requisite infrastructure for development of dairy sector in Assam.

Animal husbandry plays a pivotal role in the State rural economy. Table 2.1 presents the contribution of animal husbandry to GSDP in Assam. Table shows that the contribution of animal husbandry to agriculture and allied sector during the period from 2006-07 to 2015-16 had marginally declined from 5.33 to 5.08 per cent, while steep decline was recorded from 1.32 per cent to 0.95 per cent during the corresponding period. It might be due to higher contribution of secondary and tertiary sectors to the GSDP.

Table 2.1: Trend of Contribution of Animal Husbandry to GSDP in Assam

Particulars	2006-07*	2007-08	2008-09	2009-10	2010-11	2011-12**	2012-13	2013-14	2014-15(P)	2015-16(Q)
Contribution to Ag & Allied (%)	5.33	5.14	3.65	4.83	5.00	5.59	5.20	5.05	5.22	5.08
Contribution to GSDP (%)	1.32	1.25	1.00	1.11	1.12	1.11	1.17	1.04	1.01	0.95

Notes: *Data during 2006-07 to 2010-11 refers to constant prices of 2004-05.; ** Data during 2011-12 to 2015-16 refers to constant prices of 2011-12.

Source: Directorate of Economics and Statistics, Assam, 2017

2.2.2 Composition of Livestock in Assam

Table 2.2 presents growth of livestock wealth in Assam and India. Nineteenth Livestock Census (2012) of India has placed the total livestock population at 512.1 million, out of which, 19.62 million (3.83 per cent) belonged to Assam. It is evident from the table that the inter-census growth of livestock in Assam did not indicate any consistent, rather it seemed to be erratic. It can be seen from Table 2.3 that the cattle population in Assam had constituted 52.55 per cent to total livestock population while corresponding figure for India stood at 37.28 per cent.

Table 2.2: Growth of the Livestock in Assam and India

Sl. No	Livestock Census Year	Total Livestock (000)		% Share of Assam to All India	% year-wise growth
		All India	Assam		
1	1966	344111	8450	2.46	-
2	1972	353338	8010	2.26	- 5.21
3	1977	369525	9580	2.59	19.60
4	1983	419588	10140	2.42	5.85
5	1987	445285	11320	2.57	11.63
6	1993	470830	12940	2.75	14.31
7	1997	485385	21210	4.37	63.91
8	2003	485002	14450	2.98	-31.87
9	2007	529698	18570	3.35	28.51
10	2012	512057	19620	3.83	5.65

Note: Figures without Dog & Rabbit.

Source: GOI (2016) & GOA (2016)

Table 2.3: Species-wise Livestock Population in Assam

Sl. No.	Particulars	Assam -2012			India 2012	
		Livestock (In '000)	% share in India	% share in total Livestock	Livestock (In '000)	% share in Total Livestock
1	Cattle	10310	5.40	52.55	190904	37.28
2	Buffaloes	440	0.40	2.24	108702	21.22
3	Sheep	520	0.80	2.65	65069	12.70
4	Goats	6170	4.56	31.45	135173	26.40
5	Others	2180	17.86	11.11	12209	2.00
6	Total	19620	3.83	100.00	512057	100.00

Note: Figures without Dog & Rabbit.

Source: GOI (2016) & GOA (2016)

Table 2.4: Growth in Livestock Population in Assam (1966-2012)

Sl.	Year	Growth in Livestock Population in Assam (1966-2012) (In million nos.)										Growth (%) 2007-12
		1966	1972	1979	1982	1988	1992	1997	2003	2007	2012	
1	Cattle	6.10	5.80	6.60	6.75	7.28	7.79	8.05	8.42	10.37	10.31	-1.20
	i Local	6.10	5.80	6.60	6.60	7.05	7.48	7.66	7.98	9.68	9.91	4.60
	ii CB	0.00	0.00	0.00	0.15	0.23	0.30	0.39	0.44	0.69	0.40	-5.80
2	Buffaloes	0.54	0.49	0.73	0.56	0.62	0.65	0.73	0.68	0.53	0.44	-1.80
3	Sheep	0.05	0.05	0.06	0.05	0.07	0.08	0.08	0.15	0.36	0.52	3.20
4	Goat	1.46	1.26	1.66	1.73	2.13	2.64	2.68	2.99	4.38	6.17	35.8
5	Others	0.30	0.41	0.53	1.05	1.22	1.78	9.68	2.21	2.93	2.18	-15.00
	Total	8.46	8.00	9.58	10.14	11.45	12.94	21.21	14.45	17.77	19.61	36.80

Source: Different Livestock Census in Assam, Directorate of Animal Husbandry and Veterinary, Assam

According to the Livestock Census 2012, the cattle population constituted the largest share of 52.58 per cent which was however declined as compared to share in 2007 (Table 2.4). This decline may perhaps attributed to declining growth rate (-5.80 per cent) of cross breed cattle. Table 2.5 shows that the highest bovine population is dominated in Sonitpur district while the lowest bovine population was recorded in the district of North Cachar Hills.

Table 2.5: District-wise Bovine population in Assam

Sl. No.	District	Bovine population in Assam as per 2012 Livestock Census (In Nos.)			
		Crossbred Cattle	Indigenous Cattle	Buffalo	Total Bovine population
1	Goalpara	4120	284374	7283	295777
2	Dhubri	6077	502284	13043	521404
3	Kokrajhar	2423	323239	13290	338952
4	Bongaigaon	6847	202043	1783	210673
5	Barpeta	37074	346474	27044	410592
6	Nalbari	24648	235502	4552	264702
7	Baksa	7625	353762	2528	363915
8	Kamrup	44887	612778	8837	666502
9	Darrang	11349	331676	12522	355547
10	Udalguri	6338	332767	1775	340880
11	Sonitpur	34963	907329	36106	978398
12	Lakhimpur	3900	603782	13819	621501
13	Dhemaji	826	452564	14547	467937
14	Morigaon	27777	290064	4179	322020
15	Nagaon	43421	719439	7445	770305
16	Golaghat	10712	402175	15153	428040
17	Jorhat	11893	479602	26449	517944
18	Sibsagar	9307	401792	24406	435505
19	Dibrugarh	9681	438400	12312	460393
20	Tinsukia	12749	395788	17247	425784
21	Karbi-Anglong	23221	340122	14935	378278
22	N.C. Hills	3848	23110	24294	51252
23	Karimganj	16917	247787	40041	304745
24	Hailakandi	12759	148753	27947	189459
25	Chirang	1712	226159	7692	235563
26	Cachar	20828	309937	56036	386801
ASSAM		395902	9911702	435265	10742869

Source: Directorate of Animal Husbandry and Veterinary, Assam

2.2.3 Outlay and Expenditure on Animal Husbandry in Assam

Table 2.6 reflects that the outlay on animal husbandry has increased from 434.90 lakh in 2000-01 to 3027.78 in 2015-16 while during this period the actual expenditure varied between 434.90 to 222.14 lakh. The amount seems to be insufficient to meet the demand of milk product in the State. Moreover, the highest sanction amount of Rs.

1,645.86 lakhs in 2009-10 which came down to Rs. 222.14 lakhs in 2015-16 is a matter of great concern.

Table 2.6: Outlay & Expenditure on Animal Husbandry in Assam

Year	Outlay & Expenditure on Animal Husbandry in Assam (Under State Plan and CSS)	
	Outlay (lakh)	Actual Expenditure (Lakh)
2000-01	434.90	434.90
2001-02	1095.00	153.56
2002-03	1095.00	333.09
2003-04	1182.00	228.60
2004-05	1116.00	267.34
2005-06	1821.00	776.63
2006-07	1333.00	60.00
2007-08	1395.16	121.50
2008-09	2409.16	367.08
2009-10	2714.16	1645.86
2010-11	2466.27	1227.00
2011-12	2906.95	2182.38
2012-13	2454.59	1940.61
2013-14	3113.76	215.42
2014-15	2643.25	872.28
2015-16	3027.78	222.14

Source: Dairy Department, Assam

2.2.4 Growth in Milk Production in Assam

Table 2.7 presents the share of milk production by cow, buffaloes and goat and per capita availability of milk during 2000 -2001 to 2014-15 in Assam. Altogether cattle milk contributed 82.61 per cent of the total milk production of the State. Share of Buffalo milk to total milk production was recorded at 14.46 per cent and that of goat milk was 2.94 per cent. Total milk production highest (2.13 per cent) followed by cattle (0.92 per cent) while it was negative in case of goat. Contrary to the recommended norms of Indian Council of Medical Research (ICMR) which is 208 ml per head per day, the per capita /per day milk consumption in Assam is only 74 ml. There has been a steady growth of milk production in Assam in recent period. However, estimated per day per capita consumption has remained almost same with the commensurating increase in population.

Table 2.8 shows the districtwise estimated bovine milk production in Assam for the year 2013-14. From the analysis, it has been observed that, indigenous cattle continues to contribute larger share of the State's total milk production *i.e.* 54.31 per cent of the entire milk production while the contribution of cross breed cows stood at 28.82 per cent only.

It can be seen from the table 2.9 that estimated milk production in the state has increased at the rate of 0.75 during the period from 2001-02 to 2014-15 and highest production of milk was estimated to be Darrang district of Assam.

Table 2.7 : Share of Milk Production by Cow, Buffaloes and Goats in Assam

Year	Cattle (Million Litres)	Buffalo (Million Liters)	Goat (Million Liters)	Total (Million lits)	Per capita availability (Gram/Day)
2000-01	612 (83.15)	98(13.32)	26(3.53)	736 (100)	70
2001-02	628 (83.73)	97(12.93)	25(3.33)	750(100)	71
2002-03	647 (83.70)	98(12.68)	28(3.62)	773(100)	71
2003-04	662 (83.27)	100(12.58)	33(4.15)	795(100)	72
2004-05	681 (83.87)	102(12.56)	29(3.57)	812(100)	72
2005-06	689 (83.82)	103(12.53)	30(3.65)	822(100)	70
2006-07	690 (83.84)	105(12.76)	28(3.40)	823(100)	70
2007-08	687 (83.37)	109(13.23)	27(3.28)	824(100)	69
2008-09	691 (83.56)	110(13.30)	26(3.14)	827(100)	70
2009-10	698 (84.10)	108(13.01)	24(2.89)	830(100)	69
2010-11	702(84.27)	106(12.73)	25(3.00)	833(100)	71
2011-12	692(82.51)	123.4(14.71)	23(2.74)	838.7(100)	70
2012-13	697.4(82.55)	128.7(15.23)	18.7(2.21)	844.8(100)	69
2013-14	712.66(83.13)	128.5(14.99)	16.1(1.88)	857.26(100)	72
2014-15	721.09(82.61)	126.2(14.46)	25.6(2.93)	872.89(100)	74
ACGR(%)	0.92	2.13	-2.47	0.98	0.05

Note: Figures in Parentheses indicate % share of milk production to total

Source: Directorate of Animal Husbandry and Veterinary, Guwahati

Table 2.8: District wise Bovine Milk Production in Assam, 2013-14

Sl.	District	Ind. Cattle	CB Cattle	Buffalo	Goat	Total Liters
1	Goalpara	13393629	6081229	3264506	617969	23357333
2	Dhubri	23541839	10110509	7751676	839453	42243477
3	Kokrajhar	21201338	5499032	5891643	696156	33288169
4	Bongaigaon	17601581	11222411	3264359	637247	32725598
5	Barpeta	22300308	15813443	4425319	687571	43226641
6	Nalbari	13703060	10905483	2953595	597694	28159832
7	Baksa	10939326	3456270	1177447	390074	15963117
8	Kamrup	23052811	25560374	4403722	930750	53947657
9	Darrang	17593391	16069358	7165256	1300043	42128048
10	Udalguri	15330715	4510654	2430603	496381	22768353
11	Sonitpur	28545680	13066958	8303887	750315	50666840
12	Lakhimpur	25636095	6425275	4097979	570807	36730156
13	Dhemaji	20560931	3791888	5370805	675181	30398805
14	Morigaon	13620178	9863664	2364799	407983	26256624
15	Nagaon	22526364	13551729	6188021	730218	42996332
16	Golaghat	21730050	8768221	4943026	680654	36121951
17	Jorhat	16751899	20573871	5448376	548634	43322780
18	Sibsagar	19703339	7657991	4687408	623674	32672412
19	Dibrugarh	21435296	12401464	5847242	637110	40321112
20	Tinsukia	21455841	7577022	5016487	643555	34692905
21	Karbi-Anglong	21052546	10297786	11644577	914257	43909166
22	N.C. Hills	7801208	2903946	4454028	329672	15488854
23	Karimganj	16903584	6768237	6794276	470669	30936766
24	Hailakandi	7846877	3644267	3478579	343011	15312734
25	Cachar	21385249	10544063	7191670	628559	39749541
	ASSAM	465613135	247065145	128559286	16147637	857385203

Source: Directorate of Animal Husbandry and Veterinary, Assam

Table 2.9: District wise milk production in Assam (2001-02 to 2014-15)

Sl. No.	Districts	Milk production in Assam (Million Ltr.)				ACGR (%)
		2001-02	2005-06	2010-11	2014-15	
1	Goalpara	19.84	26.77	24.53	25.15	-1.78
2	Dhubri	30.69	45.95	39.43	34.69	-1.45
3	Kokrajhar	24.9	29.75	27.29	22.26	-0.75
4	Bongaigaon	30.2	29.1	33.49	15.21	-1.38
5	Barpeta	34.87	35.65	50.09	23.82	0.06
6	Nalbari	26.35	28.12	27.73	46.64	1.99
7	Baska	0	0	13.69	31.99	18.4
8	Kamrup	71.3	63.84	63.54	19.66	-3.36
9	Darrang	49.47	44.13	40.57	68.69	0.46
10	Udalguri	0	0	20.21	39.29	16.85
11	Sonitpur	54.15	55.4	49.62	22.65	-3.01
12	Lakhimpur	27.27	39.36	31.6	54.49	-0.17
13	Dhemaji	22.31	33.46	31.21	33.44	-2.5
14	Morigaon	23.24	20.7	28.31	26.35	3.62
15	Nagoan	44.75	52.34	44.35	29.1	-2.05
16	Golaghat	36.01	33.05	35.42	49.76	1.6
17	Jorhat	29.47	26.95	38.12	32.09	3.22
18	Sibsagar	26.72	29.45	31.1	39.49	1.26
19	Dibrugarh	35	47.54	39.5	34.59	-1.52
20	Tinsukia	36.26	45.06	36	33.82	-0.84
21	Karbi Anglong	40.18	50.3	42	34.97	-1.19
22	N.C. Hills	12.45	11.96	12.5	44.68	4.78
23	Karimganj	28.99	27.18	25.43	16.09	-0.73
24	Hailakandi	11.91	9.86	12.35	31.44	6.31
25	Cachar	33.88	35.72	34.64	19.21	-0.31
26	Chirang	0	0	0	43.44	-
TOTAL		750	822	833	872.89	0.75

Source: Different Issues of Integrated Sample Survey, Directorate of Animal Husbandry & Veterinary, Govt. of Assam.

2.2.5 Milk Consumption and Marketable Surplus in Assam

Table 2.10 shows that during 2014-15, out of total milk produced in Assam, 32 per cent was consumed by households as fluid milk, around 46 per cent was sold as fluid milk and only 22.00 per cent was converted into milk products.

Table 2.10: Year -wise Milk Utilization Pattern in Assam (2005-06 to 2014-15)
(million litres)

Milk Product	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Consumed as fluid milk by household	371.54 (45.20)	381.05 (46.30)	374.10 (45.40)	372.15 (45.00)	398.40 (48.00)	316.54 (38.00)	301.93 (36.00)	304.13 (36.00)	300.04 (35.00)	279.32 (32.00)
Sold as Fluid milk	136.45 (16.60)	149.79 (18.20)	210.12 (25.50)	235.70 (28.50)	249.00 (30.00)	333.20 (40.00)	352.25 (42.00)	354.82 (42.00)	368.62 (43.00)	401.53 (46.00)
Converted into milk products	314.00 (38.20)	292.17 (35.50)	239.78 (29.10)	219.16 (26.50)	182.60 (22.00)	183.26 (22.00)	184.51 (22.00)	185.86 (22.00)	188.60 (22.00)	192.04 (22.00)
Total	822.00 (100)	823.00 (100)	824.00 (100)	827.00 (100)	830.00 (100)	833.00 (100)	838.70 (100)	844.80 (100)	857.26 (100)	872.89 (100)

Source: Integrated Sample Survey Report, 2014-15, Animal Husbandry and Veterinary Department, Assam

2.2.6 Requirement and Availability of Milk in Assam

As per the Sample Survey 2014-15 data as published by the Directorate of Animal Husbandry and Veterinary, Assam, there exist large gap between the requirement and availability of milk in the state. It can be seen from the table 2.11 that availability of milk in the State was 35.81 per cent of the total requirement during the year 2015-16. It clearly indicates that Assam is a deficit State in terms of milk production. This deficit is met by the supply of milk from outside the State especially from 'AMUL' (Gujarat). Although Department does not carry out any survey on requirement of livestock products, it prepares estimate on the basis of requirement norms prescribed by the ICMR.

Table 2.11: Requirement and Availability/Deficit of Milk in Assam

Year	Requirement and Availability/Deficit of Milk in Assam (Milk in million ltrs)		
	Requirement	Availability	Deficit
2011-12	2338	839(35.89)	15009 (64.16)
2012-13	2395	845 (35.28)	1550 (64.72)
2013-14	2423	857 (35.27)	1566 (64.63)
2014-15	2452	873 (35.60)	1579 (64.40)
2015-16	2480	888 (35.81)	1592 (64.19)

Note: Figures in bracket shows the availability and deficit of milk in per cent to total requirement.

Source: *Economic Survey, Assam, 2016-17*

2.2.7 Status of Availability of Feed and Fodder in Assam

Due to heavy rainfall in the entire North East region and for availability of wild grasses in plenty, in the entire region monsoon season; farmers in this part of the country are not habituated with fodder cultivation. The Department has therefore started programme to popularize fodder cultivation at institutional waste land, to strengthen and revamp the Regional Feed Testing Laboratory, located at Khanapara and to establish Silage making unit in each Government Livestock Farm for demonstration purpose. The Animal Husbandry and Veterinary department, Assam has also proposed for establishment of 6 (six) numbers of feed mill and fodder block making units in PPP mode to provide available source of fodder for cattle to enhance the desired milk production. During 2012-13, the area under fodder crops was 10,000 hectares which was only 0.1 per cent of the Gross Cropped Area of the

State despite the fact that there are 168 thousand hectares of permanent pasture and grazing land in Assam. In 2008, the availability of crop residues and green fodder in Assam was 5.82 Million Tonnes and 0.95 million tonnes respectively while the requirement of these two items stood at 12.39 million tonnes and 6.61 million tonnes in corresponding order.

2.2.8 Infrastructure Development in Assam

In Assam, organized development of dairy processing infrastructure was initiated even before the launch of Operation Flood Phase-I. The first processing plant in the State was established at Jorhat in 1966 with daily milk processing capacity of 5,000 litres. During the 1970s, emphasis was laid on the creation of infrastructure for intermediate preservation of fresh milk and consequently, a number of chilling plants were commissioned in different districts of the State. In the subsequent years, additional processing infrastructure was built up in the State with the initiative from the Government, and cooperative and private sectors. In recent years, the number of milk pasteurization plants has increased three-fold, from 3 in 2002 to 9 plants in 2008. The total installed capacity of these 9 plants was 159 thousand litres per day (LPD), more than double of 2002. The Government, cooperative and private sectors account for 17 per cent, 38 per cent and 45 per cent of the installed capacity, respectively.

Table 2.12: Status of Milk Processing in Assam

Years	Milk Processing in Assam	
	Quantity (Million tonnes)	Value (Rs in crore)
2000-01	2.88	4.61
2001-02	2.88	5.19
2002-03	2.88	5.77
2003-04	3.43	7.55
2004-05	8.14	19.53
2005-06	5.99	15.56
2006-07	5.88	16.45
2007-08	6.02	18.07
2008-09	6.35	20.32
2009-10	6.31	21.47
2010-11	7.23	26.02
2011-12	15.22	54.79
2012-13	17.05	64.77
2013-14	18.87	71.71
2014-15	21.72	86.87

Source: Directorate of Dairy Development, Govt. of Assam

Table 2.12 describes the yearwise milk processing in the State. Table indicates that the quantity of milk processed has increased from 2.88 million tonnes in 2000-01 to 21.72 million tonnes during 2014-15. The value of milk and its products also increased from Rs.4.61 crore to Rs.86.87 crore. The semen station at Khanapara was initiated at 1968-69 under the Intensive Cattle Development Project (ICDP). Later, the station was updated in the year 1975-76 under the IACBP for production of chilled semen till the beginning of 1995-96. In the year 1995-96, under the ARIASP (khanapara), Semen Station was strengthened with new Bulls and equipments for production of Frozen Semen. The production of Frozen Semen was temporarily suspended due to transfer of old semen station of Khanapara to the new one located at Barpeta which was commissioned from March, 2015. Till date 200,000 Frozen Semen doses of pure Jersey and H.F. have been produced. The Semen produced are distributed in the field after CMU evaluation. The ALDA was established under the Society's Act as per guidelines of (NPCBB) and it started functioning from 2004.

Districtwise veterinary infrastructure available in Assam are presented in Table 2.13. It is found that existing infrastructure is not at all sufficient enough against the number of bovine population (1.07 crores). In aggregate, there are 22 veterinary hospitals, 385 veterinary dispensaries, 756 first-aid centres, 129 block veterinary dispensaries, 39 Key village centres, 34 regional artificial insemination centres, 20 RP check post and 14 BCPP check post with an overall total of 1399 numbers of infrastructure facilities created in Assam. For efficient maintenance of cold chain from producer level to consumers' level, following steps have been taken- (A) Upgraded 2 numbers of Milk Processing Plants *i.e*, Nagaon and Bokakhat Milk Processing Plants from 2000 ltrs to 5000 ltrs.; (b) Revived 10 defunct Chilling Plants, (c) Established 59 numbers of Bulk Milk Coolers in the State, (d) Established 53 Milk Collection Centre with Automatic Milk Collection Units, (e) Procured 17 numbers of Road Milk Tanker, (f) Established a central Milk Testing Laboratory at Khanapara for checking quality of milk for the consumers.

Table 2.13: District-wise Veterinary Infrastructure in Assam

Districts	Hospitals	Dispensaries	Sub-Centre First Aid Centre	Block Veterinary Dispensaries	Key-Village Centre	Regional Artificial Insemination	R.P Check Post	BCPP Check Post	Total
Goalpara	1	11	20	4	1	0	0	0	37
Dhubri	1	16	27	7	3	2	1	0	57
Kokrajhar	1	10	25	4	3	2	1	0	46
Bongaigaon	0	11	14	3	0	1	0	0	29
Barpeta	1	13	32	7	4	1	0	0	58
Nalbari	1	40	60	9	3	1	0	0	114
Baska	0	11	5	4	0	0	0	0	20
Kamrup	2	27	44	6	1	6	0	0	86
Darrang	1	10	21	3	1	1	0	0	37
Udalguri	0	6	9	2	2	1	1	0	21
Sonitpur	2	17	65	7	4	3	1	2	101
Lakhimpur	1	11	51	5	0	1	1	2	72
Dhemaji	0	12	17	3	1	1	0	1	35
Morigaon	0	9	26	4	2	1	0	0	42
Nagoan	1	40	60	9	3	1	0	0	114
Golaghat	1	11	28	4	1	2	1	1	49
Jorhat	1	21	42	8	0	1	0	2	75
Sivasagar	2	20	20	5	0	1	1	2	51
Dibrugarh	1	13	31	7	0	1	1	2	56
Tinsukia	0	17	27	6	0	1	1	2	54
Karbi Anglong	0	10	42	10	0	1	1	0	64
Dema Hasao	0	8	16	2	5	1	1	0	33
Karimganj	1	10	20	4	0	1	3	0	39
Hailakandi	0	6	19	4	1	1	3	0	34
Cachar	4	17	27	0	4	2	3	0	57
Chirang	0	8	8	2	0	0	0	0	18
TOTAL	22	385	756	129	39	34	20	14	1399

Source: Animal Husbandry and Veterinary Department, Assam, 2016

2.2.9 State Summary

The review of the status of Dairy development in Assam indicates that despite having sizeable number of cattle, milk production in the State is not up to the satisfactory level as the major percentage of the cattle population in the State are of non-descript type. So far as availability of milk was concerned, Assam could produce only 35.81 per cent of the total milk requirement in the year 2015-16. As such, Assam is a deficit State in terms of milk production.

2.3 Dairy Development in Bihar

Bihar with geographical area of 93.6 lakh hectares with share of 2.8 per cent of land mass of India. It has 38 districts, 534 blocks/taluka and 44,874 villages. It falls in four agro-climatic zone which is further classified in to Zone-I, Zone-II, Zone-III A and Zone-III B. As per census 2011, Bihar has population of 10.41 crores which was 8.30 crore of which 11.29 per cent people live in urban regions with 76.86 per cent literacy rate in which males were 82.56 per cent while females were at 61.95 per cent. The state contribution to country's GDP at current prices during 2013-14 & 2014-15 were estimated to be Rs. 402283 crore and Rs. 343663 crore respectively. Per capita income at current price during 2013-14 & 2014-15 was Rs. 31199 crore and Rs. 36143 crore respectively.

2.3.1 Role of Dairy Sector in State Economy of Bihar

Bihar produces about 2.9 mt of milk accounting for 3.28 per cent of the total milk production in the country. However, only 9-10 per cent of production is processed by COMPFED (Sudha Dairy) and only 2-3 per cent in the private sector. Milk processing capacity in India has grown at a rate of 4.00 per cent with almost negligible growth in Bihar. The technology being used is now decades old with no primary processing/cooling facility at the farm/village level. Despite it, animal husbandry along with agriculture is one of key sector which provide massive employment and income opportunities for the rural population of the Bihar. This sector contributes about 1/5th of the total rural income and also creates large scale of employment to women and workers of marginalised section of the society. Therefore, the state government of Bihar has taken step to treat it at par with agriculture. This is for the first time in the country that such a step has been taken by any state government. The state government of Bihar has sanctioned the creation of a separate "Animal Science University," namely *Bihar Pashu Vigyan Vishwavidyalaya* in 2016.

The estimated milk production in Bihar was 7.2 million tones in 2013-14, which was 5.2 per cent of the national milk production and also stayed 9th ranked in the country. The cooperatives dairies procured 15

lakh kg per day in 2013-14. The state of Bihar has about 9 lakh producers' members pouring milk to around 15 thousand dairy cooperatives societies. As per 19th livestock census (2012), Bihar has 198 lakh bovines. The state has 6.41 per cent and 6.96 per cent of our country's total cattle and buffalo population respectively.

2.3.2 Trend in Contribution of Dairy in GSDP in Bihar

The economy of Bihar is largely service oriented, but it also has a significant agriculture base. Animal husbandry is key sector of Bihar contributing about one-fifth of the total rural income. However, livestock contributing 5.2 per cent to the state GDP in 2013-14 while the contribution of agriculture to total GSDP was 18.00 per cent. The contribution of agriculture and livestock together to total GSDP was estimated to be 23.20 per cent. However, livestock accounts for 35 per cent of the total value of output from agriculture and allied activities (TE 2008-09), almost 10 per cent higher than national average of 25 per cent. Milk is the most important livestock product in Bihar with a share of 71 per cent of the livestock output (TE 2008-09). Bihar produces about 5.4 MT of milk annually, contributes almost 5.4 per cent of milk produced in the country, and since 2004-05, milk production in Bihar has grown at 6.8 per cent as compared with 4.3 per cent at the national level. Thus, the share of GVO from livestock to agriculture sector has been fluctuating over last five year and remains between 19-29 per cent. However, the contribution of GVA from agriculture and livestock to total GSDP has decreased from 30 per cent in 1999-2000 to 21 per cent in 2013-14 (Table 2.14). The percentage share of value of output from livestock was recorded 32.62 per cent to the GVO of agriculture and allied, whereas that of agriculture was 54.55 in 2010-11 for the state of Bihar so that livestock is one of the biggest sector for supporting livelihood of marginal and small milk producer in the state. The livestock output at constant price was recorded at Rs. 13364 crore in 2010-11 (at constant price). Out of which, milk contributes about 73 per cent or Rs. 9769 crore (Table 2.15).

Table 2.14: Contribution of GVO and GVA from Agriculture and Livestock Sector to GDP in Bihar

Sr.		Contribution to total GDP at Current Prices of Bihar State					
		Total GDP (Rs In Crores)	Share of GVO from Ag to Total GDP (%)	share of GVO from Livestock to Total GDP (%)	share of GVO from Ag & Livestock to Total GDP (%)	share of GVA from Ag & Livestock to Total GDP (%)	Share of GVO from Livestock to Ag & Li sector (%)
1	1999-00	50174	28.22	11.87	40.09	30.30	40.09
2	2000-01	57242	31.79	11.26	43.05	34.47	43.05
3	2001-02	57657	30.92	11.98	42.90	30.64	42.90
4	2002-03	64965	28.60	11.66	40.26	32.55	40.27
5	2003-04	66174	32.24	12.60	44.84	28.77	44.83
6	2004-05	77781	19.08	13.02	32.10	26.58	40.56
7	2005-06	82490	22.43	12.71	35.14	25.25	36.17
8	2006-07	10073	21.28	11.18	31.46	26.95	34.44
9	2007-08	11368	21.06	11.00	32.06	23.79	34.32
10	2008-09	14227	21.65	10.93	32.58	25.77	33.54
11	2009-10	16380	18.31	10.95	29.26	22.56	37.42
12	2010-11	20355	16.51	9.87	26.38	23.29	33.42
13	2011-12	24326	18.32	9.08	27.40	23.83	38.15
14	2012-13	29361	18.49	9.17	27.66	24.32	33.13
15	2013-14	34366	15.08	4.00	19.08	21.11	20.97

Source: Economic Survey of Bihar (2012-13).

Table 2.15: Value of Output: Agriculture and Livestock in Bihar

Item	Value of Output: Agriculture and Livestock in Bihar							
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Value of Output at Current Prices (Rs. crore)								
Ag & Allied*	29449	33358	37895	41740	52658	54449	61601	NA
Agriculture	14842	18506	21441	23941	30801	29996	33604	NA
Livestock	10129	10488	11262	12501	15545	17391	20096	NA
Share of Value of Output to Agriculture and Allied* (%)								
Agriculture	55.40	55.55	56.67	57.36	58.49	55.09	54.55	NA
Livestock	34.40	31.44	29.77	29.95	29.52	31.94	32.62	NA
Value of Output at Constant Prices (Rs. crore) (2004-05)								
Ag & Allied*	29450	31202	34256	34546	37094	35264	35703	NA
Agriculture	14842	15883	18457	18022	20297	18136	18083	NA
Livestock	10129	10848	11483	12178	12420	12825	13364	NA
Share of Value of Output to Agriculture and Allied* (%)								
Agriculture	50.40	50.90	53.88	52.17	54.72	51.43	50.65	NA
Livestock	34.39	34.77	33.52	35.25	33.48	36.37	37.43	NA
Value of Livestock Output at Current Prices (Rs. crore)								
Milk	7102	7102	7652	8400	10894	12715	14503	NA
Meat	1675	1879	1854	2127	2646	3016	3099	NA
Egg	133	154	148	176	223	228	283	NA
Dung	887	966	1054	1155	1247	1338	1439	NA
Others^	46	54	58	51	167	165	187	NA
Share of Livestock Output at Current Prices (%)								
Milk	70.12	67.72	67.95	67.19	70.10	73.11	72.17	NA
Meat	16.54	17.92	17.35	17.08	16.38	17.34	15.42	NA
Egg	1.31	1.47	1.31	1.41	1.43	1.31	1.41	NA
Dung	8.76	9.21	9.36	9.24	8.02	7.69	7.18	NA
Others^	0.45	0.51	0.52	0.41	1.07	0.95	0.93	NA
Value of Livestock Output at Constant Prices (Rs. crore) (2004-05)								
Milk	7102	7577	8164	8662	8890	9172	9769	NA
Meat	1675	1784	1749	1797	1831	1867	1784	NA
Egg	133	175	159	161	181	185	125	NA
Dung	887	919	957	1002	1043	1079	1118	NA
Others^	46	45	51	46	93	89	88	NA
Share of Livestock Output at Constant Prices (%)								
Milk	70.12	69.85	71.10	71.13	71.58	71.52	73.10	NA
Meat	16.54	16.45	15.23	14.76	14.74	14.56	13.35	NA
Egg	1.31	1.61	1.38	1.50	1.46	1.44	0.94	NA
Dung	8.76	8.47	8.33	8.23	8.40	8.41	8.37	NA
Others^	0.45	0.41	0.44	0.38	0.75	0.69	0.66	NA

2.3.3 Composition of Livestock in the Bihar State

The state of Bihar has a remarkable position in our country with regards to livestock wealth and development. As per 19th livestock census (2012), India has total livestock population of 51.2057 crore, out of which, 3.29 crore livestock (6.43%) population was in the state of Bihar (Table 2.16). The state accounts for 6.41 per cent share in cattle population, 6.96 per cent of buffalo population, 0.36 per cent of sheep population and 8.99 per cent goat population of the country (Table 2.17). The significant share of donkeys (6.58%) and camels (2.50%) in national population has also been recorded (2012). There was a marginal increased in livestock population over 2007 to 2012 from 3.02 crores to 3.29 crores accounting for 9.18 per cent growth in the total number of animals of the various species (2.3). In fact, the percentage share of Bihar in all India total livestock has also increased by 0.73 per cent in 2012 over 2007.

Table 2.16: Growth of the Livestock in Bihar and India

Sr. No	Livestock Census Year	Total Livestock (000)		% Share of Bihar to All India	% Growth of Bihar State between two Census
		All India	Bihar		
1	1993	470830	22154	4.71	---
2	1997	485385	24600	5.07	11.04
3	2003	485002	26957	5.56	9.58
4	2007	529698	30167	5.70	11.91
5	2012	512057	32939	6.43	9.19

Source: Economic Survey of Bihar 2015-16

Table 2.17: Species-wise Livestock Population & its Share in Total Livestock in Bihar

Sr. No.	Particulars	Bihar -2012			India 2012	
		Livestock 2012	% share in India	% share in total Livestock	Livestock 2012	% share in Total Livestock
1	Cattle	12232	6.41	37.14	190904	37.28
2	Buffaloes	7567	6.96	22.97	108702	21.23
3	Sheep	232	0.36	0.70	65069	12.71
4	Goats	12154	8.99	36.90	135173	26.40
5	Pigs	650	6.31	1.97	10294	2.01
6	Horses & Ponies	49	12.64	0.24	625	0.12
7	Mules	25	12.76	0.08	196	0.04
8	Donkeys	21	6.58	0.06	319	0.06
9	Camel	10	2.50	0.03	400	0.08
10	Yaks	NA	NA	NA	77	0.02
11	Mithun	NA	NA	NA	298	0.06
12	Total Livestock	32939	6.43	100.00	512057	100.00

Source: Compiled from Economic Survey of Bihar (2016-17) & Agricultural Statistics at a Glance, Goi, 2016

Among the different species, the cattle contributes highest share (37.14%) in total livestock population of the state followed by goat (36.9%), buffalo (22.97%), besides it, marginal contribution is attributed by other livestock species such as camels, mules, donkeys, horses and pigs. The growth of livestock population in Bihar was depicted in table 2.18 and reveals that livestock population was increased to 9.19 per cent over previous census. The highest growth in population was recorded in goat population (19.54%) followed by buffalo (13.11%) and sheep (6.42%) while cattle population registered decline (1.42%). No livestock census had been conducted in the state of Bihar since 1982.

Table 2.18: Growth in Livestock Population in Bihar- 2003 to 2012

Sr No.	Year	Cattle		Buffalo		Sheep		Goat		Total Livestock	
		Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)
1	2003	10476	---	5766	---	346	---	96.6	---	26957	---
2	2007	12408	18.44	6690	16.02	218	-36.99	10167	5.84	30167	11.91
3	2012	12232	-1.42	7567	13.11	232	6.42	12154	19.54	32939	9.19

Note: Figure in '000.

Source: Economic Survey of Bihar, 2015-16

The data were projected on the basis of animal growth rate of various animals. The 17th livestock census was conducted in both the state of Bihar and Jharkhand. The combined data shows that 9.93 per cent of cattle, 7.24 per cent of the buffaloes, 1.73 per cent of sheep, 11.68 per cent of goat and 13.17 per cent of pigs of the country's livestock population is in Bihar. The total livestock is to the tune of 8.86 per cent of the country's livestock population. The district wise percentage share of animal in total state livestock population (table 2.19) shows that East Champaran (5.52%) has highest number of total livestock population followed by Araria (5.42%), Katihar (4.67%) and Gaya (4.56%). These four districts together accounted for 20.17 per cent of the total state livestock population in 2012. East Champaran has the highest number of in milk buffaloes and cows followed by Araria and Katihar districts.

Table 2.19: District wise Percentage share of Animals in Total Livestock Population in Bihar

District	District wise Percentage share animals in Total livestock population in Bihar-2012										
	Crossbred	Indigenous	Total Cow	Buffalo	Total Sheep	Goat	Total Pigs	Horses & Ponies	Mules	Donkey	Camel
Patna	6.57	0.52	2.30	2.55	5.93	1.20	6.81	3.53	2.03	1.64	NA
Bhojpur	4.29	0.66	1.72	2.95	7.22	0.74	3.57	5.12	12.2	11.93	88.11
Nalanda	2.90	0.88	1.47	3.86	3.27	1.05	3.68	3.39	0.12	0.09	NA
Buxar	2.43	0.91	1.35	2.51	9.85	0.52	2.24	2.94	5.37	27.02	0.99
Rohtas	2.57	1.88	2.05	4.41	7.73	1.09	1.87	3.14	9.19	11.91	NA
Kaimur	1.11	2.04	1.74	3.22	16.9	0.74	1.30	2.01	3.82	19.97	NA
Gaya	1.50	7.22	5.42	4.67	6.23	2.90	16.9	0.36	NA	1.49	NA
Jehanabad	1.11	0.55	0.71	2.00	0.67	0.49	3.09	0.22	NA	0.02	NA
Arwal	1.35	0.10	0.47	1.10	---	0.35	0.71	0.22	NA	0.42	NA
Nawada	0.75	3.73	2.79	2.04	1.42	2.16	7.50	0.15	NA	NA	NA
Aurangabad	1.31	4.00	3.14	2.96	11.3	1.27	2.05	0.39	24.9	0.54	NA
Saran	4.32	2.37	2.91	2.77	1.98	1.81	1.48	3.78	10.7	8.38	NA
Siwan	2.11	2.37	2.26	2.32	1.11	2.14	1.90	0.59	0.48	8.14	NA
Gopalganj	1.95	1.52	1.63	1.72	0.54	1.38	1.22	0.42	3.70	4.21	5.94
Muzaffarpur	7.46	0.83	2.78	4.61	0.50	5.19	1.08	0.25	NA	0.14	NA
Vaishali	5.89	0.19	1.87	2.64	0.54	2.95	0.27	0.32	NA	0.58	1.98
Sitamadhi	1.11	1.37	1.27	2.51	0.10	3.42	1.01	0.51	0.12	NA	NA
Sheohar	0.59	0.40	0.45	0.65	NA	0.83	0.22	0.71	NA	NA	NA
Champan (E)	1.66	3.97	3.23	5.33	0.71	7.12	3.24	3.34	1.31	0.95	0.99
Champan (W)	2.52	3.23	2.97	3.89	0.93	5.00	5.02	8.37	NA	0.36	NA
Darbhanga	1.89	2.41	2.22	3.38	0.17	2.88	1.47	1.40	1.67	0.35	NA
Madhubani	0.34	5.54	3.92	4.50	1.39	3.50	2.90	1.10	0.72	NA	NA
Samastipur	12.44	0.47	4.01	3.50	1.17	3.70	0.61	1.44	NA	0.75	NA
Munger	1.68	1.21	1.52	0.78	NA	1.51	1.29	5.13	NA	NA	NA
Begusarai	3.35	0.30	0.27	1.43	0.08	2.48	1.24	10.5	NA	NA	1.98
Sheikhpura	0.95	0.46	0.61	0.70	0.58	1.01	0.72	4.70	NA	NA	NA
Lakhisarai	2.37	0.58	1.10	0.91	0.59	0.62	0.90	0.64	0.48	NA	NA
Jamuie	0.05	0.62	0.44	0.19	0.30	0.37	0.71	NA	NA	NA	NA
Khagaria	5.97	0.88	2.37	1.51	0.01	2.32	0.91	10.9	8.11	NA	NA
Bhagalpur	5.40	2.74	3.49	3.00	0.21	4.72	1.55	4.29	8.71	0.13	NA
Banka	1.00	6.20	4.57	2.15	5.60	3.43	4.04	0.30	NA	NA	NA
Saharsa	0.79	3.55	2.68	2.50	0.03	3.26	2.00	8.25	0.24	NA	NA
Supaul	0.09	5.74	3.98	3.55	6.38	3.94	1.43	0.45	NA	NA	NA
Madhepura	0.39	4.81	3.43	3.45	1.08	4.49	1.36	4.84	3.10	NA	NA
Purnea	1.34	5.67	4.31	2.56	0.20	4.77	3.70	2.30	1.91	0.06	NA
Araria	0.25	8.21	7.03	4.27	1.35	5.40	3.60	1.40	NA	NA	NA
Kishanganj	0.41	5.11	3.65	0.75	0.03	3.68	2.18	0.07	NA	0.44	NA
Katihar	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Source: Economic Survey of Bihar, 2014-15 & 2015-16

Agro-climatic zone wise density of livestock and bovine presented in table 2.20 reveals that the highest livestock density was found in zone-II (North-East) accounting for 351 livestock per sq. km followed by zone-IIIA, zone-I and zone-IIIB (lowest 210 livestock per sq. km whereas, bovine density was also highest in zone-II accounting for 204 bovine per sq km followed by zone-I and zone-IIIB.

Table 2.20: Agro-Climatic Zone wise Density of Livestock in Bihar

Agro-Climatic Zone	Livestock (Per Sq. Km)	Brovine (Per Sq. Km)
Zone - I (North-West)	274	173
Zone - II (North-East)	351	204
Zone - IIIA (South East)	326	163
Zone - IIIB (South West)	210	171
Bihar	275	178

Source: Dynamics of livestock sector in Bihar: A temporal analysis, 14 January, 2010

There are 137 breeds of domesticated animal has been found in our country. Out of which, about 12 breeds are available in Bihar. The state of Bihar has high quality, high yielding breeds of cattle and buffaloes (table 2.21). Holstein Friesen and Gir in cows, and Mehsana and Jafarabadi in buffaloes were well known for their high milk yielding breeds. All mentioned breed in Bihar are used as milk purpose.

Table 2.21: Distribution of Bihar's Cattle and Buffalo Breeds

Breeds	Breeding Tract	Utility	Distribution
A) Cattle			
Sahiwal	Nalanda, Sheikhpura, Lakhisarai, Munger, Jamuie, Banka, Bhagalpur, Begusarai, Muzaffarpur, Darbhanga, Vaishali, Khagaria, Buxar, Kaimur, Rohtas	Milch	
Hariyana	Vaishali, Khagaria, Buxar, Kaimur, Rohtas	Milch	
Jersy	Supaul, Saharsa, Madhepura & Katihar	Milch	Madhya Pradesh, Bihar, Rajasthan
Holstein F.	Bhagalpur, Begusarai, Samastipur, Patna, Siwan	Milch	
B) Buffalo			
Mehsana	Saharsa, Supaul, Madhepura, Katihar, Begusarai, Bhagalpur, Banka & Munger	Milch	Northern Gujarat
Jafarabadi	Begusarai, Bhagalpur, Patna, Samastipur, Siwan, Saran, Bhojpur, Nalanda & Banka		

Source: Draft Report on Breeding Policy for Dairy Animal Improvement in Bihar, April, 2008

The bovine per 100 households across landholding size in Bihar has been presented in table 2.22 and analysis reveals that bovine per 100 households was declined (24%) in landless categories of households

during 1991-2003. The decline in number of bovine was also identical on large size of households. The number of that was increased from 64 in 1991 to 116 in 2003 on medium size of households accounting for 81.25 per cent change followed by small (52.17%) and marginal (51.35%) size of households.

Table 2.22: Bovine per 100 Households across Landholding Size of Bihar

Sr N	Land holding Size (ha)	Bovine/100 hh across Landholding Size in Bihar		
		1991	2003	% change
1.	Landless (<0.5 ha)	25	19	-24.00
2.	Marginal (0.5-1.0 ha)	37	56	51.35
3.	Small (1-2 ha)	46	70	52.17
4.	Medium (2-4 ha)	64	116	81.25
5.	Large (4 & above)	82	27	-67.07

Source: Dynamics of livestock sector in Bihar: A temporal analysis, 14 January, 2010

The bovine population in milk (both cows and buffaloes) per 100 households declined in landless categories of households during 1991-92 to 2002-03 (Table 2.23). The decline in number of cows and buffaloes was almost identical on landless categories of households but number of goats per 100 households increased during the same period from 46 to 56 accounting for 21.74 per cent on the particular category of households. It clearly indicates a further scope to promote goats on landless households in Bihar who constitute more than 3/4th of rural households in Bihar. The number of bovine (both cows and buffaloes) per 100 households increased during 1991-2003 on marginal, small and medium sized households in Bihar. However, there was decline in number of goats per 100 households under these categories. Among the different categories of households, the increase in number of bovine in milk was much higher on medium (from 64 to 116 per 100 households) followed by small and marginal. It may be pointed out that higher decline in number of goats per 100 households was noticed on large households and medium households who achieved higher increase in number of bovine during that period. Despite increase in number of bovine in Bihar, their household wise number declined in all the categories of households. It was mainly due to increase in number of households from 80 lakh in 1997

to 117 lakh in 2003 in Bihar. But goat population per household increased on landless which clearly suggest special efforts in creating production and marketing management of goats to improve the socio-economic status of weaker section of society in Bihar. Table 2.24 represents the number per 1000 of households reporting owing livestock of different types for each size class of households' operational landholding in Bihar (rural) as per NSSO-59th round conducted in 2003.

Table 2.23: Livestock per 100 Households across Landholding Size: Bihar

Landholding Size (Ha) No.	Cow in Milk			Buffalo in Milk			Goat		
	1991	2003	% Chang	1991	2003	% Change	1991	2003	% Change
Landless (<0.5 ha)	15	12	-20	10	7	-30	46	56	21.74
Marginal (0.5-1.0)	26	33	26.92	11	23	109.09	83	39	-53.01
Small (1-2 ha)	27	29	7.41	19	41	115.79	59	39	-33.90
Medium (2-4 ha)	28	67	139.2	36	49	36.11	143	19	-86.71
Large (4 & above)	26	27	3.85	56	---	---	214	15	-92.99

Source: Handbook of Agriculture, Govt. of Bihar, 2007-08

Table 2.24: Number per 1000 of households reporting owing livestock of different types for each size class of households operational holdings in Bihar (Rural) 2003

size class of operational holding (ha)	Bihar (Rural)- No. of households per 1000 households reporting								
	cattle			buffalo	other large heads	sheep, goats	fowl* , duck	other birds	pigs and rabbits
	cross breed	non descript	all						
nil	0	2	2	2	0	49	26	4	6
^ 0.002	0	493	493	228	0	342	89	59	69
0.002 - 0.005	45	397	442	318	7	323	101	7	42
0.005 - 0.040	23	23	432	210	1	353	152	40	3
0.040 - 0.5	52	347	393	236	3	168	46	10	5
0.5-1.0	44	555	593	347	1	144	42	11	0
1.0-2.0	90	587	654	435	4	131	56	7	2
2.0-3.0	54	640	675	357	2	97	61	38	8
3.0-4.0	29	695	695	323	0	95	6	0	0
4.0-5.0	79	902	974	377	0	107	59	0	0
5.0-7.5	25	654	690	623	0	0	120	0	0
7.5-10.0	338	232	518	599	0	0	0	0	0
10.0-20.0	338	300	688	0	0	0	0	0	0
> 20.0	0	0	0	0	0	0	0	0	0
all sizes	36	315	347	206	2	150	53	12	7

Note: includes hens, cocks and chickens.

Source: Livestock ownership across operational holdings classes in India, NSS Report No. 493

2.3.4 Plan wise Outlay and Expenditure in Bihar

Livestock is a core sector of the state economy of Bihar, as it provides opportunities for poverty alleviation, development of the rural

economy, combating rural unemployment and reducing the gap between the poor, rural and affluent, urban societies. This sector contributes 16 per cent to the GDP of Bihar but receives only 0.75 per cent allocation of the total state budget. Around 89 per cent of the population of the state is directly or indirectly linked with this sector. Apart from rural livelihood, the health, life style and safety of people is linked to this sector through their dependence on milk, meat, egg, wool, leather and other products. The state government policy has been providing necessary support for dairy development in the state through cooperative sector. Table 2.25 shows that there has been consistent increase in the plan provision for animal husbandry and dairy development. The proportion of plan expenditure in the plan provision has also been increasing with up and down pattern. This has led to increase in number of milch animals, milk production and qualitative improvement in milch animals. The outlay and expenditure on dairy development has also increased over the period of time. However, the percentage share of expenditure on dairy development has increased to 95.91 in 2006-07 from 17.61 per cent in 2002-03. The proportion of expenditure to outlay on dairy development was much better during corresponding period.

Table 2.25: Annual Plan-wise Outlay and Expenditure under Dairy Development in Bihar

Sr. No.	Plan Period	Outlay (Rs. In Lakh)			Expenditure (Rs. In Lakh)		
		Animal Husbandry (Revised)	Dairy Development (Revised)	Total	Animal Husbandry	Dairy Development	Total
1	2002-03	273.00	50.00	323.00	223.28	47.73	271.01
2	2003-04	270.70	90.00	360.70	200.35	31.80	232.15
3	2004-05	273.55	97.45	371.00	198.20	92.56	290.76
4	2005-06	206.35	102.50	308.85	198.88	81.53	280.41
5	2006-07	225.88	5207.00	5432.88	221.95	5203.85	5425.80

Source: 11th Five Year Plan, 2007-12, Government of Bihar

2.3.5 Growth in Milk Production and Productivity in Bihar

Bihar is one of leading state in terms of quality milk animal and milk production. Bihar ranks ninth among the milk producing state of India, achieving 82.88 lakh MT in 2015-16 which has increased from 50.60 lakh MT during 2005-06. The various initiatives have been taken by

government of Bihar help to improve the milk productivity in coming era. An analysis of this table 2.26 reveals that there is a consistent increase in the production of milk over the year. The milk production has increased from 2.66 MT in 2001-02 to 8.29 MT in 2015-16 registering a growth of 211 per cent over base year. Milk production in the state of Bihar has been increasing continuously throughout the year from 2001-2016. However, the per capita availability of milk in the state has increased from 88 gms/day in 2001-02 to 208 gms/day in 2014-15.

Table 2.26: Milk Production in Bihar: 2000-01 to 2015-16

Sr. No	Year	Milk Production in thousand tones					Growth of Milk Production (%) over base year	Per Capita availability (gms/ day)	
		In milk Cow		In Milk Buffalo	In milk Bovine	In Milk Goat			Total
		Indi genous	C.B.						
1	2000-01	NA	NA	NA	NA	NA	NA	NA	
2	2001-02	NA	NA	NA	NA	NA	2664	NA	88
3	2002-03	NA	NA	NA	NA	NA	2869	7.70	92
4	2003-04	NA	NA	NA	NA	NA	3180	19.36	100
5	2004-05	NA	NA	NA	NA	NA	4743	78.04	147
6	2005-06	NA	NA	2473	2345	212	5060	89.94	154
7	2006-07	NA	NA	2654	2582	214	5450	104.58	163
8	2007-08	1958	986	2616	2935	216	5767	116.57	170
9	2008-09	1991	1024	2722	3016	196	5934	122.75	172
10	2009-10	1074	2023	2807	3098	219	6124	129.88	175
11	2010-11	NA	NA	2798	3561	158	6517	144.63	184
12	2011-12	NA	NA	2797	3652	176	6625	148.69	175
13	2012-13	NA	NA	2899	3763	182	6844	156.91	188
14	2013-14	NA	NA	3015	3986	196	7197	170.16	195
15	2014-15	NA	NA	NA	NA	NA	7775	191.85	208
16	2015-16	NA	NA	NA	NA	NA	8288	211.11	219

Source: Handbook of Agriculture, Government of Bihar, 2007-08, nddb.coop/information/state/in Department of animal husbandry, dairy & fisheries, Govt. of India

Out of total milk production, about 45.84 per cent of the milk is contributed by indigenous buffaloes followed by 33.03 per cent of crossbreed cattle. The indigenous cattle contributed 17.54 per cent of the total milk production in the state during 2009-10 whereas goat contributed 2.72 per cent to the total milk production during 2013-14. Out of total bovine milk production, 75.45 per cent milk shared by buffalo

milk and remaining shared by cattle milk. District wise and category wise percentage share of milk production in Bihar for the year 2013-14 is presented in table 2.27 which reveals that Patna is highest milk producing district in the state with estimated share (5.52%) of total milk production in the state followed by Gaya (5.14%), Samastipur (4.75%), Bhojpur (4.27%) and Begusarai (3.85%).

Table 2.27: District wise & category wise Percentage share of Milk Production in Bihar (2013-14)

Name of the District	District wise & category wise Percentage share of Milk Production in					
	% share of Crossbred Cow	% share of Ind Cow	% share of Total Cattle	% share of Buffalo	Goat	% share to total Prod
Patna	9.71	2.71	5.06	6.32	2.55	5.52
Bhojpur	5.92	2.73	3.95	4.84	1.90	4.27
Nalanda	2.00	1.64	1.78	4.26	2.08	2.83
Buxar	3.25	1.95	2.45	3.54	0.61	2.85
Rohtas	2.21	2.78	2.56	5.05	2.77	3.61
Kaimur	0.16	2.18	1.41	3.34	0.52	2.30
Gaya	1.72	7.25	5.31	5.10	5.78	5.14
Jehanabad	0.57	0.77	0.65	1.67	0.59	1.07
Arwal	0.43	0.59	0.53	1.03	0.49	0.74
Nawada	0.47	3.34	2.24	2.76	3.25	2.28
Aurangabad	0.83	4.22	2.92	3.10	3.11	3.00
Saran	5.69	2.40	3.66	3.31	2.50	3.48
Siwan	1.32	2.58	2.10	2.31	0.93	2.16
Gopalganj	2.24	1.59	1.84	2.45	1.65	2.09
Muzaffarpur	4.55	2.51	3.29	3.71	3.56	3.48
Vaishali	8.03	0.83	3.60	2.03	2.98	2.92
Sitamadhi	0.75	0.75	0.75	2.93	3.80	1.75
Sheohar	0.10	0.36	0.26	0.56	0.76	0.48
Champanan (E)	0.55	3.64	2.45	3.41	4.81	2.95
Champanan (W)	0.74	3.29	2.31	2.62	5.53	2.53
Darbhanga	1.21	3.30	2.50	3.82	1.88	3.03
Madhubani	0.62	3.13	2.71	4.03	2.66	2.96
Samastipur	12.61	1.88	5.99	5.28	2.29	4.75
Munger	2.69	1.74	2.11	1.00	2.11	1.64
Begusarai	14.93	0.29	5.90	1.27	1.59	3.85
Sheikhpura	0.35	0.60	0.51	0.65	0.48	0.57
Lakhisarai	1.74	0.85	1.19	0.93	0.60	1.06
Jamuie	1.32	5.36	3.81	1.73	3.39	2.92
Khagaria	6.04	1.40	3.18	1.99	1.58	2.59
Bhagalpur	3.88	4.14	4.04	2.72	4.23	3.49
Banka	0.15	4.48	3.05	1.47	3.08	2.56
Saharsa	0.99	3.16	2.33	2.62	3.51	2.48
Supaul	0.12	4.05	2.55	3.14	3.58	2.82
Madhepura	0.60	2.41	1.72	2.26	3.58	1.99
Purnea	0.30	3.94	2.54	1.52	3.90	2.15
Araria	0.20	3.10	1.97	1.36	4.05	2.00
Kishanganj	0.16	3.62	2.29	0.61	3.93	1.63
Katihar	0.36	5.02	3.21	0.97	3.43	2.28

Out of 38 districts, top 10 districts together contributes about 40.14 per cent of total milk production in the state, those are Patna, Bhojpur, Rohtas, Gaya, Aurangabad, Bhagalpur, Muzaffarpur, Darbhanga, Samastipur and Begusarai. The category wise share of milk production in Bihar clearly indicate that some top milk producing district in Bihar are dominated by the production of milk by buffaloes (41.88%) of total milk production in the state during 2013-14, followed by indigenous cows (34.16%) and crossbreed cows (21.23%). However, Sheohar has lowest percentage share of milk (0.4%) to total milk production in the state.

2.3.6 Status of Availability of Feed and Fodder in Bihar

Adequate and balance availability of feed and fodder is pre-requisite for increasing livestock production in Bihar, crop residue and by product of crops are the main sources of fodder for livestock whereas goats are generally maintained on tree leaves and grazing. In Bihar, about 20 lakh hectare of land is available for grazing throughout the year which includes wasteland, culturable waste land, pasture trees and groves, fallow land and some part of forest. Due to low cropping intensity, there is huge land area is fallow in rabi and summer season which is used for grazing of animal in Bihar. Hence, theoretical demand and supply position of fodder does not match with actual fodder supply demand scenario. Bihar state planning board has made an estimate of supply-demands for fodder and concentrate in late eighties and came out with conclusion that the state was deficient in concentrate by 8.37 million tones, dry fodder, and green fodder with 18.81 million tones each. Government of Bihar estimated the normal demand for concentrate, green fodder and dry fodder for livestock in Bihar which is given in Tables 2.28 to 2.30.

Table 2.28: Demand for Concentrate, Green Fodder and Dry fodder for Livestock in Bihar

SN	Particular	Quantity (In MT)
1.	Concentrate	5.88
2.	Green Fodder	38.17
3.	Dry Fodder	2.48

Source: Department of Animal Husbandry & Fisheries, Government of Bihar, 2013-14.

The state produces around 12 million tonnes of food grain cannot afford to allocate nearly half of food grain for feed purpose. However, Bihar is now self sufficient in dry fodder. During flood, dry fodder was supplied by other states but it is not normal feature. Bihar will remain deficient in green fodder because it is grown in about one lakh hectare only. Crop weeds, tops of sugarcane and tree leaves are extensively used for green fodder in Bihar. To meet the green fodder requirement, about 5 lakh hectare of land is required to be cropped green fodder crops. There is no any specific programme of green fodder production in Bihar. However COMPFED supplies fodder seed to farmers through DCS. Hence, there is an urgent need to decrease the number of unproductive/ uneconomic animals for improving the per capita availability of feed, fodder and concentrate in the state. An intensive research is also required to evolve HYV of fodder so that the higher economic returns can be obtained for land, labour and capital used for fodder production in comparison to other use of land. Government is trying to promote private sector to establish feed factories in area where maize production is at large scale.

Table 2.29: Demand and Supply of Feed and Fodder in Bihar

Eastern States	Dry Fodder Requirement	Availability (MT)	Deficit (%)	Green Fodder Requirement (MT)	Availability (MT)	Deficit (%)
Bihar	25.95	15.61	39.83	42.90	1.35	96.85
Eastern Region	150.80	84.03	44.27	213.19	51.77	75.72

Source: Calculated based on 2001 Census data.

Table 2.30: Demand and Supply of Concentrate in Bihar

Eastern States	Concentrate Requirement (MT)	Availability (MT)	Deficit (%)
Bihar	6.63	1.19	82.05
Eastern Region	39.44	6.14	84.43

Source: Calculated based on 2001 Census data.

2.3.7 Infrastructure Development in Bihar

Bihar is 9th largest milk producing state in our country. This could result with one of the strongest network of dairy cooperatives and development of infrastructure at the village as well as district level. The cooperatives have developed veterinary health and artificial insemination

centre and these provide service to a large number of milk producers at low cost. An attempt has been made to analyse the animal health services available to livestock in Bihar. The number of functional hospital increased from 852 in 2003-04 to 1114 in 2013-14 and number of veterinary doctor also increased from 912 in 2003-04 to 1154 in 2013-14. The number of livestock was also increased from 241 lakh to 270 lakh recording an annual increase of about 1.00 per cent in livestock population. Per hospital, livestock population increased from 26.26 thousand in 1991-92 to 31.69 thousand in 2003-04 and livestock population also increased from 18.37 thousand to 29.61 thousand per veterinary hospital during corresponding period (Table 2.31).

Table 2.31: Infrastructure for Dairy Health Care in Bihar

Year	No. of Hospital	No. of Veterinary Doctor	Livestock Population		Bovine Population	
			Per Hospital ('000)	Per Vet Doctor ('000)	Per Hospital ('000)	Per Veter. Doctor ('000)
1981-82	766	746	28.20	28.95	16.97	17.43
1991-92	904	1312	26.66	18.37	16.04	11.05
2003-04	852	912	31.69	29.61	19.01	17.76
2010-11	814	853	NA	NA	NA	NA
2011-12	814	853	NA	NA	NA	NA
2012-13	814	853	NA	NA	NA	NA
2013-14	1114	1154	NA	NA	NA	NA

Source: Economic Survey of Bihar, 2010-11 & 2014-15, GoB.

The animal health care is an important factor for economic growth in field of livestock and animal husbandry in Bihar. There are 39 veterinary polyclinic, 1114 veterinary dispensaries, 1595 veterinary aid centre, 1948 artificial insemination centres and only 3 cattle breeding farm in the state of Bihar. The number of veterinary hospital and veterinary doctors declined during the period 1991 -91 to 2003-04. The state is yet to achieve the standard fixed in this regard by Royal Commission on Agriculture (1928). The National Commission on Agriculture (1976) also suggested having one veterinary doctor for 10 thousand livestock. In Bihar, number of veterinary hospital and veterinary doctors need to increase by two fold for proper care of animal health in the state. Bihar government is now making sincere efforts to make available veterinary services to door of the farmers. The expansion of health service facilities

would be much expensive and it could only be done in different phases in the state of Bihar. The efforts of COMPFED, BAFE, J K Trust and some NGOs is proving animal health service are satisfactory. But activities of most of these NGO are concentrated around the urban areas and not providing services in remote and backward areas of the state. In Bihar, cattle vaidya (Quacks) dominate in providing treatment to animals. They rely on naturotheoraphy but do not hesitate in Suggesting modern medicine to animals. At this juncture, it may be suggested to organise training on animal health services to rural youth, especially to them who are performing job of cattle vaidya in rural area.

In Bihar, there were 462 government (AI) centres in the year 1985-86 which increased to 1948 in 2010-11 but less than one-third of these centres are functional. As so as 584 thousand of artificial insemination were performed in 1985-86, covering about 12 per cent of breedable bovine in Bihar but there was an increase in number of A-I from 584 thousand in 1985-86 to 951 thousand in 1991-92 but covered only 15 per cent of breedable bovine population. During last 15 year, public artificial insemination system collapsed and about 400 AI centres are operation, which are short of staff and resources, making them unreliable source of AI. As co-operative and NGOs are operating in Bihar for providing AI services. Presently, about 20 lakh artificial inseminations is performed by government and NGO which cover about 29 per cent of breed able bovine in Bihar. Hence, it may be said that about 71 per cent of breed able bovine are still served by natural breeding system. The details about growth in infrastructure facilities for animal husbandry in Bihar are presented in table 2.32. The details on cattle and development programme during 2015-16 are presented in table 2.33 and analysis reveals that Bihar has 23 intensive cattle development programme/project with three cattle breeding farm in the state of Bihar which are aimed at improving the breed of cattle and buffaloes.

There are eight co-operative milk unions in the state of Bihar and have total 66.45 lakh litre per day milk processing capacity and they procure 44.56 LLPD milk. During the year 2012-13, 150 bulk milk coolers

and 8 chilling centres with total chilling capacity of around 660 TLPD. The details on number of societies with bulk cooler, Automatic milk collection system and number of chilling centre with dairy cooperative society in Bihar is presented in table 2.34. Patna, Muzaffarpur, Begusarai, Arrah and Samastipur have larger number of infrastructure than other districts.

Table 2.32: Growth in Infrastructure Facilities for Animal Husbandry in Bihar

Year	Vet. Hospital/ Polyclinic	Vet. Dispensaries	Vet aid centre/stockmen centre/ Mobile dispensaries	Artificial Insemination
1986-87	NA	766	NA	77
1996-97	NA	904	NA	91
2006-07	NA	852	NA	120
2007-08	NA	NA	NA	251
2008-09	NA	NA	NA	514
2009-10	NA	NA	NA	950
2010-11	NA	NA	NA	1948
2011-12	39	783	1595	NA
2012-13	NA	814	NA	NA
2013-14	NA	1114	NA	NA

Source: Basic Animal Husbandry Statistics, Govt. of Bihar, Dept. of Animal & Fisheries resources, Patna

Table 2.33: Cattle and Dairy Development Programme in Bihar

SN	Particulars	Items	Nos
1.	No. of Buffalo Breeding Farm	Under Animal Husbandry Deptt.	---
2.	No. of Gaushala	Under Animal Husbandry Deptt	86
3.	No. of Liquid Nitrogen Plant	Under Animal Husbandry Deptt	03
4.	No. of ICDP	Under Animal Husbandry Deptt	23
5.	Semen Production Centre	Under Animal Husbandry Deptt	01
6.	Frozen Semen Bank	Under Animal Husbandry Deptt	03
7.	No. of AI Centre	Under Animal Husbandry Deptt	1401
8.	No. of Cattle Breeding Farm	Under Animal Husbandry Deptt	03

Source: Calculated from difference sources

Table 2.34: Details about Bulk Cooler, Automatic Milk Collection Systems and Chilling Centres facility with Dairy Cooperative Societies in Bihar

Sr. No.	Name of Milk Producers' Co- op. Union Ltd.	No. of Societies with		No. of Chilling Centre-installed Capacity (000 litres/day)
		Bulk Milk Cooler (BMC)	Automatic Milk Collection System (AMCS)	
1	Vaishal Patliputra Milk Union, Patna	34	318	97
2	Rajendra Prasad Milk Union Begusarai, Barauni	22	409	89
3	Mithila Milk Union, Samastipur	19	354	85
4	Tirhut Milk Union, Muzaffarpur	26	197	41
5	Shahbad Milk Union, Arrah	18	260	47
6	Vikramshila Milk Union, Bhagalpur	17	70	57
7	Magadh Dairy Project, Gaya	08	40	32
8	Kosi Dairy Project, Purnea	07	29	32

2.4 Dairy Development in Chhattisgarh

The Chhattisgarh State came into existence and carved out of Madhya Pradesh on November 1, 2000. In terms of population (255.4 lakh) it occupies 16th position in India (2011). Chhattisgarh contributed only 0.82% (1277 thousand t) in total milk production (155491 thousand t) of India (Table 2.2). The per capita availability of milk is also found too less in Chhattisgarh (132 g/capita) as compared to India (329 g/capita). However, milk production and milk availability showed increasing trend in Chhattisgarh with the magnitude of 37.657 thousand t/year and 2.3 g/capita/year in during the period 2001-15 (Table 2.35).

Table 2.35: Milk production and per capita availability of milk in Chattisgarh

Years	Milk Production (in '000 t)		Milk Availability (in g)	
	Chhattisgarh	India	Chhattisgarh	India
2001-02	795 (0.94)	84406	104	225
2002-03	804 (0.93)	86159	106	230
2003-04	812 (0.92)	88082	107	231
2004-05	831(0.90)	92484	109	233
2005-06	839 (0.86)	97066	110	241
2006-07	849 (0.84)	100869	112	246
2007-08	866 (0.80)	107934	114	252
2008-09	908 (0.81)	112183	119	258
2009-10	957 (0.82)	116425	126	263
2010-11	1029 (0.84)	121848	128	268
2011-12	1119 (0.87)	127904	129	290
2012-13	1164 (0.88)	132431	131	295
2013-14	1209 (0.88)	137686	130	301
2014-15	1231 (0.84)	146314	130	315
2015-16	1277 (0.82)	155491	132	329

Note: Figures in parenthesis percetgare to national total.

Source: Livestock Statistics-Chhattisgarh, <http://ahd.cg.gov.in/>

2.4.1 Contribution of Dairy in Chhattisgarh State GDP

Agriculture and livestock sector contributed Rs. 11668 Crores in (2010-11) total Gross State Domestic Product (Rs.78902 Crores) in Chhattisgarh with 34.4 per cent contribution of livestock sector in agriculture (2010-11) which was found to be increased by 4.27 per cent in 2010-11 as compared to 2009-10 (Table 2.36). Allocation and utilisation of budget indicate that Rs. 373.3 and 567.7 Crores of fund allocation was made to livestock sector in plan and non-plan schemes in Chhattisgarh. The utilization of fund has been increased to 66.9 per cent plan and 128.6 per cent non-plan in XIth plan as compared to Xth plan. (Table 2.37)

Table 2.36: Gross State Domestic Products- Chhattisgarh (2004-05 Price) (in Crores)

Sr No.	Sector	2006-07	2007-08	2008-09	2009-10	2010-11	% change over in 2009-2010	Share of sectors in total GSDP of 2010-11
1	Primary sector (Agri., Forest, Fisheries and Mining)	18368	19801	19187	20367	23554	16	30
2	Secondary sector	20693	22376	25816	24711	25031	1	32
3	Tertiary sector	19535	21466	23978	26263	30316	15	38
4	GSDP at Current Prices	58598	63643	68982	71342	78902	11	100
5	Agriculture and livestock	8738	9743	8358	9268	11668	26	15
6	Livestock only	2370	2417	2522	3845	4009	4	5
7	% Share of livestock in Agriculture GDP	27	25	30	42	34	0	0

Source: Livestock Statistics-Chhattisgarh, <http://ahd.cg.gov.in/>

Table 2.37: Allocation and Utilization of budgets in Chattisgarh

S. No.	Particulars	X Plan (02-03 to 06-07)		XI Plan(07-08 to 11-12)		% change in Utilization
		Allocation	Utilized	Allocation	Utilized	
A	Plan	232.7	165.6	373.3	274.5	66.9
1	State	195.0	148.4	190.0	142.6	
2	Centrally Sponsored Schemes	16.3	10.1	32.4	23.4	
3	Central sector Schemes	21.4	7.1	25.1	6.0	
4	RKVY	Nil	Nil	125.9	104.5	
B	Non Plan	243.6	233.5	567.7	533.7	128.6

Source: Livestock Statistics-Chhattisgarh, <http://ahd.cg.gov.in/>

The value of out-put (milk and milk product) was increased from Rs. 2370 Crores (2006-07) to Rs. 4009 Crores (2010-11) with change of 4.2 per cent in 2010-11 over 2009-10. The percentage change of milk (6.1% per year), egg (5.7% per year) and dung (5.8% per year) in 2009-10 to 2010-11 was also increased, while meat (-3.6% per year) was found to be decreased (Table 2.38). The allocated to given to the sector among plan and non-plan schemes during XIth plan in Chhattisgarh was found to be Rs. 373.3 and 567.7 crores, respectively.

Table 2.38: Value of Output of livestock sector Chhattisgarh (2004-05 Price)

Sr. No.	Livestock Produce	VOP of livestock sector Chhattisgarh (2004-05 Price) (in Crores)					% Change over 2009-10
		2006-07	2007-08	2008-09	2009-10	2010-11	
1	Milk	1158.0	1195.0	1254.0	2394.0	2540.0	6.1
2	Meat	336.0	335.0	360.0	704.0	679.0	-3.6
3	Egg	146.0	145.0	154.0	158.0	167.0	5.7
4	Wool/hair	2.0	2.0	2.0	3.0	3.0	0.0
5	Dung	728.0	740.0	752.0	586.0	620.0	5.8
Total		2370.0	2417.0	2522.0	3845.0	4009.0	4.2

Source: Livestock Statistics-Chhattisgarh, <http://ahd.cg.gov.in/>

2.4.2 Growth and Composition of Livestock in Chattisgarh

Chhattisgarh contributed only 3.93 per cent of total livestock population of the country (382974 thousand). The state recorded maximum population of goat (52.93%) followed by cattle (5.14%), pigs (4.2%), buffaloes (1.28%), horse & ponies (0.48%), sheep (0.26%) and donkeys (0.21%) of the country. In Chhattisgarh among different livestock species, cattle contributes highest share (65.25%) in total livestock population followed by goat (21.44%), buffalo (9.24%), pigs (2.92%) and sheep (1.12%), besides marginal contribution was attributed by other livestock species such as camel, mules, donkeys, horses, ponies and others in minority (Table 2.39). The population of local cow and buffaloes was found to be decreased from 1344 thousand to 1176 thousand and 261 thousand to 190 thousand respectively during the period 2001-15, although, the trend of local cow was found to be positive.

Table 2.39: Species-wise Livestock Population in Chattisgarh

Sr. No.	Particular	Chhattisgarh 2012			India 2012	
		Livestock	% share to India	% share to Total Livestock	Livestock	% share in total Live
1	Cattle	9812.87	5.14	65.25	190,904	49.85
2	Buffalo	1390.18	1.28	9.24	108702	28.38
3	Sheep	168.22	0.26	1.12	65069	16.99
4	Goat	3224.71	52.93	21.44	6092	1.59
5	Horse & Ponies	2.97	0.48	0.02	624	0.16
6	Donkeys	0.68	0.21	0.00	318	0.08
7	Pigs	439.05	4.27	2.92	10294	2.69
8	Others	2	0.17	0.00	971	0.25
	Total	15040.31	3.93	100.00	382,974	100.00

Source: 19th Livestock census, Chhattisgarh. <http://ahd.cg.gov.in/>

Table 2.40: Growth in Livestock population in Chhattisgarh (in '000)

Year	Local cow	Cross Breed Cow	Buffaloes	Goat
2001-02	1344	35	261	513
2002-03	1346	36	264	518
2003-04	1351	36	266	520
2004-05	1369	38	271	522
2005-06	1356	39	271	524
2006-07	1373	39	268	526
2007-08	1389	40	198	533
2008-09	1432	47	201	567
2009-10	1476	54	208	551
2010-11	1408	49	192	535
2011-12	1472	49	206	622
2012-13	1508	50	210	644
2013-14	1436	48	196	565
2014-15	1391	48	192	592
2015-16	1176	50	190	612

While the population of buffalos was found to be decreased with the magnitude of 6.7118 thousand/year during the period of 2001-15 in Chhattisgarh (Fig. 2.40). The population of crossbreed cow and goat was found to be increased from 35 to 50 thousand and 513 to 612 thousand during corresponding years. The nine breeds of cows and 4 breeds of buffaloes were found in Chhattisgarh (Table 2.41)

Table 2.41 Distribution of different breeds of cattles & buffalo in Chhattisgarh

Breeds	Breeding Tract	Utility
(A) Cattle		
Gir	All District	Milch
Sahiwal	All District	Dual
Red Sindhi	All District	Milch
Jersey	All District	Dairy
Holstein	All District	Milk & Meat
Tharparker	All District	Dual
Ongole	All District	Dual
Kosali	Raipur, Durg, Bilaspur and Janjgir districts.	Dual
Hariana	All District	Milch
(B) Buffalo		
Murrah	Raipur and Durg	Milch
Surti	Durg	Dual
Nagpuri	All District	
Nili ravi	Bilaspur, Dhamtari, Durg, Jangir chapa, Kabeerdham, Raipur, Rajnandganv and Surguja	Milch
Mehsana	All District	Milch

Source: Livestock Statistics-Chhattisgarh, <http://ahd.cg.gov.in/>

Out of total crossbreed Cow, the maximum number were found in Raigarh (25.90%) (Table 2.42). Out of total Indigenous breed Cow, the maximum number were found in Rajnandgaon (7.45%) followed by Balodabazaar (5.72%), Bilaspur (5.66%) and Janjgir (5.59%). While out of total buffalo, the maximum number were found in Bilaspur (7.37%) followed by Janjgir (5.72%) and Ambikapur (5.03%).

As far as density of population of livestock per sq km is concerned (Table 2.43), the maximum density of livestock was found in Durg (203/km) followed by Raipur (187/km), Bemetra (170/km), Jangir (165/km), Kondagaon (157/km) (Table 2.44). The maximum density of Bovine population was also found in Durg (175/km) followed by Raipur (160/km), Bemetra (144/km).

Table 2.42: Districtwise Livestock Population of different species in Chhattisgarh 2012

(in '000)

S. No	Districts	Crossbred/ Exotic	Indigen ous	Total cow	Buffalo	Sheep	Goat	Others	Total Livestock
1	Koriya	5.22	298.42	303.64	49.13	0.00	155.61	3.69	512.06
2	Balrampur	2.36	371.18	373.54	57.12	3.76	231.20	22.44	688.06
3	Surajpur	6.51	315.70	322.20	69.26	0.23	179.76	6.13	577.58
4	Ambikapur	6.29	308.16	314.46	69.91	0.64	206.83	13.73	605.57
5	Jushpur	3.95	434.85	438.80	35.33	7.40	335.54	40.33	857.41
6	Raigarh	46.15	406.37	452.52	47.69	21.32	208.95	9.49	739.96
7	Korba	3.78	346.17	349.95	62.90	0.05	140.89	3.80	557.59
8	Janjgir	11.73	538.50	550.23	79.53	9.38	93.94	4.25	737.31
9	Bilaspur	15.72	545.32	561.03	102.46	2.81	165.23	8.41	839.95
10	Mungeli	1.23	252.54	253.77	40.03	2.53	65.10	2.26	363.70
11	Kabirdham	0.66	346.52	347.18	48.47	0.69	70.70	13.72	480.75
12	Rajnandgaon	5.81	717.65	723.46	63.57	5.08	106.81	10.60	909.52
13	Bemetra	0.73	364.45	365.18	46.18	7.61	64.26	1.54	484.76
14	Durg	8.65	339.69	348.34	57.80	4.30	59.44	1.98	471.86
15	Balod	3.73	355.95	359.68	43.05	3.84	53.95	3.64	464.16
16	Baloda Bazar	3.39	550.74	554.14	66.88	8.02	95.64	4.48	729.16
17	Raipur	10.77	389.22	399.98	65.88	6.62	65.95	4.30	542.73
18	Gariyaband	1.58	273.33	274.91	44.69	29.05	65.56	5.02	419.22
19	Mahasamund	17.26	344.93	362.20	41.80	17.31	123.66	4.21	549.18
20	Dhamtari	4.95	280.18	285.13	54.56	0.13	51.88	8.64	400.34
21	Kanker	7.09	357.24	364.32	37.32	2.25	166.82	46.45	617.16
22	Kondagaon	2.42	382.39	384.81	43.62	2.99	104.62	41.76	577.80
23	Bastar	4.01	306.86	310.87	55.25	26.22	91.93	31.03	515.30
24	Narayanpur	1.27	155.98	157.25	12.29	0.00	51.79	34.74	256.07
25	Dantewada	1.34	146.36	147.70	13.50	0.45	59.39	27.06	248.10
26	Sukma	0.40	267.61	268.01	41.74	5.40	106.63	55.42	477.20
27	Bijapur	1.19	238.43	239.61	40.24	0.15	102.65	35.19	417.84
	Chhattisgarh	178.19	9634.72	9812.91	1390.18	168.22	3224.71	444.31	15040.34

Source: 19th Livestock census, Chhattisgarh. <http://ahd.cg.gov.in/>

Table 2.43: Density of Livestock and Bovine Population in Chhattisgarh.

Sr. No	Density of livestock and Bovine Population in different districts of Chhattisgarh (No. per sq. km)		
	Districts	Livestock	Bovine
1	Koriya	86	59
2	Balrampur	114	72
3	Surajpur	116	78
4	Ambikapur	121	77
5	Jushpur	133	73
6	Raigarh	113	77
7	Korba	78	58
8	Janjgir	165	141
9	Bilaspur	144	114
10	Mungeli	132	107
11	Kabirdham	108	89
12	Rajnandgaon	113	98
13	Bemetra	170	144
14	Durg	203	175
15	Balod	131	114
16	Baloda Bazar	156	133
17	Raipur	187	160
18	Gariyaband	72	55
19	Mahasamund	111	81
20	Dhamtari	98	83
21	Kanker	96	62
22	Kondagaon	157	116
23	Bastar	80	57
24	Narayanpur	37	25
25	Dantewada	73	47
26	Sukma	85	55
27	Bijapur	64	43
	Chhattisgarh	109	81

Source: 19th Livestock census, Chhattisgarh. <http://ahd.cg.gov.in/>

2.4.3 Growth in Milk Production in Chhattisgarh

The total milk production in the state has increased from 794.5 (2001-02) to 1277.3 thousand tones (2015-16).

Table 2.44: Year-wise milk production of different species in Chhattisgarh

Years	Year-wise milk production of different species in Chhattisgarh (In'000 ton)				
	Local cow	Cross Breed Cow	Buffaloes	Goat	Total
2001-02	442.9	49.5	264.0	38.0	794.5
2002-03	444.3	50.8	269.0	40.1	804.1
2003-04	447.8	51.3	272.0	41.1	812.3
2004-05	455.7	53.8	280.0	41.5	831.0
2005-06	457.8	54.5	285.0	42.1	839.3
2006-07	463.1	55.9	287.0	42.6	848.6
2007-08	471.1	56.4	296.0	43.0	866.5
2008-09	487.2	67.9	307.0	46.5	908.6
2009-10	514.8	77.4	318.0	45.9	956.1
2010-11	561.8	81.8	343.0	42.8	1029.3
2011-12	618.1	83.1	368.3	49.4	1118.9
2012-13	650.9	86.9	375.1	51.3	1164.3
2013-14	694.5	93.8	374.9	46.0	1209.2
2014-15	716.8	106.4	359.4	48.7	1231.3
2015-16	815.1	103.4	310.8	48.1	1277.3

Source: Livestock Statistics-Chhattisgarh, <http://ahd.cg.gov.in/>

Table 2.45: District and Specieswise Milk Production in Chhattisgarh 2015-16 (in '000 ton)

S. No	Districts	Cow Degrade d Native	Cow Indian Breed	Cow Foreign Breed	Cow Cross Breed	Buffalo native breed	Buffalo Advanced Breed	Goat	Total Milk Production
1	Koriya	10.30	11.04	2.10	1.95	12.32	3.41	2.54	43.65
2	Balrampur	12.21	4.14	0.26	0.94	9.31	0.68	3.44	30.97
3	Surajpur	6.82	15.04	0.30	2.42	5.76	2.94	2.74	36.03
4	Sarguja	6.72	10.35	0.00	2.87	7.39	3.82	3.09	34.23
5	Jashpur	10.41	11.90	0.18	2.28	7.61	0.94	5.54	38.85
6	Raigarh	14.43	20.52	0.00	21.12	6.42	1.48	3.50	67.47
7	Korba	18.51	1.21	0.75	1.87	10.07	4.49	2.26	39.15
8	Janjgeer	21.38	36.55	0.29	4.90	3.75	5.97	1.60	74.44
9	Bilaspur	26.16	20.75	0.89	7.81	17.80	4.27	2.10	79.77
10	Mungeli	6.23	27.01	0.00	0.55	7.45	0.81	0.89	42.94
11	Kabidham	12.38	35.31	0.00	0.09	7.32	1.92	1.14	58.15
12	Rajnandgaon	24.82	37.82	0.27	4.10	9.16	4.77	1.46	82.40
13	Bemetara	9.57	30.96	0.00	0.34	10.49	2.63	0.87	54.87
14	Durg	7.37	44.18	0.41	8.13	6.45	20.69	0.93	88.16
15	Balod	6.59	37.19	0.00	2.06	7.86	2.25	0.84	56.78
16	Balodabazar	21.32	27.62	0.22	1.78	15.41	4.23	1.38	71.96
17	Raipur	17.27	23.87	0.97	8.13	14.06	21.12	1.18	86.61
18	Goriyaband	8.88	15.82	0.00	0.72	10.10	1.44	1.03	37.99
19	Mahasamund	12.68	20.07	0.00	12.22	8.08	3.66	2.51	59.21
20	Dhamtari	2.31	35.53	0.00	2.35	3.00	10.58	0.66	54.43
21	Kanker	10.37	11.05	1.39	2.63	3.71	0.40	2.19	31.75
22	Kondagaon	11.67	0.24	0.18	0.90	3.78	0.13	1.41	18.32
23	Bastar	7.99	7.07	0.43	2.08	3.49	0.46	1.24	22.75
24	Narayanpur	5.07	4.96	0.14	0.17	1.46	0.00	0.73	12.52
25	Dantewada	3.70	2.13	0.00	0.94	1.23	0.14	0.45	8.60
26	Sukma	8.58	7.37	0.00	0.15	4.95	0.29	1.13	22.46
27	Bijapur	12.27	0.00	0.00	0.24	9.54	0.00	1.29	23.33
Total		315.99	499.66	8.77	93.72	207.97	103.51	48.10	1277.75

The milk production of different livestock species was also found to be increased (Table 2.44). Chhattisgarh produces 1277.753 thousand tones of milk production in 2015-16, out of which the maximum milk was obtained through Cow Indian breed (39%) followed by Cow degraded native (25%), Buffalo native breed (16%), Buffalo advance breed (8%), cow cross breed (7%), Goat (4%) and cow foreign breed (1%) spread over all the district. Out of total milk production 1277.75 thousand tones, the highest milk production was found in Durg followed by Rajnandgaon and Bilaspur (Table 2.45).

2.4.4 Infrastructure Development

The details on livestock Infrastructure development in Chhattisgarh are presented in Table 2.46. There were 6546 dairy units in Chhattisgarh out of which 1679 (25.65%) were found in Urban and Sub Urban area while rest 4867 (74.35%) were located in rural areas. Out of total urban dairies, highest were found in Raipur (375) followed by Durg (321), Korba (165), Rajnandgaon (150) (see, Table 2.47).

Table 2.46: Livestock Infrastructure Development in Chhattisgarh

<i>Sr. No.</i>	<i>Name of Institution</i>	<i>Numbers</i>
1	Veterinary Hospital	301
2	State level Hospital	01
3	State DI Laboratory	01
4	Outline Dispensary	798
5	AI Center	22
6	AI Sub Center	249
7	Key village Center	10
8	Key village Unit	99
9	RP surveillance Center	05
10	Veterinary Check Post	07
11	Mass Vaccination Unit	01
12	Mobile Unit	27
13	Ambulatory Clinics	08
14	Motor cycle unit	20
15	Government Goat Breeding Farm	03
16	Government Poultry Farm	08
17	Government Quail Farm	02
18	Duck and Turkey Farm	02
19	Cattle Breeding Farm	04
20	Pig Breeding Farm	03
21	AVFO Training Center	00
22	Poultry Development Project	00
23	Disease Investigation Lab	16
24	CSS and Frozen Semen Bull Station	05

Table 2.47: District-wise Commercial Dairy units in Chhattisgarh

Sr. No.	Districts	Urban	Rural	Total
1	Koriya	69 (4.11)	59 (1.21)	128 (1.96)
2	Balrampur	0 (0.00)	2 (0.04)	2 (0.03)
3	Surajpur	0 (0.00)	0 (0.00)	0 (0.00)
4	Sarguja	46 (2.74)	38 (0.78)	84 (1.28)
5	Jashpur	74 (4.41)	114 (2.34)	188 (2.87)
6	Raigarh	58 (3.45)	415 (8.53)	473 (7.23)
7	Korba	165 (9.83)	49 (1.01)	214 (3.27)
8	Janjgeer	39 (2.32)	242 (4.97)	281 (4.29)
9	Bilaspur	67 (3.99)	162 (3.33)	229 (3.50)
10	Mungeli	0 (0.00)	20 (0.41)	20 (0.31)
11	Kabidham	1 (0.06)	18 (0.37)	19 (0.29)
12	Rajnandgaon	150 (8.93)	162 (3.33)	312 (4.77)
13	Bemetara	12 (0.71)	460 (9.45)	472 (7.21)
14	Durg	321 (19.12)	939 (19.29)	1260 (19.25)
15	Balod	12 (0.71)	254 (5.22)	266 (4.06)
16	Balodabazar	24 (1.43)	9 (0.18)	33 (0.50)
17	Raipur	375 (22.33)	906 (18.62)	1281 (19.57)
18	Goriyaband	5 (0.30)	68 (1.40)	73 (1.12)
19	Mahasamund	44 (2.62)	569 (11.69)	613 (9.36)
20	Dhamtari	84 (5.00)	222 (4.56)	306 (4.67)
21	Kanker	8 (0.48)	17 (0.35)	25 (0.38)
22	Kondagaon	18 (1.07)	25 (0.51)	43 (0.66)
23	Bastar	90 (5.36)	110 (2.26)	200 (3.06)
24	Narayanpur	0 (0.00)	0 (0.00)	0 (0.00)
25	Dantewada	17 (1.01)	7 (0.14)	24 (0.37)
26	Sukma	0 (0.00)	0 (0.00)	0 (0.00)
27	Bijapur	0 (0.00)	0 (0.00)	0 (0.00)
Total		1679	4867	6546

Source: Livestock Statistics-Chhattisgarh, <http://ahd.cg.gov.in/>

2.4.5. State Summary

The Chhattisgarh contributed only 0.82 per cent in total milk production of India. The per capita availability of milk is also found less in Chhattisgarh as compared to India. However, milk production showed increasing trend in Chhattisgarh with the magnitude of 37.657 thousand tones/year during the period 2001-15. Chhattisgarh contributed only 3.93 per cent of total livestock population of the country. Thus, there is ample scope to increase milk production in the State by adopting various needful steps.

2.5 Status of Dairy Development in Jharkhand

Milk production activity is an important enterprise as it provides supplement income and reduces unemployment of small and marginal farmers and agriculture labourers. It has been realised that dairy development could be used as a tool for bringing change in the socio-economic among the rural farming communities by production of milk as a subsidiary occupation. There is tremendous potential for the milk production in the state of Jharkhand, as the agro-climatic condition of this state are ideally suited for cross bred milch cattle with moderate production capacity especially of 50.00 per cent exotic inheritance from Holstein Friesian. There is an adequate market potential for sale of milk and milk products in this state due to a number of industrially developed areas. In the state of Jharkhand, rural milk trading practices are not well established and milk marketing network is not much developed. So, milk is produced mostly for household consumption and local marketing. However, there is tremendous scope for dairy co-operative development and milk route development through institution arrangements with milk processing plant. In order to meet the requirement of milk and milk products in the state of Jharkhand, around 6 to 8 lakh litres of milk is being procured daily from neighbouring states by organised sector player. At the same time to make the state self-sufficient in milk production by implementing the breed improvement, feed and fodder development programmes and also by other productivity enhancement programmes intensively. As a result, the milk production in rural area is increasing significantly.

2.5.1 Annual Outlays and Expenditures in Jharkhand

It can be seen from Table 2.48 that total amount of outlay and expenditure by state plan was Rs. 25375 lakh and Rs. 22516 lakh respectively during 11th Five Year Plan. Around 88.73 per cent of total outlay was expended during same period. Under CS/CSS schemes, around Rs. 500.90 lakh was released and total expenditure was estimated to be Rs. 483.82 lakh accounted for 96.59 per cent of total grant released during same period of time.

Table 2.48: Annual Outlays & Expenditures in Jharkhand

SN	Year	State Plan (Rs. In lakh)		CS/CSS (Rs. In lakh)	
		Outlay	Expenditure	Grant Released	Expenditure
1.	2007-08	3965.00	3453.33	107.64	107.64
2.	2008-09	4600.00	4415.21	93.50	89.25
3.	2009-10	4710.00	4609.45	19.76	6.93
4.	2010-11	5500.00	4674.41	280.00	143.4375
5.	2011-12	6600.00	5364.04	---	136.5625
	Total	25375.00	22516.44	500.90	483.82

Source: Deptt. of Animal Husbandry & Fisheries, Annual Plan, 2012-13 of Jharkhand

2.5.2 Districtwise Cattle Buffalo Population in Jharkhand

The districtwise cattle and buffalo population presented in table 2.49 indicate that total livestock population and total breedable cattle and buffalo population in the Jharkhand was estimated to be 9916025 and 2957194 respectively, i.e. about 29.82 per cent of total livestock population was breedable. The district of Giridih has highest breedable population of cattle and buffalo accounting for 8.34 per cent of total state's breedable cattle and buffalo population.

Table 2.49: Districtwise Cattle & Buffalo Population in Jharkhand

SN	District	Live stock Population (Nos)			Breedable Cattle & Buffalo (%)
		Cow (%)	Buffalo (%)	Total (%)	
1.	Bokaro	311748 (3.57)	37455 (3.16)	349203 (3.52)	112248 (3.80)
2.	Chatara	404132 (4.63)	83289 (7.02)	487421 (4.92)	156672 (5.30)
3.	Deoghar	507325 (5.81)	43260 (3.65)	550585 (5.55)	184103 (6.22)
4.	Dhanbad	304360 (3.48)	32292 (2.72)	336652 (3.40)	118429 (4.00)
5.	Dumka	562389 (6.44)	39108 (3.30)	601497 (6.07)	177880 (6.01)
6.	Garhwa	392257 (4.49)	60397 (5.10)	452654 (4.56)	149858 (5.07)
7.	Giridih	718845 (8.23)	98930 (8.34)	817775 (8.25)	246814 (8.35)
8.	Godda	389048 (4.46)	60186 (5.07)	449234 (4.53)	163812 (5.54)
9.	Gumala	486668 (5.57)	69968 (5.90)	556636 (5.61)	133958 (4.53)
10.	Hazaribagh	446400 (5.11)	106784 (9.00)	553184 (5.58)	159596 (5.40)
11.	Jamatara	297107 (3.40)	20325 (1.71)	317432 (3.20)	95071 (3.21)
12.	Khunti	232346 (2.66)	24158 (2.04)	256504 (2.59)	70424 (2.38)
13.	Kodarma	163259 (1.87)	30584 (2.58)	193843 (1.95)	58617 (2.00)
14.	Latehar	277380 (3.18)	37798 (3.19)	315178 (3.18)	83498 (2.82)
15.	Lohardagga	141135 (1.62)	15160 (1.28)	156295 (1.58)	38039 (1.29)
16.	Pakur	378246 (4.33)	57051 (4.81)	435297 (4.39)	125819 (4.25)
17.	Palamau	540055 (6.20)	88732 (7.48)	628787 (6.34)	221806 (7.50)
18.	Singbhum (W)	415993 (4.77)	32643 (2.75)	448636 (4.52)	103316 (3.49)
19.	Singbhum (E)	340457 (3.90)	19484 (1.64)	359941 (3.63)	104044 (3.52)
20.	Ramgarh	124421 (1.43)	36546 (3.08)	160967 (1.62)	40839 (1.38)
21.	Ranchi	446146 (5.11)	100800 (8.50)	546946 (5.52)	143705 (4.86)
22.	Sahibganj	261982 (3.00)	53655 (4.52)	315637 (3.18)	123226 (4.17)
23.	Saraikela	239298 (2.74)	19633 (1.66)	258931 (2.61)	59093 (2.00)
24.	Simdega	349086 (4.00)	17704 (1.50)	366790 (3.70)	86327 (2.91)
	Total	8730083	1185942	9916025	2957194

Notes: Figure in bracket indicates percentage

Source: Census, 2012

2.5.3 Milk Production and Per Capita Availability of Milk in Jharkhand

The year wise milk production and per capita availability of milk are presented in table 2.50. Total milk production has increased to 1812.38 thousand tones in 2015-16 from 910 thousand tones in 2000-01 accounting for 99.16 per cent increase during 2000-01 to 2015-16. So we can say that Jharkhand has been achieved just double in milk production during 2000-01 to 2015-16. Per capita availability of milk has also increased to 152 gms/day in 2015-16 from 96 gms/day in 2001-02 accounting for 58.33 per cent increased during 2001-02 to 2015-16. Moreover, Chatara district of Jharkhand has highest availability of milk per capita (228 gms/day) followed by Dumka and Gumala both (179 gms/day), Ranchi with 169 gms/day and Garhwa with 164 gms/day.

Table 2.50: Milk Production and Per Capita availability of Milk in Jharkhand

Sr	Years	Production (In 000 tones)	Per capita availability (gms/day)
1.	2000-01	910	---
2.	2001-02	940	96
3.	2002-03	952	94
4.	2003-04	954	92
5.	2004-05	1330	127
6.	2005-06	1335	126
7.	2006-07	1401	130
8.	2007-08	1442	132
9.	2008-09	1466.35	132
10.	2009-10	1463.00	130
11.	2010-11	1555.64	136
12.	2011-12	1745.00	145
13.	2012-13	1679.00	146
14.	2013-14	1699.83	146
15.	2014-15	1733.72	147
16.	2015-16	1812.38	152

Source: Jharkhand Economic Survey, 2016-17 & Deptt. of AH, Dairying & Fisheries, Ministry of Agriculture, GoI

The districtwise total milk production in the state of Jharkhand is presented in Table 2.51. Total milk production has increased to 1812.37 thousand MT in 2015-16 from 1463.00 thousand MT in 2009-10 accounting for 23.88 per cent increase during this period. Total milk production in Jharkhand has been continuously increased during above period. Ranchi has the highest milk production which was increased to 179.44 thousand MT in 2015-16 from 102.02 thousand MT in 2009-10.

Table 2.51: Districtwise Milk Production & Per Capita Availability in Jharkhand

SN	Districts	District wise Milk Production in Jharkhand (<i>In 000 MT</i>)				Annual Milk Production (MT) (%)	Per Capita Availability in gms.
		2009-10 (%)	2011-12 (%)	2013-14 (%)	2015-16 (%)		
1	Bokaro	65.8077 (4.50)	70.9906 (4.50)	76.5023 (4.50)	101.5701 (5.60)	101570.08 (5.60)	135
2	Chatara	79.6888 (5.45)	85.6673 (5.42)	90.9014 (5.35)	86.8896 (4.79)	86889.57 (4.79)	228
3	Deoghar	83.6902 (5.72)	91.2283 (5.77)	98.8169 (5.81)	110.1496 (6.08)	110149.62 (6.08)	202
4	Dhanbad	84.363 (5.77)	90.3687 (5.72)	96.5273 (5.68)	130.1698 (7.18)	130169.75 (7.18)	133
5	Dumka	78.5562 (5.37)	86.3921 (5.46)	94.431 (5.56)	86.5392 (4.77)	86539.17 (4.77)	179
6	Garhwa	77.4148 (5.30)	83.124 (5.26)	88.016 (5.18)	79.3958 (4.38)	79395.81 (4.38)	164
7	Giridih	112.5312 (7.69)	122.4975 (7.75)	132.714 (7.81)	128.1760 (7.07)	128175.99 (7.07)	143
8	Godda	76.3873 (5.22)	82.2006 (5.20)	87.2963 (5.14)	74.7628 (4.13)	74762.77 (4.13)	156
9	Gumala	64.7833 (4.43)	70.0754 (4.43)	75.3768 (4.43)	66.8896 (3.69)	66889.55 (3.69)	179
10	Hazaribagh	79.8046 (5.45)	86.3121 (5.46)	93.1639 (5.48)	101.2033 (5.58)	101203.27 (5.58)	160
11	Jamatara	39.0097 (2.67)	43.0513 (2.72)	47.2996 (2.78)	47.2305 (2.61)	47230.53 (2.61)	163
12	Khunti	26.6581 (1.82)	28.9632 (1.83)	31.3515 (1.84)	31.1076 (1.72)	31107.55 (1.72)	160
13	Kodarma	30.6142 (2.09)	33.1037 (2.09)	35.5675 (2.09)	37.4034 (2.06)	37403.42 (2.06)	143
14	Latehar	42.3433 (2.89)	45.2944 (2.86)	47.9137 (2.82)	39.0422 (2.15)	39042.22 (2.15)	147
15	Lohardagga	19.475 (1.33)	21.012 (1.33)	22.6973 (1.34)	25.5887 (1.41)	25588.74 (1.41)	152
16	Pakur	48.3473 (3.30)	52.3906 (3.31)	56.1837 (3.31)	49.0019 (2.70)	49001.89 (2.70)	149
17	Palamau	104.9233 (7.17)	112.6291 (7.12)	118.8735 (6.99)	94.3164 (5.20)	94316.44 (5.20)	133
18	Singhbhum (W)	33.025 (2.26)	36.0375 (2.28)	39.763 (2.34)	42.1477 (2.33)	42147.67 (2.33)	77
19	Singhbhum (E)	60.8504 (4.16)	65.7393 (4.16)	71.6655 (4.22)	116.7344 (6.44)	116734.44 (6.44)	139
20	Ramgarh	30.4505 (2.08)	32.4169 (2.05)	34.6335 (2.03)	45.8900 (2.53)	45889.98 (2.53)	132
21	Ranchi	102.0192 (6.97)	108.4639 (6.86)	115.7599 (6.81)	179.4398 (9.90)	179439.77 (9.90)	169
22	Sahibganj	59.5909 (4.07)	64.1403 (4.06)	68.3019 (4.02)	62.6320 (3.45)	62632.04 (3.45)	149
23	Saraikela	30.8108 (2.11)	33.7685 (2.14)	37.2705 (2.19)	40.4513 (2.23)	40451.26 (2.23)	104
24.	Simdega	31.8552 (2.18)	35.1128 (2.22)	38.803 (2.28)	35.6440 (2.00)	35644.03 (2.00)	163
	Total	1463	1580.98	1699.83	1812.3757	1812375.68	

Source: Jharkhand Economic Survey, 2015-16 & 2016-17.

2.5.4 District wise infrastructure Facilities in Jharkhand

An analysis of table 2.52 reveals that total number of Gokul Gram Vikas Kendra in the state of Jharkhand were 268, out of which, highest

number were in Ranchi district followed by Deoghar, Hazaribagh and Giridih. The total number of Bulk milk cooler in the state of Jharkhand were 20. The total number of AMCU/PDMCU in the state of Jharkhand were recorded to be 136. Ranchi has highest number of AMCU/PDMCU (48) followed by Palamu with 16, Dumka and Deoghar each has 14 AMCU/PDMCU and Lohardaga has 12 AMCU/PDMCU. However, some districts have no any such types of facilities. So, it should be effort by cooperative/state government to establish such types of facilities in each district of Jharkhand to empower the milk producers.

The total number of dairy cattle development centre in the state of Jharkhand were 1010, out of which, Palamu has the highest number of cattle development centre followed by Hazaribagh, Giridih, Godda and Deoghar each has 65. The total number of milk processing plant/milk chilling plant in the state was 9. It means 9 districts each has one chilling plant while remaining district has no any such types of facilities.

Table 2.52: Districtwise Infrastructure in Jharkhand

SN	Districts	Gokul Gram Vikas Kendra	Bulk Milk Cooler	AMCU/ PDMCU	Dairy Cattle Development Centre	Milk Processing Plant/Milk Chilling Plant
1.	Bokaro	07	---	---	40	---
2.	Chatara	07	01	06	35	---
3.	Deoghar	26	02	14	65	01
4.	Dhanbad	11	---	---	40	01
5.	Dumka	16	01	14	60	01
6.	Garhwa	06	---	---	60	---
7.	Giridih	16	---	01	65	01
8.	Godda	12	---	07	65	---
9.	Gumala	05	---	---	35	---
10.	Hazaribagh	23	02	08	65	01
11.	Jamatara	06	---	---	35	---
12.	Khunti	08	01	01	20	---
13.	Kodarma	09	---	06	30	01
14.	Latehar	08	---	---	40	01
15.	Lohardagga	15	---	12	30	01
16.	Pakur	06	---	---	20	---
17.	Palamau	04	02	16	75	---
18.	Singhbhum (W)	03	---	---	25	---
19.	Singhbhum (E)	09	---	---	30	---
20.	Ramgarh	07	---	03	25	---
21.	Ranchi	52	11	48	60	01
22.	Sahibganj	04	---	---	35	---
23.	Saraikela	03	---	---	30	---
24.	Simdega	05	---	---	25	--
	Total	268	20	136	1010	09

Source: Dept. of Agri., Animal Husbandry & Cooperation (Dairy Development Sector), Jharkhand.

Note: AMCU/DPMCU --- Computerised Milk Collection Unit

The veterinary facilities in the state of Jharkhand is presented in table 5.53 and reveals that the total number of class-I veterinary hospital was 424, mobile veterinary hospital (04), provincial veterinary hospital (23), cattle breeding farms (03), bull mother farm (01) and AI centres (433) managed by department of animal husbandry & dairy, Govt. of Jharkhand.

Table 2.53: Status of Veterinary Facilities in Jharkhand

SN	Infrastructure Status	Nos.
1.	Class - I, Veterinary Hospital	424
2.	Mobile Veterinary Hospital	04
3.	Provincial Veterinary Hospital	23
4.	Cattle Breeding Farms	03
5.	Bull mother Farm	01
6.	A. I. Centres (managed by Department)	433

2.5.5 Requirement and availability of Feed and Fodder in Jharkhand

The area under fodder crop, permanent pastures and other grazing land was estimated to be 110 thousand ha in 2009-10. The requirement and availability of dry fodder in Jharkhand was estimated to be 20.09 MT and 35.54 MT respectively which indicates surplus of 15.45 MT, while that was deficits by 163 MT at national level (Table 2.54). In case of green fodder, deficit of 18.86 MT was estimated in the state as well as at all India level by 79 MT. Same case was noticed in concentrate having deficit of 2.22 MT while same was also deficit by 30 mt at all India level.

Table 2.54: Requirement and Availability of Feed & Fodder in Jharkhand

Sr No	Particular	Jharkhand (2011-12) (In MT)		India (2011-12) (In MT)	
		Requirement	Availability	Requirement	Availability
1.	Dry Fodder	20.09 (4.82)	35.54 (14.04)	416.00(100)	253.00 (100)
2.	Green Fodder	40.18(18.09)	21.32 (14.90)	222.00 (11)	143.00 (100)
3.	Concentrate Feed	4.02 (7.58)	1.80 (7.82)	53.00 (100)	23.00 (100)

Note: Figure in bracket indicates percentage share of Jharkhand in India

2.5.6 State Summary:

There is tremendous potential for the milk production in the state of Jharkhand, as the agro-climatic condition of this state are ideally suited for cross bred milch cattle with moderate production capacity especially of 50.00 per cent exotic inheritance from Holstein Friesian. The state of Jharkhand has adequate availability of fodder resources and thus need to take appropriate steps in this regard.

2.6 Dairy Development in Odisha

Livestock production had always been an integral part of the rural livelihood systems in Odisha, all through the known history of the state. The predominant farming system in Odisha is the mixed crop-livestock farming system and over 90 per cent of farms of all categories conform to this farming system. The livestock wealth of Odisha is impressive in numbers across all species, constituting a natural resource base with immense livelihood implications, even though productivity levels are very low. Livestock holding in Orissa is equitable as over 80 per cent of all livestock are owned by the marginal / small holders and the land less. Some 80 per cent of all rural households own livestock of one species or the other, or a combination of some of them, cattle being the most popular and therefore, the preponderant species. The sector has ample scope to substantially enhance the production to meet the domestic market demands, create employment and income generating opportunities for the rural poor and enhance their food and livelihood security. Government of Odisha in FARD department has formulated the Livestock sector Policy during the year 2002-03 to use the Livestock sector as an instrument for socio and economic development of the rural population of Odisha enabling steady growth of living standard.

2.6.1 Role of Dairy Sector in State Economy of Odisha:

Diary Development activities in the State plays a vital role for up-gradation of socio-economic status of the rural poor. Dairy Development activities are undertaken through ARD Department and Orissa State Co-operative Milk Producers Federation Ltd. (OMFED). Similarly, National Project for Cattle & Buffalo Breeding (NPCBB), a Central sponsored scheme is in operation to upgrade the local cattle & buffalo population and create productive stock in the State. Presently, 8 LBD Farms are functioning under the ARD Department for the purpose of production of breeding bulls to upgrade the local stock and the demonstration purpose for the farmers. Presently, OMFED has taken up the responsibility of milk procurement, processing, marketing through Dairy Co-operatives. In order

to boost up the Dairy Development activities in the State financial assistance are being provided by the Govt. of India under different schemes. So also farmers are being provided financial assistance for keeping the cows under different schemes to develop their socio-economic status and also employment facilities are provided, out of those programmes.

2.6.2 Trend in Contribution of Dairy in GSDP of Odisha:

Table 2.55 presents contribution of gross value of output and gross value added from agriculture and livestock sector to Total GSDP at current prices of Odisha State indicate that contribution of agriculture and livestock to total GSDP was estimated to be 20 per cent, while contribution of livestock to agriculture and livestock together was around 24 per cent. Thus, around one fourth of the agriculture sector output comes from livestock sector (Table 2.55).

Table 2.55: Contribution of Gross Value of Output and Gross Value Added from Agriculture and Livestock Sector to Total GSDP at Current Prices of Odisha State

Sr. No.	Year	Total GSDP (Rs In lakh)	Contribution of GVO from Ag to Total GSDP (%)	Contribution of GVO from Livestock to Total GSDP (%)	Contribution of GVO from Ag & Livestock to Total GSDP (%)	Contribution of GVA from Ag & Livestock to Total GSDP (%)	Contribution of GVO from Livestock to Ag & Livestock sector (%)
1	1999-00	4789168	23.80	3.69	27.49	-	13.42
2	2000-01	4841484	22.30	3.96	26.25	-	15.07
3	2001-02	5170371	24.35	4.23	28.58	-	14.81
4	2002-03	5408111	22.31	4.13	26.45	-	15.64
5	2003-04	6610014	24.73	3.59	28.32	-	12.68
6	2004-05	7772943	20.51	3.83	24.34	-	15.73
7	2005-06	8509649	19.99	3.80	23.79	-	15.96
8	2006-07	10183947	18.69	3.99	22.68	-	17.60
9	2007-08	12927445	21.51	3.79	25.30	-	14.99
10	2008-09	14849071	18.43	4.36	22.79	-	19.14
11	2009-10	16294643	17.88	4.94	22.82	-	21.64
12	2010-11	19752990	15.73	4.55	20.28	-	22.43
13	2011-12	22058927	14.05	4.32	18.37	13.81	23.51
14	2012-13	25122046	15.51	4.47	19.98	17.27	22.36
15	2013-14	27297992	15.29	4.70	19.99	16.30	23.52

Source: Statistical Abstract of Odisha 2014-15.

Milk contributes to around 36 per cent to the livestock output and is one of the biggest sectors for supporting livelihood in the state. Livestock output at constant prices was reported at Rs. 54 billion

in 2010-11 (at constant prices), of which milk contributes about 39 per cent (Table 2.56).

Table 2.56: Value of Output: Agriculture and Livestock in Odisha

Item	Value of Output: Agriculture and Livestock in Odisha						
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Value of Output at Current Prices (Rs. billion)							
Agriculture & Allied*	235	245	279	383	397	436	482
Agriculture	159	170	190	278	274	291	311
Livestock	32	32	41	49	65	80	92
Share of Value of Output to Agriculture and Allied* (%)							
Agriculture	67.7	69.4	68.1	72.6	69.0	66.7	64.5
Livestock	13.6	13.1	14.7	12.8	16.4	18.3	18.7
Value of Output at Constant Prices (Rs. billion)							
Agriculture & Allied*	235	242	248	260	257	289	297
Agriculture	159	164	165	171	173	188	193
Livestock	32	33	37	42	49	52	54
Share of Value of Output to Agriculture and Allied* (%)							
Agriculture	67.7	67.8	66.5	65.8	67.3	65.1	65.0
Livestock	13.6	13.6	14.9	16.2	19.1	18.0	18.2
Value of Livestock Output at Current Prices (Rs. billion)							
Milk	16	17	19	22	25	29	32
Meat	13	12	16	19	25	35	40
Egg	2	2	2	3	5	6	7
Dung	3	3	5	5	11	12	13
Others^	-2	-2	-2	-1	-1	-1	-2
Share of Livestock Output at Current Prices (%)							
Milk	50.9	52.3	46.1	45.6	39.1	36.1	35.5
Meat	40.5	37.8	39.9	39.4	39.4	43.7	44.7
Egg	5.9	6.1	6.1	6.4	7.2	7.6	7.5
Dung	9.4	9.7	11.6	10.1	16.9	14.4	14.1
Others^	-6.7	-5.9	-3.8	-1.5	-2.3	-1.8	-1.8
Value of Livestock Output at Constant Prices (Rs. billion)							
Milk	16	17	18	20	20	21	21
Meat	13	13	14	15	18	20	21
Egg	2	2	2	2	3	4	4
Dung	3	3	4	4	9	9	10
Others^	-2	-2	-2	-1	-2	-1	-1
Share of Livestock Output at Constant Prices (%)							
Milk	50.9	50.4	48.1	48.9	41.2	39.5	38.5
Meat	40.5	39.9	38.5	37.0	36.6	38.4	38.2
Egg	5.9	6.0	5.9	5.9	6.4	6.9	6.7
Dung	9.4	9.0	11.5	10.3	19.1	17.8	18.8
Others^	-6.7	-5.3	-4.1	-2.0	-3.2	-2.3	-2.2

Notes:* Includes Livestock, Forestry & Fisheries, ^ Includes Wool and Hair, Silkworm Cocoons & Honey, Increment in Stock
Source: Directorate of Economics and Statistics, Govt of Odisha.

2.6.3 Outlay and Expenditure in Odisha

The yearwise outlay and expenditure on animal husbandry and dairy development in Odisha presented in Table 2.57 indicate that allocation and expenditure were not stable during the years of last decade, while since

beginning of this decade, considerable increase in outlay and expenditure was noted. Out of total expenditure on animal husbandry and dairying, around one fifth of same has been spent of dairy development activities in the state during 2014-15.

Table 2.57: Year-wise Outlay and Expenditure on Animal Husbandry and Dairy Development in Odisha

Sr. No.	Plan Period	Outlay (Rs. In Lakh)			Expenditure (Rs. In Lakh)		
		Animal Husbandry (Revised)	Dairy Development (Revised)	Total	Animal Husbandry	Dairy Development	Total
1	2002-03	254.00	74.00	328.00	295.93	82.43	378.36
2	2003-04	84.79	0.02	84.81	103.25	0.00	103.25
3	2004-05	54.71	0.02	54.73	112.87	0.00	112.87
4	2005-06	98.50	30.01	128.51	185.68	30.00	215.68
5	2006-07	310.00	20.00	330.00	497.40	25.00	522.40
6	2007-08	586.15	25.00	611.15	430.48	25.00	455.48
7	2008-09	2113.00	25.00	2138.00	2970.61	25.00	2995.61
8	2009-10	4665.17	143.00	4808.17	3686.74	142.49	3829.23
9	2010-11	4512.00	440.00	4952.00	3113.02	440.00	3553.02
10	2011-12	21671.03	574.26	22245.29	18908.82	416.44	19325.26
11	2012-13	23503.85	661.84	24165.69	18639.02	443.23	19082.25
12	2013-14	25830.50	1982.42	27812.92	23728.39	1953.04	25681.43
13	2014-15	25981.95	3952.00	29933.95	10210.70	2585.05	12795.75

Source: Directorate, Animal Husbandry & Veterinary Services, Orissa.

2.6.4 Composition of Livestock in Odisha

The growth in livestock population presented in Table 2.58 indicate that growth between census period was the highest during 1956-1961, followed by 1977-1983, 1961-1966s while negative growth has been registered in 1997 over 1993 and 2012 over 2003. It was very upset to note that Census 2012 recorded highest decline in number of livestock in Odisha by 10 percent. Though the share of Odisha in National livestock population has increased from 3.03 percent to 4.05 per cent, but state growth seems to be slower as other stste must have grown relatively at higher rate as well as share is fluctuating . Out of total livestock, cattle accounts for highest share of 56 per cent in State livestock population followed byt goats, these two both together accounts for almost 90 percent to total livestock population ofthe state. Thus, beside cows, goats are important livestock in the state, which account for about 5 per cent to national stock (Table 2.59). Districtwise distribution of livestock species indicate that major cattle population was observed in the districts of

Bhadrak, Kendrapara , Khordha , Jajapur , Puri, while goat population was concentrated in Mayurbhanj, Sundargarh , Bebagarh , Kendujhar and Sambalpur (Table 2.60).

The district-wise Livestock and Bovine Density (1992-2012) presented in Table 2.62 shows that the highest livestock density was observed in Baleswar district while bovine population density was highest in Bhadrak district. The distribution of Odisha's Cattle Breeds is presented in Table 2.61.

Table 2.58: Growth of the Livestock in Odisha and India

Sr. No	Livestock Census Year	Total Livestock (000)		% Share of Odisha to All India	% Growth between two Census
		All India	Odisha		
1	1951	292784	--	--	--
2	1956	306615	12049	3.93	--
3	1961	336432	14478	4.30	20.16
4	1966	344111	16341	4.75	12.87
5	1972	353338	17508	4.96	7.14
6	1977	369525	18614	5.04	6.32
7	1983	419588	21594	5.15	16.01
8	1987	445285	22321	5.01	3.37
9	1993	470830	24267	5.15	8.72
10	1997	485385	23652	4.87	-2.53
11	2003	485002	24023	4.95	1.57
12	2007	529698	23057	4.35	-4.02
13	2012	512057	20721	4.05	-10.13

Note: Figures without Dog & Rabbit.

Source: Directorate of Economics and Statistics, Govt of Odisha.

Table 2.59: Species-wise Livestock population & its Share in total livestock

Sr. No.	Particulars	Odisha			India	
		Livestock-	% share in India	% total Livestock	Livestock-	% Total Livestock
1	Cattle	11621	6.09	56.1	190904	37.28
2	Buffaloes	723	0.67	3.5	108702	21.23
3	Sheep	1576	2.42	7.6	65069	12.71
4	Goats	6510	4.82	31.4	135173	26.40
5	Pigs	280	2.72	1.4	10294	2.01
6	Horses & Ponies	3	0.48	0.0	625	0.12
7	Mules	7	3.57	0.0	196	0.04
8	Donkeys	1	0.16	0.0	319	0.06
9	Camel	1	0.21	0.0	400	0.08
10	Yaks	0	0.00	0.0	77	0.02
11	Mithun	0	0.00	0.0	298	0.06
12	Total Livestock	20721	4.05	100.0	512057	100.00

Note: Figures without Dog & Rabbit.

Source: Livestock census of Odisha

Table 2.60: District wise Share of Animals in Total Livestock Population in Odisha

District	District wise Percentage share of animals in Total livestock population in Odisha-2012										
	Cross bred	Indigenous	Total Cow	Buffalo	Total Sheep	Goat	Total Pigs	Horses & Ponies	Mules	Donkey	Camel
Anugul	3.56	59.07	62.63	1.76	5.81	29.73	0.07	0.00	0.00	0.000	0.000
Balangir	8.98	39.10	48.07	5.48	12.21	34.11	0.13	0.00	0.00	0.000	0.000
Baleshwar	3.16	62.89	66.05	0.34	0.22	32.99	0.37	0.02	0.00	0.000	0.000
Bargarh	23.66	33.89	57.55	3.30	10.20	28.30	0.64	0.00	0.00	0.001	0.000
Baudh	3.56	42.97	46.54	4.57	22.11	26.70	0.07	0.00	0.00	0.001	0.000
Bhadrak	4.20	73.01	77.21	0.74	0.29	21.69	0.07	0.00	0.00	0.000	0.000
Cuttack	21.18	41.52	62.70	2.64	9.11	25.43	0.11	0.00	0.00	0.001	0.000
Bebagarh	1.18	52.57	53.75	1.35	1.19	43.08	0.64	0.00	0.00	0.000	0.000
Dhenkanal	2.29	63.65	65.94	4.00	4.39	25.47	0.19	0.00	0.00	0.000	0.000
Gajapati	5.25	51.27	56.51	3.23	3.84	33.73	2.53	0.04	0.00	0.009	0.000
Ganjam	1.93	54.59	56.51	6.18	14.99	21.76	0.55	0.00	0.00	0.006	0.000
Jagatsinghapur	40.38	27.09	67.48	2.55	3.26	26.21	0.50	0.00	0.00	0.000	0.000
Jajapur	2.36	68.97	71.33	0.76	1.87	25.71	0.33	0.00	0.00	0.000	0.000
Jharsuguda	6.33	53.81	60.14	2.34	2.78	33.58	1.16	0.00	0.00	0.000	0.000
Kalahandi	5.13	42.31	47.44	6.68	12.20	33.11	0.57	0.00	0.00	0.000	0.000
Kandhamal	0.34	48.43	48.76	8.74	1.19	36.33	4.98	0.01	0.00	0.001	0.001
Kendrapara	13.35	59.92	73.26	2.83	3.31	20.27	0.28	0.01	0.00	0.005	0.019
Kendujhar	2.65	46.34	48.99	1.05	7.03	42.01	0.76	0.06	0.00	0.000	0.000
Khordha	13.52	59.01	72.53	2.78	7.28	16.96	0.44	0.00	0.00	0.002	0.000
Koraput	1.81	52.97	54.78	9.24	13.84	18.55	3.54	0.02	0.00	0.001	0.000
Malkangiri	0.78	60.02	60.80	3.66	4.69	23.79	7.06	0.00	0.00	0.000	0.000
Mayurbhanj	1.73	34.46	36.19	0.62	12.68	49.30	1.08	0.05	0.00	0.000	0.000
Nabarangapur	2.34	63.90	66.23	7.11	14.72	10.28	1.65	0.00	0.00	0.000	0.000
Nayagarh	1.67	60.48	62.16	5.37	7.60	24.85	0.01	0.00	0.00	0.000	0.000
Nuapada	1.63	57.86	59.49	7.19	9.83	23.30	0.17	0.00	0.00	0.010	0.001
Puri	26.59	42.91	69.50	2.58	6.96	20.73	0.22	0.00	0.00	0.000	0.004
Rayagada	1.18	48.94	50.12	11.17	5.03	29.34	4.31	0.01	0.00	0.003	0.000
Sambalpur	6.21	44.30	50.51	1.97	3.36	41.87	2.01	0.03	0.00	0.053	0.122
Subarnapur	13.15	37.64	50.80	3.20	16.25	29.34	0.41	0.01	0.00	0.000	0.000
Sundargarh	1.63	45.31	46.94	2.57	2.52	44.05	3.81	0.03	0.00	0.000	0.000
Odisha State	6.30	49.76	56.05	3.50	7.63	31.41	1.35	0.02	0.00	0.003	0.004

Source: Director, Animal Husbandry & Veterinary Services, Orissa.

Table 2.61: Distribution of Odisha's Cattle Breeds

Breeds	Breeding Tract	Utility	Distribution
A) Cattle			
Binjharपुर	Primarily in Jajapur district and adjoining areas of Bhadrak and Kendrapara districts of Odisha	Milk and Draught (Dual)	Binjharपुर, Bari, Sujapur and Dasarathapur blocks of Jajapur district and parts of Kendrapara and Bhadrak districts.
Ghumusari	Bhanjanagar area of Ganjam and parts of Kandhamal districts of Odisha	Draught	Soroda, Aska, Bhanjanagar, Dharakote and Shergarh blocks of Ganjam district and some parts of Kandhamal district.
Khariar	Mostly in Nuapada district of Odisha	Draught	Kariar, Komna, Sinapali and Boden blocks of Nuapada district and parts of Kalahandi and Balangir districts.
Motu	Southern part of Malkangiri district and parts of Chhattisgarh and Andhra Pradesh.	Draught and Manure	Podia, Motu, Malkangiri blocks of Malkangiri district and some parts of Chhattisgarh and Andhra Pradesh.
B) Buffalo			
Chilika	Puri and Khordha districts of Odisha and adjoining part of Ganjam district	Milk and Draught	Krushna Prasad, Brahamagiri blocks in Puri district and Balugaon block of Khordha district and parts of Ganjam district.
Kalahandi	Mostly found in Kalahandi districts of Odisha	Milk, Draught, Manure	Mainly found in Bhawanipatna, Junagarh, Golamunda and Dharmagarh blocks of Kalahandi district and parts of Rayagada district.

Source: Odisha Livestock Resources Development Society and Orissa University of Agriculture and Technology

Table 2.62: District-wise Livestock and Bovine Density in Odisha

Districts	Livestock (No. per sq km)					Bovine (No. per sq km)				
	1992	1997	2003	2007	2012	1992	1997	2003	2007	2012
Anugul	-	142	128	128	109	-	95	85	74	70
Balangir	-	152	165	164	114	-	92	99	96	61
Baleshwar	-	355	329	337	304	-	254	235	237	202
Bargarh	-	135	122	123	98	-	93	88	89	60
Baudh	-	146	151	133	123	-	89	90	73	63
Bhadrak	-	304	319	319	265	-	228	246	231	207
Cuttack	-	261	235	204	217	-	168	144	103	142
Bebagarh	-	95	103	113	106	-	65	65	64	59
Dhenkanal	-	158	169	169	143	-	126	119	116	100
Gajapati	-	96	89	63	75	-	61	57	22	45
Ganjam	-	165	161	146	127	-	118	117	100	80
Jagatsinghapur	-	272	308	245	264	-	180	204	121	185
Jajapur	-	332	335	346	244	-	222	225	230	176
Jharsuguda	-	115	113	128	94	-	88	84	90	59
Kalahandi	-	115	104	88	83	-	73	65	45	45
Kandhamal	-	76	83	78	85	-	46	50	43	49
Kendrapara	-	165	246	245	187	-	106	180	174	143
Kendujhar	-	159	170	174	156	-	90	99	99	78
Khordha	-	205	198	69	155	-	152	148	14	117
Koraput	-	109	123	122	97	-	68	82	77	62
Malkangiri	-	118	94	260	100	-	76	62	90	65
Mayurbhanj	-	168	180	196	220	-	87	91	88	81
Nabarangapur	-	133	133	112	112	-	87	97	82	82
Nayagarh	-	128	121	122	95	-	95	86	76	64
Nuapada	-	93	119	77	87	-	63	82	46	58
Puri	-	194	200	189	184	-	138	114	131	132
Rayagada	-	102	95	83	81	-	67	62	50	50
Sambalpur	-	97	94	87	87	-	66	60	53	46
Subarnapur	-	171	164	110	139	-	116	110	56	75
Sundargarh	-	144	128	128	132	-	80	74	76	65
ODISHA	-	150	150	148	133	-	98	98	87	79

Source: Dairying in Odisha - A Statistical Profile 2016.

2.6.5 Growth in Milk Production in Odisha

Milk production in the State was relatively stable during the last decade of last century, which has pickup in the last decade. During the year 1994-95 the estimated milk production of the State was 584.39 TMT and it reached at all time high production of 1930 TMT during the year 2015-16. The per capita availability of milk in the state has increased from 67 grams/day in 2000-01 to 118 gm/day in the year 2014-15 (Table 2.63). While district-wise share in total milk production data indicate that mostly all districts has dominance of cattle and thus cattle milk production (Table 2.64).

Table 2.63: Milk Production in Odisha: 2000-01 to 2015-16

Sr. No	Year	Milk Production in lakh tones						Growth of Milk Prod (%) over base year	Per Capita availability (gms/day)
		In milk Cow		In Milk Buffalo	In milk Bovine	In Milk Goat	Total		
		Indi-genous	C.B.						
1	2000-01	312.62	387.67	172.55	872.84	2.29	875.13		67
2	2001-02	318.62	418.60	188.97	926.19	2.58	928.77	6.13	70
3	2002-03	311.39	436.11	191.47	938.97	2.52	941.49	7.58	71
4	2003-04	320.20	466.20	205.90	992.30	2.81	995.11	13.71	74
5	2004-05	553.78	525.86	200.56	1280.20	2.56	1282.76	46.58	94
6	2005-06	560.64	570.29	208.49	1339.42	2.88	1342.30	53.38	98
7	2006-07	611.10	599.40	217.65	1428.15	2.57	1430.72	63.49	103
8	2007-08	752.34	645.81	219.93	1618.08	2.36	1620.44	85.17	115
9	2008-09	712.40	664.50	218.75	1595.65	2.38	1598.03	82.60	112
10	2009-10	718.70	706.70	223.13	1648.53	2.78	1651.31	88.69	109
11	2010-11	727.00	711.00	229.00	1667.00	3.00	1670.00	90.83	109
12	2011-12	734.00	741.00	240.00	1715.00	3.00	1718.00	96.31	112
13	2012-13	794.00	732.00	255.00	1781.00	3.00	1784.00	103.86	117
14	2013-14	828.00	758.00	272.00	1858.00	3.00	1861.00	112.65	117
15	2014-15	-	-	249.66	-	4.29	1902.98	117.45	118
16	2015-16	-	-	-	-	-	1930.00	120.54	-

Source: Directorate, Animal Husbandry & Veterinary Services, Orissa.

Table 2.64: Districtwise Category wise Percentage share of Milk Production in Odisha

Name of the District	District wise & category wise Percentage share of Milk Production in Odisha (2013-14)			
	% share of Crossbred Cow	% share of Indigenous Cow	% share of Total Cattle	% share of Buffalo
Angul	40.57	49.90	90.47	9.53
Balasore	39.36	41.81	81.17	18.83
Baragarh	16.41	82.07	98.49	1.51
Bhadrak	39.13	37.39	76.52	23.48
Bolangir	21.79	55.98	77.78	22.22
Boudh	25.11	58.49	83.59	16.41
Cuttack	65.25	28.97	94.22	5.78
Deogarh	73.33	14.51	87.84	12.16
Dhenkanal	36.56	49.32	85.88	14.12
Gajapati	41.39	44.11	85.50	14.50
Ganjam	16.96	56.77	73.73	26.27
Jagatsingpur	81.67	13.87	95.54	4.46
Jajpur	34.00	60.36	94.36	5.64
Jharsuguda	40.63	44.53	85.16	14.84
Kalahandi	24.44	49.06	73.50	26.50
Kandhamal	18.29	54.27	72.56	27.44
Kendrapara	44.33	51.84	96.17	3.83
Keonjhar	54.41	37.44	91.85	8.15
Khurdha	44.27	30.73	75.00	25.00
Koraput	32.15	45.88	78.03	21.97
Malkangiri	6.51	47.77	54.28	45.72
Mayurbhanj	56.55	39.83	96.38	3.62
Nawarangpur	22.28	58.15	80.43	19.57
Nayagarh	19.84	72.37	92.22	7.78
Nuapada	47.22	40.28	87.50	12.50
Puri	59.03	21.69	80.73	19.27
Rayagada	18.00	46.47	64.46	35.54
Sambalpur	52.34	32.46	84.80	15.20
Subarnapur	40.20	49.26	89.46	10.54
Sundargarh	48.97	40.46	89.43	10.57

Source: Directorate, Animal Husbandry & Veterinary Services, Orissa.

2.6.6 Milk Consumption and Marketable Surplus in Odisha

The data on milk utilisation pattern in Odisha indicate that out of the total production of milk at the home, about 84 per cent was sold, while 8 per cent milk was consumed at the home and remaining 8 per cent milk was converted into milk products in 2015-16 (Table 2.65). The seasonwise utilisation pattern has also recorded same pattern.

Table 2.65: Milk Utilisation Pattern in Households in Odisha (1997-98 to 2015-16)

Item	Milk Utilisation Pattern in Households in Odisha				
	1997-98	2000-01	2006-07	2011-12	2015-16
Production in Selected HH(000'kg)	30129	36865	106327	152673	228670
Purchased					
Quantity (kg)	-	-	-	-	-
Avg. rate of purchase (Rs. per kg) sold	-	-	-	-	-
Sold					
Quantity (000'kg)	28020	34284	97290	135116	192083
Avg. rate of selling (Rs. per kg)	6.83	10.67	10.02	16.75	26.1
Converted into Milk Products (000'kg)	904	1106	4785	8397	18294
Consumed at Home (000'kg)	1205	1475	3721	9160	18293
Quantity sold (%)	93	93	92	88.5	84
Converted into milk products (%)	3	3	4.5	5.5	8
Consumed at home (%)	4	4	3.5	6	8

Source : Directorate of Animal Husbandry, Govt. of Odisha.

2.6.7 Infrastructure Development in Odisha

There are 7 nos. of LBD Farms and one ECB Farm are functioning in the State. These farms act as a Demonstration Unit to the farmers interested in the AH Programme in the locality. In the past years, the different breeds like, Red Sindhi, Haryana, Murrah Buffalo, Cross-bred Jersey animals were maintained in the different LBD Farms, where as pure Jersey animals were maintained at Exotic Cattle Breeding Farm, Chipilima. Out of 11 LBD Farms and one ECB Farm, the LBD Farm at Phulbani has been closed and presently the Goat Rearing Farms is functioning in the campus. There are no Dairy cows at LBD Farm, Bhawanipatna, Bolangir and Kathapal. The FSB, Bhawanipatna is functioning in the campus of LBD Farm, Bhawanipatna and bull calves are groomed there for FSB at Kathapal Fodder Seed Production Farm is functioning. At Bolangir there are no animals in the Farm and buildings are in damaged position. The stagnant stage of veterinary Infrastructure and manpower as well as facilities in Odisha state can be visible form Tables 2.66 and 2.67. The details about

Bulk Cooler, Automatic Milk Collection Systems and Chilling Centres facility with Dairy Cooperative Societies in Odisha is presented in Table 2.68 while Cattle Feed Production Capacity and Fodder Production in the Departmental L.B.D Farms are presented in Tables 2.69 and 2.71

Table 2.66: Veterinary Infrastructure and Manpower in Odisha state

Year	No. of Veterinary Institutions	No. of Veterinarians
2010-11	540	865
2011-12	540	682
2012-13	540	682
2013-14	540	682
2014-15	541	682
2015-16	541	682
2016-17	541	682

Source : Directorate of Animal Husbandry, Govt. of Odisha.

Table 2.67: Growth in Infrastructure facilities for Animal Husbandry in Odisha

Year	Growth in Infrastructure facilities for Animal Husbandry in Odisha (Nos)						
	Veterinary Hospital / Polyclinic	Mobile veterinary Dispensaries	First Aid Veterinary Centre	Animal Insemination Centre/ SubCentres	Sheep & Wool Extension Centres	Breeding Farms	
						Cattle	Poultry
2000-01	540	-	2939	2041	NA	8	10
2010-11	540	-	2939	5895	NA	8	10
2011-12	540	40	2939	5895	NA	8	10
2012-13	540	65	2939	6010	NA	8	10
2013-14	540	53	2939	6591	NA	8	10
2014-15	540	156	2939	6546	NA	8	10
2015-16	541	156	3839	6457	NA	8	10
2016-17	541	156	3839	6474	NA	8	10

Source : Directorate of Animal Husbandry, Govt. of Odisha.

Table 2.68: Details on Bulk Cooler, Automatic Milk Collection Systems & Chilling Centres in Odisha

Sr. No.	Name of Milk Producers' Co- op. Union Ltd.	No. of Societies with		No. of Chilling Centre-Installed Capacity (1000 litres/day)
		Bulk Milk Cooler (BMC)	Automatic Milk Collection System (AMCS)/DPMCU	
1	Cuttack	106	798	259.0
2	Dhenkanal	07	-	7.0
3	Keonjhar	07	-	11.0
4	Puri	44	68	85.0
5	Sambalpur	56	161	113.0
6	Balasore, Bhadrak Milk Union	46	-	70.0
7	Greater Ganjam & Gajapati Milk Union	24	46	30.0
8	Koraput, Malkangiri, Nawrangapur & Rayagada Milk Union	37	-	63.0
9	Bolangir, Kalahandi & Nuapada Milk Union	31	93	62.0
10	Sundergarh	-	-	-
11	Boudh	06	-	4.5
12	Mayurbhanj	10	-	6.5
Total		374	1166	711.0

Source: OMFED

Table 2.69: District wise Number of Veterinary Institutions in Odisha (2015 - 2016)

Sr. No.	District	Veterinary Hospitals/ Dispensaries	Aid Centres	LACs doing A.I.	No. of A.I Centres		No. of Veterinary Doctors	No. of L.I.in position
					A.H. Deptt.	Others		
1	Angul	16	81	81	153	20	20	56
2	Balasore	21	124	124	213	00	26	112
3	Baragarh	19	119	119	183	190	20	48
4	Bhadrak	13	98	98	167	124	16	72
5	Bolangir	21	118	118	167	00	33	101
6	Boudh	7	28	28	36	15	8	34
7	Cuttack	26	172	172	272	00	38	140
8	Deogarh	4	20	20	30	00	3	12
9	Dhenkanal	18	86	86	155	00	22	80
10	Gajapati	11	54	54	65	32	14	43
11	Ganjam	38	246	246	324	00	45	187
12	Jagatsingpur	13	92	92	156	434	16	60
13	Jajpur	18	102	102	212	0	24	85
14	Jharsuguda	9	35	35	50	0	11	28
15	Kalahandi	21	129	129	184	0	27	146
16	Kandhamal	20	87	87	75	0	24	102
17	Kendrapara	14	88	88	155	0	19	60
18	Keonjhar	22	113	113	169	91	27	112
19	Khurdha	20	98	98	172	0	28	46
20	Koraput	25	129	129	131	0	32	104
21	Malkangiri	13	50	50	41	103	12	58
22	Mayurbhanj	42	167	167	277	0	46	187
23	Nawarangpur	17	72	72	101	0	25	58
24	Nayagarh	16	72	72	101	0	21	78
25	Nuapada	8	47	47	58	0	13	54
26	Puri	15	145	145	220	00	24	79
27	Rayagada	16	101	101	116	00	22	102
28	Sambalpur	18	113	113	149	00	20	59
29	Subarnapur	10	38	38	68	79	14	47
30	Sundargarh	30	115	115	186	00	32	120
Total		241	2939	2939	4398	1300	682	2467

Table 2.70: Details about Cattle Feed Production Capacity in Odisha

Sr. No.	Data year 2015-16	Cattle Feed Brand	Production Capacity (MTPD)	Price/ M.T.(Rs.)
1	Cattle Feed Factory	Omfed Super	200	Rs.14000/MT

Source: OMFED

Table 2.71: Fodder Production in the Departmental L.B.D Farms in Odisha

Sr. No.	Name of the Farm 2015-16	Area (in Ac.) for Fodder Production		Fodder Production (in Qtls)	
		Target	Achievement	Target	Achievement
1	LBD Farm, Cuttack	6.00	6.00	3500.00	3613.08
2	ECB Farm, Chiplima	44.00	39.10	13200.00	5378.25
3	LBD Farm, Keonjhar	10.50	10.50	2847.00	2052.49
4	LBD Farm, Remuna	24.00	8.50	4020.00	1685.30
5	LBD Farm, Bhanjanagar	22.50	10.20	3480.00	3297.98
6	LBD Farm, Boudh	2.50	2.50	520.00	511.50
7	LBD Farm, Sundargarh	21.50	16.50	2956.00	3071.35
8	LBD Farm, Kuarmunda	35.00	34.00	4860.00	4388.60
ODISHA		166.00	127.30	35383.00	24178.55

Source: Directorate of Animal Husbandry and Veterinary Services, Odisha

2.7 Dairy Development in Eastern U.P.

Uttar Pradesh is the largest milk producing state of India contributing 17 percent of the total milk production. A milk cooperative society in a village of Allahabad district of eastern Uttar Pradesh set up in 1918 marked the beginning of milk cooperatives in the state. In the year 1938, the country's first milk union 'Lucknow Milk Producers Cooperative Union Ltd.', was set-up in Lucknow, the capital of Uttar Pradesh. To accelerate the progress of dairy development in the state, the Pradeshik Cooperative Dairy Federation Ltd. was setup as a technical consultancy firm in 1962. The average milk production has been reported as 34,000 thousand litres per day during 1995. The major pockets of milk production in U.P. are Meerut, Aligarh, Moradabad, Allahabad, Agra, Kanpur, Varanasi, Mathura, Bareilly, Fatehpur, Gorakhpur and Lucknow .

2.7.1 Plan-wise Outlay and Expenditures under Dairy Development

The plan-wise outlay and expenditures under dairy development efforts in the state of Uttar Pradesh workout and presented in Table 2.72 indicates that the total outlay was Rs. 19 lakh during the first plan period was fully utilized. The total outlays and expenditure figures over the subsequent plans periods also indicate full utilization .

Table 2.72: Plan-wise Outlay & Expenditure under Dairy Development Efforts in UP

Sl. No.	Five Year Plans	Years	Outlay (Rs. in lakh)	Expenditures (Rs. in lakh)
1.	1 st Five Year Plan	1951-1956	19.000	19.000
2.	2 nd Five Year Plan	1956-1961	21.000	21.000
3.	3 rd Five Year Plan	1961-1966	385.000	385.000
4.	Three Annual Plans	1966-1969	162.000	162.000
5.	4 th Five Year Plan	1969-1974	509.000	509.000
6.	5 th Five Year Plan	1974-1978	436.000	436.000
7.	Two Annual Plans	1978-1980	286.760	286.760
8.	6 th Five Year Plan	1980-1985	2821.507	2821.507
9.	7 th Five Year Plan	1985-1990	3179.440	3179.440
10.	Annual Plans	1990-1991	1398.900	1398.900
11.	Annual Plans	1991-1992	1185.190	1185.190
12.	8 th Five Year Plan	1992-1997	12040.880	12040.880
13.	9 th Five Year Plan	1997-2002	2054.460	2054.460
14.	10 th Five Year Plan	2002-2007	5596.320	5596.320
15.	11 th Five Year Plan	2007-2012	25834.446	25834.446
16.	12 th Five Year Plan	2012-2017	33440.400	33440.400

Note: *Total outlay has been utilized (total utilized)

Source: Annual Progress Report 2015-16 Dairy Development Department, Lucknow, U.P.

2.7.2 District-wise Bovine Population in Eastern U.P.

The district-wise bovine population in eastern U.P. during 2012 livestock census presented in Table 2.73 shows that the total number of bovine population in eastern U.P. was 2,29,29,230. While the total number of bovine population in the state of UP was estimated to be 6.57 crore during the 2012 livestock census. Thus, more than one third bovine population was in Eastern Uttar Pradesh. Thus, the number of bovine animals in eastern region of Uttar Pradesh was considerably higher than the other three regions of Uttar Pradesh. Among 28 districts falling in eastern region the maximum number of bovine animals was reported in Allahabad district.

Table 2.73: District-wise Bovine Population in Eastern U.P.

Sr. No.	Name of Districts	Bovine Population (2012) Census (In Numbers)					
		Cross Breed cows	Local Cows	Total cows	Buffaloes	Goats	Total Bovine Animals
1.	Allahabad	148778	550639	699417	584550	299979	1583946
2.	Kaushambi	12338	151048	163386	220933	211425	595744
3.	Pratapgarh	90765	287362	378127	356180	263750	998057
4.	Faizabad	28438	351668	380106	290427	186152	856685
5.	Sultanpur	43808	345215	389023	271965	178041	839029
6.	Amethi	43808	298104	341912	270424	264080	876416
7.	AmbedkarNagar	53743	174135	227878	288813	142560	659251
8.	Gonda	53338	417166	470504	395253	253326	1119083
9.	Baharaich	10995	525183	536178	365963	502321	1404462
10	Srawasti	2231	198123	200354	130956	139453	470763
11	Balrampur	4092	269475	273567	165971	173832	613370
12	Basti	55216	98681	153897	334153	174247	662297
13	Sant KabirNagar	30265	63305	93570	132123	103349	329042
	Sidharth Ngar	6159	265615	271774	167061	228818	667653
15	Gorakhpur	102605	186160	288765	279122	196224	764111
16	Maharajganj	33627	52034	85661	181832	260170	527663
17	Deoria	110169	89928	200097	211271	263799	675167
18	Kushinagar	84394	74000	158394	269441	332745	760580
19	Varanasi	53050	187661	240711	295072	162090	697873
20	Chandauli	42284	162592	204876	221726	98838	525440
21	Gazipur	56124	325767	381891	478776	307656	1168323
22	Jaunpur	141816	330428	472244	464499	267452	1204195
23	Azamgarh	142876	396897	539773	438385	311608	1289766
24	Mau	28096	132398	160494	174986	175568	511048
25	Ballia	84296	189552	273848	233907	154580	662335
26	Mirzapur	91273	335641	426914	251180	167168	845262
27	Sonbhadra	15113	460780	475893	225214	291942	993049
28	SantRavidasNagar	92084	117835	209919	144578	74123	428620
	Eastern U.P.	1661781	7037392	8699173	7844761	6185296	22729230
	UP	3579015	15978052	19557067	30625334	15585615	65768016

Source: Department AH & Dairying U.P., Lucknow

2.7.3 Milk Production in Eastern U.P.

The year-wise milk production in eastern Uttar Pradesh during 2001-02 to 2015-16 is presented in Table 2.74 which indicate that the total milk production in eastern region of U.P. has increased from 4180.99 thousand tonnes in the year 2001-02 to 5671.59 thousand tonnes till the year 2008-09. But, in the year 2009-10 it suddenly decreased to 5468.86 thousand tonnes. Thereafter, the milk production in east U.P. continuously increased from 6110.27 thousand M. tonnes in the year 2010-11 to 8205.01 thousand tonnes till the year 2015-16. Thus, milk production in eastern U.P. continuously increased during the span of 2001 to 2015 with a sudden decrease in 2009-10.

Table 2.74: Milk Production in Eastern Uttar Pradesh (2001-02 to 2015-16)

Years	Production (in 000 M.Tonnes)
2001-2002	4180.994
2002-2003	4526.514
2003-2004	4633.993
2004-2005	4772.665
2005-2006	5031.766
2006-2007	5267.618
2007-2008	5489.333
2008-2009	5671.59
2009-2010	5468.862
2010-2011	6110.27
2011-2012	6936.167
2012-2013	7187.874
2013-2014	7453.942
2014-2015	7767.632
2015-2016	8205.013

Source: Directorate of A.H. & Dairying, U.P., Lucknow

The district-wise total milk production in eastern U.P. presented in Table 2.75 indicates that the total milk production in the eastern region of U.P. has continuously increased from 4180.99 thousand tonnes in the year 2001-02 to 8205.01 thousand tonnes till the year 2015-16 with a sudden decrease in the year 2009-10. The district-wise distribution of milk production in eastern region of U.P. shows that the production of milk in Allahabad district was highest which has increased from 351.81 thousand M. tonnes in the year 2001-02 to 526.17 thousand tonnes in 2015-16.

Table 2.75: District-wise Milk Production in the Eastern Uttar Pradesh

Sl. No	Name of the District	District-wise Milk Production (In thousand M. Tonnes)				
		2001-02	2006-07	2010-11	2014-15	2015-16
1.	Allahabad	351.814	480.442	468.423	506.681	526.173
2.	Kaushambi	--	--	110.302	151.498	158.680
3.	Pratapgarh	158.179	198.133	239.887	280.924	355.863
4.	Faizabad	125.384	177.852	203.816	245.337	280.557
5.	Sultanpur	201.219	298.995	340.582	428.146	503.568
6.	Amethi	--	--	--	--	--
7.	Ambedkar Nagar	127.524	166.544	192.892	228.554	209.629
8.	Gonda	279.518	309.951	247.171	389.443	444.319
9.	Baharaich	208.729	244.428	188.797	324.591	414.053
10.	Srawasti	--	--	85.199	106.574	122.467
11.	Balrampur	--	--	111.697	155.758	182.938
12.	Basti	242.769	301.792	226.942	273.605	340.764
13.	Sant Kabir Nagar	--	--	126.192	148.504	147.655
14.	Sidharth Ngar	138.211	168.916	192.216	323.490	273.398
15.	Gorakhpur	210.280	241.563	281.260	380.368	347.034
16.	Maharajganj	135.571	155.913	179.544	264.474	170.393
17.	Deoaria	134.804	189.413	217.933	265.161	301.250
18.	Kushinagar	149.838	198.685	227.610	310.646	278.178
19.	Varanasi	155.829	167.231	188.034	194.062	371.610
20.	Chandauli	138.528	142.849	169.122	203.991	220.246
21.	Gazipur	235.042	300.353	361.421	429.376	408.039
22.	Jaunpur	256.426	349.547	392.473	534.762	450.807
23.	Azamgarh	304.845	403.627	460.860	513.639	607.687
24.	Mau	174.435	163.311	187.541	219.567	168.277
25.	Ballia	157.415	217.223	251.237	271.290	265.460
26.	Mirzapur	144.043	170.391	202.502	268.071	255.243
27.	Sonbhadra	89.121	140.720	163.277	247.349	210.103
28.	Sant Ravidas Nagar	61.470	79.739	93.340	101.771	190.622
	Eastern U.P.	4180.994	5267.618	6110.27	7767.632	8205.013

Source: Directorate of AH & Dairying U.P., Lucknow.

2.7.4 District-wise Veterinary Facilities in Eastern UP

The district-wise veterinary facilities available in Eastern Uttar Pradesh presented in Table 2.76 shows that total numbers of artificial insemination centres established till the year 2014-15 were reported to be 1821, of which the maximum were in Allahabad district. There was only one Livestock Farm in Varanasi district. The no. of veterinary hospital were 854 in the whole of east U.P. whiel higher no. of veterinary hospitals were in Azamgarh, Ballia, Ghazipur and Gorakhpur districts. The veterinary hospitals of 'D' category were 66 only in the whole eastern region till 2014-15. The number of livestock service centres in east U.P. were 896 in all. Thus, in whole of the eastern region of U.P. the conditions of animal husbandry as well as veterinary hospitals were deplorably poor.

Table 2.76: Districtwise Veterinary Facilities available in Eastern UP

Sl. No.	Name of Districts of East U.P.	AI Centre	Indigenous Insemination Centre	Livestocks Farms	Veterinary hospital	(D) Category Vet. Hospital	Livestock service centre	Sheep assistance centres	Sheep's farms	Sheep & wool ext. farms	Goat farms	Pig insemination farms
1.	Allahabad	150	--	--	49	7	94	--	--	32	1	--
2.	Kaushambi	39	--	--	15	2	22	--	--	11	--	--
3.	Pratapgarh	101	--	--	50	5	46	1	--	4	--	--
4.	Faizabad	44	--	--	25	1	18	--	--	1	--	--
5.	Sultanpur	79	--	--	32	1	48	--	--	7	--	--
6.	Amethi	82	--	--	28	--	41	--	--	--	--	--
7.	AmbedkarNagar	41	--	--	18	2	21	--	--	--	--	--
8.	Gonda	68	--	--	35	2	31	--	--	2	--	--
9.	Baharaich	65	--	--	35	1	29	2	--	1	--	--
10	Srawasti	16	--	--	13	--	3	1	--	--	--	--
11	Balrampur	38	--	--	19	--	19	--	--	1	--	--
12	Basti	64	--	--	31	2	31	--	--	--	--	--
13	Sant KabirNagar	37	--	--	18	--	19	--	--	--	--	--
14	Sidharth Ngar	61	--	--	25	1	35	--	--	--	--	--
15	Gorakhpur	105	--	--	52	7	46	--	--	3	--	--
16	Maharajganj	57	--	--	31	2	24	--	--	--	--	--
17	Deoaria	64	--	--	26	3	35	--	--	2	--	--
18	Kushinagar	64	--	--	24	1	39	--	--	1	--	--
19	Varanasi	34	--	1	16	3	15	--	--	15	--	1
20	Chandauli	39	7	--	18	--	21	--	1	5	--	1
21	Gazipur	102	--	--	52	4	46	2	--	2	--	--
22	Jaunpur	81	--	--	36	3	42	--	--	3	--	--
23	Azamgarh	112	--	--	58	7	47	--	--	4	--	--
24	Mau	59	--	--	31	1	27	1	--	2	--	--
25	Ballia	102	--	--	56	6	40	--	--	1	--	--
26	Mirzapur	56	--	--	27	2	27	--	--	14	--	--
27	Sonbhadra	40	--	--	23	2	15	--	--	1	--	--
28	SantRavidasNagar	21	--	--	11	1	9	--	--	8	--	--
	Eastern U.P.	1821	7	1	854	66	890	7	1	120	1	2

Source: Directorate of A.H., Uttar Pradesh. Lucknow, (U.P.) Progress Report, 2014-15.

2.7.5 Fodder Availability in Eastern UP

The eastern region of Uttar Pradesh has estimated to have 80901 hectares area under fodder crops (2013-14), of which area maximum was covered under kharif fodders (43948 ha). Thus, eastern region of UP did not have adequate area under fodder crops to meet out the requirement of fodders by teaming livestock and bovine animals in the eastern region.

2.7.6 State Summary

The state of Uttar Pradesh is a main milk producing state in India, where less availability of fodder as well as supporting infrastructure were the major concerns for low milk productivity in the state.

2.8 Dairy Development in West Bengal:

As per Livestock Census 2012, the West Bengal state has 16, 514 thousand cattle population. Out of this total cattle population, the state has 83.7% indigenous species and 16.3% crossbred species. As a result, per capita milk availability per day is 145 gms in the state. However, as agri-allied sector, dairying is now playing an important role for upliftment of the rural economy in West Bengal.

2.8.1 Role of Dairy Sector in State Economy of West Bengal

Dairying is an important and integral part of the rural economy of West Bengal. It has been playing a significant role in boosting the agrarian economy of the state. It is one of the main subsidiary sources of livelihood in rural area of the state. Thus, this sector plays a vital role in the livelihood of the rural people as well as rural economy of the state. It has significant impact on employment as well as income generation for marginal and sub-marginal farmers and landless labourers in West Bengal. However, organized dairying is yet to achieve its full potential in the state. Cattle and especially bullocks are the primary source of draught power required for the agricultural operations as well as rural transportation. Milch animals are the main origin of the milk requirements of the human beings. Thus, cattle and milch animals provide essential foods like milk and meat. Large quantities of animal by-products are also generated by these animals. Bullocks and milch animal are the main support of agricultural operations and also a major source of supplementary income to the marginal and small farmer and landless agricultural labourers. On the other hand, the by-products of agricultural produce happen to be the chief ingredients of food for cattle and milch animals. Farmers are in a position to follow animal husbandry and dairying as an adjunct to cultivation. The requisite labour for keeping dairy animals is also available from within the farmer's family. A very large portion of female labour force of cultivator households which otherwise have suffered from disguised unemployment, gets self-employment in several occupations allied to cattle and buffalo rearing.

Milch animal-holders feed and nourish dairy animals with crop residuals and agriculture by-products available with them. But the dairy cooperatives have been able to procure only around 5.4 per cent of the marketable surplus milk of the state against around 16 per cent procurement of the marketable surplus milk by dairy cooperatives in India. This indicates the utilization of a large amount of marketable surplus milk by the unorganized sector for conversion into traditional products, predominantly *chhana*. The *chhana* industry of West Bengal is as old as Bengali food culture. Nineteenth century renaissance of Bengal played a major role in the growth of *chhana* based sweet industry. Enterprising skills combined with business acumen provided impetus for a century old industry. However, till date the industry is purely in the hands of unorganized sector. In the present globalized economy which is hindering the growth of the sector.

The capital city of Kolkata is the major market of *chhana*. The *chhana* consumed by the sweetshops of the city is either manufactured in-house or obtained from the local *chhana* markets or supplied by vendors from adjoining districts. Two adjoining districts namely, Hooghly and North 24 Parganas are the major suppliers of *chhana*. The sweet industry of the state is directly providing employment to about 7 lakh people and the downstream *chhana* industry providing about 4 lakh employments. There are about 15,000 sweetshops and five wholesale *chhana* markets in Kolkata.

2.7.2 Trend in Contribution of Dairy in GSDP

Animal husbandry plays an important role in rural economy of West Bengal state. The contribution of Livestock was 4.30 per cent to the state GSDP in 2013-14. On the other hand, the contribution of agriculture to total GSDP was 12.35 per cent. The contribution of agriculture and livestock to total GSDP was estimated to be 16.64 per cent, while contribution of livestock to agriculture and livestock together was nearly 26 per cent. Thus, more than one fourth of the agriculture sector output comes from livestock sector (Table 2.77). The share of GVO from livestock

to agriculture sector has remained between 20.57 to 25.81 per cent with some little fluctuation during the last one and half decade. Livestock contributes more than 20 per cent to the agricultural GDP of West Bengal and is one of the biggest sectors for supporting livelihood in the state. Livestock output at constant prices was reported at Rs. 288.75 billion in 2011-12 (at constant prices), of which milk contributes about 47.15 per cent or Rs. 136.16 billion (Table 2.78).

Table 2.77: Contribution of GVO and GVA to Total GSDP in West Bengal

Sr.	Year	Total GSDP (Rs In Crores)	Contribution of GVO from Agriculture to Total GSDP (%)	Contribution of GVO from Livestock to Total GSDP (%)	of GVO from Agriculture & Livestock to Total GSDP (%)	Contribution of GVO from Livestock to Agriculture & Livestock sector %)
1	1999-00	135376	25.30	6.55	31.86	20.57
2	2000-01	143724	22.55	6.42	28.96	22.16
3	2001-02	157144	23.03	6.19	29.22	21.17
4	2002-03	168000	20.83	6.14	26.98	22.77
5	2003-04	189258	20.55	5.80	26.35	21.99
6	2004-05	208656	18.57	5.75	24.31	23.64
7	2005-06	230245	18.65	5.28	23.93	22.05
8	2006-07	261682	17.69	5.12	22.81	22.45
9	2007-08	299483	17.87	5.32	23.18	22.93
10	2008-09	341942	16.43	5.12	21.55	23.75
11	2009-10	398880	17.25	5.44	22.69	23.98
12	2010-11	460959	16.45	5.12	21.56	23.74
13	2011-12	528316	16.00	5.47	21.47	25.46
14	2012-13	603311	14.51	4.99	19.50	25.60
15	2013-14	706561	12.35	4.30	16.64	25.81

2.8.3 Planwise Outlay and Expenditure under Dairy Development in WB

Livestock sector has been making rapid strides and spectacular growth in recent time, with positive impact on the lives of rural people mainly small farmers, marginal farmers and agricultural landless labours by raising their living standards considerably. The State Government policy has been providing necessary support for dairy development in the state through cooperative sector. Table 2.79 gives details regarding plan-wise outlay and expenditure on animal husbandry and dairy development by the Government of West Bengal (excluding central assistance and fund).

Table 2.78: Value of Output (Agriculture and Livestock) in West Bengal

Item	Value of Output: Agriculture and Livestock in West Bengal							
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Value of Output at Current Prices (Rs. billion)								
Agriculture & Allied*	621.81	668.82	731.20	846.16	911.45	1113.24	1218.31	1392.82
Agriculture	387.41	429.50	462.83	535.12	561.96	688.05	758.05	845.43
Livestock	119.91	121.52	133.96	159.18	175.02	217.01	236.00	288.75
Share of Value of Output to Agriculture and Allied* (%)								
Agriculture	62.30	64.22	63.30	63.24	61.66	61.81	62.22	60.70
Livestock	19.28	18.17	18.32	18.81	19.20	19.49	19.37	20.73
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12*
Value of Output at Constant Prices (Rs. billion) (2004-05 & 2011-12)								
Agriculture & Allied*	621.81	627.89	646.38	690.16	669.25	722.15	713.68	1392.82
Agriculture	387.41	384.89	390.58	415.23	410.04	441.46	431.23	845.43
Livestock	119.91	122.42	125.57	136.70	132.65	137.65	143.15	288.75
Share of Value of Output to Agriculture and Allied* (%)								
Agriculture	62.30	61.30	60.43	60.16	61.27	61.13	60.42	60.70
Livestock	19.28	19.50	19.43	19.81	19.82	19.06	20.06	20.73
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Value of Livestock Output at Current Prices (Rs. billion)								
Milk	56.98	58.50	62.70	71.36	82.24	100.37	105.03	136.16
Meat	44.75	47.42	50.34	65.05	66.91	80.70	88.19	111.15
Egg	4.51	4.73	4.98	5.49	6.51	10.09	11.96	14.03
Dung	10.03	10.77	11.37	12.08	12.52	16.87	19.96	21.14
Others^	3.61	4.08	4.56	5.18	6.82	8.96	10.84	6.26
Share of Livestock Output at Current Prices (%)								
Milk	47.52	48.14	46.81	44.83	46.99	46.25	44.50	47.15
Meat	37.32	39.02	37.58	40.87	38.23	37.19	37.37	38.49
Egg	3.76	3.89	3.72	3.45	3.72	4.65	5.07	4.86
Dung	8.36	8.86	8.49	7.59	7.15	7.77	8.46	7.32
Others^	3.01	3.36	3.40	3.25	3.90	4.13	4.59	2.17
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12*
Value of Livestock Output at Constant Prices (Rs. billion) (2004-05 & 2011-12)								
Milk	56.98	58.08	59.42	60.90	62.24	64.08	66.62	136.16
Meat	44.75	45.63	46.78	55.76	50.03	51.94	53.70	111.15
Egg	4.51	4.63	4.75	4.78	4.79	5.36	5.79	14.03
Dung	10.03	10.17	10.32	10.48	10.64	10.81	10.99	21.14
Others^	3.61	3.88	4.27	4.76	4.94	5.45	6.03	6.26
Share of Livestock Output at Constant Prices (%)								
Milk	47.52	47.44	47.32	44.55	46.92	46.55	46.54	47.15
Meat	37.32	37.27	37.25	40.79	37.72	37.73	37.51	38.49
Egg	3.76	3.78	3.78	3.50	3.61	3.89	4.04	4.86
Dung	8.36	8.31	8.22	7.67	8.02	7.85	7.68	7.32
Others^	3.01	3.17	3.40	3.48	3.72	3.96	4.21	2.17

Notes: *at 2011-12 price; P: Provisional Estimates, Q: Quick Estimates, *Includes Livestock, Forestry & Fisheries, ^Includes Wooland Hair, Silk worm Cocoons & Honey, Increment in Stock

Source: Statewise estimate of Value of Output (Ag & Allied) with base year 2004-05 & 2011-12, MoSPI, GoI.

Table 2.79: Plan-wise Outlay and Expenditure in WB

Sr. No.	Plan Period	Outlay (Rs. In Lakh)			Expenditure (Rs. In Lakh)		
		Animal Husbandry (Revised)	Dairy Development (Revised)	Total	Animal Husbandry	Dairy Development	Total
1	IV FYP (1969 to 1974)	457.49	390.13	847.61	451.67	327.25	778.92
2	V FYP (1974 to 1978)	-	1368.00	1368.00	475.00	334.00	809.00
3	AP (1978-79 to 1979-80)	Sector wise figure not available					
4	VI FYP (1980-1985)	4400.00 (AH+Dairy)		4400.00	2148.42 (AH+Dairy)		2148.42
5	VII FYP (1985- 1990)	3630.00	1845.00	5475.00	2439.00	798.00	3237.00
6	AP(1990-91)	-	-	-	467.94	172.95	640.89
7	AP (1991-92)	-	-	-	246.89	76.83	323.72
8	VIII FYP (1992-97)	5325.79	1874.21	7200.00	1218.32	335.36	1553.68
9	IX FYP (1997-98 to 2001 -02)	6190.00	2449.00	8639.00	6518.42	2053.69	8572.11
10	X FYP (2002-03 to 2006-07)	11033.27	3214.85	14248.12	3704.43	1387.37	5091.80
11	XI FYP (2007-08 to 2011- 12)	27828.00	1051.00	28879.00	26079.13	2179.41	28258.54
12	AP (2012-201 3)	1221.50 (5 yrs outlay)	78.60 (5 yrs outlay)	1300.10 (5 yrs outlay)	299.44	94.94	394.38
13	AP (2013-2014)	-	-	-	298.67	95.74	394.41
14	AP (20 14-201 5)	-	-	-	335.69	117.31	453.00
15	AP (2015-201 6)	-	-	-	-	-	-

Source: Statistical Abstract 2014, Govt. Of West Bengal

This table shows that there has been consistent increase in the plan provision for animal husbandry and dairy development. The proportion of plan expenditure in the plan provision has also been increasing with up and down pattern. This has led to increase in number of milch animals, milk production and qualitative improvement in milch animals. The outlay and expenditure on dairy development has also increased over the period of time. However, percentage share of expenditure on dairy development to total expenditure has declined considerably. As compared to around 41.29 per cent share of total expenditure on dairy development during 1974-1978, it has declined to 10.69 per cent during the period of 2002-03 to 2011-12. The proportion of expenditure to outlay on dairy development was much better during the corresponding period, which was recorded for the period from 2012-13 to 2014-15, to be around 4 times than the allotment of Rs. 78.60 lakh for the period of 12th FYP.

2.8.4 Composition of Livestock in West Bengal State

West Bengal state possesses a remarkable position in the country so far as livestock wealth and development are concerned. The 19th Livestock Census (2012) of India has placed total livestock population at 512.06

million, out of which, 30.35 million livestock (5.93 %) population was in West Bengal. There is a decrease in livestock population over 2007 to 2012 from 36.60 million to 30.35 million registering a negative growth of 17.09 per cent in the total number of animals of various species (Table 2.80). The state accounts for 8.65 per cent share in cattle population, 0.55 per cent of buffalo population, 1.65 per cent sheep population and 8.51 per cent goat population of the country.

Table 2.80: Growth of the Livestock in West Bengal and India

Sr. No	Livestock Census Year	Total Livestock (000)		% Share of WB to All India	% Growth of WB State between two Census
		All India	West Bengal		
1	1951	292784	-	-	-
2	1956	306615	-	-	-
3	1961	336432	17535	5.21	-
4	1966	344111	19410	5.64	10.69
5	1972	353338	18721	5.30	- 3.55
6	1977	369525	24134	6.53	28.91
7	1983	419588	28948	6.90	19.95
8	1987	445285	30842	6.93	6.54
9	1993	470830	33786	7.17	9.54
10	1997	485385	35958	7.41	6.43
11	2003	485002	32039	6.60	- 10.90
12	2007	529698	36604	6.91	14.25
13	2012	512057	30348	5.93	- 17.09

Note: Figures without Dog & Rabbit.

Among the species, Cattle contributes highest share (54.42 per cent) in total livestock population followed by Goat (37.91%), Sheep (3.54 %), Pigs (2.13%) and Buffaloes (1.97 %), besides marginal contribution is attributed by other livestock species such as Horses and Ponies, Mules, Donkeys, Yaks, etc. (Table 2.81). However, over the period, share of cattle population in total livestock population has declined from 65.45 per cent in 1961 to 54.42 per cent in 2012. The share of buffalo population has also decreased considerably (5.62% to 1.97%). In absolute term, the rate of cattle population increases by 43.90%, while the rate of buffaloes population decreases by 39.45 %. Total livestock population in West Bengal has increased by 73.07 per cent during last five decades period).

Table 2.81: Species-wise Livestock Population in West Bengal

Sr. No.	Particulars	West Bengal -2012 (000)				India 2012	
		Livestock-2012 (000)	% share in India	% share in total Livestock	Rank in All India	Livestock-2012 (000)	% share in Total Livestock
1	Cattle	16514	8.65	54.42	3	190904	37.28
2	Buffaloes	597	0.55	1.97	11	108702	21.23
3	Sheep	1076	1.65	3.54	10	65069	12.71
4	Goats	11506	8.51	37.91	4	135173	26.40
5	Pigs	648	6.29	2.13	5	10294	2.01
6	Horses & Ponies	4	0.64	0.01	14	625	0.12
7	Mules	Negligible	0.1		13	196	0.04
8	Donkeys			12	319	0.06	
9	Camel	-	-		-	400	0.08
10	Yaks	1	1.30	0.003	5	77	0.02
11	Mithun	-	-		-	298	0.06
	Others	2	Negligible	0.006			
12	Total	30348	5.93	99.99	7	512057	100.00

Note: Figures without Dog & Rabbit.

Source: Directorate of Animal Resource & Animal Health, GoWB, 19th Livestock Census, 2012

The district-wise share in total state livestock population figures (Table 2.82) indicate that Medinipur (East + West) district has the highest number of livestock population (16.98 %). The major districts, viz. Medinipur (East + West), Burdwan (East + West), Bankura, Murshidabad, Birbhum, Maldah, Jalpaiguri + Alipur district, Hooghly and South 24 Parganas together accounted for 68.68 percent of total livestock population in the state. Medinipur East and West district jointly has the highest percentage share of cows (64.62%). The highest percentage share of indigenous cattle and crossbred cattle was found in Howrah (67.81%) and Darjeeling district (23.21%) respectively. The existences of maximum percentage share of buffalo was observed in Kolkata district (9.57%) Table 2.83). As per density per square kilometre in 2012, highest animal density was recorded in Hooghly district followed by Howrah (Table 2.66). India has a total 137 breeds of domesticated animals, of which only a few breeds, including some internationally recognised ones, are available in West Bengal. The State has some high-quality and high-yielding breeds of cattle and buffaloes. Sahiwal, Gir, Jersey and Holstein Friesian breeds in cows, and Murrah breed in buffaloes were known for their high milk yielding capacity. The Jersey breed is found in all over the state of West Bengal. But till today, indigenous breeds are predominant in the state.

Table 2.82: Districtwise Share in Livestock Population in WB

District	District wise share of animals in Total livestock population in WB State-2012								
	Crossbred	Indigenous	Total Cow	Buffalo	Total Sheep	Goat	Others	Total Pigs	Horses & Ponies
Bankura	6.34	52.46	58.80	2.87	3.44	32.59	2.30	0.17	-
Burdwan (E&W)	9.89	42.18	52.07	3.57	4.43	37.19	2.75	0.25	-
Birbhum	4.29	44.63	48.92	2.98	8.40	38.12	1.59	0.10	-
South Dinajpur	2.03	48.72	50.75	0.71	0.77	44.45	3.32	0.10	-
North Dinajpur	4.37	50.33	54.70	1.24	0.19	42.07	1.80	0.08	-
Darjeeling	23.21	25.47	48.68	0.63	0.49	39.40	10.80	0.16	-
Howrah	6.63	67.81	74.44	0.71	0.05	24.68	0.13	0.002	-
Hooghly	14.25	47.19	61.44	1.54	0.04	35.59	1.39	0.07	-
JalpaiguriAlipurduar	6.32	51.69	58.01	0.54	1.58	34.26	5.62	0.30	-
Cooch Behar	4.81	58.92	63.73	0.27	6.35	28.35	1.30	0.06	-
Kolkata	17.59	13.89	31.48	9.57	0.21	46.40	12.35	0.004	0.002
Maldah	5.58	36.63	42.21	2.18	2.18	50.41	3.01	0.18	
Murshidabad	18.43	25.51	43.94	2.54	2.83	50.12	0.58	0.05	0.002
Nadia	22.04	28.74	50.78	1.20	0.76	46.41	0.84	0.04	0.005
South 24 Pgs	17.17	30.64	47.81	2.44	3.65	44.49	1.61	0.05	-
North 24 Pgs	4.06	47.80	51.86	0.38	6.33	40.33	1.10	0.07	-
Medinipur	10.49	54.13	64.62	1.55	2.07	30.27	1.50	0.25	-
Purulia	0.72	44.02	44.74	4.02	11.77	36.37	3.10	0.19	-
WB State	9.21	45.21	54.42	1.97	3.54	37.91	0.006	2.13	0.01

Source: Directorate of Animal Resource & Animal Health, GoWB; Statistical Abstract 2014

Table 2.83: District-wise Livestock and Bovine Density in WB

Districts	Livestock (No. per sq km)					Bovine (No. per sq km)				
	1994*	1997	2003	2007	2012	1994	1997	2003	2007	2012
Bankura	331	353	389	384	330	210	219	215	240	208
Burdwan (E&W)	407	435	511	489	381	247	259	265	264	218
Birbhum	436	462	533	519	422	232	240	243	264	223
South Dinajpur	362	385	418	466	432	217	225	220	268	230
North Dinajpur	380	406	484	495	426	212	219	261	266	243
Darjeeling	164	176	223	173	131	77	80	71	94	73
Howrah	495	530	592	367	404	315	331	328	239	304
Hooghly	581	622	716	576	487	334	349	351	333	311
JalpaiguriAlipurduar	211	224	294	265	248	128	132	152	165	154
Cooch Behar	517	553	630	502	401	292	303	278	312	260
Kolkata	323	359	394	243	69	103	117	91	39	32
Maldah	727	793	381	486	465	182	191	193	210	213
Murshidabad	466	502	580	661	404	204	215	258	264	189
Nadia	573	616	687	478	372	266	277	282	228	195
South 24 Pgs	241	256	318	225	151	118	122	135	112	80
North 24 Pgs	538	576	686	454	327	304	319	341	241	167
Medinipur (E&W)	316	340	404	418	360	223	231	251	274	242
Purulia	326	334	387	342	289	175	166	168	167	146
WB State	381	408	454	413	335	207	215	225	225	193

*Note: Data for 1992 is not available in WB

Source: NDDDB: Statistical Abstract 2014: Directorate of Animal Resource & Animal Health, GoWB

2.8.5 Growth in Milk Production and Productivity in WB

West Bengal is a state in the eastern India. Milk production in this state has been improving considerably due to the efforts of the Operation Flood Projects. But the per capita availability is far below from the other improved states like Haryana, Punjab, etc. The main reason behind this is lack of high milk producing milch animals. Most of the animals in West Bengal are Zebu cattle i.e. non descriptive cow whose productivity is very low. In order to improve the productivity of Bengal desi cow, Artificial Insemination (AI) with frozen semen of quality breeds is being extensively carried out. The entire breedable cow population in the state is being tried to be brought under the coverage of AI at the Gram Panchyat (GP) level. Moreover co-operative unions are also responsible for performing AI under their care. They also supply feed, fodder seeds etc. to the beneficiary farmers which in turn help to improve the milk production of the state. In fact, the numbers of initiatives were taken by the government which could help in improving the milk productivity over the period.

The milk production has increased from 35 lakh tonnes in 2000-2001 to 49.6 lakh tonnes in 2014-15 registering a growth of 41.71 per cent over base year. The milk production in the state has been increasing continuously. As a result, the per capita availability of milk in the state increased from 116 gms/day in 2000-01 to 145 gms/day in 2014-15 (Table 2.84). Out of total milk production, about 47.98 per cent of the milk production is contributed by Indigenous cow followed by 44.35 per cent by Crossbred cow. The buffalo contribute 4.64 per cent of the total milk production in the state whereas Goat contributes 3.02 per cent to total milk production. The productivity of cows and buffalo in term of daily milk yield is increasing continuously. Despite of increase in milk yield, there is still a wide scope for improving milk yield of milch animals.

Out of total bovine milk production in 2015-16, 62.32 per cent share accounts for Indigenous cattle, 32.79 per cent share accounts for Crossbred cows and remaining 4.89 per cent was of Buffalo breed. The significant growth in population of in milk bovine animals supported by increase in milk yield of bovine animals which has increased (bovine milk

production) by 21.23 per cent in 2015-16 over 2002-03. The share of cross bred cows in total milk production has increased while share of indigenous cows and buffalo has declined during last one and half decade. The corresponding share was 66.75 per cent, 28.19 per cent and 5.06 per cent respectively in 2000-01.

Table 2.84: Milk Production in West Bengal: 2000-01 to 2015-16

Sr. No	Year	Milk Production in million tones					Growth of Milk Production (%) over base year	Per Capita availability (gms/day)	
		In milk Cow		In Milk Buffalo	In milk Bovine	In Milk Goat			Total
		Indigenous	C.B.						
1	2000-01	3.10		0.30		0.10	3.50	-	116
2	2001-02						3.51	0.29	120
3	2002-03	2.22	0.96	0.30	3.48	0.12	3.60	2.86	121
4	2003-04	2.26	1.01	0.30	3.57	0.12	3.69	5.31	122
5	2004-05	2.32	1.06	0.29	3.67	0.12	3.79	8.29	124
6	2005-06	2.38	1.09	0.30	3.77	0.12	3.89	11.17	125
7	2006-07	2.19	1.44	0.25	3.88	0.11	3.98	13.77	126
8	2007-08	2.24	1.49	0.24	3.97	0.11	4.08	16.49	128
9	2008-09	2.28	1.54	0.25	4.07	0.11	4.18	19.31	129
10	2009-10	2.12	1.83	0.22	4.17	0.13	4.30	22.83	131
11	2010-11	2.19	1.92	0.22	4.33	0.14	4.47	27.74	135
12	2011-12	2.28	2.02	0.22	4.51	0.15	4.66	33.11	139
13	2012-13	2.36	2.12	0.23	4.71	0.15	4.86	38.80	144
14	2013-14	2.36	2.16	0.24	4.75	0.15	4.91	40.14	144
15	2014-15	2.38	2.20	0.23	4.81	0.15	4.96	41.69	145
16	2015-16	3.06	1.61	0.24	4.91	-	-	-	-

Source: Dept. of Animal Husbandry, Dairying & Fisheries, GoI; Annual Administrative Report, ARD Dept.

Medinipur East and West district jointly are the highest milk producing district in the state with an estimated milk production of about 903 thousand tonnes during 2015-16 accounting 18.40 percent of total milk production in the state. Burdwan East and West district jointly is the second largest producer of milk with an estimated share of about 11.15 percent, followed by Murshidabad (7.76 %), Bankura (7.17%) and Nadia (6.48%). The top thirteen districts together contributes about 77.22 per cent of milk production of the state, those are Bankura, Burdwan (E & W), Birbhum, Howrah, Hooghly, Jalpaiguri + Alipurduar, Murshidabad, Nadia, North 24 Parganas and Medinipur (E & W). Category-wise share of milk production in West Bengal clearly indicate that top ranked milk producer nine districts in West Bengal are dominated by the production of milk by Indigenous cows, followed by Crossbred, Buffalo and Goat (Table 2.85).

Table 2.85: Districtwise & Categorywise Share of Milk Production in WB

Name of the District	District wise & category wise Percentage share of Milk Production in WB (2014-15)					
	% share of Crossbred Cow	% share of Indigenous Cow	% share of Total Cattle	% share of Buffalo	% share of Goat	% share of Total Milk Production
Medinipur (E&W)	15.75	18.09	16.97	5.53	13.29	16.32
Burdwan (E&W)	10.10	13.16	11.69	23.71	11.62	12.25
Murshidabad	14.94	5.31	9.94	8.47	9.01	9.84
Nadia	12.72	4.78	8.60	2.11	3.80	8.15
Hooghly	9.58	6.23	7.84	9.46	5.22	7.84
North 24 Pgs	8.85	4.64	6.67	25.41	4.08	7.47
Bankura	4.06	6.68	5.42	4.53	8.29	5.47
Maldah	3.79	5.96	4.92	4.34	7.03	4.95
Howrah	1.61	7.61	4.72	2.80	1.41	4.53
Jalpaiguri+Alipurduar	3.58	4.42	4.02	1.22	3.36	3.86
Birbhum	2.71	4.15	3.46	3.23	9.86	3.64
South 24 Pgs	1.72	4.84	3.34	2.26	3.23	3.29
Darjeeling	5.07	1.82	3.38	1.01	1.49	3.21
North Dinajpur	2.12	3.76	2.97	2.46	5.68	3.03
Cooch Behar	2.11	4.02	3.10	0.31	2.39	2.95
South Dinajpur	0.70	2.95	1.87	0.07	2.77	1.81
Purulia	0.40	1.52	0.98	2.13	7.43	1.23
Kolkata	0.18	0.06	0.12	0.96	0.05	0.16
WB State	100.00	100.00	100.00	100.00	100.00	100.00

Source: NDDB, Kolkata

The highest milk yield was recorded in buffalo followed by cross breed cows. The highest bovine milk yield is recorded in Darjeeling district (5.9 kg/day) and the lowest was in Purulia district (1.1 kg/day). In case of indigenous cows, highest milk yield was recorded in Kolkata district (5.0 kg/day) and the lowest was in Purulia (0.9 kg/day). Among the species, the highest milk yield was recorded in cross breed cows in Darjeeling district (6.5 kg/day) and the lowest was in Purulia district (4.3 kg/day). Kolkata district was the top rank district in case of buffalo yield (6.7 kg/day) while same was recorded lowest in Purulia district (2.4 kg/day). The highest milk density is recorded in Hooghly (437 kg/day/sqkm) and at the same time highest per capita milk availability is also recorded in Hooghly district (248 gm/day).

2.8.6 Milk Consumption and Marketable Surplus in WB

On the basis of availability of data on milk utilisation pattern in West Bengal, it has been found that out of total production of milk at home, about 57 per cent was sold, while 39 per cent milk was consumed at the home and remaining 4 per cent milk was converted into milk products in 2009-10. The share of quantity of milk sold and converted in to milk product has been increased to 65 and 22 per cent respectively in 2014-15

over 2009-10, while share of consumption of milk declined to 22 per cent during the same period (Table 2.86).

Table 2.86: Milk Utilisation Pattern in Households in West Bengal

Item	Milk Utilisation Pattern in Households in West Bengal				
	2009-10	2011-12	2012-	2013-14	2014-15
Quantity sold (%)	57	56	57	57	65
Converted into milk products (%)	4	5	4	5	13
Consumed at home (%)	39	38	39	38	22

Source : NDDDB (Kolkata); Directorate of Animal Husbandry, Govt. of West Bengal.

2.8.7 Status of Availability of Feed and Fodder in WB

As against the estimated animals' requirements of dry matter, feed resources available in West Bengal are lower. In the last almost one and half decade (1997 to 2011), shortage of dry matter in the State reduced from 57.86 per cent of the requirement to 46.91 per cent (Table 2.87). Green fodder is a comparatively economical source of nutrients. However, the availability of green fodder is too lower than estimated requirement in West Bengal. The estimation in 2007-08 regarding area under fodder crops indicated that only 0.04 per cent area (3600 ha) to the gross sown area of 9752 thousand ha was under fodder cultivation in West Bengal. Murshidabad district had the largest area under fodder crops followed by Nadia, Hooghly, Birbhum and Cooch Behar district. In West Bengal, there is absence of regulated and organized fodder market. Small scale marketing of fodder exists in all rural areas of the state where fodder are sold by producers to traders or directly to the consumers. In rural areas, farmers having surplus fodder sell some quantity to needy cattle owners. Generally, demand for green and dry fodders in a village is met from within village. While green fodder is available from crops like lucerne, bajra, maize and sorghum, the sources of dry fodder are crop-residues and by-product of cereals and pulses crops. Farmers bring head loads or cartloads of fodder from their fields to the village. Normally, surplus green fodder is sold as standing crop on area basis. Surplus dry straw is sold either in bundles or weight basis in the village to needy cattle owners. Natural grass is abundantly available from during the month of September

to October when grass is harvested. Generally, grass producers sell their grass soon after the harvest to needy farmers. Grass being a bulky and less remunerative product, producers sell it just after harvest.

Table 2.87: Dry matter Availability, Requirement & Surplus/Deficit in WB

Year	Dry matter Availability, Requirement & Surplus/Deficit in WB (000MT)		
	Availability	Requirement	Deficit/Surplus
1997	17,049	40,462	-23,413
2003	27,519	46,308	-18,789
2007	29,344	45,855	-16,511
2008	30,025	46,437	-16,412
2009	30,025	47,347	-17,322
2010	28,165	48,627	-20,462
2011	26,719	50,327	-23,608

Source: NDDDB, Kolkata

2.8.8 Infrastructure Development

The milk co-operatives in West Bengal have developed modern systems of veterinary care and artificial insemination and provide these services to a large number of milk producers at very low prices. The district co-operatives have vans equipped with a trained veterinary surgeon and medicines stationed in different centres to cater to the needs of the members of the cooperatives. The special emphasis on development of dairy infrastructure was given during the Operation Flood movement. For veterinary Services, 110 State Animal Health Centre (SAHC) & District Veterinary Hospital (DVH), 341 Block Animal Health Centre (BAHC), 273 Additional Block Animal Health Centre (ABAHC), 3248 Animal Development Aid Center (ADAC) and 5744 AI Centre (AIC) are working at present. Still these facilities are not available in the interior villages. The state has no any facility for Mobile Animal Health Centre.

Table 2.88: Veterinary Infrastructure and Manpower in West Bengal

Year	No. of Veterinary Institutions	No. of Veterinarians	Cattle Equivalent Units/ Veterinary Institution	Cattle Equivalent Per Veterinarian
2010-11	8440	6538	-	-
2011-12	9716	7168	-	-
2012-13	9716	6770	-	-
2013-14	9102	-	-	-
2014-15	9014	-	-	-

Note: Data of "No. of Veterinarians" for the year 2013-14 & 2014-15 is not available.

Source: State Statistical Hand Book 2015 (Vet. Instn) & District Statistical Hand Book 2013 (Vetn), GoWB

In case of Cattle Breeding Farm, state has 7 Breeding Farms in Haringhata, Kurseong, Salboni, Suri, Kharagpur, Kalyani, and Beldanga.

These Breeding Farms are operating since 1990-91. Besides state has 27 Poultry Breeding Farms. The details about the infrastructure in West Bengal is presented in Tables 2.88 to 2.90.

Table 2.89: Growth in Infrastructure facilities for Animal Husbandry in WB

Year	Growth in Infrastructure facilities for Animal Husbandry in West Bengal (Nos)							
	SAHC + DVH	BAHC	ABAHC	ADAC	MAHC	AIC (including PB+Coop)	Breeding Farms	
							Cattle	Poultry
1990-91	110	341	270	620	82	114	7	-
2000-01	110	341	271	2147	-	3512	7	-
2010-11	110	341	271	3248	5	4465	7	26
2011-12	110	341	273	3248	-	5744	7	26
2012-13	110	341	273	3248	-	5744	7	27

Source: Statistical Abstract 2014 & District Statistical Hand Book 2013, Govt. of WB.

Table 2.90: District wise Number of Veterinary Institutions in WB (2012-2013)

Sr. No.	District	SAHC + DVH	BAHC	ABAHC	ADAC	MAHC	AIC (including PB+Coop)	Total Vet. Insti.
1	Bankura	5	22	22	190	-	343	582
2	Burdwan (E&W)	11	31	20	277	-	473	812
3	Birbhum	7	19	17	167	-	276	486
4	South Dinajpur	2	8	8	65	-	133	216
5	North Dinajpur	3	9	9	99	-	187	307
6	Darjeeling	6	10	7	22	-	69	114
7	Howrah	3	14	11	157	-	254	439
8	Hoogly	5	18	17	210	-	386	636
9	Jalpaiguri	6	13	13	148	-	240	420
10	Cooch Behar	6	14	10	128	-	220	378
11	Kolkata	1						1
12	Maldah	4	15	15	147	-	252	433
13	Murshidabad	8	26	17	255	-	545	851
14	Nadia	9	17	16	187	-	404	633
15	South 24 Pgs	6	29	20	312	-	410	777
16	North 24 Pgs	6	22	16	200	-	397	641
17	Medinipur (E&W)	14	54	36	514	-	864	1482
18	Purulia	8	20	19	170	-	290	507
	WB State	110	341	273	3248	-	5744	9716

Source: District Statistical Hand Book 2013, GoWB

2.8.9 State Summary

West Bengal state possesses a remarkable position in the country so far as livestock wealth and development are concerned. The state accounts for 8.65 per cent share in cattle population, 0.55 per cent of buffalo population, 1.65 per cent sheep population and 8.51 per cent goat population of the country. The milk production in the state has increased from 35 lakh tonnes in 2000-2001 to 49.6 lakh tonnes in 2014-15. Out of total production of milk at home, about 57 per cent was sold, 39 per cent milk was consumed at the home and remaining 4 per cent milk was converted into milk products. As against the estimated animals' requirements of dry matter, feed resources available in WB are lower.

2.9 Dairy Development in Gujarat:

Gujarat has been consistently clocking impressive agricultural growth rates. This has been possible because the government has focused on improving not only irrigation, quality of seeds and power but also tertiary sectors like animal husbandry. The growth of the animal husbandry sector has resulted not only in increased milk production but has also provided a boost to the overall agro-economy of the state¹. The livestock sector in Gujarat has achieved a remarkable success over the period due to collective efforts of government organisations, non-government organisation and the milk producers. Gujarat is one of the leading states in terms of milk production. The cooperative sector has been the key driver of the tremendous increase in Gujarat's milk production. It is no surprise that Gujarat, the birthplace of India's white revolution, has a thriving milk cooperative sector. The largest dairy co-operative in India, Amul, is based in Anand, Gujarat. "Amul" pattern is well known and accepted by all the states in our country and some of the other countries also².

2.9.1 Role of Dairy Sector in State Economy of Gujarat:

Animal husbandry has been playing a significant role in boosting the agrarian economy of the state. It is not only a subsidiary source of livelihood in rural Gujarat, it is a major economic activity, especially in the arid and semi-arid regions of the state. Thus, this sector plays a vital role in the rural economy of the state and has significant impact on employment generation for marginal, sub-marginal and landless farmers. Out of about 102 lakhs total household, about 43 lakh families keep livestock in Gujarat as a primary or secondary source of income.

The dairy sector in India has grown substantially over the past years. Gujarat is the leading milk producer in the country with cooperative dairy sector well established. Dairy industry in Gujarat state is well-established at present and is taken as a model for replicating in other states of the country. The dairy sector in the state assumes key

¹ <http://gujaratindia.com/media/news.htm?NewsID=OwAhuSgQW4gO/FwV0lqgsQ==>

² <https://doah.gujarat.gov.in/dairy-development.htm>

importance as it is a business that helps generate the best alternative additional income and employment for poor, rural farmers. Milch animal-holders feed and nourish dairy animals with crop residuals and agriculture by-products available with them. The pace of dairy development in Gujarat was very fast due to assured market, reasonably good prices for milk supplied to the dairy and easy access to all health care services offered by co-operative dairy sector.

2.9.2 Trend in Contribution of Dairy in GSDP in Gujarat

Animal husbandry plays a vital role in Gujarat's rural economy, while contributing 5.32 per cent to the state GSDP in 2013-14, while the contribution of agriculture to total GSDP was 16.83 per cent. The contribution of agriculture and livestock to total GSDP was estimated to be 22.15 per cent, while contribution of livestock to agriculture and livestock together was around 24 per cent. Thus, one fourth of the agriculture sector output comes from livestock sector (Table 2.91). The share of GVO from livestock to agriculture sector has been fluctuating over the last one and half decade and remains between 18-22 per cent. However, the contribution of gross value added from agriculture and livestock to total GSDP has increased from 14.54 per cent in 1999-2000 to 18.57 per cent in 2013-14. Gujarat accounts for 6.53 per cent share in value of output from livestock (at current prices) of country, while its share was 7.98 per cent in total value of output from agriculture and livestock of the country in 2013-14.

Milk contributes to around 20 per cent to the agricultural GDP of Gujarat and is one of the biggest sectors for supporting livelihood in the state. Livestock output at constant prices was reported at Rs. 141 billion in 2011-12 (at constant prices), of which milk contributes about 86 per cent or Rs. 122 billion (Table 2.92).

Table 2.91: Contribution of GVO & GVA from Agriculture and Livestock Sector in Gujarat

Sr. No.	Year	Total GSDP (Rs In Crores)	share of GVO from Ag to Total GSDP (%)	Share of GVO from Livestock to Total GSDP (%)	Share of GVO from Ag & Livestock to Total GSDP (%)	Contribution of GVA from Ag& Livestock to Total GSDP (%)	Share of GVO- Livestock to Ag & livestock sector (%)
1	1999-00	109861	15.4	5.21	20.61	14.54	25.28
2	2000-01	111139	13.14	5.64	18.78	13.28	30.02
3	2001-02	123573	15.11	5.66	20.77	14.74	27.25
4	2002-03	141534	13.39	5.13	18.52	12.79	27.69
5	2003-04	168080	18.03	5.02	23.05	16.44	21.77
6	2004-05	203373	13.76	4.82	18.58	13.15	25.95
7	2005-06	244736	15.37	4.24	19.62	14.43	21.63
8	2006-07	283693	15.11	4.43	19.54	14.83	22.68
9	2007-08	329285	15.23	4.64	19.88	15.51	23.37
10	2008-09	367912	13.11	4.84	17.95	13.89	26.97
11	2009-10	431262	12.73	4.8	17.52	13.61	27.38
12	2010-11	521519	17.23	4.92	22.15	18.03	22.22
13	2011-12	598786	17.38	5.18	22.56	18.53	22.95
14	2012-13	658540	12.93	5.37	18.3	15.41	29.35
15	2013-14	765638	16.83	5.32	22.15	18.57	24.01

Source: GOG (2015).

Table 2.92: Value of Output: Agriculture and Livestock in Gujarat

Item	Value of Output: Agriculture and Livestock in Gujarat							
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Value of Output at Current Prices (Rs. billion)								
Agriculture & Allied*	448	565	644	735	743	859	1274	1464
Agriculture	278	376	421	492	476	549	898	1030
Livestock	99	106	127	156	178	207	257	310
Share of Value of Output to Agriculture and Allied* (%)								
Agriculture	62.1	66.5	65.4	66.9	64.1	63.9	70.5	70.4
Livestock	22.1	18.8	19.7	21.2	24	24.1	20.2	21.2
Value of Output at Constant Prices (Rs. billion) (2004-05)								
Agriculture & Allied*	449	430	494	556	526	513	628	647
Agriculture	278	350	307	361	318	312	424	437
Livestock	99	105	112	118	129	133	134	141
Share of Value of Output to Agriculture and Allied* (%)								
Agriculture	61.9	81.4	62.1	64.9	60.5	60.7	67.6	67.6
Livestock	22	24.4	22.7	21.2	24.5	25.8	21.3	21.8
Value of Livestock Output at Current Prices (Rs. billion)								
Milk	85.8	89.9	107.1	133.1	145.1	169.8	214.4	255.1
Meat	6.4	7.3	10.9	12.1	19.6	18.7	20.3	27.8
Egg	0.8	0.9	1.3	1.6	2.9	3	4	5.1
Dung	4.1	4.6	5	5.3	5.4	5.8	6.1	7.1
Others^	2.5	3	3.4	4.4	5.6	9.6	12	15.1
Share of Livestock Output at Current Prices (%)								
Milk	86.2	85.1	83.8	85.1	81.2	82	83.5	82.2
Meat	6.4	6.9	8.5	7.7	11	9	7.9	9
Egg	0.8	0.9	1.1	1	1.6	1.5	1.6	1.6
Dung	4.1	4.4	3.9	3.4	3	2.8	2.4	2.3
Others^	2.5	2.8	2.7	2.8	3.2	4.6	4.7	4.9
Value of Livestock Output at Constant Prices (Rs. billion) (2004-05)								
Milk	85.8	89.9	94.9	99.5	105.3	110.4	116	121.8
Meat	6.4	7.1	9	9.6	13.8	11.4	6.6	7.1
Egg	0.8	0.9	1.2	1.4	2.1	2.1	2.2	2.4
Dung	4.1	4.3	4.5	4.4	4.4	2.5	2.5	2.7
Others^	2.5	2.8	3.1	3.4	3.5	6.2	6.7	7.2
Share of Livestock Output at Constant Prices (%)								
Milk	86.2	85.6	84.2	84.1	81.5	83.2	86.6	86.3
Meat	6.4	6.7	8	8.1	10.7	8.6	4.9	5
Egg	0.8	0.9	1.1	1.1	1.6	1.6	1.6	1.7
Dung	4.1	4.1	4	3.8	3.4	1.9	1.9	1.9
Others^	2.5	2.7	2.7	2.9	2.7	4.7	5	5.1

Notes: P: Provisional Estimates, Q: Quick Estimates, * Includes Livestock, Forestry & Fisheries, ^ Includes Wool and Hair, Silkworm Cocoons & Honey, Increment in Stock
Source: NDDB (20014), Dairying in Gujarat: A Statistical Profile 2013.

2.9.3 Composition of Livestock in Gujarat

Gujarat State possesses a remarkable position in the country so far as livestock wealth and development are concerned. The Nineteenth Livestock Census (2012) of India has placed total livestock population at 512.1 million, out of which, 27.12 million livestock (5.3 %) population was in the state of Gujarat. The state accounts for 5.23 per cent share in cattle population, 9.55 per cent of buffalo population, 2.62 per cent sheep population and 3.67 per cent goat population of the country. The significant share of donkeys (12.18 %) and camels (7.80 %) in national stock has also been recorded (2012). There is an increase in livestock population over 2007 to 2012 from 23.51 million to 27.12 million (excluding 0.29 million stray cattle) registering a positive growth of 15.36 per cent in the total number of animals of various species (Table 2.3). In fact, the share of the Gujarat in all Indian total stock of livestock has also considerably increased by 0.86 per cent in 2012 over 2007.

Table 2.93: Growth of the Livestock in Gujarat and India

Sr. No	Livestock Census Year	Total Livestock (000)		% Share of Gujarat to All India	% Growth of Gujarat State between two Census
		All India	Gujarat		
1	1951	292784	11977	4.09	-
2	1956	306615	13312	4.34	11.15
3	1961	336432	13454	4.00	1.07
4	1966	344111	14338	4.17	6.57
5	1972	353338	15098	4.27	5.30
6	1977	369525	14406	3.90	-4.58
7	1983	419588	18440	4.39	28.00
8	1987	445285	17343	3.89	-5.95
9	1993	470830	19672	4.18	13.43
10	1997	485385	19939	4.11	1.36
11	2003	485002	21671	4.47	8.69
12	2007	529698	23515	4.44	8.51
13	2012	512057	27128	5.30	15.36

Note: Figures without Dog & Rabbit.

Source: GOI (2016) & GOG (2017).

As per Livestock Census 2012, among the species, buffalo contributes highest share (38.28 per cent) in total livestock population followed by Cattle (36.80%), Goat (18.28 %) and Sheep (6.30 %), besides marginal contribution is attributed by other livestock species such as Camel, Mules, Donkeys, Horses and Ponies (Table 2.94). The females

among the indigenous cattle, crossbred and buffalo population numbered 5.03 million, 1.73 million and 9.6 million, respectively. There is an increase of 15.36 per cent in livestock population in 2012 over 2007. The highest growth in population was recorded in cattle population (25.18 %) followed buffalo (18.37 %) and goat (6.88 %), while sheep population registered decline (14.69 per %).

Table 2.94: Species-wise Livestock population in Gujarat

Sr. No.	Particulars	Gujarat -2012				India 2012	
		Livestock-2012	% share in India	% share in total Livestock	Rank in All India	Livestock-2012	% share in Total Livestock
1	Cattle	9984	5.23	36.80	9	190904	37.28
2	Buffaloes	10386	9.55	38.29	4	108702	21.23
3	Sheep	1708	2.62	6.30	7	65069	12.71
4	Goats	4959	3.67	18.28	12	135173	26.40
5	Pigs	4	0.04	0.01	29	10294	2.01
6	Horses & Ponies	18	2.88	0.07	9	625	0.12
7	Mules	0	0.0	0.00	-	196	0.04
8	Donkeys	39	12.23	0.14	3	319	0.06
9	Camel	30	7.5	0.11	2	400	0.08
10	Yaks	0	0	0.00	-	77	0.02
11	Mithun	0	0	0.00	-	298	0.06
12	Total Livestock	27128	5.3	100.00	9	512057	100.00

Note: Figures without Dog & Rabbit.

Source: GOI (2016) & GOG (2017).

However, over the period, share of cattle population in total livestock population has declined from 44.6 per cent in 1951 to 36.8 per cent in 2012, while share of buffalo population has increased considerably (21% to 38.3%) during corresponding period. In absolute term, the rate of increase in buffaloes population (313 %) is much faster as compared to rate of increase in cows population (87 %). In case of small ruminants, sheep population has increased by 8.6 per cent while goat population declined by 6 per cent in 2012 over 1951. Total livestock population in Gujarat has increased by 127 per cent during last six decades period (Table 2.95).

The district-wise share in total state livestock population figures (Table 2.96) indicate that Banaskantha (9.38 %) has the highest number of livestock population followed by Panchmahal (7.41%), Kachchh (7.14%), Sabarkantha (6.8%), Dahod (6.41%) and Vadodara (6.13%). These six

districts together accounted for 44 percent of total livestock population in the state in 2012.

Table 2.95: Growth in Livestock Population in Gujarat- 1951 to 2012

Sr. No.	Year	Cattle		Buffalo		Sheep		Goat		Total Livestock	
		Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)
1	1951	5345	-	2514	-	1574	-	2326	-	11977	-
2	1956	6055	13.28	2640	5.01	1744	10.80	2606	12.04	13312	11.15
3	1961	6557	8.29	2917	10.49	1481	-15.08	2223	-14.70	13454	1.07
4	1966	6544	-0.20	3140	7.64	1652	11.55	2771	24.65	14338	6.57
5	1972	6457	-1.33	3468	10.45	1722	4.24	3210	15.84	15098	5.30
6	1977	6006	-6.98	3473	0.14	1592	-7.55	3084	-3.93	14406	-4.58
7	1982	6994	16.45	4443	27.93	2357	48.05	3300	7.00	18440	28.00
8	1988	6240	-10.78	4502	1.33	1559	-33.86	3584	8.61	17343	-5.95
9	1992	6803	9.02	5268	17.01	2027	30.02	4241	18.33	19672	13.43
10	1997	6749	-0.79	6285	19.31	2158	6.46	4386	3.42	20970	6.60
11	2003	7424	10.00	7140	13.60	2062	-4.45	4541	3.53	21655	3.27
12	2007	7976	7.44	8774	22.89	2002	-2.91	4640	2.18	23515	8.59
13	2012	9984	25.18	10386	18.37	1708	-14.69	4959	6.88	27128	15.36

Note: GR- Growth rate over previous year.

Source: GOG (2017).

Banaskantha has the highest number of in-milk buffaloes and cows followed by Sabarkantha and Mehsana district. Sabarkantha has the highest number of in-milk crossbreds and Kachchh, the highest in in-milk indigenous cattle. In-milk indigenous cattle like Gir are predominantly spread across Saurashtra region covering Rajkot, Junagadh and Bhavnagar districts of Gujarat, whereas Kankrej are found mostly in northern Gujarat and Kachchh region. The highest livestock and bovine animal density was recorded in Dahod (Table 2.97).

India has a total 137 breeds of domesticated animals, of which about 18 breeds, including some internationally recognised ones, are available in Gujarat. The State has high-quality, high-yielding breeds of cattle and buffaloes (Table 2.98). Gir and Kankrej breeds in cows, and Mehsani, Jafarbadi and Surti breeds in buffaloes were known for their high milk yielding capacity. Gir and kankrej breeds are dual purpose breeds. The Gir breed is found in Amreli, Bhavnagar, Junagadh, Jamnagar, Rajkot and Surendranagar districts. In rest of the districts of Gujarat, Kankrej breed is found along with a Non-descriptive breed of the total number of buffaloes. The Surti breed is found in Bharuch, Kheda, Surat, Vadodara,

Panchmahal etc, whereas the Mehsani breed is found in Mehsana, Sabarkantha, Banaskantha and Ahmedabad.

Table 2.96: District wise share of Animals in Total Livestock Population in Gujarat

District	District wise Percentage share of animals in Total livestock population in Gujarat-2012										
	Crossbred	Indigenous	Total Cow	Buffalo	Total Sheep	Goat	Total Pigs	Horses & Ponies	Mules	Donkey	Camel
Ahmedabad	2.15	28.56	30.71	48.80	2.05	17.83	0.14	0.16	0.00	0.20	0.10
Amreli	0.68	39.09	39.77	30.05	12.95	17.02	0.00	0.16	0.00	0.05	0.00
Anand	13.37	13.79	27.15	62.40	0.65	9.03	0.00	0.03	0.00	0.64	0.10
Banaskantha	15.04	22.48	37.52	46.05	4.55	11.61	0.00	0.04	0.00	0.06	0.17
Bharuch	6.58	25.09	31.67	33.26	0.80	33.52	0.07	0.19	0.00	0.34	0.14
Bhavnagar	0.88	33.86	34.74	33.08	14.61	17.34	0.00	0.14	0.00	0.06	0.03
Dahod	0.30	39.46	39.77	20.80	0.29	39.03	0.00	0.00	0.00	0.11	0.00
Dang	7.50	51.26	58.76	18.62	0.00	22.23	0.35	0.02	0.00	0.01	0.01
Gandhinagar	15.37	12.26	27.63	56.84	2.44	12.71	0.00	0.04	0.00	0.14	0.19
Jamnagar	0.12	34.68	34.81	28.21	20.04	16.60	0.02	0.07	0.00	0.07	0.19
Junagadh	2.22	42.76	44.97	40.21	3.55	11.08	0.00	0.07	0.00	0.04	0.07
Kachchh	0.26	29.74	30.00	19.34	29.48	20.48	0.02	0.11	0.00	0.17	0.41
Kheda	9.87	14.69	24.57	61.95	1.81	10.97	0.00	0.03	0.00	0.55	0.13
Mehsana	17.08	12.90	29.98	57.03	1.33	10.88	0.00	0.10	0.00	0.18	0.50
Narmada	1.37	50.54	51.90	23.67	0.12	24.21	0.00	0.02	0.00	0.08	0.00
Navsari	41.59	11.91	53.50	26.44	0.48	19.43	0.10	0.02	0.00	0.03	0.00
Panchmahal	4.76	28.76	33.52	36.51	0.11	29.74	0.00	0.01	0.00	0.10	0.00
Patan	2.25	18.57	20.82	59.52	6.03	12.84	0.00	0.11	0.00	0.25	0.43
Porbandar	0.17	30.04	30.21	54.08	8.35	7.03	0.04	0.12	0.01	0.01	0.15
Rajkot	2.21	39.50	41.70	31.36	14.24	12.52	0.00	0.10	0.00	0.05	0.02
Sabarkantha	14.41	23.96	38.37	39.91	3.35	18.06	0.01	0.03	0.00	0.17	0.09
Surat	18.67	20.21	38.88	40.34	0.23	20.21	0.07	0.14	0.00	0.11	0.01
Surendranagar	0.32	40.06	40.39	36.65	7.47	15.23	0.00	0.17	0.00	0.07	0.02
Tapi	22.49	24.53	47.02	34.49	0.03	18.44	0.00	0.01	0.00	0.01	0.00
Vadodara	2.17	34.39	36.56	36.40	0.38	26.34	0.04	0.03	0.00	0.24	0.01
Valsad	19.06	35.57	54.63	17.07	0.86	27.40	0.01	0.02	0.00	0.01	0.00
Gujarat State	7.33	28.88	36.21	38.08	6.50	18.87	0.02	0.07	0.00	0.15	0.12

Source: NDDB (2014).

In respect of the population of buffaloes in the state, Kheda district ranks first, followed by Mehsana and Sabarkantha district. With the recognition of the Banni breed by the National Bureau of Animal Genetic Resources (NBAGR), Gujarat is now proud home to four major buffalo breeds of the total 12 recognised breeds in India. The performance of these breeds is presented in Table 2.99.

Table 2.97: District-wise Livestock and Bovine Density (1992-2012) in Gujarat

Districts	Livestock (No. per sq km)					Bovine (No. per sq km)				
	1992	1997	2003	2007	2012	1992	1997	2003	2007	2012
Ahmedabad	89	66	83	89	100	64	50	62	69	79
Amreli	102	110	98	100	147	65	66	58	63	114
Anand			176	222	243			144	188	218
Banaskantha	124	136	162	201	237	70	72	112	150	198
Bharuch	73	65	67	65	61	49	29	42	42	40
Bhavnagar	103	104	118	114	119	53	54	64	68	81
Dahod			307	391	478			199	239	289
Gandhinagar	186	172	233	272	272	156	141	201	237	230
Jamnagar	60	64	70	71	75	33	35	40	43	47
Junagadh	96	88	110	116	139	74	69	86	97	120
Kachchh	31	36	33	37	42	10	12	11	13	21
Kheda	157	175	201	240	309	132	142	163	203	268
Mehsana	130	169	172	205	214	103	142	146	179	187
Narmada			122	99	120			84	73	91
Navsari			176	150	194			127	117	155
Panchmahal	230	201	312	323	384	159	143	223	231	269
Patan			90	116	108			59	86	87
Porbandar			101	105	116			73	82	98
Rajkot	104	102	110	111	123	58	59	64	73	90
Sabarkantha	170	187	227	248	250	121	140	172	189	195
Surat	102	118	137	77	164	80	90	106	62	130
Surendranagar	65	68	77	92	117	38	42	47	61	94
Tapi					159				222	130
The Dangs	71	71	88	77	75	11	11	15	12	58
Vadodara	138	140	159	168	220	144	150	279	311	171
Valsad	163	144	151	186	149	118	99	106	133	107
GUJARAT	94	101	110	112	138	62	66	74	72	104

Source: NDDDB (2014).

Table 2.98: Distribution of Gujarat's Cattle Breeds

Breeds	Breeding Tract	Utility	Distribution
A) Cattle			
Gir	Junagadh, Bhavnagar, Amreli, Porbandar and Rajkot districts.	Milch	Rajasthan, MP and MS. Exported to Brazil, Mexico, USA and Venezuela.
Kankrej	South-west Rann of Kachchh comprising Mehsana, Kachchh, Ahmedabad, Kheda, Sabarkantha and Banaskantha districts.	Dual	Western Rajasthan. Nomadic herds of this breeds are also found in Madhya Pradesh, Maharashtra, Uttar Pradesh, Haryana.
Dangi	The Dang, Valsad, Panchmahal and Dahod districts. Sizeable numbers of this breeds are also found in Nasik & Ahmednagar districts of MS	Draught	Parts of northern Maharashtra
Buffalo			
Jaffrabadi	Found in Junagadh, Amreli, Bhavnagar, Porbandar and Rajkot	Milch	Bulls and herds of this breed have been introduced for breed improvement programmes in Maharashtra.
Mehsana	Found in Mehsana, Patan, Banaskantha and Sabarkantha	Milch	Northern Gujarat
Surti	Found in Kheda, Anand, Vadodara, Bharuch and Surat districts.	Milch	In the border districts of Rajasthan.
Banni	Found in Kachchh and Patan	Milch	Kachchh

SOURCE: AE Nivsarkar *et al.*, (2000), as mentioned NDDDB (2014).

Table 2.99: Performance of Cattle and Buffalo Breeds in Gujarat

Parameter	Cattle			Buffalo			
	Gir	Kankrej	Dangi	Jaffrabadi	Mehsana	Surti	Banni
Breed Pop ('000)	1,400	2,682	209	1,470	3,370	1,557	525
Lactation Yield(kg)							
Field	2,790 (2,732 to 3,312)	2,396 (2,137 to 2,864)		3,189 (3,047 to 3,639)	3,426 (3,163 to 3,488)	2,405 (2,262 to 2,792)	2,860 (2,770- 22,950)
Farm	2,125 (1,835 to 2,950)	1,954 (1,271 to 232)	530 (32 to 1,228)	1,967 (1,917 to 2,075)	1,840 (1,774 to 1,904)	1,699 (1,399 to 1,955)	
Lactation Length(days)	305 (302 to 329)	314 (308 to 329)	269 (100 to 396)	325 (316 to 328)	315 (312 to 327)	310 (308 to 323)	300 (296 to 304)
Calving Interval (days)	435 (420 to 480)	424 (312 to 565)	474 (464 to 484)	482 (476 to 494)	394 (385 to 403)	424 (418 to 437)	372
Dry Period (days)	115 (75 to 155)	151 (72 to 173)	190	142 (141 to 143)	128 (120 to 136)	126 (120 to 138)	66
Age at First calving (months)	46 (44 to 53)	51	45 (44-46)	53 (49 to 63)	49	46 (43 to 48)	40 (39- 41)

SOURCE: AE Nivsarkar *et al.*, (2000), Animal Genetics Resources of India, Cattle and Buffalo, ICAR publication, as mentioned NDDDB (2014).

2.9.4 Planwise Outlay and Expenditure in Gujarat

The State Government policy has been providing necessary support for dairy development in the state through co-operative sector. Table 2.100 gives details regarding plan-wise outlay and expenditure on animal husbandry and dairy development by the Government of Gujarat (excluding central assistance and fund). This table shows that there has been consistent increase in the plan provision for animal husbandry and dairy development. The proportion of plan expenditure in the plan provision has also been increasing with up and down pattern. This has led to increase in number of milch animals, milk production and qualitative improvement in milch animals. The outlay and expenditure on dairy development has also increased over the period of time. However, percentage share of expenditure on dairy development to total expenditure has declined considerably. As compared to around 42-45 per cent share of total expenditure on dairy development during 1974-1980, it has declined to 23-28 per cent during the last one decade. The proportion of expenditure to outlay on dairy development was much better during the corresponding period, which was recorded to be around 70 per cent in 2015-16. During the year 2015-16, out of the total expenditure of Rs. 6534.48 lakh incurred on dairy development, about 96.64 per cent (Rs. 6314.90) was incurred

on Direction and Administration head. While out of Rs. 21394.77 lakh expenditure incurred on Animal Husbandry, Rs. 17104.39 was spend together on heads related to dairy animal development (veterinary services and animal health, cattle and sheep development, feed and fodder development). Under non-plan section, total Rs. 26629.12 lakh was spent on animal husbandry and dairy development in the state. Besides, plan and non plan expenditure spending by state government, the additional support has been provided by the Central government under RKVY and Central sponsored schemes for Animal Husbandry and Dairy development.

Table 2.100: Plan-wise Outlay and Expenditure on Animal Husbandry and Dairy Development in Gujarat

Sr. No.	Plan Period	Outlay (Rs. In Lakh)			Expenditure (Rs. In Lakh)		
		Animal Husbandry (Revised)	Dairy Development (Revised)	Total	Animal Husbandry	Dairy Development	Total
1	IV FYP (1969 to 1974)	675.00	175	850	432.48	96.31	528.79
2	V FYP (1974 to 1978)	755.00	247.00	1002.00	304.57	244.97	549.54
3	AP (1978-79 to 1979-80)	514	116	630.00	496.14	355.1	851.24
4	VI FYP (1980-1985)	1770.00	205.00	1975	1,432.76	219.70	1652.46
5	VII FYP (1985-1990)	1820	127	1947	1875.83	121	1997
6	VIII FYP (1990-95)	2720.00	325.00	3045.00	2853.57	241.51	3095.08
7	AP (1995-96)	916	120.00	1036.00	959.22	91.08	1070.30
8	AP (1996-97)	916.00	120.00	1036.00	937.83	120.32	1058.15
9	IX FYP (1997-98 to 2001-02)	7450.00	530.00	7980.00	7655.58	437.81	8093.39
10	X FYP (2002-03 to 2006-07)	14339.84	848.92	15,188.76	12635.53	813.72	13449.25
11	XI FYP (2007-08 to 2011-12)	51898.13	17200	69098.13	43556.56	17110.64	60657.20
12	AP (2012-2013)	26457.00	7300.00	33737.00	19827.77	6930.00	26757.77
13	AP (2013-2014)	25000.00	7400.00	32400.00	14900.75	765.38	15666.13
14	AP (20 14-2015)	26777.78	7678.38	34456.16	17552.25	6928.72	24480.97
15	AP (2015-2016)	34753.28	9252.1	44005.38	21394.77	6534.48	27929.25

Source: GOG (2016 & 2017).

2.9.5 Growth in Milk Production In Gujarat

Gujarat is a leading state in terms of its quality milch animals and milk production. Gujarat ranks third among the milk producing states in

India, achieving 122.62 lakh MT in 2015-16, which has increased from the 30.9 lakh tonnes during 1983-84. The numbers of initiatives were taken by the government which could help in improving the milk productivity over the period. The milk production has increased from 5.32 million tonnes in 2000-2001 to 12.26 million tonnes in 2015-16 registering a growth of 131 per cent over base year (Table 2.101). Except for the period of drought from 1986-87 to 1988-89, milk production in the state has been increasing continuously. The milk production declined during 1986-1989 due to the worst drought situation in the state. The rate of increase in milk production was faster than rate of increase in state's human population. As a result, the per capita availability of milk in the state increased from 321gms/day in 2003-04 to 506 gm/day in 2015-16.

Table 2.101: Milk Production in Gujarat: 2000-01 to 2015-16

Sr. No	Year	Milk Production in million tones					Total	Growth of Milk Production (%) over base year	Per Capita availability (gms/day)
		In milk Cow		In Milk Buffalo	In milk Bovine	In Milk Goat			
		Indi-genous	C.B.						
1	2000-01	1.43	0.26	3.40	5.09	0.23	5.32	-	-
2	2001-02	1.49	0.36	3.80	5.65	0.23	5.88	10.51	-
3	2002-03	1.58	0.38	3.90	5.86	0.23	6.09	14.52	321
4	2003-04	1.63	0.43	4.12	6.18	0.24	6.42	20.75	333
5	2004-05	1.69	0.48	4.32	6.49	0.26	6.75	26.86	344
6	2005-06	1.74	0.52	4.45	6.70	0.26	6.96	30.89	350
7	2006-07	1.80	0.82	4.66	7.28	0.25	7.53	41.67	373
8	2007-08	1.85	0.96	4.86	7.66	0.25	7.91	48.79	386
9	2008-09	1.85	1.19	5.11	8.15	0.23	8.39	57.73	403
10	2009-10	1.91	1.42	5.28	8.61	0.23	8.84	66.30	421
11	2010-11	1.98	1.59	5.51	9.09	0.24	9.32	75.29	437
12	2011-12	2.06	1.79	5.73	9.58	0.24	9.82	84.61	436
13	2012-13	2.18	2.00	5.90	10.07	0.24	10.31	93.98	453
14	2013-14	2.37	2.30	6.18	10.85	0.26	11.11	108.99	476
15	2014-15	2.52	2.48	6.42	11.42	0.27	11.69	119.86	492
16	2015-16	2.81	2.65	6.51	11.97	0.29	12.26	130.61	506

Source: GOG (2017).

Out of total milk production, about 53.11 per cent of the milk production is contributed by Indigenous Buffaloes followed by 22.94 per cent by indigenous cattle. The crossbreed cattle contribute 21.6 per

cent of the total milk production in the state whereas Goat contributes 2.36 per cent to total milk production. The productivity of cows and buffalo in term of daily milk yield is increasing continuously. Despite of increase in milk yield, there is still a wide scope for improving milk yield of milch animals.

Banaskantha is the highest milk producing district in the state with an estimated milk production of about 1644 thousand tonnes during 2015-16 accounting more than ten percent of total milk production in the state. Sabarkantha is the second largest producer of milk with an estimated share of about 9 percent, followed by Mehsana (6.51 %) and Kheda (5.57%). The top ten districts together contributes about 62 per cent of milk production of the state, those are Banaskantha, Sabarkantha, Mehsana, Kheda, Junagadh, Panchmahal, Rajkot, Anand, Kachchh, and Surendranagar. Category-wise share of milk production in Gujarat clearly indicate that top ranked milk producer five districts in Gujarat are dominated by the production of milk by cross bred cows, followed by buffalo and goat (Table 2.102).

Among the species, the highest milk yield was recorded in cross breed cows. The highest bovine milk yield is recorded in Mehsana district (6.17 kg/day) and the lowest was in Dahod district (3.0 kg/day). In case of indigenous cows, highest milk yield was recorded in Amreli (4.77 kg/day) and the lowest was in Dangs (1.26 kg/day). Among the species, the highest milk yield was recorded in cross breed cows in Banaskantha district (10.68 kg/day) and the lowest was in Dangs district (7.29 kg/day). Porbandar district was the top rank district in case of buffalo yield (5.69 kg/day) while same was recorded lowest in Narmada (3.28 kg/day). The highest milk density is recorded in Gandhinagar (542 kg/day/sq km), while highest per capita milk availability is recorded in Banaskantha (1060 gm/day).

Table 2.102: District wise & category wise Percentage share of Milk Production in Gujarat

Name of the District	District wise & category wise Percentage share of Milk Production in Gujarat (2014-15)					
	% share of Crossbred Cow	% share of Indigenous Cow	% share of Total Cattle	% share of Buffalo	Goat	% share to total Milk Production
Banaskantha	21.1	9.0	15.0	12.0	10.0	13.2
Sabarkantha	16.5	8.8	10.7	8.2	9.1	9.3
Mehsana	11.0	7.9	6.9	7.3	8.8	7.0
Navsari	6.6	7.5	4.8	6.3	8.8	5.3
Surat	6.3	7.2	4.6	5.4	8.5	4.8
Kheda	5.9	6.4	4.4	5.2	6.0	4.8
Anand	5.8	5.0	4.2	4.8	4.3	4.7
Gandhinagar	4.9	5.0	4.2	4.7	3.9	4.5
Tapi	4.0	4.8	4.1	4.5	3.8	3.9
Valsad	3.9	4.8	3.7	4.3	3.6	3.9
Panchmahal	3.7	4.7	3.7	4.2	3.4	3.9
Rajkot	2.1	4.2	3.6	3.8	3.3	3.6
Vadodara	1.5	3.6	3.6	3.6	3.3	3.6
Ahmedabad	1.1	2.9	3.2	3.6	2.9	3.5
Bharuch	1.1	2.7	3.2	3.5	2.9	3.3
Patan	1.0	2.6	3.0	3.3	2.8	3.3
Junagadh	1.0	2.6	2.7	3.2	2.2	3.1
Bhavnagar	0.7	1.9	2.6	2.9	2.2	2.8
Dang	0.6	1.5	2.6	2.5	2.1	2.5
Amreli	0.4	1.4	2.4	1.7	1.9	2.1
Kachchh	0.3	1.3	2.1	1.6	1.5	2.0
Narmada	0.2	1.3	1.9	1.4	1.2	1.5
Surendranagar	0.2	1.2	1.1	0.9	1.2	1.3
Porbandar	0.1	1.1	0.8	0.6	1.1	1.3
Jamnagar	0.1	0.6	0.8	0.6	0.7	0.7
Dahod	0.1	0.2	0.4	0.1	0.3	0.2

Source: GOG (2015a).

2.9.6 Milk Consumption and Marketable Surplus in Gujarat

The data on milk utilisation pattern in Gujarat indicate that out of the total production of milk at the home, about 77.6 per cent was sold, while 17.7 per cent milk was consumed at the home and remaining 4.7 per cent milk was converted into milk products (Table 2.103). The share of quantity sold has been increased by 25.4 percent points in 2015-16 over 197-98, while consumption of milk share declined by 17.4 percent points and share of converted into category milk products declined by 8.1 per cent points during corresponding years. The breed wise milk utilisation shows that goat milk was preferred for consumption during monsoon and summer season, while during winter, it is used for conversion into milk products.

Table 2.103: Milk Utilisation Pattern in Households in Gujarat

Item	Milk Utilisation Pattern in HH in Gujrat				
	1997-98	2000-01	2006-07	2011-12	2015-16
Production in Selected Households 000'kg)	36.0	106.5	127.7	142.8	319.7
Purchased					
Quantity (kg)	57.0	114.5	71.6	18.0	123.4
Avg. rate of purchase (Rs./ kg) sold	8.9	11.6	15.2	30.3	45.5
Sold					
Quantity (000'kg)	18.8	55.5	73.5	94.6	248.1
Avg. rate of selling (Rs. per kg)	8.8	10.3	13.0	24.6	32.1
Converted into Milk Products (000'kg)	4.6	11.4	14.6	8.3	15.0
Consumed at Home (000'kg)	12.6	39.6	39.8	39.9	56.7
Quantity sold (%)	52.2	52.1	57.6	66.2	77.6
Converted into milk products (%)	12.8	10.7	11.4	5.8	4.7
Consumed at home (%)	35.1	37.2	31.2	27.9	17.7

Source : GOG (2017), Directorate of Animal Husbandry, Govt. of Gujarat.

2.9.7 Status of Availability of Feed and Fodder in Gujarat

As against the estimated animals' requirements, feed resources available in Gujarat are lower. In the last decade (2003 to 2011), shortage of dry matter in the State reduced from 137 per cent of the requirement to 66 per cent; total digestible nutrients from 200 per cent to 73 per cent while the crude protein availability increased from -98 per cent to a surplus of 19 per cent (Table 2.104). Eleven cattle feed factories, in the cooperative sector and spread across the State, produced about 2.6 million tonnes of concentrated cattle feed for bovines during 2012-13 and was sold at prices ranging from Rs. 11.9 to 14.3 a kg. The usage of concentrate increased from 2.1 kg to 2.7 kg per in-milk cattle, while for buffaloes, it declined from 3.0 kg to 2.7 kg during the same period. Green fodder is a comparatively economical source of nutrients. However, availability of green fodder is lower than estimated requirement. In Gujarat as area under fodder crop has fallen over last eight years, viz. from 10.47 per cent of the GSA in 2000-01 to 6.96 per cent in 2007-08. Patan district had the largest area under fodder crops followed by Kachchh, Navsari, Ahmedabad and Gandhinagar district.

Table 2.104: Feed Availability, Requirement & Surplus/Deficit in Gujarat

Year	Feed Nutrients Availability, Requirement and Surplus/Deficit in Gujarat (000 MT)								
	Dry Matter			Crude Protein			Total Digestible Nutrients		
	Availability	Requirement	Deficit/Surplus	Availability	Requirement	Deficit/Surplus	Availability	Requirement	Deficit/Surplus
1992	15,900	-	-	1,682	-	-	8,312	-	-
1997	24,164	34,013	-9,848	3,158	3,023	135	12,925	21,781	-8,856
2003	18,940	44,897	-25,957	2,033	4,027	-1,994	9,562	28,740	-19,77.8
2007	24,517	50,242	-25,726	4,761	4,593	168	14,769	32,082	-17,313
2008	30,710	51,533	-20,824	5,736	4,732	1,005	18,101	32,878	-14,777
2009	26,297	52,991	-26,694	4,625	4,887	-262	14,376	33,786	-19,411
2010	22,586	54,633	-32,046	4,189	5,060	-871	12,303	34,817	-22,514
2011	33,971	56,479	-22,508	6,533	5,252	1,281	20,767	35,985	-15,218

Source:www.indiastat.com

In Gujarat, there is absence of regulated and organized fodder market. Small scale marketing of fodder exists in all rural areas of the state where fodder are sold by producers to traders or directly to the consumers. In rural areas, farmers having surplus fodder sell some quantity to needy cattle owners. Generally, demand for green and dry fodders in a village is met from within village. While green fodder is available from crops like Lucerne, bajra, maize and sorghum, the sources of dry fodder are crop-residues and by-product of cereals and pulses crops. Farmers bring head loads or cartloads of fodder from their fields to the village. Normally, surplus green fodder is sold as standing crop on area basis. Surplus dry straw is sold either in bundles or weight basis in the village to needy cattle owners. Natural grass is abundantly available from during the month of September to October when grass is harvested. Generally, grass producers sell their grass soon after the harvest to needy farmers. Grass being a bulky and less remunerative product, producers sell it just after harvest.

2.9.8 Infrastructure Development in Gujarat

Gujarat is third largest producer of milk in our country. This could happen because of strong network of milk cooperatives and development of infrastructure at the village as well as district level. The co-operatives have developed modern systems of veterinary care and artificial insemination and provide these services to a large number of milk

producers at very low prices. The district co-operatives have vans equipped with a trained veterinary surgeon and medicines stationed in different centres to cater to the needs of the members of the co-operatives. The special emphasis on development was dairy infrastructure was given during the Operation Flood movement.

The animal health care is more important for all over economic growth in Gujarat state. For veterinary Services 675 Veterinary Dispensaries, 45 Mobile Veterinary Dispensaries, 27 Branch Veterinary Dispensary, 552 First aid veterinary Centers, 23 Veterinary polyclinics and One Biological Product Station-Gandhinagar are working at present. Still these facilities are not available in the interior villages, 120 Mobile Animal Disease Diagnostic Laboratory Ambulance Van cum Veterinary Dispensaries are established and attached with veterinary Dispensary. A New Scheme of “Mobile Veterinary Dispensary per 10 Villages” was established in the year 2015-16. Under this scheme 115 M.V.D. were came into existence. The objective of this scheme is to provide veterinary services at village level through mobile vehicle in each 10 villages of respective Veterinary Dispensary by different prescribed route. The coverage of livestock unit per institution is around 13771. For the control of emerging diseases of livestock and poultry, 17 Diseases Diagnostic Units, 2 Epidemiology Units and one Foot and mouth typing unit are working in the State. There are number of emerging and re-emerging livestock diseases like P.P.R (goat plague), Brucellosis, Leptospirosis and Blue tongue.

Table 2.105: Veterinary Infrastructure and Manpower in Gujarat state

Year	No. of Vet. Institutions	No. of Veterinarians	Cattle Equivalent Units Per Veterinary Institution	Cattle Equivalent Per Veterinarian
2010-11	1232	NA	14330	-
2011-12	1232	733	14330	24085.0
2012-13	1282	684	13771	25810.4
2013-14	1322	720	13354	24519.9
2014-15	1322	801	16093	26560.3

Source: GOG (2014b, 2017).

Table 2.106: Growth in Infrastructure facilities for Animal Husbandry in Gujarat

Year	Growth in Infrastructure facilities for Animal Husbandry in Gujarat (Nos)							
	Veterinary Polyclinic	Veterinary Hospital VD/BVD	Mobile veterinary Dispensaries	First Aid Veterinary Centre	Animal Insemination Centre/SubCentres	Sheep & Wool Extension Centres	Breeding Farms	
							Cattle	Poultry
1960-61	-	189	NA	344	41	6	3	NA
1970-71	-	216	NA	428	861	30	5	10
1980-81	-	220	113	512	2106	115	4	11
1990-91	13	349	31	557	3485	53	12	6
2000-01	14	478	37	553	3693	94	9	6
2010-11	23	622	35	552	6581	159	8	11
2012-13	23	672	35	552	7145	159	5	12

Source: GOG (2014), Statistical Abstract of Gujarat State.

Table 2.107: Districtwise Number of Veterinary Institutions in Gujarat (2015 - 2016)

Sr. No.	District	Polyclinic	VD/BVD	FAVC	MVD	MVD/10 Village	Total Vet. Insti.	ADIO
1	Ahmedabad	1	27	17	1	4	50	1
2	Amreli	1	33	24	0	6	64	1
3	Anand	1	20	20	0	0	41	0
4	Aravalli	0	21	15	0	0	36	0
5	Banaskantha	1	62	27	3	0	93	1
6	Bharuch	1	19	25	1	9	55	1
7	Bhavnagar	1	27	19	1	10	58	1
8	Botad	0	10	6	0	2	18	0
9	Chhota Udepur	0	10	14	0	0	24	0
10	Dahod	1	19	23	3	0	46	1
11	Dangs	0	6	9	1	5	21	0
12	Devbhumi Dwaraka	0	13	6	0	4	23	0
13	Gandhinagar	1	23	13	0	0	37	0
14	Gir Somnath	0	19	5	0	3	27	0
15	Jamanagar	1	20	17	0	8	46	1
16	Junagadh	1	30	7	1	6	45	1
17	Kachchh	1	32	29	6	13	81	1
18	Kheda	1	17	18	0	0	36	0
19	Mahesana	1	33	20	0	0	54	1
20	Mahisagar	0	19	17	0	0	36	0
21	Morbi	0	15	8	0	1	24	0
22	Narmada	0	14	16	4	10	44	0
23	Navsari	1	17	15	2	6	41	1
24	Panchmahal	1	23	21	2	0	47	0
25	Patan	1	29	15	2	0	47	0
26	Porbandar	1	11	7	1	2	22	0
27	Rajkot	1	28	18	0	11	58	1
28	Sabarkantha	1	24	22	7	0	54	1
29	Surat	1	18	25	2	8	54	1
30	Surendranagar	1	28	14	0	0	43	1
31	Tapi	0	10	26	2	0	38	0
32	Vadodara	1	15	17	4	0	37	1
33	Valsad	1	10	17	2	7	37	1
Total		23	702	552	45	115	1437	17

The details about the veterinary infrastructure and Manpower available in Gujarat state is presented in Table 2.105, growth in infrastructure facilities for animal Husbandry in Gujarat is presented in Table 2.106 and districtwise number of veterinary institutions in Gujarat during 2015 - 2016 is presented in Table 2.107. The details on cattle and development programme 2015-16 are presented in Table 2.108. Gujarat has 23 Intensive Cattle Development Projects (ICDP) with 1,078 Breeding Centres in the state which are aimed at improving the breed of cattle and buffaloes.

Table 2.108: Infrastructure Development under Cattle & Buffalo Development programme in Gujarat (2015-16)

Particulars	Item	Nos.
Cattle Breeding Farm	(i) Under Gujarat Livestock Development Board	4
	(ii) Under State Agricultural University	0
Buffalo Breeding Farm	(i) Under Government of Gujarat	1
	(ii) Under Indian Dairy Development	0
	(iii) Under State Agricultural University	0
	(iv) Under National Dairy Development Board	0
Gaushala	(a) Religious Institutes	243
	(b) Educational Institutes	65
	(c) Others	359
Panjarapoles		269
Intensive Cattle Development Programme	(ii) Blocks	23
	(ii) Sub-Centres	965

Source: GOG (2017).

Over the period, as production of milk increases, numbers of milk processing dairies were build up. Eighteen Co-operative Dairy Unions have total 140.50 Lakh Liter per Day milk processing capacity and they procured 125.75 LLPD milk. During the year 2012-13, these Eighteen dairy union have 73 chilling center also having capacity of 57.19 LLPD of milk. The details on number of societies with bulk milkcooler (BMC), automatic milk collection System (AMCS) and number of chilling centre with installed capacity (1000 litres/day) is presented in Table 2.109. Banaskantha, Mehsana and Sabarkanta district have these infrastructure available on larger number than other districts in the state. Nine District Co-operative Unions have established 12 Cattle Feed Factories to produce and supply cattle feed to their members at village level at no profit no loss basis. To help and to enhance cattle feed production state government is also helps

them by providing Rs.45 lakh as revolving fund in the state. Total production of cattle feed is 1299608 MT by above nine factories (Table 2.110). However, still Gujarat state is deficit in availability of feed nutrient.

Table 2.109: Details about Bulk Cooler, Automatic Milk Collection Systems and Chilling Centres facility with Dairy Cooperative Societies in Gujarat

Sr. No.	Name of Milk Producers' Co- op. Union Ltd.	No. of Societies with		No. of Chilling Centre- Installed Capacity (1000 litres/day)
		Bulk Milk Cooler (BMC)	Automatic Milk Collection System (AMCS)	
1	Ahmedabad	47	364	130
2	Amreli	0	537	100
3	Banaskantha	1067	1562	625
4	Bharuch	152	408	90
5	Bhavnagar	0	496	600
6	Gandhinagar	4	99	-
7	Jamnagar	0	0	
8	Junagadh	6	312	1350
9	Kachchh	0	503	398
10	Kheda	1187	1179	240
11	Mehsana	747	1504	1400
12	Panchmahal	255	1150	460
13	Porbandar	0	191	125
14	Rajkot	75	683	250
15	Sabarkantha	383	1649	600
16	Surat	482	1263	550
17	Surendranagar	93	726	735
18	Vadodara	223	979	270
19	Valsad	72	628	335
Total		4793	14233	8258

Table 2.110: Details about Cattle Feed Production Capacity 2014-2015 in Gujarat

Sr. No.	Cattle Feed Factory	Cattle Feed Brand	Production Capacity (MTPD)	Price/ M.T.(Rs.) as on Mar-14
1	Ahmedabad -Sarkhej	Uttamdan	100	14000
2	Banaskantha - Palanpur	Banasdan	1600	13421
3	Boriyavi, Mehsana	Sagardan	450	14857
4	Ubakhal, Mehsana	Sagardan	450	-
5	Jagudan, Mehsana	Sagardan	1000	-
6	Sabarkantha -Himmatnagar	Sagardan	450	12857
7	Itola - Vadodara	Barodadan	140	14500
8	Kanjari- Kheda	Amuldan	1050	13500
9	Khandheri - Panchmahal	Panchamrutdan	100	14327
10	Chalthan- Surat	Sumuldan	300	13384
11	Sagbara- Valsad	Vasudhara-dan	50	13900

Source: GOG (2017).

Animal hostel:

Milk Production depends on the well-being of the cattle. The Government of Gujarat has focused on providing adequate cattle-care facilities to the people of Gujarat. India's first animal hostel was inaugurated in Akodara village of Sabarkantha district. The animal hostel aims to provide shelter to the animals in villages and is based on a public-private partnership model. The animal hostel is not only boost milk production, but it also lessen the stress on the women of the village, as they do not need to remain engaged with their cattle for the whole day.

2.9.9. State Summary

The review of dairy development in Gujarat indicate that one fourth of the agriculture sector output comes from livestock sector and milk contributes to around 20 per cent to the agricultural GDP of Gujarat and is one of the biggest sectors for supporting livelihood in the state. The State has high-quality, high-yielding breeds of cattle and buffaloes. Gir and Kankrej breeds in cows, and Mehsani, Jafarbadi and Surti breeds in buffaloes were known for their high milk yielding capacity. Gujarat ranks third among the milk producing states in India, achieving 122.62 lakh MT in 2015-16, which has increased from the 30.9 lakh tonnes during 1983-84. The productivity of cows and buffalo in term of daily milk yield is increasing continuously. Despite of increase in milk yield, there is still a wide scope for improving milk yield of milch animals. The highest milk yield was recorded in cross breed cows. However, as against the estimated animals' requirements, feed resources available in Gujarat are lower. The co-operatives have developed modern systems of veterinary care and artificial insemination and provide these services to a large number of milk producers at very low prices. The district co-operatives have vans equipped with a trained veterinary surgeon and medicines stationed in different centres to cater to the needs of the members of co-operatives.

2.10 Dairy Development in Rajasthan:

Rajasthan is the north-western largest state of India, with a land area of 34.3 million hectares (10.4% of India's total area). The state has four main physiographical regions- the Western Desert, the Aravali hills (running southwest to northeast), the Eastern Plain, and the South eastern Plateau. It is divided into 33 districts, and further sub-divided into 249 blocks and 9,177 gram panchayats. The total human population of Rajasthan in 2011 was 68.62 million, of which 75.3 per cent was rural population. The population density was estimated to be 201 per sq. km. An estimated 24.8 percent of the population lives below poverty line (BPL), compared to 29.8 percent at national level.

2.10.1 Role of Dairy Sector in Rajasthan Economy

Animal husbandry and livestock is highly potential sector contributing a lot in state economy, especially of rural economy. The potential of crop production depends upon huge investment and weather and meteorological conditions. Comparatively Animal husbandry and livestock is more stable and requires lesser investments. Livestock and poultry have proved to be life saviour in many distress conditions, especially in case of drought. The livestock population of State was 577.32 lakh (2012). Rajasthan is considered as "Denmark of India". The total milk production in Rajasthan was 18.5 million tonnes in 2015-16, ranks second in India. Animal Husbandry in is a major economic activity contributing approximately 10.21 per cent to the total GDP of the state.

Rajasthan is rich in agro-ecological diversity and has a wide range of unique livestock production systems that have evolved in different regions in tune with the naturally available resources and needs of the people. This diversity begins with the choice of species reared; breeds that have evolved, management and feeding practices, health care systems that are closely linked to the natural flora and fauna, and local marketing systems. Development of livestock sector therefore is critical pathway to rural prosperity. This fact in context to Rajasthan is well established where agricultural operations offer less promising prospects due to extreme geo-

climatic conditions and uncertainty of rains. As such livestock operations have expressed their superiority over crop farming in terms of growth, stability, resource conservation and uplifting the socio- Economic status of the inhabitants.

2.10.2 Trend in Contribution of Dairy in State GDP in Rajasthan

Rajasthan is the largest state having about 10.41 per cent of the total geographical area of the country. It supports 5.5 per cent of human population and about 11 per cent of the country's livestock population. Agriculture and allied activities, however, remain the primary and major economic activity in the state; this sector provide livelihood to 66 per cent of the State's population. Because of the limited water resources, most of the agriculture production is rain-fed and as such, the livestock sector assumes more importance. Animal Husbandry is not only a subsidiary occupation to agriculture but it is a major economic activity, especially in the arid and semi-arid regions of the Rajasthan. Livestock sector development has a significant beneficial impact in generating employment and reducing poverty in rural areas.

Animal husbandry contributes over 9 per cent to the gross domestic product. More than 80 per cent rural families keep livestock in their households. About 35 per cent of the income to small and marginal farmers comes from dairy and animal husbandry. In arid areas the contribution is as high as 50 per cent. The sector has potential to create employment in rural areas with least investments as compared to other sectors. Milk contributes to around 28 per cent to the agricultural GDP of Rajasthan and is one of the biggest sectors for supporting livelihood in the state. Livestock output at constant prices was reported at Rs. 239 billion in 2010-11 (at constant prices), of which milk contributes about 74 per cent or Rs. 177 billion (Table 2.111).

Table 2.111: Value of Output: Agriculture and Livestock in Rajasthan

Item	Value of Output: Agriculture and Livestock in Rajasthan						
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Value of Output at Current Prices (Rs. billion)							
Agriculture & Allied*	489	521	615	677	819	897	1,187
Agriculture	265	280	338	384	444	435	636
Livestock	167	177	198	220	289	345	418
Share of Value of Output to Agriculture and Allied* (%)							
Agriculture	54	54	55	57	54	48	54
Livestock	34	34	32	32	35	38	35
Value of Output at Constant Prices (Rs. billion) (2004-05)							
Agriculture & Allied*	489	488	521	534	577	538	643
Agriculture	265	259	280	287	307	252	342
Livestock	167	173	183	186	217	225	239
Share of Value of Output to Agriculture and Allied* (%)							
Agriculture	54	53	54	54	53	47	53
Livestock	34	35	35	35	38	42	37
Value of Livestock Output at Current Prices (Rs. billion)							
Milk	114	122	138	152	211	250	308
Meat	8	10	10	12	14	16	18
Egg	1	1	1	1	1	2	2
Dung	39	39	42	46	53	63	73
Others^	5	5	7	9	10	14	17
Share of Livestock Output at Current Prices (%)							
Milk	68	69	70	69	73	72	74
Meat	5	6	5	5	5	5	4
Egg	1	1	1	0	0	1	0
Dung	23	22	21	21	18	18	17
Others^	3	3	4	4	3	4	4
Value of Livestock Output at Constant Prices (Rs. billion) (2004-05)							
Milk	114	119	128	130	159	165	177
Meat	8	9	9	9	9	10	11
Egg	1	1	1	1	1	1	1
Dung	39	39	40	41	42	43	44
Others^	5	5	5	5	6	6	6
Share of Livestock Output at Constant Prices (%)							
Milk	68	69	70	70	73	73	74
Meat	5	5	5	5	4	4	5
Egg	1	1	1	1	0	0	0
Dung	23	23	22	22	19	19	18
Others^	3	3	3	3	3	3	3

Notes: P: Provisional Estimates, Q: Quick Estimates, * Includes Livestock, Forestry & Fisheries, ^ Includes Wool and Hair, Silkworm Cocoons & Honey, Increment in Stock
Source: NDDB (2016).

2.10.3 Composition of Livestock in Rajasthan

The state of Rajasthan is rich in livestock wealth. State is blessed with the best breeds of cattle, sheep and camels of the country. The climatic conditions are adverse with scarcity of water for irrigation and erratic rains with very low average annual rainfall. These conditions leave a little scope for crop production and enhance the importance of animal

husbandry over the crop production especially during recurrent droughts. The Nineteenth Livestock Census (2012) of India has placed total livestock population at 512.1 million, out of which, 57.73 million livestock (11.3 %) population was in the state of Rajasthan (Table 1.2). There is an increase in livestock population over 2007 to 2012 from 56.66 million to 57.73 million total number of animals of various species. In fact, the share of the Rajasthan in all Indian total stock of livestock has also considerably increased over the period of time (8.4% in 1951 to 11.3 in 2012) (Table 2.112). The state accounts for 6.98 per cent share in cattle population, 11.94 per cent of buffalo population, 13.95 per cent sheep population and 16.03 per cent goat population of the country (Table 2.113). The state ranks 1st in goat and camel production, ranks 2nd in buffalo population and rank 3rd in sheep population of the country. The significant share of Camels (81.37 %) and Donkeys (25.56 %) in national stock has also been recorded (2012). Main strengths of livestock sector in the State is that it produces 11 per cent milk, 35 per cent wool and 10 per cent meat of the country.

Table 2.112: Growth of the Livestock in Rajasthan and India

Sr. No	Livestock Census Year	Total Livestock (000)		% Share of Rajasthan to All India	% Growth of Rajasthan State between two Census
		All India	Rajasthan		
1	1951	292784	24642	8.4	
2	1956	306615	32427	10.6	31.6
3	1961	336432	34499	10.3	6.4
4	1966	344111	37476	10.9	8.6
5	1972	353338	38678	10.9	3.2
6	1977	369525	41359	11.2	6.9
7	1983	419588	49650	11.8	20.0
8	1987	445285	40901	9.2	-17.6
9	1993	470830	48482	10.3	18.5
10	1997	485385	54655	11.3	12.7
11	2003	485002	49136	10.1	-10.1
12	2007	529698	56663	10.7	15.3
13	2012	512057	57732	11.3	1.9

Note: Figures without Dog & Rabbit.

Sources: GOI (2015, 2016) & GOR (2015).

However, over the period, share of cattle population in total livestock population has declined from 42.26 per cent in 1951 to 23.08 per cent in 2012, while share of buffalo population has increased considerably (11.93% to 22.48%) during corresponding period. The rate of

increase in buffaloes population (326%) was much faster as compared to rate of increase in cows population (23.57%). In case of small ruminants, sheep population has increased by 68.55 per cent and goat population increased by 289.56 per cent in 2012 over 1951. Total livestock population in Rajasthan has increased by 126.25 per cent during last six decades period (Table 2.114).

Table 2.113: Species-wise Livestock population in Rajasthan

Sr. No.	Particulars	Rajasthan -2012				India 2012	
		Livestock-2012	% share in India	% share in total Livestock	Rank in All India	Livestock-2012	% share in Total Livestock
1	Cattle	13324	6.98	23.08	5	190904	37.28
2	Buffaloes	12976	11.94	22.48	2	108702	21.23
3	Sheep	9080	13.95	15.73	3	65069	12.71
4	Goats	21666	16.03	37.53	1	135173	26.4
5	Pigs	238	2.31	0.41	17	10294	2.01
6	Horses & Ponies	38	6.05	0.07	4	625	0.12
7	Mules	3	1.72	0.01	11	196	0.04
8	Donkeys	81	25.56	0.14	1	319	0.06
9	Camel	326	81.37	0.56	1	400	0.08
10	Yaks	0	0.00	0.00	-	77	0.02
11	Mithun	0	0.00	0.00	-	298	0.06
12	Total Livestock	57732	11.27	100.00	2	512057	100

Note: Figures without Dog & Rabbit

Source: GOR (2015, 2016), Department of Animal Husbandry, Rajasthan.

Table 2.114: Growth in Livestock Population in Rajasthan- 1951 to 2012

Sr. No.	Year	Cattle		Buffalo		Sheep		Goat		Total Livestock	
		Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)	Nos.	GR (%)
1	1951	107.82	-	30.45	-	53.87	-	55.62	-	255.16	-
2	1956	120.73	11.97	34.30	12.64	73.73	36.87	87.30	56.96	324.28	27.09
3	1961	131.36	8.80	40.19	17.17	73.60	-0.18	80.52	-7.77	335.09	3.33
4	1966	131.23	-0.10	42.23	5.08	88.06	19.65	103.23	28.20	374.76	11.84
5	1972	124.70	-4.98	45.92	8.74	85.56	-2.84	121.62	17.81	388.78	3.74
6	1977	128.96	3.42	50.72	10.45	99.38	16.15	123.07	1.19	413.59	6.38
7	1982	135.04	4.71	60.43	19.14	134.31	35.15	154.8	25.78	496.5	20.05
8	1988	109.21	-19.13	63.44	4.98	99.32	-26.05	125.78	-18.75	409.17	-17.59
9	1992	116.66	6.82	77.75	22.56	124.91	25.77	152.85	21.52	484.45	18.40
10	1997	121.41	4.07	97.70	25.66	145.85	16.76	169.71	11.03	546.55	12.82
11	2003	108.54	-10.60	104.14	6.59	100.54	-31.07	168.09	-0.95	491.36	-10.10
12	2007	121.20	11.66	110.92	6.51	111.9	11.30	215.03	27.93	566.63	15.32
13	2012	133.24	9.93	129.76	16.99	90.8	-18.86	216.66	0.76	577.32	1.89

Note: GR- Growth rate over previous year.

Source: GOR (2015), Department of Animal Husbandry, Rajasthan.

The district-wise share in total state livestock population figures indicate that (Table 2.115) Barmer district (9.30 %) has the highest number of livestock population followed by Jodhpur, Jaisalmer, Nagour, Jaipur, Udaipur, Bikaner, Bhilwara and Pali. These nine districts together accounted for 49.21 percent of total livestock population in the state.

Table 2.115: District wise share of Animals in Livestock Population in Rajasthan

District	District wise Percentage share of animals in Total livestock population in Rajasthan-2012											
	Cross-bred	Indigenous	Total Cow	Buffalo	Sheep	Goat	Total Pigs	Horses & Ponies	Mules	Donkey	Camel	Pig
Ajmer	2.18	18.41	20.59	22.33	18.58	37.18	0.09	0.00	0.11	0.08	1.05	2.18
Alwar	3.22	7.30	10.53	53.97	2.65	19.32	0.05	0.03	0.07	0.30	0.77	3.22
Banswara	0.50	29.94	30.45	14.37	0.37	25.68	0.01	0.00	0.09	0.03	0.01	0.50
Baran	0.27	17.18	17.45	12.73	0.49	9.34	0.03	0.01	0.05	0.04	0.61	0.27
Barmer	0.12	39.99	40.11	10.90	71.44	147.38	0.13	0.00	0.89	2.20	0.01	0.12
Bharatpur	1.90	6.59	8.49	42.55	3.31	8.77	0.04	0.00	0.07	0.12	1.24	1.90
Bhilwara	6.20	30.32	36.53	23.01	20.63	43.08	0.11	0.01	0.06	0.24	0.74	6.20
Bikaner	2.92	43.18	46.10	9.84	33.23	48.94	0.16	0.00	0.44	2.35	0.04	2.92
Bundi	0.71	11.65	12.36	16.12	2.75	16.76	0.07	0.00	0.04	0.14	0.69	0.71
Chittorgarh	1.68	21.56	23.25	20.01	2.24	24.16	0.09	0.00	0.02	0.11	0.21	1.68
Churu	1.63	16.05	17.68	14.89	17.73	41.72	0.04	0.01	0.26	1.73	0.06	1.63
Dausa	1.73	5.30	7.02	24.85	2.84	15.59	0.04	0.00	0.02	0.12	0.55	1.73
Dholpur	0.32	2.71	3.04	18.27	0.60	4.56	0.03	0.01	0.04	0.02	0.36	0.32
Dungarpur	0.14	18.94	19.08	11.81	3.19	21.20	0.01	0.00	0.06	0.09	0.00	0.14
Ganganagar	8.79	23.59	32.38	13.79	13.91	19.56	0.05	0.01	0.23	0.63	0.09	8.79
Hanumangarh	4.98	20.56	25.54	19.81	9.63	10.84	0.06	0.02	0.17	1.59	0.07	4.98
Jaipur	17.55	14.76	32.31	54.61	11.70	42.59	0.06	0.00	0.07	0.25	1.08	17.55
Jaisalmer	0.08	22.03	22.11	0.21	60.30	77.00	0.06	0.00	0.30	2.54	0.06	0.08
Jalore	0.11	14.94	15.05	23.87	19.61	23.89	0.10	0.00	0.17	0.26	0.04	0.11
Jhalawar	0.16	19.18	19.34	15.80	0.58	15.95	0.07	0.00	0.04	0.01	0.36	0.16
Jhunjhunu	9.34	2.50	11.84	19.58	6.41	26.54	0.06	0.01	0.08	0.65	0.17	9.34
Jodhpur	2.87	40.29	43.16	15.53	37.20	85.57	0.08	0.01	0.21	0.85	0.04	2.87
Karauli	0.46	4.68	5.14	24.25	2.88	14.40	0.03	0.01	0.04	0.17	0.58	0.46
Kota	0.46	10.86	11.33	12.03	0.93	7.61	0.02	0.00	0.02	0.09	0.75	0.46
Nagour	3.69	21.83	25.52	28.32	29.76	75.56	0.11	0.00	0.09	0.54	0.38	3.69
Pali	0.46	17.63	18.09	15.86	43.28	39.05	0.06	0.00	0.11	0.42	0.27	0.46
Pratapgarh	0.80	15.99	16.79	7.66	1.12	13.22	0.01	0.00	0.02	0.01	0.12	0.80
Rajsamand	1.33	11.94	13.27	11.31	5.11	27.32	0.05	0.00	0.05	0.08	0.16	1.33
S.Madhopur	0.09	5.50	5.60	16.19	4.23	13.86	0.05	0.00	0.06	0.19	0.71	0.09
Sikar	10.23	6.62	16.84	28.19	7.44	54.61	0.04	0.00	0.06	0.36	0.21	10.23
Sirohi	0.16	9.74	9.90	9.47	10.47	15.66	0.03	0.01	0.07	0.21	0.03	0.16
Tonk	0.48	11.10	11.58	19.92	10.21	19.12	0.05	0.00	0.01	0.04	0.55	0.48
Udaipur	2.70	46.76	49.46	28.17	7.15	56.31	0.04	0.00	0.12	0.14	0.08	2.70
	3.01	20.07	23.08	22.48	15.73	37.53	0.07	0.01	0.14	0.56	0.41	3.01

Source: GOR (2015), Department of Animal Husbandry, Rajasthan.

Jaipur district has the highest number of in-milk crossbreds and buffaloes. Bikaner has the highest number of in-milk indigenous Cattle followed by Jodhpur and Barmer district. In milk indigenous cattle like Tharparkar cattle breed is native of the Jodhpur and Jaisalmer districts in eastern region of the Rajasthan whereas Rathi cattle breed is reared for

dairy purposes in the northern districts of Shri Ganganagar, Bikaner and parts of Jaisalmer which are irrigated or partially irrigated arid zones. The highest livestock and bovine animal density was recorded in Bharatpur (Table 2.116).

Table 2.116: District-wise Livestock and Bovine Density (1997-2012) in Rajasthan

Districts	Livestock (No. per sq km)				Bovine (No. per sq km)			
	1997	2003	2007	2012	1997	2003	2007	2012
Ajmer	248	90	39	232	94	59	36	00
Alwar	194	99	40	206	15	31	140	51
Banswara	259	10	09	309	78	203	204	95
Baran	117	12	24	115	35	74	33	35
Barmer	145	16	58	189	22	24	28	35
Bharatpur	182	207	83	251	27	159	119	98
Bhilwara	259	203	94	234	08	38	85	12
Bikaner	84	31	35	92	22	25	27	36
Bundi	169	55	72	167	95	38	96	97
Chittaurgarh	221	238	256	176	39	141	158	09
Churu	154	04	37	134	39	30	34	16
Dausa	233	243	283	292	43	147	160	82
Dhaulpur	149	58	74	174	10	120	123	38
Dungarpur	273	303	309	289	53	168	175	61
Ganganagar	130	20	51	144	57	51	79	33
Hanumangarh	129	20	40	138	56	57	76	92
Jaipur	208	221	255	252	08	117	131	53
Jaisalmer	64	16	74	83	3	5	9	1
Jalor	170	54	79	153	57	57	56	72
Jhalawar	149	67	82	165	06	111	117	11
Jhunjhunun	210	200	237	217	30	35	92	04
Jodhpur	172	16	46	157	38	31	40	50
Karauli	144	40	77	169	39	34	94	05
Kota	126	26	39	124	36	31	91	38
Nagaur	183	49	76	178	52	14	50	50
Pali	223	72	87	186	50	16	54	54
Pratapgarh	-	-	-	72	-	-	-	108
Rajsamand	26	233	249	242	14	97	110	04
Sawai Madhopur	16	66	96	179	93	36	32	95
Sikar	32	241	293	274	37	91	100	14
Sirohi	188	89	88	175	57	55	72	74
Tonk	175	41	69	168	31	52	77	36
Udaipur	216	253	233	237	22	134	125	30
RAJASTHAN	159	144	166	169	64	62	68	77

Source: NDDDB (2016).

Rajasthan state has three native cattle breeds viz Rathi, Tharparker and Nagori, having great deal of endurance (Table 2.117). Rathi cattle breed is reared for dairy purposes in the northern districts of Shri Ganganagar, Bikaner and parts of Jaisalmer which are irrigated or partially irrigated arid zones with alluvial or loamy soil. The Tharparkar cattle breed is native of the Jodhpur and Jaisalmer districts in eastern region of the state which has arid climate characterized by low rainfall and desert soil.

Tharparkar is also known as “White Sindhi”, “Cutchi” or “Thari” cattle breed reared for dual purpose of draught and milk production as it can produce milk under rigorous feeding and unfavourable environmental conditions. Nagori cattle breed has been named after the Nagaur district which is in central part of the state. The Nagori cattle are sturdy and used for ploughing, cultivation, drawing water from wells as well as transportation of field produce to markets. Earlier they were used as trotters in light iron-wheeled carts for quick transportation. There was a good demand of Nagori animals in Bihar but after implementation of Rajasthan Bovine Animal (Prohibition on Slaughter and Regulation of Temporary Migration or Export) Act, the demand has tapered off. In addition to native breeds, Gir, Malvi, Kankrej and Hariana cattle are found in large numbers in the State. In case of buffalo, there is no native breed. However, enormous numbers of Murrah, Surti buffaloes are reared in the region. The performances of these breeds are presented in Table 2.118.

Table 2.117: Distribution of Rajasthan’s Cattle Breeds in Rajasthan

Breed	Breeding Tract	Utility	Distribution
Rathi	Bikaner, Ganganagar and Jaisalmer districts of Rajasthan	Milch	Mainly distributed in Bikaner, Ganganagar and Hanumangarh districts
Tharparkar	Jodhpur, Barmer, Jaisalmer districts of Rajasthan and Kutch district of Gujarat	Milk and Draught	Distributed in Jaisalmer, Jodhpur and Barmer districts
Nagori	Nagaur, Bikaner and Jodhpur districts of Rajasthan	Draught	Mainly distributed across Nagaur, Jodhpur, Bikaner districts

Source: NDDDB (2016).

Table 2.118: Performance of Native Cattle Breeds in Rajasthan

Parameters	Cattle		
	Rathi	Tharparkar	Nagori
Breed Population as on 2012	1,218,294	486,339	503,193
Average Adult Body Weight (Kg)	Female : 295	Male : 475 Female : 295	Male : 363 Female : 318
Lactation Yield (Kg)	1,560 (1,062 - 2,810)	1,749 (913 - 2,147)	603 (479 - 905)
Lactation Length (days)	336	285	267 (237 - 300)
Calving Interval (days)	512 (420 - 600)	425 (403-565)	455 (420 - 540)
Age at First Calving (days)	1,392 (1,080 - 1,560)	1,231 (1,101 - 1,575)	1,421 (1,260 - 1,500)
Average Milk Fat (%)	3.7 - 4.0	4.9 (4.7 - 4.9)	5.8

Source: NDDDB (2016) Animal Genetic resources of India (Agri-IS), NBAGR, ICAR and estimated Livestock Population Breed Wise, Based on Breed Survey 2013, Department of Animal Husbandry, Dairying and Fisheries, MoA&FW, Govt. of India

2.10.4 Status of Availability of Feed and Fodder in Rajasthan

Feed and fodder availability in a drought prone area of the State is a major constraint of dairy development in Rajasthan. Dairying is the most reliable source of earning to farmers in Rajasthan but with disappearing grazing land, restricted forest and stall feeding, the bovine are facing a severe shortage of fodder. It is estimated that a perpetual shortage of fodder in the State is to the tune of 40 per cent. In Rajasthan, the livestock keepers have traditionally relied on common grazing lands “gochars”, sacred groves “orans” and forests. With the growth of mining industry and allocation of community wastelands for biodiesel plantation, the permanent pastures and other grazing land has reduced from 1.9 million ha in 1990-91 to 1.7 million ha in 2009-10. Often layers of white marble dust choke neighbouring grazing land. Rajasthan is a leader in crops like sorghum, pearl millet (bajra), pulses, oil seeds, wheat and rice, all of which in some way or other, form parts of compound livestock feed. Rajasthan also produces non-conventional ingredients, which can be integral part of the feed raw material. Now the dairy farmers are shifting from extensive open grazing system to semi-intensive and intensive stall feeding system. Green fodder is a comparatively economical source of nutrients. However, the availability of green fodder is lower than estimated requirement. In Rajasthan, the area under fodder crop to state gross cropped area has increased from 15.93 per cent in 2008-09 to 20.26 per cent in 2012-13 (Table 2.119). Bikaner District has the highest area under fodder crops followed by Churu, Hanumangarh and Jaisalmer District.

As against the estimated animals’ requirements, feed resources available in Rajasthan are lower. It can be seen from the state that during the last two decade (1992 to 2011), as given in Table 2.120, shortage of dry matter in the State has increased from 29.01 per cent of the requirement to 51.88 per cent during corresponding years. Six cattle feed plant, in the cooperative sector and spread across the State, produced about 1650 MTPD during 2016.

Table 2.119: Area under Fodder Crops in Rajasthan

Districts	Area under Fodder Crops ('000 ha)					Gross Sown area ('000 ha)				
	2008-09	2009-10	2010-11	2011-12	2012-13	2008-09	2009-10	2010-11	2011-12	2012-13
Ajmer	17	15	13	12	27	493	436	775	640	664
Alwar	50	35	34	30	55	809	864	859	854	853
Banswara	2	2	2	2	2	316	325	332	337	340
Baran	2	3	2	2	2	550	547	574	593	629
Barmer	360	370	411	430	417	1,777	1,820	1,979	1,868	1,646
Bharatpur	30	31	27	26	35	562	603	597	591	587
Bhilwara	47	35	36	30	54	520	456	733	624	643
Bikaner	891	653	884	908	1,101	1,784	1,502	1,880	1,884	1,807
Bundi	15	15	18	13	14	413	384	444	461	464
Chiiorgarh	21	21	22	21	27	492	423	520	505	518
Churu	350	295	248	327	608	1,459	1,283	1,575	1,528	1,355
Dausa	18	14	12	11	15	351	382	392	384	378
Dholpur	3	3	3	3	4	208	229	226	230	230
Dungarpur	4	5	5	5	5	158	186	187	200	200
Ganganagar	282	187	217	216	357	1,092	947	1,073	1,107	1,187
Hanumangarh	389	215	310	314	509	1,237	1,014	1,278	1,220	1,198
Jaipur	73	70	59	53	71	963	934	1,172	1,091	1,013
Jaisalmer	374	318	426	430	500	728	626	878	848	844
Jalor	66	63	61	50	103	813	824	1,126	911	895
Jhalawar	3	4	3	3	4	549	579	570	601	614
Jhunjhunun	79	67	61	66	132	655	614	734	668	644
Jodhpur	174	148	153	158	291	1,420	1,402	1,580	1,516	1,449
Karauli	5	5	4	3	7	306	348	344	340	340
Kota	5	5	5	4	4	435	439	459	462	492
Nagaur	135	92	78	91	217	1,460	1,411	1,859	1,469	1,453
Pali	66	53	46	35	65	645	631	887	702	721
Pratapgarh	2	2	2	2	2	272	267	272	283	291
Rajsamand	12	9	10	8	12	110	99	146	139	140
S.Madhupur	7	6	5	4	8	372	425	412	398	400
Sikar	87	76	72	80	134	743	715	847	777	748
Sirohi	23	22	22	18	32	192	171	241	233	230
Tonk	16	14	13	13	19	584	575	715	691	637
Udaipur	22	22	22	21	22	303	284	336	348	342
Rajasthan	3,627	2,875	3,287	3,386	4,853	22,771	21,745	26,002	24,505	23,954

Source: NDDB (2016).

Table 2.120: Dry Matter Availability, Requirement & Surplus/Deficit in Rajasthan

Year	Dry Matter Availability, Requirement and Surplus/Deficit in Rajasthan (000 MT)		
	Availability	Requirement	Deficit/ Surplus
1992	33,571	55,046	-21,475
1997	35,848	66,634	-30,786
2003	29,523	66,153	-36,630
2007	45,655	74,298	-28,643
2008	47,310	76,464	-29,154
2009	47,052	78,929	-31,877
2010	38,218	81,703	-43,485
2011	40,809	84,808	-43,999

Source: ICAR-NIANP (2012)- Feedbase 2012, National Institute of Animal Nutrition and Physiology, Bangalore.

2.10.5 Growth in Milk Production in Rajasthan

Rajasthan ranks second among the milk producing states in India, achieving 185 lakh MT in 2015-16, which has increased from the 41.46 lakh MT during 1985-86. The numbers of initiatives were taken by the government which could help in improving the milk productivity over the period. The graph indicates that there is a consistent increase in the production of milk over the years. The milk production has increased from 7718 thousand tonnes in 2001-2002 to 18500 thousand tonnes in 2015-16 registering a growth of 139.70 per cent over base year (Table 2.121). In Rajasthan, per capita milk availability is high as compared to national availability and ICMR recommendation. During the year 2015-16, per capita milk availability was very high of 704 gm/day against 337 gm/day of national availability and 208 grams of milk requirement per head per day as per ICMR norms.

Table 2.121: Milk Production in Rajasthan: 2000-01 to 2015-16

Sr. No	Year	Milk Production in Thousand MT						Growth of Milk Prod (%) over base year	Per Capita availability (gms/day)
		In milk Cow		In Milk Buffalo	In milk Bovine	In Milk Goat	Total		
		Indi-genous	C.B.						
1	2001-02	2325	91	4488	6904	814	7718	-	376
2	2002-03	2159	121	4702	6982	866	7848	1.68	368
3	2003-04	2134	157	4899	7190	864	8054	2.62	371
4	2004-05	2148	188	5065	7401	909	8310	3.18	376
5	2005-06	2287	257	5108	7652	981	8633	3.89	387
6	2006-07	2782	606	5571	8959	1350	10309	19.41	449
7	2007-08	3161	681	6012	9854	1523	11377	10.36	486
8	2008-09	3625	703	6033	10361	1572	11933	4.89	501
9	2009-10	3927	882	6074	10883	1448	12331	3.34	509
10	2010-11	4120	913	6611	11644	1590	13234	7.32	538
11	2011-12	3822	867	7153	11842	1669	13511	2.09	539
12	2012-13	4084	913	7238	12235	1712	13947	3.23	555
13	2013-14	4173	938	7682	12793	1781	14574	4.50	572
14	2014-15	4286	1840	8985	15111	1823	16934	16.19	655
15	2015-16	4394	2235	9938	16567	1933	18500	9.24	704

Source: NDDB (2016).

Out of total milk production, about 53.72 per cent of the milk production is contributed by Indigenous Buffaloes followed by 23.75 per cent by indigenous cattle. The crossbreed cattle contribute 12.08 per cent of the total milk production in the state whereas Goat contributes 10.45 per cent to total milk production. However, the productivity of cross breed cows was maximum at 7.93 liters per day among all dairy animals. The

indigenous cattle is also contributing significantly in milk production, especially in arid and semiarid areas of the state, though its productivity is much lower than the cross bred cows and buffaloes (5.84 ltr/day). While the productivity of cows and buffalo in term of daily milk yield is increasing continuously (Fig 1.5). Despite of increase in milk yield, there is still a wide scope for improving milk yield of milch animals.

Out of total bovine milk production, 59.99 per cent accounts buffalo milk, 26.52 per cent share accounts for indigenous cows and remaining 13.49 per cent was of cross breed cows. The significant growth in population of in milk bovine animals supported by increase in milk yield of bovine animals which has increased (bovine milk production) by 41.67 per cent in 2015-16 over 2001-02. The share of cross breed cows in total milk production has increased while share of indigenous cows and buffalo has declined during last one and half decade. The corresponding share was 65.0 per cent, 33.68 per cent and 1.32 per cent respectively in 2000-01.

Specieswise performance of growth in milk production during the 2001-02 to 2014-15 is presented in Table 2.122. The rate of growth in milk production in the state has varied widely from different species. Cross breed cow has recorded highest growth rate of 24.32 per cent per annum followed by goats 7.30 per cent, desi cow 6.03 per cent and buffaloes 4.88 per cent in the state. Though growth in milk production has been increased in the state but it was very less at the national level as compared to state level. During the same year, crossbreed cow also has highest annual growth milk in yield (2.88%) followed by buffaloes (2.72%), desi cow (2.69%) and goats (1.09%) per annum. Nagori, Rathi, Tharparkar and Kankrej are some of the cow breeds found in Rajasthan. Among all cow breeds in Rajasthan, Tharparkar has the highest yield of 1800 to 2600 kg of milk per lactation. Alwar is the highest milk producing district in the state with an estimated milk production of about 1116 thousand tonnes during 2013-14 (Table 2.123). Jaipur is the second largest producer of milk (7.44%). The top ten districts together contributes half of the state milk production those are Alwar, Jaipur, Jodhpur, Ajmer, Pali, Barmer, Sikar, Ganganagar, Nagour and Jhunjhunu.

Table 2.122: Growth in Milk production and Milk Yield (in Rajasthan)

Category	Milk production (%)		Milk yield (%)	
	Rajasthan	India	Rajasthan	India
Cross breed cow	24.32	7.58	2.88	0.74
Desi Cow	6.03	3.39	2.69	2.21
Buffaloes	4.88	3.80	2.72	1.40
Goats	7.30	3.27	1.09	0.23

Source: GOR (2015, 2016), Annual Report, Directorate of Animal Husbandry, Jaipur.

Table 2.123: Districtwise & categorywise Share of Milk Production in Rajasthan

Name of the District	District wise & category wise %age share of Milk Production in Rajasthan (2013-14)					
	% share of CB Cow	% share of IND Cow	% share of Total Cattle	% share of Buffalo	Goat	% share to total prod
Ajmer	0.81	5.08	5.90	8.17	2.18	4.66
Alwar	0.36	2.59	2.95	21.36	2.42	7.66
Banswara	0.12	1.97	2.09	4.22	0.79	2.03
Baran	0.05	2.21	2.25	3.16	0.48	1.68
Barmer	0.00	8.27	8.27	2.59	3.40	4.09
Bharatpur	0.43	1.37	1.80	6.09	0.41	2.37
Bhilwara	1.63	4.22	5.85	4.53	1.29	3.34
Bikaner	1.17	6.47	7.65	2.42	1.61	3.34
Bundi	0.12	3.12	3.24	5.49	0.55	2.66
Chittaurgarh	0.89	3.12	4.00	5.94	0.96	3.12
Churu	0.36	2.66	3.02	3.64	1.92	2.46
Dausa	0.43	1.08	1.51	7.69	0.98	2.92
Dhaulpur	0.02	0.84	0.86	3.36	0.29	1.29
Dungarpur	0.02	1.94	1.97	3.21	0.74	1.70
Ganganagar	3.07	5.80	8.87	3.57	0.72	3.77
Hanumangarh	1.15	3.60	4.75	4.82	0.65	2.92
Jaipur	3.45	3.81	7.26	16.90	1.80	7.44
Jaisalmer	0.02	3.50	3.52	0.05	2.56	1.75
Jalor	0.02	2.66	2.68	5.25	0.96	2.55
Jhalawar	0.02	1.99	2.01	4.65	0.84	2.15
Jhunjhunun	2.71	1.58	4.29	7.17	1.68	3.76
Jodhpur	1.20	7.33	8.53	7.50	2.78	5.39
Karauli	0.07	0.86	0.93	4.72	0.89	1.87
Kota	0.10	1.51	1.61	3.33	0.48	1.55
Nagaur	0.38	4.10	4.48	6.23	2.92	3.91
Pali	0.14	6.52	6.66	6.38	1.68	4.22
Rajsamand	0.60	1.27	1.87	3.67	0.74	1.81
SawaiMadhopur	0.05	1.37	1.41	5.61	0.65	2.20
Sikar	2.49	2.97	5.47	9.61	2.09	4.91
Sirohi	0.02	1.51	1.53	2.47	0.91	1.41
Tonk	0.12	2.04	2.16	4.22	0.89	2.09
Udaipur	0.48	2.42	2.90	5.99	1.41	2.95

Source: GOR (2016a).

At present both private and co-operative organizations are engaged in the production, procurement, processing and marketing of milk in the

state. The milk producers who sell their milk through private local traders are always exploited. The private traders who have been interested in maximizing their own profits are least concerned about improving the productivity of dairy farming. The burden, therefore, lies on the cooperative sector and primary milk cooperative societies were organized to help dairy farmers in developing dairy as an industry.

2.10.6 Infrastructure Development in Rajasthan

Rajasthan is the largest state in the country and large part of the state is arid or semi-arid and fall under Thar Desert. The climatic conditions are adverse with scarcity of water for irrigation and erratic rains with very low average annual rainfall. These conditions leave a little scope for crop production and enhance the importance of animal husbandry over the crop production especially during recurrent droughts. Main strength of livestock sector in the State is that it produces 11 per cent milk and ranks second in the country. This could happen because of good network of milk cooperatives and development of infrastructure at the village as well as district level. The co-operatives have developed modern systems of Marketing of dairy product, veterinary care, milk processing, training, cattle feed farm and artificial insemination and provide these services to a large number of milk producers at very low prices. the special emphasis on development was dairy infrastructure was given during the Operation Flood movement.

The marketing activities of the Federation include providing support to the Milk Unions in milk and milk products marketing, within and outside the State. RCDF is presently marketing milk & milk products under SARAS brand. Fresh milk of different compositions and long shelf life tetra pack milk is being marketed in rural and urban areas. The Federation is a major supplier of tetra pack milk (UHT) to the armed forces. Saras Milk Parlours serving a complete range of milk products are operational at 383 points and there are 18,374 booths and shop agencies in Rajasthan.

The milk collection and testing systems at village DCS have been

automated with the installation of various testing equipments (AMCS, AMCU, EMT, Auto Milk Analyser & DPMCU, FT-1/120, LACTO SCAN, MILKO SCAN MINOR). At present 14,070 such equipments are working. Milk reception, weighing and testing at dairy plants and chilling centres have been modernized with the installation of 37 Automated raw milk reception Dock (RMRD). Further, 1779 Bulk Milk Coolers (BMC) have been installed for quality milk collection.

An ultramodern Frozen Semen Station is established at Bassi which supplies the Semen of high pedigree exotic and native breeds to supply the frozen semen to the AI Centres of Milk Unions as well as to A.H. Department. At Frozen Semen Bank Bassi semen of high pedigree bulls like Surti, HF, HF crossbreed, Tharparkar, Gir, Rathi, Sahiwal & Kankrej are available. For indigenous breed Germ Plasm Station, Narwa Khichiyani, Jodhpur has been established where bulls of indigenous breeds like Rathi, Tharparkar, Kankrej, Gir & Murrah are available for semen production. The animal health care is more important for all over economic growth in Rajasthan state. There are 4696 veterinary Institution, 34 Veterinary polyclinic, 775 First Grade Veterinary Hospitals, 1718 Veterinary Hospitals, 198 Veterinary Dispensaries, 2571 veterinary sub centre are working at present.

The district wise growth of veterinary institutions in Rajasthan during 2014 - 2015 is presented in Table 2.124, while District wise Number of Veterinary Institutions in Rajasthan (2014 - 2015) for animal Husbandry in Rajasthan is presented in Table 2.125.

Table 2.124: Districtwise growth of Veterinary Institutions in Rajasthan

Districts	Number of Veterinary Institutes- Rajasthan					
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Ajmer	100	104	116	133	147	147
Alwar	175	178	186	208	237	237
Banswara	105	110	113	117	120	120
Baran	67	68	72	78	84	84
Barmer	105	110	119	138	158	158
Bharatpur	149	150	154	170	180	180
Bhilwara	176	178	183	194	205	205
Bikaner	110	114	121	134	148	148
Bundi	67	67	69	71	79	79
Chittaurgarh	115	119	123	131	138	138
Churu	88	92	97	110	125	125
Dausa	75	78	83	94	102	102
Dhaulpur	49	49	50	54	58	58
Dungarpur	136	140	142	146	151	151
Ganganagar	115	118	123	135	141	141
Hanumangarh	90	95	102	119	133	133
Jaipur	231	239	253	284	318	318
Jaisalmer	48	49	52	57	60	60
Jalor	87	90	91	95	106	106
Jhalawar	71	73	73	78	78	78
Jhunjhunun	147	154	168	198	219	219
Jodhpur	138	140	144	160	174	174
Karauli	61	62	67	73	78	78
Kota	60	61	64	70	76	76
Nagaur	161	170	196	235	277	277
Pali	120	121	126	135	143	143
Pratapgarh	64	65	66	72	75	75
Rajsamand	103	103	108	112	115	115
Sawai Madhopur	54	59	65	76	84	84
Sikar	167	173	191	219	244	244
Sirohi	75	75	77	79	82	82
Tonk	80	83	90	98	114	114
Udaipur	206	211	216	230	247	247
Rajasthan	3,595	3,698	3,900	4,303	4,696	4,696

Source: NDDB (2016).

The Input facility like cattle feed and fodder farm, semen bank and nucleus farm are presented in Table. It can be seen that the frozen Semen bank and Exotic Nucleus farm was established in Bassi (Jaipur) and Narwa with the objective to provide high quality genetics in the form of semen straw to cover milk shed area to uplift socioeconomic condition of dairy farmer in the milk shed area and country. For the development of the production potentiality of our livestock, availability of nutritious feed and fodder is essential. The cattle seed farm is located in Rajori/ Bassi

(Jaipur). Balanced cattle feed is being manufactured by five cattle feed plants viz. Ajmer, Bikaner, Jodhpur and Nadbai, Lambiyakalan. The milk unions make feed available to the farmers via village level dairy cooperative societies.

Table 2.125: Districtwise Number of Veterinary Institutions in Rajasthan

S.No.	Districts	PC	VHF	VH	VD	SC	DMVU	Total
1	Ajmer	1	29	68	5	99	3	205
2	Alwar	1	34	79	9	189	3	315
3	Baran	1	18	30	4	86	3	142
4	Banswara	1	23	50	6	83	3	166
5	Barmer	1	28	70	5	102	3	209
6	Bharatpur	1	23	52	7	147	3	233
7	Bhilwara	1	38	68	10	135	3	255
8	Bikaner	1	26	63	9	94	3	196
9	Bundi	1	12	21	4	76	3	117
10	Chittorgarh	1	19	44	7	99	3	173
11	Churu	1	23	47	5	98	3	177
12	Dausa	1	17	42	5	77	3	145
13	Dholpur	1	12	25	5	38	3	84
14	Dungarpur	1	21	44	6	115	3	190
15	Hanumangarh	1	20	53	6	96	3	179
16	Jaipur	2	57	98	10	244	3	414
17	Jaisalmer	1	12	28	1	31	3	76
18	Jalore	1	18	38	6	79	3	145
19	Jhalawar	1	22	25	4	72	3	127
20	Jhunjhunu	1	35	102	0	128	3	269
21	Jodhpur	2	31	87	8	110	3	241
22	Karoli	1	12	31	7	55	3	109
23	Kota	1	15	29	4	63	3	115
24	Kuchaman city	0	22	58	4	105	3	192
25	Nagaur	1	15	45	7	83	3	154
26	Pali	1	26	65	5	98	3	198
27	Pratapgarh	1	12	20	4	61	3	101
28	Rajsamand	1	17	34	4	85	3	144
29	Swaimodhpur	1	15	24	6	81	3	130
30	Sikar	1	31	94	10	164	3	303
31	Sirohi	1	13	29	7	54	3	107
32	Sriganganagar	1	26	41	7	110	3	188
33	Tonk	1	18	42	5	88	3	157
34	Udaipur	1	35	71	6	202	3	318
Total		35	775	1717	198	3447	102	6274

Notes: PC- Poly Clinic, VHF- first Grade Veterinary Hospital, VH- Veterinary Hospital, VD- Veterinary Dispensary, SC- veterinary Sub Centre, DMVU- Mobile veterinary Unit
Source: GOR (2012)- Statistical Abstract, GoR, Jaipur

2.10.7 State Summary

Rajasthan ranks second among the milk producing states in India, achieving 185 lakh MT in 2015-16, which has increased from the 41.46 lakh MT during 1985-86. The numbers of initiatives were taken by the government which could help in improving the milk productivity over the period. In Rajasthan, per capita milk availability is high as compared to national availability and ICMR recommendation. During the year 2015-16, per capita milk availability was very high of 704 gm/day against 337 gm/day of national availability and 208 grams of milk requirement per head per day as per ICMR norms. The climatic conditions are adverse with scarcity of water for irrigation and erratic rains with very low average annual rainfall. These conditions leave a little scope for crop production and enhance the importance of animal husbandry over the crop production especially during recurrent droughts. Main strength of livestock sector in the State is that it produces 11 per cent milk and ranks second in the country. This could happen because of good network of milk cooperatives and development of infrastructure at the village as well as district level. The co-operatives have developed modern systems of Marketing of dairy product, veterinary care, milk processing, training, cattle feed farm and artificial insemination and provide these services to a large number of milk producers at very low prices. The special emphasis on development of dairy infrastructure was given during the Operation Flood movement.

The next chapter presented status of dairy development institutions in selected eastern and western states of India.

Status of Dairy Development Institutions

3.1 Introduction:

Various types of institutional and infrastructure supports are required in order to facilitate growth in dairy sector. These include credit institutions, farmer training facilities, milk collection centres, processing and marketing facilities, dairy farmer co-operatives of groups, and research extension services. Without these support dairy development programmes can face serious constraints. As cited by many researchers, most of the dairy farmers are resource poor smallholders who mainly depend on bank loans for farm investment. Most of these farmers have little formal education and only a limited knowledge of dairy husbandry; consequently at least two or three months of intensive practical training are required to provide them with a reasonable background in dairy farming. Once dairy production begins, a milk collection and cooling centre is required to collect milk from the dairy farms and then to transport the milk to a milk processing plant for processing and packaging, as well as marketing of the products. Farmers constantly require dairy extension service to provide AI, as well as animal health care (such as vaccination) and other services to improve their farming efficiency. Research on various aspects of dairy production, including socio-economic and policy studies, is required in order to find solutions to various problems. Government departments and universities need to be well equipped in dairy research. There is a need for facilities capable of conducting research to identify appropriate scientific and technological interventions for the improvement of local dairy production. The lack of effective dairy extension services and inadequate research support appear to be major constraints to the efficiency of dairy production in different parts of India.

Let us discuss about first eastern states followed by western states.

3.2 Status of Dairy Development Institutions in Assam

The Directorate of Animal Husbandry and Veterinary is one of the major departments under the Department of Animal Husbandry and Veterinary, Government of Assam which looks after the different activities for development of livestock sectors. Assam Livestock Development Agency (ALDA) was registered under Society Act as per guidelines given by the National Project on Cattle and Buffalo Breeding (NPCBB), GOI. This agency under NPCBB has been involved in the supply of genetic material to the participating agencies. ALDA started functioning in the State from the year 2004, successfully completed NPCBB Phase- I and started implementing Phase- II which is still going on. During the process ALDA expanded the AI network to the entire State as per the guideline of NPCBB and achieved considerable progress in terms of A.I. coverage and semen production. Under NPCBB Phase - II the State also established one State of the art Frozen semen Bull Station at Barpeta to cater to the needs of State's own breeding network expansion. The North Eastern Regional Disease Diagnostic Laboratory (NERDDL) was established in Guwahati in 2003 with 100 per cent assistance from Government of India as the referral laboratory for the North-East States. It is equipped with Modern animal disease diagnostic equipments, two BSL-II level lab and One Mobile BSL-III lab.

In Assam, the Directorate of Dairy Development initially covered all of their activities on procurement, processing and distribution of milk. One of their major aims was to supplement the incomes of the rural milk producers and to provide good quality milk to the urban consumers at a reasonable price. However, this objective underwent changes over the years and the Directorate has started giving more importance on facilitating and regulatory role.

3.2.1 Dairy Development through Cooperative/Milk Unions in Assam

In Assam, dairy cooperative model is a three-tiered structure with the dairy cooperative societies at the village level, a milk union at the district level and a federation of member unions at the State level. The

three tire model helps in – (a) Establishment of a direct linkage between milk producers and consumers by eliminating middlemen (b) Milk Producers (farmers) control procurement, processing and marketing (c) Professional management.

Milk cooperatives are now playing a significant role in the socio-economic development of the State. Most of these cooperatives are the members of the West Assam Milk Producers Union Ltd. (WAMUL) and East Assam Milk Producers Cooperative Union Ltd. (EAMUL) (which is defunct). These cooperatives sell their surplus milk to their Union. At present, there are 341 numbers of primary dairy cooperative societies in the State. These societies are formed as per the Assam Cooperative Societies Act, 2007, which came into force in 2012. In 2015-16, the total members of the dairy cooperatives stood at 16 thousand in Assam. As against this, only about 42 thousand liters of liquid milk are marketed daily in the State by the dairy cooperative societies. As per NDDDB Annual reports 2015-16, the percentage share of Assam in total milk procurement by cooperative sector in India was only 0.05.

In Assam, Dairy Development institutions are less developed as compared to the advanced milk producing States in the country. Districtwise geographical coverage of dairy cooperative societies are presented in Table 3.1. It shows that co-operative societies were mostly found in 9 districts out of 26 districts of Assam. The highest geographical area of 532298 ha was covered under Sonitpur district and the lowest area coverage was recorded in the district of Marigaon (158765 ha). In aggregate, area under each co-operative was recorded at 8646 ha. The table reflects that the status of dairy cooperatives in the State still in infant stage in spite of continuous efforts put in by the Directorate of Dairy Development to bring the milk producers under dairy cooperative systems.

Table 3.1: District wise number of Dairy Co-operative Societies, 2016

Sl. No	District	No. of Co-operative Society (In nos.)	Geographical Area (ha.)	Area Coverage per Dairy Cooperative (ha.)
1	Kamrup	39	423701	10864
2	Nalbari	-		
3	Barpeta	63	225069	3573
4	Darrang	38	180707	4755
5	Nagaon	47	411030	8745
6	Marigaon	33	158765	4811
7	Sonitpur	25	532298	21292
8	Sivasagar	-	-	-
9	Jorhat	35	285100	8146
10	Golaghat	35	354070	10116
11	Cachar	26	377610	14523
12	Karimganj	-	-	-
13	Hailakandi	-	-	-
14	Dhubri	-	-	-
15	Goalapara	-	-	-
16	Bongaigaon	-	-	-
17	Karbi Anglong	-	-	-
18	Dima Hasao	-	-	-
19	Lakhimpur	-	-	-
20	Dhemaji	-	-	-
21	Tinsukia	-	-	-
22	Dibrugarh	-	-	-
23	Baska	-	-	-
24	Udalguri	-	-	-
25	N.C.Hills	-	-	-
26	Chirang	-	-	-
	Total	341	2948350	8646

Source: Directorate of Dairy Development, Govt. of Assam and area coverage per dairy cooperative is computed.

3.2.2 West Assam Milk Producers' Cooperative Union Limited (WAMUL)

It has already been mentioned earlier that out of three Milk Unions, only WAMUL is functional. The WAMUL covers three of our sample districts i.e. Barpeta, Kamrup and Nagaon. The NDDB is managing WAMUL since April 2008. During 2015-16, the Union reported an average milk procurement of 21,783 kg per day with a peak procurement of 32,813 kg per day, covering 3,894 dairy farmers organized in 169 functional milk producers' cooperative societies. The Union in the year has made a significant stride by handling an additional milk procurement of over Rs.1.50 crore from its dairy farmers. Moreover, for promoting clean and hygienic handling of fresh milk by the dairy farmers, this year, the Union has distributed stainless steel milk jars with a capacity of five litres and 10 litres to over 1,700 dairy farmers. During 2015-16, the Union sold 43,830

litres of packed liquid milk per day under the brand ‘*Purabi*’ and also launched ‘*Purabi Taza*’, a new product in 200 ml pouch. The Union has achieved a sales turnover of Rs.725 million compared to Rs. 651 million in the previous year. During the year, WAMUL received financial assistance from the Government of Assam under the World Bank-funded Assam Agricultural Competitiveness Project-Additional Funding (AACP-AF) Project. This support has enabled the WAMUL to formally train 120 Mobile Artificial Insemination Technicians (MAITs) for carrying out doorstep AI delivery services in Nagaon district. As on March 2016, the MAITs have performed 43,076 AI services covering around 960 villages which have resulted in the birth of 5,091 calves of which 2,801 are female. The project has also started organizing veterinary and animal health camps for enhancing the productive life cycle of the animals. The WAMUL had initiated ration balancing advisory services by training 10 of its MAITs as Local Resource Persons (LRPs). During the year, greater degree of transparency was established in the village-level milk collection process through installation of 25 Data Processor-based Milk Collection Units (DPMCU) and two Automated Milk Collection Units (AMCU). This has resulted in remarkable improvement in the quality of locally procured milk.

Table 3.2 Sales Turnover and Gross Margin by Selling Liquid Milk & Milk Products of Milk Union (WAMUL)

Particulars	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15
Sales turnover from Milk Business (Rs/ Ltr)	38.6	41.8	40.53	41.02	41.3	41.33	41.23	40.54	42.79	40.6	46.77	46.19
Operating Profit(Rs/ Ltr)	-0.36	0.22	-1.19	-1.75	-0.48	-1.65	-0.28	0.03	0.64	2.9	5.1	3.7
Other Income(Rs/ Ltr)	0.41	0.76	0.64	0.52	0.57	0.31	0.68	0.62	0.52	0.91	-1.09	0.13
Gross Margin from Sales(Rs/ Ltr)	0.05	0.98	-0.55	-1.23	0.09	-1.34	0.4	0.65	1.16	3.81	4.01	3.83

Source: WAMUL

Table 3.2 shows sales turnover and gross margin by selling liquid milk and milk products of WAMUL. The table depicts that the sales turnover from milk business increased from Rs. 38.60/ Ltr from the month of April, 2014 to Rs. 46.19/ Ltr for the month of March, 2015 while during

this period gross margin from sales increased from Rs. 0.05/ Ltr to Rs.3.83/Ltr.

3.2.3 Pattern of Pricing and Marketing

The role of dairy cooperatives in procurement of milk and providing necessary services to the dairy farmers make them distinct among the other channels of milk marketing. The dairy farmers selling the milk to the dairy cooperatives get fair prices of their product. Milk union collects the milk through their Milk Van from the cooperatives. Milk price is paid to the dairy cooperative society by the union on the basis of two axis *FAT* and *SNF* content of raw milk. These centres (co-operative Society) also provide financial support and pay the money to the dairy farmers at certain intervals. Thus, the dairy farmers used to get reasonably good amount from the dairy cooperatives.

3.2.4 Institutional Weakness/Deficiency/Inefficiency

The financial problem was found to be the most significant constraint faced by the dairy cooperatives. Among the infrastructural constraints, non-availability and infrequent visit of veterinary practitioners were the main constraints. Not exercising proper management practices by the cooperative societies in favour of their attached farms was a major managerial problem. Lack of technical guidance was severe among the members of cooperative farms. As regards the socio-psychological issues are concerned, lack of time due to pre-occupation with domestic /agricultural work and lack of cooperation and coordination among the members were major constraints. The main constraint that milk producers usually seek to overcome by acting collectively is the marketing of their product. As a matter of fact, they need to be assured of a secure market to sell their highly perishable produces. It can be met by the dairy farmers themselves by organizing their own collection system and milk treatment facility. This is the rationale behind the establishment of DCS and it has helped the dairy farmers a lot in

converting their primary produce in to other value-added products with longer keeping quality for marketing purposes. The other constraint with this channel is delay in payments by the dairy cooperatives. The poor households are unable to wait for longer periods to get the payments and thereby prefer to transact their marketable surplus through other channels. A major area of weakness of the primary dairy co-operatives is that they function merely as milk vendors, purchasing milk from the members and selling it to the milk union. Dairy development is an integrated process. As such, success can only be achieved if the primary dairy co-operative societies came forward to adopt an integrated approach to address the issues at appropriate level.

3.3 Status of Dairy Development Institutions in Bihar

Making dairying a more lucrative and income generating occupation for farmers will require different types of institutional and infrastructure facilities. These would include credit institutions, farmers training facilities, milk collection centres, marketing facilities, milk processing facilities and veterinary institutes at villages' level. It will be require an increase in the productivity of milch animals and reduction in the cost of production of milk to get more benefit from dairy and make it more intensive. This will be only done by providing better breeding, animal health and feeding inputs to milk producers. This overall strategy will be to increase the production of clean milk, strengthen the cooperatives, and enhance the skills of milk producers for better management of stock, increase the capacity to process milk and set-up a marketing chain for the output. There is also need to expand the cooperative network to cover more farmers. At present, the dairy sector in the state of Bihar is being served by 5,123 dairy cooperative societies with 2.54 lakh farmer members, largest among the eastern part of the states. However, dairy development in the state of Bihar should be leverage the existing cooperative network, as well as focus on expanding and strengthening its coverage in terms of area and processing infrastructure.

3.3.1 Dairy Development Institutions

Dairy development in Bihar was initiated during the 1st Five Year Plan but sincerely effort to organise dairy cooperatives was made much later during 4th Five Year Plan. However, Bihar State Dairy Development Corporation was established in 1972 to accelerate the process of dairy development in general and organization of dairy cooperatives in particular. The process of replicating the 'AMUL Pattern' of dairy cooperatives, got momentum in the state of Bihar only during the mid 1980s after the establishment of the Bihar State Co-operative Milk Producers Federation Ltd. (COMPFED) in 1983. Dairy cooperative is only successful organization in Bihar but covers less than 15 per cent of the villages during 30 years. The dairy cooperative system has lost its steam in Bihar. Moreover, it should not be allowed to monopolize the milk marketing system. During survey, several farmers showed concern about low prices paid by cooperative milk marketing needs more emphasis but private milk processing and marketing organizations are not getting institutional support in Bihar which could be done by promoting private entrepreneurs through institutional financing and government support. The Price of milch animal is higher in Bihar than most of major states in India. It is only due to unavailability of good quality animals. All the animal breeding farms established to multiply good quality breeds under public sector have already been closed. There is no any private organization engaged in multiplication of good quality breed of animals in Bihar. Hence, an arrangement should be made in public - private partnership to establish animal breeding farms for purposeful so that the good quality breed of livestock are made available to the farmers at reasonable prices.

The dairy cooperative structure is not much more found in the region of our state. The majority of milk producers of these regions sell their milk directly to milk vendors/middlemen whereas, few producers sell their milk through milk cooperative societies. The exploitation of milk producers by milk vendors/middlemen is found low due to the existence

of cooperative societies in the some villages but they offer to sell their milk directly to consumer, milk vendor/middlemen since most of the milk producer of these region are marginal and small need money every day and weekly payment whereas payment by cooperative society is very delay as such monthly or bimonthly. Despite it, milk producers have an opportunity to access all types of veterinary and health care services available in cooperative milk union and in nearby government veterinary clinic.

3.3.2 Dairy Development Board/Cooperative Federation/Corporations

The Bihar State Milk Co-operative Federation Ltd. (COMPFED) was established in 1983 as the implementing agency of operation flood (OF) programme of dairy development on 'Anand' pattern in Bihar. All the operation of erstwhile Bihar State Dairy Corporation was handed over to COMPFED (www.sudha.coop). It markets its products under the label "Sudha Dairy." There are six district level milk producers' cooperative unions affiliated to the milk federation. These milk unions are covering 26 districts and in addition 5 districts are being covered by the federation, out of 38 districts. The average capacity of these dairies is to procure 14 lakh litres of milk per day. COMPFED has linked more than 06 lakh farmers in its networking and has about 12,000 village level dairy cooperative societies to assist in milk procurement. COMPFED has 6 affiliated milk unions, including Rajendra Prasad Milk Union (Barauni), Vaishali-Patliputra Milk Union (Patna) Mithila Milk Union (Samastipur) and Tirhut Milk Union (Muzaffarpur). There are 10 dairy plant under cooperation federation with capacity of 780 thousand litre per day and about 150 bulk milk coolers and eight chilling centres with total chilling capacity of 660 TLPD are functional at village and town level. It has been proposed to set up 230 new bulk coolers of 5000 litres capacity and 115 new bulk milk coolers of 10,000 litres capacity in the village till 2016-17. COMPFED markets milk products under brand names like Sudha Gold, Sudha Shakti, Sudha Healthy, sudha Smart and Sudha Lite. The cooperative also facilitates the procurement, processing and marketing of the dairy

products produced, provides education to the unions on successful dairy processing, and assists with animal care including artificial insemination, vaccination, and feeding.

3.3.3 Sudha Brand

The 'Sudha' is also working on the AMUL Model/Pattern in Bihar. It is mainly three tiered structure with dairy cooperative societies (DCS) at the village level, milk union at district level and federation at state level. These help in establishment of direct linkage between milk producers and consumer by eliminating middlemen; milk producers control procurement, processing and marketing and also help in professional management.

3.3.4 Primary Dairy Co-operative Societies

The milk cooperative sector in Bihar was started in 1983 by government of Bihar to coordinate the work of various local milk unions. There are six district level milk producers' cooperative unions affiliated to the milk federation. These milk unions are covering 26 districts and in addition 5 districts are being covered by federation. It has grown positively and includes 19483 organised societies, 13940 working societies and 6030 registered societies comprising 8 districts level milk unions with 151.95 billion membership (2015-16) contributing milk twice a day and procurement of 319460 litre of milk. Further, women have been played an integral part in this flood revolution. Therefore, 580 women cooperative societies exclusively managed and run by rural women folk. In last five years, the milk pouring of cooperatives has increased from 10.70 lakh litres to 17.23 lakh litres per day with effort of government. Nowadays, Bihar is not only self sufficient but also expand to market to eastern UP, Jharkhand, Delhi and NCR.

The district wise distribution of primary dairy cooperative societies in the state is presented in tale 3.3 indicate that the highest number of dairy cooperatives societies are in Patna (19.48% to state total) followed by Ara (17.33%), Muzaffarpur (15.27%), Begusarai (13.24%) and Samastipur

(13.13%). These five together account for more than 78.00 per cent of total dairy cooperatives societies in the state. The progress of unions are presented in Table 3.4

Table 3.3: Number of Dairy Cooperative Societies under Different Milk Union/Project in Bihar (2015-16)

SN	Location of Union/Project	Organized Societies	Working Societies	Registered Societies	Total No. of Societies
1	Vaishal Patliputra Milk Union, Patna	3973	2490	1228	7691
2	Rajendra Prasad Milk Union Begusarai, Barauni	2162	1970	1094	5226
3	Mithila Milk Union, Samastipur	2305	1841	1036	5182
4	Tirhut Milk Union, Muzaffarpur	3181	1904	947	6032
5	Shahbad Milk Union, Arrah	3206	2432	1205	6843
6	Vikramshila Milk Union, Bhagalpur	1616	1027	250	2893
7	Magadh Dairy Project, Gaya	1656	1319	183	3158
8	Kosi Dairy Project, Purnea	1384	1987	87	2458
9	Total	19483	13940	6030	39483

Source: Economic Survey of Bihar, 2012-13 & 2014-15.

Table 3.4: Progress of Unions and Projects in Daily Milk Collection

Sl.	Union/Project	2011-12	2012-13	2013-14	2014-15	2015-16	CAGR
1	Vaishal Patliputra Milk Union, Patna	210.15	224.85	282.09	318.91	307.73	11.80
2	Rajendra Prasad Milk Union Begusarai, Barauni	314.12	383.80	375.20	409.72	457.52	9.70
3	Mithila Milk Union, Samastipur	250.98	282.99	340.57	354.51	353.67	9.50
4	Tirhut Milk Union, Muzaffarpur	11.12	133.53	181.87	196.87	191.55	15.10
5	Shahbad Milk Union, Arrah	129.44	176.17	206.24	257.57	258.29	19.40
6	Vikramshila Milk Union, Bhagalpur	35.73	48.34	54.88	70.13	72.94	19.70
7	Magadh Dairy Project, Gaya	7.50	13.19	22.55	39.53	39.82	55.80
8	Kosi Dairy Project, Purnea	7.13	15.55	20.98	29.24	41.48	51.50
	Total	1070.19	1238.27	1484.52	1676.40	17234.00	13.50

Source: COMPFED, Govt. of Bihar.

3.3.5 Bihar Co-operative Milk Marketing Federation Ltd.

The COMPFED is most successful implementing agency in Bihar that covers 629.20 thousand DCS members, 11638 DCS organisation and 8823 functional DCS. It has 8 districts milk unions as member with 1008 primary members (Table 3.5). COMPFED is the apex marketing agency of the dairy network in the state of Bihar and it is manage the physical delivery and distribution of milk and dairy products from all the milk unions to the final users. This is also responsible for all decisions confined to market development and customer management.

Table 3.5: Overview of COMPFED, Bihar

1.	Year of Establishment	1983
2.	Member	08 District Cooperative Producers' Unions
3.	No. of Producer Members	1008 (In thousand)
4.	No. of Village Societies	9.42 Lakhs
5.	Total Milk handling capacity per day	1228 litres per day
6.	Milk Collection (Total (2015-16)	4.48 billion litres
7.	Milk collection (Daily Average 2015-16)	16.90 lakh litres/day
8.	Cattle feed manufacturing capacity	260 MT per day
9.	Sale Turnover (2015-16)	1500 crores

Source: COMPFED, GoB.

3.3.6 Bihar State Dairy Cooperative Ltd. (BSCL) Coverage

Bihar state dairy cooperative Ltd. is one of the important food product marketing organisations. Its daily milk procurement is around 16.90 lakh litres per day from 9.42 lakhs village dairy cooperative society, 8 members of milk unions covering 29 districts and 10.08 lakhs milk producer members in Bihar state. It is the apex organisation of the dairy cooperatives of Bihar, which; provides remunerative price to the milk farmers. It is exclusive marketing organization of 'Sudha' branded products. Its product comprises milk, Ghee, Ice-cream, Lassi, Misti-dahi, Peda, Paneer, Sudha Special Kalakand, Rasogolla, Gulabjamun, Plain-curd and Balusahi, etc. Presently, milk collection through dairy cooperative was recorded 17.23 lakh kg in Bihar with growth of 61.00 per cent during last five years, which was 10.74 lakh kg in 2011-12. Magadh dairy project has highest CAGR 55.8 per cent followed by Koshi dairy project (51.5%) and Vikramshila milk union (19.7%).

3.3.7 Milk Producer Company Ltd. in Bihar

There are various milk producer companies in Bihar.

Anuj Dairy Pvt. Ltd. (producer of milk and manufacturer of milk products), this was established in the year 1992. This is one of the leading private dairy players in Bihar with brand name of Raj milk and milk product and snow ball ice-cream. It has two plants, one in Patna and another in Hazipur with processing capacity of 1.5 lakh litre of milk per

day. It sells his product across Bihar through distributor and dealer network. This is one of the reputed dairy companies in Bihar offer milk product, dairy product, ghee, desi ghee, milk with its brand name Raj milk and milk product. Exclusive company outlet in Patna at premium location.

Major Contribution to the Success of Anuj Dairy Product Ltd.:

- Milk procurement with more than thousand societies all across Bihar. It is certified under ISO 9001 & ISO 22000 (HACCP).
- Superior sales and marketing force.
- Strategic technological and infrastructural advantage.
- Efficient human investment.

Advantage of its Company:

- Procurement of quality buffalo and cow milk through a strong network of VLC across Bihar.
- Strong roots in local markets and first-hand knowledge of the local culture.
- Business intelligence and technical expertise that is applied to serve our consumer.
- Strong management focus.

Vision and Mission

They provide quality food and beverages to consumers at affordable prices while ensuring fair return to the produces. Anuj dairy's heritage is intrinsically linked to the dairy movement in Bihar. With determination and price, they will continue to serve his farmers, rural areas and his consumers.

Ganga Dairy Ltd. Located in Begusarai since 1997, established as manufacturer of milk product, exporter and importer of milk powder product. This committed to deliver his product which meets all regulatory, industrial, consumer, quality and food safety requirement to his consumers. They sell different products like toned milk, standard milk, ice-cream, dahi, milk powder, milk products and sweets (gangadairyLtd.com).

3.3.8 Milk Collection through Dairy Cooperative Societies

Milk procurement by dairy cooperative is an important ideas, and because well successful agency in Bihar. Dairy cooperatives are one of the strongest in Bihar and other adjoining state but share of Bihar in total milk procurement by cooperative sector to our country was very little and stay 9th rank in milk production. Among the different 06 milk cooperative unions and three projects, the annual growth rate for milk procurement was highest for Koshi Dairy Project (51.5%), followed by Magadh Dairy Project (44.8%). The milk procurement per functional society per day had also recorded an increase between 2010-11 and 2015-16. Begusarai has highest share of milk procurement (26.74%) to total state procurement followed by Samastipur (20.83%), Patna (13.29%) and Ara (11.45%), whereas Begusarai has also highest share of milk holding capacity (19.76%) to total state capacity, followed by Samastipur (19.48%), Ara (17.44%) and Patna (15.99%) (Table 3.6).

Table 3.6: Procurement and Distribution of Milk by DCS in 2015-16

SN	Districts	No. of Coop. Dairy	Capacity (TLPD)	Quantity of Milk Procured (LLPD)	Quantity of Milk Sold Distributed (TLPD)
1.	Patna	1	275.00	119.88	186.72
2.	Begusarai	1	340.00	241.17	81.91
3.	Samastipur	1	335.00	187.87	110.51
4.	Muzaffarpur	1	290.00	91.80	102.51
5.	Arrah	1	300.00	103.26	27.36
6.	Bhagalpur	1	60.00	87.65	23.67
7.	Gaya	1	100.00	31.18	38.64
8.	Purnea	1	20.00	38.97	31.46
9.	Total	8	1720.00	901.78	612.78

Source: COMPFED, Govt. of Bihar.

3.3.9 Marketing of Milk and Milk Products

The milk procured by COMPFED is sold either as milk or milk products under brand 'Sudha'. Table 3.5 and 3.6 shows that over the year, COMPFED has been steadily expanding its marketing operation to strengthen dairy industry in Bihar. It cover 60 per cent village of the state, like milk output to 44 lakh litres. Bihar's rural landscape has undergone a silent revolution under umbrella organization that involves around six lakh farmers and provides indirect employment to many others.

COMPFED had been started with just 1030 cooperatives in 1983, today the number of cooperatives have risen to 11,400. The milk production was 11.52 lakh litres per day in 2014-15 increased to 12.20 lakh litres per day in 2015-16 and their annual turnover in 2010-11 was Rs. 1337.67 crores increased to Rs. 1503 crores in 2011-12 accounting for 11.00 per cent more than previous year (Table 3.7). This is remarkable for any cooperation. In 2011-12, the COMPFED marketed 8.17 lakh litres milk per day, which is a record in its history. COMPFED was committed to serve its customers and relise the dream of having at least one 'Bihari dish' in the plate of every Indian. COMPFED also procure milk from farmers at Rs. 25.58 per litre, which is higher than the cooperative of Haryana, Rajathan, Punjab, Karnataka and Maharashtra, apart from other.

Table 3.7: Details on COMPFED Turnover, Milk Procurement and Milk Marketing

Year	Turnover (In Crore)	Milk Procurement (LLPD)	Milk Marketing (LLPD)
2010-11	1337.67	11.92	7.21
2011-12	1503.00	10.37	8.17
1012-13	1500.00	9.61	9.20
2013-14	NA	12.05	10.76
2014-15	NA	11.60	11.50
2015-16	NA	12.28	12.21

Source: COMPFED, Govt. of Bihar.

Table 3.8: Marketing of Milk and Milk Product

SN	Particular	2010-11	2011-12	2012-13	2013-14	2014-15
1.	No. of Retail Outlets	7677	8388	9558	10944	12299
2.	Milk (LLPD)	721	8.17	9.20	10.76	11.52
3.	Ghee (MT)	1270	1329	1717	1638	1756
4.	Lassi (MT)	4094	3242	6426	5846	4412
5.	Peda (MT)	770	745	1242	1273	1173
6.	Paneer (MT)	1936	2090	3022	3087	3284
7.	Dahi (MT)	2857	3252	4628	6003	6492
8.	Gulab Jamum (MT)	463	566	1105	1331	1160
9.	Ice-Cream (MT)	585	841	1083	1321	1702

Source: COMPFED, Govt. of Bihar.

An analysis of table 3.8 reveals that COMPFED markets milk products under brand 'Sudha' was 11975 MT in 2010-11 increased to

19979 MT in 2014-15 accounting for 66.84 per cent increased during last five year. Among different product of COMPFED, dahi was highly sold about 6492 MT in 2014-15 followed by lassi (4412 MT) and paneer (3284 MT) during responding year. These three products together had been accounting 71.01 per cent of total state products in 2014-15.

3.3.10 Institutional Weakness/Deficiency/Inefficiency:

The dairy cooperative is itself an autonomous body of the peoples and united voluntarily it to meet their essential economic, social and cultural needful through jointly owned and democratically controlled enterprises. However, day to day, these societies have unsuccessful to achieve competency, and interference of political leaders have increased and thus its autonomy is going down. Despite of significant growth in dairy, cooperative sector in Bihar are in few weakness.

The dairy cooperative has lost its steam in Bihar. Moreover, it should not be allowed to monopolise the milk marketing system. Several farmers showed concern about low prices paid and no bonus provide to the farmers by cooperative. Milk marketing needs more emphasis but private milk processing and marketing organization are not getting institutional support in Bihar which could be done by promoting private entrepreneurs through institutional financing and government support.

There is some major weakness/inefficiency

- Infrastructure facility at village level is very weak and inadequate.
- Low dairy plants efficiency and in appropriate milk collection centre in few study areas.
- Frequently transfer of staff and also shortage of staff.
- Unavailability of good quality animal and price of milch animal is higher in Bihar than most of major states in India.
- Good quality breed for animal breeding is not appropriate.
- Increasing political interference and very delay payment to the farmers.
- Chilling facility at few areas is very week.

3.4 Status of Dairy Institutions in Chattisgarh

Chhattisgarh is one of the most progressive states of Republic of India. In the domain of dairy development it is well known for its productive milch cattle. The economy of the state is predominantly based on agriculture. People rear and breed cattle as a subsidiary occupation.

3.4.1 Chhattisgarh State Cooperative Dairy Federation

Chhattisgarh State Cooperative Dairy Federation is one of the largest Cooperative Dairy Federation in Chhattisgarh, owned and managed by milk producers of Chhattisgarh State. The State Dairy Federation was formed in the year 2013 which was previously known as Raipur Dugh Sangh (a part of MPCDF of undivided Madhya Pradesh). There after its business was taken over by Federation to set up TWO TIER SYSTEM and soon planning for THREE TIRE SYSTEM based on Anand Pattern. CGCDF has over 82000 lts per day milk producers in over 665 Dairy Cooperative Societies at village level, functioning under 27 District Chhattisgarh State.

The mission of the Federation is to usher rural prosperity through dairy development while set goals to channelize marketable surplus milk from the rural areas to urban deficit areas and maximize the returns to producer and provide quality milk and milk products to the consumers; to carryout activities for promoting Production, Procurement, Processing and Marketing of milk and milk products for economic development of the farming community and to provide stable and reliable market and secure price to the dairy farmers for their produce.

During the last four decades of Cooperative Dairy Development by CGCDF, the dairy industry in Chhattisgarh State has progressed from a situation of milk-scarcity to that of milk-surplus. Our Motto is to provide the quality milk and milk products, thereby **DEVBHOG - the upfront brand** achieved an unmatched in quality and made available to consumers at most competitive prices.

3.4.2 Dairy Cooperatives and Commercial Dairy Units in Chattisgarh

The details on dairy cooperatives in Chhattisgarh state is presented in Table 3.9 and district-wise commercial dairy units are present in Table 3.10. It can be seen from the table that Mahasamund district has the highest number of primary dairy cooperative societies followed by Raigarh district. There were 6546 dairy units were found in Chhattisgarh, out of which 25.65 per cent were found in urban and sub urban area and rest 74.35 per cent were located in rural areas (Table 3.10). Out of total urban dairies, highest were found in Raipur (22.33%) followed by Durg, Korba and Rajnandgaon districts of Chhattisgarh.

Table 3.9: Development block wise Number of dairy Cooperative Societies in Chhattisgarh

Sr. No	Districts	Development Block	UDA Committees	IDDP	RKVY	NPDD	New Societies	Total	Temporarily Closed	RKVY-RV
1	Koriya	1	-	-	7			7	0	0
2	Balrampur	1	-	-	1			1	0	0
3	Surajpur	2	-	-	6			6	0	0
4	Ambikapur	2	-	-	0		13	13	3	0
5	Jushpur	1	-	-	-		1	1	0	0
6	Raigarh	4	22	-	109		4	135	20	0
7	Korba	1	-	-	2			2	2	0
8	Janjgir	4	-	-	34	3		37	9	0
9	Bilaspur	4	6	-	18			24	1	2
10	Mungeli	3	3	-	8			11	1	0
11	Kabirdham	3	-	-	5			5	0	0
12	Rajnandgaon	3	1	34	-			35	10	0
13	Bemetra	1	10	-	3			13	0	0
14	Durg	3	12	-	3			15	3	0
15	Balod	4	14	-	15			29	3	2
16	Baloda Bazar	5	22	15	4			41	10	0
17	Raipur	4	38	24	-			62	7	6
18	Gariyaband	3	1	12	-			13	0	0
19	Mahasamund	5	107	64	11			182	16	9
20	Dhamtari	3	15	40	4			59	3	1
21	Kanker	1	17	-	18			35	2	0
22	Kondagaon									
23	Bastar									
24	Narayanpur	2								
25	Dantewada									
26	Sukma									
27	Bijapur									
	Chhattisgarh	60	268	189	248	3	18	726	90	20

Source: <http://www.cgcoopdairyfed.in/>

Table 3.10: District-wise Commercial Dairy Units in Chhattisgarh

Sr. No.	Districts	Urban	Rural	Total
1	Koriya	69 (4.11)	59 (1.21)	128 (1.96)
2	Balrampur	0 (0.00)	2 (0.04)	2 (0.03)
3	Surajpur	0 (0.00)	0 (0.00)	0 (0.00)
4	Sarguja	46 (2.74)	38 (0.78)	84 (1.28)
5	Jashpur	74 (4.41)	114 (2.34)	188 (2.87)
6	Raigarh	58 (3.45)	415 (8.53)	473 (7.23)
7	Korba	165 (9.83)	49 (1.01)	214 (3.27)
8	Janjgeer	39 (2.32)	242 (4.97)	281 (4.29)
9	Bilaspur	67 (3.99)	162 (3.33)	229 (3.50)
10	Mungeli	0 (0.00)	20 (0.41)	20 (0.31)
11	Kabidham	1 (0.06)	18 (0.37)	19 (0.29)
12	Rajnandgaon	150 (8.93)	162 (3.33)	312 (4.77)
13	Bemetara	12 (0.71)	460 (9.45)	472 (7.21)
14	Durg	321 (19.12)	939 (19.29)	1260 (19.25)
15	Balod	12 (0.71)	254 (5.22)	266 (4.06)
16	Balodabazar	24 (1.43)	9 (0.18)	33 (0.50)
17	Raipur	375 (22.33)	906 (18.62)	1281 (19.57)
18	Goriyaband	5 (0.30)	68 (1.40)	73 (1.12)
19	Mahasamund	44 (2.62)	569 (11.69)	613 (9.36)
20	Dhamtari	84 (5.00)	222 (4.56)	306 (4.67)
21	Kanker	8 (0.48)	17 (0.35)	25 (0.38)
22	Kondagaon	18 (1.07)	25 (0.51)	43 (0.66)
23	Bastar	90 (5.36)	110 (2.26)	200 (3.06)
24	Narayanpur	0 (0.00)	0 (0.00)	0 (0.00)
25	Dantewada	17 (1.01)	7 (0.14)	24 (0.37)
26	Sukma	0 (0.00)	0 (0.00)	0 (0.00)
27	Bijapur	0 (0.00)	0 (0.00)	0 (0.00)
Total		1679	4867	6546

Source: Livestock Statistics-Chhattisgarh, <http://ahd.cg.gov.in/>

3.5 Status of Dairy Institutions in Jharkhand

The state of Jharkhand lags behind in milk production during bifurcation of state from Bihar. However, after the creation of state, the dairy development programmes are being implemented intensively in order to create rural self employment through dairy farming. Directorate of Dairy Development for Jharkhand located in Ranchi is nodal department of Government of Jharkhand. As a resultant of intensive implementation of various dairy development schemes by the State Government with support of Central Government, the production of milk was increased to 16.43 lakh MT in 2011-12 from 7.74 lakh MT in 2001-02 accounted for 112.27 per cent increased during 2001-02 to 2011-12.

3.5.1 Dairy Cooperative Societies in Jharkhand

The details on dairy cooperative societies in the state of Jharkhand is presented in table 3.11. An analysis of this table reveals that total number of DCS in the state was 60 and producer member was 1000 in 2015-16. The capacity of milk procurement in the state of Jharkhand was increased to 61.00 thousand kg/day in 2015-16 from 14.00 thousand kg/day in 2014-15 while liquid milk marketing capacity in the state was decreased to 304 thousand litres per day in 2015-16 from 308 thousand litres per day in 2014-15 accounting for 1.29 per cent decreased during this period.

Table 3.11: Status of Dairy Co-operative in Jharkhand

Sr	Items	2014-15	2015-16
1.	Dairy Cooperative Societies (In Nos.)	60	60
2.	Producer members (In '000)	01	01
3.	Milk Procurement (In '000 kg/day)	14	61
4.	Liquid milk Marketing (In '000 litres/day)	308	304

Source: NDDDB, Annual Report 2015-16

3.5.2 Jharkhand State Co-Operative Milk Federation

The Jharkhand State Cooperative Milk Producers' Federation Limited (JMF) was registered under the Jharkhand Cooperative Societies Act 1935 in June 2013 with an aim to promote dairying and make the state self-sufficient in milk. Considering the role of NDDDB in providing financial and technical support to producer-owned, professionally managed institutions for dairy development in the country, Department of AH&F, Government of Jharkhand requested NDDDB to take over the management of the newly formed Jharkhand State Cooperative Milk Producers' Federation Ltd. (JMF) and work towards dairy development in the State.

Jharkhand State Milk Federation (JMF) implemented various dairy development programme in the State for a period of five years. Subsequently, NDDDB took over the existing Government Dairy at Ormanjhi in August 2014 and two other dairies at Deoghar and Koderma in September 2014. In April 2014, NDDDB further took over the management

of JMF which included milk procurement, processing and marketing activities. NDDDB also agreed to lend its brand “Mother Dairy” – which is renowned for its high-quality milk and milk products in the country – to support local brand “Medha”. It not only helped the brand to get established but also enable it capture a reasonable share of the Jharkhand Milk market. It is due to the consistent support that Medha receives, it is able to provide 1 lac litres of milk every day. We are thankful to and proud of the people we are associated with in this journey. It is extremely delighting to be able to touch and enrich so many lives at the same time.

in order to improve milk production and reproductive efficiency of dairy animals in the State, JMF is providing quality cattle feed to its milk producers at subsidized rate, veterinary helpline service through “Gaupalak Sahayata Kendra”, Productivity Enhancement Camps in villages by engaging experienced veterinary doctors, arrangement of training and workshop for the milk producers etc. To address the serious issue of mineral deficiencies specific to the State, the Federation is manufacturing Area Specific Mineral Mixture (ASMM) based on composition assessed through mineral mapping of the state conducted by NDDDB in 2014, at its mineral mixture plant (12 MT per day) located at Hotwar. Work is also in progress for 20 MT per day bypass protein plant at Hotwar, Ranchi, to improve the utilization of protein by the milch animals.

3.6 Status of Dairy Development Institutions in Odisha

The Department of Fisheries & Animal Resources Development Department (F&ARD) in Odisha came into existence in 1991 after being bifurcated from the erstwhile Forest, Fisheries & Animal Resources Development Department. Within F&ARD, there is a Directorate for Animal Husbandry & Veterinary Services (AH&VS). In the field, AH&VS has thirteen Chief District Veterinary Officers in charge of 13 districts and in remaining 17 districts, the Sub-Divisional Veterinary Officers functioning in the district headquarter are looking after the districts affairs. Besides, there is a Frozen Semen Bank and 2 Orissa Biological Product Institutes. There are

540 veterinary hospitals (VDs), about 3,000 Livestock Aid Centres (LAC) to provide veterinary services. The activities of department are supported by: (i) *Odisha Livestock Resource Development Society (OLRDS)*: Formed and registered in 2000 for spearheading livestock breeding activities and ensuring timely and meaningful implementation of National Project for Cattle & Buffalo Breeding” (NPCBB) in the State of Orissa for breeding activities;

(ii) *The Odisha Cooperative Milk Producers Federation Ltd (OMFED)*: Established in the year 1980, the major objectives of the Federation is to carry out activities for promoting production, procurement, processing and marketing of milk and milk products for economic development of the rural dairy farming community.

(iii) *Utkal Gomangal Samiti (UGS)*: Established in the year 1936, the aim and objectives of the Samiti is to bring all round development of the livestock through up-gradation of local indigenous stock by providing improved bulls, Cows, Calves, Buffalo Bulls and Bucks etc. and to propagate different types of fodder cultivation, Cattle Feed and encourage public for the same.

(iv) *State Society for Prevention of Cruelty to Animals (SPCA) 59 of 1960 (Central Act)*: In 1976, Government of Odisha has enforced the Act in the state for wellbeing of animals. The main objective of this act is to generate public consciousness towards kindness and compassion to animals. Besides this, Animal Birth Control Programme (ABC), relief and rescue operation, animal health camp, media programmes, relief and rescue operations are also organised.

3.6.1 Orissa State Cooperative Milk Producers' Federation Limited

The Orissa State Cooperative Milk Producers' Federation Limited (OMFED) is an apex level dairy cooperative society registered under Cooperative Society Act - 1962. It has come into existence to integrate the milk producers in rural areas with consumers in the urban areas with an enterprising aptitude. OMFED was established based on AMUL pattern under operation flood-II of NDDDB, for promoting, production,

procurement, processing and marketing of milk & milk products initially in undivided districts of Puri, Cuttack, Dhenkanal, Keonjhar. OMFED was registered in 1980 and started work in 1981. The operational area of OMFED is presented in Fig. 3.1 and overview is presented in Table 3.12. The turnover of OMFED presented in Table 3.13 indicates the significant increase in same during last one decade alongwith increase in milk procurement.

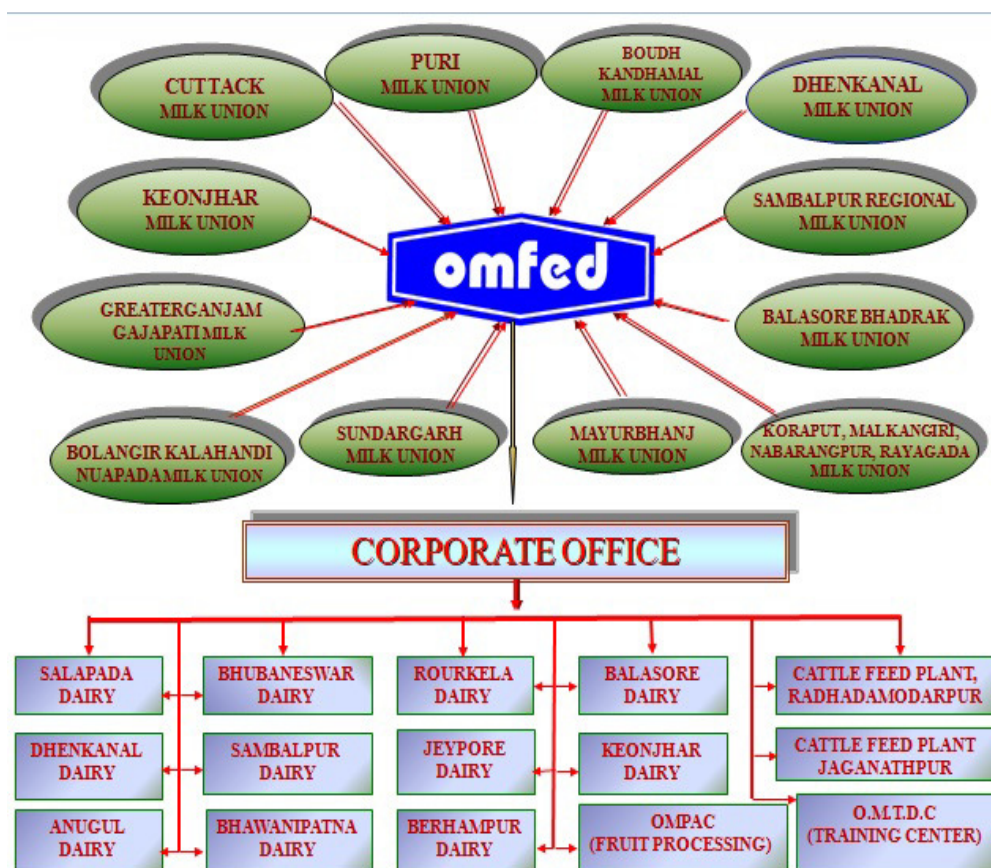


Fig. 3.1: Structure of OMFED

Table 3.12: Overview of OMFED

Year of Establishment	1985
Members	11 District Cooperative Milk Producers Unions
No. of Producer Members	277117
No. of Village Societies	5409
Total Milk handling capacity per day	6,40,000
Milk Collection (Total - 2015-16)	191990000
Milk collection (Daily Average 2015-16)	5,26,000 kgs
Cattle feed manufacturing Capacity	355MT/Day
Sales Turnover -(2015-16)	650 Crores

Table 3.13: Details on OMFED turnover, Milk Procurement and Milk Price in Odisha

Year	Turnover (In crores)	Milk procurement (In crore kg.)	Milk price (Per kg. fat)
2006-07	17058.30	266548	-
2007-08	21420.16	288270	-
2008-09	26974.88	294383	-
2009-10	31581.04	299636	-
2010-11	38636.97	342663	-
2011-12	46595.42	370179	-
2012-13	52313.13	378936	--
2013-14	59827.04	390257	-
2014-15	67428.68	444473	-
2015-16	68309.79	526257	-

Source: OMFED, Bhubaneswar

There were 5491 cooperative societies in Odisha during 2015-16 and the highest number of cooperative societies were registered in Cuttack district followed by in Puri district. Almost one third of members were female members (table 3.14). The procurement and distribution of milk DCS in 2015-16 are presented in Table 3.15. It can be seen from the table that total 5.26 lakh litre of milk was procured and Khurda district cooperative society contributed significantly in the same.

Table 3.14: District wise Cooperative Societies in Odisha (2015-16)

Sr. No	Name of Milk Producers' Co- op. Union Ltd.	Total No of Societies	ISO Certified Societies	No. of Members (000)	No. of Female Cooperative Society	No. Of Female Members
1	Cuttack	1474	-	96511	402	38643
2	Dhenkanal	206	-	13802	82	2816
3	Keonjhar	150	-	7102	62	2339
4	Puri	1300	-	35792	266	10263
5	Sambalpur	538	-	38957	200	15780
6	Balasore, Bhadrak Milk Union	563	-	26836	479	22794
7	Greater Ganjam & Gajapati Milk Union	284	-	12069	58	3027
8	Koraput, Malkangiri, Nawrangapur & Rayagada Milk Union	402	-	11776	112	4505
9	Bolangir, Kalahandi & Nuapada Milk Union	375	-	11512	14	895
10	Sundergarh	-	-	-	-	-
11	Boudh	114	-	1981	12	475
12	Mayurbhanj	85	-	5214	25	1245
Total		5491	-	261552	1712	102782

Source: OMFED, Bhubaneswar

Table 3.15: Procurement and Distribution of Milk by DCS in 2015-16 in Odisha

Sr No	District	No. of Co-op. Dairies	Installed Capacity per day (Lakh Liters)	Quantity of Milk Procured (lakh litres) per day	Quantity of Milk Sale/ distributed per day (Lakh Liters)	Rate of Distribution per Liter (Rs.)				
						Whole Milk	Tonned Milk	Standard Milk	Double Tonned Milk	Skim Milk
1	Khurdha	01	2.50	2.45	-	-	34.00	38.00	-	-
2	Puri	01	0.10	0.08	-	-	34.00	38.00	-	-
3	Balasore	01	0.50	0.63	-	-	34.00	38.00	-	-
4	Sambalpur	01	0.50	0.74	-	-	34.00	38.00	-	-
5	Sundergarh	01	0.30	0.26	-	-	34.00	38.00	-	-
6	Ganjam	01	0.30	0.26	-	-	34.00	38.00	-	-
7	Keonjhar	02	0.60	0.35	-	-	34.00	38.00	-	-
8	Dhenkanal	01	0.20	0.13	-	-	34.00	38.00	-	-
9	Kalahandi	01	0.30	0.13	-	-	34.00	38.00	-	-
10	Koraput	01	0.20	0.13	-	-	34.00	38.00	-	-
11	Jagatsinghpur	01	0.20	0.10	-	-	34.00	38.00	-	-
	TOTAL	12	5.70	5.26	-	-			-	-

Source: OMFED, Bhubaneswar

3.7 Status of Dairy Development Institutions in Uttar Pradesh

Uttar Pradesh is the largest milk producing state of India contributing 17 percent of the total milk production. A milk cooperative society in a village of Allahabad district of eastern Uttar Pradesh set up in 1918 marked the beginning of milk cooperatives in the state of Uttar Pradesh. In the year 1938, the country's first milk union "Lucknow Milk Producers Cooperative Union Ltd.", was set-up in Lucknow, the capital of Uttar Pradesh. To accelerate the progress of dairy development in the state, the Pradeshik Cooperative Dairy Federation Ltd. (PCDF) was setup as a technical consultancy firm in 1962. PCDF was the chosen agency to implement the World Bank's prestigious Operation Flood programme in the state. Parag is the brand name for a range of milk and milk products including- Milk, Skimmed Milk Powder, Whole Milk Powder, Butter, Ghee, and an array of indigenous milk products.

3.7.1 Pradeshik Cooperative Dairy Federation, Uttar Pradesh (PCDF)

PCDF, Lucknow was formed in 1962 with the aim to develop organized dairying in the State on Cooperative lines PCDF's is a cohesive body that successfully does away with the exploitative forces of years-the Middlemen. Therefore a direct link is established between the producer and the ultimate consumer. This Apex Milk Cooperative draws its

inherent strength from the farmers committed participation, and injects corporate skills and dynamic professionalism into what is fundamentally a traditional institution. Over the years PCDF has expanded, diversified, channelized into new areas, over new dimensions, onto new challenges. Today it features prominently in the National Milk Grid, supplying Milk to Mother Dairy for sale in Delhi. The details on milk unions and coverage is presented in table 3.16.

Table 3.16: Details on Milk Unions and Coverage Area in UP

Sr.	Dugdh Sangh	Districts Covered
1	Aligarh	Aligarh, Etah, Hathras, Kasganj
2	Prayagraj	Prayagraj, Fatehpur, Pratapgarh, Kaushambi
3	Azamgarh	Azamgarh, Ballia, Mau
4	Bareilly	Badayun, Bareilly, Pilibhit
5	Basti	Basti, Sant Kabir Nagar, Siddharthnagar
6	Chitrakoot	Banda, Chitrakoot, Hamirpur, Mahoba
7	Devi Patan	Bahraich, Balrampur, Gonda, Shravasti
8	Ayodhya	Ambedkar Nagar, Amethi, Barabanki, Ayodhya, Sultanpur
9	Firozabad	Agra, Firozabad, Mainpuri
10	Gorakhpur	Deoria, Gorakhpur, Kushi Nagar, Maharajganj
11	Jhansi	Jaiaun, Jhansi, Lalitpur
12	Kanpur	Etawah, Farrukhabad, Kannauj, Kanpur Nagar, Kanpur Dehat, Auraiya
13	Lucknow	Hardoi, Lakhimpur Khiri, Lucknow, Rebareli, Sitapur, Unnao
14	Mathura	Mathura
15	Meerut	Baghpat, Bulandshar, Ghaziabad, Meerut, Noida, Hapur
16	Mirzapur	Mirzapur, Sonbhadra
17	Moradabad	Bijnore, J.P. Nagar, Moradabad, Rampur, Sambhal
18	MuzaffarNagar	Muzaffar Nagar, Saharanpur, Shamli
19	Shahjahanpur	Shahjahanpur
20	Varanasi	Chandauli, Ghazipur, Jaunpur, Varanasi, Sant Ravidas Nagar

3.7.2 Parag Milk Marketing Limited

Parag Milk Marketing Limited (PMML) was constituted by the State Government in the year 2016 with the objective to market Parag branded Milk & Milk Products manufactured by different milk union working under the control of Pradeshik Cooperative Dairy federation Limited (PCDF), an apex State level Dairy Cooperative having its registered office in Lucknow. PMML is 100 per cent Government owned Organization, but, it could not be made fully functional and the job of marketing of the milk products manufactured by different milk unions under its control is still entrusted to PCDF. Currently, PCDF is engaged in marketing of Ghee, Butter and Milk Powder (SMP/WMP/Dairy Whitener).

3.7.3 Primary Cooperative Societies in UP

The district-wise number of primary dairy cooperative societies (PDCS) existing during the year 2014-15 worked-out in Table 3.17 shows that in the eastern region of Uttar Pradesh there were 4049 primary dairy cooperative societies (PDCS) during the year 2014-15. The reason behind the scanty numbers of PDCS is densely populated as well as having the higher number of cows and buffaloes Six districts out of 28 districts falls under eastern region are newly created districts (kaushambi, Amethi, Sant Kabir Nagar, Chandauli, Sonbhadra and Sant Ravidas Nagar). In these districts the records were still not maintained and main of the important information were not at all available. The number of PDCS were found significant in Varanasi, Sultanpur, Gonda, Ambedkar Nagar and Faizabad.

Table 3.17: District-wise Primary Dairy Cooperative Societies in Eastern U.P.

Sl.	Name of the Districts	Primary Dairy Cooperative Societies P.D.C.S. (2014-15)
1.	Allahabad	238
2.	Kaushambi	0
3.	Pratapgarh	32
4.	Faizabad	274
5.	Sultanpur	406
6.	Amethi	0
7.	Ambedkar Nagar	361
8.	Gonda	369
9.	Baharaich	100
10.	Srawasti	70
11.	Balrampur	55
12.	Basti	256
13.	Sant Kabir Nagar	0
14.	Sidharth Ngar	83
15.	Gorakhpur	207
16.	Maharajganj	30
17.	Deoaria	142
18.	Kushinagar	69
19.	Varanasi	528
20.	Chandauli	0
21.	Gazipur	226
22.	Jaunpur	115
23.	Azamgarh	40
24.	Mau	80
25.	Ballia	270
26.	Mirzapur	98
27.	Sonbhadra	0
28.	Sant Ravidas Nagar	0
	Eastern U.P.	4049

Source: Dairy development Department Uttar Pradesh, Lucknow, U.P.

3.8 Status of Dairy Development Institutions in West Bengal

The organised sector for milk production in West Bengal is still in the nascent stage and major portion of the marketed surplus is consumed by the unorganised sector consisting mainly of numerous sweets and sweetmeat shops situated all around Bengal. However constant efforts were initiated both from central and state governments since independence to channelize the flow of milk to organized sector through establishments of milk co-operatives, milk unions and institutional efforts to ensure remunerative dairy business to the producers. The institutions responsible for dairy development in West Bengal presented in Table 3.18.

Table 3.18: Institutions Responsible for Dairy Development and their responsibilities

Name of the Institutions	Responsibility
Directorate of Dairy Development	Milk Processing & Supply at Greater Kolkata & other areas
West Bengal Cooperative Milk Producers' Federation Ltd. (WBCMPF)	Milk Marketing
Mother Dairy, Calcutta	Milk Processing & Supply at Greater Kolkata & other areas

3.8.1 Dairy Development Boards/ Corporations/Cooperative Fed.:

Directorate of Dairy Development, Government of West Bengal is engaged in the processing of raw milk to produce pasteurised and homogenised market milk and various milk products, and sells them through its own network of Milk booths, Suravis, Agents and Distributors in safe and wholesome condition. With the implementation of Operation Flood Programme in the mid-1970s, the extension, procurement and other farmer related activities on Dairy Development have been handed over to the Co-operative sector, i.e; West Bengal Co-operative Milk Producers' Federation Limited. Under this Directorate, the oldest dairy at Haringhata was established in June, 1950 primarily to cater to the demands of local hospitals, government institutions and common people of Kanchrapara and Kalyani cities. Subsequently four more dairies were established viz. (a) Central Dairy, Belgachia, Kolkata in 1962-for supply of milk in Greater Kolkata region, (b) State Dairy,

Durgapur in 1972-for supply of milk in Durgapur and Asansol areas, (c) State Dairy, Burdwan in 1982 - for supply of milk in Burdwan, amnd (d) State Dairy, Krishnagar in 1987- for supply of milk in Krishnagar region.

To feed raw chilled milk to these dairy plants, different chilling plants were established. However, subsequently considering the reduced demand of raw milk by the government dairies, it was felt necessary to hand over the chilling plants to the West Bengal Co-operative Milk Producers' Federation Limited for their effective use. Accordingly, except three chilling plants, all ten chilling plants have been handed over to the Milk Federation/Unions on management and utilisation of assets basis. The State Dairy at Burdwan was non-operational since May, 2004. Now, it has been handed over to Mother Dairy, Calcutta on "Management of asset basis" for its utilisation for processing and packaging of market milk. The production and distribution of milk at the State Dairy, Durgapur is kept suspended since May 2012 due to administrative reasons (GoWB, 2014).

Different varieties of milk and milk products manufactured and marketed by the Directorate of Dairy Development, Govt. of West Bengal are being sold under the brand name "HARINGHATA". The central dairy is having the grater installed capacity as compared to other dairies of the state (Table 3.19). However it is of a major concern that the effective capacity utilization in all the dairies are much lower than the installed capacity which depicts the decreasing demand of the organized sector in the state.

Table 3.19: Physical Capacities and Capacity Utilization in different dairies

Name of the Dairy	Year of Establishment	Installed Capacity (TLPD)	Capacity Utilized (TLPD)
Central Dairy	09/1962	200	37.90 (18.95%)
Haringhata Dairy	06/1950	50	1.70 (3.4%)
Krishnagar Dairy	01/1987	20	Handed over to Milk Fedn. / Kishan Milk Union on 05/06/06
Durgapur Dairy	10/1972	50	Non-operational since May 2012
Burdwan Dairy	11/1982	20	Handed over to Mother Dairy, Calcutta on "Management of Asset basis" on May 2013.

Source: Animal resource development department, Government of West Bengal

Several bulk chilling plants were established all across the states for immediate processing of the raw milk and increase its self-life. Most of the chilling plants has been handed over to the milk federations for operational purposes (Table 3.20). Bulk of the raw milk procurement is still undertaken mainly through central dairy situated in Kolkata to cater the entire urban population of the city. However the proportion of utilisation of value added dairy products like butter is in negligible amount (Table 3.21). In tune with the milk procurement, it is evident that the central dairy is mainly responsible for milk production only and the other (i.e. Haringhata Dairy) is attempting to produce value added dairy products (Table 3.22). However considering the changing demand pattern of the urban consumers to the value added and functional dairy products, attempts may be initiated to divert the production more towards value added products rather traditional and bulky milk products.

Table 3.20: Status of Chilling Plants of Directorate of Dairy Development

Name of the Dairy	Chilling Plant	Capacity (TLPD)	Year of Establishment	Remarks
Central Dairy	1. Champadanga	4	1965	Handed over to Milk Fedn. (14.02.06)
Haringhata Dairy	2. Dhaniakhali	5	1965	Handed over to Milk Fedn.
	3. Mogra	4	1965	Closed
	4. Habra	4	1960	Handed over to Milk Fedn.
Krishnagar Dairy (Handed over to Milk Fedn.)	5. Bethuadahri	10	1964	Handed over to Milk Fedn. (05.10.05)
	6. Plassey	4	1965	Handed over to Milk Fedn. (05.10.05)
	7. Fulia	10	1954	Handed over to Milk Fedn. (05.10.05)
Durgapur Dairy	8. Sonamukhi	4	1973	Handed over to Milk Fedn. (03.11.06)
	9. Bishnupur	4	1972	Handed over to Milk Fedn. (22.04.08)
	10. Baramullah	2	1993	Yet to be handed over
Burdwan Dairy (Non-functional since 20.05.04)	11. Shaktigarh	2	1967	Yet to be handed over
	12. Katwa	4	1972	Handed over to Milk Fedn. (21.02.06)
	13. Kusumgram	4	1987	Handed over to Milk Fedn. (06.10.05)

Source: Animal resource development department, Government of West Bengal

Table 3.21: Dairy-wise Utilization of Raw Materials and Production of Milk & Milk Products

Sl. No.	Name of the Dairy	Raw Milk Procurement and Consumption (TKPD)	Skimmed Milk Powder Consumption (MT/ day)	White Butter Consumption (MT/day)
1	Central Dairy	11.37	2.01	0.24
2	Haringhata Dairy	1.50	0.03	0.00
	Total	12.87	2.04	0.24

Source: Animal resource development department, Government of West Bengal

Table 3.22: Production of Milk and Milk Products

Sl. No	Name of the Dairy	Milk Production (TLPD)	Ghee (MT/Y)	Chocolate (MT/Y)	Lassi (MT/Y)
1	Central Dairy	28.71	Nil	Nil	Nil
2	Haringhata Dairy	1.56	13.07	0.40	Nil
	Total	30.27	13.07	0.40	Nil

Source: Animal resource development department, Government of West Bengal

The fund utilization pattern of the different milk supplying institutions depicts that major portion of the allotment was not utilized (Table 3.23). Further only non-plan budget was utilised and plan budget was completely un-utilized in all the milk supply except greater Kolkata. Planned expenditure will be essential for long run sustainability of the supplies with greater efficiency and reasons of only non-planned expenditure may be critically looked into for possible modification in the future budget allocations.

Table 3.23: Schemes of the Directorate of Dairy Development (2012 - 2013)

Scheme	Source	Allotment (Rs.)	Fund Utilized (Rs.) (Total Expenditure)	Percentage Utilization Of Funds	Sales Proceeds of Milk & Milk Products (Rs.)
Greater Kolkata Milk Supply	State Plan	21,46,194	8,32,678	38.80	-
	Non-Plan	119,52,18,500	69,90,06,028	58.48	24,43,91,259
Durgapur Milk Supply	State Plan	Nil	Nil	Nil	Nil
	Non-Plan	7,99,76,500	3,25,95,410	40.76	
Burdwan Milk Supply	State Plan	NIL	Nil	Nil	
	Non-Plan	2,51,14,000	1,70,06,734	67.72	
Krishnagar Milk supply	State Plan	NIL	Nil	Nil	
	Non-Plan	47,33,250	31,81,900	67.22	

Source: Animal resource development department, Government of West Bengal

3.8.2 West Bengal Co-Operative Milk Producers' Federation Ltd.

West Bengal Co-operative Milk Producers' Federation Ltd. (Federation) was formed as an apex body of milk cooperatives in West Bengal for developing the dairy industry. It was registered in 1983. The philosophy of the Federation is to organize institutions to be owned and managed by the milk producers themselves to achieve economies of scale to ensure maximum returns and at the same time to provide quality milk at reasonable price to urban consumers. Ultimately, the network of cooperative organizations should build a bridge between masses of rural producers and millions of urban consumers and achieve a socio-economic transformation in the state.

Presently, 4120 primary milk producers' cooperative societies in the village level collect milk from its producer members and make regular payment. In addition, the district Milk Unions, provide various services, like veterinary cover, artificial insemination, fodder etc. to its producer members. These societies within a milk shed, normally co-terminus with the districts, affiliate themselves into District Milk Unions, which collect the milk procured by the Primary Milk Producer's Cooperative Societies from their doorstep, processes and markets the milk in the district or outside. The Milk Unions facilitate various inputs to the primary societies for onward transmission to producer members.

The district milk unions, in turn, affiliate themselves into the West Bengal Milk Federation, whose role is to guide and monitor the Milk Unions in all its activities and for development and implementation of the various Government schemes. The Federation has 93% of its share held by the State Government, providing share contribution of Rs.383.49 lakh and Rs.29.38 lakh from Milk Unions totalling Rs.412.87 lakh. It has a Board of Directors with Chairpersons of the Milk Unions and Govt. nominee. During the year 2013-2014 on average 285.40 TKgPD milk was procured from various District Milk Unions covering 1637 functional societies and 2.75 lakh farmer members. Major portion of the procured milk was supplied to different urban dairies namely

Mother, Metro and Central Dairies, which marketed in and around Kolkata both processed milk and milk products. The federation is continuously procuring raw milk from the dairy producers both in flush as well as lean seasons. The minimum price for farmers increased marginally since 2012 in tune with the increasing market price of raw milk but the producer's share have decreased from 2012. But overall the producers' share was sufficiently high as compared to other mode of disposal (Table 3.24).

Table 3.24: Procurement Price of Raw Milk per kg in WB

With effect from 01.12.2012 (4.5% Fat / 8.5% SNF)				Producers' share
Flush season	19.80	Minimum Farmer's Price	18.00	91.00%
Lean season	20.85	Minimum Farmer's Price	19.00	91.00%
With effect from 01.04.2014				Producers' share
Flush season	22.60	Minimum Farmer's Price	20.00	88.50%
Lean season	23.60	Minimum Farmer's Price	21.00	89.00%

Source: Animal resource development department, Government of West Bengal

3.8.3 Milk Unions in UP

The state is having around fifteen milk unions from the districts from which two unions is currently not functioning. The highest milk is procured from Bhagirathi milk union in Murshidabad (146 lakh Kgs per annum) followed by Kisan milk union in Nadia district (144 lakh Kg/annum). However in respect of percentage of total milk procured the non-MPCS tops the chart as almost 26% of the total milk procured is destined to the non-MPCS). The procurement in few unions is miserably low (e.g., Burdwan, Bankura, North Dinajpur, Howrah etc.) comparing to the other performing unions (Table 3.25). Efforts should be initiated to improve the supply of milk to organised sectors through these milk unions for better price realisation as well as overall wellbeing of the milk producers in those areas.

An insight into the profit and loss statement of different milk unions from 2007-08 to 2012-13 reveals that out of total 15 milk unions established in the state, 13.33% (2 in nos.) were defunct and almost 60% of the total milk unions were more or less in profitable

situation during the period (Table 3.26). However 20% of the total established unions, namely Himul, Kisan and Manbhum were continuously running in loss during the period. Moreover, it is matter of concern that more unions were prone to loss during the later period as compared to the earlier period. It may also be enunciated from the figures that farmer producers are losing interest in supplying raw milk to the unions and more milk is diverting to unorganised sectors. A further study into the mode of operations of these unions may help to get better insight of the situation and improve the situation thereof. Apart from managing the unions, the federation is also engaged in organizing 'Dairy Co-operative Societies', 'Women Dairy Co-operative societies', establishment of artificial insemination centre to uplift the genetic potential of the cattle in the state. A glimpse of the physical achievements of the federation is enlisted in the following (Table 3.27).

Table 3.25: Daily average Milk Procurement from DCS / WDCS of the Milk Unions I in WB during the year 2013 - 14

Name of the Milk Union/ Unit	Daily Average Milk Procurement (TKgPD)	Annual Milk Procurement (Lakh Kg)
Himul (Darjeeling)	10.50	38.325
Bhagirathi (Murshidabad)	40.10	146.365
Kishan (Nadia)	39.52	144.248
Midnapore (Medinipur)	30.10	109.865
Bardhaman (Burdwan)	3.15	11.498
Damodar (Hooghly)	16.98	61.977
Ichhamati (North 24-Parganas)	14.51	52.961
Howrah (Howrah)	3.97	14.490
Jalpaiguri (Jalpaiguri)	Presently Defunct	Presently Defunct
Coochbehar (Coochbehar)	Presently Defunct	Presently Defunct
Kulick (Uttar Dinajpur)	2.12	7.738
Mayurakshi (Birbhum)	2.30	8.395
Sundarban (South 24-Parganas)	0.78	2.487
Kangsabati (Bankura)	8.83	32.230
Manbhum (Purulia)	0.45	1.642
Federation	33.00	120.450
Dairpoul	5.00	18.250
Non Mpcs	74.10	270.465
T O T A L	285.40	1041.710

Source: Animal resource development department, Government of West Bengal

Table 3.26: Profit & Loss Status of Milk Unions in WB (in Rs. Lakh)

Name Of M.U.	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Himul	(2.04)	(5.76)	(101.87)	(244.60)	(239.38)	
Bhagirathi	(117.11)	(42.14)	(4.57)	3.00	13.75	95.06
Kishan	(40.37)	(3.57)	(41.13)	(29.67)	(25.73)	(25.63)
Midnapore	1.30	0.47	7.85	3.04	1.78	1.24
Bardhaman	1.43	8.34	9.06	4.01	3.91	(6.64)
Damodar	18.23	38.99	23.35	16.81	(14.77)	(70.81)
Ichhamati	17.08	17.99	18.62	20.00	7.34	(39.54)
Howrah	0.16	0.94	1.29	2.24	2.54	1.94
Jalpaiguri	Presently Defunct					
Coochbehar	Presently Defunct					
Kulick	1.57	1.87	2.62	2.05	2.75	
Mayurakshi	4.41	6.99	1.34	2.25	4.11	
Sundarban	3.93	0.74	0.82	0.58	3.89	0.33
Kangsabati	(9.41)	(12.07)	0.08	54.49	40.00	
Manbhum	0.18	(17.57)	(36.13)	(14.09)	(9.82)	(2.98)

* Figures in the parenthesis denotes loss

Source: Animal resource development department, Government of West Bengal

Table 3.27: Physical Achievements of WBCMPF

Particulars	2010-11	2011-12	2012-13	2013-14
DCS/WDCS organized (cum)	3862	3899	3998	3086
DCS/WDCS registered (cum)	2050	2058	2138	1034
Farmer members (cum)	257652	259334	267124	274530
Avg. milk procurement (Kg. PD)	330500	307330	334080	285400
AI Sub Centres (cum)	669	663	610	612
AI done	367869	346563	330230	302318
Avg milk procured per farmer	1.28	1.18	1.25	1.04
W D C P :				
WDCS organised (cum)	599	599	599	599
WDCS registered (cum)	426	426	426	426
Farmer Members (cum)	57591	57709	57709	57837
Avg. Milk procurement	39361	39100	33100	37856
I D D P :				
DCS organised (cum)	441	551	650	650
DCS registered (cum)	295	297	305	331
Farmer Members (cum)	26287	31724	36564	36564
Avg. Milk procurement	9894	15204	19160	11493

Source: Animal resource development department, Government of West Bengal

3.8.4 Mother Dairy Calcutta (MDC)

Apart from Directorate of Dairy Development and West Bengal Co-operative Milk Producers Federation, Mother Dairy Calcutta is also providing necessary support towards dairy development in the state through its own infrastructural and managerial capabilities. Today Mother

Dairy has become a household name in case dairy products to the urban consumers of the state especially greater Kolkata and neighbouring towns. Glimpses of the main activities of Mother dairy are presented in Table 3.28 and 3.29.

Table 3.28: Mother Dairy Calcutta -Performance at Glance

SL. NO	ACTIVITY	UNITS	As On 16.09.2014
1	Raw Milk Procurement	Ton KG / Day	161.3
2	Total Nos. of Milk Booths/Outlet	Nos.	1943
3	Total Nos. of Delivery Boys (door to door service)	Nos.	13500
4	Total No of self-employment generation (including Delivery Boys)	Nos	19430
5	Average Daily Sale of Liquid Milk	Ltrs/day	305967
6	Sale of Mishti Doi/Yoghurt	Kg/day	1356
7	Sale of Probiotic Doi	Kg/day	785
8	Sale of Paneer	Kg/day	825
9	Sale of Ice Cream	Kg/day	451
10	Peda	Kg/day	30
11	Mango Pudding	Kg/day	30
12	Cow Ghee	Kg/day	100

Source: Animal resource development department, Government of West Bengal

Table 3.29: District-wise Outlets of Mother Dairy Calcutta in WB

District	Kiosks/Outlets for self-employment as on 31.03.2013	Targeted No of Kiosks/Outlets for self-Employment (2013-14)	Actual No of Kiosks/Outlets achieved for Self employment (2013-14)	Kiosks/ Outlets for self-employment as on 31.03.2014
Kolkata	899	175	180	1079
Bankura	18	8	6	24
Birbhum	25	12	10	35
Burdwan	120	25	18	138
Coochbehar		5		0
D Dinajpur		5		0
U Dinajpur		5		0
Darjeeling	28	20	16	44
Howrah	272	35	28	300
Hooghly	239	25	22	261
Jalpaiguri			5	5
Malda	31	20	15	46
Murshidabad		5		0
Nadia	26	15	12	38
North 24 Pgs	149	30	22	171
South 24 Pgs	118	50	42	160
Paschim	77	40	32	109
Medinipur				
Purba	48	30	27	75
Medinipur				
Purulia	27	20	15	42
Total	2077	525	450	2527

Notes: No of persons engaged in each outlet -10; Total no of self-employment 25270

Source: Animal resource development department, Government of West Bengal

3.9 Dairy Development Institutions in Gujarat:

Dairy industry in Gujarat state is well-established at present and it was taken as a model for replicating in other parts of the country. The dairy sector in the state is a key importance as it generates the best alternative additional income and employment for poor, rural farmers, landless workers. The pace of dairy development in state was very rapidly due to well organised and assured market agency, reasonably good prices for milk supplied to the dairy and easy access for all veterinary and health care services offered by the co-operative dairy sector at village level. However, the State Government policy is to support the dairy development through co-operative sector. The co-operative dairy structure is very sound is central, north and partially in the southern region of the state. Majority of milk producers of these regions sell their milk through milk co-operative societies. The dairy development was also driven by the establishment of producer organizations such as MAHI. Few producers sell milk either directly to consumers or to milk vendor/middlemen or Mahi. The exploitation of milk producers by milk vendor/ middlemen is low due to the existence of co-operative societies in the village. Milk producers have easy access to all types of veterinary and health care services available in co-operative milk producers union and in nearby Government veterinary clinic.

3.9.1 Dairy Development Boards/Corporations/Cooperative Federations:

As mentioned earlier, the institutions of national Importance such as National Dairy Development Board (NDDDB) and National Cooperative Dairy Federation of India Limited (NCDFI) are established and located in Anand district of Gujarat. Though the area coverage of these institutions is all India level, but it helped the Gujarat state is developing its dairy sector. Gujarat is now the leading milk producer in the country with cooperative dairy sector well established. The State Government established Gujarat Dairy Development Co-operation (GDDC) in 1973 with a view to supporting dairy development programme for the districts which lagged behind. By the end of 2015-16, 19 out of 33 districts had been covered

under the co-operative milk producers union. Out of 18 dairy plants, 12 dairy plants are under Gujarat Cooperative Milk Marketing Federation (GCMMF) and 6 dairy plants viz. Jamnagar, Surendranagar, Amreli, Bhavnagar, Junagadh and Kachchh are under GDDC. The average capacity of these dairies is to process around 30 lakh liters of milk per dairy. Factories for milk products have been producing products per day on an average 24 lakh liters of milk. There are 10 cattle feed factories under GCMMF/GDDC with production capacity of 1800 MT per day. There are 35 chilling cooling centres with a capacity to hold 14.82 lakh liters milk. GCMMF markets milk products under brand names like “AMUL”, “SAGAR” and “SUGAM” These brand names are household names throughout India. GCMMF has been leading the way in milk production and distribution. Tremendous success has been achieved through Amul brand. Today GCMMF has around 2 lakh retail outlets in India.

AMUL Anand Model

The Amul Model¹ has helped India to emerge as the largest milk producer in the world. More than 15.83 million milk producers pour their milk in 1.7 lakh dairy cooperative societies across the country. Their milk is processed in 184 District Co-operative Unions and marketed by 22 State Marketing Federations, ensuring a better life for millions. The Amul Model of dairy development is a three-tiered structure with the dairy cooperative societies at the village level federated under a milk union at the district level and a federation of member unions at the state level. The three tier model (Fig. 3.1) help in (a) Establishment of a direct linkage between milk producers and consumers by eliminating middlemen; (b) Milk Producers (farmers) control procurement, processing and marketing; (c) Professional management.

The Three Tier Structure:

1. **The First Tier - Primary village Co-operative Society:** An Anand Pattern village dairy cooperative society (DCS) is formed by milk producers. Any producer can become a DCS member by buying a

¹ <http://www.amul.com/m/about-us>

- share and committing to sell milk only to the society. Each DCS has a milk collection centre where members take milk every day. Each member's milk is tested for quality with payments based on the percentage of fat and SNF. At the end of each year, a portion of the DCS profits is used to pay each member a patronage bonus based on the quantity of milk poured. This also acts as a vital link for various productivity enhancement and development programmes of farmers programmes.
2. **District Union the 2nd Tier:** A District Cooperative Milk Producers' Union is owned by dairy cooperative societies. It is a Union of primary village co-operative societies within a district. The Union buys all the societies' milk, then processes and markets fluid milk and products. Union also provides a range of inputs and services to village co-operative societies and their members: feed, veterinary care, artificial insemination to sustain the growth of milk production and the cooperatives' business. Union staff train and provide consulting services to support village co-operative society leaders and staff.
 3. **The State Federation – 3rd Tier:** The cooperative milk producers' unions in a state form a State Federation which is an apex marketing body responsible for marketing of milk and milk products of member unions. The Federation also plays a role in the overall development of the district unions federated to it.

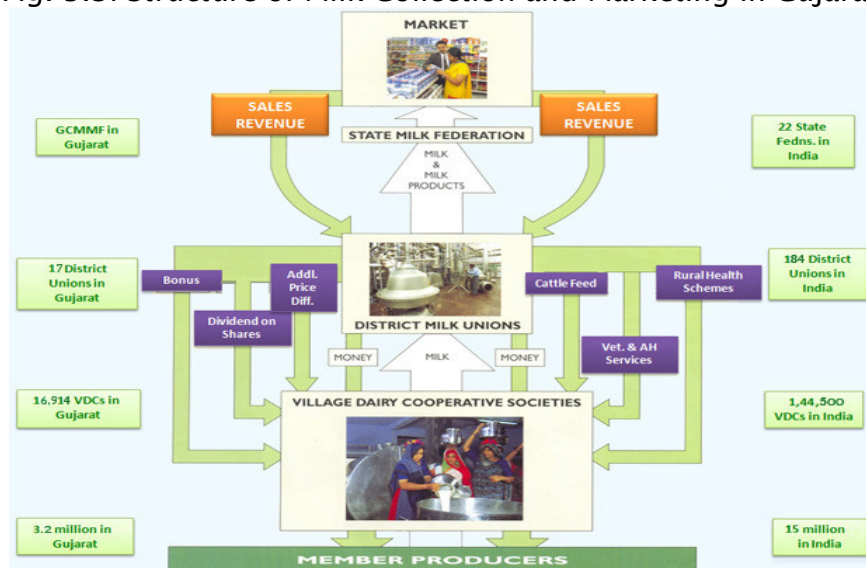
The Anand Pattern is essentially an economic organizational pattern to benefit small producers who join hands forming an integrated approach in order to economy of a large scale business. The whole operation is professionally managed so that the individual producers have the freedom to decide their own policies. The adoption of modern production and marketing techniques helps in providing those services that small producers individually can neither afford nor manage. The Anand Pattern succeeded because it gave a fair price to the farmer and high - quality milk

and milk products to the consumer. What would have been middlemen's profits in the earlier system got absorbed into development projects for primary producer or lower cost for the consumer. In short, the Anand Pattern meant the utilization of resources in the most profitable manner at grass-root level (Fig. 3.3).

Fig. 3.2: Three Tire Structure of AMUL



Fig. 3.3: Structure of Milk Collection and Marketing in Gujarat



3.9.2 Primary Dairy Cooperative Societies:

The milk cooperative sector in Gujarat started in 1942 with one milk cooperative union and only two producers. Today, it has grown impressively and includes 18149 milk cooperative societies attached to 18 district level milk unions with 3.42 million milk producers (2015-16) contributing milk twice a day. About 17 per cent primary cooperative dairy societies in five districts of Gujarat (Banaskantha, Mehsana, Kheda, Sabarkantha and Surat) are ISO certified. More than 70 per cent of the members are small or marginal farmers and landless labourers including a sizeable population of tribal folk and people belonging to the scheduled caste. Nearly 11 lakh cattle owners in Kathiawar and Kutch region are a part of this cooperative sector. Furthermore, women, have played an integral part in ushering in this white revolution. The number of milk societies formed and run by women has jumped from 800 to 3867. In the last ten years, the milk pouring of cooperatives has increased from 46 lakh litres to 174 lakh litres per day. Because of Government efforts², Gujarat today is not only self sufficient but Gujarat's dairies send 20 lakh litres of milk to Delhi, 8 lakh liters to Mumbai and 5 lakh liters to Kolkata, along with supplying milk powder to our armed forces. Over the last five and a half decades, dairy cooperatives in Gujarat have created an economic network that links more than 3.4 million village milk producers with millions of consumers in India.

The districtwise distribution of primary dairy cooperative societies in the State indicate that the highest number of village level cooperative milk societies are in Panchmahal district (11.8 % to state total) followed by Sabarkantha (10.6%), Banaskantha (8.0%), Vadodara (8.0%), Valsad (7.0 %), Mehsana (7.4%), Kheda (6.7%) and Surat (6.4%). These eight districts together accounts for two third of total primary cooperative milk societies in the state (Table 3.30). Out of the total 18149 cooperative milk societies in the state, about 21 percent are female cooperative milk societies. The proportion of female cooperative milk societies to total societies in each

² <http://gujaratindia.com/printpreview.aspx?id=163&lg=en&NewsID=OwAhuSgQW4gO/FwV0lqgsQ==>

district was found highest in Bhavnagar district (82.3 %), followed by Valsad district (72.4 %) and Rajkot district (53.6%).

Table 3.30: Districtwise Cooperative Societies in Gujarat (2015-16)

Sr. No	Name of Milk Producers' Co-op. Union Ltd.	Total No of Societies	ISO Certified Societies	No. of Members (000)	No. of Female Cooperative Society	No. Of Female Members
1	Ahmedabad	734	0	86	157	28528
2	Amreli	1050	0	38	20	16837
3	Banaskantha	1458	1060	346	96	103993
4	Bharuch	680	0	65	155	25000
5	Bhavnagar	638	0	84	525	51956
6	Gandhinagar	121	0	43	32	8750
7	Jamnagar	0	0	0	0	0
8	Junagadh	413	0	43	218	14190
9	Kachchh	690	0	39	33	12532
10	Kheda	1217	1050	683	23	113000
11	Mehsana	1341	500	612	170	330257
12	Panchmahal	2133	0	277	429	55428
13	Porbandar	191	0	16	13	4345
14	Rajkot	914	0	74	490	32367
15	Sabarkantha	1915	274	367	135	106121
16	Surat	1167	149	235	149	66000
17	Surendranagar	761	0	76	171	21605
18	Vadodara	1454	0	218	130	57187
19	Valsad	1272	0	121	921	73690
Total		18149	3033	3422	3867	1121816

3.9.3 Gujarat Cooperative Milk Marketing Federation Ltd.:

Gujarat is known for its marketing institutions like farmers' cooperatives and other organisation. The most successful institution in farmers' cooperative is Gujarat Cooperative Milk Marketing Federation (GCMMF) that covers 3.2 million farmers. GCMMF has 18 district unions as members (Box 3.1). GCMMF is the apex marketing agency of the dairy network in the state of Gujarat and it manages the physical delivery and distribution of milk and dairy products from all the Milk Unions to the end users. GCMMF is also responsible for all decisions related to market development and customer management. GCMMF also plays a key role in working with the different Milk Unions to coordinate the supply of milk and dairy products.

GCMMF Coverage

Gujarat Cooperative Milk Marketing Federation Ltd. (GCMMF) is India's largest food product marketing organization with annual turnover (2015-16) US\$ 3.5 billion (Table 3.31). Its daily milk procurement is around 16.97 million lit per day from 18545 village milk cooperative societies, 18 members of Milk unions covering 33 districts, and 3.6 million milk producer members in Gujarat state. It is the apex organization of the dairy cooperatives of Gujarat, which aims to provide remunerative returns to the farmers and also serve the interest of consumers by providing quality products which are good value for money. Its success has not only been emulated in India but serves as a model for rest of the World. It is exclusive marketing organization of 'Amul' and 'Sagar' branded products. It operates through 56 Sales Offices and has a dealer network of 10000 dealers and 10 lakh retailers, one of the largest such networks in India. Its product range comprises milk, milk powder, health beverages, ghee, butter, cheese, Pizza cheese, Ice-cream, Paneer, chocolates, and traditional Indian sweets, etc.

Box 3.1: District Milk Unions in Gujarat

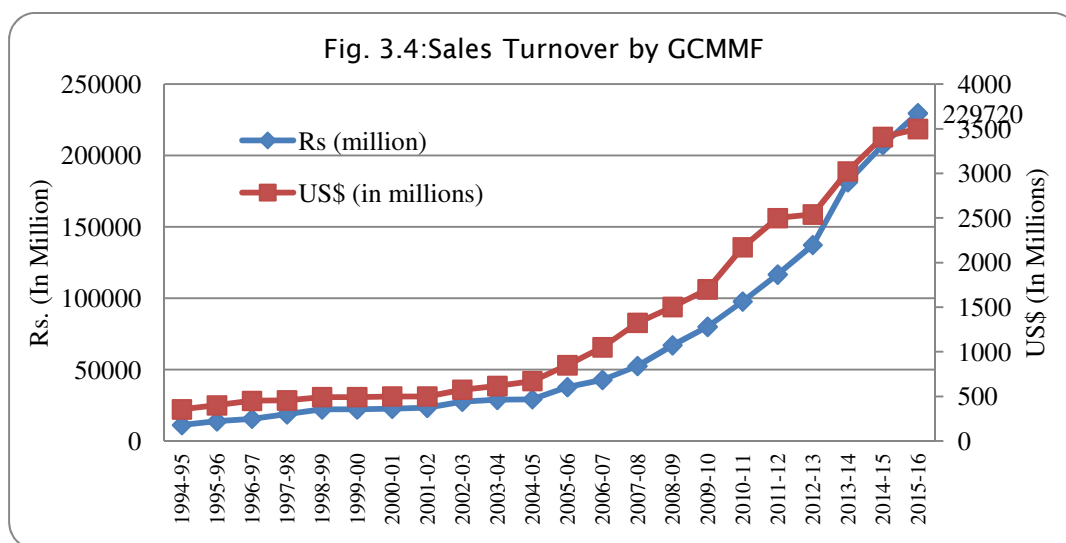
1. Kaira District Cooperative Milk Producers' Union Ltd., Anand
2. Mehsana District Cooperative Milk Producers' Union Ltd, Mehsana
3. Sabarkantha District Cooperative Milk Producers' Union Ltd., Himmatnagar
4. Banaskantha District Cooperative Milk Producers' Union Ltd., Palanpur
5. Surat District Cooperative Milk Producers' Union Ltd., Surat
6. Baroda District Cooperative Milk Producers' Union Ltd., Vadodara
7. Panchmahal District Cooperative Milk Producers' Union Ltd., Godhra
8. Valsad District Cooperative Milk Producers' Union Ltd., Valsad
9. Bharuch District Cooperative Milk Producers' Union Ltd., Bharuch
10. Ahmedabad District Cooperative Milk Producers' Union Ltd., Ahmedabad
11. Rajkot District Cooperative Milk Producers' Union Ltd., Rajkot
12. Gandhinagar District Cooperative Milk Producers' Union Ltd., Gandhinagar
13. Surendranagar District Cooperative Milk Producers' Union Ltd., Surendranagar
14. Amreli District Cooperative Milk Producers Union Ltd., Amreli
15. Bhavnagar District Cooperative Milk Producers Union Ltd., Bhavnagar
16. Kutch District Cooperative Milk Producers' Union Ltd., Anjar
17. Junagadh District Cooperative Milk Producers' Union Limited, Junagadh
18. Porbandar District Cooperative Milk Producers' Union Ltd, Porbandar

GCMMF is also India's largest exporter of dairy products. It has been accorded a 'Trading House' status. Many of our products are available in USA, Gulf Countries, Singapore, The Philippines, Japan, China and Australia. GCMMF has received the APEDA Award from Government of India for Excellence in Dairy Product Exports for the last 16 years. The Amul brand is not only a product, but also a movement. It is in one way, the representation of the economic freedom of farmers. It has given farmers the courage to dream.

Table 3.31: Overview of GCMMF, Gujarat

Year of Establishment	1973
Members	18 District Cooperative Milk Producers' Unions
No. of Producer Members	3.6 Million
No. of Village Societies	18545
Total Milk handling capacity per day	28 Million litres per day
Milk Collection (Total - 2015-16)	6.2 billion litres
Milk collection (Daily Average 2015-16)	16.97 million litres
Cattle feed manufacturing Capacity	7800 Mts. per day
Sales Turnover -(2015-16)	Rs. 22972 Crores (US \$ 3.5 Billion)

During the last six years, sales of Federation have registered remarkable growth of 187 per cent which implies an impressive cumulative average growth rate of 19.2 per cent (Fig. 3.4). During 2015-16, Federation has registered an impressive growth of 11 per cent, to reach Rs. 22972 crores.



3.9.4 Milk Producer Company Limited (MAHI)

Maahi Milk Producer Company Limited was incorporated on June 7, 2012, as a Producer Company under the provisions of Part-IXA of the Companies Act, 1956, in the State of Gujarat, to undertake the business of pooling, purchasing, processing of milk and milk products primarily of the Members and also of others, marketing of the same and to deal in activities that are part of or incidental to any activity related thereto. The Company commenced its commercial operations from 18th March 2013 with its milk procurement operations extending to the then seven districts of Saurashtra and Kutch region of Gujarat covering 2066 villages and 2,296 MPPs (Milk Pooling Points) and with shareholders' base consisting of 85,194 members, who were milk producers. Even though a Producer Company is a company there are certain features which differentiate it from other companies. The silent features of producers companies and cooperatives are presented in Box 3.2.

Presently, the Company's milk procurement operations continue to remain extended in Saurashtra and Kutch region of Gujarat in eleven districts (i.e., Junagadh, Gir Somnath, Amreli, Botad, Bhavnagar, Surendranagar, Morbi, Jamnagar, Dev Bhumi Dwarka, Kutch and Porbandar), and in several cases, reaching to the remotest villages in these areas, where competitors have not made any breakthrough.

The Company's current kitty of products consists of poly packed milk, butter milk, skimmed milk powder, white butter, ghee and curd having different variants in different consumer pack sizes, which also include sweets. The Company continues selling poly packed milk and butter milk under co-branding with 'Mother Dairy™', whereas other products of the Company are being sold under the solo brand 'Maahi™'. Presently, the company's sales and distribution network is spread across Saurashtra & Kutch region and in Ahmedabad and Surat cities of Gujarat. All endeavours are being made to expand the presence of Maahi's products in other prominent cities of Gujarat along with enlarging the Company's basket of products. The Company foresees big potential in

tapping of new markets in the eastern/southern Gujarat, and is actively considering these options. The Company is constantly thriving to spread out its reach and product portfolio by adding new products and facility. In this direction, the Company has first time successfully launched Skimmed Milk Dahi (Lite Dahi) in the market. Few other new milk products are also proposed to be launched shortly during the current year.

Box 3.2: Salient Features of Producer Companies and Cooperatives

Features	Producer Company	Cooperative
Legal Framework	Central Act and enabling in nature	State Act and restrictive in nature
Area of operation	Not restricted	Restricted
Share holders	User members only to hold shares	Non users can also hold shares
Voting rights	One member one vote, but PCs having only Producer Institutions as its members shall have patronage based voting rights	one member one vote for all types of cooperatives
Active members	PC legislation has explicit active members provision. Removal of inactive member is easier.	No provision of active members
Audit	Regular audit by a Chartered Accountant	Audit by Cooperative audit department or govt empanelled auditors and often audit is delayed.
Professional management	Explicit provision in Act for experts on Board	No provision for experts on board
Govt. Nominee on Board	No provision for Govt. nominee	Explicit Provision for Govt. nominee

<i>Producer Company</i>	<i>Other Companies</i>
Only producers can be members/ shareholders	Anyone can be a shareholder
Owned by user members	Owned by investors
One member, one vote or patronage- based voting	Voting rights based on shareholding
No trading of share is permitted. However transfer of shares among members is permitted.	Trading of shares is permitted
Limited dividend	No limit on dividend
Patronage-based returns	Capital-based returns

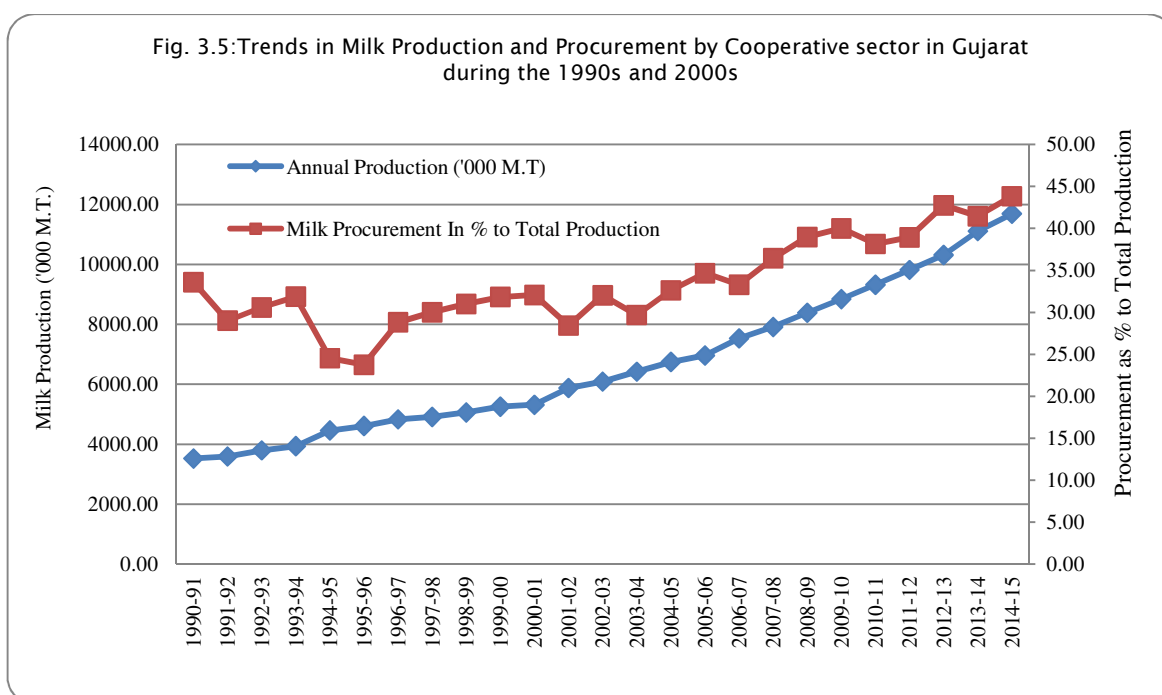
Source: Tikku (2017).

The Company is also an End Implementing Agency (EIA) under the National Dairy Plan-I (NDP-I) for the implementation of four Sub-Project

Plans (SPPs) of NDP-I [Ration Balancing Programme (RBP); Fodder Development Programme; Pilot Model for Viable AI Delivery; and Village Based Milk Procurement System (VBMPS)] over a span of five years from 2012-2013 to 2017-2018 and all above four plans are being implemented in Company's operational districts viz., Amreli, Bhavnagar (excludes AI Delivery), Jamnagar Junagadh, Kutch, Porbandar and Surendranagar.

3.8.5 Milk Collection through Dairy Cooperative Societies

Milk procurement by co-operative movement is the basic theme and success of growth of dairy sector in Gujarat. Dairy cooperative are strong in Gujarat and adjoining regions. The share of Gujarat in total milk procurement by cooperative sector in our country was the highest (41.1 %), followed by Karnataka (15.2%) and Maharashtra (8.6%) during the 2015-16. Gujarat has increased its share from 27.7 percent in the 2001-02 to 41.1 percent in 2015-16 (Fig. 3.5). Karnataka and Rajasthan have also improved their share while Maharashtra has lost its share between 2000-01 and 2015-16 (declined from 18.1 % to 8.6 %). The co-operative sector has a dominant market share in milk and milk products, and has maintained it even in the face of competition from the private sector.



As noted earlier, there are 18149 village level milk co-operative societies, 89 chilling centers and 18 district level milk unions are in functioning in state. They collect total milk 125.75 lakh Liters per day (LLPD) and process it. In case of district-wise milk procurement by the cooperative milk societies during 2014-15, Banaskantha, Sabarkantha, Mehsana, Kheda and Surat are the top five districts having highest procurement of milk (Fig 3.6, Table 3.32). The figures on season-wise utilization pattern of milk in Gujarat indicate that out of the total milk procured, around 70 per cent is sold in the market as liquid milk, around 5 percent is processed and 20 percent is consumed at household level.

Table 3.32: Procurement and Distribution of Milk by DCS in 2015-16

Sr No	District	No. of Co-op. Dairies	Installed Capacity per day (Lakh Liters)	Quantity of Milk Procured (lakh litres) per day	Quantity of Milk Sale/ distributed per day (Lakh Liters)	Rate of Distribution per Liter (Rs.)				
						Whole Milk	Tonned Milk	Standard Milk	Double Tonned Milk	Skim Milk
1	Ahmedabad	1	2.5	2.81	1.82	46	34	42	32	-
2	Amreli	1	2	1.26	1.4	NA	NA	NA	NA	NA
3	Banaskantha	1	48	40.49	21.48	48	36	44	34	16.24
4	Bharuch	1	2	1.62	1.3	48	36	30	34	44
5	Bhavnagar	1	5	2.85	2.81	45	34	41	33	28
6	Gandhinagar	1	2	1.72	1.83	24	7.5	22	-	-
7	Junagadh	1	2.00	1.46	1.65	*	*	*	*	*
8	Kachchh	1	2	2.65	3.36	44.8	33.1	40.65	-	-
9	Kheda	1	26	19.4	14.8	48	36	44	34	-
10	Mehsana	1	25	17.01	2.25	24	-	22	-	-
11	Panchmahal	1	10	9.76	6.4	48	36	44	34	-
12	Porbandar	1	NA	1.1	2.76	NA	NA	NA	NA	NA
13	Rajkot	1	6	4.65	2.89	50	38	46	NA	40
14	Sabarkantha	1	16	18.49	3.2	35.37	25.68	-	22.76	16.4
15	Surat	1	12	13.73	-	40	40	40	40	40
16	Surendranagar	1	6.47	5.18	5.17	NA	NA	NA	NA	NA
17	Vadodara	1	8.7	5.85	4.3	40	40	44	36	NA
18	Valsad	1	3	6.81	6.25	50	34	42	35	38
	TOTAL	18	175.67	156.84	83.67	-	-	-	-	-

Note: * - As per GCMF.

3.9.6 Milk Procurement by Mahi

During the year, the milk acquisition operations of company has been extended to 2296 milk collection centres (M.P.P. Milk Pooling Unit) of 2066 villages of 11 districts of Saurashtra and Kutch region of Gujarat and the company has acquired on an average 572745 liters milk per day annually by regular acquisition of salvable quality milk produced by all the

milk producers associated with the company. The company succeeded in decreasing last year's 0.34 per cent average sour milk up to 0.24 per cent during the current year by various programmes organised by the company such as modernization of chilling centre and BMC, interaction with the members, required modifications in the time and vehicles of milk pulling route and providing training to all the personnel/officers of the company related to various aspects of milk business

3.9.7 Pattern of Pricing and Marketing

GCMMF, being the apex marketing federation of the unions as part of the cooperative structure, has strong control over its procurement cost, and the flexibility to adjust procurement cost at the year-end based on the marketing surplus earned for the year. Total milk procurement by member unions during the year 2015-16 averaged 174.81 lakh kilograms (17.48 million kg) per day, representing growth of 14.3 per cent over 152.90 lakh kilograms (15.29 million kg) per day achieved during 2014-15. The highest procurement was recorded during February 2016 at 220.00 lakh kilograms (22.00 million kg) per day. During the last six years, milk procurement has witnessed phenomenal increase of 87 per cent. This enormous growth in milk procurement was a result of high milk procurement price paid to members which has increased by 90 per cent during last six years (Table 3.41).

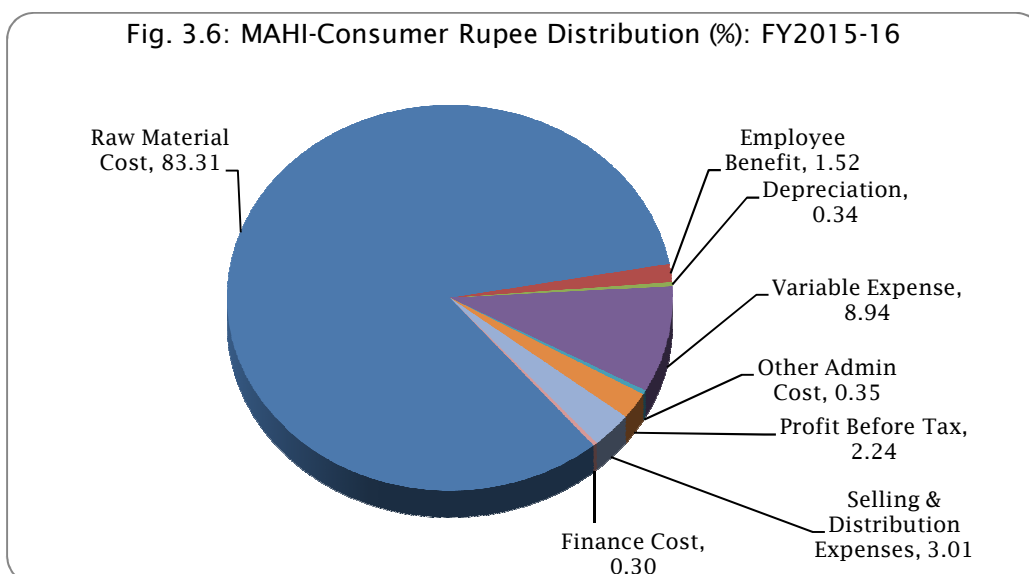
Table 3.33: Details on GCMMF turnover, Milk Procurement and Milk Price

Year	Turnover (In crores)	Milk procurement (In crore kg.)	Milk price (Per kg. fat)
2006-07	821	32.44	234.02
2007-08	1077	40.17	280.13
2008-09	1377	48.86	297.76
2009-10	1695	49.80	334.25
2010-11	2111	51.59	390.60
2011-12	2466	56.00	452.00
2012-13	2850	61.70	475.00
2013-14	3441	66.80	512.00
2014-15	4142	63.60	626.00
2015-16	4825	71.00	661.00

High remunerative milk procurement price to farmers has helped farmer’s interest in milk production occupation. Better returns from dairying have obviously motivated farmers to enhancement their investments in increasing milk production. Federation’s initiative in promoting the concept of commercial, scientific, cooperative dairy farming is also helping to attract next generation of dairy farmers to remain in the business.

3.9.8 Maahi Sale & Marketing:

Maahi brand of products today extend to poly packed milk, butter milk, curd, cow and buffalo ghee, sweets, skimmed milk powder and white butter, masala chhas, cow milk in different packing size. The company is continued to sell poly packed milk, butter milk in Gujarat. The sale of poly packed milk and butter milk were 329000 LPD (avg.) and 55200 LPD (avg.) respectively. Annual sale of Dahi, ghee was 473 MT and 1134 MT respectively, whereas the sale of white butter was 553.96 MT. 75 new distributors, 1779 new retailers and 950 Maahi shops were added during the year for strengthening of sales and distribution networks. Maahi will be introducing a range of value added dairy products as a part of its endeavour to increase its product portfolio and give the consumers the entire basket of products ensuring best value of their money spent and help the distributors, retailers to increase their returns (Fig. 3.6).



3.9.9 Institutional Weakness/Deficiency/Inefficiency

A cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise. However, over the years, cooperative societies have failed to develop competitive competence, interference of political leaders have increased and thus its autonomy is almost withdrawn. Despite of significant growth in the various parametres of dairy, cooperative sector in Gujarat, there are few weaknesses in the present milk cooperative structure, as follows:

- Strong dependency on weak infrastructure & completely dependent on villages for its raw materials.
- Poor raw milk quality, poor veterinary services, lack of good dairy practice, low dairy plants efficiency , inappropriate milk collection system in some area
- Low Compitative Competatnce
- Availibility of less staff as wellas as frequent transfer of staff
- Inadequate avaialibility of feed and fodder
- Risk of highly complex supply chain system.
- Short of its product.
- Increasing Political interefence

Besides the present dairy cooperativs have threats as floows:

- There are many competitors in dairy product, mainly chocklate and ice cream market -Hindustan Unilever, nestle, Britannia, Mother Dairy and local players.
- Stiff competition from MNCs in butter, growing price of milk and milk products.
- The yield of indian cattle still much lower than other dairy countries.

3.10 Status of Dairy Institutions in Rajasthan

3.10.1 Department of Animal Husbandry:-

When the Rajasthan State came in existence in March 1949, there was no department as such in the state to deal with the animal husbandry sector. Initially animal husbandry activities were taken care by the Department of Agriculture. In the year 1958, the department was separated from the Department of Agriculture. The Animal Husbandry Department thus came in to existence in 1958, along with sheep and wool and fisheries sections. In 1984, the Fisheries Department was separated from the Department of Animal Husbandry making it an independent Department. Various livestock development programmes are aimed to increase the productivity of the animals on sound scientific methodology. The main activities and programmes of the department include (i) breed improvement programme using superior germplasm; (b) Veterinary health care & Disease Control Programme, and (c) Extension Activities.

3.10.2 Rajasthan Livestock Development Board (RLDB)

With the purpose to promote breeding & development of all species and breeds of economic importance and to introduce, promote and adopt appropriate technology for improving all aspects of livestock production and their productivity, an autonomous body in the name of 'Rajasthan Livestock Development Board' (RLDB) was established by State Government in 1998. The project envisages 100 per cent grant-in-aid to implementing agencies to achieve the following objectives:

- To arrange, delivery of a vastly improved artificial insemination service at the farmer's doorstep
- To progressively bring 80 percent breedable females among cattle and buffalo under organized breeding through Artificial insemination or Natural service by high quality bulls within a period of ten years.
- To undertake breed improvement programmes for indigenous cattle and buffalo breeds so as to improve their genetic qualities as well as their availability.

- To provide quality breeding inputs in the breeding tracts of important indigenous breeds so as to prevent the breeds from deterioration and extinction.
- To bring all breeding agencies under single umbrella To increase coverage of breedable population under organized breeding programme through A.I./ NS
- Conservation and development of indigenous breeds. Cattle : Tharparkar, Rathi Buffalo : Surti, Murrah
- Training to A.I. workers for quality A.I. services and professionals for production of semen straws.

3.10.3 Rajasthan Cooperative Dairy Federation

Dairy development was initiated by the state government in the early seventies under the auspices of Rajasthan State Dairy Development Corporation (RSDDC) registered in 1975. Two years later RCDF assumed responsibility for many of the functions of RSDDC. It became the nodal agency for implementation of operation flood in the state. Rajasthan Cooperative Dairy Federation (RCDF) set up in 1977 as the implementing agency for dairy development programmes in Rajasthan is registered as a society under the Rajasthan cooperative societies act 1965.

The Federation is a State level apex co-operative organization owned by its member unions each of which, in turn, is owned the dairy co-operative societies in its area of operation which are themselves owned by farmer members. The Federation has a board of directors which has overall responsibility for the planning policies, financial resource mobilization and management, member and public relations as well as liaison with agencies of the state and central government, financing institutions etc. The Federation has a chief executive designated as Managing Director.

Dairy development was initiated by the state government in the early seventies under the auspices of Rajasthan State Dairy Development Corporation (RSDDC) registered in 1975. Two years later RCDF assumed

responsibility for many of the functions of RSDDC. It became the nodal agency for implementation of operation flood in the state. Districtwise distribution of milk unions in Rajasthan presented in Table 3.34 shows that Alwar has the highest number of cooperative dairy societies followed by Ganganagar and Bhilwara.

Table 3.34: Districtwise milk Unions in Rajasthan

Particulars	Registered DCS*(Nos)	PDCS(CC)*(Nos)	MEMBERSHIP*(Nos)	Milk-Proc	Local-Mktg
				(17-18) (TKGPD)	(17-18) (TLPD)
Ajmer	732	133	51687	311	195
Alwar	1197	503	92997	170	128
Banswara	256	43	10963	13	0
Barmer	224	31	12731	16	5
Bharatpur	311	78	8368	13	9
Bhilwara	1082	62	66907	269	156
Bikaner	875	145	39841	85	26
Chittorgarh	977	138	47395	100	87
Churu	298	246	14126	16	9
Ganganagar	1110	486	44933	122	58
Jalore	555	45	14568	44	23
Jaipur	2399	433	166589	1,136	899
Jhalawar	278	35	8498	19	10
Jodhpur	663	68	37736	63	54
Kota	794	141	33947	91	80
Nagour	369	64	14747	22	14
Pali	571	50	36071	114	59
Sikar	612	75	35760	85	61
SawaiMadhopur	276	52	9756	15	4
Tonk	421	35	27286	37	32
Udaipur	716	45	45796	2845	99
Total	14716	2908	820702	2568	2010

Rajasthan Cooperative Dairy Federation (RCDF) set up in 1977 as the implementing agency for dairy development programmes in Rajasthan is registered as a society under the Rajasthan cooperative societies act 1965. The Federation is a State level apex co-operative organization owned by its member unions each of which, in turn, is owned the dairy co-operative societies in its area of operation which are themselves owned by farmer members. The dairy co-operative movement operates on three tier system wherein farmer members own dairy co-operative societies (DCS) which own district milk producer's union. The unions collectively own the RCDF.

3.10.4 PAAYAS Milk Producer Company Limited

PAAYAS Milk Producer Company limited was incorporated on 19th May 2012 under Part IX A of the Companies Act 1956. The company has received overwhelming response from the milk producers who have applied for the membership of the company and resulting that the Company has successfully allotted membership to 1.12 lakh milk producers (March,2017) of Rajasthan within three years from its incorporation. At present, the company has its operations in eight districts of Rajasthan and daily procured average 650 thousand litres of fresh raw milk from its producer-members spread over 2400 villages (Table 3.35).

Table 3.35: Paayas MPCs at a glance as of March, 2017

Particulars	PAYAS
Total No. of MPPs	3444
No of Members	1,12,460
Women Members	45,210
women membership as % of Total members	40%
Small holders\$ as % of total members	38%
Paid up Share Capital (Rs in crores)	30.7
Average Milk Procurement ('000 Kg Per Day)	650
Turnover 2016-17 (Rs in crores)	1006

Source: PAYAS (2016), Annual Report 2015-16, PAAYAS Milk Producers Company, Jaipur.

Each milk pooling point and chilling centre is equipped with electronic weighing and testing system thereby ensuring fairness and transparency at all the levels. The Flow Chart and Member Payment in the Milk Producer Company are presented in figure 2.3. The detail of milk transactions carried out including value of milk are provided to members in every shift in form of an auto milk receipt. Similarly, information pertaining to members is placed on milk pooling point notice board every month. The company stepped-up creation of milk market at farmers' doorstep in fresh geographies to enable new members realise benefits of fair and transparent milk procurement system. Two new milk chilling centres were added taking the tally to twenty. Besides, promising outcomes were also achieved in domains such as quality assurance and members' payment through their respective bank account despite thin banking density in Rural Rajasthan. The operations are SOP driven with periodic audits in place.

The company organized 694 milk pooling point taking its tally to 3009. There remained an overwhelming response during membership drive resulting in addition of 19031 new members. Average milk procurement grew to all time high of 570 thousand kilos/day. A Milk Chilling Centre each at Bassi (Jaipur) and Beawar (Ajmer) was created to aid to milk procurement. The ratio of milk procurement between April to September and October to March remained 1:1.7 which is noteworthy under North India conditions. The Paayas Milk Producer Company implemented different programmes like Village Based milk procurement System (VBMPS), Rational Balancing Programme (RBP), Fodder Development (FD), Pilot model for viable AI are facilitated by National Dairy Services Supported under NDP.

3.11 Chapter Summary

It is very clear from above discussion that cooperative dairy sector is weak in eastern states of India compared to developed cooperative dairy structure in western states of India. The success of the Gujarat Cooperative Milk Marketing Federation, known for its Amul brand and its Amul model of cooperative, is acclaimed. However, there is a perception that cooperative organizations generally have failed in other parts of the country. A less recognized fact is that the cooperatives in other states are organized differently than the GCMMF cooperatives. The GCMMF cooperatives operate as a true representative of farmers and are run by professionally qualified managers. In most other states, the cooperatives are managed by civil servants, function more as government bodies and are weak representatives of farmers. Being the lead organizations, the cooperatives also set a benchmark for prices paid by other buyers, such as local vendors and private dairies, who tend to little extra than that paid by the cooperatives.

The next chapter presents the policies and programmes/schemes for dairy development in India and Selected States as well as possible convergence of schemes suggested.

Policies and Programmes/Schemes for Dairy Development & Convergence of Schemes

4.1 Introduction:

Government policies that have been implemented over the period have produced major positive impacts on dairy production in India. It is quite obvious that dairying cannot be expanded easily if related government policies are not supportive of dairy farming. There are plethora of state and central government schemes that provide forward and backward linkages for promotion of dairying involving milk producers. For dairy development, department of Animal Husbandry and Dairying is the parent department, mandated to implement different schemes and programs of the governments. The resources to implement different schemes and programs are provided through state budgets and central grants. Many government welfare schemes are implemented for dairy development which is funded through budgetary provisions of multiple departments. For instance, departments of Rural Development and Panchayat Raj, Agriculture and Cooperation, Scheduled Caste and Scheduled Tribe Finance Corporation, Tribal Welfare, Women and Child Welfare beside the parent department are engaged in the promotion of various welfare schemes to promote dairying. The aforesaid departments have their own mandates and thus schemes are promoted in consonance with departments' targets and demands.

Apart from the government programs, the state milk federations and the milk unions have evolved a variety of schemes that provide incentives to the milk producers. Given the diversity in social and economic contexts, district level milk unions have drawn up schemes to promote dairy development, which are funded through various ingenious ways (partly through profits generated in milk business, partly through token cess/user fee or through charity (synonymous with welfare). Some

anecdotal evidence suggests that the Banaskantha union of Gujarat had evolved some 20 different schemes to their producer members. Needless to say, the schemes are intended to provide impetus for milk production. Convergence of different state and central governments programs in a given geography provide forward and backward linkages to any development program enhancing efficiency in implementation. In view of same, convergence of different programs also enhances sustainability. The milk producers benefit when both state and central government programs converge over a given territory so that linkages among these programs foster speedy realisation of program benefits. The flip side is that if the programs are implemented in isolation, the impact is unlikely to be sustainable, with less economic benefit accrued to the producers. The convergence theory is also desirable from the standpoint of use of scarce public resources.

Therefore, convergence of all state and central government schemes at the implementation level, in a given territory, would bring about improvement in milk production sector in a manner that will be sustainable, while ensuring social and economic improvements of the dairy farmers. NDDDB had documented¹ the outlining all schemes of the central government have been documented. This chapter attempts to present the various schemes in operation in the study area.

4.2 Regulatory Framework for the Dairy Processing Sector:

Food processing industry is of enormous significance for India's development as it has linked economy, industry and agriculture in India, efficiently and effectively. Different laws govern the food processing sector in India. The prevailing laws and standards adopted by the Government to verify the quality of food and drugs is one of the best in the world. Different laws govern the food processing sector in India. The prevailing laws and standards adopted by the Government to verify the quality of food and drugs is one of the best in the world. Multiple laws/regulations

¹ <http://www.dairyknowledge.in/article/compendium-documents-dairy-development-and-animal-husbandry-schemes-10-sep-2014>.

prescribe varied standards regarding food additives, contaminants, food colours, preservatives and labelling. The food laws in India are enforced by the Director General of Health Services, Ministry of Health and Family Welfare, Government of India (GOI). There are various food laws applicable to food and related products in India (Box 4.1).

Box 4.1: Food laws applicable to food and related products in India

- Prevention of Food Adulteration Act (PFA), 1954 and Rules (Ministry of Health & Family Welfare).
- The Standards of Weights and Measures Act, 1976, and Standards of Weights and Measures (Packaged Commodities) Rules, 1977
- Agriculture Produce (Grading & Marking) Act (Ministry of Rural Development).
- Essential Commodities Act, 1955 (Ministry of Food & Consumer Affairs).
- Fruit Products Order (FPO), 1995.
- Meat Food Products Order, 1973 (MFPO).
- **Milk and Milk Products Order, 1992.**
- The Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) Act, 1992 and Rules 1993.
- The Insecticide Act, 1968.
- Export (Quality Control and Inspection) Act, 1963.
- Environment Protection Act, 1986.
- Pollution Control (Ministry of Environment and Forests).
- Industrial Licenses under Industries (Development & Regulation) Act, 1951 for liquor manufacture.
- Bureau of Indian Standards Act, 1986 which is the largest body for formulating standards for various food items
- Vegetable Oil Control Orders 1998
- The Solvent Extracted Oil, Deoiled Meal and Edible Flour (Control) Order, 1967

Milk is an important food for households - both in rural and urban areas, even though consumption levels vary across income classes and regions. Milk and dairy foods are healthy foods and considered nutrient-rich. The dairy industry handling the marketable surplus of the milk can be broadly divided into the organized sector and the unorganized sector. The organized dairy sector refers to the dairy units registered under the Milk and Milk Products Order, 1992, rev. 2002 (MMPO). These dairies have each capacity of handling over 10,000 litres of milk per day². These organized dairies are under co-operative, private or other (like government dairies) sector. As per the Annual Report 2007-08 of the Department of Animal Husbandry, Dairying and Fisheries, Government of India, there were 818 MMPO registered units with a combined processing capacity of

² http://old.fssai.gov.in/Portals/0/Baseworkingpaper_june2009.pdf

953 lakh litres a day as on 31 March 2007. Many of these are however not functional. These dairy plants are supplied milk by over 1 lakh collection centres. The organized dairy sector has a good share in milk products market. But the products manufactured are mostly western-type in nature like table butter, cheese and different types of milk powders. Even though the organized sector has entered the market of indigenous milk products like *ghee*, *shrikhand* and *paneer*, these markets are mostly controlled by un-organized sector. The organized sector, especially co-operative dairy sector, disposes large portion of milk as processed liquid milk and only surplus is converted into products. The unorganized dairy sector comprises numerous, small and/or seasonal milk producers/traders (popularly known as '*halwai*') that are not registered under the MMPO. They handle 10,000 litres of milk per day or less. They are involved in selling raw liquid milk, boiled liquid milk as well as manufacturing and selling mainly indigenous milk products like *peda*, *barfi*, *rasgulla*, *khoa*, *paneer*, *ghee* etc., usually at the local level, but have a major share in these milk products. There are no official records on number of such unorganized dairy units. The organized dairy sector handle around 38 per cent of the marketable surplus (884 lakh kg/day) while the unorganized sector handles ((1416 lakh kg/day) about 62 per cent of the marketable milk (NDDB, 2017). In the organized dairy sector, equal share of 50 per cent each is accounted by the co-operative with government dairies and private dairies. The organized dairy sector has been paying increasing attention, though not adequate, on improving quality of products. Enforcement of rules is also concentrated mostly on this sector, while the unorganized dairy sector largely remains unattended. As a result business operators in the unorganized sector pay little importance to quality, except some reputed sweetmeat shop owners who maintain relatively good quality standards.

Milk and Milk Product Order 1992³

The Government of India had promulgated the Milk and Milk Product Order (MMPO) 1992 on 9/6/92 under the provisions of Essential

³ <http://dahd.nic.in/related-links/milk-and-milk-product-order-1992>

Commodities Act, 1955 consequent to de-licensing of Dairy Sector in 1991. As per the provisions of this order, any person/dairy plant handling more than 10,000 liters per day of milk or 500 MT of milk solids per annum needs to be registered with the Registering Authority appointed by Central Government. The objective of the order is to maintain and increase the supply of liquid milk of desired quality in the interest of the general public and also for regulating the production, processing and distribution of milk and milk products.

Recognizing the necessity suitable amendments in Milk and Milk Product Order-1992 for faster pace of growth in dairy sector, Government of India has amended milk and milk product order-92 from time to time in order to make it more liberal and oriented to facilitate the dairy entrepreneurs (Box 4.2). The Government of India has notified the last amendment proposals in the official Gazette on 26/3/02. Now there is no restriction on setting up of new milk processing, while noting that the requirement of registration is for enforcing the prescribed Sanitary, Hygienic Conditions and Quality and Food Safety Measures as specified in the Vth Schedule of MMPO-1992.

Box 4.2: Silent features of the new amendments made

- The provision of assigning milkshed has been done away with.
- The registrations under MMPO-92 will now cover sanitary, hygienic condition, quality and food safety measures as specified in Vth Schedule of MMPO-1992.
- The provision of inspection of dairy plant has been made flexible.
- The provision to grant registration in 90 days has been reduced to 45 days subject to submission of application in complete form.
- The power or registration of State Registering Authority has been raised from 1.00 lakh liters per day to 2.00 liters per day.
- Altogether the Central and the State Registering Authorities have registered 818 units with combined milk processing capacity 952.93 lakh litre per day in Co-operative, Private and Government Sector as on 31.3.2007.

4.3 Impact of Operation Flood and Reasons for failure, if any

Operation Flood, launched in 1970, has been instrumental in helping the farmers mould their own development. Thus, helping reach milk to consumers in 700 towns and cities through a National Milk Grid. It also helped eradicate the need for middlemen thereby reducing the

seasonal price variations. Operation Flood was implemented in different parts of the country in three phases, Phase I (1970–1980), Phase II (1981–1985) and Phase III (1985–1996). As a result of the cooperative structure the whole exercise of production and distribution of milk and milk products has become economically viable for farmers to undertake on their own. In this manner the farmer himself can enjoy the fruits of his own labor, instead of surrendering a majority of the profit to corrupt middlemen. The scheme sought to establish milk producers' cooperatives in the villages and make modern technology available to them. The broad objectives are to increase milk production ("a flood of milk"), augment rural incomes and transfer to milk producers the profits of milk marketing which are hitherto enjoyed by well-to-do-middlemen.

Phase I of Operation Flood was financed by the sale within India of skimmed milk powder and butter oil gifted by the EC countries via the World Food Program. As founder-chairman of the National Dairy Development Board (NDDB) of India, Dr Kurien finalized the plans and negotiated the details of EEC assistance. He looked after the administration of the scheme as founder-chairman of the erstwhile Indian Dairy Corporation, the project authority for Operation Flood. During its first phase, the project aimed at linking India's 18 best milksheds with the milk markets of the four metropolitan cities of Delhi, Mumbai, Calcutta and Madras.

Phase II of the project, implemented during 1981-85 raised this to some 136 milksheds linked to over 290 urban markets. The seed capital raised from the sale of WFP/EEC gift products and World Bank loan had created, by end 1985, a self-sustaining system of 43,000 village cooperatives covering 4.25 million milk producers. Milk powder production went up from 22,000 tonnes in the pre project year to 1,40,000 tonnes in 1989, thanks to dairies set up under Operation Flood. The EEC gifts thus helped to promote self-reliance. Direct marketing of milk by producers' cooperatives resulting in the transfer of profits from milk contracts --increased by several million liters per day.

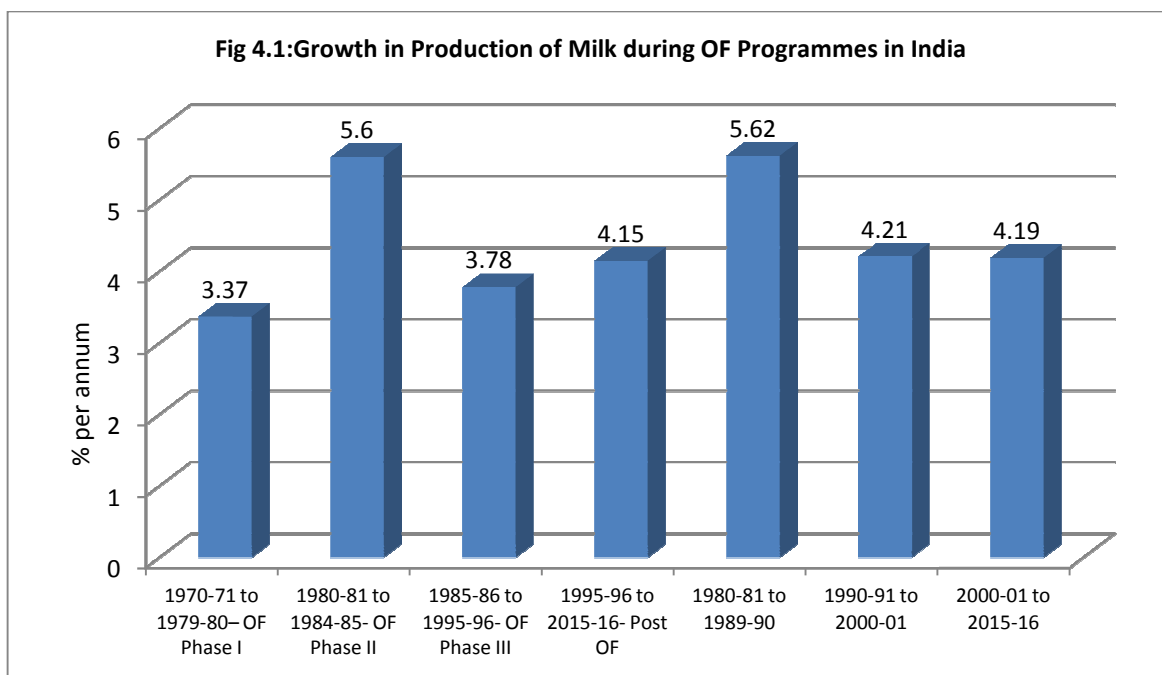
Phase III of Operation Flood (1985-1996) enabled dairy cooperatives to rapidly build up the basic infrastructure required to procure and market more and more milk daily. Facilities were created by the cooperatives to provide better veterinary first-aid health care services to their producer members.

The summary of operation flood achievement in the major states of India is presented in Table 4.1. The growth in production of milk during the three phases and thereafter is presented in Table 4.2. The milk production in India had registered significant rate of growth during second phase of operation flood programme. The year 1995-96 marked the termination of Operation Flood III, funded by a World Bank loan, EEC food aid and internal resources of NDDB. At the conclusion of Operation Flood III, 72,744 DCSs in 170 milksheds of the country, having a total membership of 93.14 lakh had been organized. The targets set have either been effectively achieved or exceeded. However, procurement targets could not be reached as private agencies started procuring milk from the cooperative villages, following the new delicensing policy under the Government's program of economic liberalization

Table 4.1: Salient Features of Operation Floods in India

Features	OF-I	OF-II	OF-III
Period	July 1, 1970 to March 31, 1981	October 2, 1979 to March 31, 1985	April 1, 1985 to April 30, 1996
Number of Milk sheds covered	39	136	170
Number of Anand Pattern DCSs ('000)	13.3	34.5	72.7
Number of Members (in millions)	1.8	3.6	9.3
Av. Milk Procurement (Million Kg/Day)	2.6	5.8	10.9
Processing Capacity in Rural Dairies (Million Ltrs Per Day)	3.8	8.8	18.1
Drying Capacity (Metric Tons Per Day)	261	508	842
Liquid Milk Marketing (Million Ltrs/Day)	2.8	5	9.9

Source: <http://www.amuldairy.com/index.php/white-revolution>.



4.4 National Livestock Policy

National Livestock Policy 2013⁴ has been formulated by Central Government in order to have a policy framework for improving productivity of the livestock sector in a sustainable manner, taking into account the provisions of the National Policy of Farmers, 2007 and the recommendations of the stakeholders, including the States. The National Livestock Policy aims at increasing livestock productivity and production in a sustainable manner, while protecting the environment, preserving animal bio-diversity, ensuring bio-security & farmers' livelihood.

4.5 National Action Plan and Policies for Dairy Development

The cooperatives and private dairies procure about 20 per cent of the milk produced in the country while 32 per cent is sold in the unorganised market and about 48 per cent is consumed locally. About 40 per cent of the milk sold is handled by the organized sector and the remaining 60 percent by the unorganised sector. However, in most of the developed nations, 90 percent of the surplus milk is processed through organised sector. With the increase in population, rise in per capita

⁴ <http://dahd.nic.in/sites/default/files/NLP%202013%20Final11.pdf>

income, changing lifestyle, affordable aspirational food habits, export opportunities etc., the demand for milk is expected to rise. It is estimated that the demand for milk would be in the range of 200-210 million mt by 2021-22.

4.51 National Action Plan

The Department of Animal Husbandry, Dairying and Fisheries has formulated a National Action Plan for Dairy Development with specific objectives; (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 double milk producers' income at farm level by 2021-22 by providing rural milk producers with greater access to the organized milk processing sector. The milk production is envisaged to be million mt by 2021-22 from existing 155.5 Million MT requiring an annual growth rate of 8.56 per cent which would lead to increase in per capita availability of milk from current level of 337 grams per day to 515 grams per day in 2021-22 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 per cent to 6.14 KgPD by 2021-22 from existing 4.65 KgPD. National Action Plan for Dairy Development is targeted to increase organized milk handling from 20% at present to 41% in 2021-22. The milk handling by cooperatives has been targeted to increase from 10 per cent to 20 per cent and private sector from 10 per cent to 30 per cent. Based on the National Action Plan, a Vision Document has been prepared by the Department.

4.5.2 Dairy Development Policies/Schemes

The brief details of Dairy Development Schemes⁵ being implemented by this Department are as follows:

⁵ <http://www.dahd.nic.in/reports/annual-report-2017-18>

4.5.2.1 National Programme for Bovine Breeding & Dairy Development

A restructured scheme titled "National Programme for Bovine Breeding and Dairy Development" (NPBB & DD) was launched in February 2014 with budgetary provision of 1800 Crore for implementation during 12th Plan, by merging of four ongoing schemes namely Integrated Dairy Development Programme (IDDP), Strengthening Infrastructure for Quality & Clean Milk Production (SIQ-CMP), Assistance to Cooperatives (A to C) and National Project for Cattle & Buffalo Breeding (NPCBB). NPBB&DD have two components (a) National Programme for Bovine Breeding (NPBB) and (b) National Programme for Dairy Development (NPDD). The IDDP, CMP and A to C has been discontinued from April, 2017. The NPBB focuses on extension of field AI Net work through "MAITRI (Multi Purpose AI Technician in Rural India) and to encourage conservation and development of recognized indigenous breeds of the country. The NPDD focuses on creating/strengthening of infrastructure for Production of quality milk. Procurement, processing and marketing of milk & milk products by the State Implementing Agency (SIA) i.e. State Cooperative Dairy Federations/ District Cooperative Milk Producers' Union. Funding Pattern under NPDD is as 50 per cent Grants-in-aid to NDP States, for non NDP States 75 per cent grants to profit making milk unions with accumulated profit of more than Rs. 1 crore in previous Year, 90 per cent grants to loss making milk unions with accumulated profit of less than Rs. 1 crore in previous year, 90% grants to Hilly & North-Eastern States and 50 per cent grants for rehabilitation of sick milk unions. The central assistance is restricted to Rs. 15 crore/project and Rs. 5 crore for rehabilitation of the milk unions.

4.5.2.2 Dairy Entrepreneurship Development Scheme

Dairy Entrepreneurship Development Scheme (DEDS) was started in September, 2010 with the objective to generate self employment opportunities in dairy sector in the country. This scheme is being implemented through NABARD which provides financial assistance to commercially bankable projects with loans from Commercial, Cooperative, Urban and Rural banks with a back ended capital subsidy of 25% of the

project cost to the beneficiaries of general category and 33.33% of the project cost to SC & ST beneficiaries. An amount of Rs 203.0 crore has been allocated at RE stage and an amount of Rs 178 crore has been released to NABARD during current year 2017-18 (up to 31st December, 2017). The activities covered are establishment of small dairy unit from 2 to 10 milch animals. Rearing of heifers (upto 20 calves), Vermi- Compost, Purchase of Milking Machines, Milko testers & BMCs (upto 5000 litres capacity). Purchase of Milk Processing equipments for manufacture of indigenous milk products. Transportation & Cold Storage facilities. Establishment of private veterinary clinics. Setting up of Milk Parlour for enhancement of milk production. Procurement, Cold chain and Transportation facilities. Processing and Marketing of milk & milk products. Eligible beneficiary can be an individual entrepreneur, farmer. Group of farmers. Self Help Groups, Dairy Cooperative Societies, District Milk Unions and Panchayati Raj Institutions are eligible under the scheme.

4.5.2.3 National Dairy Plan-I

National Dairy Plan Phase I (NDP I) is a scientifically planned multi-state initiative to increase productivity of milch animals and thereby increase milk production to meet the rapidly growing demand for milk through scientific breeding and feeding and to provide rural milk producers with greater access to the organised milk processing sector. NDP-I is a central sector scheme of Government of India being implemented by National Dairy Development Board (NDDB) through the network of End Implementing Agencies (EIAs) for the period 2011-12 to 2018-19 with the following Project Development. NDP-I is being implemented in 18 major milk producing States, viz. Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand and West Bengal. These States account for more than 90 per cent of the country's milk production. However, the benefits from the project are accruing across the country. NDP I is being implemented in States where the respective state

governments have committed to undertake the necessary policy/regulatory support to prepare an environment for successful implementation of the scheme. All the 18 participating States under NDP I have complied and committed to comply with the key policy and regulatory measures envisaged under NDP I. NDP I is an externally aided project with the total outlay of Rs 2242 crore comprising Rs 1584 crore as International Development Association assistance, Rs 176 crore as Government of India share, Rs 282 crore as share of EIAs that will carry out the projects in participating States and support of Rs 200 crore by NDDDB and its subsidiaries for providing technical and implementation support to the project.

4.5.2.4 Supporting State Cooperative Dairy Federations

Department has approved a new Central Sector Scheme "Supporting State Cooperative Dairy Federations" from 2016-17 with a corpus of Rs. 300 crore to be kept in perpetuity with National Dairy Development Board to be used for providing soft loans for working capital to enable State Dairy Cooperative Federations to provide a stable market access to farmers. The scheme will be implemented by National Dairy Development Board. The objective of the scheme are as follows: (a) to assist the State Dairy Cooperative Federations by providing soft working capital loan to tide over the crisis on account severely adverse market conditions or natural calamities. To provide stable market access to the dairy farmers; (b) to enable State Cooperative Dairy Federations to continue to make timely payments of dues to the farmers, (c) To enable the cooperatives to procure milk at a remunerative price from the farmers, even during the flush season.

4.5.2.5 Dairy Processing & Infrastructure Development Fund (DIDF)

Consequent to the Union Budget 2017-18 announcement, Dairy Processing & Infrastructure Development Fund has been set up as a corpus of Rs. 8004 crore with National Bank for Agriculture and Rural Development (NABARD) over a period of 3 years (i.e. 2017-18 to 2019-20). The CCEA in its meeting dated 12.09.2017 has approved the scheme.

DADF, Government of India (GoI) has issued the administrative approval of the Central Sector Scheme - 'Dairy Processing & Infrastructure Development Fund (DIDF)' on 21 December 2017. DIDF scheme will be implemented with a total investment outlay of Rs. 10,881 crore comprising Rs. 8004 crore as a loan from National Bank for Agriculture and Rural Development (NABARD), Rs. 2001 crore as End Borrower's contribution, Rs. 864 crore as GoI's Interest Subvention and Rs. 12 crore by National Dairy Development Board (NDDB) and National Cooperative Dairy Corporation (NCDC).

4.6 Government Policies on Quality Semen Import, Export of Meat & Milk Products

There are many success stories in genetic improvement in advanced dairy producing countries. Remarkable increase in average lactation yields has been achieved. Thus there is a need to breed the farmer's herd with superior germplasm. The import and export of the cattle/ buffalo germplasm⁶ is under the restricted list and is allowed against license(s) issued by the Directorate General of Foreign Trade, Ministry of Commerce on the recommendation of the Department of Animal Husbandry dairying & Fisheries. There is a definite demand for the germplasm of Indian breeds of cattle and buffaloes in South America, South Asia and other countries. Towards conservation of the rich diversity of indigenous breeds, it is important to broadly identify germplasm of cattle and buffalo meant for breeding purposes and for the export. As introduction of temperate dairy breeds in the country for crossbreeding indigenous non - descript cattle has been accepted for quite some time and need was felt by a number of State Governments/ Organisations to import exotic germplasm to produce quality cross -bred animals, Central Government issued guidelines ([Guidelines for export /import of bovine germplasm \(Revised April](#)

⁶ Guidelines for export /import of bovine germplasm (Revised April 2016)- <http://www.dahd.nic.in/sites/default/files/Guidelines%20for%20Import%20and%20Export%20of%20Bovine%20Germplasm%2C%202016.pdf>

2016) for processing such applications for import and export of bovine germplasm, in order to streamline procedures and ensure efficient and transparent processing.

Recently Gujarat government⁷ has decided to import from Brazil 10,000 doses of Gir bull semen as the cow population of this prestigious breed has declined in Gujarat. Interestingly, the bulls whose semen are to be imported are descendants of those gifted to Brazil as a goodwill gesture by the maharaja of Bhavnagar before Independence. Gir cows have long been the pride of Gujarat with their very high milk yield. The obsession with Jersey cows and indiscriminate breeding has led to the decline of Gir cow population in the state to nearly seven lakh out of the two crore milk-giving breeds. Brazil, on the other hand, was careful to preserve the breed and now has a sizable population of Gir breed cows and bulls. The government has also granted Rs 50 lakh for this project. Ironically, the move has not gone down well with the state's own *Gau Seva Ayog* (Cow Welfare Commission) that suspects Gir cows and bulls of Brazil may no longer be a pure breed.

India moves fast in exports of livestock products. The total exports recorded a whopping around 60 per cent growth during the last three financial years and buffalo meat covered 89 per cent of the total exports during 2014-15 and India stands tall as the largest exporter country⁸. India is considered as world's 5th largest meat producer with 6.3 million tonnes which account for 3% of world meat production of 220 million tonnes. The support from the Government helps boosting the meat industry. A grant of up to Rs 15 crore is still offered to set up new abattoirs or modernize existing ones. New players enter the field and *India Mart*, an online B2B marketplace has seen by the 20 % increase in registration of meat exporters. Indian meat is gaining preference in global markets as it is 20% cheaper than Brazilian meat. The cost of rearing of animals in Brazil is higher as they

⁷ <http://timesofindia.indiatimes.com/city/ahmedabad/Govt-to-import-Gir-bull-semen-from-Brazil/articleshow/50924556.cms>

⁸ <http://vetconcerns.org/2015/10/16/export-of-livestock-products-india-on-a-winning-streak/>

are meant for slaughtering alone. In India, the water buffaloes are reared and used as milch animals and sent for slaughtering once they are considered unproductive. The popularity of Indian beef among Middle East and other Muslim countries is on a higher side as the importers are assured of *Halal* slaughter. Beef exports from India more than trebled from around 0.6 million tonnes to over 2 million tonnes between 2009 and 2014. The export value more than quadrupled from \$ 1,163.54 million in 2009-10 (April-March) to \$ 4,781.18 million in 2014-15. India's buffalo meat exports have been growing at an average of nearly 14 per cent each year since 2011. According to Department of Animal husbandry, Dairying and Fisheries, India produced 14.3 lakh tons of beef of which 11 lakh tons are from buffalo-meat and 3.3 lakh tons are from cattle.

All exported meat products must be sourced from abattoirs and meat processing plants registered with APEDA. Export shipments are subject to compulsory microbiological and other testing for the issuance of animal health certificates by the certified GOI agency. Since most Indian states restrict or prohibit cow slaughter due to religious sensitivities, India's carabeef⁹ sector mainly depends on unproductive water buffalo and water buffalo bulls from the dairy sector. In 2015, several India states, including Maharashtra and Haryana, enacted stringent cattle slaughter legislation to completely prohibit the cattle slaughter. However, industry sources indicate that these legislations have not had a major impact on the carabeef trade and supply chain. All Indian states except Kerala, West Bengal, and north-eastern states prohibit the slaughter of cattle of any age, including for both female and male calves.

Once a net importer, India has now turned a net exporter of dairy products. The value of dairy exports in 2013-14 is USD 546.1 million.

9

https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Livestock%20and%20Products%20Annual_New%20Delhi_India_8-31-2016.pdf

Saudi Arabia, Bangladesh, UAE, Egypt, Nepal, Singapore and Pakistan are among the top export destinations for dairy products from India. India's import of dairy products during 2012-13 and 2013-14 accounts for US \$ 30.65 and 35 million. Milk and cream concentrates, whey powders, and cheese are major products imported among dairy products. New Zealand, France and Australia are the major suppliers of dairy products to India. GCMMF is also India's largest exporter of Dairy Products. It has been accorded a "Trading House" status. Many of our products are available in USA, Gulf Countries, Singapore, The Philippines, Japan, China and Australia. GCMMF has received the APEDA Award from Government of India for Excellence in Dairy Product Exports for the last 16 years.

4.7 Maintenance of Progeny History of Dairy Animal

Given the fact that stress due to climate variability and availability of feed will be increasing constraints, more emphasis is required in promoting indigenous breed. Besides, as the milk productivity of our animals is low and high variability in the economic traits of cows, there is a vast scope for improvement of the milk production and consequently marketable surplus of milk for processing by systematic implementation of genetic improvement of cattle and buffaloes through progeny testing and building the capacity of different states, union territories, government institutes, dairy development agencies and public-private partnership for overall improvement of dairy animals in the country.

Genetic improvement of dairy animals depends on the type of genetic resources available in the country¹⁰. The types of bovine genetic resources varies in different agro-climatic regions and even within the particular region of the country. The global cattle and buffalo population indicate that there are 861 and 74 recognized

¹⁰ <http://www.dairyfarmguide.com/types-of-genetic-resources-0126.html>

cattle and buffalo breeds in the world and out of that India has 30 recognized cattle breeds and 15 breeds of Indian buffaloes. Among fifteen breeds of buffalo, eight breeds have a sizeable breedable population and are recognized. In India most of the indigenous cattle breeds have been developed from *Bos indicus* origin. The cattle breeds are different morphologically with different types of horns, long drooping ears, prominent dewlaps and hump over the withers but the animals are suitable to variable climatic conditions because of different sweat glands and are more tolerant to enzootic diseases. Like cattle, the buffalo breeds are also different morphologically though the average productivity of different breeds is low. In spite of that the country possesses some best breeds of cattle and buffaloes in the world. The rural household have different types of genetic resources such as indigenous pure breed of cattle, pure breed of buffalo, non-descript cattle, graded buffaloes, different types of crossbred animals and various combinations of the above types of animal. The herd size in India is predominantly very small whether in organized or rural areas. Therefore, it is important to maintain the progeny history of all dairy animals.

Besides, recording of breeding information such as herd status, growth, reproduction, production Performance of male and females, age at first service and age at first training and production of semen doses, age group wise mortality of male and female animals, bull wise semen production and utilization, test and elite daughters and males born shall be maintained in the herd. Under rural condition beside pedigree the peak yield and monthly milk yield of each dairy animal should be maintained. The NDRI has initiated the performance recording of daughters of various crossbred and Murrah test bulls in 15 villages on test day milk yield at monthly interval for evaluation of high pedigree bulls.

4.8 Policies & Schemes for Dairy Development (Central, State & Union)

As a part of agriculture, the dairy sector in India comes under the State subject to policy concerns. The central government, however, has taken a lead in formulating policies in this sector at the national level while implementation of these policies has been largely left to the State Governments (Sharma and Singh, 2007). Despite the importance of dairying in the Indian economy, especially for livelihoods of resource poor farmers and landless labourers, government policy for the sector has suffered from the lack of a clear, strong thrust and focus. One of the priority indicators to a sector could be judged from budget allocation under plan periods to the sector. The allocation of animal husbandry and dairying as total percentage plan outlay varied from 0.98 per cent during the Fourth Plan to about 0.18 per cent during Ninth Plan compared to the sector's contribution to the national GDP over five per cent. Although the dairy sector occupies a pivotal position and its contribution to the agricultural sector is the highest, the plan investment made so far does not appear commensurate with its contribution and future potential for growth and development. We can divide dairy sector policies in the country in the post independence period into distinct phases: Pre-operation Flood (1950s & 1960s; Operation Flood to the Pre-reforms Period, (1970s & 1980s); Post-reform Period (Post 1991); and Post MMPO period 2002 (see, Box 4.3).

Government of India is making efforts for strengthening the dairy sector through various Central sector Schemes like “National Programme for Bovine Breeding and Dairy Development”, National Dairy Plan (Phase-I) and “Dairy Entrepreneurship Development Scheme”. The restructured Scheme National Programme for Bovine Breeding and Dairy Development (NPBBDD) was launched by merging four existing schemes i.e. Intensive Dairy Development Programme (IDDP), Strengthening Infrastructure for Quality & Clean Milk Production (SIQ&CMP), Assistant to Cooperatives and National Project for Cattle &

Buffalo Breeding. In order to meet the growing demand for milk with a focus to improve milch animal productivity and increase milk production, the Government has approved National Dairy Plan Phase-I (NDP-I) in February, 2012 with a total investment of about Rs.2242 crore to be implemented from 2011-12 to 2018-19 with an aim to . increase domestic production through productivity enhancement, strengthening and expanding village level infrastructure for milk procurement and provide producers with greater access to markets. The strategy involves improving genetic potential of bovines, producing required number of quality bulls, and superior quality frozen semen and adopting adequate bio-security measures etc. The scheme is implemented by NDDDB through end implementing agencies like state Dairy Cooperative Federations/Unions/Milk Producers Companies.

Box 4.3: Summary of Indian dairy sector policy changes: 1950s to 2000s	
Pre-Operation Flood Period 1950s and 1960	<ul style="list-style-type: none"> > Focus on urban consumers > Promotion of govt. owned dairy plants and periurban dairying > Limited practice of crossbreeding introduced in 1960s > Failure of urban milk schemes recognized > Stagnant Production; > Decline in per capita milk availability
Operation Flood Period 1970s and 1980s	<ul style="list-style-type: none"> > Missing Link between rural producer and urban consumer > Launch of Operation Flood Programme in 1970 > White Revolution: Institutional innovation, linked rural producers with urban consumers; reduced transactions costs through coops > Import substitution strategy through tariffs and Non-tariff barriers > Restricted competition within organised sector through licensing and preference for cooperatives > Large public investment (Coops) in processing infrastructure > Significant increase in milk production and per capita availability
Post Macro-Reforms Period 1990s	<ul style="list-style-type: none"> > Industrial licensing for setting up milk processing facilities abolished > 1992 - Reintroduced of licensing through Milk and Milk Products Order (MMPO) > Milkshed area concept introduced for procurement of raw milk > Signed the URAA in 1994 and became member of the WTO in 1995 > Non-tariff barriers (NTBs) such as quantitative restrictions (QRs), canalization, etc. removed > Amendments in the MMPO
Post- MMPO Period 2002 -	<ul style="list-style-type: none"> > 2002 - MMPO amended >. > Licensing requirements abolished > No milkshed area requirement for setting up milk but food safety and hygiene requirements

Source: Sharma and Singh, 2007.

The overall performance of most of the schemes has not been to the desired levels (GOI, 2012). Problems lied with funding pattern, poor

flexibility, etc. Most of the schemes were stand alone with meagre financial outlay. Their implementation across all the state resulted in dilution of the focus. As states have their own specific needs and problems but are not able to address them comprehensively due to inadequate financial resources of their own and therefore they have to essentially look forward to the Central assistance. In fact it would be beneficial to harness the regional strengths using a regionally differentiated approach for exploiting the potential.

4.9 NDDDB-Satellite Mapping to boost Dairy Farming¹¹

Dairy farming is the latest addition to the list of traditional businesses that are achieving higher efficiency and productivity through technology. Big cooperatives are taking the help of Indian Space Research Organisation (ISRO) to track the milk system at village-level more efficiently. The National Dairy Development Board (NDDDB) has taken the help of satellite imaging to track the animal population, fodder status, and land use patterns. Recently, an NDDDB project won an award at the Geosmart India 2016 for developing an 'internet-based dairy geographical information system' or IDGIS. IDGIS is a visualisation tool which enables identification of villages and integrates human census, livestock census, land-use and land-cover of villages in all the major milk producing states.

4.10 State-wise Policies/Schemes for Dairy Development

As mentioned earlier, besides the schemes implemented by the Central Government, State government as well as some milk unions have been implementing various schemes for dairy development. The details of schemes in selected states and possible convergence among the schemes are presented in this section. As suggested by Working Group for 12th five year plan (GOI, 2012), all the ongoing schemes should be classified under three mega schemes; a) Animal Production, b) Livestock Health and c) Dairy Development. The details of schemes in each selected states can be seen in State report and presented in Annexure I (a) to VIII (b).

¹¹ http://www.business-standard.com/article/current-affairs/satellite-mapping-to-boost-dairy-farming-116033000465_1.html

Profile of Selected Milk Producers

5.1 Introduction

As mentioned earlier, study was conducted in nine states of India comprised of seven eastern states and two western states of India. Total sample size of milk producers was 2160 comprised of 1080 each respondents from DCS and NCDS groups. This chapter presents the socio-economic background of surveyed milk producers.

5.2 Family Profile of Selected Households

The various socio-economic factors for instance size of family, education and training of dairy producer, availability of land and off farm income, experience in dairy, etc have direct influence on dairy farmers' decision to whether they want to expand and improve their dairy operations. The socio-economic characteristics of selected sample households are presented in Table 5.1. It can be seen from this table that the selected household average size ranges from minimum 4.3 to 7.3 persons across the States and selected groups (DCS- member of dairy cooperative society & NDCS- non member of dairy cooperative society). The large size of households was found in Chhattisgarh having more than 7 persons in each household followed by Bihar, Rajasthan, Jharkhand and Eastern UP (more than 6 person/hh), while remaining state has household with around 4-5 persons. The lowest size of household with 4.3 person was observed in DCS group from West Bengal state. The family composition indicates that around 30-40 percent each were male and females and remaining were children, except Bihar and Jharkhand where number of children were relatively more than average trend found in other States under study.

Table 5.1: Family Profile of Selected Households

Sr. No	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		Eastern UP		West Bengal		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
A	Av. Household Size (Nos.)																		
	Male	2.3	1.8	1.8	1.7	3.4	3.3	2.3	2.4	2.2	1.7	2.6	2.3	2.1	2.3	2.2	2.3	2.6	2.5
	Female	1.7	1.4	1.5	1.5	2.6	2.6	2.1	2.0	1.7	1.5	2.2	2.0	1.6	1.6	2.1	2.1	2.3	2.2
	Children(Below 15 Year)	1.3	1.9	3.0	3.6	1.3	1.2	1.9	2.4	0.6	0.7	1.5	1.8	0.9	0.8	1.5	1.2	1.5	1.8
	Total	5.3	5.0	6.3	6.9	7.3	7.1	6.3	6.7	4.5	3.8	6.3	6.2	4.3	4.4	5.8	5.6	6.4	6.4
B	Gender of Respondent/HH (%)																		
	Male	82.5	94.2	98.3	97.5	96.7	98.3	79.2	71.7	83.3	96.7	80.0	85.8	39.2	41.7	89.2	85.8	94.2	88.3
	Female	17.5	5.8	1.7	2.5	3.3	1.7	20.9	28.3	16.7	3.3	20.0	14.2	60.8	58.3	10.8	14.2	5.8	11.7
C	Av. Age of respondent (years)																		
	Male	52.6	45.7	51.3	53.5	50.2	49.4	45.4	49.5	51.6	47.4	51.4	47.7	53.1	52.1	45.9	43.9	42.9	43.9
	Female	45.3	43.6	38.4	42.0	49.0	28.7	44.6	46.9	51.3	55.5	44.8	39.3	43.2	42.0	43.6	43.8	41.7	41.9
	Average	51.3	45.6	44.9	47.7	49.6	39.0	45.0	48.2	51.5	51.4	48.1	43.5	48.2	47.1	44.7	43.8	42.3	42.9
D	Av. Age of family (years)	28.9	30.1	27.1	23.7	20.9	20.4	33.0	32.7	36.0	33.3	31.0	29.3	37.2	36.5	31.1	29.0	29.9	28.8
E	Av. Education of respondent/HH (years)	6.7	6.8	10.2	9.8	5.9	5.2	8.2	8.3	7.9	8.0	8.3	8.0	6.6	4.9	6.9	7.2	7.2	8.4
F	% of Family members works in dairy	49.6	49.8	41.3	34.1	42.1	41.2	88.6	25.8	61.8	68.5	48.6	53.6	68.5	64.3	58.4	57.1	61.1	51.4

Source: Field survey data.

Most of the respondents were male, except West Bengal where female have dominated the response. The average age of respondents of both categories ranges between 39-52 years, which was found highest in Odisha followed by Assam. Also, in case of average family age, it ranges between 28-37, and the West Bengal followed by Jharkhand state households family was relatively older having average age of around 33-36 years, while households in Chhattisgarh were the youngest one in selected sample (having average age about 21 years). The data on average level of education of family indicate that on an average respondent were educated maximum up to 11th standard. The lowest level of education was recorded in newly created State of Chhattisgarh. The data on involvement of family members in dairy activity indicate mixed trend. In Odisha, 61.8 percent of DCS and 68.5 percent of NDCS family members are engaged in dairy business while corresponding figures for Bihar was 41.3 and 24.1 per cent respectively.

5.3 Socio-Economic Characteristics of Selected Households

The socio-economic characteristics of selected households are presented in table 5.2. It can be seen from the table that as dairy business is mostly deal by the females, it was expected that they would be the decisions makers. However, field data indicate that except DCS households in West Bengal, in all other cases more than 75 per cent of households decisions are taken by the male, while it was mentioned while data collection that female provide the support to the decision taken by the male, as per tradition followed in India everywhere. Out of the selected households across the States, maximum numbers of households were from Hindu religion followed by Muslim, Christian and Sikh. Christian and Sikh religion households were found only in Western states of India i.e. Gujarat and Rajasthan state.

Table 5.2: Socio-Economic Characteristics of Selected Households

Sr. No	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		Uttar Pradesh		West Bengal		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	Gender of Decision Maker (%)																		
	Male	85.0	94.2	93.3	94.2	96.7	94.2	75.8	88.0	80.8	96.7	80.8	98.0	45.8	80.8	89.2	91.7	94.2	88.3
	Female	15.0	5.8	6.7	5.8	3.3	5.8	24.2	12.0	19.2	3.3	18.2	1.7	54.2	19.2	10.8	8.3	5.8	11.7
2	Religion (% to total)																		
	Hindu	95.0	77.5	95.8	92.5	100.0	100.0	95.9	97.0	100.0	100.0	100.0	100.0	98.3	95.8	95.0	93.3	95.8	86.7
	Muslim	5.0	22.5	4.2	5.8	0.0	0.0	4.1	3.0	0.0	0.0	0.0	0.0	1.7	4.2	2.5	5.0	1.7	0.0
	Christian	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0
	Sikh	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	2.5	13.3
	Other	NA	NA	NA	1.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	Social Group (% to total)																		
	Scheduled Tribe	0.0	0.8	NA	NA	9.2	1.7	9.0	12.4	0.0	2.5	-	-	5.8	1.7	18.3	26.7	10.8	2.5
	Scheduled Caste	4.2	23.3	12.5	12.5	2.5	1.7	12.3	11.7	5.8	5.0	9.2	6.7	25.8	16.7	3.3	8.3	3.3	2.5
	Other Backward Class	40.8	30.0	56.7	62.5	87.5	93.3	48.6	49.1	58.4	55.0	75.0	88.3	15.9	14.1	48.4	45.8	80.0	82.5
	General/Open	55.0	45.8	30.8	25.0	0.8	3.4	30.1	26.7	35.8	37.5	15.8	5.0	52.5	67.5	30.0	19.2	5.8	12.5
4	Income Group (%)																		
	BPL	5.0	5.8	63.3	75.8	42.5	78.1	45.8	43.3	71.7	72.5	3.3	6.7	53.3	38.3	33.3	37.5	17.5	14.2
	APL	95.0	94.2	36.7	24.2	57.5	21.9	54.2	56.7	28.3	27.5	96.7	93.3	46.7	61.7	66.7	62.5	82.5	85.8
5	House Structure (%)																		
	Pucca	49.2	45.8	14.2	10.0	28.3	11.7	40.0	31.7	71.7	56.6	64.2	61.7	29.2	32.5	64.2	50.8	65.8	52.5
	Semi-Pucca	45.8	48.3	51.7	61.7	26.7	53.3	35.8	45.0	15.8	24.2	33.3	32.5	21.6	24.2	20.8	24.2	17.5	24.2
	Kuccha	5.0	5.8	34.2	28.3	45.0	35.0	24.2	23.3	12.5	19.2	2.5	5.8	49.2	43.3	15.0	25.0	16.7	23.3

Source: Field survey data.

The distribution of selected DCS households across groups and States as per social group indicate the dominance of households belongs to other backward class in Rajasthan, Gujarat, Bihar, Chhattisgarh, Odisha, Uttar Pradesh, while General category households dominate sample in the state of Assam, and West Bengal. Households from Scheduled caste has relatively significant share in total households in the state of West Bengal. The scheduled tribe households were found to be covered significantly in Gujarat followed by Rajasthan and Jharkhand State. No sample from scheduled tribe household was observed in Bihar and Uttar Pradesh. The dominance of above Poverty Line households in sample was observed in Assam, Uttar Pradesh, Gujarat and Rajasthan, while in other states, major numbers of households were from below poverty line. The lowest share of households from below poverty line was recorded in the state of Assam and Uttar Pradesh. The household structures of sample households in selected States was found semi-Pucca and Pucca except in Bihar, Chhattisgarh and West Bengal where sample households still has Kuchha house may be dominance of below poverty line households.

5.4 Occupation and Land Holding Size of Selected Households

It can be seen from the Table 5.3 that agriculture comprised of cultivation of land as a farmer along with supportive allied activity of animal husbandry and dairying was the principal occupation of all the selected households in all the states. Significant number of households in West Bengal were engaged as agriculture labour or as a non farm labour, while In Jharkhand, significant households were in service. All the dairy producers initially became involved in dairy farming as a secondary and supportive activity. The average age of experience in dairy of selected households was found highest in Gujarat (around 20 years), followed by around 19 years in Bihar. Highest experience of NDS household was recorded as 32.1 years in Chhattisgarh state.

Table 5.3: Details on Occupation and Land Holdings Size of Selected Households

Sr. No	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		Uttar Pradesh		West Bengal		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	Occupation (%)																		
	<i>Principal</i>																		
	Cultivator	74.2	79.2	76.7	82.5	90.0	18.6	46.0	48.7	75.0	62.5	72.5	60.0	76.7	74.2	71.7	65.8	90.8	83.3
	AH & Dairying	19.2	16.7	16.7	11.7	5.0	63.7	36.3	33.7	14.2	26.7	11.7	24.2	10.8	15.0	28.3	23.3	9.2	11.7
	Agri. Labour	0.0	0.0	NA	NA	4.2	6.7	0	0	3.4	8.4	4.2	8.3	11.7	10.0	0.0	3.4	0.0	0.0
	Nonfarm Labour	6.7	4.2	NA	NA	0.0	0.0	0	0.0	0.8	0.8	5.8	5.0	0	0	0.0	1.7	0.0	0.0
	Own Non-Farm Establishment	0.0	0.0	NA	NA	0.0	0.0	0	0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Trade	0.0	0.0	5.8	4.2	0.0	0.0	10.2	0.9	2.5	0.8	3.3	1.7	0.0	0.0	0.0	0.0	0.0	0.0
	Employee in Service	0.0	0.0	0.8	1.7	0.8	11.0	7.4	2.8	2.5	0.0	2.5	0.8	0.8	0.8	0.0	5.8	0.0	5.0
	Other (Specify)	0.0	0.0	0.0	0.0	0	0	0	0	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<i>Subsidiary</i>																		
	Cultivator	15.8	12.5	8.3	9.2	0.0	0.0	3.4	0	11.7	15.0	11.7	19.1	10.0	15.0	20.0	14.2	6.7	11.7
	AH & Dairying	80.8	83.3	84.2	87.5	0.0	0.0	16.8	0	80.8	70.8	88.3	79.1	89.2	85.0	71.7	76.7	81.7	85.8
	Agri. Labour	0.0	0.0	5.0	2.5	0.0	0.0	5.1	19.0	5.1	13.4	0.0	1.7	0.8	0.0	5.0	1.7	11.7	2.5
	Nonfarm Labour	0.0	0.0	0.0	0.0	0.0	0.0	33.7	33.8	0.0	0.0	0.0	0.0	0.0	0.0	3.3	6.6	0.0	0.0
	Own Non-Farm Establishment	1.7	3.3	0.0	0.0	0.0	0.0	0	0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Trade	1.7	0.8	2.5	0.8	0.0	0.0	9.5	28.2	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Employee in Service	0.0	0.0	0.0	0.0	0.0	0.0	31.6	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
	Other (Specify)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Av. Experience in Dairy (years)	14.2	13.9	19.2	18.4	3.4	32.1	5.5	5.2	20.0	15.7	17.3	16.9	14.3	15.2	21.7	19.6	16.0	17.9
3	Av. Operational land holding (area in ha)																		
	Irrigated	0.4	0.3	1.6	1.4	1.7	1.2	2.1	2.3	3.7	2.5	1.2	0.9	0.3	0.4	1.6	1.6	4.3	3.2
	Un irrigated	0.8	0.9	0.4	0.3	1.2	0.8	0.4	0.6	2.0	2.4	0.0	0.0	0.0	0.0	0.2	0.3	0.9	1.0
	Total	1.2	1.2	2.1	1.7	3.0	2.0	2.5	2.9	5.7	4.9	1.2	0.9	0.3	0.4	1.8	1.9	5.2	4.2

The highest size of land holding with sample household was estimated in Odisha State (5.7 ha in DCS & 4.9 ha in NDCS) followed by in Rajasthan (4-5 ha) and Jharkhand (around 3 ha). The lowest land holding size was with sample households in West Bengal (0.3-.04 ha) followed by Assam (1.2 ha). All the land of selected households in UP was under irrigation and the lowest irrigation coverage was observed in West Bengal.

5.5 Cropping Pattern of Selected Households

The details on cropping pattern of selected households during 2015-16 are presented in Table 5.4. It can be seen from the table that out of total gross cropped area, paddy was the major crop grown during kharif season in all seven north eastern states of India, while coarse cereals along with pulses and oilseeds were major crops grown in western states of India. Except in Bihar and Chattisgarh, fodder crop could get significant area during kharif season. Western states which are deficit in fodder had allotted relatively more area under fodder crops. During Rabi season, except in Assam and Odisha state, wheat crop is grown, followed by rapeseed mustard, vegetable crops and fodder crops. Summer paddy was grown in the state of Assam and West Bengal, while vegetables and pulse crops were also cultivated by the sample households. It was very strange to note that in the state of Odisha, crops were only grown during kharif seasons and no selected household had grown rabi and summer crop. The cropping intensity was found higher in case of DCS households than NDCS households.

Table 5.4: Cropping Pattern of Selected Households

(percentage to gross cropped area)

Sr. No	Season /Crops	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan		
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	
Kharif	Paddy	59.1	59.2	61.1	67.0	58.5	42.7	42.5	36.6	69.2	84.0	34.1	31.8	35.9	44.5	2.3	2.4	0.0	10.4	
	Bajra									0.0	0.0	0.3	0.7	0.0	0.0	0.7	2.1	13.6	13.4	
	Jowar															0.1	10.6	3.9	1.3	
	Maize	0.0	0.0	2.5	2.2	0.0	0.0	13.0	13.2	5.7	1.3	0.0	0.0	0.0	0.0	5.1	2.4	1.8	0.7	
	Pulses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	5.9	0.0	0.0	0.1	0.1	5.3	4.3	4.8	0.6	
	Soybean	0.0	0.0			2.3	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	13.1	0.0	0.0	
	Castor seed															1.2	2.5	1.7	1.4	
	Groundnut															11.7	5.2	2.9	0.7	
	Cotton													0.0	1.9	1.1	7.5	8.8	5.2	
	Jute													7.9	4.2			0.0	0.0	
	Sugarcane										6.8	4.1	3.3	0.3	0.0	0.3	4.3	0.6	0.0	0.0
	Fruit										3.8	0.0			0.0	0.0			0.0	0.0
	Vegetables	3.1	3.7	2.1	1.3	0.0	0.0	0.0	0.0	1.7	2.1	1.3	2.4	2.6	0.1				0.8	1.2
	Guar																		8.3	8.6
	Fodder	2.4	2.2	0.0	0.0	0.0	0.0	4.5	5.4	3.9	2.6	5.7	6.1	3.1	1.9	4.3	4.1	6.3	7.2	
Others	0.0	0.0	0.0	0.0	0.4	3.3	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.6	0.6		
Total Kharif	64.6	65.2	65.7	70.5	61.2	51.2	59.9	55.2	100.0	100.0	44.7	41.2	49.6	53.1	46.1	55.5	53.5	51.3		
Rabi	Wheat	0.0	0.0	12.1	11.5	10.7	10.2	21.2	19.2			29.0	28.4	3.4	1.9	23.9	22.6	18.9	1.8	
	Paddy	0.0	0.0			16.8	19.6	0.0	0.0			0.0	0.0	4.7	5.0			0.0	0.0	
	Barley													0.5	0.5			0.9	0.5	
	Pulses	4.4	4.0	9.2	10.6	10.7	17.4	12.0	13.6			0.0	0.0	5.9	4.2	0.6	3.3	1.2	26.0	
	Mustard	3.9	3.5	2.5	2.2	0.0	0.0	0.0	0.0			0.8	1.9	5.4	7.1	0.1	0.4	12.3	7.8	
	Vegetables	9.4	10.9	1.7	0.0	0.0	0.0	0.0	0.0			7.9	6.2	10.8	10.2			0.7	2.9	
	Fodder	3.1	2.8	0.0	0.0	0.0	0.0	0.0	0.0			4.8	4.7	3.2	3.2	9.3	6.3	5.3	4.0	
	Others	0.0	0.0	0.0	0.0	0.6	1.7	0.0	0.0			0.0	0.0	0.0	0.0	6.7	2.2	1.9	0.5	
Total Rabi	20.8	21.2	25.5	24.2	38.8	48.8	33.2	32.8	0.0	0.0	42.5	41.2	33.9	32.1	40.6	34.8	41.2	43.6		
Summer	S Paddy	11.8	11.1	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	10.2	10.6			0.0	0.0	
	Bajra															0.9	1.6	1.9	1.8	
	Pulses			2.9	2.6	0.0	0.0	0.0	0.0			5.4	1.7	0.0	0.0	1.3	1.6	0.0	0.0	
	Oilseeds													1.0	0.2	0.8	0.8	0.0	0.0	
	Vegetable			0.8	0.9	0.0	0.0	6.8	12.0			0.6	0.1	2.7	1.2			0.4	0.3	
	Fodder	2.8	2.5	4.2	0.9	0.0	0.0	0.0	0.0			6.7	15.6	2.5	2.0	9.7	3.4	3.0	2.1	
	Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.2	0.0	0.0	0.8	0.5	2.4	0.0	0.9	
Summer	14.6	13.7	7.9	4.4	0.0	0.0	6.8	12.0	0.0	0.0	12.9	17.4	16.4	14.8	13.2	9.8	5.3	5.1		

Source: Field Survey data.

5.6 Chapter Summary

The chapter presented the profile, socio-economic characteristics of the selected sample households. The selected household average size ranges from minimum 4.3 to 7.3 persons across the States and selected groups. The large size of households was found in Chhattisgarh having more than 7 persons in each household while the lowest size of household with 4.3 person was observed in DCS group from West Bengal state. Most of the respondents were male, except West Bengal where female have dominated the response. The average age of respondents of both categories ranges between 39-52 years, which was found highest in Odisha followed by Assam. On an average respondent were educated maximum up to 11h standard. The lowest level of education was recorded in newly created State of Chhattisgarh. The data indicate that except DCS households in West Bengal, in all other cases more than 75 per cent of households decisions are taken by the male, while it was mentioned while data collection that female provide the support to the decision taken by the male, as per tradition followed in India everywhere. Out of the selected households across the States, maximum numbers of households were from Hindu religion followed by Muslim, Christian and Sikh. Christian and Sikh religion households were found only in Western states of India i.e. Gujarat and Rajasthan state. The distribution of selected DCS households across groups and States as per social group indicate the dominance of households belongs to other backward class in Rajasthan, Gujarat, Bihar, Chhattisgarh, Odisha, Uttar Pradesh, while General category households dominate sample in the state of Assam, and West Bengal. Households from Scheduled caste has relatively significant share in total households in the state of West Bengal. The scheduled tribe households were found to be covered significantly in Gujarat followed by Rajasthan and Jharkhand State. No sample from scheduled tribe household was observed in Bihar and Uttar Pradesh. The dominance of above Poverty Line households in sample was observed in Assam, Uttar Pradesh, Gujarat and Rajasthan, while in other states, major numbers of

households were from below poverty line. The lowest share of households from below poverty line was recorded in the state of Assam and Uttar Pradesh. Agriculture comprised of cultivation of land as a farmer along with supportive allied activity of animal husbandry and dairying was the principal occupation of all the selected households in all the states. Significant number of households in West Bengal were engaged as agriculture labour or as a non farm labour, while In Jharkhand, significant households were in service. All the dairy producers initially became involved in dairy farming as a secondary and supportive activity. The average age of experience in dairy of selected households was found highest in Gujarat (around 20 years), followed by around 19 years in Bihar. Highest experience of NDS household was recorded as 32.1 years in Chhattisgarh state. The highest size of land holding with sample household was estimated in Odisha State (5.7 ha in DCS & 4.9 ha in NDCS) followed by in Rajasthan (4-5 ha) and Jharkhand (around 3 ha). The lowest land holding size was with sample households in West Bengal (0.3-.04 ha) followed by Assam (1.2 ha). All the land of selected households in UP was under irrigation and the lowest irrigation coverage was observed in West Bengal. Out of total gross cropped area, paddy was the major crop grown during kharif season in all seven north eastern states of India, while coarse cereals along with pulses and oilseeds were major crops grown in western states of India.

The next chapter presents cost of milk production and awareness about the schemes.

Cost of Milk Production & Awareness about the Schemes

6.1 Introduction:

After having discussed about the selected study area and characteristics of the sample households, this chapter discusses the data on various parameters collected from the DCS and NDCS households in order to work out the size of the herd, number of animals covered under programme, details on feed and fodder, labour use and expenditure on animal health, and cost of milk production.

6.2 Breedable Animals

It is important to have information on distribution of local and crossbreed cows and buffaloes with selected households. The details on herd strength and cattle shed are presented in Tables 6.1. As mentioned in sample selection section, all milk producers were categorized as per holding of number of bovine population (cattle and buffalos) as small milk producers (SMP-1-2 milch animal), medium milk producers (MMP-3-5 milch animal) and large milk producers (LMP-above 5 milch animal), however, in order to easy comparative analysis, results on average figures are presented and discussed across states and groups. It can be seen from the Table 6.1 that selected households in Odisha had largest size of heard strength with both the selected groups, i.e. DCS and NDCS households, having around total 14 animals of which around 8 milch animals, followed by Assam state where corresponding figures were 9 and 4 animals respectively. In both the groups, distribution of animals found almost same, Local cattle and buffaloes were dominant in livestock holdings of selected households of the state of Chhattisgarh, Jharkhand, while cross breed cows were dominant in Assam, Bihar, Odisha state. Buffalo and cross breed cows were dominant in the states of UP, Gujarat and Rajasthan states, while Crossbreed and local Cattle found dominant in herd strength of households in Odisha state.

Table 6.1: Details on Herd Strength & Cattle Shed – DCS and NDCS Households

(Value in Rs.)

Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		Eastern UP		West Bengal		Gujarat		Rajasthan	
	Total	Milch	Total	Milch	Total	Milch	Total	Milch	Total	Milch	Total	Milch	Total	Milch	Total	Milch	Total	Milch
DCS																		
Local Cattle	0.3	0.1	0.35	0.23	4.17	2.74	2.96	1.92	1.66	0.86	NA	0.58	3.4	1.6	1.8	1.0	1.08	0.6
Cross Breed	8.5	4.0	2.00	1.69	0.28	0.16	0.13	0.07	11.66	6.10	NA	1.26	5.8	2.7	1.6	1.3	0.73	0.5
Buffalo	0.0	0.0	0.67	0.46	1.38	0.76	0.38	0.23	0.31	0.21	NA	2.06	0.0	0.0	3.0	1.7	4.72	3.1
Other	0.0	0.0	0.00	0.00	0.72	0.00	0.00	0.00	0.00	0.00	NA	0.00	0.0	0.0	0.8	0.0	0.00	0.00
Total	8.9	4.2	3.02	2.38	6.54	3.66	3.47	2.21	13.63	7.17	NA	3.09	8.1	3.8	7.2	4.0	6.53	4.2
Cattle Shed	Av.	Value																
Pucca	0.2	58.2	67	52	0.83	35.8	-	-	0.74	42.1	0.04	NA	0.0	1.1	0.4	7.7	0.3	121
Semi-Pucca	0.9	24.7	120	93	0.84	19.9	65	NA	1.01	37.1	0.47	NA	0.5	19.4	0.3	4.6	0.3	43.9
Kuccha	0.2	10.2	175	141	1.02	11.7	75	NA	1.23	18.7	1.00	NA	1.1	10.3	0.4	1.0	0.4	16.3
Total	1.2	26.3	362	286	0.90	22.4	140	NA	2.98	10.9	1.51	NA	1.0	16.6	1.0	4.3	1.0	60.3
NDCS																		
Local Cattle	0.7	0.3	0.22	0.17	4.01	1.53	2.83	1.84	2.78	1.63	NA	0.32	2.8	1.3	1.3	0.7	1.4	0.9
Cross Bread	8.4	3.9	1.23	1.01	0.89	0.45	0.10	0.06	10.38	5.56	NA	1.07	6.3	3.0	0.3	0.2	1	0.7
Buffalo	0.0	0.0	0.52	0.36	3.68	1.97	0.43	0.28	0.42	0.27	NA	2.17	0.0	0.0	4.7	2.9	3.5	2.5
Other	0.0	0.0	0.00	0.00	1.24	0.00	0.00	0.00	0.00	0.00	NA	0	0.0	0.0	1.0	0.1	0	0
Total	9.1	4.2	1.97	1.53	9.82	3.95	3.37	2.18	13.58	7.46	NA	3.57	7.7	3.6	7.3	3.9	5.9	4.1
Cattle Shed	Av.	Value																
Pucca	0.2	58.1	31	28	38.3	51.6	-	-	0.50	23.5	0.03		0.1	3.6	0.7	7.2	0.2	116
Semi-Pucca	0.8	24.1	96	70	27.5	28.2	0.5	NA	1.13	35.5	0.53		0.3	13.7	1.0	3.2	0.2	47.0
Kuccha	0.3	12.2	109	86	34.2	16.1	0.65	NA	1.33	21.1	0.74		1.1	8.9	1.5	1.0	0.4	11.6
Total	1.2	25.8	236	184	100	31.9	0.58	NA	0.99	26.7	0.43		1.2	14.4	1.0	3.8	0.9	58.2

The details of animal breed with selected households in study area are depicted in Table 6.2. It can be seen from the table that the highest milk yield/day was recorded in case of crossbred cows, followed by buffaloes and then local cows.

Table 6.2: Details of Animals Breeds with Sample Households in Study Area

Sl No.	Name of the state	Type of animal	Name of the breeds
1	Assam	Local cow	Local desi
		Crossbreed breed	Jersey cross breed, Holstein crossbreed
2	Bihar	Local cow	Bachur , Hariana, red sindhi, gir, tharparkar,,sahiwal
		Crossbreed breed	
		Buffalo	Mahasana , Murrah
3	Chattisgarh	Local cow	Deshi, Koshalisahiwal, Gir, Tharparkar, Hariana, Red sindhi
		Crossbreed breed	Jersey Holstein, Ongole
		Buffalo	Murrah, surti, Nagpuri, Nilliravi, Mehsana & Deshi
4	Jharkhand	Local cow	Shaiwal, Hariana
		Crossbreed breed	Holstein, Jersey
		Buffalo	Mehsana, Murrah
5	Odisha	Local cow	Binjarpuri,Ghumusari,Khariar, Motu
		Crossbreed breed	
		Buffalo	Chilika, Kalahandi
6	Uttar Pradesh	Local cow	Deshi, Sahiwal, Hariana
		Crossbreed breed	Jersey, Jersey , sahiwal
		Buffalo	Murra
7	West Bengal	Local Cow	Local Non-descript Breeds
		Crossbred Cow	Jersey, Gir Cross Breed
		Buffalo	
8	Gujarat	Local cow	Gir , kankrej, Dangi
		Crossbreed breed	Jersey crossbreed, Holstein crossbreed, other crossbreed
		Buffalo	Jaffarbadi, Mehsana,surti, Banni, Non- descript
9	Rajasthan	Local cow	Rathi,Tharparkar,Nagori, Rathi , sahiwal, kankrej, gir,malvi,
		Crossbreed breed	Jersey , Holstein friesian
		Buffalo	Murrah, surti

Table 6.3: Details of Breedable Animals with DCS & NDCS Households on Survey Date

Particulars		Assam		Bihar			Chhatisgarh			Jharkhand			Odisha			Uttar Pradesh			WB		Gujarat			Rajasthan			
DCS		Local Cow	CB Cow	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	
		1	Av. Age (year)	5.0	5.0	3.4	3.4	4.2	6.6	6.8	6.8	7.3	-	7.9	5.0	5.0	7.0	4.8	4.2	5.8	6.0	5.0	5.7	5.5	6.9	6.0	6.1
2	Av. Age at 1 st Calving Month	26.0	23.0	36.0	30.0	36.0	36.1	37.9	47.0	37.1	-	45.5	28.0	24.0	25.0	34.0	32.0	44.0	39.0	30.0	40.6	31.3	44.2	39.0	33.4	42.7	
3	Lactation Order@	3.0	3.0	3.75	12.0	9.0	2.9	3.6	3.2	3.6	-	5.6	2.0	2.0	2.0	2.6	1.6	1.8	3.0	3.0	2.4	2.8	2.8	2.5	2.5	2.8	
4	Lactation Period (Days)	214	268	240	260	260	189	225	263	246	-	270	253	252	252	263	273	278	218	227	235	248	244	238	260	225	
5	Peak Yield-																										
	Last Lactation	0.9	4.7	2.2	4.5	4.8	1.3	3.0	2.5	4.3	-	7.1	4.9	7.4	7.4	4.9	12.0	7.7	2.5	5.2	7.7	10.8	10.5	7.3	10.4	9.3	
	Present Lactation	1.3	5.5	3.5	10.4	9.2	1.7	3.8	3.3	5.0	-	8.5	5.2	7.9	8.0	5.2	11.0	9.7	2.7	5.9	7.9	10.7	10.2	7.3	10.9	9.2	
6	Animals Covered under Insurance	0.0	72.0	NA	NA	NA	N	N	N	N	-	N	4.0	16.6	8.0	N	N	N	0.0	0.0	1.0	40.0	11.0	N	N		
	Premium paid (Rs./animal)			NA	NA	NA	-	-	-	-	-	-				-	-	-	NA	NA							
	Government	-	-	NA	NA	NA	-	-	-	-	-	-	-	-	-	-	-	-	NA	NA	1125	1056	1098				
	Self	-	590	NA	NA	NA	-	-	-	-	-	-	100	100	100	-	-	-	NA	NA	500	1218	1457				
NDCS																											
1	Av. Age (year)	4.0	4.0	3.5	3.6	4.0	6.3	5.9	7.0	7.2	5.9	6.9	6.0	5.0	7.0	5.0	4.5	5.8	6.0	6.0	6.0	4.9	6.8	6.1	6.5	6.7	
2	Av. Age at 1 st Calving Month	28.0	24.0	32.0	30.0	34.0	34.6	39.1	48.3	38.6	28.5	45.9	29.0	25.0	26.0	34.0	33.0	44.0	40.0	31.0	40.3	34.2	43.1	39.7	36.7	43.0	
3	Lactation Order@	2.0	2.0	4.0	10.1	9.3	4.0	4.0	4.0	3.4	6.2	5.1	2.0	2.0	2.0	2.6	1.6	1.8	3.0	3.0	2.5	2.3	2.9	2.8	3.0	2.9	
4	Lactation Period (Days)	212	265	230	260	250	164	233	269	235	223	257	257	256	260	277	287	282	228	208	222	266	236	231	269	224	
5	Peak Yield-																										
	Last Lactation	0.8	3.9	2.8	4.0	4.0	1.4	3.7	3.2	4.2	7.4	6.4	4.8	8.2	9.0	4.3	10.1	7.0	3.0	5.4	6.9	11.6	9.1	6.9	11.3	9.2	
	Present Lactation	1.3	4.6	3.6	10.3	9.3	1.8	4.9	4.4	4.5	7.5	6.9	4.1	8.8	10.1	5.3	11.3	8.5	2.9	5.5	7.6	11.5	9.4	6.7	12.6	10.1	
6	Animals Covered under Insurance	0.0	54.0	NA	NA	NA	N	N	N	N	N	N	0.0	0.0	0.0	N	N	N	0.0	0.0	0.0	0.0	0.0	N	N	N	
	Premium paid (Rs./animal)			NA	NA	NA	-	-	-	-	-	-							NA	NA							
	Government	-	-	NA	NA	NA	-	-	-	-	-	-	-	-	-	-	-	-	NA	NA	-	-	-				
	Self	-	577.0	NA	NA	NA	-	-	-	-	-	-	-	-	-	-	-	-	NA	NA	-	-	-				

On the date of survey, the information was collected on numbers of breedable animals with the selected households and presented in Tables 6.3. On an average, in both DCS and NDCS group, the age of local and cross bred cows was around 4-6 years and for buffaloes, it ranges between as around 6-8 years, except in case of Bihar where much younger age of cows and buffaloes were observed with DCS hh having age of 3.4 and 4.2 years and 3.5 and 3.6 years with NDCS households in Bihar, respectively. The age at first calving of local cattle of both the groups (ranges between 24-40.6 months) was found higher than crossbred cows (23-38 months). The average age of first calving ranges between 25-47 months in case of buffaloes across the selected States of India. It was very strange to note that age of first calving of buffaloes was estimated to be 25-28 months in Odisha and 23-26 months for cows in Assam. The lactation order of the milch animal was found to be between 2 to 4, except in Bihar where lactation order of crossbred cows was recorded to be as high as between 10-12 and 9-10 for buffaloes. The average period of lactation in case of cows was recorded between 164-263 in case of local cows, 225-273 days in case of cross breed cows and 240-270 days for buffaloes. The lowest period of lactation period in local cows of 164 days was recorded in Chattisgarh. The level of peak yield recorded during the present lactation was marginally higher than earlier lactation except few cases. Across the group and species, the milk yield of cross breed cows was the highest followed by buffaloes and local cows. The information was also collected on animals covered under insurance scheme and it was observed that some of the DCS households had covered their animals under animal insurance program. The coverage of animals under insurance was relatively better in case of cross bred cows followed by meagre number of buffaloes and local cows. It was very strange to note that except CB cows in Assam, no other NDCS households in any state by had covered their animals under insurance.

Table 6.4: Season wise Milk Yield (Per day) of Selected HH 2015-16

Particulars		Assam		Bihar			Chhatisgarh			Jharkhand			Odisha			Uttar Pradesh			WB		Gujarat			Rajasthan		
		Local Cow	CB Cow	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Local Cow	CB Cow	Buffalo	Local Cow	CB Cow	Buffalo
DCS																										
1	Rainy	1.2	5.3	3.5	10.9	8.3	2.9	5.0	4.4	3.3	-	5.2	4.1	7.3	10.8	4.3	11.5	8.3	3.0	5.7	8.2	12.3	12.0	10.6	11.8	11.7
2	Winter	1.3	5.9	3.7	12.7	9.3	2.3	3.5	2.5	4.2	-	6.0	4.9	8.6	10.8	4.7	11.8	8.8	1.9	3.8	9.2	13.6	14.0	11.6	13.2	12.6
3	Summer	1.2	5.5	4.0	15.5	10.2	1.1	1.3	0.9	3.5	-	5.8	3.5	5.5	7.7	5.0	11.0	7.8	2.5	4.8	7.0	10.9	10.9	9.0	10.0	10.2
NDCS																										
1	Rainy	1.2	4.2	3.7	10.2	9.1	1.4	4.2	4.3	3.0	5.8	4.5	4.4	8.7	10.1	4.5	10.3	7.8	3.1	5.5	9.8	10.4	9.2	8.4	10.8	10.0
2	Winter	1.3	5.0	3.5	13.4	9.5	1.0	3.5	3.2	3.8	6.8	5.8	5.2	10.0	11.0	4.7	10.6	8.3	1.9	3.5	10.8	12.4	10.3	9.6	12.4	11.0
3	Summer	1.2	4.5	4.3	15.2	11.3	0.7	2.3	2.3	3.5	6.0	5.0	3.9	6.5	7.2	5.0	10.0	7.3	2.6	4.5	8.5	8.7	8.4	7.4	9.1	8.6

It indicates that government should make necessary policy and arrange extension activities to increase the awareness among the dairy producers to cover their animals under insurance scheme. On an average the premium paid per animal ranges between Rs. 100-1500/-.

6.3 Seasonwise Milk Production

The details on season-wise milk production are presented in table 6.4. It can be seen from the table that season wise pattern of milk yield per day varies significantly across the states and the species. The highest milk yield day of local cow of 11.6 litres/day was recorded during winter season by the selected households Gujarat, while among north eastern states same was highest in Odisha (4.9 litre/day during winter season). In case of cross breed cows, the highest milk yield of 15.5 litres/day was recorded in Bihar during summer season. Highest buffalo milk yield of 12.6 litres per day was estimated in Rajasthan state during winter season while across north eastern states, 11.3 litres/day was observed during summer season by the selected households in Bihar. Across the different states, all animals groups performed differently as far as productivity of milk is concerned. The milk yield of all milch animal across seasons was experienced highest during winter seasons by selected households in Jharkhand, Odisha, UP, Gujarat and Rajasthan, while during rainy seasons, milk yield was highest in Chhattisgarh, West Bengal. the selected households in Bihar state recorded highest milk yield in all species during summer season. Same trend was observed by the NDCS households of all selected states. Low milk yield across species recorded in the states of Assam and Chhattisgarh followed by West Bengal is the major concern for the growth of dairy development in the north eastern area of our Country.

Table 6.5: Labour Use Pattern of Selected Households- Working Hours per day

Sl. No	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		West Bengal		Gujarat		Rajasthan	
		No. of Workers/ Day		No. of Workers/ Day		No. of Workers/ Day		No. of Workers/ Day		No. of Workers/ Day		No. of Workers/ Day		No. of Workers/ Day		No. of Workers/ Day		No. of Workers/ Day	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	DCS																		
A	Family Labours																		
1	Fodder Management	1.1	0.7	0.4	0.2	1.3	0.9	1.0	0.0	1.1	0.9	2.0	2.0	1.3	1.7	1.0	1.0	1.1	1.0
2	Shed Management	0.7	0.7	0.1	0.2	1.0	1.3	0.0	1.0	0.5	1.2	4.0	4.0	1.6	2.2	0.6	1.2	0.7	1.3
3	Milking	1.0	0.6	0.2	0.1	1.4	0.7	0.0	0.0	0.7	1.1	1.0	1.0	0.5	1.5	0.7	1.0	0.7	1.2
4	Animal Health	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.7	0.5	2.0	2.0	1.2	1.0	0.9	0.4	1.0	0.5
B	Hired Labours																		
1	Fodder Management	0.1	0.0	0.1	0.1	1.0	1.1	0.0	0.0	0.2	0.0	2.0	0.0	-	-	0.1	0.0	0.0	0.0
2	Shed Management	0.1	0.0	0.0	0.1	0.7	1.2	0.0	0.0	0.0	0.0	2.0	0.0	-	-	0.1	0.0	0.0	0.0
3	Milking	0.1	0.0	0.1	0.0	0.7	0.0	1.0	0.0	0.2	0.2	0.0	0.0	-	-	0.0	0.0	0.0	0.0
4	Animal Health	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0
C	Labour Rate (Rs./Day)Male/ Female	193	147	NA	NA					204	124			195	183	247	216	284	251
	NDCS																		
A	Family Labours																		
1	Fodder Management	0.9	0.9	0.3	0.1	1.1	1.0	1.0	0.0	1.1	1.0	2.0	2.0	1.3	1.9	1.1	1.1	1.1	1.0
2	Shed Management	0.7	0.7	0.1	0.3	1.0	1.0	1.0	1.0	0.8	1.2	4.0	4.0	1.6	2.2	0.8	1.1	0.8	1.3
3	Milking	0.8	0.8	0.1	0.0	1.2	0.7	0.0	0.0	0.9	1.3	1.0	1.0	0.3	1.5	0.8	1.0	0.7	1.3
4	Animal Health	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.8	0.3	2.0	2.0	1.0	0.9	0.8	0.4	0.9	0.4
B	Hired Labours																		
1	Fodder Management	0.1	0.0	0.1	0.0	1.2	1.2	0.0	0.0	0.0	0.1	2.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
2	Shed Management	0.1	0.0	0.0	0.0	1.2	1.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
3	Milking	0.1	0.0	0.1	0.0	2.0	1.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Animal Health	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	Labour Rate (Rs./Day)Male/ Female	187	143	NA	NA	260	180			209	121			195	183	238	206	148	143

6.4 Labour Use Pattern

As dairy activities are carried out as complimentary activity to agriculture activities, the labour use pattern by the selected sample households indicate the complete dominance of use family labour who were engaged in both the activities and out of total time worked in a day, about half of the time was spent on dairy and household activities while remaining time was spent on field. Though some of the household had hired casual labour, which were mainly used for agriculture activities, while tendency of having permanent labour was very rare and found with few households only. Thus, activities of dairy were carried out mostly by the household members. The significant involvement of female in dairy activity can be seen from the data which indicate that in all the operations, female are part of that. The same trend has been recorded in case of NDCS.

If we look at the working hours per day and total hours worked per person per day engaged in various activities of dairy management as present in table 6.5 and 6.6, it was observed that around 3 hours per day was spent by the selected households in dairy activities such as fodder management, she management, milking the animals, and maintaining the health of animal. In some dairy activities, hired labours were paid and labour rate was around Rs.150-250 per day.

Table 6.6: Labour Use Pattern of Selected Households- Total Hour Worked / Person / Day

Sl. No	Particulars	Assam		Bihar		Chhattisgarh		Jharkhand		Odisha		UP		West Bengal		Gujarat		Rajasthan	
		Hour/person/day		Hour/person/day		Hour/person/day		Hour/person/day		Hour/person/day		Hour/person/day		Hour/person/day		Hour/person/day		Hour/person/day	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	DCS																		
A	Family Labours	1.5	0.7	4.5	2.5	0.5	0.5	3.0	0.0	1.8	0.8	1.9	1.4	1.3	1.7	1.7	0.8	0.8	0.6
1	Fodder Management	0.3	0.7	1.5	3.5	0.4	0.3	0.0	4.0	1.0	1.0	1.3	4.4	1.6	2.2	1.0	1.1	0.4	1.4
2	Shed Management	0.5	0.3	1.0	1.0	0.4	0.2	0.0	0.0	0.4	1.0	1.3	1.0	0.5	1.5	0.5	1.0	0.3	0.5
3	Milking	0.4	0.2	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	0.8	0.7	1.2	1.0	1.1	0.2	0.5	0.2
4	Animal Health																		
B	Hired Labours	0.2	0.0	4.5	3.5	0.4	0.4	0.0	0.0	0.0	0.0	1.4	0.0	-	-	0.1	0.0	1.3	2.0
1	Fodder Management	0.1	0.0	0.0	3.5	0.5	0.4	0.0	0.0	0.0	0.0	0.9	0.0	-	-	0.1	0.0	0.3	1.5
2	Shed Management	0.2	0.0	1.5	0.0	0.4	0.0	2.0	0.0	0.1	0.1	0.0	0.0	-	-	0.0	0.0	0.3	1.0
3	Milking	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0
4	Animal Health	-	-	-	-	-	-	-	-	-	-	-	-	195	183	-	-		
C	Labour Rate (Rs./Day) Male/Female	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	NDCS																		
A	Family Labours	2.1	1.2	4.5	2.5	0.3	0.3	4.0	0.0	2.0	1.2	2.2	1.3	1.3	1.9	2.0	1.2	1.2	1.1
1	Fodder Management	0.4	1.0	1.5	3.5	0.4	0.3	2.0	2.0	1.2	1.1	4.5	1.3	1.6	2.2	1.2	1.1	0.4	1.3
2	Shed Management	1.1	0.4	1.0	1.5	0.4	0.3	0.0	0.0	1.0	1.1	1.1	0.5	0.3	1.5	1.0	1.1	0.3	0.5
3	Milking	0.4	0.1	1.0	0.0	0.0	0.0	0.0	0.0	1.3	0.3	1.2	1.1	1.0	0.9	1.3	0.3	0.5	0.1
4	Animal Health																		
B	Hired Labours	0.2	0.0	2.5	3.5	0.3	0.4	0.0	0.0	0.1	0.1	2.2	0.0	0.0	0.0	0.1	0.0	0.1	0.3
1	Fodder Management	0.1	0.0	3.5	4.5	0.4	0.3	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	1.2
2	Shed Management	0.1	0.0	1.0	0.0	0.5	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	1.2	0.3
3	Milking	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0
4	Animal Health	-	-	NA	NA					--	--			195	183	-	-	1.2	1.1
C	Labour Rate (Rs./Day)Male/Female	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

6.5 Details on Feed/Fodder and Water

There is a direct relation between the nutritional status of the animals and the type of feed fed. For getting the best results, feeding of animal need planned scientific, practical as well as economical approach. Livestock feeds are generally classified as roughages and concentrates. Roughages are further classified into green fodder and dry fodder. Green fodder are cultivated and harvested for feeding the animals in the form of forage (cut green and fed fresh), silage (preserved under anaerobic condition) and hay (dehydrated green fodder). Fodder production and its utilization depend on various factors like cropping pattern followed, climatic condition of the area as well as the socio-economic conditions of the household and type of livestock reared. The cattle and buffaloes are normally fed on the fodder available from cultivated areas, supplemented to a small extent by harvested grasses. The major sources of fodder supply are crop residues, cultivated fodder and fodder from common property resources like forests, permanent pastures and grazing lands.

At present, there is huge gap between demand and supply of animal feed and fodder. The increased growth of livestock particularly that of genetically upgraded animals, has further aggravated the situation. Additionally, the quality of the available fodder is also poor, being deficient in energy, protein and minerals. Therefore, it is important to have information on feed and fodder fed to animals. The details on feed and fodder fed by the selected households at the time of survey are presented in Table 6.7. It can be seen from the tables that except few exceptions, in all the species and across the size groups, the quantity of feed (dry and green fodder), concentrates and supplements were found higher in case of NDCS households. The selected households used fodder from both sources (self cultivated & purchased fodder). The animals were also fed with concentrates which were mostly purchased from the market.

Table 6.7: Details of Feed and Fodder (at the Time of Survey)

Sr. No.	Stall-Feeding	Assam			Bihar			Chhatisgarh			Jharkhand			Odisha			Uttar Pradesh			West Bengal			Gujarat			Rajasthan		
		LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B
A	DCS																											
1	Dry Fodder	3.7	4.8	0.0	3.5	4.5	6.8	4.6	5.1	7.8	2.7	0.0	3.5	9.6	11.9	14.2	4.9	5.6	7.3	7.6	7.7	0.0	12.3	15.0	13.5	7.7	7.8	7.8
2	Green Fodder	10.2	19.6	0.0	4.5	5.6	10.0	15.7	11.1	11.7	4.8	0.0	6.8	5.8	6.3	8.4	5.4	6.7	7.6	10.3	12.2	0.0	11.2	13.1	11.7	8.2	8.1	8.3
3	Concentrates	1.3	3.9	0.0	1.6	2.2	3.2	1.0	1.5	2.0	0.5	0.0	1.0	2.9	3.7	5.0	1.8	2.4	2.3	1.2	1.1	0.0	3.3	3.1	3.2	2.9	3.0	3.1
4	Supplements (Gram)	28	78	0	400	550	550	0	0	1	150	0	300	38	52	66	0	0	0	439	423	0	104	145	139	184	187	200
5	Out feeding Grazing (No of Hrs./day)	6.4	0.0	0.0	2.0	-	3.0	8.0	7.8	8.0	3.5	0.0	4.3	-	-	-				3.8	2.5	0.0	7.6	6.1	5.0	-	-	-
B	NDCS																											
1	Dry Fodder	3.7	5.3	0.0	3.4	4.5	6.7	5.9	8.9	13.2	2.3	2.3	3.8	10.3	12.9	15.0	5.1	5.5	7.5	8.4	7.9	0.0	15.9	15.8	15.0	7.3	8.2	8.6
2	Green Fodder	10.8	19.7	0.0	4.2	5.3	10.1	16.1	18.7	22.9	4.0	3.3	6.3	5.9	6.4	7.1	7.0	6.8	7.5	11.9	11.2	0.0	13.8	13.6	13.2	8.0	8.5	9.2
3	Concentrates	1.3	3.8	0.0	1.5	2.1	3.2	0.9	1.6	2.3	0.5	1.8	0.5	2.6	3.7	4.2	2.3	2.6	3.1	1.1	1.0	0.0	5.2	5.8	6.4	3.3	3.5	3.8
4	Supplements (Gram)	28	76	0	350	450	500	1	1	1	150	300	325	31	47	55	0	0	0	476	451	0	66	52	44	210	215	216
5	Out feeding Grazing (No of hrs./day)	6.6	0.0	0.0	2.5	-	3.0	8.0	8.0	8.0	4.0	-	4.0	-	-	-				3.4	2.5	0.0	8.0	8.0	5.9	3.3	2.2	3.7

Source: Field Survey Data.

Besides feeding the animals at stall in shed, the selected households had grazed their animals every day for about 2-8 hours on their own agriculture land or common grazing land of the village except DCS and NDCS households in Odisha, UP and only DCS households in Rajasthan. Grazing time was relatively found higher in fodder deficit states like Gujarat and Chhattisgarh.

Beside feed and fodder, availability of quality of water also determines growth of dairy activities. It can be seen from the tables 6.8 and 6.9 that in both the groups (DCS & NDCS) groundwater is the main source of water in the state of Odisha, West Bengal, Chhattisgarh, Bihar, Gujarat while surface water was major source of water in Jharkhand, Rajasthan while Assam has multiple sources and in UP, water from hand pumps were used for dairy purposes. The water for dairy activities were also fetched from the other minor sources such as river, canal, farm pond and tanker. Though the supply of water is almost adequate during rainy and winter seasons, shortage of water was faced by the sample households during summer seasons in all the selected states. In such situation, households those who suffer with shortage of water, alternative sources were exploited. The NDCS households faces shortage of water required for dairy activities. Besides, water shortage, water quality of problem was faced by selected NDCS households in the states of Assam and Bihar. Some of the households reported that they had got water through tanker by making payment for same, which ranges between Rs. 172-328/- that to state of Gujarat and Rajasthan which are water deficient state which are categorised as water stressed states..

Table 6.8: Availability of Water for Dairy Activities- DCS households

Sl No	Particulars	Assam			Bihar			Chhatisgarh			Jharkhand		Odisha			Uttar Pradesh			West Bengal			Gujarat			Rajasthan		
		R	W	S	R	W	S	R	W	S	R	S	S	R	W	R	W	S	R	W	S	R	W	S	R	W	S
A	Sources																										
1	Open Well	12.5	12.5	10.8	4.17	7.5	14.2	26.7	26.7	10.8	-	26.8	45.8	50.8	26.7	0.0	0.0	0.0	3.3	0.0	0.8	11.7	11.7	11.7	10.8	10.8	15.8
2	Tubewell	91.7	91.7	91.7	15.8	10.8	13.3	58.3	58.3	6.7	25.6	30.8	33.3	33.3	58.3	0.0	0.0	0.0	75.0	78.3	77.5	45.8	45.8	45.0	24.2	24.2	30.8
3	River	-	-	-	19.2	23.3	16.7						0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.8	0.8	0.0	0.00	0.0
4	Canal	-	-	-	NA	NA	NA	0.0	0.0	0.0	32.4	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	1.7	1.7	5.0	5.00	0.0
5	Village Talawadi	-	-	-	21.67	23.3	24.2	15.0	15.0	82.5	42.0	16.2	18.3	13.3	15.0	0.0	0.0	0.0	0.0	0.0	0.0	36.7	35.0	34.2	24.2	24.17	20.0
6	Farm Pond	-	-	-	8.3	1.7	---				-	-	2.5	2.5	0.0	0.0	0.0	0.0	21.7	21.7	21.7	6.7	7.5	2.5	35.83	35.8	33.3
7	Tanker	-	-	-									0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7			
8	Hand pump				30.8	33.3	31.7				-	26.2				100	100	100									
	Av. Dist(MT)	87	87	87	67.00	92	216	203	203	526	2	2	232	212	374	26	26	26	39	37	37	468	565	565	250	250	317
B	Water is adequate																										
1	Yes	93.3	95.0	91.7	87.50	69.2	8.3	81.7	80.0	65.0	72.7	22.4	97.5	96.7	85.0	100.0	100.0	100.0	100.0	95.8	95.8	95.8	4.2	95.0	90.0	90.0	59.2
2	No	6.7	5.0	8.3	12.50	30.8	91.7	18.3	20.0	35.0	27.3	77.6	2.5	3.3	15.0	-	-	-	0.0	4.2	4.2	5.0	91.7	8.3	10.0	10.0	40.8
C	Water Quality																										
1	Normal	100	100	89.2	4.16	38.3	10.0	78.3	78.3	52.5	22.5	25.7	93.3	98.3	100.0	100	100	100	94.2	93.3	96.7	100	100	100	90.8	90.8	90.8
2	Poor	0.0	0.0	10.8	49.2	42.5	50.8	12.5	17.5	32.5	68.4	64.4	6.7	1.7	0.0	-	-	-	3.3	4.2	0.8	0.0	0.0	0.0	9.2	9.2	9.2
3	Very Poor	0.0	0.0	0.0	46.7	19.2	39.2	9.2	2.5	15.0	9.2	10.0	0.0	0.0	0.0	-	-	-	2.5	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0
D	Alternative source																										
1	Open Well	0.0	0.0	0.0	14.2	8.3	10.0	0.0	0.0	0.0	42.3	58.3	5.8	5.8	5.8	0.0	0.0	2.0	0.8	0.8	0.8	0.0	0.0	0.0	17.5	17.5	17.5
2	TubeWell	0.0	0.0	0.0	20.8	19.2	22.5	34.2	36.7	43.3	38.7	37.2	80.0	80.0	80.0	0.0	0.0	10.0	51.7	50.8	51.7	1.7	9.2	2.5	82.5	82.5	82.5
3	River	0.0	0.0	0.0	6.67	16.7	17.5				-	-	0.0	0.0	0.0	0.0	0.0	0.0	4.2	4.2	4.2	7.5	0.8	0.0	0.0	0.0	0.0
4	Canal	0.0	0.0	0.0	NA	NA	NA	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	3.3	0.0	1.7	9.2	0.0	0.0	0.0
5	Village Talawadi	10.0	8.3	15.8	25.0	19.2	21.7	65.8	63.3	56.7			14.2	14.2	14.2	0.0	0.0	0.0	4.2	4.2	4.2	2.5	10.8	3.3	0.0	0.0	0.0
6	Farm Pond	0.0	0.0	0.0	NA	NA	NA				-	-	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0	5.0	0.0	0.0	2.5	0.0	0.0	0.0
7	Tanker	0.0	0.0	0.0									0.0	0.0	0.0	0.0	0.0	0.0	5.8	5.8	5.8	10	2.5	5.0			
8	Hand pump				33.3	36.7	28.3				19.1	4.6				-	-	-									
	Av. Dist(Mt)	141	141	141	100	210	261	452	440	516	1	1	330	427	392	-	-	192	110	109	110	2033	2183	1675	967	967	967
E	Payment for Water (Rs)	0.0	0.0	0.0	NA	NA	NA				-	-	-	-	-	-	-	-	0.0	0.0	0.0	268	268	322	297	295	299

6.6 Details on Veterinary and Breeding Services and Expenditures

The details of veterinary and breeding expenditure incurred during last one year by beneficiary and non-beneficiary households are presented in Tables 6.10. It can be seen from the tables that almost all the animals in Gujarat state were given vaccinations (such as FMD, HS, BQ, Deworner, Thailera, Swell in Feet, etc), while condition was very pathetic in eastern states such as Chattisagarh and Odisha. Besides, some of the selected households had incurred expenditure on medicine and doctor as and when some of animals fell sick. On an average DCS households in western states had incurred medicine plus doctor fee cost ranging between Rs. 100-550/- per animal during the year, while corresponding figure for selected households from eastern states was at higher side which ranges between Rs. 400-1000/animal. During the visit to the field and discussion with the selected household, it was observed that despite of various efforts made by the government; availability of veterinary doctor is one of the bottlenecks in dairy development. It can be seen from the table that on an average, every year total number of visit of veterinary doctor ranges between 1-3 only. Thus, most of the households had either depend on the alternative source of advisory and medical support for their animals.

Though under cooperative dairy sector which is mostly developed in western part of India, member of dairy can register a complaint at diary society and doctor visit the animals, it sometimes takes long time to get doctor visited and thus delayed visit and prescription of doctor sometime result in extra expenditure on medicine and doctor as well as loss in income due to low milk yield (in case of milch animal). Beside natural service, artificial insemination facility was availed by the selected households for their animals and on an average, rate of conception of AI was less than 2.

Table 6.9: Availability of Water for Dairy Activities- NDCS households

Sl No	Particulars	Assam			Bihar			Chhatisgarh			Jharkhand			Odisha			Uttar Pradesh			West Bengal			Gujarat			Rajasthan		
		R	W	S	R	W	S	R	W	S	R	W	S	R	W	S	R	W	S	R	W	S	R	W	S	R	W	S
A	Sources																											
1	Open Well	9.2	6.7	15.8	14.2	15.8	22.5	14.2	15.8	22.5	-	26.23	28.6	61.7	61.7	40	0	0	0	1.7	1.7	1.7	17	14	15	14.2	12.5	16.7
2	Tubewell	14.2	16.7	15	42.5	43.3	56.7	42.5	43.3	56.7	27.4	28.6	32.2	5	5	15	0	0	0	75.8	75.8	75.8	45	45	47	20.8	22.5	40.0
3	River	13.3	22.5	17.5	0.0	0.0	0.0				0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	1	1	1	0.0	0.0	0.0
4	Canal	NA	NA	NA	14.2	15.8	8.3	14.2	15.8	8.33	35.2	0.0	0.0	0.8	0.83	0.83	0	0	0	0.0	0.0	0.0	7	7	7	0.8	5.8	0.0
5	Talawadi	17.8	23.3	22.5	25.0	25.0	12.5	25	25	12.5	37.4	48.1	25.7	32.5	32.5	44.17	0	0	0	0.0	0.0	0.0	25	25	27	25.0	25.8	12.5
6	Farm Pond	10.8	5	0	4.2	0.0	0.0	4.17	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	22.5	22.5	22.5	2	1	1	39.2	33.3	30.8
7	Tanker	0	0	0	0.0	0.0	0.0				0.0	0.0	13.6	0	0	0	0	0	0	0.0	0.0	0.0	28	29	23	0.0	0.0	0.0
8	Hand pump	33.3	25.8	29.17	0.0	0.0	0.0				0.0	0.0	0.0	0	0	0	100	100	100	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0
	Av. Dist(MT)	72	89	207	198	190	130	198	190	130	2	1	1	298	292	299	39	39	39	30	30	30	152	168	141	323	323	342
B	Water is adequate																											
1	Yes	84.2	80.8	9.2	96.7	87.5	73.3	96.7	87.5	73.3	74.2	26.8	18.6	90.0	81.7	75.0	100.0	100.0	100.0	100.0	100.0	100.0	86.0	64.0	35.0	83.3	83.3	54.2
2	No	15.8	19.2	90.8	3.3	12.5	26.7	3.3	12.5	26.7	25.8	73.3	81.5	10.0	18.3	25.0	0.0	0.0	0.0	0.0	0.0	0.0	34.0	56.0	85.0	16.7	16.7	45.8
C	Water Quality																											
1	Normal	10.8	32.5	8.3	63.3	61.7	58.3	63.3	61.7	58.3	18.4	54.4	27.1	95.8	95.0	89.2	100.0	100.0	100.0	100.0	96.7	100.0	44.0	56.0	49.0	89.2	89.2	89.2
2	Poor	59.2	42.5	57.5	25.0	28.3	27.5	25.0	28.3	27.5	62.1	32.8	62.2	4.2	5.0	10.8	0.0	0.0	0.0	0.0	3.3	0.0	56.0	35.0	38.0	10.8	10.8	10.8
3	Very Poor	30.0	25.0	34.2	11.7	10.0	14.2	11.7	10.0	14.2	19.6	12.9	10.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	29.0	33.0	0.0	0.0	0.0
D	Alternative source																											
1	Open Well	11.7	11.7	8.33	16.7	12.5	15.8	16.7	12.5	15.8	45.7	46.1	59.2	31.7	31.67	10	0	0	3	0.0	1.7	1.7	19	4	3	25.8	25.8	25.8
2	TubeWell	6.7	15.8	17.5	50.0	79.2	83.3	50	79.2	83.3	32.5	32.2	34.1	25.8	25.83	35.8	0	0	5	61.7	60.0	59.2	9	1	2	74.2	74.2	74.2
3	River	15.8	21.6	21.7	0.0	0.0	0.0				0.0	0.0	0.0	0	0	0	0	0	0	0.8	0.8	0.8	12	29	18	0.0	0.0	0.0
4	Canal	NA	NA	NA	4.2	0.8	0.8				0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	18	29	15	0.0	0.0	0.0
5	Talawadi	23.3	18.3	20.8	29.2	7.5	0.0	4.17	0.83	0.83	0.0	0.0	0.0	42.5	42.5	54.2	0	0	0	10.0	10.0	10.0	30	35	49	0.0	0.0	0.0
6	Farm Pond	8.3	NA	NA	0.0	0.0	0.0	29.2	7.5	0	0.0	0.0	0.0	0	0	0	0	0	0	2.5	2.5	2.5	7	0	0	0.0	0.0	0.0
7	Tanker	34.2	32.5	31.7	0.0	0.0	0.0				21.8	21.8	6.7	0	0	0	0	0	0	0.0	0.0	0.0	29	31	35	0.0	0.0	0.0
8	Hand pump																											
	Av. Dist(Mt)	99	201.8	220	172	87	52	172	87	52	1	1	1	433	427	433	0	0	283	74	74	74	141	173	218	1355	1355	1355
E	Payment for Water (Rs)	NA	NA	NA	0	0	0				0	0	0	0	0	0	0	0	0	0	0	0	172	205	216	317	317	328

Source: Field Survey Data.

6.7 Awareness about the Schemes:

There are many government schemes that provide forward and backward linkages for promotion of dairying involving milk producers. Besides, the state milk federations and the milk unions have evolved a variety of schemes that provide incentives to the milk producers. However, proper awareness about the benefit of scheme would not only help in success of aim of scheme but also benefit the dairy producer in many ways. Therefore, an attempt was made in this study also to know the status of awareness about various schemes among the selected households. It can be seen from the Table 6.11 that on an average, about three fourth of DCS households were aware about different vaccinations schemes/programmes in the states of Assam, Bihar, Chhattisgarh, UP, Gujarat and Rajasthan, while in case of NDCS households, awareness about same was very poor in Bihar and UP. In case of AI programmes, more than 60 per cent DCS households of all states had information while in case of NDCS households, corresponding figure was lowest in UP. In fact selected households in WB were well aware about vaccinations and AI programmes. The development of dairy sector heavily depends about the awareness of various dairy development programme among the dairy owners. Awareness about dairy schemes among selected households was significantly high in the states of Chhattisgarh, Gujarat, Rajasthan and Assam while same was very poor in the state of UP and Bihar. The main sources of information of programmes for DCS households were cooperative society followed by government animal husbandry department, media and fellow farmers. However, very few of them have benefited with scheme. While in case of NDCS households, they were dependent on media and fellow farmers for same. The association of dairy producers with cooperative milk society improve the awareness about the various dairy development schemes. Therefore, more efforts should be made by the government to disseminate the information about scheme through village awareness programme, etc.

Table 6.10: Details of Veterinary and Breeding Expenditure during last one year Households

SI No	Particulars	Assam		Bihar			Chhatisgarh			Jharkhand			Odisha			Uttar Pradesh			WB		Gujarat			Rajasthan		
		LC	CB	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B
	DCS																									
A	Vaccination																									
	HS	4	348	-	286	-	-	-	-	-	-	2	76	3	--	13	30	87	92	120	126	189	4	7	11	
	BQ	7	357	-	286	-	-	-	-	255	-	250				--	17	14	156	247	88	100	122	6	15	24
	FMD	10	453	250	258	-	-	-	-	300	-	325				15	80	91	145	166	110	159	195	16	34	45
B	Medicines + Doctor(Rs)	374	689	800	1000	890	2	2	1	350	-	250	288	431	489	2500	42521	46950	497	544	330	368	361	686	820	740
C	Av. No. of Visit By Vet./Year	1.72	2.62	1	2	2	-	-	-	2	-	2	1.8	2.8	3.5	5	1.67	2	2.70	3.00	1.9	2.3	1.8	2.6	2.9	3.0
D	Service									---	-	---														
	AI	2	473	-	2	-	-	-	-	150	-	165	5	50	6	33	91	90	68	101	74	166	116	40	131	238
	Natural service	15	11	1	-	1	1.5	0.0	1.2	---	-	---	2	22	4	11	--	157	1	0	59	10	100	25	11	58
	Amount	50	50	-	100	-	302	0	300	---	-	---	52	107	117	4750	21590	24720	159	143	132	66	215	554	591	624
E	No. of AI Per conception	1.5	1.7	-	2	-	-	-	-	---	-	---	0.8	1.3	1.4	1	1	1	2.00	2.00	1.5	2.2	1.5	1.4	2.3	1.4
F	Per visit rate paid to vet. doc (Rs/visit)	177	215	200	200	200	144	181	115	250	-	250	88	143	180	200	200	200	121	119	159	114	190	139	180	143
	NDCS																									
A	Vaccination																									
	HS	8	355	-	290	-	-	-	-				8	56	6	--	7	84	108	66	38	8	174	0	7	13
	BQ	9	348	-	291	-	-	-	-	240	245	155				1	13	6	137	244	23	7	32	0	8	22
	FMD	18	415	-	273	270	-	-	-	325	315	260				7	58	16	120	170	57	9	175	10	21	45
B	Medicines + Doctor(Rs)	350	653	825	950	1020	206	252	139	360	450	300	256	493	537	--	18800	45180	437	419	601	406	657	1005	1180	1053
C	Av. No. of Visit By Vet./Year	1.65	2.42	1	2	2	-	-	-	2	2	3	0.8	1.7	2.8	--	5	2	2.6	2.9	2.1	1.7	1.6	1.96	2.14	2.31
D	Service									---	---	---														
	AI	4	455	-	2	-	1.0	-	1.0	155	160	165	8	46	6	38	129	106	56	90	47	15	123	40	98	155
	Natural service	31	10	1	-	1	2.0	-	1.0	---	---	---	2	9	1	1	--	155	2	0	44	4	207	24	49	122
	Amount	50	50	-	150	-	340	-	25	---	---	---	51	112	125	2900	19550	43780	172	152	212	257	283	610.1	652.2	699.2
E	No. of AI Per conception	1.33	1.73	-	2	-	2.00	-	1.00	---	---	---	1.4	2.0	68.0	1	1	1	1.9	1.9	2.0	2.3	2.0	1.81	2.19	2.11
F	Per visit rate paid to vet. doc (Rs/visit)	178	223	200	200	200	233	180	217	250	250	250	133	215	228	--	200	200	112	128	277	269	282	188.7	230.4	193.3

6.8 Cost of Milk Production:

The cost of production of milk and net returns realised by the sample households are presented in Tables 6.12 and 6.13 and Figures 6.1 to 6.3. It can be seen from the tables and figures that net returns realised by the DCS households was higher than NDCS households all groups and in all species. In case of West Bengal, the DCS households holding local cows as well as NDCS households holding both local and cross breed cows had realised negative returns in milk production mostly because of high expenditure incurred on total supplements fed to animals as compared to corresponding expenditures figures reported in other states. It was very strange to note that on an average, expenditure towards total dry fodder was estimated to be the lowest in Chhattisgarh ranges between Rs. 2-4 per animal per day, while same was reported highest for cattle in Rajasthan (Rs. 34.8/animal/day) and for buffalo in Odisha (Rs. 38.9/animal/day). In case of green fodder also, lowest expenditure was recorded in Chhattisgarh (between Rs. 2-4/animal/day), while it was the highest in Gujarat for local cattle (Rs. 24.2/day/animal) and Odisha for cross breed (s. 25.1/animal/day) and buffalo (Rs. 33.6/animal/day). The total concentrates fed to animal was recorded to be highest in western states of India and the lowest was in Odisha. Same the case holds true for supplements with exception of West Bengal. As was expected high feed and fodder cost was estimated to be higher in western states of India as may be due to fodder deficit, while same was recorded lowest in Odisha (ranges between Rs. 6-12/animal/day). Thus, there are huge variations across the states in terms of the expenditure incurred on various items of milk production. Low margins for NDCS dairy producers may be due to low milk productivity from animals with low genetic potential, poor health, feeding and husbandry practises low price offered by private agent/agency. Therefore, there is a huge scope to enhance producers' income from dairy by enhancing animals productivity, improving management practise, and ensuing remunerative prices.

Table 6.11: Details on Awareness about Various Schemes

Sr. No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		Uttar Pradesh		West Bengal		Gujarat		Rajasthan			
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS		
1	Awareness about different Vaccinations schemes/programmes (%)	Yes	72.5	46.7	65.0	33.3	78.3	61.7	62.5	52.5	57.5	41.7	70.8	25.0	100.0	100.0	75.0	41.7	85.0	70.0	
		No	27.5	53.3	35.0	66.7	21.7	38.3	37.5	47.5	42.5	58.3	52.5	75.0	0.0	0.0	25.0	58.3	15.0	100.0	
2	Awareness about Artificial Insemination (AI) programmes (%)	Yes	72.5	57.5	95.0	69.2	82.5	74.2	80.8	59.2	60.8	48.3	71.7	30.0	100.0	100.0	70.8	41.7	83.3	80.0	
		No	27.5	42.5	5.0	30.8	17.5	25.8	19.2	40.8	39.2	51.7	28.3	70.0	0.0	0.0	29.2	58.3	16.7	20.0	
3	Awareness about any dairy development scheme/programmes (%)	Yes	68.3	12.5	29.2	21.7	94.2	33.3	52.5	34.2	57.5	30.0	32.5	33.0	82.5	28.3	64.2	3.3	66.7	30.0	
		No	31.7	87.5	70.8	78.3	5.8	66.7	47.5	65.8	42.5	70.0	67.5	67.0	17.5	71.7	35.8	96.7	33.3	70.0	
4	Sources of information about schemes (%)																				
	a) Govt. Animal Husbandry Department		22.5	38.3	8.3	1.7	0.0	20.8	27.5	15.0	0.0	0.0		--	0.0	0.0	21.4	0.0			
	b) Dairy Cooperative/ Milk Union		61.7	0.0	39.2	50.0	100.0	10.8	60.0	-	54.2	0.0	16.7	10.0	81.7	0.0	53.1	0.0	85.0	30.0	
	c) Media (Press/TV)		0.8	11.7	NA	NA	0.0	30.0	6.7	5.8	0.0	0.0	65.0	--	0.0	0.0	11.7	0.0	80.0	65.0	
	d) Fellow farmer/dairy owner/neighbor		15.0	50.0	52.5	48.3	0.0	38.3	45.0	38.3	45.8	0.0	50.0	90.0	0.0	28.3	13.8	0.0	15.0	60.0	
	e) Other		NA	NA	NA	NA			-	-	-	-		--							
5	Have you benefited with any dairy scheme (%)	Yes	23.3	0.0	22.5	-	48.3	0.0	16.7	10.8	12.5	0.0	0.0	2.5	59.2	-	15.0	0.0	37.5	0.0	
		No	76.7	100.0	77.5	100.0	51.7	100.0	83.3	89.2	87.5	100.0	100.0	97.5	40.8	-	85.0	100.0	62.5	100.0	
	a) If benefited, please provide following										-	-			-	-					
	i) No. of visits to office		-	-	2.0	NA	2.0	-	2.2	2.2	-	-	0	2.0	-	-	-	-	1.52	0	
	ii) Wage days lost (Days)		-	-	200	NA	204.0	-	-	-	-	-	0	150.0	-	-	-	-	0.66	0	
	iii) Total Expenditure to avail scheme (doc/travel/etc)		-	-	150	NA	-	-	-	-	-	-	0	50.0	-	-	-	-	57.7	0	
	iv) Bribe paid to any one		-	-	NA	NA	-	-	-	-	-	-	0	--		-	-	-	0	0	
	v) Quality of material received	Good		89.2	-	60.0	NA	100.0	-	-	-	100.0	-	0	1.0	100.0	-	100	-	100	0
		Bad		10.8	-	NA	NA	0.0	-	-	-	0.0	-	0	--	0.0	-	0.0	-	0	0
	vi) Satisfied with benefit received (%)	Yes		89.2	-	52.0	NA	100.0	-	-	-	100.0	-	0	60.0	90.0	-	100	-	100	0
		No		10.8	-	NA	NA	0.0	-	-	-	0.0	-		--	10.0		0.0	-		
	If no, give reason			Poor quality	-	NA	NA	-	-	-	-	-	-		--			-	-		

Source: Field Survey Data.

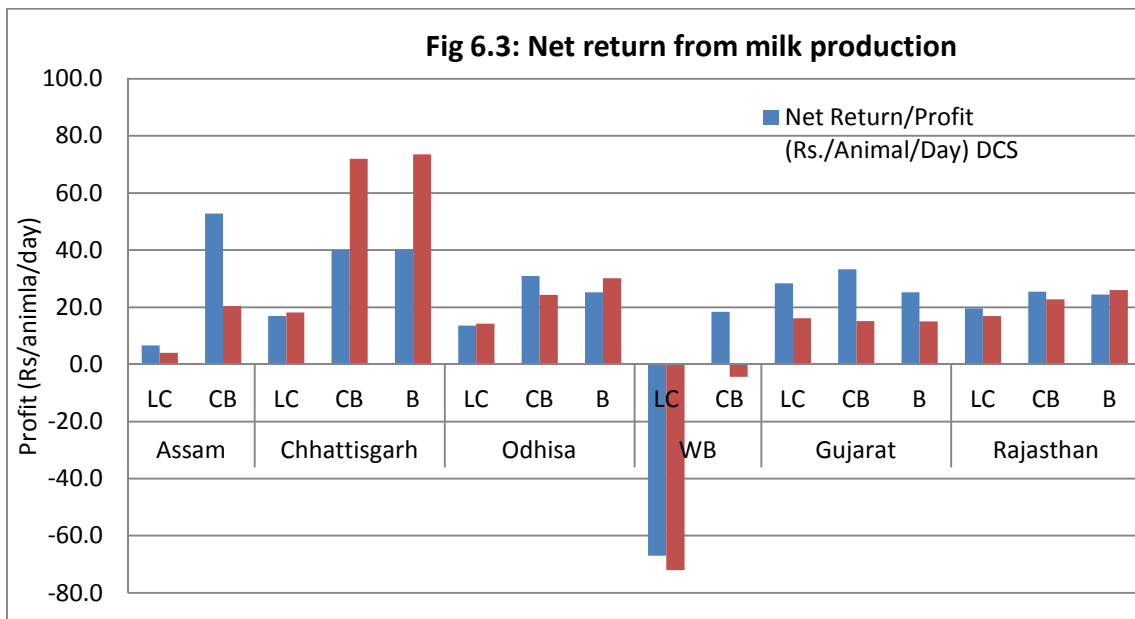
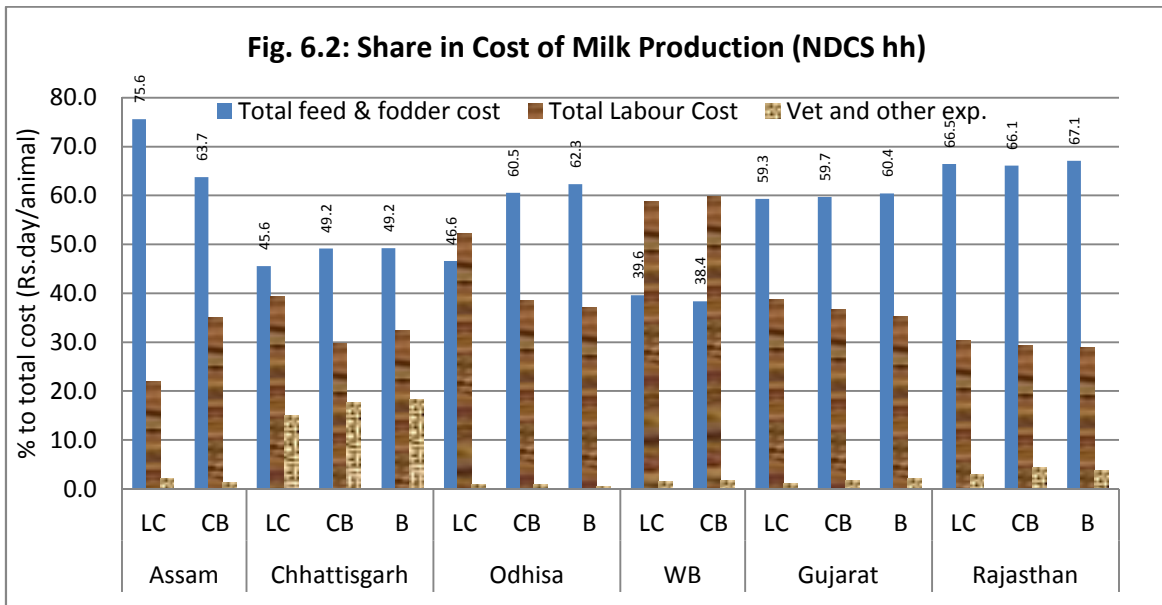
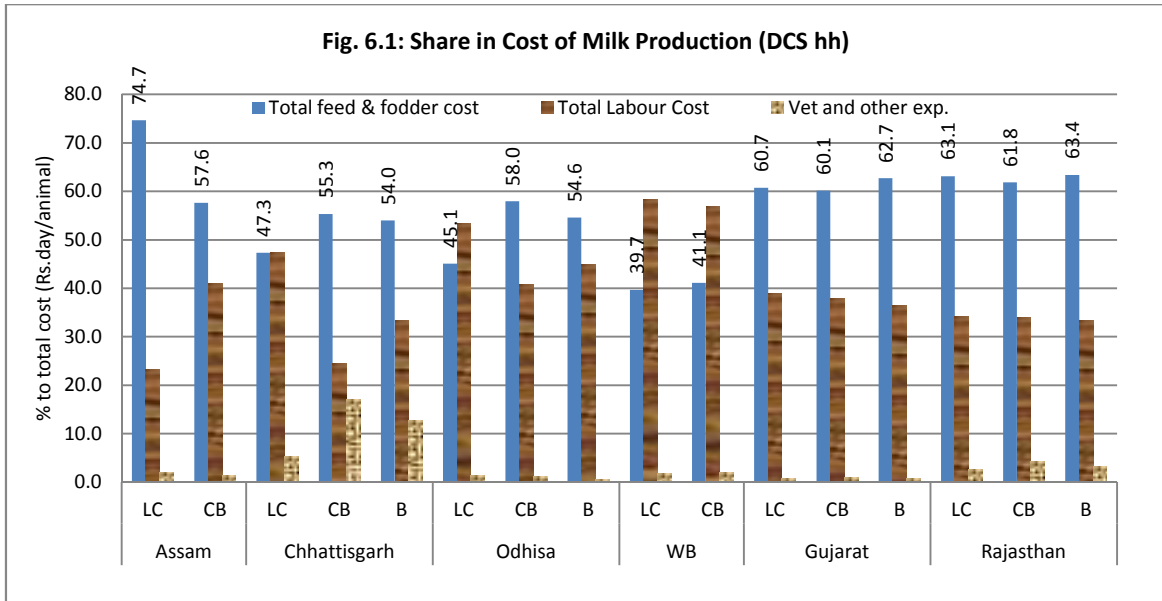


Table 6.12: Cost of Cow and Buffalo Milk Production and Net Returns- DCS households

A	Particulars (DCS)	Assam		Chhattisgarh			Odhisia			West Bengal		Gujarat			Rajasthan		
		LC	CB	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B
1	Total Dry Fodder (Rs./Animal/Day)	4.7	6.4	2.3	3.6	3.5	22.8	30.7	38.9	16.2	16.4	31.3	30.9	31.6	34.8	32.9	35.2
2	Total Green Fodder (Rs./Animal/Day)	15.7	31.3	1.6	2.9	4.0	12.0	25.1	33.6	12.9	15.4	24.2	25.0	27.4	18.7	18.4	18.2
3	Total Concentrates (Rs./Animal/Day)	13.5	41.7	1.6	2.6	2.3	16.3	44.7	47.0	19.2	18.0	55.7	56.1	62.9	60.3	61.1	63.1
4	Total Supplements (Rs./Animal/Day)	1.4	4.7	0.8	1.3	1.7	2.3	3.1	3.9	18.0	17.3	4.4	6.1	5.9	16.4	16.2	17.8
5	Total feed & fodder (Rs./Animal/Day)	35.3	84.0	6.2	10.4	11.5	53.4	103.6	123.4	66.4	67.1	115.6	118.1	127.9	130.2	128.6	134.2
6	Total Labour (Rs./Day)																
	Male (Rs./Day)	9.3	47.4	3.8	2.7	4.3	38.3	41.7	59.0	38.5	43.1	46.3	46.3	46.3	35.2	35.2	35.2
	Female (Rs./Day)	1.7	12.3	2.3	1.9	2.9	25.0	31.3	42.3	59.3	49.8	28.0	28.0	28.0	35.3	35.3	35.3
	Total	11.0	59.7	6.2	4.6	7.1	63.3	73.0	101.3	97.8	92.9	74.3	74.3	74.3	70.5	70.5	70.5
8	Veterinary Cost (Rs./Animal/Day)	1.0	2.1	0.4	2.9	2.2	1.7	2.1	1.2	3.1	3.3	1.5	2.0	1.4	5.5	8.8	6.9
9	Transportation Cost	0.0	0.0	0.3	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Total Cost (Rs./Animal/Day)	47.3	145.8	13.1	18.8	21.3	118.4	178.7	225.9	167.4	163.2	190.4	196.4	203.9	206.3	207.9	211.6
B	Returns																
1	Milk Production (Litre/Animal)	1.3	5.5	1.3	2.8	2.5	4.7	7.5	7.9	2.6	5.7	6.1	6.4	6.4	8.1	7.4	7.5
2	Price (Rs. /litre)	40.5	35.3	22.5	20.9	24.3	28.4	28.1	31.6	24.7	24.1	34.1	34.1	34.1	27.6	31.0	30.6
3	Returns from Milk Production (Production*Avg Price)	51.0	195.4	29.3	58.4	60.7	132.0	209.7	251.1	64.2	137.4	208.0	218.2	218.2	221.9	229.1	230.1
4	Income from Dung (Rs./Animal/Day)	2.9	3.3	0.7	0.4	0.9	0.0	0.0	0.0	36.2	44.2	10.8	11.5	10.9	4.0	4.3	6.0
5	Total Income (Rs./Animal/Day)	54.0	198.6	30.0	58.8	61.6	132.0	209.7	251.1	100.4	181.6	218.8	229.7	229.1	225.9	233.4	236.1
6	Net Return/Profit (RS./Animal/Day)	6.7	52.8	16.9	40.0	40.3	13.6	31.0	25.2	-67.0	18.4	28.4	33.3	25.2	19.6	25.4	24.5

Note: Per animal per day cost of milk production were observed.

Low productivity of local cattle breed in Assam, Chhattisgarh and West Bengal and buffalo in Chhattisgarh is a serious constraint to dairy development. The productivity of dairy animals could be increased by crossbreeding low-yielding nondescript cows with high-yielding selected indigenous purebreds or suitable exotic breeds in a phased manner. The cattle-breeding policy should not only focus on milk yield but should also provide for the production of good-quality bullocks to meet the draft-power requirements of agriculture. Upgrading nondescript buffalo through selective breeding with high-yielding purebreds such as Murrah, Mehsani or Nili Ravi should be given high priority in all areas where buffalo are well-adapted to the agro-climatic conditions.

6.8 Chapter Summary

From field data, it was observed that milk yield of cross breed cows was the highest followed by buffaloes and local cows. Few DCS households had covered under their few animals under animal insurance program of the Government. The activities of dairy were carried out mostly by the household members. Groundwater is the main source of water followed by village talawadi and open well in the village. Besides, some of the selected households had incurred expenditure on medicine and doctor as and when some of animals fell sick. On an average, about most of the DCS households were aware about different vaccinations schemes/programmes, while in case of NDCS households, awareness about same was very poor. Net returns realised by the DCS households was higher than NDCS households all groups and in all species. Therefore, there is a huge scope to enhance producers' income from dairy by enhancing animals productivity, improving management practise, and ensuing remunerative prices.

The next chapter presents details on marketing of milk by the selected households.

Table 6.13: Cost of Cow and Buffalo Milk Production and Net Returns- NDCS households

A	Cost of Milk Production NDCS	Assam		Chhattisgarh			Odhisa			West Bangal		Gujarat			Rajasthan		
		LC	CB	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B
1	Total Dry Fodder (Rs./Animal/Day)	4.8	7.1	2.8	4.1	4.0	21.9	32.7	43.6	18.2	16.8	32.2	31.6	31.7	31.1	31.4	31.4
2	Total Green Fodder (Rs./Animal/Day)	16.8	31.8	1.5	3.3	3.8	12.7	25.6	29.3	15.2	14.0	26.0	25.9	26.2	15.2	15.2	15.4
3	Total Concentrates (Rs./Animal/Day)	13.6	41.6	1.5	3.1	2.5	17.3	66.7	91.7	17.1	15.7	43.6	51.5	50.7	54.3	57.3	59.2
4	Total Supplements (Rs./Animal/Day)	1.4	4.6	0.9	1.3	2.0	1.9	2.8	3.3	19.4	18.4	2.8	2.2	2.5	14.7	15.0	16.0
5	Total feed & fodder (Rs./Animal/Day)	36.5	85.0	6.7	11.9	12.3	53.8	127.8	167.9	69.9	65.0	104.6	111.2	111.1	115.3	118.9	122.1
6	Total Labour (Rs./Day)																
	Male (Rs./Day)	9.0	37.1	3.4	4.0	4.6	36.5	48.0	59.0	39.9	52.1	36.9	36.9	33.6	23.2	23.2	23.2
	Female (Rs./Day)	1.6	9.6	2.4	3.2	3.6	24.0	33.3	41.3	63.8	49.3	31.4	31.4	31.4	29.7	29.7	29.7
	Total	10.7	46.7	5.8	7.2	8.1	60.5	81.3	100.3	103.7	101.4	68.3	68.3	64.9	52.9	52.9	52.9
8	Veterinary Cost (Rs./Animal/Day)	1.1	1.7	1.2	2.3	2.2	1.2	2.0	1.1	2.8	3.0	1.9	3.3	3.9	5.3	8.1	7.0
9	Transportation	0.0	0.0	1.0	2.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Total Cost (Rs./Animal/Day)	48.3	133.4	14.7	24.2	25.0	115.5	211.1	269.3	176.4	169.4	176.4	186.3	183.9	173.5	179.9	181.9
B	Returns																
1	Milk Production (Litre/Animal)	1.3	4.6	1.3	3.7	3.1	4.9	9.0	10.1	2.9	5.4	5.7	6.2	6.1	7.7	7.7	7.8
2	Price (Rs. /litre)	39.5	33.2	23.5	25.3	30.7	26.3	26.1	29.7	23.0	22.5	31.8	30.7	31.2	24.4	25.8	26.0
3	Returns from Milk Prod (Prod*Avg Price)	49.7	150.9	30.5	93.7	95.0	129.8	235.4	299.4	66.7	121.4	181.8	191.1	190.2	186.4	198.4	202.0
4	Income from Dung (Rs./Animal/Day)	2.6	2.8	2.4	2.5	3.5	0.0	0.0	0.0	37.6	43.7	10.8	10.3	8.7	4.0	4.3	6.0
5	Total Income (Rs./Animal/Day)	52.3	153.7	32.9	96.2	98.5	129.8	235.4	299.4	104.3	165.1	192.6	201.4	198.9	190.4	202.7	208.0
6	Net Return/Profit (RS./Animal/Day)	4.0	20.4	18.2	72.0	73.5	14.3	24.3	30.1	-72.1	-4.3	16.2	15.1	15.0	16.9	22.8	26.1

Note: Per animal per day cost of milk production were observed.

Milk Consumption & Marketable Surplus

7.1 Introduction:

After having discussed about the issues related to milk production, it is important to have the discussion of issues related of marketing milk. As mentioned earlier, more than 62 per cent of the milk produced in the country is marketed by the unorganised sector (private organisations) and less than 38 per cent is marketed by the organised sector (government or cooperative societies). Even though co-operatives provide a remunerative price to the producer, the unorganized sector plays a major role in milk marketing because of three factors. The first factor is the pricing policy of the co-operatives: their purchase price is based on the fat content of the milk, whereas the private sector pays a flat rate per liter of milk. The second factor, which motivates the milk producers to sell milk to private vendors, involves the type of milk reared by the producer. Crossbred cows yield more milk with a lower fat than do buffalo. The crossbred cow population has increased over years because animals of artificial insemination and improvements in management practices. The third factor is payment policy. The private sector can pay their producers every day, whereas the co-operatives pay weekly or fortnightly. Producers sometimes have to fight with the co-operatives to get their payments. Within the organized sector, the co-operative sector is by far the largest in terms of volumes of milk handled, installed processing capacities, and marketing infrastructure. Cooperatives pay back the highest share of consumer rupee to the milk producer. Besides, input services are also provided to member milk producer. This chapter discusses details on milk production and its use and marketing, cost of milk marketing, constraints faced in milk marketing.

Table 7.1: Production and Use of Milk by selected DCS Households (day of visit)

S L	Particulars DCS	Assam			Bihar			Chhatisgarh			Jharkhand			Odisha			UP			West Bengal		Gujarat			Rajasthan		
		LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B
1	Milk Drawn Lit/animal/day	1.3	5.5		4.0	14.8	10.0	1.3	2.8	2.5	3.6	6.5	5.6	4.7	7.5	7.9	5.0	22.0	13.4	2.6	5.7	6.0	8.6	7.1	7.1	6.5	5.9
2	Use of Milk at Home (lit)	6.4	99.1		60.0	90.0	60.0	18.4	1.7	17.6	72.21	12.75	28.38	31.0	257.0	25.0	140.0	296.0	278.0	36.0	53.2	136.5	96.5	194.0	145.0	119.5	340.0
3	% Milk used at Home	29.6	3.7		53.6	3.0	10.9	12.7	7.7	21.8	1.0	24.7	18.6	19.1	12.6	12.0	28.2	13.5	20.7	18.8	9.1	20.1	7.3	13.1	30.8	29.8	15.2
4	For Direct Consumption (%)	77.3	86.5		100.0	100.0	63.3	61.0	41.2	26.7				77.4	48.6	92.0				86.4	53.6	83.5	95.9	80.7	82.4	67.8	71.3
5	For Processing (%)	22.7	13.5		0.0	0.0	36.7	39.0	58.8	73.3				22.6	51.4	8.0				13.6	46.4	16.5	4.1	19.3	17.6	32.2	28.7
6	Raw/Liquid Milk sold (Lit)		2577		52.0	2904	490.0	126.7	20.4	63.0	762.7	38.9	123.9	131.0	1776	183.5	356.0	1904.	1065.	155.3	531.7	542.5	1224.	1286.	326.4	281.5	1895.
7	% to total production	70.4	96.3		6.4	97.0	89.1	87.3	92.3	78.2	91.4	75.3	81.4	80.9	87.4	88.0	71.8	86.5	79.3	81.2	90.9	79.9	92.7	86.9	69.2	70.2	84.8

Source: Field Survey Data.

7.2 Use of Milk at Home and Processing

The data collected on production and use of milk on the earlier day of visit is presented in Tables 7.1 and 7.2. It can be seen from the tables that the percentage share of milk used at home was found higher in Rajasthan State. While across the species larger proportion of milk of local cows was preferred to consume and process except in Jharkhand state where proportion of cross breed cow milk consumption at home recorded the highest. The proportion share of milk of local cow used at home ranges between as low as 1.0 percent in Jharkhand to as high as 53.6 percent in Bihar. While in case of cross breed cows, same proportion was lowest in Bihar and the highest was in 29.8 per cent in Rajasthan. In case of buffalo, share to total milk production which was used at home ranges between 10.9 to 18.6 per cent. The variation in milk used at home is due to different climatic, social and daily food pattern of that regions/state. Thus the buffalo and cross bred cow milk was sold outside and local cow milk was mostly consumed at the home. In case of NDCS households, relatively higher share of milk produced was used at home than DCS households, though the use of local cow milk was relatively better but was at par with the cross bred cows and marginally higher than buffalo cows. Thus, it indicates that the NCDS households preferred cross bred cow milk in consumption, while no reason was cited for same. The DCS households prefer to sell as much as more milk to dairy cooperative society to increase their income while NDCS households may have faced problems in marketing of milk which must have somehow order increased use of milk at home.

Table 7.2: Production and Use of Milk by selected NDCS Households (day of visit)

S L	Particulars DCS	Assam		Bihar			Chhatisgarh			Jharkhand			Odisha			UP			West Bengal		Gujarat			Rajasthan		
		LC	CB	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B
1	Milk Drawn Lit/ animal/ day	1.3	4.6	3.8	12.4	8.7	1.3	3.7	3.1	3.4	6.2	5.1	4.6	9.0	10.1	5.1	25.5	14.5	2.9	5.5	7.8	7.9	5.8	6.5	8.3	6.1
2	Use of Milk at Home (lit)	16.8	85.7	50.2	96.0	72.0	20.1	7.6	20.1	65.32	9.55	26.15	42.0	220.0	33.0	158.0	180.0	241.0	46.0	44.8	138.5	34.0	294.0	172.0	152.0	282.5
3	% Milk used at Home	39.3	4.1	65.9	6.4	19.2	25.6	11.0	8.1	8.6	22.1	15.6	24.6	11.4	10.0	31.2	7.1	16.6	25.0	9.3	21.7	20.6	14.5	24.5	23.3	15.4
4	For Direct Consumption (%)	74.8	72.7	100.0	100.0	72.2	34.7	45.1	33.7				52.4	22.3	69.7				58.7	73.4	76.9	79.4	77.4	84.0	68.4	69.6
5	For Processing (%)	25.3	27.3	0.0	0.0	27.8	65.3	54.9	66.3				47.6	77.7	30.3				41.3	26.6	23.1	20.6	22.6	16.0	31.6	30.4
6	Raw/ Liquid Milk sold (Lit)	26.1	2031.4	26.0	1406.8	303.0	58.5	61.6	228.9	690.5	33.6	141.2	128.5	1717.0	298.0	349.0	2372.0	1211.0	138.1	438.1	501.0	131.0	1729.5	531.0	500.0	1547.0
7	% to total production	60.8	96.0	34.1	93.6	80.8	74.4	89.0	91.9	91.4	77.9	84.4	75.4	88.6	90.0	68.8	92.9	83.4	75.0	90.7	78.3	79.4	85.5	75.5	76.7	84.6

Source: Field Survey Data.

7.3 Sale of Milk and Cost of Milk Marketing

Tables 7.3 and 7.4 presented the details on disposal of milk by selected households. It was observed that on an average across cross the species, percent of milk produced disposed by the selected DCS households ranges between 46.3 per cent to 97.0 percent, while corresponding figures for NDCS households was 34 percent to 96 per cent. However, across the species, there is a large variations. As mentioned earlier, milk producers have used more share of local cow milk for the home purpose and used for preparation and thus has lower share in total milk sold in market. If we look at the disposal pattern of milk, it can be observed that all the DCS households had sold milk to dairy cooperative societies, where they got weekly payment. Few households from large milk producer group had sold small quantum of milk to consumers on month payment basis. The distance of dairy societies was quite closer and thus very meagre cost was incurred on transportation. The milk rate realised by milk producer was around Rs. 22-28/litre in case of cow milk and around Rs. 39/litre in case of buffalo milk.

The opposite picture can be seen in case of sale of milk by the NDCS households. It can be seen from the table that the NDCS households opted to sale their milk to private milk plant which was maximum 17 kms away from the households for which they incurred around Rs. 6-11 cost as transportation cost. The payment was provided as per requirement and milk rate realised was around same as in case of DCS members. Few of NDCS members have sold the milk to private vendor/shop/middlemen as well as to catering services. Thus, it is clear that unlike of almost 100% sale to dairy cooperative society by DCS households, NDCS households had to sale to variety of customers, where in rates are relatively lower and other facilities may not have available as like in dairy cooperatives.

Table 7.3: Sale of Milk and Cost of Milk Marketing- DCS Households

Sl No	Particulars DCS	Assam		Bihar			Chhatisgarh			Jharkhand			Odisha			UP			WB		Gujarat			Rajasthan		
		LC	CB	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B
1	Milk Sold (% to total prod)	70.4	96.3	46.4	97.0	89.1	87.3	92.3	78.2	91.4	75.3	81.4	80.9	87.4	88.0	71.8	86.5	79.3	81.2	90.9	79.9	92.7	86.9	69.2	70.2	84.8
2	Agencies																				6.0	8.6	7.1			
A	DCS																									
a	Milk Sold (% to total sale)	0	100	100	100	100	100	100	100	100	100		100	100	100	100	100	100	91.5	88.9	98.2	100	98.4	100	100	100
b	Price (Rs./Lit)	0	35.3	28.2	27.6	32.1	22.5	20.9	24.3	26.8	29.6		28.4	28.1	39.0	23.0	22.0	31.0	24.9	24.4	27.0	25.2	39.1	23.1	23.4	32.4
c	Payment (%)						-	-	-										-	-						
	Daily	0	0				100	100	100	50	50		0.0	0.0	0.0	--	--	--	-	-						
	Weekly	0	100	100	100	100	-	-	-	50	50		1000	100	100	100	100	100	100	100	100	100	100	100	100	100
	Monthly	0	0	100	100	100	-	-	-				0.0	0.0	0.0	--	--	--	-	-						
	Half Monthly	0	0										0.0	0.0	0.0				-	-						
d	Distance(Kms)	0	0.47	1.75	1.25	1.5	0.69	0.51	0.69	---	---		0.1	0.1	0.1	1	1	1	0.48	0.46				0.5	1.4	0.6
e	Transport Cost (Rs.)	0	0							---	---		0.2	0.0	0.2	--	--	--	0	0.02				1.2	2.1	1.6
B	Consumer																									
a	Milk Sold (% to total sale)	100	0							---	---		0.0	0.0	0.0	--	--	--	6.89	1.97				1.6		
b	Price Rs./Lit	40.5	-							---	---		-	-	-	--	--	--	22.1	22.6				50.0		
c	Payment (%)									---	---	---	-	-	-	--	--	--	-	-						
	Daily	-	-										-	-	-	--	--	--	-	-						
	Weekly	-	-										-	-	-	--	--	--	-	-						
	Monthly	100	-										-	-	-	--	--	--	100	100				100		
	Half Monthly																									
d	Distance(Kms)	0.2	-										-	-	-	--	--	--	0	0.25	-	-	-	0.2		
e	Transport Cost (Rs.)	0	-							---	---	---							0	0	-	-	-	0.0		
C	Private vendor /Middlemen									---	---	---	-	-	-						-	-	-			
a	Milk Sold (% to total sale)	0	0										-	-	-	--	--	--	1.61	2.9	1.8	-	-			
b	Price Rs./Lit	-	-										0.0	0.0	0.0	--	--	--	23	21.5	26.0	-	-			
c	Payment (%)									---	---	---	-	-	-	--	--	--	-	-	-	-	-			
	Daily	0	-										-	-	-	--	--	--	-	-						
	Weekly	0	-										-	-	-	--	--	--	-	-	-	-	-	0.2		
	Monthly	0	-										-	-	-	--	--	--	100	100	100.0	-	0.0			
	Half Monthly																		-	-						
d	Distance (Kms)	0	-							---	---	---	-	-	-	--	--	--	0	0.05	0.3	-	-			
e	Transport Cost (Rs.)	0	-							---	---	---	-	-	-	--	--	--	0	0	0.0	-	-			

Table 7.3 continues..

SI No	Particulars DCS	Assam		Bihar			Chhatisgarh			Jharkhand			Odisha			UP			WB		Gujarat			Rajasthan			
		LC	CB	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B	
D	Sweet Shop/ Catering etc										---	---	---	-	-	-											
a	Milk Sold (% to total sale)	0	0											-	-	-	--	--	--	-	6.19						
b	Price Rs./Lit	-	-														--	--	--	-	22.7	0.0	-	-			
c	Payment													0.0	0.0	0.0	--	--	--	-	-	0.0	-	-			
	Daily	-	-											-	-	-	--	--	--	-	-	2.0	-	-			
	Weekly	-	-											-	-	-	--	--	--	-	-						
	Monthly	-	-											-	-	-	--	--	--	-	-						
	Half Monthly													-	-	-	--	--	--	-	-	0.0	-	-			
d	Distance(Kms)	-	-											-	-	-	--	--	--	-	0.28						
e	Transport Cost (Rs.)	-	-																	-	0	-	-	-			
E	Private Milk Plants													-	-	-						-	-	-			
a	Milk Sold (% to total sale)	0	0											-	-	-	--	--	--			-	-	-			
b	Price Rs./Lit	-	-																			-	-	-			
c	Payment													0.0	0.0	0.0						-	-	-			
	Daily	-	-											-	-	-						-	-	-			
	Weekly	-	-											-	-	-						-	-	-			
	Monthly	-	-											-	-	-						-	-	-			
	Half Monthly													-	-	-						-	-	-			
d	Distance Kms)	-	-											-	-	-						-	-	-			
e	Transport Cost (Rs.)																					-	-	-			
F	Catering Services													-	-	-						-	-	-			
a	Milk Sold (% to total sale)	0	0																			-	-	-			
b	Price Rs./Lit	-	-																			-	-	-			
c	Payment													0.0	0.0	0.0						-	-	-			
	Daily	-	-											-	-	-						-	-	-			
	Weekly	-	-											-	-	-						-	-	-			
	Monthly	-	-											-	-	-						-	-	-			
d	Distance kms	-	-											-	-	-						-	-	-			
e	Transport Cost (Rs.)	-	-											-	-	-											
G	members did not sale milk to dairy	0	0																			-	-	-			
	reasons	-	-																			-	-	-			

Table 7.4: Sale of Milk and Cost of Milk Marketing- NDCS Households

SI No	Particulars NDCS	Assam		Bihar			Chhatisgarh			Jharkhand			Odisha			UP			WB		Gujarat			Rajasthan		
		LC	CB	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B
1	Milk Sold (% to total prod)	60.8	96.0	34.1	93.6	80.8	74.4	89.0	91.9	91.4	77.9	84.4	75.4	88.6	90.0	68.8	92.9	83.4	75.0	90.7	78.3	79.4	85.5	75.5	76.7	84.6
2	Agencies																									
A	DCS																									
a	Milk Sold (% to total sale)	0	0										0	0	0											
b	Price (Rs./Lit)	-	-										-	-	-				14.9	-						
c	Payment (%)												-	-	-				24.8	-						
	Daily	-	-										-	-	-				-	-						
	Weekly	-	-										-	-	-				-	-						
	Monthly	-	-										-	-	-				100	-						
	Half Monthly	-	-										-	-	-				-	-						
d	Distance(Kms)	-	-										-	-	-				-	-						
e	Transport Cost (Rs.)			---	---	---							-	-	-				0.75	-						
B	Consumer	100.0	7.0																0	-						
a	Milk Sold (% to total sale)	39.5	39.5	100.0	22.0	17.0	23.2	13.5	12.7	36.3	60.0		4.7	4.02							3.8	17.6	14.7	4.5	6.0	5.0
b	Price Rs./Lit			30.0	28.0	38.0	22.8	33.5	31.2	32.8	32.7	---	0.0	0	0				-	-	32.5	33.5	42.3	32.5	25.0	34.2
c	Payment (%)	0	0									---							-	-	-	-	-			
	Daily	0	0										-	-	-				-	-	-	-	-			
	Weekly	100	100				100	100	100	100	100	0	0	0	0				-	-	-	-	-			
	Monthly	0	0	100	100	100	100	100	100				100	100					-	-	100	100	100	100	100	100
	Half Monthly																									
d	Distance(Kms)	0.25	0.3	1.5	2	2.25				1.5	1.5	0							-	-	0.0	2.5	3.6	0.0	0.0	0.0
e	Transport Cost (Rs.)	0	0							0	0	0	0	0					-	-	0.0	10.0	11.0	0.0	0.0	0.0
C	Private vendor /Middlemen	-	-																-	-						
a	Milk Sold (% to total sale)	-	43	---	17.8	41.4	33.0	28.4	42.6	35.3	40.0	30.9									2	3	18	31	12	35
b	Price Rs./Lit	-	33.2	---	28	40	22.8	33.5	31.2	31.5	31.3	36.4	14.0	4.3	26.2	23	22	31	85	100	29	20	34	24	24	27
c	Payment (%)												0	0	0				23	22						
	Daily	-	-	---	---	---				50	50	50	0	0	0				-	-	0.0	2.0	0.0			
	Weekly	-	100	---	100	100	100	100	100	50	50	50	-	-	-	100	100	100	-	-	66.7	0.0	34.8			
	Monthly	-	-	---	100	100	100	100	100				100	100	100				-	-	33.3	100.0	65.2	100.0	100.0	100.0
	Half Monthly																		100	100						
d	Distance(Kms)	-	2.17	---	---	---				2.5	2.5	2.5							-	-	1.0	0.0	3.1			
e	Transport Cost (Rs.)	-	12.5	---	---	---													0.21	0.01	3.3	0.0	8.5			

Table 7.3 continues..

SI No	Particulars NDCS	Assam		Bihar			Chhatisgarh			Jharkhand			Odisha			UP			WB		Gujarat			Rajasthan					
		LC	CB	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	B	LC	CB	LC	CB	B	LC	CB	B			
D	Sweet Shop/ Catering etc								---	---	---	-	-	-															
a	Milk Sold (% to total sale)	-	50.0	---	60.2	41.6	21.1	24.7	13.6	28.4		69.1	20.2	19.3							1.8	1.0	0.8	5.8	17.6	7.5			
b	Price Rs./Lit	-	33.2	---	28.0	41.0	22.8	33.5	31.2	32.4		37.6	0.0	0.0	0.0					-	-	30.0	0.0	40.0	26.0	28.8	30.2		
c	Payment						23.5	25.3	30.7				0.0	0.0	0.0					-	-	2.0	0.0	8.0					
	Daily	-	-	---	---	---				33.3	33.3	33.3	0.0	0.0	0.0					-	-								
	Weekly	-	100.0	---	100	100	100	100	100	33.3	33.3	33.3	60.0	100.0						-	-				100.0	100.0	100.0		
	Monthly	-	-	---	100	100	100	100	100	33.3	33.3	33.3	40.0							-	-	100.0	0.0	100.0					
	Half Monthly	-	-																	-	-								
d	Distance(Kms)	-	2.3	---	8.0	9.5	16.7	17.7	18.1	1.5	1.5	1.0	5.0	-	-					-	-	5.0		5.0	0.9	1.8	1.5		
e	Transport Cost (Rs.)	-	11.0		50 p/L	50 p/L	6.6	10.2	11.3				10.0	-	-					-	-	10.0	0.0	10.0	2.0	2.7	3.2		
E	Private Plants																			-	-								
a	Milk Sold (% to total sale)	-	-										61.1	69.3	73.8							91.9	79.8	65.9	58.4	64.8	50.9		
b	Price Rs./Lit	-	-										0	0	0										25.4	26.3	35.2		
c	Payment												0	0	0														
	Daily	-	-										0	0	-								1.4	0.0	2.7				
	Weekly	-	-																				71.2	71.4	74.8	100.0	100.0	100.0	
	Monthly	-	-																				27.4	21.4	21.6				
	Half Monthly	-	-										100	100	100									7.1	0.9				
d	Distance Kms)	-	-										5	7	5.5								1.7	3.1	2.2	5.2	5.8	6.0	
e	Transport Cost (Rs.)	-	-										7.6	12	9.9								7.6	12.0	9.9	12.6	13.5	14.7	
F	Catering																												
a	Milk Sold (% to total sale)	-	-										-	-	-														
b	Price Rs./Lit	-	-																				0.9	0.0	0.9				
c	Payment																						25.0	0.0	33.6				
	Daily	-	-																										
	Weekly	-	-																						33.3	33.3			
	Monthly	-	-																					100.0	33.3	33.3			
d	Distance kms	-	-																					33.4	33.4				
e	Transport Cost (Rs.)	-	-																										
G	members did not sale milk to dairy	-	-																					2.0	0.0	1.1			
	reasons	-	-																					0.0	0.0	11.4			

Source: Field survey data.

Thus, in case of NDCS households, marketing channels remains traditions and maximum marketable surplus in milk was sold through informal channels, especially private traders in unorganised sector and direct sale to consumer. This is in sharp contrast to sale of milk by DCS households to dairy cooperatives.

Handling of Income from Dairying

As dairy activities are carried out mostly at household level and it has been observed that most of labour engaged in dairy activities were family labour, it is expected the dominance of female member in feeding the animals as well as handling the income of dairy. It can be seen from the Table 7.5 that only in case of sale of dairy products, income was handled by the female members while in case of sale of milk and dung, dominance of male was observed. However, sometime both of them handle it. While spending the income received from the sale of milk, priority is given to animal feed and health and then to meet family expenditure, whereas income which received from sale of milk products and dung, vice versa, i.e. family priorities taken accounts first and then animal health and feed.

Table 7.5: Details about Income received from Dairying and its use

Sr No	Particulars	Assam			Bihar			Chhatisgarh			Jharkhand			Odisha		
		Who receives income	Income spent on (share in approx.)		Who receives income	Income spent on (share in approx.)		Who receives income	Income spent on (share in approx.)		Who receives income	Income spent on (share.)		Who receives income	Income spent on (share)	
			FE	AFH		FE	AFH		FE	AFH		FE	AFH		FE	AFH
I	DCS															
A	<i>Income from dairy (sale of milk)</i>															
1	Male	57.7	56.6	43.4	95.2	37.3	62.7	91.7	54.5	38.7	66.7	65.6	32.5	45.8	44.2	55.8
2	Female	26.7			4.8			8.3			33.3			32.5		
3	Both	15.7												21.7		
B	<i>Income from sale of products</i>										NA					
1	Male	0.0	0.0	0.0	0.0			62.7	69.2	30.9				44.2		
2	Female	0.0			0.0			37.4						33.3	65.8	34.2
3	Both	0.0												22.5		
C	<i>Income sale of dung /FYM</i>										NA					
1	Male	48.4	65.3	34.7	0.0			70.3	79.6	21.5				53.3		
2	Female	32.4			0.0			29.8						29.2	55.8	44.2
3	Both	19.2			-									17.5		
II	NDCS															
A	<i>Income from dairy (sale of milk)</i>															
1	Male	66.4	65.3	34.7	94.0	41.0	59.0	79.2	38.3	61.7	78.0	52.9	47.1	62.5	59.2	40.8
2	Female	19.5			6.0			20.8			22.0			22.5		
3	Both	14.1												15.0		
B	<i>Income from sale of products</i>															
1	Male	0.0	0.0	0.0				64.9	70.1	29.9				60.8	46.7	53.3
2	Female	0.0						35.1			NA			24.2		
3	Both	0.0												15.0		
C	<i>Income sale of dung /FYM</i>															
1	Male	50.4	65.3	34.7	-			89.9	69.6	30.4	NA			66.7	62.5	37.5
2	Female	23.7						10.1						22.5		
3	Both	25.9			-									10.8		

Table 7.5 continues....

Sr No	Particulars	UP			WB			Gujarat			Rajasthan		
		Who receives income	Income spent on (share in approx.)		Who receives income	Income spent on (share in approx.)		Who receives income	Income spent on (share in approx.)		Who receives income	Income spent on (share.)	
			FE	AFH		FE	AFH		FE	AFH		FE	AFH
I	DCS												
A	<i>Income from dairy (sale of milk)</i>												
1	Male	47.0	39.7	60.3	24.2	54.7	45.3	45.0	41.7	58.5	45.0	49.1	50.9
2	Female	13.0			30.8			34.0			28.3		
3	Both	40.0			45.0			41.0			26.7		
B	<i>Income from sale of products</i>												
1	Male	0.0			0.8	54.7	45.3	41.0	54.3	45.7	39.2	48.3	51.7
2	Female	0.0			4.2			43.0			60.8		
3	Both	0.0			0.8			36.0			0.0		
C	<i>Income sale of dung /FYM</i>												
1	Male	0.0			9.2	54.7	45.3	48.0	57.5	42.5	33.3	31.9	68.1
2	Female	0.0			72.5			42.0			4.2		
3	Both	0.0			18.3			29.0			0.0		
II	NDCS												
A	<i>Income from dairy (sale of milk)</i>												
1	Male	47.0	40.6	59.4	29.2	54.5	45.5	59.0	43.1	56.9	49.2	60.4	39.6
2	Female	8.0			36.7			27.0			24.2		
3	Both	45.0			34.2			34.0			26.7		
B	<i>Income from sale of products</i>												
1	Male				1.7	54.5	45.5	39.0	69.4	30.6	15.0	63.8	36.2
2	Female				20.0			41.0			19.2		
3	Both				0.8			40.0			19.2		
C	<i>Income sale of dung /FYM</i>												
1	Male				13.3	54.5	45.5	59.0	47.8	52.2	25.0	64.0	36.0
2	Female				52.5			26.0			0.0		
3	Both				21.7			35.0			0.0		

Source: Field Survey Data.

7.4 Problems in Milk Marketing:

In spite of various developments in dairy sector over the period of time, milk marketing in India remains grossly primitive compared to its western counterparts. It begins with the largely unregulated sector, which handles the majority of the milk production, providing ample opportunity for malpractice. Some of the common forms of malpractice include false measurements in the selling of milk and adulteration of milk. Another major impediment to an efficient marketing system is the presence of numerous intermediaries, which take advantage of producers' weakness. In many cases, intermediaries dictate the price by advancing a loan to the milk producers. Producers' bargaining power is also limited because of perishability and bulkiness of milk. In addition, the lack of proper infrastructure for transportation, distribution, and storage also makes milk procurement difficult.

On the other hand, it will be impossible for most producers to market their milk without the presence of these market intermediaries. The Cooperative Societies Act continues to be restrictive rather than enabling, even though the Anand Pattern milk producers' co-operatives have emerged as the most stunningly effective institutional model for milk marketing. Political and bureaucratic interference, delayed payments to the primary producers, and the decision-making power of the administrators over marketing of milk and milk products by the district-level union and the state-level federation also adversely affect the growth of dairy co-operatives. The cooperative laws in general have inhibited the emergence of true leadership, professional management, and democratic functioning of the co-operatives.

7.5 Chapter Summary:

The chapter presents the details on milk consumption and marketable surplus at sample households. As expected, across the species, selected households had preferred to consume and process the milk of local cows, followed by buffaloes and cross breed cows. Thus buffalo and

cross bred cow milk was sold outside and local cow milk was mostly consumed at the home. While in case of NCDS households, they preferred cross bred cow milk for consumption. The disposal pattern indicates that in case of all the DCS households, they had sold milk to dairy cooperative societies and got weekly payment. The distance of dairy societies was quite closer and thus very meagre cost was incurred on transportation. The milk rate realised by the milk producer was around 22-28 in case of cow milk and around Rs. 39 in case of buffalo milk. The NDCS households opted to sale their milk to private milk plant which was maximum 17 kms away from the households for which they incurred around Rs. 6-11 cost as transportation cost. The payment was provided as per requirement and milk rate realised was around same as in case of DCS members. Few of NDCS members have sold the milk to private vendor/shop/middlemen as well as to catering services. Thus, unlike of almost 100% sale to dairy cooperative society by DCS households, NDCS households had to sale to variety of customers, where in rates are relatively lower and other facilities may not have available as like in dairy cooperatives. Thus, in case of NDCS households, marketing channels remains traditions and maximum marketable surplus in milk was sold through informal channels. This is in sharp contrast to sale of milk by DCS households to dairy cooperatives.

The next chapter presents the constraints faced in production and marketing of milk and suggestions given by the respondents.

Constraints faced in Production and Marketing of Milk and Suggestions

8.1 Introduction:

After having discussed about the issues related to marketing of milk, attempt was made to find out the constraints faced by the milk producer in production and marketing of milk as well as sought the suggestions from milk producers. This chapter discusses the details on services delivery systems and constraints faced in milk marketing.

8.2 Service Delivery System

Efficient input supply and service delivery determines the success of the dairy activity in particular region, whether provided by the government through its department, by dairy cooperative societies or by the private dairy plant/agent. The performance of the dairy sector is depends on many factors includes input supply (particularly feed) and service provision (veterinary service and Artificial Insemination (AI) or breed) or output services. There is a whole range of services that are needed to enhance the capacity of poor households to exploit the full potential of livestock production. These include health and production services such as clinical care, preventive health and provision of pharmaceutical supplies, feed and fodder supply, artificial insemination, livestock research and extension, and other market services such as credit, livestock insurance, delivery of market information, output marketing and milk collection. Good support services are critical for enhancing livestock productivity and for enabling the poor to gain access to expanding markets. This section reviews the status of livestock service delivery system existing in study area and raises some issues for efficient delivery of these services to the dairy producer.

The details of input and output service delivery experienced by selected households are presented in Tables 8.1 and 8.2. It can be seen

from the Table 8.1 that maximum DCS households in Assam, Odisha, Chhattisgarh, Jharkhand, Gujarat and Rajasthan recorded the adequate supply of cattle feed, while households in Bihar, UP and West Bengal faced constraint in supply of cattle feed through PDCS as well as from private agents in those areas. Thus dairy cooperatives in these areas need to be worked to make available cattle feed to dairy household members. Dairy households in Assam and Odisha as well as in Gujarat and Rajasthan had received cattle feed on credit by cooperative society, however most of households mentioned that cost of cattle feed and mineral mixtures was high. Thus, dairy federation in Bihar, Chhattisgarh, Jharkhand, UP and West Bengal must work out on same.

It was very disturbing to note that veterinary services were rarely available in the state of Assam, Bihar, Chhattisgarh, UP and West Bengal, while same was somehow recorded relatively better presence in Jharkhand and Odisha. Despite of low coverage of veterinary services, charges for EVS were recorded to be high. While in western states, emergency veterinary services were available while EVS charges of dairy cooperative were medium as compared to high charges by private agents. Not only the availability of vaccines and semen at the AI centre at dairy cooperatives as well as at private dairy agents was inadequate but also the delivery & applications of quality & requisite quantity of vaccines was very poor, particularly in Bihar and West Bengal. It was observed that there was no provision of loan in society or government for the purchase of cattle and no technical guidance was available to them. Most of the households mentioned that premium for insurance was medium, however, very few dairy producer had taken animal insurance.

In case of output delivery, DCS households mentioned that the milk price received by them was low and they get fortnightly payment. Almost more than three fourth of respondents in Assam, Bihar and Rajasthan and two third of respondents in Odisha had mentioned that incentives or bonus for supplying milk was low. Majority of households in all selected states except Chhattisgarh had mentioned that cross bred cow milk is acceptable in family. Dairy cooperatives do not have system of advance

payment for milk while agent or private agency has provided this facility in selected area, except in Assam.

In case of NDCS households, these households did not have facility to get any support from the dairy cooperatives existing in their area, they are fully depend on the agent or private agency to get support for input and output service systems. It can be seen from the Table 8.2 that though the supply of cattle feed and fodder was adequate with agents and private agency, which was available on credit for half of the households. Except in Jharkhand and West Bengal, availability of emergency veterinary services is very poor and whatever is available was availed at very high charges. The poor availability of vaccines and semen was also noted by NDCS households. Majority of households mentioned that charges for premium are very high and no technical support is available to them. Except in Chhattisgarh, as expected, more than 70 per cent of selected NDCS households in all states mentioned that milk price received by them are low. The majority of households received payment within 15 days or after 15 days. Except few household in Bihar and Chhattisgarh, almost all other selected households mentioned about no incentives or bonus for supplying milk and no advance payment was provided by vendors/private agency. Except selected households in Chhattisgarh and Gujarat, majority of other selected households mentioned about acceptability of cross bred cow's milk for home consumption.

Table 8.1: Details of Input and Output Service Delivery experienced by DCS households

Sr No	Particulars DCS	Assam			Bihar	Chhat- isgarh	Jhark hand	Odisha			UP	West Bengal			Gujarat			Rajasthan		
		PDCS	Agent	Private agent	All	All	All	PDCS	Private Agent	Govt	All	PDCS	Agent	Private agent	PDCS	Agent	Private agent	PDCS	Agent	Govt.
A	Input Delivery (%)																			
1	Supply of Cattle Feed																			
	Adequate	84.2	-	72.5	19.2	55.8	82.5	86.7	96.7	-	-	22.5	-	26.3	94.7	-	96.0	90.0	7.5	
	Inadequate	15.8	-	27.5	37.5	44.2	17.5	13.3	3.3	-	100.0	77.5	-	73.8	5.3	-	4.0	1.7	2.5	
	Not Available	0.0	-	0.0	43.3	0.0	---	0.0	0.0	-	-	-	-	-	0.0	-	0.0	0.0		
2	Cattle feed & fodder seed on Credit																			
	Available	75.8	-	73.3	25.0	0.0	---	90.0	95.8	-	7.5	0	-	62.8	85.1	-	92.3	90.8	9.2	
	Not Available	24.2	-	26.7	75.0	100.0	100.0	10.0	4.2	-	92.5	100	-	37.2	14.9	-	7.7	0.0		
3	Cost of cattle feed & mineral mixture																			
	High	85.0	-	90.0	68.3	97.5	100.0	91.7	95.0	-	98.3	6.7	-	94.3	51.6	-	85.2	90.8	9.2	
	ok	15.0	-	10.0	NA	2.5	---	8.3	5.0	-	1.7	93.3	-	5.7	36.6	-	11.1			
	Not Available	0.0	-	0.0	31.7	0.0	---	0.0	0.0	-	-	-	-	-	11.8	-	3.7			
4	Emergency Veterinary Services																			
	Available	14.2	-	48.3	33.3	9.2	73.3	58.3	80.8	-	40.8	0	-	100.0	93.9	-	100.0		75.0	
	Not Available	85.8	-	51.7	66.7	90.8	26.7	41.7	19.2	-	59.2	100	-	0.0	6.1	-	0.0		25.0	
5	Charges for EVS																			
	High	79.2	-	83.3	87.5	66.7	100.0	9.2	74.2	-	100.0	-	-	95	34.4	0.0	77.3		80.8	
	Medium	20.8	-	16.7	12.5	20.8	---	65.8	25.8	-	-	-	-	5.0	52.1	100	13.6		19.2	
	Low	0.0	-	0.0	NA	12.5	---	25.0	0.0	-	-	-	-	0.0	13.5	0.0	9.1			
	Rs/Visit				300.0		256.0				100.0	-	-						903.7	
	Vaccines																			
	Adequate	59.2	-	-	14.2	100.0	64.2	95.8	-	-	51.7	0.0	-	1.7	95.8	-	-			74.2
	Inadequate	34.2	-	-	30.8	0.0	35.8	3.3	-	-	48.3	0.0	-	98.3	1.7	-	-			16.7
	Not Available	6.7	-	-	55.0	0.0	---	0.8	-	-	-	100.0	-	0.0	2.5	-	-			9.2
6	Delivery & applications of quality & requisite quantity of vaccines																			
	Yes	72.5	-	-	29.2	100.0	65.8	95.0	-	-	55.0	-	-	1.7	89.2	-	-			74.2
	No	27.5	-	-	70.8	0.0	34.2	5.0	-	-	45.0	-	-	98.3	10.8	-	-			16.7
7	Semen - AI centre																			
	Adequate	40.8	-	-	19.2	100.0	76.7	95.5	-	-	44.2	-	-	0.0	94.2	-	-	70.0	30.0	
	Inadequate	21.7	-	-	54.2	0.0	23.3	5.0	-	-	55.8	-	-	100	3.3	-	-			
	Not Available	37.5	-	-	26.7	0.0	---	0.0	-	-	-	-	-	0.0	2.5	-	-			

Table 8.1 :

Sr No	Particulars DCS	Assam			Bihar	Chhat- isgarh	Jhark hand	Odisha			UP	West Bengal			Gujarat			Rajasthan		
		PDCS	Agent	Private agent	All	All	All	PDCS	Private Agent	Govt	All	PDCS	Agent	Private agent	PDCS	Agent	Private agent	PDCS	Agent	Govt.
8	Provision of loan in society or govt.																			
	Adequate	28.3	-	-	2.5	13.3	---	-	-	-	-	0.0	-	0.0	26.1	-	100.0			
	Inadequate	34.2	-	-	30.8	76.7	---	-	-	-	1.7	0.0	-	0.0	10.9	-	0.0			
	Not Available	37.5	-	-	66.7	10.0	100	100	-	-	98.8	100	-	100	63.0	-	0.0	100		
9	Charges for insurance																			
	Very high	34.2	-	-	NA	67.5	NA	-	-	-	80.8	-	-	-	11.7	-	-			
	High	49.2	-	-	99.0	12.5	NA	-	-	-	19.2	-	-	-	25.0	-	-			
	Medium	16.7	-	-	1.0	20.0	NA	-	-	-	-	-	-	-	63.3	-	-			
10	Technical Guidance				NA	64.2												60.0		
	Available	30.0	-	-		100.0		3.3	-	-		100	-	100	42.5	-	-			
	Not available	70.0	-	-		0.0		96.7	-	-		0.0	-	0.0	57.5	-	-			
B	Output Delivery (%)																			
1	Milk Price(Rs./lit)																			
	Adequate	0.0	-	-	17.5	1.7	---	27.5	-	-	-	0.0	-	0.0	38.3	-	-	3.3		
	Low	100.0	-	-	82.5	98.3	100	72.5	-	-	100	100	-	100	61.7	-	-	96.7		
2	Payment of Milk																			
	Immediate	0.0	-	-	NA	5.0	---	0.0	-	-	-	0.0	-	0.0	0.0	-	-			
	Within 2 days	0.0	-	-	NA	26.7	---	0.0	-	-	-	0.0	-	0.0	0.0	-	-			
	Within 15 days	100.0	-	-	NA	68.3	---	100.0	-	-	100	100	-	0.0	100	-	-	100.0		
	More than 15 days	0.0	-	-				0.0				0.0	-	100						
3	incentives or bonus for supplying milk																			
	Adequate	1.7	-	-	23.3	59.2	---	35.0	-	-	87.5	-	-	-	65.0	-	-	22.5		
	Low	98.3	-	-	76.7	40.8	100	65.0	-	-	12.5	-	-	-	35.0	-	-	77.5		
	Not Available	0.0	-	-				0.0				100	-	100						
4	Acceptability CB cow milk in family																			
	Poor	6.7	-	-	10.8	34.2	---	17.0	-	-	22.5	0.0	-	-	5.8	-	-	16.7		
	Acceptable	82.5	-	-	74.2	9.2	100	83.0	-	-	77.5	100	-	-	69.2	-	-	83.3		
	Not acceptable	10.8	-	-	5.0	56.7	---		-	-	-	0.0	-	-	25.0	-	-			
5	Advance payment for milk by society/ vendors																			
	Available	72.5	-	-	18.3	0.0	---	0.0	-	-	-	0.0	-	-	0.0	100	100	26.7		
	Not available	27.5	-	-	81.7	100.0	100.0	100.0	-	-	100.0	100.0	-	-	100.0	0.0	0.0	73.3		

Source: Field Survey Data.

Table 8.2: Details of Input and Output Service Delivery experienced by NDCS households

Sr No	Particulars NDCS	Assam			Bihar	Chhat- isgarh	Jhark hand	Odisha			UP	West Bengal			Gujarat			Rajasthan		
		PDCS	Agent	Private agent	All	All	All	PDCS	Private Agent	Govt	All	PDCS	Agent	Private agent	PDCS	Agent	Private agent	PDCS	Agent	Govt.
A	Input Delivery (%)																			
1	Supply of Cattle Feed																			
	Adequate	-	-	76.67	3.3	78.3	69.2	-	90.0	69.2	-	-	-	7.5	-	-	69.2	-	73.3	
	Inadequate	-	-	23.33	28.3	21.7	30.8	-	10.0	30.8	100.0	-	-	92.5	-	-	15.8	-	26.7	
	Not Available	-	-	0	68.3	0.0	---	-	0.0	0.0	-	-	-	0.0	-	-	15.0	-		
2	Cattle feed & fodder seed on Credit																			
	Available	-	-	72.5	20.8	0.0	100.0	-	85.0	0.0	5.0	-	-	74.2	-	100.0	53.4	-	45.8	
	Not Available	-	-	27.5	79.2	100.0	---	-	15.0	0.0	95.0	-	-	25.8	-	100.0	46.6	-	54.2	
3	Cost of cattle feed & mineral mixture																			
	High	-	-	86.67	68.3	96.7	100.0	-	100.0	-	100.0	-	-	100.0	-	-	49.2	-	86.7	
	ok	-	-	13.33	5.0	3.3	---	-	-	-	-	-	-	0.0	-	-	6.7	-	13.3	
	Not Available	-	-	0	26.7	0.0	---	-	-	-	-	-	-	-	-	-	44.2	-		
4	Emergency Veterinary Services																			
	Available	-	-	12.5	33.3	10.8	63.3	-	-	25.8	29.2	-	-	100.0	-	-	25.8	-	38.3	
	Not Available	-	-	87.5	66.7	89.2	36.7	-	-	74.2	70.8	-	-	0.0	-	-	74.2	-	61.7	
5	Charges for EVS																			
	High	-	-	80	80.8	71.7	100.0	-	-	76.5	100.0	-	-	98.3	-	80.0	76.5	-	91.7	
	Medium	-	-	20	19.2	22.5	---	-	-	21.7	-	-	-	1.7	-	0.0	21.7	-	8.3	
	Low	-	-	0	NA	5.8	---	-	-	1.7	-	-	-	0.0	-	20.0	1.7	-		
	Rs/Visit	-	-	-	350.0	-	182.5	-	-	-	100.0	-	-	-	-	-	-	-	997.5	
	Vaccines																			
	Adequate	-	-	56.67	12.5	100.0	62.5	-	-	18.2	45.0	-	-	2.5	-	14.3	18.2	-	48.3	
	Inadequate	-	-	31.67	53.3	0.0	37.5	-	-	33.3	55.0	-	-	97.5	-	52.4	33.3	-		
	Not Available	-	-	11.67	34.2	0.0	---	-	-	48.5	-	-	-	0.0	-	33.3	48.5	-	46.7	
6	Delivery & applications of quality & requisite quantity of vaccines																			
	Yes	-	-	73.33	20.8	100.0	60.0	-	-	25.0	50.0	-	-	2.5	-	6.3	25.0	-	48.3	
	No	-	-	26.67	79.2	0.0	40.0	-	-	75.0	50.0	-	-	97.5	-	93.8	75.0	-	46.7	
7	Semen - AI centre																			
	Adequate	-	-	33.33	3.3	100.0	66.7	-	8.3	15.6	35.0	-	-	0.0	-	8.3	15.6	-	40.0	
	Inadequate	-	-	19.17	40.8	0.0	33.3	-	91.7	15.6	65.0	-	-	100.0	-	91.7	15.6	-		
	Not Available	-	-	47.5	55.8	0.0	---	-	0.0	68.8	-	-	-	0.0	-	0.0	68.8	-	60.0	

Table 8.2:

Sr No	Particulars NDCS	Assam			Bihar	Chhat- isgarh	Jhark hand	Odisha			UP	West Bengal			Gujarat			Rajasthan		
		PDCS	Agent	Private agent	All	All	All	PDCS	Private Agent	Govt	All	PDCS	Agent	Private agent	PDCS	Agent	Private agent	PDCS	Agent	Govt.
8	Provision of loan in society or govt.																			
	Adequate	-	-	3.33	NA	12.6	70.8	-	0.0		-	-	-	-	0.0	3.8				
	Inadequate	-	-	7.5	NA	67.3	29.2	-	0.0		100.0	-	-	25.0	-	0.0	8.9			
	Not Available	-	-	89.17	NA	20.1	---	-	100.0		-	-	-	75.0	-	100.0	87.3		100.0	
9	Charges for insurance																			
	Very high	-	-	40.83	NA	56.7	NA	-	-	-	86.7	-	-	-	-	81.8	34.5			
	High	-	-	39.17	NA	12.5	NA	-	-	-	13.3	-	-	-	-	18.2	56.3			
	Medium	-	-	20	NA	30.8	NA	-	-	-	-	-	-	-	-	0.0	9.2			
10	Technical Guidance				NA		56.7				-								25.0	
	Available	-	-	23.33		25.8		-	7.5	-		100.0	-	100.0	-	-	12.5			
	Not available	-	-	76.67		74.2		-	92.5	-		0.0	-	0.0	-	-	87.5			
B	Output Delivery (%)																			
1	Milk Price(Rs./lit)	-	-	-				-		-										
	Adequate	-	-	0	30.0	89.2	---	-	23.0	-	-	0.0	-	0.0	-	0.0	23.7		5.8	
	Low	-	-	100	70.0	10.8	100.0	-	77.0	-	100.0	100.0	-	100.0	-	100.0	76.3		94.2	
2	Payment of Milk																			
	Immediate	-	-	0	NA	10.8	---	-	0.0	-	-	0.0	-	0.0	-	0.0	0.0			
	Within 2 days	-	-	0	NA	23.3	---	-	0.0	-	-	0.0	-	0.0	-	0.0	0.0		4.2	
	Within 15 days	-	-	0	62.5	65.8	100.0	-	33.0	-	100.0	100.0	-	0.0	-	33.3	33.3		36.7	
	More than 15 days			100					67.0	-		0.0	-	100.0		66.7	66.7		59.2	
3	incentives or bonus for supplying milk																			
	Adequate	-	-	0	30.0	18.3	---	-	-	-	-	-	-	-	-	6.3	0.0			
	Low	-	-	0	70.0	81.7	---	-	-	-	-	-	-	-	-	6.3	3.8			
	Not Available			0				-	100.0	-		-	-	100.0		87.5	96.2		100.0	
4	Acceptability CB cow milk in family																			
	Poor	-	-	10.83	8.3	31.7	25.7	-	9.7	-	23.3	-	-	0.0	-	-	9.2		8.3	
	Acceptable	-	-	75	85.0	18.3	74.3	-	90.3	-	76.7	-	-	100.0	-	-	17.5		91.7	
	Not acceptable	-	-	14.17	6.7	50.0	---	-	0.0	-	-	-	-	0.0	-	-	73.3			
5	Advance payment for milk by society/ vendors																			
	Available	-	-	78.33	58.3	0.0	100.0	-	0.0	-	-	-	-	0.0	-	-	0.0		40.8	
	Not available	-	-	21.67	41.7	100.0	---	-	100.0	-	100.0	-	-	100.0	-	-	100.0		59.2	

Source: Field Survey Data.

8.3 Infrastructural Constraints:

The details on infrastructural constraints faced by the selected household are presented in Table 8.3. It can be seen from the table that in case of DCS households across the States, the four major infrastructural constraints were unavailability of emergency veterinary services, infrequent visit of veterinary staff, unavailability of cattle feed and fodder seed on credit, low average milk yield of the milk animals and lack of improved equipments. The underlying causes behind the major infrastructural constraints faced by NDCS were infrequent visit of veterinary staff, lack of training facilities, unavailability of emergency veterinary services and lack of improved equipments. Besides the above mentioned constraints, other constraints reported were unavailability of vaccines, occasional availability of semen at AI Centre, unsuitability of the time of delivery of milk during winter due to bitter cold in early hours of the day, and unavailability of green/dry fodder throughout the year.

8.4 Economic Constraints:

The details on economic constraints faced by the selected household are presented in Table 8.4. It can be seen from the table that in case of DCS households, the major economic constraints were low price of milk offered, high cost of fodder seed, high cost of cattle feed and miner mixtures, high charges of emergency veterinary services as well as high cost of veterinary medicines, low price of milk offered (except in Odisha and Chhattisgarh) along with low incentives or bonus for supplying milk. The underlying causes behind the major economic constraints faced by NDCS were almost same as experienced by the DCS members while only the difference is that DCS members were attached to dairy cooperative thus could get necessary support to the extent available. While NDCS households had to get all the services from private agencies and thus had faced the constrains such as high cost of veterinary services, high charges of emergency veterinary services, high

cost of cattle feed and mineral mixtures, low price of milk offered, high cost of fodder seed, low provision of loan in society or government for purchasing of cattle and low incentives or bonus for supplying milk and high charges for insurance.

8.5 Marketing Constraints:

The details on economic constraints faced by the selected household are presented in Table 8.5. It can be seen from the table the major marketing constraints faced by the DCS households were less knowledge about marketing strategies and low risk taking behaviour. The NDCS households has faced four marketing constraints viz., less knowledge about marketing strategies, no or less advance payment for milk by society/vendors, lack of time for marketing and low risk taking behaviour.

8.6 Technical Constraints:

The details on technical constraints faced by the selected household are presented in Table 8.6. It can be seen from the table the major main technical constraints faced by the DCS and NDCS households across the States were lack of technical guidance (except in WB), Unavailability of high genetic merit bull and Poor conception rate through artificial insemination. Besides, NDCS households have faced other constraints such as Poor knowledge about Feeding and health care and Lack of knowledge about cheap & scientific housing of animal.

8.7 Socio-Psychological Constraints:

The details on socio-psychological constraints faced by the selected household are presented in Table 8.7. It can be seen from the table the major socio-psychological constraints reported by DCS as well as NDCS households were lack of purchasing power (except Odisha and NDCS households in Chhattisgarh) and lower socio-economic conditions. Lack of time due to busy in domestic/agricultural work was another problems faced by them.

Table 8.3: Details on Infrastructural Constraints faced by Selected Households

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	Lack of improved equipments																		
	Never	23.3	21.7	12.5	4.2	54.2	53.3	-	-	18.3	43.3	15.8	16.7	12.5	10.0	41.7	30.8	31.7	37.5
	Sometime	60.8	66.7	63.3	75.8	12.5	12.5	-	-	42.5	27.5	40.8	38.3	92.5	82.5	28.3	21.7	17.5	33.3
	Always	15.8	11.7	24.2	20.0	33.3	34.2	77.5	72.5	39.2	29.2	43.3	45.0	65.0	69.2	30.0	47.5	50.8	29.2
2	Irregular & inadequate supply of cattle feed																		
	Never	55.8	52.5	1.7	8.3	21.7	48.3	-	-	18.3	43.3	50.8	50.0	0.0	0.0	47.5	39.2	74.2	63.3
	Sometime	27.5	25.0	39.2	67.5	49.2	28.3	17.5	40.0	49.2	27.5	49.2	50.0	24.2	23.3	33.3	32.5	21.7	24.2
	Always	16.7	22.5	59.2	24.2	29.2	23.3	-	-	32.5	29.2	-	-	75.8	76.7	19.2	28.3	4.2	12.5
3	Unavailability of emergency veterinary services																		
	Never	14.2	12.5	8.3	14.2	9.2	21.7	-	-	29.2	44.2	-	-	0.0	0.0	33.3	21.7	32.5	30.8
	Sometime	18.3	22.5	38.3	64.2	66.7	66.7	26.7	40.0	50	34.2	14.2	14.2	20.0	20.0	30.8	22.5	39.2	31.7
	Always	67.5	65.0	53.3	21.7	24.2	11.7	-	-	20.8	21.7	85.9	85.9	80.0	80.0	35.8	55.8	28.3	37.5
4	Infrequent visit of veterinary staff																		
	Never	20.0	20.0	NA	10.0	14.2	14.2	-	-	23.3	28.3	-	-	0.0	0.0	38.3	10.0	25.8	13.3
	Sometime	24.2	25.0	65.8	62.5	21.7	22.5	51.7	55.8	50.8	59.2	10.0	8.3	23.3	20.8	32.5	14.2	34.2	37.5
	Always	55.8	55.0	34.2	27.5	64.2	63.3	10.0	44.2	25.8	12.5	90.0	91.7	76.7	79.2	29.2	75.8	40.0	49.2
5	Unavailability of vaccines																		
	Never	59.2	56.7	1.7	5.8	23.3	66.7	-	-	33.3	38.3	84.2	86.7	0.0	0.0	51.7	35.8	71.7	44.2
	Sometime	34.2	31.7	49.2	54.2	56.7	23.3	33.3	43.3	43.3	50.8	15.8	13.3	21.7	21.7	32.5	19.2	19.2	26.7
	Always	6.7	11.7	49.2	40.0	20.0	10.0	-	-	23.3	10.8	-	-	78.3	78.3	15.8	45.0	9.2	29.2
6	Occasional Availability of semen at the AI centre																		
	Never	40.8	33.3	8.3	8.3	24.2	25.8	-	-	34.2	31.7	-	-	0.0	0.0	43.3	35.0	60.0	45.8
	Sometime	21.7	19.2	71.7	53.3	27.5	27.5	35.0	45.8	48.3	57.5	90.8	91.7	10.0	14.2	25.8	31.7	15.0	24.2
	Always	37.5	47.5	20.0	38.3	48.3	46.7	-	-	17.5	10.8	9.2	8.3	90.0	85.8	30.8	33.3	25.0	30.0
7	Lack of training facilities																		
	Never	30.0	4.2	53.3	75.8	4.2	0.0	-	-	25	44.2	-	-	0.0	0.0	25.0	18.3	9.2	15.0
	Sometime	45.8	12.5	44.2	24.2	29.2	10.8	-	-	56.7	43.3	2.5	-	0.0	0.0	38.3	20.0	11.7	30.0
	Always	24.2	83.3	2.5	NA	66.7	89.2	35.8	64.2	18.3	12.5	97.5	100.0	100.0	100.0	36.7	61.7	79.2	55.0

Table 8.3...

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
8	Unsuitability of the time of delivery of milk during winters due to bitter cold in early hours of the day																		
	Never	32.5	36.7	4.2	NA	78.3	78.3	-	-	38.3	53.3	-	-	100.0	100.0	40.8	46.7	50.0	60.0
	Sometime	59.2	53.3	72.5	64.2	14.2	11.7	31.7	28.3	50.8	37.5	100.0	100.0	0.0	0.0	42.5	42.5	44.2	37.5
	Always	8.3	10.0	23.3	35.8	7.5	10.0	46.7	71.7	10.8	9.2	-	-	0.0	0.0	16.7	10.8	5.8	2.5
9	Unavailability of green/dry fodder throughout the year																		
	Never	29.2	32.5	42.5	21.7	10.0	8.3	-	-	40.8	56.7	-	-	25.8	17.5	33.3	30.8	41.7	27.5
	Sometime	47.5	40.8	57.5	78.3	12.5	11.7	71.7	65.0	45.8	25.8	19.3	17.5	74.2	82.5	37.5	46.7	48.3	43.3
	Always	23.3	26.7	NA	NA	77.5	80.0	-	-	13.3	17.5	81.7	82.5	0.0	0.0	29.2	22.5	10.0	29.2
10	Unavailability of cattle feed and fodder seed on credit																		
	Never	22.5	25.0	24.2	5.8	9.2	11.7	-	63.3	49.2	72.5	-	-	16.7	16.7	37.5	38.3	65.8	48.3
	Sometime	53.3	47.5	46.7	53.3	14.2	10.0	-	36.7	25.8	20	10.8	13.3	37.5	35.0	41.7	30.0	21.7	28.3
	Always	24.2	27.5	29.2	40.8	76.7	78.3	100.0	-	25	7.5	89.2	86.7	45.8	48.3	20.8	31.7	12.5	23.3
11	Low average milk yield of the milk animals																		
	Never	25.8	14.2	6.7	6.7	11.8	15.8	-	-	42.5	77.5	-	-	0.0	0.0	39.2	32.5	25.8	28.3
	Sometime	40.0	45.0	93.3	76.7	19.4	17.5	39.2	35.0	41.7	20	32.5	42.5	0.0	0.0	40.0	43.3	40.8	40.0
	Always	34.2	40.8	NA	16.7	68.8	66.7	60.8	65.0	15.8	2.5	67.5	57.5	100.0	100.0	20.8	24.2	33.3	31.7

Table 8.4: Details on Economic Constraints faced by Selected Households

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	High cost of fodder seed																		
	Never	15.8	15.0	NA	NA	8.3	8.3	-	-	28.3	10.0	-	-	6.7	0.0	17.5	27.5	15.0	10.0
	Sometime	22.5	23.3	35.8	26.7	14.2	13.3	41.7	45.0	54.2	72.5	27.5	26.7	64.2	30.0	23.3	12.5	10.8	15.8
	Always	61.7	61.7	64.2	73.3	77.5	78.3	58.3	55.0	27.0	17.5	72.5	73.3	29.2	70.0	59.2	60.0	74.2	74.2
2	Delay in payment of milk																		
	Never	56.7	45.8	NA	15.8	89.2	92.5	-	60.0	45.0	20.8	-	-	100.0	53.3	50.0	40.8	79.2	65.0
	Sometime	30.8	40.0	33.3	75.0	10.8	7.5	52.5	40.0	36.7	71.7	-	-	0.0	46.7	28.3	22.5	12.5	22.5
	Always	12.5	14.2	66.7	9.2	0.0	0.0	47.5	---	18.3	7.5	100	100	0.0	0.0	21.7	36.7	8.3	12.5
3	Low price of milk offered																		
	Never	0.0	0.0	NA	4.2	10.0	53.3	-	-	61.7	52.5	-	-	0.0	0.0	10.8	10.0	16.7	20.8
	Sometime	0.0	0.0	25.0	55.0	10.8	24.2	-	-	14.2	38.3	-	-	0.0	0.0	21.7	22.5	10.0	25.8
	Always	100.0	100.0	75.0	40.8	79.2	22.5	100	100	24.2	9.2	100	100	100	100	67.5	67.5	73.3	53.3
4	High cost of cross bred cow																		
	Never	0.0	0.0	NA	NA	14.2	9.2	-	-	49.2	68.3	-	-	0.0	0.0	33.3	35.0	30.8	28.3
	Sometime	0.0	0.0	9.2	32.5	12.5	22.5	-	-	10.0	9.2	79.2	69.2	26.7	25.0	27.5	21.7	27.5	27.5
	Always	100.0	100.0	90.8	67.5	73.3	68.3	100.0	100.0	40.8	22.5	20.8	30.8	73.3	75.0	39.2	43.3	41.7	44.2
5	High cost of veterinary medicines																		
	Never	0.0	0.0	NA	NA	11.7	12.5	-	-	45.0	36.7	-	-	0.0	0.0	24.2	5.8	6.7	8.3
	Sometime	14.2	15.8	10.0	34.2	24.2	25.8	35.0	41.7	15.8	15.8	-	-	19.2	24.2	35.0	17.5	39.2	40.0
	Always	85.8	84.2	90.0	65.8	64.2	61.7	65.0	58.3	39.2	47.5	100.0	100.0	80.8	75.8	40.8	76.7	54.2	51.7
6	High cost of cattle feed and mineral mixture																		
	Never	0.0	0.0	NA	NA	14.2	10.8	-	-	28.3	37.5	-	-	0.0	0.0	20.8	17.5	15.0	9.2
	Sometime	15.8	16.7	14.2	35.0	23.3	26.7	-	-	28.3	10.0	-	-	0.0	0.0	22.5	15.8	39.2	28.3
	Always	84.2	83.3	85.8	65.0	62.5	62.5	100.0	100.0	43.3	52.5	100	100	100	100	56.7	66.7	45.8	62.5

Table 8.4..

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
7	Low provision of loan in society or govt. for purchasing cattle																		
	Never	28.3	3.3	NA	NA	15.8	15.8	-	-	14.2	34.2	-	-	0.0	0.0	36.7	35.8	27.5	35.8
	Sometime	34.2	7.5	30.0	25.8	24.2	35.8	-	49.2	32.5	10.8	-	-	0.0	10.8	29.2	16.7	17.5	14.2
	Always	37.5	89.2	70.0	74.2	60.0	48.3	100.0	-	53.3	55.0	100.0	100.0	100	89.2	34.2	47.5	55.0	50.0
8	Low incentives or bonus for supplying milk																		
	Never	1.7	0.0	NA	NA	0.0	0.0	-	-	6.7	23.3	-	-	0.0	0.0	43.3	33.3	41.7	40.8
	Sometime	0.0	0.0	11.7	29.2	33.3	0.0	57.5	-	25.0	8.3	-	-	0.0	0.0	30.8	19.2	20.8	27.5
	Always	98.3	0.0	88.3	70.8	66.7	100.0	42.5	-	68.3	68.3	100	100	100	100	25.8	47.5	37.5	31.7
9	High charges of emergency veterinary services																		
	Never	0.0	0.0	NA	NA	0.0	0.0	-	-	14.2	11.7	-	-	0.0	0.0	28.3	12.5	13.3	22.5
	Sometime	20.8	20.0	16.7	20.0	9.2	46.7	60.0	50.8	26.7	21.7	-	-	0.0	0.0	29.2	19.2	16.7	24.2
	Always	79.2	80.0	83.3	80.0	90.8	53.3	40.0	49.2	59.2	66.7	100	100	100	100	42.5	68.3	70.0	53.3
10	High charges for insurance																		
	Never	16.7	20.0	NA	NA	0.0	10.0	NA	NA	6.7	5.8	-	-	NA	NA	45.8	45.8	66.7	60.8
	Sometime	34.2	39.2	16.7	19.2	8.3	23.3	NA	NA	26.7	41.7	-	-	NA	NA	19.2	12.5	8.3	21.7
	Always	49.2	40.8	83.3	80.8	91.7	66.7	NA	NA	36.2	52.5	-	-	NA	NA	35.0	41.7	25.0	17.5

Source: Field Survey Data.

Table 8.5: Details on Marketing Constraints faced by Selected Households

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	Irregular sell of milk																		
	Never	79.2	59.2	17.5	15.0	85.8	89.2	82.5	35.0	28.3	18.3	16.0	13.0	100.0	100.0	65.83	54.17	95.8	69.2
	Sometime	16.7	17.5	82.5	73.3	10.0	9.2	17.5	65.0	52.5	81.7	93.0	102	0.0	0.0	25.00	15.00	2.5	20.8
	Always	4.2	23.3	NA	11.7	4.2	1.7	-	-	19.2	0.0	11.0	5.0	0.0	0.0	9.17	30.83	1.7	10.0
2	Lack of time for marketing																		
	Never	43.3	29.2	9.2	NA	66.7	65.8	77.5	44.2	63.3	68.3	79.0	80.0	NR	NR	42.50	27.50	47.5	33.3
	Sometime	29.2	21.7	55.0	56.7	23.3	24.2	22.5	55.8	25.8	21.7	40.0	36.0	NR	NR	30.00	24.17	26.7	35.8
	Always	27.5	49.2	25.8	43.3	10.0	10.0	-	-	10.8	10.0	1.0	4.0	NR	NR	27.50	48.33	25.8	30.8
3	Less knowledge about marketing strategies																		
	Never	26.7	21.7	NA	NA	10.0	34.2	-	-	44.2	62.5	1.0	-	NR	NR	16.67	17.50	54.2	14.2
	Sometime	25.0	26.7	41.7	38.3	12.5	22.5	29.2	27.5	19.2	7.5	28.0	36.0	NR	NR	30.00	10.83	35.8	25.8
	Always	48.3	51.7	58.3	61.7	77.5	43.3	70.8	72.5	36.7	30.0	91.0	84.0	NR	NR	53.33	71.67	10.0	60.0
4	Low risk taking behaviour																		
	Never	37.5	33.3	NA	NA	10.0	45.0	-	30.8	18.3	22.5	44.0	42.0	NR	NR	35.00	31.67	24.2	28.3
	Sometime	25.8	28.3	55.8	25.8	20.8	35.8	33.3	69.2	18.3	5.8	48.0	43.0	NR	NR	25.83	22.50	25.0	25.0
	Always	36.7	38.3	44.2	74.2	69.2	19.2	66.7	-	63.3	71.7	28.0	35.0	NR	NR	39.17	45.83	50.8	46.7
5	No or less advance payment for milk by society/vendors																		
	Never	58.3	24.2	NA	NA	0.0	100.0	-	-	71.5	75.0	-	-	0.0	0.0	42.50	22.50	48.3	46.7
	Sometime	27.5	13.3	55.0	48.3	0.0	0.0	-	65.0	28.3	25.0	2.0	3.0	0.0	0.0	26.67	18.33	25.8	22.5
	Always	14.2	62.5	45.0	51.7	100.0	0.0	100.0	35.0	0.0	0.0	118.0	117.0	100.0	100.0	30.83	59.17	25.8	30.8
6	Inability to market for value added products																		
	Never	26.7	21.7	NA	NA	0.0	100.0	-	-	18.3	6.7	-	-	12.5	7.5	54.17	40.83	59.2	55.0
	Sometime	48.3	51.7	12.5	20.8	0.0	0.0	-	-	52.5	58.3	109.0	106.0	22.5	21.7	30.00	23.33	21.7	30.0
	Always	25.0	26.7	87.5	79.2	100.0	0.0	100.0	100.0	29.2	35.0	11.0	14.0	65.0	70.8	15.83	35.83	19.2	15.0

Source: Field Survey Data.

Table 8.6: Details on Technical Constraints faced by Selected Households

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	Lack of technical guidance																		
	Never	19.2	11.7	17.5	NA	10.0	75.8	21.7	-	11.7	21.7	-	-	100.0	100.0	18.3	10.8	6.7	14.2
	Sometime	25.8	20.8	56.7	17.5	13.3	11.7	55.0	33.3	70.0	68.3	16.7	13.3	0.0	0.0	24.2	20.8	16.7	8.3
	Always	55.0	67.5	25.8	82.5	76.7	12.5	23.3	66.7	18.3	10.0	83.3	86.7	0.0	0.0	57.5	68.3	76.7	77.5
2	Unavailability of high genetic merit bull																		
	Never	26.7	21.7	NA	NA	23.3	53.3	-	-	50.0	41.7	-	-	0.0	0.0	39.2	32.5	41.7	20.0
	Sometime	48.3	51.7	36.7	24.2	55.8	35.0	-	-	24.2	30.8	8.3	6.7	0.0	0.0	35.0	31.7	16.7	36.7
	Always	25.0	26.7	63.3	75.8	20.8	11.7	100.0	100.0	25.8	27.5	91.7	93.3	100.0	100.0	25.8	35.8	41.7	43.3
3	Poor conception rate through artificial insemination																		
	Never	14.2	12.5	13.3	18.2	19.2	47.5	32.5	35.8	18.3	31.7	-	-	0.0	0.0	33.3	27.5	33.3	25.0
	Sometime	40.0	30.8	59.2	49.2	35.0	33.3	67.5	64.2	11.7	15.0	37.5	38.3	0.0	0.0	40.8	30.0	27.5	34.2
	Always	45.8	56.7	27.5	32.5	45.8	19.2	-	-	70.0	53.3	62.5	61.7	100.0	100.0	25.8	42.5	39.2	40.8
4	Poor knowledge about Feeding and health care																		
	Never	25.0	18.3	17.5	14.2	18.3	78.3	-	-	10.0	5.0	36.7	37.5	0.0	0.0	14.2	15.8	16.7	10.8
	Sometime	26.7	26.7	60.8	60.0	45.8	21.7	70.8	59.2	26.7	17.5	23.3	22.5	0.0	0.0	34.2	24.2	41.7	27.5
	Always	48.3	55.0	21.7	25.8	35.8	0.0	29.2	40.8	63.3	77.5	40.0	40.0	100.0	100.0	51.7	60.0	41.7	61.7
5	Lack of knowledge about cheap & scientific housing of animal																		
	Never	25.8	14.2	NA	NA	7.5	51.7	-	-	11.7	0.0	0.8	-	0.0	0.0	22.5	20.0	29.2	20.8
	Sometime	34.2	40.8	66.7	39.2	24.2	29.2	39.2	38.3	66.7	68.3	3.3	3.3	0.0	0.0	37.5	30.0	24.2	33.3
	Always	40.0	45.0	33.3	60.8	68.3	19.2	60.8	61.7	21.7	31.7	95.8	96.7	100.0	100.0	40.0	50.0	46.7	45.8

Source: Field Survey Data.

Table 8.7: Details on Socio-Psychological Constraints faced by Selected Households

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	Lower socio- economic conditions																		
	Never	24.2	21.7	NA	NA	9.2	56.7	-	-	45.0	40.0	15.83	17.5	9.2	6.7	33.33	24.17	54.2	42.5
	Sometime	38.3	29.2	50.8	60.8	11.7	34.2	30.0	26.7	36.7	53.3	84.17	82.5	30.0	19.2	28.33	27.50	18.3	19.2
	Always	37.5	49.2	49.2	39.2	79.2	9.2	70.0	73.3	18.3	6.7	-	-	60.8	74.2	38.33	48.33	27.5	38.3
2	Lack of purchasing power																		
	Never	22.5	17.5	16.7	4.2	0.0	77.5	-	-	56.7	67.5	-	-	0.0	0.0	15.00	6.67	44.2	25.0
	Sometime	31.7	28.3	60.0	58.3	23.3	22.5	34.2	33.3	18.3	26.7	100	100	0.0	0.0	36.67	33.33	21.7	26.7
	Always	45.8	54.2	38.3	37.5	76.7	0.0	65.8	66.7	25.0	5.8	-	-	100.0	100.0	48.33	60.00	34.2	48.3
3	Lack of time due to busy in domestic/ agricultural work																		
	Never	22.5	23.3	4.2	11.7	19.2	68.3	-	-	36.7	36.7	49.17	47.5	91.7	80.0	25.00	30.00	36.7	35.8
	Sometime	43.3	39.2	53.3	50.0	14.2	24.2	65.0	68.3	20.8	19.2	50.83	52.5	8.3	20.0	46.67	36.67	36.7	43.3
	Always	34.2	37.5	42.5	38.3	66.7	7.5	35.0	31.7	42.5	44.2	-	-	0.0	0.0	28.33	33.33	26.7	20.8
4	Lack of cooperation and coordination among members																		
	Never	60.8	54.2	13.3	14.2	9.2	100.0	39.2	36.7	24.2	44.2	-	-	NR	NR	40.00	43.33	77.5	62.5
	Sometime	27.5	25.0	37.5	60.0	13.3	0.0	60.8	63.3	18.3	0.8	100.0	100.0	NR	NR	40.83	29.17	19.2	26.7
	Always	11.7	20.8	49.2	25.8	77.5	0.0	-	-	57.5	55.0	-	-	NR	NR	19.17	27.50	3.3	10.8
5	Milk producers are meant for influential people																		
	Never	65.0	57.5	12.5	7.5	56.7	23.3	-	-	16.7	5.0	-	-	NR	NR	47.50	40.00	79.2	47.5
	Sometime	27.5	25.0	37.5	55.0	32.5	13.3	70.0	57.5	51.7	40.0	88.3	90.0	NR	NR	41.67	30.83	20.0	35.0
	Always	7.5	17.5	50.0	37.5	10.8	63.3	30.0	42.5	31.7	55.0	11.7	10.0	NR	NR	10.83	29.17	0.8	17.5
6	Milk of cross-bred cow has poor acceptability (family members)																		
	Never	64.2	55.8	51.7	45.0	9.2	10.0	25.8	20.9	16.7	5.8	52.5	50.0	100.0	100.0	53.33	63.33	66.7	62.5
	Sometime	26.7	26.7	39.2	43.3	34.2	32.5	74.2	79.2	58.3	60.0	47.5	50.0	0.0	0.0	30.00	15.83	23.3	25.0
	Always	9.2	17.5	9.2	11.7	56.7	57.5	-	-	25.0	34.2	-	-	0.0	0.0	16.67	20.83	10.0	12.5

Source: Field Survey Data.

8.8 Other Constraints:

The details on other constraints faced by the selected household are presented in Table 8.8. The common constraints faced by the both DCS and NDCS households were poor knowledge about scientific animal husbandry practises and dairy farming, poor livestock extension services, lack of awareness about quality of milk, lack of veterinary services in village for quality milk production and poor housing to milch animals. Besides these constraints, NDCS households faced other constraints such as lack of marketing facility for dairy business, unavailability of chilling facilities at village level for milk preservation, unavailability of medicine and equipments required for quality milk production.

8.9 Suggestions:

In order to have corrective steps in existing scheme, attempt was made to have suggestions on same. The DCS households had offered more suggestions than NDCS households (Table 8.9). Majority of DCS and NDCS households have suggested that veterinary literature should be provided in village, need to improve service delivery, loan sanction procedure should be made easy, subsidies should be given on certain inputs like veterinary medicines, fodder seeds, etc. Besides, NDCS had made suggestions were marketing facilities be provided at village level for the outlet of milk and milk products, need to provide technical knowledge to manage the dairy enterprise. The selected households in Bihar, UP, West Bengal and Assam had faced many constraints and thus made many suggestions for the development of dairy sector in the state.

Table 8.8: Details on Other Constraints faced by Selected Households

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	Unavailability of chilling facilities at village level for milk preservation	34.2	65.8	36.7	33.3	100.0	100.0	61.7	60.0	24.2	49.2	87.5	95.0	0.0	64.2	21.7	47.5	54.2	64.2
2	Diversion of feed and fodder ingredients for industrial use	19.2	16.7	NA	NA	9.2	7.5	26.7	22.5	14.2	15.0	-	-	NR	NR	14.2	10.0	4.2	5.8
3	Majority of grazing lands are either degraded or encroached	45.0	53.3	43.3	48.3	27.5	44.2	60.0	36.7	30.0	34.2	65.0	65.8	23.3	22.5	27.5	31.7	16.7	14.2
4	Poor access to organized markets deprive farmers in getting proper milk price	40.0	48.3	46.7	43.3	89.2	45.0	44.2	44.2	35.8	28.3	26.7	27.5	12.5	22.5	25.8	31.7	30.8	45.8
5	Irregular quality electricity supply	25.8	26.7	46.7	44.2	0.0	0.0	53.3	51.7	17.5	16.7	72.5	90.8	0.0	0.0	13.3	14.2	31.7	45.0
6	Poor irrigation facility to grow fodder crops	54.2	53.3	40.0	36.4	75.8	35.0	59.2	55.0	38.3	39.2	5.0	5.0	0.0	0.0	38.3	35.8	25.8	41.7
7	Non availability of improved fodder seed	37.5	31.7	NA	NA	89.2	36.7	49.2	47.0	30.0	36.0	-	-	16.7	78.3	37.5	30.8	35.0	54.2
8	Poor livestock extension services	54.2	65.0	39.2	25.8	34.2	56.7	61.7	62.5	54.5	53.3	91.7	90.0	24.2	58.3	45.0	54.2	57.5	66.7
9	Poor knowledge about scientific animal husbandry practices and dairy farming	58.3	67.5	40.0	43.3	78.3	42.5	65.8	65.0	54.2	60.0	91.7	91.7	45.0	59.2	52.5	59.2	63.3	65.0
10	Poor knowledge of mastitis (mastitis in dairy animal) in dairy animals	38.3	40.8	37.5	40.8	9.2	7.5	-	-	31.7	36.0	76.7	80.0	72.5	87.5	36.7	29.2	30.0	30.8
11	Lack of awareness about quality milk production	55.8	66.7	29.2	45.0	43.3	9.2	48.3	70.0	64.2	65.8	83.3	85.9	100.0	100.0	47.5	61.7	65.8	67.5
12	Poor housing to milch animals	42.5	46.7	46.7	48.3	89.2	23.3	39.2	34.2	42.5	46.8	66.7	81.7	22.5	32.5	40.0	40.8	64.2	65.0
13	Unavailability of medicine and equipment required for quality milk production	46.7	52.5	39.2	35.0	75.8	34.2	48.3	49.2	40.8	46.0	82.5	85.8	60.0	65.0	38.3	43.3	55.8	51.7
14	Lack of milk testing and animal screening facilities	58.3	70.8	37.5	40.8	78.3	23.3	38.3	40.0	40.0	47.5	91.7	98.3	50.8	52.5	26.7	35.8	24.2	21.7
15	Lack of veterinary services in village for quality milk production	52.5	58.3	39.2	43.3	65.0	66.7	72.5	72.5	50.8	52.0	88.3	85.0	60.0	65.0	45.8	50.0	48.3	70.8
16	Lack of nutrition's feed for quality milk production	45.8	54.2	45.0	36.7	64.2	13.3	33.3	50.0	47.5	49.2	88.3	86.7	50.0	61.7	40.8	46.7	45.0	49.2

Source: Field Survey Data.

Table 8.8....

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
17	Lack of ecto parasites control programmes	38.3	49.2	39.2	41.7	89.2	34.2	-	-	29.2	27.5	-	-	NAW	NAW	30.0	25.0	23.3	24.2
18	Lack of finance to invest in dairy business for quality milk production/ Inadequate finance	55.8	63.3	43.3	45.0	34.2	38.3	72.5	30.0	32.5	39.2	52.5	55.8	100.0	100.0	30.8	33.3	26.7	26.7
19	Lack of necessary space required for tying the milking animals	27.5	34.2	20.0	23.3	23.3	34.2	-	-	25.8	30.0	67.5	70.0	18.3	18.3	20.8	24.2	18.3	10.8
20	Lack of marketing facility for dairy business	44.2	60.0	34.2	43.3	13.3	9.2	-	-	54.2	46.6	79.2	81.7	20.8	57.5	37.5	50.8	40.8	45.8
21	Uneconomical capital investment on quality milk production	38.3	41.7	41.7	40.0	89.2	17.5	56.7	-	25.8	25.0	45.0	50.0	NAW	NAW	23.3	21.7	25.8	21.7
22	Lack of water supply	32.5	38.3	NA	NA	35.8	7.5	-	-	32.5	34.2	5.8	3.3	0.0	0.0	25.8	28.3	25.0	33.3
23	Inadequate labour supply	35.8	37.5	34.2	35.0	13.3	55.8	22.5	14.2	24.2	28.3	6.7	-	0.0	0.0	22.5	24.2	14.2	10.8
24	Ecological factors- High heat/temperature, High cold, etc	36.7	35.0	39.2	31.7	89.2	79.2	27.5	28.3	26.7	28.3	84.8	89.2	0.0	0.0	27.5	24.2	46.7	52.5
25	Competition from established and large units	22.5	34.2	NA	NA	79.2	57.5	42.5	29.2	0.0	0.0	84.2	86.7	0.0	0.0	13.3	21.7	10.0	16.7
26	Difficulty to store milk in summer	39.2	50.0	34.2	36.7	13.3	67.5	25.8	20.8	41.7	40.8	78.4	90.8	0.0	0.0	29.2	39.2	39.2	54.2
27	low acceptability of AI in buffalo	-	-	30.0	25.8	85.8	76.7	33.3	32.5	79.3	80.7	70.8	75.0	NA	NA	14.2	14.2	33.3	39.2
28	Disease outbreak: mortality and morbidity	16.7	15.8	NA	NA	35.0	45.0	-	-	63.7	70.0	62.5	65.0	23.3	36.7	12.5	9.2	12.5	10.8
29	Politics in Cooperative is not good	52.5	45.0	33.3	NA	89.2	0.0	80.0	75.8	30.0	26.3	68.3	54.2	NR	NR	22.5	10.0	9.2	15.0

Source: Field Survey Data.

Table 8.9: Suggestions for improvement in adoption of dairy schemes

No.	Particulars	Assam		Bihar		Chhatisgarh		Jharkhand		Odisha		UP		WB		Gujarat		Rajasthan	
		DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS	DCS	NDCS
1	Marketing facilities be provided at village level for the outlet of milk and milk products	52.5	40.8	82.5	78.3	NA	NA	42.5	35.0	44.2	40.0	71.7	100.0	20.8	57.5	45.8	39.2	49.2	74.2
2	Providing technical knowledge to manage the dairy Enterprise	41.7	32.5	93.3	93.3	NA	NA	19.2	40.0	76.7	65.7	88.3	86.7	100.0	100.0	38.3	26.7	44.2	58.3
3	There should be regular and planned supply of vaccines (100%)	31.7	25.8	95.8	95.0	NA	NA	52.5	34.2	61.7	33.3	97.5	95.8	100.0	100.0	22.5	11.7	29.2	25.0
4	Subsidies should be given on certain inputs like veterinary medicines, fodder seeds, etc.	48.3	51.7	96.7	99.2	NA	NA	45.8	29.2	34.2	30.8	100.0	100.0	100.0	100.0	27.5	30.8	40.8	45.0
5	Enhanced milk price for the producers	70.8	65.8	92.5	93.3	NA	NA	100.0	100.0	40.0	32.0	95.0	95.8	100.0	100.0	39.2	27.5	55.0	50.0
6	Loan sanction procedure should be made easy	62.5	58.3	65.0	62.5	NA	NA	90.0	88.3	60.0	71.0	41.7	45.0	25.8	10.8	40.8	28.3	50.0	50.8
7	The loan amount for the purchase dairy animals need to be increased	37.5	26.7	40.0	35.8	NA	NA	40.0	47.5	45.0	24.2	41.7	43.3	14.2	4.2	29.2	15.0	30.0	35.0
8	Concentrates should be made available at cheaper rate and in time	17.5	24.2	88.3	87.5	NA	NA	42.5	50.0	45.0	60.0	100.0	100.0	100.0	100.0	10.8	15.0	54.2	30.0
9	Providing proper A.I. facility at village level /door step	48.3	51.7	100.0	100.0	NA	NA	43.3	65.0	48.3	60.0	100.0	100.0	100.0	100.0	20.8	25.0	36.7	35.8
10	Cost of veterinary services need to be reduced	60.0	55.8	96.7	90.0	NA	NA	50.8	37.5	34.2	43.3	100.0	100.0	100.0	100.0	29.2	21.7	39.2	43.3
11	Provide veterinary literature in village	65.8	57.5	81.7	76.7	NA	NA	-	-	45.0	41.7	100.0	100.0	100.0	100.0	47.5	37.5	50.8	80.8
12	Small scale dairy industries be encouraged at village level	27.5	26.7	90.8	89.2	NA	NA	50.8	42.5	33.3	58.3	90.0	90.8	25.8	18.3	14.2	13.3	24.2	18.3
13	Need to improve service delivery	49.2	45.8	80.0	67.5	NA	NA	37.5	41.7	78.3	81.7	83.3	80.8	100.0	100.0	37.5	37.5	64.2	60.8

Future Challenges

“Failure is never final, and success never ending.” Former Chairman Kurien bears out this statement perfectly to describe the current status of the dairy industry in India. The Indian dairy industry needs to focus simultaneously on the four-fold challenge of quality, product development, infrastructure-support development, and global marketing. Equally urgent is the need for strategic alliances with some of the leading dairy companies in the world for technical collaboration and marketing tie-ups. Raw-milk handling needs to be upgraded in terms of physico-chemical and microbiological attributes of the milk collected. Better operational efficiencies are needed to improve yield, reduce waste, minimize fat and protein losses during processing, control production costs, save energy, and extend shelf life. The adoption of Good Manufacturing Practices (GMP) would help manufacture milk products that conform to international standards and thus make exports competitive.

8.10 Constraints faced by PDCS /Private Dairy Units

During the field survey, various constraints faced by the selected Primary Dairy Cooperative Societies (PDCS) and Private Dairy Units (PDU) were gathered. The constraints (such as milk supply related, infrastructure related and marketing related) faced by the selected primary dairy cooperative societies and private dairy units are presented in this section.

8.10.1 Constraints faced by PDCS /Private Dairy Units in Assam:

Table 8.10 shows the milk supply related constraints faced by the PDCS and PDUs. Table shows that the major constraint faced by PDCS pertaining to milk supply was unavailability of green/ dry fodder throughout the year. Other problems faced by them were, no or less provision for advance payment for milk by the society or vendors; poor quality, irregular & inadequate supply of milk, infrequent visit of veterinary staff, late delivery, unavailability of emergency veterinary services, unavailability of vaccines and low average milk yield of the milch animals. The major constraint faced by PDU was inability to provide cattle feed and fodder seed on credit. Most of

them also faced problems like, poor quality, irregular & inadequate supply of milk, unavailability of green/ dry fodder throughout the year and low average milk yield.

Table 8.10 Milk Supply related Constraints faced by the PDCS & Private Dairy Units in Assam

SI No	Constraints	Milk Supply related Constraints faced by (% to total responses) in Assam							
		PDCS (% to total responses)				PDU (% to total responses)			
		Nagaon	Barpeta	Kamrup(R)	Jorhat	Nagaon	Barpeta	Kamrup (R)	Jorhat
1	Huge number of small producers								
	Never	0	0	0	50	12.5	27.5	0	0
	Sometime	50	0	100	0	27.5	48.5	0	62.5
	Always	50	100	0	50	60	24	100	37.5
2	No or less provision for advance payment for milk by society or vendors								
	Never	0	0	0	25	0	0	12.5	87.5
	Sometime	50	0	0	25	25	100	62.5	12.5
	Always	50	100	100	50	75	0	25	0
3	Unable to provide cattle feed and fodder seed on credit to members								
	Never	0	100	0	50	0	0	0	0
	Sometime	50	0	50	50	0	0	0	0
	Always	50	0	50	0	100	100	100	100
4	Poor Quality milk								
	Never	0	0	0	0	0	25.5	50	0
	Sometime	50	50	100	100	12.5	45.5	12.5	12.5
	Always	50	50	0	0	87.5	29	37.5	87.5
5	Irregular & inadequate supply of milk								
	Never	0	0	0	0	0	0	50	0
	Sometime	0	100	100	50	0	0	25	25
	Always	100	0	0	50	25	25	25	75
6	Late delivery								
	Never	50	0	0	0	45.5	62.5	50	25
	Sometime	50	100	100	100	37.5	25	12.5	37.5
	Always	0	0	0	0	17	12.5	37.5	37.5
7	Unavailability of emergency veterinary services								
	Never	0	0	0	0	0	0	0	0
	Sometime	50	100	0	50	0	25	0	50
	Always	50	0	100	50	25	0	25	50
8	Infrequent visit of veterinary staff								
	Never	50	0	0	0	0	0	0	0
	Sometime	50	50	100	100	0	25	0	50
	Always	0	50	0	0	25	0	25	50
9	Unavailability of vaccines								
	Never	50	50	0	0	0	0	0	0
	Sometime	50	50	100	100	0	25	12.5	62.5
	Always	0	0	0	0	25	0	12.5	37.5
10	Occasional availability of semen at the AI centre								
	Never	0	0	0	50	0	0	0	0
	Sometime	100	50	100	50	0	25	12.5	62.5
	Always	0	50	0	0	25	12.5	0	37.5
11	Unsuitability of the time of delivery of milk during winters due to bitter cold in early hours of the day								
	Never	100	100	100	100	25	25	12.5	87.5
	Sometime	0	0	0	0	0	0	0	12.5
	Always	0	0	0	0	0	0	12.5	0
12	Unavailability of green/ dry fodder throughout the year								
	Never	0	0	0	0	0	0	0	0
	Sometime	0	0	0	0	0	0	0	0
	Always	100	100	100	100	25	25	25	100
13	Low average milk yield of the milk animals in area								
	Never	50	0	0	50	0	0	0	0
	Sometime	0	50	0	50	0	0	12.5	25
	Always	50	50	100	0	25	25	12.5	75
14	Lack of cooperation and coordination among members								
	Never	100	100	100	100	25	25	12.5	37.5
	Sometime	0	0	0	0	0	0	12.5	37.5
	Always	0	0	0	0	0	0	0	25

Source: Field Survey Data

Table 8.11: Infrastructure related Constraints faced by the PDCS & PDUs in Assam

Sl No	Constraints	Infrastructure related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Nagaon	Barpeta	Kamrup	Jorhat	Nagaon	Barpeta	Kamrup	Jorhat
1	Unavailability of chilling facilities at village level for milk preservation								
	Never	0	0	0	0	50	12.5	0	0
	Sometime	50	0	50	0	25	25.5	0	0
	Always	50	100	50	100	25	62	100	100
2	Lack of improved equipment								
	Never	0	0	0	50	0	40.5	0	0
	Sometime	50	0	100	0	100	35	50	0
	Always	50	100	0	50	0	22.5	50	100
3	Lack of necessary space required for dairy operation								
	Never	100	50	52	0	50	0	25	62.5
	Sometime	0	50	50	0	0	0	25	12.5
	Always	0	0	0	100	50	100	50	25
4	Lack of training facilities								
	Never	0	0	0	0	0	0	0	0
	Sometime	50	0	0	0	0	50	0	0
	Always	50	100	100	100	100	50	100	100

Source: Field Survey Data.

Table 8.12: Market related Constraints faced by the PDCS & PDU in Assam

Sl No	Constraints	Market related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Nagaon	Barpeta	Kamrup	Jorhat	Nagaon	Barpeta	Kamrup	Jorhat
1	Inability to market for value-added products								
	Never	0	0	0	0	50	25	24.5	0
	Sometime	50	0	100	50	50	25	25	50
	Always	50	100	0	50	0	50	50.5	50
2	Competition from private dairy								
	Never	0	0	0	0	0	0	100	100
	Sometime	50	0	0	50	0	100	0	0
	Always	50	100	100	50	100	0	0	0
3	Poor Road infrastructure								
	Never	50	0	12.5	0	25	12.5	12.5	0
	Sometime	0	50	0	50	50	75	12.5	0
	Always	50	50	87.5	50	25	12.5	75	100
4	Unstable prices of milk								
	Never	0	0	0	0	50	12.5	25	12.5
	Sometime	50	0	100	50	25	62.5	50	50
	Always	50	100	0	50	25	25	25	37.5
5	Competition from imported dairy product								
	Never	0	0	0	0	12.5	0	0	0
	Sometime	50	0	0	50	50.5	0	50	0
	Always	50	100	100	50	37	100	50	100

Source: Field Survey Data

Infrastructure related constraints cited by the sample PDCS and PDU were recorded and presented in Table 8.11. Lack of training facility was major constraint for both PDCS and PDU. Other constraints of both PDCS and PDU included un-availability of chilling facilities at village level for milk

preservation, lack of improved equipment and lack of necessary space required for dairy operation *etc.* Table 8.12 depicts the market related constraints faced by the DCS and PDUs. The major constraint as reported by the sample PDCS and PDU was the competition from imported dairy products while, competition from private dairy, unstable prices of milk, inability to market for value-added products and poor road infrastructure were the other marketing constraints faced by the both groups, with varying severity in different districts.

8.10.2 Constraints faced by PDCS /Private Dairy Units in Chhattisgarh

It is observed from the Table 8.13 that no/less provision for advance payment for milk by the societies/ vendors, unavailability of cattle feed and fodder seed on credit, unavailability of emergency veterinary services, infrequent visit of veterinary staff, unsuitability of time of delivery of milk during winter due to bitter cold in early hours of the day, unavailability of green/dry fodder throughout the year, occasional availability of semen at AI centres and low average yield of milch animals were found to major constraints always faced by the majority of milk cooperative societies /private dairy units in the area under study. The constraints which were found to be faced sometimes by the milk cooperative societies /private dairy units and reported by the majority of respondents were poor quality of milk, late delivery of milk and irregular & inadequate supply of milk. The constraints which were found be never faced by the milk cooperative societies /private dairy units and reported by the majority of respondents is unavailability of vaccine for treatment of diseases.

The constraints which were found to be faced by the milk cooperative societies /private dairy units in infrastructural facilities presented in table 8.14. It is observed from the data that unavailability of chilling facilities, lack of improved equipments, and training facilities were found to be major infrastructural constraints always faced by majority of respondents in the study area. The infrastructural constraints which were found be never faced by the milk cooperative societies /private dairy units and reported by the majority of respondents is lack of necessary space required for dairy

operation, hence there is sufficient space available for development of dairy farms in the area under study. The constraints which were found to be faced by the milk cooperative societies /private dairy units in marketing of milk presented in table 8.15.

Table 8.13: Milk Supply related Constraints faced by the PDCS & PDU in Chhattisgarh

No	Constraints	Milk Supply related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Raipur	Bilaspur	Durg	Ranandgaon	Raipur	Bilaspur	Durg	Ranandgaon
1	High number of small producers								
	Never	10	7.5	10	9.2	12.8	12.5	10	11.8
	Sometime	15	7.5	20	14.2	25.6	15	17.5	19.4
	Always	75	85	70	76.7	61.5	72.5	72.5	68.8
2	No or less provision for advance payment for milk by society or vendors								
	Never	27.5	25	12.5	21.7	20	15	7.5	14.2
	Sometime	40	47.5	60	49.2	27.5	22.5	15	21.7
	Always	32.5	27.5	27.5	29.2	52.5	62.5	77.5	64.2
3	Unable to provide cattle feed and fodder seed on credit to members								
	Never	5	10	12.5	9.2	15	7.5	0	7.5
	Sometime	65	70	65	66.7	2.5	17.5	22.5	14.2
	Always	30	20	22.5	24.2	82.5	75	77.5	78.3
4	Poor Quality milk								
	Never	12.8	12.5	10	11.8	10	7.5	10	9.2
	Sometime	25.6	15	17.5	19.4	15	7.5	20	14.2
	Always	61.5	72.5	72.5	68.8	75	85	70	76.7
5	Irregular & inadequate supply of milk								
	Never	0	0	0	0	12.5	5	7.5	8.3
	Sometime	17.5	10	5	10.8	20	5	10	11.7
	Always	82.5	90	95	89.2	67.5	90	82.5	80
6	Late delivery								
	Never	25	27.5	25	25.8	42.5	50	52.5	48.3
	Sometime	27.5	27.5	27.5	27.5	32.5	27.5	25	28.3
	Always	47.5	45	47.5	46.7	25	22.5	22.5	23.3
7	Unavailability of emergency veterinary services								
	Never	20	17.5	5	14.2	57.5	55	87.5	66.7
	Sometime	27.5	12.5	27.5	22.5	35	30	5	23.3
	Always	52.5	70	67.5	63.3	7.5	15	7.5	10
8	Infrequent visit of veterinary staff								
	Never	15	7.5	25	15.8	77.5	72.5	77.5	75.8
	Sometime	27.5	32.5	12.5	24.2	15.0	15.0	5.0	11.7
	Always	57.5	60	62.5	60	7.5	12.5	17.5	12.5
9	Unavailability of vaccines								
	Never	60	87.5	85	77.5	90	95	82.5	89.2
	Sometime	30	2.5	10	14.2	10	5	17.5	10.8
	Always	10	10	5	8.3	0	0	0	0
10	Occasional availability of semen at the AI centre								
	Never	47.5	45	47.5	46.7	67.5	90	82.5	80
	Sometime	27.5	27.5	27.5	27.5	20	5	10	11.7
	Always	25	27.5	25	25.8	12.5	5	7.5	8.3
11	Unsuitability of the time of delivery of milch during winters due to bitter cold in early hours of the day								
	Never	15	10	17.5	14.2	25	10	7.5	14.2
	Sometime	17.5	15	5	12.5	22.5	40	7.5	23.3
	Always	67.5	75	77.5	73.3	52.5	50	85	62.5
12	Unavailability of green/ dry fodder throughout the year								
	Never	0	0	0	0	52.5	60	47.5	53.3
	Sometime	47.5	37.5	15	33.3	35	17.5	20	24.2
	Always	52.5	62.5	85	66.7	12.5	22.5	32.5	22.5
13	Low average milk yield of the milk animals in area								
	Never	15	12.5	5	10.8	17.5	20	10	15.8
	Sometime	32.5	32.5	15	26.7	42.5	35	30	35.8
	Always	52.5	55	80	62.5	40	45	60	48.3
14	Lack of cooperation and coordination among members								
	Never	7.5	12.5	10	10	0	0	0	0
	Sometime	17.5	7.5	12.5	12.5	0	0	0	0
	Always	75	80	77.5	77.5	0	0	0	0

Table 8.14: Infrastructure related Constraints faced by the PDCS & NDCS in Chhattisgarh

No.	Constraints	Infrastructure related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Raipur	Bilaspur	Durg	Ranandgaon	Raipur	Bilaspur	Durg	Ranandgaon
1	Unavailability of chilling facilities at village level for milk preservation.								
	Never	0	0	0	0	5	2.5	5	4.2
	Sometime	17.5	10	5	10.8	37.5	25	25	29.2
	Always	82.5	90	95	89.2	57.5	72.5	70	66.7
2	Lack of improved equipment								
	Never	5	10	12.5	9.2	32.5	17.5	20	23.3
	Sometime	30	20	22.5	24.2	25	20	15	20
	Always	65	70	65	66.7	42.5	62.5	65	56.7
3	Lack of necessary space required for dairy operation								
	Never	90	90	95	89	75	85	70	76.7
	Sometime	10	10	5	11	15	7.5	20	14.2
	Always	0	0	0	0	10	7.5	10	9.2
4	Lack of training facilities								
	Never	5	2.5	5	4.2	0	0	0	0
	Sometime	37.5	25	25	29.2	16	10	5	12
	Always	57.5	72.5	70	66.7	84	90	95	88

Table 8.15: Market related Constraints faced by the PDCS & PDU in Chhattisgarh

No.	Constraints	Market related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Raipur	Bilaspur	Durg	Ranandgaon	Raipur	Bilaspur	Durg	Ranandgaon
1	Inability to market for value-added products								
	Never	0	0	0	0	52.5	62.5	85	66.7
	Sometime	10	10	5	11	47.5	37.5	15	33.3
	Always	90	90	95	89	0	0	0	0
2	Competition from private dairy								
	Never	25	27.5	25	25.8	0	0	0	0
	Sometime	27.5	27.5	27.5	27.5	0	0	0	0
	Always	47.5	45	47.5	46.7	0	0	0	0
3	Poor Road infrastructure								
	Never	0	0	0	0	57.5	72.5	70	66.7
	Sometime	25	20	22.5	22.5	42.5	27.5	30	33.4
	Always	75	80	77.5	77.5	0	0	0	0
4	Unstable prices of milk								
	Never	5	10	12.5	9.2	75	85	70	76.7
	Sometime	65	70	65	66.7	15	7.5	20	14.2
	Always	30	20	22.5	24.2	10	7.5	10	9.2
5	Completion from imported dairy product								
	Never	100	100	100	100	52.5	62.5	77.5	64.2
	Sometime	0	0	0	0	27.5	22.5	15	21.7
	Always	0	0	0	0	20	15	7.5	14.2

It is observed from the data that inability to market for value added products, competition from private dairy farms and unstable price of milk are major constraints in marketing of milk which were found to be always face by majority of milk cooperative societies, while private dairy units were never faced these constraints in the study area.

8.10.3 Constraints faced by PDCS /Private Dairy Units in Odisha

It can be seen from the table 8.16 that top three constraints faced by both the groups are high numbers of small producers, irregular and

inadequate supply of milk, Unavailability of emergency veterinary services and low average milk yield of milk animals in area. Besides, these DPCS faced problems of not having the provision of advance payment for milk to milk producers, which was sometime available with PDUs

Table 8.16: Milk Supply related Constraints faced by the PDCS & PDU in Odisha

No.	Constraints	Milk Supply related Constraints faced by (% to total responses)			
		PDCS (% to total responses)		PDU (% to total responses)	
		Cuttack	Dhenkanal	Cuttack	Dhenkanal
1	High number of small producers				
	Never	00.00	00.00	00.00	00.00
	Sometime	00.00	00.00	00.00	00.00
	Always	50.00	50.00	50.00	50.00
2	No or less provision for advance payment for milk by society or vendors				
	Never	50.00	50.00	25.00	25.00
	Sometime	00.00	00.00	25.00	25.00
	Always	00.00	00.00	00.00	00.00
3	Unable to provide cattle feed and fodder seed on credit to members				
	Never	00.00	00.00	25.00	25.00
	Sometime	25.00	75.00	25.00	25.00
	Always	00.00	00.00	00.00	00.00
4	Poor Quality milk				
	Never	00.00	00.00	00.00	00.00
	Sometime	25.00	75.00	25.00	25.00
	Always	00.00	00.00	25.00	25.00
5	Irregular & inadequate supply of milk				
	Never	00.00	00.00	00.00	00.00
	Sometime	25.00	25.00	25.00	25.00
	Always	25.00	25.00	25.00	25.00
6	Late delivery				
	Never	00.00	00.00	00.00	00.00
	Sometime	50.00	50.00	35.00	25.00
	Always	00.00	00.00	15.00	25.00
7	Unavailability of emergency veterinary services				
	Never	00.00	00.00	00.00	00.00
	Sometime	50.00	50.00	40.00	25.00
	Always	00.00	00.00	10.00	25.00
8	Infrequent visit of veterinary staff				
	Never	00.00	00.00	00.00	00.00
	Sometime	30.00	40.00	25.00	25.00
	Always	20.00	10.00	25.00	25.00
9	Unavailability of vaccines				
	Never	00.00	00.00	00.00	00.00
	Sometime	25.00	25.00	40.00	25.00
	Always	25.00	25.00	10.00	25.00
10	Occasional availability of semen at the AI centre				
	Never	00.00	00.00	00.00	00.00
	Sometime	10.00	25.00	30.00	25.00
	Always	40.00	25.00	20.00	25.00
11	Unsuitability of the time of delivery of milk during winters due to bitter cold in early hours of the day				
	Never	50.00	50.00	25.00	25.00
	Sometime	00.00	00.00	25.00	25.00
	Always	00.00	00.00	00.00	00.00
12	Unavailability of green/ dry fodder throughout the year				
	Never	00.00	00.00	00.00	00.00
	Sometime	35.00	12.50	25.00	25.00
	Always	15.00	37.50	25.00	25.00
13	Low average milk yield of the milk animals in area				
	Never	00.00	00.00	00.00	00.00
	Sometime	35.00	30.00	40.00	30.00
	Always	15.00	20.00	10.00	20.00
14	Lack of cooperation and coordination among members				
	Never	00.00	00.00	00.00	00.00
	Sometime	40.00	30.00	35.00	40.00
	Always	10.00	20.00	15.00	10.00

Table 8.17: Infrastructure related Constraints faced by the PDCS & PDU in Odisha

No.	Constraints	Milk Supply related Constraints faced by (% to total responses)			
		PDCS (% to total responses)		PDU (% to total responses)	
		Cuttack	Dhenkanal	Cuttack	Dhenkanal
1	Unavailability of chilling facilities at village level for milk preservation.				
	Never	00.00	00.00	00.00	00.00
	Sometime	10.00	40.00	20.00	25.00
	Always	25.00	25.00	30.00	25.00
2	Lack of improved equipment				
	Never	10.00	10.00	10.00	15.00
	Sometime	25.00	15.00	25.00	10.00
	Always	15.00	25.00	15.00	25.00
3	Lack of necessary space required for dairy operation				
	Never	35.00	20.00	25.00	20.00
	Sometime	15.00	30.00	15.00	30.00
	Always	00.00	00.00	10.00	
4	Lack of training facilities				
	Never	10.00	20.00	10.00	12.50
	Sometime	15.00	10.00	10.00	12.50
	Always	25.00	20.00	30.00	25.00

Table 8.18: Market related Constraints faced by the PDCS & PDU in Odisha

No.	Constraints	Milk Supply related Constraints faced by (% to total responses)			
		PDCS (% to total responses)		PDU (% to total responses)	
		Cuttack	Dhenkanal	Cuttack	Dhenkanal
1	Inability to market for value-added products				
	Never	10.00	15.00	15.00	0.00
	Sometime	25.00	10.00	25.00	25.00
	Always	15.00	25.00	10.00	25.00
2	Competition from private dairy				
	Never	0.00	0.00	0.00	0.00
	Sometime	10.00	10.00	10.00	15.00
	Always	40.00	40.00	40.00	35.00
3	Poor Road infrastructure				
	Never	0.00	0.00	10.00	10.00
	Sometime	30.00	25.00	25.00	20.00
	Always	20.00	25.00	15.00	20.00
4	Unstable prices of milk				
	Never	0.00	0.00	0.00	0.00
	Sometime	25.00	20.00	0.00	0.00
	Always	25.00	30.00	50.00	50.00
5	Competition from imported dairy product				
	Never	0.00	0.00	0.00	0.00
	Sometime	25.00	25.00	10.00	5.00
	Always	25.00	25.00	40.00	45.00

It is observed from the data that unavailability of chilling facilities, lack of improved equipments, and training facilities were found to be major infrastructural constraints always faced by majority of respondents units in the study area. Among market related constraints, competition from private dairy farms, inability to market for value added products and unstable price of milk are major constraints in marketing of milk which were found to be always face by majority of milk cooperative societies, while private dairy units were never faced these constraints in the study area.

8.10.4 Constraints faced by PDCS /Private Dairy Units in West Bengal

From Table 8.19 it is seen that inability on the part of DCS to make advance payment to milk producers is visualized as one of the major hurdles. The DCSs were unable to provide feed and fodder seeds on credit. Inadequate and irregular supply of milk had been a problem in Bankura and Nadia. However, all the DCS were of the opinion that the average milk yield in the respective areas was sometimes low. Unavailability of emergency veterinary services and infrequent visit by veterinary staff had been a serious obstacle in Nadia, North and South Twenty Four Parganas. Large number of small producers in Nadia and South Twenty Four Parganas posed serious problem of monitoring and follow-up activities by the DCSs. In Bankua, South and North Twenty Four Parganas Scarcity of green fodder throughout the year had also been a serious problem.

Among the infrastructural constraints lack of training facilities and necessary space for diary activities turned out to be major constraints (Table 8.20). In addition lack of improved equipment and scarcity of decentralized chilling facilities sometimes posed hindrance to activities of DCSs. Market related constraints included DCS's inability to market value added milk products in all districts. In fact there was no provision at the DCS level to process milk and produce value added products. The DCSs generally collected and chilled the milk in their chilling plant located centrally and transport it to the milk unions. The DCSs of Nadia, North and South Twenty Four Parganas faced competition from private dairy operating in the districts (Table 8.21). The primary dairy cooperatives of Bankura and North Twenty Four Parganas complained about occasionally poor roadway infrastructure. In South twenty Four Parganas roadway communication had long been difficult. Instability of milk price was another difficulty faced by DCSs.

Table 8.19: Milk Supply related Constraints faced by the PDCS & PDU in WB

No.	Constraints	Milk Supply related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Bankura	Nadia	South 24 Parganas	North 24 Parganas	Bankura	Nadia	South 24 Parganas	North 24 Parganas
1	High number of small producers								
	Never	25.0	0.0	0.0	25.0	-	-	-	-
	Sometime	0.0	12.5	0.0	0.0	-	-	-	-
	Always	0.0	12.5	25.0	0.0	-	-	-	-
2	No or less provision for advance payment for milk by society or vendors								
	Never	0.0	0.0	0.0	0.0	-	-	-	-
	Sometime	0.0	12.5	0.0	0.0	-	-	-	-
	Always	25.0	12.5	25.0	25.0	-	-	-	-
3	Unable to provide cattle feed and fodder seed on credit to members								
	Never	0.0	0.0	0.0	0.0	-	-	-	-
	Sometime	0.0	0.0	0.0	25.0	-	-	-	-
	Always	25.0	25.0	25.0	0.0	-	-	-	-
4	Poor Quality milk								
	Never	0.0	0.0	0.0	0.0	-	-	-	-
	Sometime	25.0	25.0	25.0	0.0	-	-	-	-
	Always	0.0	0.0	0.0	25.0	-	-	-	-
5	Irregular & inadequate supply of milk								
	Never	0.0	0.0	25.0	25.0	-	-	-	-
	Sometime	12.5	25.0	0.0	0.0	-	-	-	-
	Always	12.5	0.0	0.0	0.0	-	-	-	-
6	Late delivery								
	Never	25.0	0.0	25.0	0.0	-	-	-	-
	Sometime	0.0	25.0	0.0	25.0	-	-	-	-
	Always	0.0	0.0	0.0	0.0	-	-	-	-
7	Unavailability of emergency veterinary services								
	Never	25.0	0.0	0.0	0.0	-	-	-	-
	Sometime	0.0	25.0	12.5	25.0	-	-	-	-
	Always	0.0	0.0	12.5	0.0	-	-	-	-
8	Infrequent visit of veterinary staff								
	Never	0.0	0.0	0.0	0.0	-	-	-	-
	Sometime	25.0	25.0	12.5	12.5	-	-	-	-
	Always	0.0	0.0	12.5	12.5	-	-	-	-
9	Unavailability of vaccines								
	Never	25.0	25.0	25.0	0.0	-	-	-	-
	Sometime	0.0	0.0	0.0	12.5	-	-	-	-
	Always	0.0	0.0	0.0	12.5	-	-	-	-
10	Occasional availability of semen at the AI centre								
	Never	25.0	25.0	25.0	25.0	-	-	-	-
	Sometime	0.0	0.0	0.0	0.0	-	-	-	-
	Always	0.0	0.0	0.0	0.0	-	-	-	-
11	Unsuitability of the time of delivery of milk during winters due to bitter cold in early hours of the day								
	Never	25.0	25.0	12.5	0.0	-	-	-	-
	Sometime	0.0	0.0	12.5	25.0	-	-	-	-
	Always	0.0	0.0	0.0	0.0	-	-	-	-
12	Unavailability of green/ dry fodder throughout the year								
	Never	0.0	25.0	0.0	0.0	-	-	-	-
	Sometime	25.0	0.0	0.0	25.0	-	-	-	-
	Always	0.0	0.0	25.0	0.0	-	-	-	-
13	Low average milk yield of the milk animals in area								
	Never	0.0	0.0	0.0	0.0	-	-	-	-
	Sometime	25.0	25.0	25.0	25.0	-	-	-	-
	Always	0.0	0.0	0.0	0.0	-	-	-	-
14	Lack of cooperation and coordination among members								
	Never	25.0	25.0	0.0	0.0	-	-	-	-
	Sometime	0.0	0.0	25.0	25.0	-	-	-	-
	Always	0.0	0.0	0.0	0.0	-	-	-	-

Source: Field Survey Data.

Note: There were no PDU in the districts under consideration.

Table 8.20: Infrastructure related Constraints faced by the PDCS & PDU in WB

No.	Constraints	Infrastructure related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Bankura	Nadia	South 24 Parganas	North 24 Parganas	Bankura	Nadia	South 24 Parganas	North 24 Parganas
1	Unavailability of chilling facilities at village level for milk preservation.								
	Never	12.5	25.0	0.0	0.0	-	-	-	-
	Sometime	12.5	0.0	25.0	0.0	-	-	-	-
	Always	0.0	0.0	0.0	25.0	-	-	-	-
2	Lack of improved equipment								
	Never	0.0	25.0	0.0	0.0	-	-	-	-
	Sometime	12.5	0.0	0.0	25.0	-	-	-	-
	Always	12.5	0.0	25.0	0.0	-	-	-	-
3	Lack of necessary space required for dairy operation								
	Never	0.0	25.0	0.0	0.0	-	-	-	-
	Sometime	12.5	0.0	12.5	25.0	-	-	-	-
	Always	12.5	0.0	12.5	0.0	-	-	-	-
4	Lack of training facilities								
	Never	0.0	25.0	0.0	0.0	-	-	-	-
	Sometime	12.5	0.0	0.0	25.0	-	-	-	-
	Always	12.5	0.0	25.0	0.0	-	-	-	-

Note and Source: Same as in Table 8.19

Table 8.21: Market related Constraints faced by the PDCS & PDU in WB

No.	Constraints	Market related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Bankura	Nadia	South 24 Parganas	North 24 Parganas	Bankura	Nadia	South 24 Parganas	North 24 Parganas
1	Inability to market for value-added products								
	Never	0.0	0.0	0.0	0.0	-	-	-	-
	Sometime	0.0	0.0	0.0	0.0	-	-	-	-
	Always	25.0	25.0	25.0	25.0	-	-	-	-
2	Competition from private dairy								
	Never	25.0	0.0	0.0	0.0	-	-	-	-
	Sometime	0.0	0.0	12.5	25.0	-	-	-	-
	Always	0.0	25.0	12.5	0.0	-	-	-	-
3	Poor Road infrastructure								
	Never	0.0	25.0	0.0	0.0	-	-	-	-
	Sometime	12.5	0.0	0.0	25.0	-	-	-	-
	Always	12.5	0.0	25.0	0.0	-	-	-	-
4	Unstable prices of milk								
	Never	12.5	0.0	0.0	0.0	-	-	-	-
	Sometime	12.5	25.0	25.0	25.0	-	-	-	-
	Always	0.0	0.0	0.0	0.0	-	-	-	-
5	Competition from imported dairy product								
	Never	25.0	25.0	25.0	25.0	-	-	-	-
	Sometime	0.0	0.0	0.0	0.0	-	-	-	-
	Always	0.0	0.0	0.0	0.0	-	-	-	-

Note and Source: Same as in Table 8.19

8.10.5 Constraints faced by PDCS /Private Dairy Units in Gujarat

It can be seen from the tables 8.22 to 8.24 that in case of milk supply related constraints, top three constraints faced by both the groups are high numbers of small producers, irregular and inadequate supply of milk, unavailability of fodder throughout the years and low average milk yield of milk animals in area. Besides, these PDCS faced problems of not having the provision of advance payment for milk to milk producers, which was sometime available with PDUs.

Table 8.22: Milk Supply related Constraints faced by the PDCS & PDU in Gujarat

No.	Constraints	Milk Supply related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Bharuch	Dahod	Junagadh	Mehsana	Bharuch	Dahod	Junagadh	Mehsana
1	High number of small producers								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	0.0	0.0	0.0	0.0	0	0	0	0
	Always	25.0	25.0	25.0	25.0	100.0	100.0	100.0	100.0
2	No or less provision for advance payment for milk by society or vendors								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	0.0	0.0	0.0	0.0	100.0	100.0	100.0	100.0
	Always	25.0	25.0	25.0	25.0	0	0	0	0
3	Unable to provide cattle feed and fodder seed on credit to members								
	Never	0.0	0.0	0.0	12.5	0	0	0	0
	Sometime	25.0	12.5	25.0	12.5	100.0	100.0	100.0	100.0
	Always	0.0	12.5	0.0	0.0	0	0	0	0
4	Poor Quality milk								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	12.5	25.0	25.0	0	0	12.5	12.5
	Always	0.0	12.5	0.0	0.0	25	25	12.5	87.5
5	Irregular & inadequate supply of milk								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	0.0	0.0	0.0	12.5	0	0	25	25
	Always	25.0	25.0	25.0	12.5	25	25	0	75
6	Late delivery								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	25.0	25.0	25.0	0	25	12.5	62.5
	Always	0.0	0.0	0.0	0.0	25	0	12.5	37.5
7	Unavailability of emergency veterinary services								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	25.0	25.0	25.0	0	25	0	50
	Always	0.0	0.0	0.0	0.0	25	0	25	50
8	Infrequent visit of veterinary staff								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	12.5	25.0	25.0	0	25	0	50
	Always	0.0	12.5	0.0	0.0	25	0	25	50
9	Unavailability of vaccines								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	25.0	25.0	25.0	0	25	12.5	62.5
	Always	0.0	0.0	0.0	0.0	25	0	12.5	37.5
10	Occasional availability of semen at the AI centre								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	25.0	25.0	12.5	0	25	12.5	62.5
	Always	0.0	0.0	0.0	12.5	25	12.5	0	37.5
11	Unsuitability of the time of delivery of milk during winters due to bitter cold in early hours of the day								
	Never	25.0	25.0	25.0	25.0	25	25	12.5	87.5
	Sometime	0.0	0.0	0.0	0.0	0	0	0	0
	Always	0.0	0.0	0.0	0.0	0	0	12.5	12.5
12	Unavailability of green/ dry fodder throughout the year								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	0.0	0.0	0.0	12.5	0	0	0	0
	Always	25.0	25.0	25.0	12.5	25	25	25	100
13	Low average milk yield of the milk animals in area								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	0.0	0.0	0.0	12.5	0	0	12.5	12.5
	Always	25.0	25.0	25.0	12.5	25	25	12.5	87.5
14	Lack of cooperation and coordination among members								
	Never	25.0	25.0	25.0	25.0	25	25	12.5	87.5
	Sometime	0.0	0.0	0.0	0.0	0	0	12.5	12.5
	Always	0.0	0.0	0.0	0.0	0	0	0	0

Table 8.23: Infrastructure related Constraints faced by the PDCS & PDU in Gujarat

No.	Constraints	Infrastructure related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Bharuch	Dahod	Junagadh	Mehsana	Bharuch	Dahod	Junagadh	Mehsana
1	Unavailability of chilling facilities at village level for milk preservation.								
	Never	0.0	0.0	0.0	25.0	0	0	0	0
	Sometime	0.0	0.0	0.0	0.0	0	0	0	0
	Always	25.0	25.0	25.0	0.0	25	25	25	25
2	Lack of improved equipment								
	Never	0.0	0.0	0.0	12.5	0	0	0	0
	Sometime	25.0	0.0	25.0	0.0	25	0	25	0
	Always	0.0	25.0	0.0	12.5	0	25	0	25
3	Lack of necessary space required for dairy operation								
	Never	25.0	0.0	25.0	0.0	25	0	25	0
	Sometime	0.0	0.0	0.0	0.0	0	0	0	0
	Always	0.0	25.0	0.0	25.0	0	25	0	25
4	Lack of training facilities								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	0.0	0.0	0.0	0.0	0	12.5	0	0
	Always	25.0	25.0	25.0	25.0	25	12.5	25	25

Table 8.24: Market related Constraints faced by the PDCS & PDU in Gujarat

No.	Constraints	Market related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Bharuch	Dahod	Junagadh	Mehsana	Bharuch	Dahod	Junagadh	Mehsana
1	Inability to market for value-added products								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	0.0	25.0	12.5	25	0	25	0
	Always	0.0	25.0	0.0	12.5	0	25	0	25
2	Competition from private dairy								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	0.0	0.0	0.0	0.0	0	0	0	0
	Always	25.0	25.0	25.0	25.0	25	25	25	25
3	Poor Road infrastructure								
	Never	25.0	0.0	12.5	25.0	25	12.5	25	0
	Sometime	0.0	25.0	12.5	0.0	0	0	0	0
	Always	0.0	0.0	0.0	0.0	0	12.5	0	25
4	Unstable prices of milk								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	0.0	25.0	12.5	0	0	0	0
	Always	0.0	25.0	0.0	12.5	25	25	25	25
5	Completion from imported dairy product								
	Never	0.0	0.0	0.0	0.0	0	0	0	0
	Sometime	25.0	12.5	25.0	12.5	0	0	0	0
	Always	0.0	12.5	0.0	12.5	25	25	25	25

The top two infrastructure related constraints were unavailability of chilling facilities at village level for milk preservation and lack of training facilities. Few of them also faced Lack of necessary space required for dairy operation. While competition from private dairy and Inability to market for value-added products were the major marketing related constraints faced by the both groups. Besides, PDU faced the problem of unstable prices of milk.

8.10.6 Constraints faced by PDCS /Private Dairy Units in Rajasthan

Table 8.25: Milk Supply related Constraints faced by the PDCS & in Rajasthan

S. No	Constraints	Milk Supply related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDU (% to total responses)			
		Jalore	Hanumangarh	Dholpur	Ajmer	Jalore	Hanumangarh	Dholpur	Ajmer
1	High number of small producers								
	Never								
	Sometime								
	Always	100	100	100	100	100	100	100	100
2	No or less provision for advance payment for milk by society or vendors								
	Never								
	Sometime					100	100	100	100
	Always	100	100	100	100				
3	Unable to provide cattle feed and fodder seed on credit to members								
	Never								
	Sometime	100	100	100	100				
	Always					100	100	100	100
4	Poor Quality milk								
	Never		100	100	100				
	Sometime	100				100	100	100	100
	Always								
5	Irregular & inadequate supply of milk								
	Never								
	Sometime		100		100				
	Always	100		100		100	100	100	100
6	Late delivery								
	Never			100					
	Sometime	100	100		100	100			
	Always						100	100	100
7	Unavailability of emergency veterinary services								
	Never				100				
	Sometime		100	100					100
	Always	100				100	100	100	
8	Infrequent visit of veterinary staff								
	Never								
	Sometime		100		100				100
	Always	100		100		100	100	100	
9	Unavailability of vaccines								
	Never	100		100	100				
	Sometime		100						
	Always					100	100	100	100
10	Occasional availability of semen at the AI centre								
	Never	100		100					
	Sometime		100		100			100	
	Always					100	100		100
11	Unsuitability of the time of delivery of milk during winters due to bitter cold in early hours of the day								
	Never				100			100	
	Sometime	100	100	100		100	100		100
	Always								
12	Unavailability of green/ dry fodder throughout the year								
	Never		100						
	Sometime	100		100	100	100	100	100	100
	Always								
13	Low average milk yield of the milk animals in area								
	Never								
	Sometime				100				100
	Always	100	100	100		100	100	100	
14	Lack of cooperation and coordination among members								
	Never	100	100	100					
	Sometime				100	100	100	100	100
	Always								

Source: Field Survey Data.

Table 8.26: Infrastructure related Constraints faced by the PDCS & in Rajasthan

No.	Constraints	Infrastructure related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDCS (% to total responses)			
		Jalore	Hanumangarh	Dholpur	Ajmer	Jalore	Hanumangarh	Dholpur	Ajmer
1	Unavailability of chilling facilities at village level for milk preservation.								
	Never		100		100				
	Sometime								
	Always	100		100		100	100	100	100
2	Lack of improved equipments								
	Never		100	100	100			100	100
	Sometime	100				100	100		
	Always								
3	Lack of necessary space required for dairy operation								
	Never								
	Sometime	100	100	100	100	100	100	100	100
	Always								
4	Lack of training facilities								
	Never								
	Sometime								
	Always	100	100	100	100	100	100	100	100

Source: Field Survey Data.

Table 8.27: Market related Constraints faced by the PDCS & PDU in Rajasthan

No.	Constraints	Market related Constraints faced by (% to total responses)							
		PDCS (% to total responses)				PDCS (% to total responses)			
		Jalore	Hanumangarh	Dholpur	Ajmer	Jalore	Hanumangarh	Dholpur	Ajmer
1	Inability to market for value-added products								
	Never	100	100	100	100				
	Sometime								
	Always					100	100	100	100
2	Competition from private dairy								
	Never								
	Sometime								
	Always	100	100	100	100	100	100	100	100
3	Poor Road infrastructure								
	Never					100	100		
	Sometime	100	100	100					
	Always				100			100	100
4	Unstable prices of milk								
	Never								
	Sometime	100	100	100	100				
	Always					100	100	100	100
5	Completion from imported dairy product								
	Never								
	Sometime	100	100	100	100				
	Always					100	100	100	100

Source: Field Survey Data.

It can be seen from tables 8.25 to 8.27 that in case of milk supply related constraints, constraints faced by both the groups are high numbers of small producers, irregular and inadequate supply of milk, unavailability of fodder throughout year and low average milk yield of milk animals in area.

Besides, these DCS faced problems of not having the provision of advance payment for milk to milk producers, which was sometime available with PDUs. PDUs also faced unavailability of vaccines and AI facility at village level. The top two infrastructure related constraints were unavailability of chilling facilities at village level for milk preservation and lack of training facilities. Few of them also faced Lack of necessary space required for dairy operation. While competition from private dairy and Inability to market for value-added products were the major marketing related constraints faced by the both groups. Besides, PDU faced the problem of unstable prices of milk.

8.11 Constraints faced by Milk Unions

Besides the milk producers, milk unions have also faced the constraints, which are presented in this section.

8.11.1 Constraints faced by Milk Unions in Assam

In Assam, only WAMUL is functioning at present, which covers three out four of the sample districts *i.e.* Kamrup, Barpeta and Nagaon. During the field survey, it was noticed that milk union had also faced some constraints which are presented in Table- 8.28. From the Table, it is evident that the major problems faced by the lone milk union were lack of skilled manpower, absence of dairy science college or food technology institute in the North Eastern Region for better training and innovation, lack of availability of raw materials for manufacturing of cattle feed in a viable manner, lesser number of crossbred animals in the State and non-adherence to the principles of *Anand* pattern cooperatives/ three tier structure by the village level Dairy Cooperative Societies (DCS). However, the milk unions have high potential for the future in the sense that the Unions are going to get handsome amount of financial assistance under new World Bank aided project, Assam Project on Agribusiness and Rural Transformation (APART), through Government of Assam. As per report, it will expand its operations in other parts of Assam in co-ordination with two other now defunct milk unions *viz.* East Assam Milk Producers' Cooperative Union Ltd. (EAMUL) and Cachar and Karimganj Milk Producers' Cooperative Union Ltd. (CAMUL).

Table 8.28: Constraints faced by the Milk Union in Assam

<p>1. Manpower Constraints (<i>e.g.</i> Problems in recruiting staff etc.)</p> <p>a) Identification of skilled manpower and hiring them with salaries commensurating with the industry standards.</p> <p>b) Absence of dairy science college, food technology institute in the North Eastern Region.</p>
<p>2. Technical Constraints (<i>e.g.</i> Problems in availability of inputs, shortfall in technical assistance provided, etc.)</p> <p>a) Manual intervention of product making at processing plant that impedes efficiency in meeting the market demand of liquid milk and various milk products.</p> <p>b) Lack of availability of raw materials for manufacturing of cattle feed locally in a viable manner.</p> <p>c) Lesser number of crossbred animals in the State.</p>
<p>3. Governance issues: (<i>e.g. autonomy in deciding producer and consumer price, autonomy in recruitment & transfers, extent of political interference, if any, facilitating and hindering State policies etc.</i>)</p> <p>a) The village level dairy cooperative societies (DCS) that are registered under Assam State Cooperative Societies Act are not bound to pour any specific portion of milk collection to a forwarding agency in the form a cooperative milk union thereby deviating from the principles of <i>Anand</i> pattern cooperatives/ three tier structure.</p>
<p>4. Financial Constraints</p> <p>a) No financial constraint was arising, as NDDDB is providing term loan at reasonable interest rates.</p>
<p>5. Potential for future</p> <p>a) The Union is going to get financial assistance under new World Bank aided project, Assam Project on Agribusiness and Rural Transformation (APART), through Government of Assam.</p> <p>b) The Union will be expanding its operations in various other parts of Assam through two other milk unions, East Assam Milk Producers' Cooperative Union Ltd. (EAMUL) in Jorhat and Cachar and Karimganj Milk Producers' Cooperative Union Ltd. (CAMUL) in Silchar.</p>

Source: WAMUL, 2016, Assam

Thus, it can be inferred that there exists huge potential for the milk Unions in Assam, which can bring about marked changes in the dairy sector in this part of the country.

8.11.2 Constraints faced by Milk Unions in WB

There were, however, various issues as regards to functioning of the milk unions in the districts. First and foremost was deficiency in skilled manpower of which all the milk unions were suffering (Table 8.29). In Nadia skilled personnel in key positions like product marketing and managerial work for DCS were priority. Almost all the milk unions suffered from manpower shortage. Technical constraints included unavailability of required inputs, technical knowhow and instruments to detect adulterants in

milk, state of the art technology for quick fat detection. In view of poor electric supply in South Twenty Four Parganas, there was demand for bulk milk cooler run by solar energy. North Twenty Four Parganas, however, did not report any technical constraint.

As far as the governance issues were concerned, it was observed that some of the milk unions were looking for autonomy and staff recruitment for smooth functioning and monitoring of the MU and the DCSs. Formation of new Board of Directors was a necessity in Nadia for good governance. In Bankura, the political intervention must have been posing hindrance for effective operation of the MU. Gradual increase in overhead expenditure coupled with decreasing quantum of milk procurement had resulted in a severe financial crisis in the districts of Nadia and North Twenty Four Parganas. There were few valuable suggestions by the responsible administrative authorities of the milk unions so as to enhance the dairy practices. In the face of increasing price level and intervention of private players in the sector, remunerative and competitive price for milk might be offered to motivate dairy farmers for production of quality milk. Processing plants are of urgent importance for production of value added milk products. Increasing awareness and imparting training as regards to milking own cow to the farmers was thought essential to get rid of their dependency on milk vendors.

Table 8.29: Constraints faced by Milk Unions in West Bengal

Sr.	Particulars	Constraints faced by Milk Unions in West Bengal			
		Bankura	Nadia	South 24 Parganas	N24 Parganas
1	Milk Union				
2	Constraints faced				
a	Manpower Constraints (eg. Problems In Recruiting Staff, Etc.)	<ul style="list-style-type: none"> There is acute shortage of skilled manpower. Fresh recruitment is also a problem. 	<ul style="list-style-type: none"> Acute shortage of manpower in key positions like Product marketing, DCS Supervisory work and Milk Procurement etc. Formation of Board of Directors is necessary. 	<ul style="list-style-type: none"> Skilled personnel for running the MU and DCSs are required. New recruitments are necessary. 	<ul style="list-style-type: none"> Insufficiency of skilled manpower. Fresh recruitment is not possible due to financial hardship.
b	Technical Constraints	<ul style="list-style-type: none"> There is shortfall in technical assistance. Availability of inputs remains a constant problem. 	<ul style="list-style-type: none"> Technical assistance with availability of instruments for detection of adulterants (like whey water, veg. oil) in milk on spot is highly needed during milk collection at reception centre 	<ul style="list-style-type: none"> Bulk milk cooler with solar panel are required for the district where the electricity connectivity and supply is poor. Fat detection technique being used presently takes time. Updated technology 	<ul style="list-style-type: none"> No problem as regards to availability and supply of inputs.

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				<p>for detection of fat is required.</p> <ul style="list-style-type: none"> For ensuring the cold chain for milk supply non-conventional sources of energy (e.g. solar panel) might be an alternative. 	
c	Governance Issues	<ul style="list-style-type: none"> Autonomy may be given to decide producers' and consumers' price for milk. Autonomy in recruitment and transfer of staff is required for smooth functioning. Political interference poses hindrance in functioning of the MU. 	<ul style="list-style-type: none"> The Milk Union is managed by its bye-laws, WBCS Act & Rules. Formation & functioning of Board of Directors as per bye-laws of the Milk Union is essential for good governance. 	<ul style="list-style-type: none"> As many areas of this district is very remote and is difficult to commute, day to day monitoring becomes a little difficult in view of scarcity of personnel. Payment for milk procurement must be computerized with the central server at MU office so that the books of accounts could be maintained properly. 	<ul style="list-style-type: none"> The Milk Union functions as per rules of West Bengal Cooperative Society Act & Rules. The Union operates under the technical and administrative guidance of West Bengal Milk Federation and NDDB.
d	Financial Constraints	<ul style="list-style-type: none"> There is no financial constraint. 	<ul style="list-style-type: none"> Gradual enhancement of overhead expenditure, decreasing quantum of milk procurement and low milk price retention are the major financial constraints. Acute financial stringency is posing hindrance in day to day functioning. 	<ul style="list-style-type: none"> At present there is little financial hardship. 	<ul style="list-style-type: none"> With decrease in the quantity of milk procurement the Union is faced with severe financial hardship.
3	Any Other suggestion	-	<ul style="list-style-type: none"> The MU is facing an uneven competition in milk procurement in the face of higher milk price offered by private units irrespective of the quality of milk. Competitive milk price is needed to ensure the quality & quantity of milk supplied by the farmers and motivating them to join DCS. Increasing awareness and imparting training as regards to milking own cow to the farmers is essential to get rid of their dependency on milk vendors. 	<ul style="list-style-type: none"> Farmers are to be motivated for improving the quality of milk through remunerative price. Value added dairy products should be produced with establishment of processing plant. Farmers are to be motivated to insure the cattle. 	-
4	Potential For Future	-	<ul style="list-style-type: none"> Extension of input distribution and transfer of modern technology through DCS would add impetus to better entrepreneurship. Creation of extensive infrastructure for milk reception centres through DCS would help the farmers to cope with exploitation by the middlemen. Extension of plants for milk processing & manufacturing value added milk products might be helpful in offering better price for liquid milk to farmers. 	<ul style="list-style-type: none"> Improvement of roadway infrastructure to Kolkata can open up new marketing avenues. 	-

Source: As reported by the Managing Directors of the Milk Unions.

8.11.3 Constraints faced by Milk Unions in Gujarat

It can be seen from the table 8.30 that out of the four selected dairy milk unions, two are located in developed cities like Mehsana and Bharuch and are located on the main highway of the state. While Panchmahal and Junagadh district milk unions are located in interior regions of the state, that to these areas are not that developed and thus they face some constraints. Panchmahal dairy is located in tribal area thus face the problem of labour and most of the persons do not want to work in interior areas of the district. Besides, during lean season, this dairy faces the problems of working capital. The dairy producers in this area are mostly illiterate and thus do not have much awareness about the schemes. In case of Junagadh dairy, though progress is good but they face the problem of supply of inputs and they are worried about the FTA issue.

Table 8.30: Constraints faced by Milk Unions-Gujarat

Sr.	Particulars	Constraints faced by Milk Unions-Gujarat			
1	Milk Union	Mehsana	Panchmahal	Bharuch	Junagadh
2	Constraints				
a	Manpower Constraints (eg. Problems In Recruiting Staff, Etc.)	<ul style="list-style-type: none"> Normally don't face any constraint with respect to man power. Managing a dairy technology college and under graduate course in another college 	<ul style="list-style-type: none"> Due to tribal area, some employees are not willing to work at interior part of the district. 	<ul style="list-style-type: none"> Bharuch and Ankleshwar is industrial area, there are number of small & large scale industries. Dahej is also developing very fast, having mega industries. Looking to the facts, there is drop out ratio of skill persons. The recruited people leave organization if he get attractive salary package. Even the contractual people leave the job if he gets higher salary at another place. Normally we do not face problem in recruiting the staff, when ever vacancies exists, our management approves the same to fill. 	<ul style="list-style-type: none"> Campus Development is in progress Expandable upto 5 Llpd,
b	Technical Constraints	<ul style="list-style-type: none"> We are member of GCMMF and therefore always technical guidance is available as and when required. NDDB is also there to help us out. we also have strong pool of experienced technical man power. 	<ul style="list-style-type: none"> Technical employees turnover rate is very high (our plant is located 100 km away from big city like Vadodara & Ahmedabad , Technical personnel are not agree to work in tribal area.) 	<ul style="list-style-type: none"> usually our dairy plant needs dairy technocrats and mechanical, electrical technical staff. for field input dealing we required veterinaries to handle animal and societies related issues. we have sufficient input to help our technocrats. 	<ul style="list-style-type: none"> no supply of any input to dairy forever, work as a mediator between Amul distributor and market, no share /cut for same, 03 veterinary doctors

Constraints in faced in Production and Marketing of Milk

c	Governance Issues	<ul style="list-style-type: none"> As per present cooperative act. there is no restriction on deciding producer's price. we also can recruit on our own there is no restriction on our autonomy. so far as sale price to consumer is concerned that is decided by GCMMF being apex marketing body for all district unions. 	<ul style="list-style-type: none"> We do not have any issues. 	<ul style="list-style-type: none"> Our organisation is of cooperative types. whole organization is managed by an elected board. milk producer, price is decided by board members and consumer price is decided by state level marketing federation situated at anand. in recruitment and transfer there is no political interference. our cooperative sector is controlled by state level cooperative registrar office, which is having district level offices to monitor milk unions and village level auditing. bharuch milk union is always facilitating the state level policies. 	<ul style="list-style-type: none"> rate/litre-10 fat of snf, 62/kg fat, store policy in progress
d	Financial Constraints	<ul style="list-style-type: none"> We enjoy very strong credit rating i.e. aa+ and therefore we can avail short term and long term finance without any problem at the base rates of the banks. In any further requirement GCMMF and NDDDB is there to help us in this regards. 	<ul style="list-style-type: none"> Dairy business is a seasonal business, during the lean season dairy industry is having the short fall of working capital & some time banks are not agree to fund co-operatives. The farmers are not aware of different finance schemes of banks, so co-operative have to work as a mediator for banks to provide the fund to the farmers. We are unable to provide direct payment to the milk producers because of availability of banks in villages. 	<ul style="list-style-type: none"> At present we don't having financial constraints. for major civil and mechanical establishment NDDDB is providing term loan at reasonable interest rates. GCMMF is also helping in minor financial issues. today we are not having financial burden with any banks. 	<ul style="list-style-type: none"> Adequate, RBP not participated
3	Any Other suggestion	--	---	--	<ul style="list-style-type: none"> FTA-Duty Should Not Be Reduced,
4	Potential For Future	<ul style="list-style-type: none"> Demand of milk and milk products is continuously increasing and therefore growth is not a problem constraint will be procurement of quality milk from the available sources. because in our area of operation milk producers are moving towards other earning avenues like: jobs, business, less no. of new people are joining this dairy farming 	<ul style="list-style-type: none"> Future of dairy co-operative will be very bright, if it is working purely on commercial ground and there should not be any external political influence in dairy sector. 	<ul style="list-style-type: none"> Bharuch milk union is procuring daily average of 2.0 lpd of milk form rural area, with well established rural cooperative network. our milk shed area is having very good irrigation facilities. there are about 70000 sugar cane growers. they are diverting their soruces of income from agriculture to animal husbandry, through commercial dairy farming approach. this will help us in average milk procurement of 5.00 lpd in coming 2-3 years. at present we are marketing milk, ghee, paneer, khova, butter milk. step by step we may start packaging and marketing of dahi, table butter, ice cream. 	<ul style="list-style-type: none"> --

8.11.3 Constraints faced by Milk Unions in Rajasthan

Besides the milk producers, milk unions have also faced the constraints, which are presented in Table 8.31. It can be seen from the table that out of the four selected dairy milk unions, two are located in developed cities like Hanumangarh, Ajmer and Jalour and are located on the main city of the state. While Bharatpur district milk unions are located in interior regions of the selected district of the state, that to these areas are not that developed and thus they face some constraints. The shortage of man power and technical constraint like veterinary doctor and maximum work is conducted by contract labours in selected all milk union. Besides, during lean season, this dairy faces the problems of working capital. The dairy producers in this area are mostly illiterate and thus do not have much awareness about the schemes. In case of Bharatpur dairy, the cooperative dairy sector is very slow progress due to high competition to private dairy. Overall, all the dairy unions have bright future subject to no political interfere in the working of unions.

Table 8.31: Constraints faced by Milk Unions-Rajasthan

Sl	Particulars	Constraints faced by Milk Unions-Rajasthan			
1	Milk Union	Jalor-Sirohi	Sriganganagar	Ajmer	Bharatpur
2	Constraints f				
a	Manpower Constraints (eg. Problems In Recruiting Staff, Etc.)	•Union has shortage of Man power due to vacant post. Since a long time not admitted post	•Milk union has only 108 employees against the sanction strength of 214. • Maximum work is conducted by contract labours. All officers having more than one charge of department. Due to shorten of staff work suffered.	•Recruitment Process under going on through RCDF and Govt. of Rajasthan	Union has shortage of Man power due to vacant post. Since a long time not admitted post
b	Technical Constraints	Union have required a Veterinary doctor and some technical staff for doing technical work	Milk union has shortage of technical staff. Due to shortage of technical staff work is conducted by using contract man power. It effect the work quality.	No	Required Veterinary Doctor and Clinic with staff
c	Governance Issues	Union has separate elected board. It short out issue related policy or financial matter in board meeting.	Procurement Price is being control by RCDF HQ. Recruitment not being permit by RCDF HQ due to not clearance of govt at Rajasthan finance department. Political interference much more and defect work of Milk union.	Union have not any issues	Union have not any issues
d	Financial Constraints	Milk Union is in good conditions.	Milk Union is in good conditions. At present Union cumulative profit is	1 Dairy Business is a seasonal Business ,during the lean	1. Low milk production at the time of summer

			Rs 481.94 Lacs	<p>season Dairy Industry is having the short fall of working capital & some time banks are not fund cooperatives.</p> <p>2 The Farmers are not aware of different finance schemes of banks, so cooperative have to work as a mediator for banks to provide the fund to the farmers.</p> <p>3 Some region are unable to provide direct payment to the Milk Producers because of availability of Banks in villages.</p>	season and this time short fall of working capital.
3	Any Other suggestion	-	-	-	-
4	Potential For Future	Cold storage facility required at jalore for marketing purpose	-	Future of Dairy cooperative will be very bright , if there no political interfere in dairy sector	Future of Dairy cooperative will be very bright due to Bovine Population has 67 % increases in over the previous census.

8.12 Chapter Summary:

The performance of the dairy sector in depends on many factors includes input supply (particularly feed) and service provision (veterinary service and Artificial Insemination (AI) or breed) or output services. DCS households recorded the adequate supply of cattle feed and emergency veterinary services while NDCS households did not have facility to get any support from the dairy cooperatives existing in their area, they are fully depend on the agent or private agency to get support for input and output service systems. The major constraints faced by the milk producers are highlighted.

The constraints (such as milk supply related, infrastructure related and marketing related) were also faced by the selected primary dairy cooperative societies and private dairy units. In case of milk supply related constraints, top three constraints faced by both the groups are high numbers of small producers, irregular and inadequate supply of milk, unavailability of fodder throughout the years and low average milk yield of milk animals in area. Besides, these DPCS faced problems of not

having the provision of advance payment for milk to milk producers, which was sometime available with PDUs. The top two infrastructure related constraints were unavailability of chilling facilities at village level for milk preservation and lack of training facilities. Few of them also faced Lack of necessary space required for dairy operation. While competition from private dairy and Inability to market for value-added products were the major marketing related constraints faced by the both groups. Besides, PDU faced the problem of unstable prices of milk. Selected milk unions have also faced the constraints, they faced the problem of labour and most of the persons do not want to work in interior areas of the district. Besides, during lean season, dairies face the problems of working capital. Overall, all the dairy unions have bright future subject to no political interfere in the working of unions.

The next chapter presents the conclusions and recommendations.

Conclusions and Recommendations

9.1 Introduction:

This chapter presents the conclusions and policy implications emerged out from the secondary and primary data analysis as discussed in Chapter 1 to 8, which are presented state wise in order to have clear understanding of actions to be taken.

9.2 Policy Implications

- Livestock sector occupies a pivotal position in the Indian economy and its contribution to the agricultural sector is the highest, the plan investments made so far do not appear proportionate with its contribution and future potential for growth and development. This suggests that public investment in the livestock sector should be enhanced to help the smallholder livestock producer, which deprives their larger share of income from the livestock sector.
- The livestock services like artificial insemination/natural service, vaccination, de-worming, etc are time-sensitive and government institutions are not able to deliver in time due to financial as well as bureaucratic constraints. Therefore, there is a need to re-orient the government policy for delivery of livestock services and involve major stakeholder.
- The major constraint in milk marketing is the involvement of the unorganized sector. Changing the dairy-cooperative laws and regulations can reduce the unorganized sector's role in milk marketing. Strengthening the infrastructure for milk collection, transportation, processing, packaging, pricing, and marketing through dairy co-operatives can also change the minds of the milk producers.
- Producers are not receiving a remunerative price for their produce because of the presence of middlemen in milk marketing. By reducing the number of middlemen between producer and consumer, the

consumers' share to the producer can be increased. In other words, bridging the gap between the producer and the consumer can increase the producer's share.

- Shortage of quality fodder and feeds is another major constraint for India's livestock sector growth. The gap between the requirement and availability of feed and fodder is increasing due to decreasing area under fodder cultivations and reduced availability of crop residues as fodder. Also there is continuous shrieking of common property resources leading to over grazing on the existing grass land. Therefore, there is a need to work out the strategies for sufficient good quality feed and fodder for efficient utilisation of genetic potential; of the various livestock species and for sustainable improvement in productivity.
- It was observed that the awareness about the dairy schemes among selected households was very poor. Therefore, there is a need to increase use advanced technology such as mobile phones in dairying for effective dissemination of livestock related information in general and dairying in particular.
- The selected households seldom aware about the livestock insurance. As insurance of livestock is the best safeguard for minimising the risk especially small holder producers, there is a need to increase the awareness and mandatory provision of the companies to undertaken livestock insurance of interested milk producers.
- Though livestock health situation in India is improving, Foot and Mouth Disease remains the issue of concern. There is a serious need for protection of animals against diseases and parasite which is one of the pre-requisites for sustainable livestock production and milk production.
- The four major infrastructural constraints faced by selected households were unavailability of emergency veterinary services, infrequent visit of veterinary staff, unavailability of cattle feed and fodder seed on credit, and low average milk yield of the milk animals. Non availability of veterinary services at the village level in time is the major constraints.

The animal husbandry departments must be rejuvenated to act as drivers of growth for dairy sector.

- Given the fact that stress due to climate variability and availability of feed will be increasing constraints, more emphasis is required in promoting indigenous breeds. The data on animal genetic resources need to be generated and preserved properly for future use.
- The role of institutions in dairy farming especially district dairy cooperatives need to be strengthened and there should be less bureaucratic and political interference in managing cooperative run dairies in India.
- The environmental security and sustainability must be made integral measures taken in the Indian dairy sector in arena of increase in milk production, storage, value addition, improving the genetics of local breed and reducing the risk in operation.
- There is a need of more modern semen stations across India operated by both private and controlled by government agencies. Dairy cooperatives and private players must be allowed too to start their own centers to supply quality semen. Farmers must be educated about the available semen profile which will help them to make informed choice.
- The state and Central Governments have initiated various development programmes and policies for promoting livestock sector in the country. However, a number of concerns about effectiveness and impact of these programmes and policies have been raised.
- The convergence of all state and central government schemes at the implementation level, in a given territory, would bring about improvement in milk production sector in a manner that will be sustainable, while ensuring social and economic improvements of the dairy farmers. As suggested by Working Group for 12th five year plan, all the ongoing schemes should be classified under three mega schemes; a) Animal Production, b) Livestock Health and c) Dairy Development.

9.2.1 Policy Implications for development of dairy sector in Assam

On the basis of the field survey, careful observations and discussions held with the milk producers and other stakeholders associated with dairy, the following suggestions are offered for improvement of the dairy sector in Assam.

- The State Government should prioritize the strategies for dairy development in the State Plan to make a real breakthrough in the dairy sector.
- Productivity-led growth is essential for accelerated and sustainable growth of this sector. Composition of dairy cattle should be modified with introduction of adequate number of cross -bred cows.
- There is need to evolve a comprehensive dairy development policy in the State through genetic improvement of indigenous milch animals. Process should be initiated for production of good quality semen from high genetic sources. To achieve that, the existing semen stations should be strengthened and upgraded. Larger focus should be on field progeny testing for quality bull production.
- Revival of non functional Milk Unions viz. EAMUL located at Jorhat and CAMUL at Silchar can give a new lease of life to the dairy sector.
- In order to overcome the fodder deficit, the Animal Husbandry and Veterinary Department of the State, being the key player, can take up elaborate programmes for enhanced fodder production throughout the State.
- Establishment of organized network of market can benefit the livestock farmers in getting due share for their products. Networking of village level dairy co-operatives can benefit all the stakeholders on several fronts. Strengthening of market linkages through expansion of cooperatives and facilitating new models of dairy farming would go a long in further improving milk yield in the State.
- Proper monitoring and implementation of dairy schemes/ programmes in the State with specific milestones set for which convergence of some of the existing schemes may bring in more efficiency in to the system. The ongoing schemes and new initiatives should be placed under three

mega schemes with wider freedom and flexibility for the State to choose the appropriate components.

- There is need to assist and train the milk producers in the field of breeding, feeding, animal management technique and marketing of milk and milk products in a cost effective manner.
- Some infrastructural development like road communication and transport is needed for transportation of fodder, feed concentrates, veterinary medicines and also transportation of milk to the consuming centres round the year.
- Livestock insurance coverage should be expanded to all types of production systems and species with appropriate incentive framework.
- Well-equipped laboratories for testing of adulterants, antibiotics residues, and food borne pathogens should be established to enhance safety and quality of animal feeds.
- Improving the farmers' access to institutional credit through simplification of procedures, reduction in interest rates, etc.

The status of dairying in Assam is far from satisfactory in terms of production and coverage despite the fact that there lies enormous potential which remains unrealized till date. Development of dairy farming on sustainable basis through optimum utilization of natural resources, adequate health-care facilities for livestock, improvement of breeding programmes through AI, improvement of present milk marketing system and timely vaccination can go a long way in bringing marked changes in the lives of the milk producers of this part of the country.

9.2.2 Policy Implications for development of dairy sector in Bihar

There are following policy implications based on main findings of the study, being intimated to Ministry of Agriculture & Farmers Welfare, Government of India; NDDB and all concerned, given as below:

- The average yield of all types of milch animals was extremely low in Bihar. Hence, state department of animal husbandry and dairying should play decisive roles to raise the milk yield rates in Bihar.

- The larger milk producers should be persuaded to adopt dairying as a small scale dairy industry in study areas.
- The costs of veterinary services and medicines were reported to be high by almost all the milk producers. Hence, Government and other concerned departments, should pay attention to reduce these costs.
- Extension services on dairying should be strengthened by providing it on doorstep of milk farmers as majority of milk producers were not at all aware about dairy schemes in Bihar.
- The average price of milk sold was found to be lower than the cost incurred in its production. So, price of milk should be enhanced for milk producers by dairy cooperatives in proportion to the increase in total inputs cost.
- Marketing facilities should be made available at village level for outlets of milk and milk products to removing irregular sales of milk under both DCS and NDCS systems.
- The procedure for sanctioning loans should be made easier and amount of loan for purchasing dairy animals should be increased in proportion to the values of dairy animals.
- The provisions of advance and bonus from cooperative societies and vendors should be properly and regularly designed to boost up milk producers for continuing in milk production enterprise.
- Infrastructure for dairy was very poor at village levels. So, it should be improved to boost-up milk producers.
- Awareness about insurance of animal was found very poor in the study area. So, there is need to increase awareness among farmers explain them about and mandatory provisions of the companies that provide livestock insurance to desired milk producers.
- Milk productivity of the buffaloes and local cows were found lower than crossbred cows across all the categories of dairy farmers. So, there is need to make efforts to increase the productivity of buffaloes and local cows by biologically upgrading the animals and encouraging farmers to adopt scientific dairy practices.

9.2.3 Policy Implications for development of dairy sector in Chhattisgarh

- Chhattisgarh State occupied pivotal position in terms of goat population contributing more than 50 per cent population of the country and found still unorganized in the State. Hence, efforts are required to be made to organize this as an industry through cooperative or producers companies as goat milk has tremendous advantageous and better than the cow milk.
- The convergence of all the state and central government schemes under the umbrella of Chhattisgarh Cooperative Dairy Federation Limited. This will not only bring the improvement in milk production in a sustainable manner but also ensure social and economic improvement of the milk producers with equity. As suggested by the working group for 12th five year plan, all the ongoing scheme should be classified under the mega scheme a) Animal Production, b) Live stock Health and c) Dairy Development. Apart from this it is also suggested that Fodder Development should also be included as a separate sub head for the development of dairy sector in real sense.
- Cropping pattern of the milk producers was not found to be tuned with fodder production. None of the selected respondent cultivates fodder in a scientific manner as they have lack of knowledge about the package and practices of fodder cultivation in the area under study. Hence, efforts should be made to popularize the recent fodder technology to ultimate milk producer because without fodder development a dairy industry will not get its proper shape in the State.
- At village level, infrastructure of dairy cooperative was not found up to the mark. Therefore, there is an urgent need to support all the cooperative societies running in the village level for balance development of dairy sector.
- Several constraints which were found to prevail in infrastructure, economic, marketing, technology, socio-psychological, quality services etc. in the study area. Hence, utmost efforts are required to be made to remove these constraints not only for the development of dairy sector

in the State but also to ensure and enhance the income of the milk producers and to stabilize it at higher level.

- It was also observed that awareness about the dairy and other development programmes including live stock insurance etc. among HHs was very poor. Therefore, there is a need to increase publicity of these schemes on mobiles etc. in local language for effective dissemination of livestock related information in general and dairying in particulars.
- There is a need of more modern semen stations across all the districts of the State operated by both private and Government agencies. Dairy cooperatives and private players must be allowed to start their own centre to supply quality semen. Milk producers must be trained about the profile of available semen to make them more educated about the artificial insemination.

9.2.4 Policy Implications for development of dairy sector in Jharkhand

There are following policy implications based on main findings of the study:

- Emphasis should be given for making dairying more viable, particularly for marginal, small and landless farmers so that they could feel encouraged for this venture.
- The average milk yield of all milch animals was extremely low in Jharkhand. Hence, state department of Animal Husbandry and Dairying should play decisive roles to raise the milk yield rates of the cattle and buffaloes in the state.
- Large sized milk producers should be persuaded to adopt dairying as a small scale enterprise in the study areas.
- The costs of veterinary services and medicines were reported to be high by almost all the milk producers. So, Government should evolve mechanizations to reduce the costs of these components or make them available at reduced costs.

- Extension services on dairying should be provided on doorsteps, as majority of the milk producers in state were not getting the same at their places.
- The average return on production of milk was found lower than the cost incurred thereon so, prices of milk paid to the DCS members should be reasonably fixed by the milk unions/federation.
- There is need to strengthen the DCS by providing them a good infrastructure, so that it could be made functional for the purpose of sale and purchase of milk and milk products.
- The procedure for sanctioning loan should be made easier preferably by organising 'Dairy Loan Mela' at village panchayat level.
- The provisions of advances and bonus made under Dairy Co-operative Societies should be properly and regularly monitored to boost up the milk producers for remaining in the venture.
- Infrastructure available at dairy farmers' level was found very poor. So, it should be improved for better up-keeping of the dairy animals.
- Awareness in regard to insurance of animals was found very poor in the study area. So, there is need to create awareness for its wider coverage.

9.2.5 Policy Implications for development of dairy sector in Odisha

- The major problem for rearing livestock in the State is scarce availability of green and dry fodder and high cost of cattle feed. Therefore, attempt should be made to increase area under fodder crops along with building regional fodder stocks .
- Poor live stock health care services is another bottleneck in the development of dairy in the State. There're, adequate veterinary services facilities need to created on priority basis.
- Extension services needs to strengthen for creating awareness about dairy development schemes such as live stock insurance scheme
- No refrigeration facility at village level hinders the conservation and processing of surplus milk. There is a need to create such facilities in milk village.

- Loan sanction procedure should be made easy and marketing facilities be provided at village level

9.2.6 Policy Implications for development of dairy sector in Eastern UP

- Efforts must be made by both Central and State Governments to convert Dairying from subsidiary to Main occupation of marginal and small farmers.
- The larger milk producers must be encouraged to adopt dairying as a Small Scale Dairy Industry in their Areas.
- The average milk yield rate was extremely low among all the milch animals in east U.P. Hence, state department of animal Husbandry and dairying must play some crucial roles to raise the milk yield rates of all milch animals in eastern U.P.
- The cost of veterinary services and medicines was told to be very high by almost all the milk producers. Therefore, government as well others concerned must pay attention to reduce these costs.
- Extension services on dairying must be strengthened on war footing as majority of milk producers were not at all aware about the schemes of dairying in east U.P.
- The quantity of milk drawn yesterday was much lesser by milk producers rearing local cows and buffaloes due to which they had sold minimum quantity of milk to cooperative societies. Therefore, the milk producers of DCS category must be encouraged by all means to increase the quantity of milk to be drawn and sold to cooperative societies.
- The average prices for milk sold in cases of all the milch animals were found to be lower than the cost incurred. Therefore, the prices milk of local cows crossbred cows and buffaloes must be enhanced in proportion of the cost increased.
- To remove the irregular sales of milk under both DCS and NDCS categories, the marketing facilities must be provided at village level for the outlets of milk and milk producers.

- For difficulties in getting loans, the procedures for sanctioning the loans must be made easy and the amount of loans for the purchase of dairy animals must be increased in proportion of the prices of dairy animals.
- To meet the demands of milk producers for advances and or bonus from the cooperative societies and vendors, the societies and vendors must advance properly and regularly to keep the milk producers continuing milk production.
- The delivery systems for both inputs and output must be improved in accordance of the needs of the milk producers with some incentives or bonus by the societies.
- Concentrates and supplements must be made available in remote villages timely and at affordable and cheaper rates.
- Proper A.Is. facilities at village level and affordable EVS (Emergency Veterinary Services) at door step must be provided to all the milk producers for boosting milk production in east U.P.
- On an overall almost all the milk producers had suggested for the development of dairy infrastructure for attracting more and more cultivators towards the adoption of dairy schemes in eastern U.P.

9.2.7 Policy Implications for development of dairy sector in West Bengal

- As against the estimated animals' requirements, feed resources available in West Bengal are lower.
- Poor state of awareness about various dairy developments schemes were observed among the NDCS households. For the DCS farmers knowledge had been imparted by the milk cooperatives and milk unions functioning in the area. For the NDCS farmers, however, source of their awareness had been fellow farmers and neighbours. A dismal scenario was observed as regards to insurance coverage for the cattle in all the villages regardless of DCS or NDCS.
- Innumerable small dairy farms are to be fastened in some sort of milk chain by the cooperative societies. So, there is urgent need to enhance

the number of PDCS in each district to reduce the exploitation by private vendors.

- The infrastructure for milk procurement and transportation should be improved at the DCS level.
- Enhanced operation of DCS offering remunerative price to farmers can motivate them in joining the society and at the same time this partnership would be able to make a dent in farmers' economic hardship.
- Service delivery of feed and fodder to be enhanced. Provision for vaccinations and emergency veterinary services including AI needed to be boosted. In this aspect DCSs working at the village level could play an important role.
- Re-orientation and proper implementation of government policies for dairy development at the grassroots must be taken care of. And in view of such re-orientation more autonomy and funds are to be provided to DCS.
- For increasing awareness regarding scientific dairy farming new training programmes need to be arranged especially for the women. These might be able to serve twin purposes of imparting improved consciousness among women regarding dairy farming and might as well be supportive for women empowerment in the village society. Department of Animal Husbandry of the State Government along with the milk unions could take up such programmes.
- It remained essential that the farmers be motivated to insure their cattle for it minimized the risk. Procedural changes, if necessary, can be thought of so that the farmers can avail these benefits. Outreach of the facility needs to be provided at the village level. For DCS membership insuring cattle might be made a mandatory criterion.
- The DCSs were of opinion that there had been fluctuations in milk yield across seasons. Proper and scientific dairy practices backed by better awareness supported by government veterinary and DCS staff might be able to bring about a change in such paucity.

- The milk unions be provided with skilled manpower for proper implementation and monitoring of the operations of DCS. More autonomy in MUs' functioning might be necessary and political intervention must be restricted.
- Establishing milk processing plants in the districts are of urgent importance for production of value added milk products that would ensure higher return.
- Offering remunerative price for milk is a decision that depends on the policy of the government. In face of rising cost a hike in procurement price may be thought of which in turn would motivate and improve economic conditions of the farmers.
- As such there are ample central and state sector schemes for development of animal husbandry in general and dairy expansion in particular. Convergences of many of such schemes were found in the survey area of this present study. But the scope and coverage seemed somewhat restrictive. Policy re-orientation might be sought for rejuvenating the dairy sector in the villages of West Bengal.

9.2.8 Policy Implications for development of dairy sector in Gujarat

- It was observed that the awareness about the dairy schemes among selected households was very poor. Therefore, there is a need to increase use advanced technology such as mobile phones in dairying for effective dissemination of livestock related information in general and dairying in particular.
- The selected households seldom aware about the livestock insurance. As insurance of livestock is the best safeguard for minimising the risk especially small holder producers, there is a need to increase the awareness and mandatory provision of the companies to undertaken livestock insurance of interested milk producers.
- The four major infrastructural constraints faced by selected households were unavailability of emergency veterinary services, infrequent visit of veterinary staff, unavailability of cattle feed and

- fodder seed on credit, and low average milk yield of the milk animals. Non availability of veterinary services at the village level in time is the major constraints. The animal husbandry departments must be rejuvenated to act as drivers of growth for dairy sector.
- The co-operative structure is very weak in Saurashtra and Kachchh regions of the state. Therefore, presence of Milk Producer Company's sales & distribution network is spread across Saurashtra & Kutch region support the dairy development in this regions. Therefore, there is a need to support the MPCs in all the areas for balanced development of dairy sector.
 - The major milk supply related constraints faced by selected primary dairy cooperative societies and private dairy units were high numbers of small producers, irregular and inadequate supply of milk, unavailability of fodder throughout the years and low average milk yield of milk animals in area. Besides, these DPCS faced problems of not having the provision of advance payment for milk to milk producers, which was sometime available with PDUs.
 - Besides the milk producers, milk unions have also faced the constraints such as problem of labour as most of the persons do not want to work in interior areas of the tribal district. Besides, during lean season, this dairy faces the problems of working capital.

9.2.9 Policy Implications for development of dairy sector in Rajasthan

- The major constraint in milk marketing is the involvement of the unorganized sector. Changing the dairy-cooperative laws and regulations can reduce the unorganized sector's role in milk marketing. Strengthening the infrastructure for milk collection, transportation, processing, packaging, pricing, and marketing through dairy co-operatives can also change the minds of the milk producers.
- The livestock services like artificial insemination/natural service, vaccination, de-worming, etc are time-sensitive and government institutions are not able to deliver in time due to financial as well as bureaucratic constraints. Therefore, there is a need to re-orient the

government policy for delivery of livestock services and involve major stakeholder.

- The public provisioning of veterinary inputs delivery system should be strengthened by invigorating the extension machineries, so that the needy farmers could benefit from it. There is a need to make greater efforts to educate and assist the milk producers in respect to latest breeding, feeding and animal management technique.
- It was observed that the awareness about the dairy schemes among selected households was very poor. Therefore, there is a need to increase use advanced technology such as mobile phones in dairying for effective dissemination of livestock related information in general and dairying in particular.
- The selected households seldom aware about the livestock insurance. As insurance of livestock is the best safeguard for minimising the risk especially small holder producers, there is a need to increase the awareness and mandatory provision of the companies to undertaken livestock insurance of interested milk producers.
- The co-operative structure is very weak in Bharatpur regions of the state. Therefore, there is a need to support the MPCs as well as union in this areas for balanced development of dairy sector.
- The major constraints faced by the selected primary dairy cooperative societies and private dairy units were high numbers of small producers, irregular and inadequate supply of milk, unavailability of fodder throughout the years and low average milk yield of milk animals in area. Regarding infrastructure related constraints were unavailability of chilling facilities at village level for milk preservation and lack of training facilities. Few of them also faced Lack of necessary space required for dairy operation.
- The milk Unions are primarily engaged in manufacturing value added milk, butter, ice cream, peda, dehi, etc., in addition to milk sale. These milk produce are aimed at urban consumers whereas the attention of the dairy management should be focused to the welfare of the farmers' members. The union dairy should revised milk procurement price so as

to factors like cost variation and seasonality in milk production could be taken into account.

- There are number of schemes that provide incentives to the milk producers, however most of the schemes were stand alone with meagre financial outlay. In fact it would be beneficial to harness the regional strengths using a regionally differentiated approach for exploiting the potential. On the line of suggestion made by the Working Group for 12th FYP, all the ongoing schemes should be converged and put under three mega schemes; a) Animal Production, b) Livestock Health and c) Dairy Development.

References

- Alvares, Claud (1983), "Operation Flood –The White Lie," *The Illustrated Weekly of India*, pp. 8-13, October.
- Bansil P. C. (2002), "Agricultural Statistics in India", CBS Publications, New Delhi.
- Bhattacharya D. (1976), "India's Five Year Plan: An Economic Analysis, Progressive Publishers, Calcutta, 1976, p.46
- Birthal, Pratap S. (2016), "Innovations in Marketing of Livestock Products in India", *Indian Journal of Agricultural Marketing*, Vol. 30, No.3 , pp.88-107, September – December.
- Birthal, Pratap S. and Digvijay S. Negi (2012), "Livestock for Higher, Sustainable and Inclusive Agricultural Growth", *Economic and Political Weekly*, Vol. XLVII, Nos. 26 & 27, pp. 89-99.
- Brithal, P. S. (2008), "Linking Small holder Livestock Producers to Market: Issues and Approaches", *Indian Journal of Agricultural Economics*, Vol. 63, pp. 19-37.
- Chand, Romesh (1995), "Livestock in Himachal Pradesh: Factors Affecting Growth Composition and Intensity", *Indian Journal of Agricultural Economics*, Vol. 50, No.3, July-September, pp. 299-310.
- Chauhan A.K. (1992) "Marketed Surplus Function of Milk in Fatehpur District (U.P.)", *Indian Journal of Dairy Science*, Vol. 45, No. 2, pp 76-79.
- Chawla, N.K.; M.P.G. Kurup and Vijay Paul Sharma (2004), 'State of the Indian Farmer- Animal Husbandry', Vol. No. 12, Department of Agriculture and Co-operation, ministry of Agriculture, Government of India, New Delhi.
- Dairy India Yearbook (1997), "Indian Dairy Industry Profile, 1997", Appendices, Table, published in Dairy India.
- Datta, D. (2013), "Indian Fodder Management towards 2030: A Case of Vision or Myopia", *International Journal of Management and Social Sciences Research*, Vol 2, No. 2, pp. 33-41.
- Datta, T. N. and B. K. Ganguly (2002), "Analysis of Consumer Expenditure Pattern in States with Special Reference to Milk and Milk Products." National Information Network, NDDB.
- Degado, C., M. Rosegrant, H. Steinfeld, S.Ehui and C. Courbois (2001), "Livestock in 2020: The Next Good Revolution", *Outlook on Agriculture*, Vol. 30, No. 1, pp. 27-29.
- Dhaka, J.P., D.K. Jain, V.K. Kesavan and Lotan Singh (1998), "A Study of Production and Marketing of Surplus Functions for Milk in India" National Dairy Research Institute, (ICAR), Haryana.
- Dhondyal S.P. and J.E. Wills, (1967) "A Guide to Research Methodology in Agricultural Economics and other Social Sciences", Lion Publications, Civil Lines, Kanpur, 1967.
- FASAR (2015), "Indian Feed Industry: Revitalizing Nutritional Security", Food & Agribusiness Strategic Advisory & Research) Team, YES BANK Limited.

- Gandhi, V. P and Z. Zhou (2010), "Rising Demand for Livestock Production in India: Nature, Patterns and Implications, *Australian Agribusiness Review*, Vol. 18, No.1, pp. 103-35.
- Gangasagare, Karanjkar (2009), Status of Milk Production and Economic Profile of Dairy Farmers in the Marathawada Region of Maharashtra", *Veterinary World*, Vol. 2, pp. 317-320.
- GCMMF (2012, 2013, 2014, 2015, 2016), Annual Report, Kaira District Cooperative Milk Unions Limited, Gujarat Co-operative Milk Marketing Federation Ltd., Anand.
- GOA (various years), "Economic Survey (2011-12 to 2016-17)", Directorate of Economics and Statistics, Government of Assam, Guwahati, Assam.
- GOA (2017), "Statistical Handbook 2016", Directorate of Economics and Statistics, Government of Assam, Guwahati, Assam.
- GOB (2008), Draft Report on Breeding Policy for Dairy Animal Improvement in Bihar", by NDDDB, Government of Bihar, April.
- GOB (2017), Economic Survey, 2016-17, Government of Bihar, Patna.
- GoC (2015), *19th Livestock Census Chhattisgarh*, Directorate of Veterinary Services, Government of Chhattisgarh, pp. 1-108.
- GoC (2015a), *Economic Survey of Chhattisgarh*, Directorate of Economics and Statistics, Government of Chhattisgarh, pp. 1-158.
- GoC (2016), Livestock Statistics 2001-2016, Directorate of Veterinary Services, Government of Chhattisgarh, pp. 1-233.
- GoG (2012), *19th Livestock Census-2012, Gujarat State*, Directorate of Animal Husbandry, Government of Gujarat, Gandhinagar, Gujarat.
- GoG (2012a), Bulletin on Animal Husbandry and Dairying Statistics, 2012-13, Gujarat State, Directorate of Animal Husbandry, Government of Gujarat, Gandhinagar, Gujarat.
- GoG (2014), Bulletin on Animal Husbandry and Dairying Statistics, 2013-14 Directorate of Animal Husbandry, Government of Gujarat, Gandhinagar.
- GoG (2014a), Statistical Abstract of Gujarat State 2014, Gujarat State, Directorate of Economics and Statistics, Govt of Gujarat, Gandhinagar.
- GOG (2015), State Domestic Product Gujarat State 2014-15, Directorate of Economics and Statistics, Govt of Gujarat, Gandhinagar, Gujarat.
- GOG (2015a), *33rd Survey Report on Estimates of Major Livestock Products for the Year 2015-16 Gujarat State*, Directorate of Animal Husbandry, Government of Gujarat, Gandhinagar, Gujarat.
- GOG (2016), Annual Development Plan 2015-16, Directorate of Animal Husbandry, Government of Gujarat, Gandhinagar, Gujarat.
- GOG (2017), Bulletin on Animal Husbandry and Dairying Statistics, 2015-16, Directorate of Animal Husbandry, Government of Gujarat, Gandhinagar.
- GOI (1994, 2016), Economic Survey, Ministry of Finance, Government of India, New Delhi.
- GOI (1984), Report of Working Group on Animal Husbandry Conference, Calcutta.

- GOI (1996), National Livestock Policy Perspective, Report of the Steering Group (National Livestock Policy, Department Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, Government of India)
- GOI (2002), Report of the Working Group on Animal Husbandry and Dairying for the Xth Plan (2002-2007), Planning Commission, Government of India.
- GOI (2004), "India 2004", Ministry of Information & Broadcasting, Govt. of India.
- GOI (2007), Basic Animal Husbandry Statistical 2007, Dept. of Animal Husbandry & Dairying, MoA, Govt. of India .
- GOI (2008), Eleventh Five Year Plan: 2007-2012, Vol. II, Planning Commission, Government of India, New Delhi.
- GOI (2010), Basic animal husbandry statistics, Dept. of Animal Husbandry, Dairying and Fisheries, Govt. of India.
- GOI (2011), Census of India 2011, Office of the Registrar General and Census Commissioner, Government of India.
- GOI (2012), "Report of the Working Group on Animal Husbandry and Dairying 12th Five Year Plan (2012-17)", Planning Commission, Government of India, New Delhi.
- GOI (2012), Report of the Working Group on Animal Husbandry and Dairying 12th Five Year Plan (2012-17), Planning Commission, Government of India.
- GOI (2012a), Economic Survey, Ministry of Finance, Govt. of India (2011-12)
- GOI (2013), Statewise Estimates of Value of Output from Agriculture and Allied Activities with New Base Year 2004-2005, CSO, MOSPI, Government of India.
- GOI (2014), 'Key Indicators of Land and Livestock Holdings in India', National Sample Survey Office, Ministry of Statistics and Programme Implementation, Delhi.
- GOI (2014), "Key Indicators of land and livestock holdings in India, National Sample Survey Office", Ministry of Statistics and Programme Implementation, Government of India, Delhi.
- GOI (2014), Basic Animal Husbandry & Fisheries Statistics, AHS Series-15, Department of Animal Husbandry, Dairying and Fisheries , Ministry of Agriculture, Krishi Bhawan, New Delhi.
- GOI (2015), Basic Animal Husbandry & Fisheries Statistics 2015, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India
- GOI (2015, various years), Agricultural Statistics at a Glance, Directorate of Economics & Statistics, Ministry of Agriculture, Govt. of India.
- GOI (2016), 'Integrated Sample Survey, Basic Animal Husbandry and Fisheries Statistics, 2016', Department of Animal Husbandry, Ministry of Agriculture and Farmers Welfare, Government of India
- GOI (2016a), "Basic Animal Husbandry & Fisheries Statistics 2016", Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India, New Delhi.
- GOI (2016b), Guidelines for Export/Import of Bovine Germ Plasm (Revised April, 2016), Government of India, New Delhi.

- GOI (2016c), "Integrated Sample Survey, Basic Animal Husbandry and Fisheries Statistics, 2016", Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India, New Delhi.
- GOI (2016d), Statewise Estimates of Value of Output from Agriculture and Allied Activities with New Base Year 2011-2012, CSO, MOSPI, Government of India (2016).
- GOJ (2012), Annual Plan of Dairy, 2012-13, Department of Animal husbandry and Dairying, Govt. of Jharkhand, Directorate of Dairy Development, Department of AH and Fisheries, Govt. of Jharkhand, Ranchi.
- GoR (2012), Statistical Abstract, Directorate of Economics and Statistics, Government of Rajasthan, Jaipur
- GoR (2015), Annual Report 2014-15, Department of Animal Husbandry, Government of Rajasthan, Jaipur
- GoR (2015a), Annual Report 2014-15, Jalore- Sirohi District Cooperative Milk Unions Limited, Raniwara Rajasthan Cooperative Dairy Federation Ltd. (RCDF), Jaipur
- GoR (2015b), Annual Report 2014-15, Rajasthan Cooperative Dairy Federation Ltd., Sarak Sankul, Jaipur.
- GoR (2015c), Annual Report 2014-15, Sriganganagar District Cooperative Milk Unions Limited, Hanumangarh, Rajasthan Cooperative Dairy Federation Ltd. (RCDF), Jaipur.
- GoR (2015d), Economic Survey of Rajasthan 2015-16, Directorate of Economics and Statistics, Planning Department, Jaipur (Rajasthan)
- GoR (2016), Annual Report 2015-16, Department of Animal Husbandry, Jaipur, Government of Rajasthan
- GOR (2016), Guidelines for export/import of bovine germ plasm (Revised April, 2016), Govt. of Jharkhand.
- GoR (2016a), Annual Report 2015-16, Rajasthan Cooperative Dairy Federation Ltd., Sarak Sankul, Jaipur.
- GoUP (2015), Annual Progress report of Dairy Development Programmes for the years 2004-05 to 2014-15, Published by Dairy Development Department, U.P., Annual Publications.
- GOUP (2015), Progress (Pragati) - 2014 & 2015, Department of Animal Husbandry, Uttar Pradesh.
- GOUP (2015), Statistical Abstract of U.P., 2014-15, published by Krishi Bhawan, Government of Uttar Pradesh, Lucknow .
- GOWB (2000), Statistical Abstract, Bureau of Applied Economics and Statistics, Government of West Bengal
- GOWB (2004). Statistical Abstract, Bureau of Applied Economics and Statistics, Government of West Bengal.
- GOWB (2011), Annual Administrative Report-2010-11, Animal Resources Development Department, Government of West Bengal.
- GOWB (2013), Statistical Abstract, Bureau of Applied Economics and Statistics, Government of West Bengal.

- GOWB (2014a), Statistical Abstract, Bureau of Applied Economics and Statistics, Government of West Bengal.
- GOWB (2014b), Annual Administrative Report-2013-14, Animal Resource Development Department, Government of West Bengal
- Grewal, S.S. and P.S. Rangi (1983), "Economics and Employment of Dairying in Punjab", *Indian Journal of Agricultural Economics*, Vol. 35, No.4, pp.120-125.
- Gupta, H.C. (2011), "Dairying in India", Bombay: ASIA Publishing House, p.125.
- Hegde, N G (2006), "Livestock Development for Sustainable Livelihood of Small Farmers", CLFMA Souvenir, pp. 50-63.
- HSIA (various issues), "Hindu Survey of Indian Agriculture, 1991-1995, National Press, Kasturi Building, Madras.
- Huria, V.K and K. T. Acharya (1980), "Dairy Development in India-Some Critical Issues", *Economic and Political Weekly*, Vol.15, No.45 & 46, pp.1931-1942, November.
- ICAR (various years), Hand Books of Agriculture (1980, 1995, 1997), published by ICAR, New Delhi.
- ICAR- NIANP (2012), Feedbase Report 2012, National Institute of Animal Nutrition and Physiology, Bangalore
- IFCN (2015), Dairy Report 2015, International Farm Comparison Network, IFCN Dairy Research Centre, Schauenburgerstrabe, Germany.
- IFPRI (2015), A Report on Livestock Industrialization, Trade and Socio-health Environmental Impact in Developing Countries', International food Policy Research Institute, Washington, DC, USA.
- Jain, D.K., A.K. Sharma and V.K. Kesavan (1998), "Demand Analysis of Milk and Milk Products in India," National Dairy Research Institute (ICAR) Karnal, Haryana.
- Jayaraman, D. (1985), "Milk Production", *Indian Dairy Man*, Vol.XIX, No. 12, pp. 399-400.
- Jha, Brajesh (2004), India's Dairy Sector in the Emerging Trade Order, Institute of Economic Growth, Working Paper E/243/2004, New Delhi.
- Kadirvel, R. (2004), "Towards Open Economy", *The Hindu Survey of Indian Agriculture*, pp. 110-114.
- Kahlon, A.S. (2002), "Dairy Financing in Kurukshetra and Kaithal Districts of Haryana- An Ex-post Evaluation Study", NABARD, Regional Office, Chandigarh.
- Kalamkar, S. S.; H. Sharma and M. Makwana (2017), "Assessment of the Status of Dairying and Potential to Improve Socio-Economic Status of the Milk Producers and Convergence of all Central & State Schemes at District level in Gujarat", AERC Report No. 168, Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat.
- Kashish, Dhawan V (2015); Socio-economic profile of dairy farmers in Punjab: A case study of Amritsar district. *International Journal of Multidisciplinary Approach and Studies* 2(2):155-162.
- Khurody, D.N. (1974), *Dairying in India*, Bombay: ASIA Publishing House, p.105.

- Kishore, Avinash; Pratap S. Birthal; P. K. Joshi; Tushaar Shah and Abhishek Saini (2016), "Patterns and Drivers of Dairy Development in India: Insights from Analysis of Households and District-level Data", *Agricultural Economics Research Review*, Vol. 29 (No. 1), pp. 1-14.
- Kumar, Ayush and Jignesh Shah (2016), "Dairying as an Instrument for Ensuring Socio-Economic and Nutritional Security in Rural India", *Indian Journal of Agricultural Economics*, Vol. 71, No. 1, January March, pp. 78-89.
- Kumar, P. (1998), "Food Demand Supply Projections in India", Mimeo, Indian Agricultural Research Institute, New Delhi.
- Kumar, T. Nanda (2016), Keynote address delivered at Indian Dairy association 44th Dairy Industry Conference, Karnal, February 18.
- Kuwar, P.M (1975), "Economics of Cross-breed Cows", *Indian Journal of Agricultural Economics*, Vol.15, No.3, pp.151-152.
- Maahi (2016), Annual Report 2015-16, Maahi Milk Producer Company Limited, Rajkot 360001, Gujarat.
- Meena, G. L. and D. K. Jain (2012), Economics of Milk Production in Alwar District (Rajasthan): A Comparative Analysis, *International Journal of Scientific and Research Publications*, Vol. 2, No. 8, pp 1-5.
- Mishra, Prachi and Devesh Roy (2011), Explaining Inflation in India: The Role of Food Prices, (Mime), International Monetary Fund, Washington, D.C.
- Mishra, S.N. (1995),"India's Livestock Economy: A Perspective on Research", *Indian Journal of Agricultural Economics*, Vol.50. No.3, pp.255-263.
- NAAS (2003), "Export Potential of Dairy Products, Policy Paper 23, National Academy of Agricultural Sciences, India, December.
- NABARD (1999), Annual Report, National Bank for Agriculture and Rural Development, Mumbai
- NCAER (2017), Agricultural Outlook and Situation Analysis Reports -Rabi Outlook Report 2017, published by Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, National Council of Applied Economic Research, New Delhi.
- NDDB (2004), Compendium of Documents on Dairy development and Animal Husbandry Schemes being implemented by different departments of Government of India, NDDB, August 2004, Mimeo.
- NDDB (2014), Dairying in Gujarat", A Statistical Profile 2013, National Dairy Development Board, Anand.
- NDDB (2014a), Inaugural address of Shri T Nanda Kumar, Chairman, NDDB, at the two-day seminar-cum-workshop on 'Convergence of Productivity Enhancement Activities to Meet Future Demand of Milk and Milk Products'.
- NDDB (2016), "Dairying in Rajasthan", A Statistical Profile 2016, National Dairy Development Board, Anand.
- NDDB (2017), "Overview and Strengthening of Dairy Cooperatives", National Dairy Development Board, Anand (available at http://dairyknowledge.in/sites/default/files/1.0_overview_and_challenges_of_dairy_cooperatives.pdf).

- NDDB (2017), Dairying in West Bengal, A Statistical Profile 2017, Salt Lake, Kolkata.
- NDDB (various years), Annual Report (2010-11, 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2017-18), National Dairy Development Board, Anand.
- Nivsarkar, A.E., P.K.Vij and M.S.Tantia, (2000), Animal Genetics Resources of India, Cattle and Buffalo, Directorate of Information and Publications of Agricultural, Indian Council of Agricultural Research, Krishi Anusandhan Bhawan Pusa, New Delhi-110012.
- NSSO (1987), Estimates of livestock and Agricultural Implements Classified by Household Operational Holding, 37th Rounds, Report No.338, National Sample Survey Office, Ministry of Statistics and Programme Implementation, GOI.
- NSSO (1997), Livestock & Agricultural Implements in Household operational holdings, 1991-92, 48th Rounds, Report No. 408, National Sample Survey Office, Ministry of Statistics and Programme Implementation, GOI.
- NSSO (2006), "Livestock ownership across operational land holding classes in India, 2002-03", 59th Rounds, Report No. 493, National Sample Survey Office, Ministry of Statistics and Programme Implementation, GOI.
- Patel, Amrita (2003), Inaugural address delivered at the International Workshop on Livestock and Livelihoods: Challenges and Opportunities for Asia in the Emerging Market Environment, Anand, November 10.
- Patel, R.K. (1993), "Present Status and Promise of Dairying in India", Indian Journal of Agricultural Economics, Vol. 48, No.1, pp.1-33, Jan-March.
- PAYAS (2016), Annual Report 2015-16, PAAYAS Milk Producers Company, Jaipur.
- Peter Bramby (1980), "The Dairy Situation in India", Indian Dairy Man, Vol-XXXL, No.5, May 1980, pp. 357 - 364.
- Prabaharan, R. (2002), "Livestock Development in India- Some Constraints", *Agricultural Economics Research Review*, pp.13-23.
- Radhakrishna, R. and C. Ravi. (1990), "Food demand projections for India" Hyderabad, India: Center for Economic and Social Studies, Mimeo.
- Raina, Rajeshwari, S and Bebanjana Dey (2016), "The Valuation Conundrum: Biodiversity and Science-Policy Interface in India's Livestock Sector", *Economic and Political Weekly*, Vol. LI, No. 47, November 19, pp 70-78.
- Rajendran, K. and Samarendu Mohanty (2004), "Dairy Cooperatives and Milk Marketing in India: Constraints and Opportunities", *Journal of Food Distribution Research*, Vol. 35, No. 2, July, pp.34-41.
- Rajeshwaran, S. & Gopal Naik (2016), Milk production in India rises by a historic 6.25% in 2014-15: A boon or a bane?, IIMB-WP NO. 518
- Ramana, D.B.V.; Shalander Kumar; K. Kareemulla; C.A. Rama Rao; Sreenath Dixit;; K.V. Rao and B. Venkateswarlu (2009), "Livestock in Rainfed Agriculture: Status, and Perspectives", Policy Paper: SEPR Series-2, Central Research Institute for Dryland Agriculture, ICAR, Hyderabad, pp. 1.46.
- Ramaswamy, N.S. (2000), "Livestock and Sustainable Development." Paper presented at the International Conference on Smallholder Livestock Production Systems in Developing Countries: Opportunities and Challenges held during 24-27th November, Kerala Agricultural University.

- Randolph T.F. , Schelling E., Grace D., Nocholson C F, Leroy J K, Cole D C, Demment M W, Omore A, Zinsstag J, Rule M (2007), "Role of Livestock in human Nutrition and Health for Poverty Reduction in Developing Countries", *Journal of Animal Sciences*, Vol. 85, pp. 2788-2800.
- Rao, V.M. (2005), "Cooperatives and Dairy Development –Changing Destiny of Rural Women", Mittal Publications, New Delhi.
- Saikia, T.N and G. Kakaty (2007), "Evaluation of Integrated Dairy Development Project (IDDP) in Non –Operation Flood, Hilly and Backward Areas in North Eastern Region", Agro-Economic Research Centre for N.E. India, Jorhat, Assam.
- Sarkar, Debnarayan and Bikash Kumar Ghosh (2010), "Constraints of Milk Production: A Study on Cooperative and Non-cooperative Dairy Farmers in West Bengal", *Agricultural Economics Research Review*, Vol. 23, July December 20110, pp. 303-314.
- Sarve, V. J. (2007), "Study of Socio-Economic Profile and Training Needs of Dairy Farmers in and around adopted Villages of Bombay Veterinary College, MVSC Thesis, Maharashtra Animal Fishery Science University, Nagpur (India).
- Saxena, R. Et al (2002), "Life Cycle Assessment of Milk Production in India", *Int J LCA*, Vol.7 (3), Pp. 1- 89.
- Saxena, Raka; N.P. Singh and K.K. Dutta (2002), "Prioritizing Production Constraints of Dairying in Haryana, *Agricultural Economics Research Review*, Conference Proceedings, December, pp.118-126.
- Sekhon M K, Dhaliwal T K, Kaur M (2012), "Present Consumption level and demand projections for livestock products in India", *Indian Journal of Agricultural Marketing*, Vol. 26, No. 1, pp.116-122.
- Shah, Amita (2006), "Changing Interface Between Agriculture and Livestock: A Study of Livelihood Options under Dry Land Farming Systems in Gujarat", Working Paper No. 170, Gujarat Institute of Development Research, Gota, Ahmedabad, May.
- Shah, Tushaar; Ashok Gulati, Hemant P, Ganga Shreedhar, R.C. Jain (2009), "Secret of Gujarat's Agrarian Miracle after 2000", *Economic and Political Weekly*, Vol. XLIV, No. 52, December 26, pp. 45-55.
- Sharma N, Mohan II (2013), "Diversification of agricultural sector in Punjab: Growth and Challenges", *Agricultural situation in India* , XIX: pp. 21-31.
- Sharma V P. Delgado C. Stall S. Singh R V (2003), Policy Technical and Environment Determinants and Implications of the Scaling-up of Milk production in India, Monographs.
- Sharma, H. and, S. S. Kalamkar (2017), "Assessment of the Status of Dairying and Potential to Improve Socio-Economic Status of the Milk Producers and Convergence of all Central & State Schemes at District level in Rajasthan", AERC Report No. 169, Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat.
- Sharma, Usha and S.K. Sharma (2005), "Discovery of North- East India, Mizoram," Vol.8, Mittal Publications, New Delhi.

- Sharma, V P; Delgado C; Stall S. and R V Singh (2003); Policy technical and environment determinants and implications of the scaling-up of milk production in India.
- Sharma, V.P. and Ashok Gulati (2003), "Trade Liberalization, Market Reforms and Competitiveness of the Indian Dairy Sector," MTID Discussion Paper, No.61, Washington, D.C., U.S.A., April.
- Sharma, V.P. and P. Sharma (2002), Trade Liberalisation and Indian Dairy Industry, Oxford and IBH Publishing Co. Pvt. Ltd. , New Delhi.
- Sharma, Vijay Paul (2004), "Livestock Economy of India: Current Status, Emerging Issues and Long Term Prospects", Keynote Paper, Indian Journal of Agricultural Economics, Vol. 59, No. 3, p. 512-554 July- September 2004.
- Sharma, Vijay Paul (2004), "Livestock Economy of India: Current Status, Emerging Issues and Long -Term Prospect", Indian Journal of Agricultural Economics, Vol.59, No.3, pp.512-554, July-Sept.
- Sharma, Vijay Paul and Raj Vir Singh (2007), "Restructuring agrifood markets in India: The dairy sector", Indian Institute of Management' Ahmedabad' (India), July.
- Sharma, Vijay Paul and Raj Vir Singh (2007), "Restructuring agrifood markets in India: The dairy sector", Indian Institute of Management' Ahmedabad' (India), July.
- Shiyani, R.L. (1996), "An Economic Inquiry into the Impact of Dairy Co-operatives on Milk Production", Indian Journal of Agricultural Economics, Vol.51, No.3, July-September, pp. 396 -406.
- Singh and Niwas (2012), "Up liftment of Rajasthan through Livestock Farming". Rajasthan Journal of Extension *Education*, Vol. 20, pp. 27-31.
- Singh, K. M. and M. S. Meena (2012), "Livestock Value Chains: Prospects, Challenges and Policy Implications", in Eds: B.P. Bhatt, A.K. Sikka, Joydeep Mukherjee, Adlul Islam, A. Dey Status of Agricultural Development in Eastern India, pp. 493-508
- Singh, K. M., R.K.P. Singh, A.K. Jha and M. S. Meena (2010), "Livestock Value Chains: Prospects, Dynamics of livestock sector in Bihar: A Temporal Analysis", *Agricultural Situation in India*, March, Vol. LXVI, No.-13, pp. 687-702.
- Singh, Katar (1987), "Operation Flood: An Appraisal of current Indian Dairy Policy," *Indian Journal of Agricultural Economics*, Vol.XL-11, No.1, Jan. - March, 1987.
- Singh, Surendar (1986), "Agro-Economics of Dairy Development in India", Criterion Publications, New Delhi.
- Tikku, D. (2017), "An Institutional Choice- Producer Companies", Dairy India, Edition Seven (ISBN 978-81-901603-3-9),pp.8588.
- Tripathi, R.S. (1995),"Cow Milk Production in H.P. Hills -An Economic Approach," Indian Journal of Dairy Science, Vol. 48, No.2, pp. 98-102.
- Vaidyanathan, A. (1989), "Research on the Livestock Economy: An Overview, Livestock Economy of India", *Indian Society of Agricultural Economics*, Oxford and IBH Publishing Co. Pvt. Ltd., Bombay.

Websites Visited:

<http://dahd.nic.in/sites/default/files/BAHS2016%20Updated%20on%2016.08.16.pdf>
<http://agricoop.nic.in>
<http://animalhusbandry.assam.gov.in>
<http://agricoop.nic.in>,
<http://ahd.cg.gov.in>
<http://animalhusbandry.rajasthan.gov.in/>
<http://banasdairy.coop/aboutus.html>
<http://www.censusindia.gov.in>; <https://www.dnvgl.com>
<http://dahd.nic.in>
<http://www.fao.org/wairdocs/lead/x6170e/x6170e2z.htm>
<http://data.gov.in/keywords/capita-availability>
<http://descg.gov.in>
<http://gujaratinformation.net/showpage.aspx?contentid=107>
<http://sarasmilkfed.rajasthan.gov.in/index.aspx>
<http://sumul.com>
<http://www.ajmermilkunion.com/achivments.html>
<http://www.amul.com/m/gcmmf>
http://www.business-standard.com/article/current-affairs/satellite-mapping-to-boost-dairy-farming-116033000465_1.html
<http://www.censusindia.gov.in>
http://www.clal.it/clal20/en/index.php?section=dwt_trial
<http://www.fao.org>
<http://www.indiাদairy.com>; <http://www.indiaonestop.com>
<http://www.nddb.org>
<http://www.paayasmilk.com/>
<http://www.rajkrishi.gov.in>
<http://www.rldb.nic.in/Achievements.aspx>
<http://www.sriganganagarmilkunion.com/>
<https://doah.gujarat.gov.in/dairy-development.htm>
https://en.wikipedia.org/wiki/Banaskantha_district; <http://nddb.ccop>
<https://www.dnvgl.com>
<https://www.indiastat.com/default.aspx>
<https://www.yesbank.in>
www.aavinmilk.com
www.amul.com
www.anujdairy.com
www.censusindia.gov.in
www.dahd.nic.in
www.fao.org
www.gangadairy ltd.com
www.google maps
www.indiাদairy.com
www.indianmirror.com
www.indiastat.com
www.insightsonindia.com
www.jharkhand.govt.in
www.nddb.coop/node/1362
www.pib.nic.in
www.sudha.coop
www.timesofindia.com
www.vikaspedia.in

Annexures

Annexures: State-wise Policies/Schemes for Dairy Development

Annex I (a): Policies/ Schemes Implemented in Assam

No	Activity	Scheme/ Institutions	Central/ State	Nodal Dept.	Relative Components/Description
A Central Govt.					
1.	Dairy Development and infrastructure	Dairy Entrepreneurship Development Scheme (DEDS)	NABARD	CBs, RRBS,UBs, SCBs, SCARDB, institutions, which are eligible for refinance from NABARD	Farmers, individual entrepreneurs and groups of unorganized and organized sector. Groups of unorganized sector which includes SHGs on behalf of their members, Dairy Cooperative Societies, Milk Unions on behalf of their members, Milk Federations, Panchayati Raj Institution (PRIs) etc. are eligible under the scheme. Back ended capital subsidy @25% of the project cost for general category and 33% for SC/ST farmers. The component-wise subsidy ceiling will be subject to indicative cost arrived by NABARD from time to time.
2	Animal Husbandry & Dairy Development	Rashtriya Krishi Vikas Yojana	Central Sector	Ministry of Agriculture and Farmers welfare	100% Grants would be provided to the States by Central Government.
3	Livestock Health	Livestock Health and Disease Control	Centrally Sponsored	Department of Animal Husbandry	Livestock Health & Disease Control (LH & DC) during 10th plan, a Centrally sponsored macro-management scheme called "Livestock Health and Disease Control" implemented with an outlay of Rs 525.00 crores.
4	Cattle and Buffalo Breeding	National Project for Cattle and Buffalo Breeding (NPCBB)	Centrally Sponsored	Department of Animal Husbandry	The project envisages 100% grant-in-aid to Implementing Agencies. The Centrally sponsored scheme NPCBB has been launched in 2006-07 for up gradation of indigenous cattle and buffalo. Production of quality Frozen Semen Required for Artificial Insemination (AI) of cattle/buffalo is one of the basic objectives of the scheme. The supply of all logistic like Liquid Nitrogen etc required for AI is to be provided under this project. Training of Veterinarians and Para Veterinarians with the new technology is also a part of the scheme, A new AI Frozen Semen Production Centre (FSBS) has been established at Barpeta district for production of quality Frozen Semen under this scheme. From 2015-16, the scheme has been renamed as NPBB (National Project on Bovine Breeding) and the funding has been routed through the Department. This scheme is implemented by Assam Livestock Development Agency (ALDA).
5	Livestock Insurance	Livestock Insurance	Centrally Sponsored	Government of India	The Livestock Insurance Scheme, a Centrally sponsored scheme, was implemented on a pilot basis by the Ministry of Agriculture & Farmers Welfare , Dept. of A.H.D. & Fisheries. The premium of the insurance is subsidized to the tune of 50%. The entire cost of the subsidy is being borne by the Central Government. The benefit of subsidy is being provided to a maximum of 2 animals per beneficiary for a policy of maximum of three years. The scheme is being implemented in all States except Goa through the State Livestock Development Boards of respective States
6	Livestock Census	Livestock Census	Central Sector Scheme	State Government	It is a Central Sector Scheme with 100% Central assistance. The ultimate responsibility for conducting the Livestock Census rests with the Animal Husbandry Departments of the States/UTs. The Central Government coordinates the work of the States and gives necessary guidance to

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					ensure uniformity in collection of census data.
7	Livestock	National Programme for Prevention of Animal Diseases	Central Sector	All State Governments/ U T Administration.	100% Centrally assisted scheme to prevent ingress of livestock diseases, to provide export certificate for livestock and livestock products. Other components include monitoring of the quality of vaccines and biologicals, Strengthening of Central/Regional Disease Diagnostic Laboratories. Implementing Agencies etc.
8	Livestock Health	National Livestock Mission (NLM)	Central Sector	Department of Animal Husbandry & Vety. Assam	NLM was launched in Assam in 2014-15 with the constitution of the State Level Sanctioning and Monitoring Committee (SLMC), with the Chief Secretary, Govt. of Assam as Chairperson and Principal Secretary to the Govt. of Assam, AH & Veterinary Department as Member Secretary. District Livestock Mission Committees (DLMCs) were also constituted with the Deputy Commissioners as Chairmans and district-level Veterinary Officers of respective districts as Member Secretaries. NLM has been formulated by subsuming and modifying of seven Centrally Sponsored Schemes and Seven Central Schemes under Mission Module. The Centrally Sponsored Schemes are: <ul style="list-style-type: none"> ○ Central Fodder Development Organization ○ Central Sheep Breeding Farm ○ Central Poultry Development Organization ○ Integrated Development of Small Ruminants and Rabbits ○ Piggery Development ○ Poultry Venture Capital Fund ○ Salvaging and Rearing of Male Buffalo Calves The Central Schemes are: <ul style="list-style-type: none"> ○ Centrally Sponsored Fodder and Feed Development Scheme ○ Conservation of Threatened Breeds of Livestock ○ Poultry Development ○ Utilization of Fallen Animals ○ Livestock Insurance ○ Establishment of Rural Slaughterhouses, including mobile slaughter plants ○ Modernization of Rural Slaughterhouses
9	Livestock Health	National Animal Disease Reporting System	Central Sector	Department of Animal Husbandry & Vety. Assam	NADRS is a 100 % Central assistance scheme implemented since 2011-12. This includes disease reporting system from identified block areas of HQ through specially designed software and using internet facilities. The report needs to be submitted to Govt. for preparation of disease mapping etc.
10	Livestock Health	Establishment & Strengthening of Veterinary Hospital and Dispensaries (ESVHD)	Central Sector	Department of Animal Husbandry & Vety. Assam	Centrally sponsored scheme ESVHD was launched during the year 2010-11. The fund is being provided by Govt. of India on 90:10 sharing basis between Central and State Govt. The Govt. of India introduced this scheme for establishment/ re construction of new Hospitals /Dispensaries, up gradation of existing Veterinary Hospitals and Dispensaries for improving efficiency as per approved norms.'

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11	Livestock Health	Assistance to State for Control of Animal Diseases (ASCAD)	Central Sector	Department of Animal Husbandry & Vety. Assam	This is a Centrally sponsored scheme ASCAD is implemented by the Govt. of India through State Government since 2005-06. The fund for this component provides to the State for control of economically important and zoonotic disease of livelihood through immunization, strengthening of existing State Veterinary Biological production unit, holding of workshop/ seminars, training of veterinarians & para vets. The project is being implemented on 90:10 sharing basis.
12	Livestock Health	National Control Programme of Brucellosis (NCPB)	Central Sector	Department of Animal Husbandry & Vety. Assam	The objective of this project is to reduce Brucellosis, an economically important disease that causes abortions and infertility in animals. Central assistance is provided to the State for mass vaccination of all female calves between 6-8 months in the areas where incidence of the disease is high
B State Govt.					
	Dairy Development	Chief Minister Samagra Gramya Unnayan Yojana (CMSGUY)	State	Directorate of Animal Husbandry & Vety. Assam	A mega mission, CMSGUY has been launched during 2016-17 for the overall development of the rural areas of the State and to double the farmer's income in Assam by 2021-22 coinciding with 75 years of India's Independence. The Assam Milk, Meat and Egg Mission is an important project under this, to be undertaken by the Directorate of Animal Husbandry and Veterinary, to make Assam self-sufficient in milk production focused interventions in critical areas required by the rural dairy farmers of Assam by organizing and strengthening the existing and new dairy groups such as Dairy Cooperative Societies (DCS), Livestock Cooperative Societies (LCS), Self Help Groups (SHGs) etc.
2	Dairy Development	Assam Agricultural Competitiveness Project(AACP)	State	Directorate of Dairy Development	The objective of the project in respect of Dairy Development is to organize the dispersed dairy farmers into Dairy Cooperative Society (DCS) and Self Help Group (SHG) and Milk Producers Institutions (MPIs) to provide both forward and backward linkage to them in order to strengthen their capacity, make them more competitive and economically sustainable and to make them able to take advantage of emerging commercial opportunities. A substantial number of dispersed dairy farmers have been organized in viable groups with assured linkages under AACP
3	Dairy Development	Chief Minister's Special Package for Dhemaji District	State	Directorate of Dairy Development	The Dairy Development Department has proposed to establish 13 nos. of Commercial Dairy Farms in the district as well as to complete on- going project of 5000 LPD Dairy Plant. In addition, the Department has planned for up gradation of existing Lahowal Milk Processing Plant.
4	Livestock Health	Fodder Development	State	Directorate of Animal Husbandry & Vety. Assam	The Department has planned to popularize fodder cultivation at institutional waste land, strengthen and revamp the Regional Feed Testing Laboratory, located at Khanapara and establish Silage making unit in each Government Livestock Farm for demonstration purpose. The Department has also proposed establishment of 6(six) numbers of feed mill and fodder block making units in PPP mode to provide available source of fodder for cattle to enhance milk production.
5	Dairy Development	Integrated Support Services for creation of milk surplus district	State	Directorate of Dairy Development	The scheme envisages providing support services to identify dairy clusters of Barpeta district and Sadiya sub division for enhancement of milk production and livelihood avenues to the poor dairy farmers and to make the district as milk surplus district.
6	Support Inputs	Support Inputs	State	Directorate of	The Dairy Co-operative Societies organized

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		to Dairy Co-operative Societies (DCSs)		Dairy Development	under AACP and IDDP are doing well in milk production. To provide input support for clean milk production as well as for enhancement of milk production, the State Dairy Development Department has proposed to give cattle feeds, green fodder, milk procurement inputs, feed supplements etc. to the members of DCSs.
7	Dairy Development	Schemes for Women	State	Directorate of Dairy Development	For economic empowerment of the womenfolk (Empowerment) involved in dairy farming, the Dairy Development department has taken special initiative since 2013-14 by forming women groups like Dairy Cooperative Societies, Self Help Groups so that they can avail easy credit, inputs and marketing facilities under the Milk Village scheme. The department also initiated training to give updated exposure and skill development on the animal rearing front and other management activities including marketing of their produce.
8	Dairy Development	Employment Generation	State	Directorate of Dairy Development	1. All the existing and new Schemes/ projects under the Dairy Development, Assam will be carried out in synchronization with each other irrespective of source of fund to achieve the common objective, i.e. to increase overall milk production in the State thereby giving livelihood avenues to the poor dairy farmers. 2. The proposed acquisition of Bulk Milk Cooler will be installed under different Dairy Cooperatives to create employment avenues in the State. 3. The Department has proposed to provide financial assistance to prospective dairy entrepreneurs to establish commercial dairy farm in urban areas for which 66.66 per cent of the total unit costs will be provided through bank finance and remaining 33.33 per cent will be as Govt. Subsidy.
9	Dairy Development	Village Milk Scheme 2015-18	State	Directorate of Dairy Development	It is a 100% grants-in-aid scheme for a Joint Liability Group (JLG) comprising of seven (7) Schedule Caste Dairy Farmers who are experienced in rearing cross bred milch cattle. The Scheme will cover the cost of 10 cattle including transportation, insurance of Rs.5,00,000.00. District Implementing Officer of the Dairy Development Dept. will be the implementing agency of the scheme. The beneficiary will be selected by the SC Welfare Board of the respective Sub-division as per their existing norms. The fund released from the Govt. would be transferred directly to the account of JLG which will be operated by the Secretary of JLG and the District Implementing Officer. The milch animals/Pregnant heifers will be procured by the JLG in coordination with District
C Milk Union Sponsored					
1	Development	Assistance to Co-operatives	Milk Union	WAMUL	Revival of WAMUL with improvement in milk procurement, processing and marketing. WAMUL has been turn around and has been able to share out its surplus to the milk producers
2	Dairy Development	Intensive Dairy Development Programme (IDDP)	Milk Union	WAMUL	Improvement in milk procurement by increasing the no of milk producers and milk marketing with a linkage to WAMUL. Creation of bulk milk cooling facilities at the village level.
3	Animal Production	Assam Dairy Development Plan (ADDP)	Milk Union	WAMUL	Provide doorstep AI delivery services & Animal Health care.

Source: GOI, GOA & WAMUL

Annex I(b) : Suggested Convergence of Schemes in Assam

No.	Activity	Scheme/ Institutions	Central/ State
A Animal Production			
1	Cattle and Buffalo Breeding	National Project for Cattle and Buffalo Breeding (NPCBB)	Centrally Sponsored
2	Animal Production	Assam Dairy Development Plan (ADDP)	Milk Union
B Livestock Health			
1	Livestock Health	Livestock Health and Disease Control	Centrally Sponsored
2	Livestock Health	National Programme for Prevention of Animal Diseases	Central
3	Livestock Health	National Livestock Mission (NLM)	Central
4	Livestock Health	National Animal Disease Reporting System	Central
5	Livestock Health	Establishment & Strengthening of Veterinary Hospital and Dispensaries (ESVHD)	Central
6	Livestock Health	Assistance to State for control of Animal Diseases (ASCAD)	Central
7	Livestock Health	Fodder Development	State
8	Livestock Health	National Control Programme of Brucellosis (NCPB)	Central
C Dairy Development			
1	Dairy Development and infrastructure	Development and infrastructure Dairy Entrepreneurship p Development Scheme (DEDS)	NABARD
2	Animal Husbandry & Dairy Development	Rashtriya Krishi Vikas Yojana (RKVY)	Central
3	Dairy Development	Chief Minister Samagra Gramya Unnayan Yojana (MSGUY)	State
4	Dairy Development	Assam Agricultural Competitiveness Project(AACP)	State
5	Dairy Development	Chief Minister's Special Package for Dhemaji District	State
6	Dairy Development	Integrated Support Services for creation of milk surplus district	State
7	Inputs Support	Support Inputs to Dairy Co-operative Societies (DCSs)	State
8	Dairy Development	Schemes for Women	State
9	Dairy Development	Employment Generation	State
10	Dairy Development	Village Milk Scheme 2015-18	State
11	Dairy Development	Assistance to Co-operatives	Milk Union
12	Dairy Development	Intensive Dairy Development Programme (IDDP)	Milk Union
D Other			
1	Livestock Insurance	Livestock Insurance	Central
2	Livestock Census	Livestock Census	Central

Annex II (a): Recommended Cluster wise Bovine Breeding Policy for Bihar

Clusters	Districts	Breeding Cluster	Improved Exotic Dairy Cattle Breed (Max. Inheritance level in population %)	Improved Indigenous Cattle Breed	Improver Buffalo Breed	Remarks
1.	West Champaran, East Champaran, Gopalganj	North-West	Nil	Bachaur, or Haryana	1. Mehsana 2. Murrah	Crossbreeding with 50 % Jersey in the herd of progressive farmers with good resources CB should have very low priority
2.	Araria, Kishanganj, Purnea	North-East	Nil	Red Sindhi or Gir	1. Mehsana 2. Murrah	Crossbreeding should not be taken up
3.	Arwal, Jehanabad, Aurangabad, Gaya, Nawada	South-West	Jersey (50%)	Haryana or Tharparkar	1. Mehsana 2. Murrah	Exotic breeding bulls to be used. Jersey pure bred and jersey 50 per cent. However, crossbreeding a low priority.
4.	Sheohar and sitamarhi	North-West	Jersey (50%)	Bachaur or Haryana	Mehsana	Jersey 50 per cent. However, crossbreeding a low priority.
5.	Madhubani	North-East	Jersey (50%)	Red Sindhi or Gir	Mehsana	Jersey 50 per cent and higher grades under better resources.

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6.	Supaul, Saharsa, Madeepura & Katihar	North-East	Jersey (50%)	Red Sindhi or Gir	Mehsana`	Jersey 50%. However, crossbreeding a low priority
7.	Nalanda, Sheikhpura, Lakhisarai, Munger, Jamui, Banka	South-East	Jersey (50%)	Sahiwal	Murrah	Exotic breeding bulls to be used. Jersey pure bred and Jersey 50%.
8.	Mezaffarpur, Darbhanga, Vaishali, Khagaria, Buxar, Kaimur, Rohtas	Central	1. Jersey (62.5%) 2. HF (50%)	Sahiwal Haryana	Murrah	Exotic breeding bulls to be used Jersey pure bred, Jersey 62.5%/Jersey 50%.
9.	Siwan, Saran, Bhojpur, Patna, Samastipur, Begusarai, Bhagalpur	Central	1. Jersey (75%) 2.HF (62.5%)	Sahiwal	Murrah	Exotic breeding bulls to be used Jersey pure bred, Jersey 75%/Jersey 50%. HF purebred, HF 62.5%/ HF 50%.

Source: Breeding Policy for Dairy Animal Improvement in Bihar, NDDB, April, 2008

Annex II (b): Suggestions for Effective Implementation of Breeding Policy in Bihar

The success of any breeding policy depends on its effective implementation. Many programmes fall due to faulty implementation despite the policy being formulated with great care. The suggestions below could facilitate the effective implementation of a recommended policy.

1. Farmers should be involved in the process of declining and implementing a breeding policy.
2. Animal identification system is essential for recording individual animals' ownership pedigree breed/blood level, breeding history etc.
3. The source of quality bulls and semen doses should be identified with care for use in the state pedigree details of bulls should be made known to farmers.
4. Semen doses of bulls of a particular breed or breed combination recommended for a particular cluster must be made available to all AI technicians at all times.
5. AI technicians should be made aware of the Breeding Policy. Their proficiency in carrying out AIs should be assessed and only then should they be registered.
6. In places when AI facilities are not feasible at present, bulls for natural service should be made available. But while making bulls available for natural service. It should be ensured that the bulls of the particular breed or breed combination recommended for the particular cluster only are supplied.
7. Field performance recording system should be initiated in some pockets to monitor, evaluate and undertake an impact assessment of the breeding policy.
8. A Regulatory Authority should be established and made responsible for :

Education of farmers regarding the Breeding Policy
Registration of services providers and AI Technicians
Enforcement of the approved breeding policy in the state
Monitoring quality control of AI delivery services provided by all service providers
Authorising the use of semen and bulls from other states on quality considerations alone
Under taking a periodic review of breeding policies and programmes, suggesting and implementing appropriate measures for further improvement.

Annex III (a): Policies/ Schemes Implemented in Chattisgarh

S. No	Name of Scheme	Activity	Scheme/ Institutions	Central /State	Central Ministry/ State Nodal Dept.	Relative Components/ Description
(a) Animal Production						
1	National Cattle- Buffalo Breeding Project	Animal breed improvement work is being done in the State by the Agency has Established well equipped Central Semen Station.	Scheme for Anjora Durg and A.I. training center at Mahasamund. Provide training, materials and tapering grant to private A.I. workers for expansion of self employment and A.I. facilities.	Central	Livestock Development Department Chhattisgarh.	The first step project Rs. 10.42 crores was sanctioned to the state, which was utilized completely. In the second step of the project Rs. 17.60 crores was sanctioned. Availability of frozen semen at A.I. centers for conserved breeds under frozen-semen insemination policy.

Policies and Programmes/Schemes for Dairy Development

2	Private Artificial Insemination Worker Scheme	Training program based on A.I.	Extension of services of Artificial insemination in far-flung areas and Provide employment to educated unemployed youth.	State	Gram Panchayat/ Concern District Joint Director/ Deputy Director, Veterinary Services.	After 04 months of training Private Artificial Insemination Worker in rural far-flung areas based on artificial insemination work stipend of Rs 1200/- (Including tag) on production of each calf (Under National Agriculture Development Scheme)
3	Pashudhan Mitra Yojna	Serving Gosevak Private Artificial Insemination Worker	Pashudhan Mitra to earn his livelihood and to maintain interest in his work, encouragement stipend to be given.	State	District Joint Director/ Deputy Director, Veterinary Services.	Work Based stipend 1. Helping in beneficiary based schemes case preparation-Rs 100/-per case. 2. Helping in vaccination of large animal Rs 5/-per animal, helping in small animal vaccination Rs 3/-per animal and in Poultry Rs 0.50/-per bird.
4	Distribution of Bull under 100% Subsidy	Far flung areas where facilities of artificial insemination is not available in those areas to improve breeds pedigreed or high breed bulls are distributed for natural service.	On recommendation of Gram Panchayat progressive farmer or trained person	State	Veterinary Hospital/ Concern District Joint Director/ Deputy Director Veterinary Services.	Under the scheme from Government Cattle Breeding Farm on Book Value along with transportation charges or on nivida on minimum rate (inclusive transportation) will be the scheme cost. Bulls will be insured on prevalent rates as given by insurance companies. Amount of insurance will also be included in unit cost. High breed/ pedigreed Bull on 100% subsidy, Average Rs 54000/- annual profit can be accrued.
5	High Breed Female Calf Rearing Scheme	Financial assistance for High Breed Female calf rearing.	Assistance for Under the scheme Small/Marginal Farmer and Landless labour who owns female calf born through A.I.	State	Veterinary Hospital/ Concern District Joint Director/ Deputy Director, Veterinary Services	Animal feed to rear female calf from 04-24 months of age eligibility for general category subsidy of 75% of unit cost or maximum Rs 15000/- whichever is less for Schedule caste/ schedule tribe subsidy of 90% of unit cost or maximum Rs 18000/- whichever is less. Average Rs. 22000/-annual profit.
6	Grassroots Scheme (Gramottan Charwaha yojana)	To provide incentive money to the herders to increase the breed improvement program through the shepherds	Scheme for A.I. and castration of unwanted bulls by Trained and named cowboy by Livestock Development Department.	State	Nearest Veterinary Institute / Development Office/ District Veterinary office	Under the R.K.V.Y. Scheme, bringing a cow / buffalo to the Artificial Insemination and the castration of unwanted bulls Rs. 10/- per animal. Scheme for Trained and named cowboy by Livestock Development Department, Promoting Breed-Improvement Program in the Area.
(b) Livestock Health						
7	Distribution of Animal Feed and Transportation Grants	Financial assistant for transportation and distribution of balanced nutritious and milk.	Balance nutritious for milch animal.	State	State Co-operative Dairy Federation Limited	Distribution of 250 grams of balanced nutritious animals at free of cost per liter milk supplied to the milk societies of the state milk producers and distribution of 2.50 Rs. per liter milk declared by the state government.

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8	Green fodder production program	Free Delivery Campaign was started in the village.	Program for increase in production animal health and disease resistant capacity by animal fodder	State	State Co-operative Dairy Federation Limited	For the purpose of development of milk production, increase in productivity, animal health and disease resistant capacity, in the Government Animal Breeding Farm. By N.G.O. Preparing Co-4 Hybrid Napier Mother nursery. For the village to village of Napier Rout-Cut - Free Delivery Campaign was started in the village.
9	Advanced Calf Rearing Scheme	Balanced dietary supply for 4 to 24 months of advanced breed calf.	Scheme for General /SC/ST / marginal farmer farm laborer.	State	Nearest Veterinary Institute / Development Office/District Veterinary office.	Unit cost for General category 10500 (Subsidy 5000/- & Grant 5500/-) For SC/ST (Subsidy 7500/- & Grant 3000/-) Estimated income 22500 per milk production per 5 liters per cow after three years.
10	Field Special Mineral Mapping	Scheme for cheap cattle feed.	On the basis of SHC and support from NDDB.	State	State Co-operative Dairy Federation Limited	On the lines of Soil Health Card, for the creation of cheap cattle feed. Special mineral mapping of state sector with the support of National Dairy Development Board Anand for the creation of cheap animal food grains.
11	Animal Disease Control Project	Assistance to States for Control of Animal Diseases(ASCAD)	Prevention and vaccination for F.M.D and other important diseases.	Central	Livestock Development Department Chhattisgarh.	Animal Disease Control Project came in existence under livestock health & disease control in the year 2002-2003. Since 2015-16 the funding pattern of the program has been changed from 75:25 to Central Share 60% and State Share 40%. In this scheme per year about 894 camps are organized at district level and block level . Along with this annual work shop are also being organized.
12	National Livestock Insurance Scheme	Promoting risk management measures including livestock insurance for farmers.	Scheme start to Raipur, Durg, Mahasamund, Dhamtari and Rajnandgaon districts .	Central	Livestock Development Department Chhattisgarh.	Under this Scheme 1499 animals has been insured. The purpose is to provide risk coverage to the farmers from the losses by accidental deaths of cattle and bufflaoes. Under the scheme Govt. pays 50% of the insurance premium and rest 50% is given by the beneficiary.
C Dairy Development						
13	Intensive Dairy Development Scheme	Establishment of milk Co-operative societies & BMC units.	Scheme for Raipur-50, Mahasamund-65, Dhamtari-40, Rajnandgaon-35 in the Districts	Central	Directorate of Veterinary Services & Dairy Federations.	190 milk cooperative societies in 5 years and 8 Bulk Milk Cooler units of 1200 liters capacity.
14	Rashtriya Krishi Vikas Yojana	Establishment of milk Co-operative societies in 16 districts.	Scheme for Balodabazar-04, Durg-03, Balod-15, Bemetra-03, Mahasamund-11, Dhamtari-04, Bilaspur-18, Mungeli-08, Raigarh-109, Janjgeera-chapa-34, Kanker-18, Korba-02, Koriya-07, Surajpur-06, Balrampur-01, Kabeerdham-05	Central	Agriculture Department (Nodal Department) or other allied sector (Fisheries Department, Horticulture, Animal Husbandry.)	248 milk Co-operative societies with the help of RKVY. Development of Agriculture and allied sectors. 100% funded by centre. This scheme for agriculture sector and other allied sector all state covered.

Policies and Programmes/Schemes for Dairy Development

15	National Programme for Dairy Development	Establishment of milk Co-operative societies & Bulk Milk Cooler (BMC) units.	Scheme for Janjgeera-chapa-25, Kanker-25, Bemetra-25, & Balod-25 districts.	Central	Directorate of Veterinary Services & Dairy Federations.	The proposed setting up of a total of 100 new societies and bulk milk coolers for 13 new 2000 liters capacity in which 40 societies were formed and 8 BMC were established in the scheme.
16	National Dairy Plan Phase-I	Establishment of Automatic Milk Collection Unit, Bulk Milk Cooler Centers, milk Societies for the cattle feed from the computer programmable & Provide the training for farmers.	Scheme for Internal village based milk procurement system and Internal dietary balance program in the Mahasamund, Raigarh, Balodabazar, Raipur, and Dhamtari districts.	Central	Directorate of Veterinary Services & Dairy Federations.	On the special initiative of the state government, by joining Chhattisgarh in May 2015 by the Government of India. The plan period increased for 2 Years and the following schemes were approved in October 2015. 53 Automatic Milk Collection Unit and 18 BMC Centers of 31000 liters capacity proposed. Initiation of compilation of 9 milk societies In the scheme, selection of 100 milk committees for making the cattle feed from the computer programmable to the existing feed on the milk producing farmers' house. In the workplace. On the pilot basis, with the help of Dairy Development Board (Gujarat) in 100 villages, food balancing program started, and for the training of cheap cheaper, animal food preparation of techniques using local resources.
17	National Livestock Mission	Distribution of chaff cutter on grants for beneficiaries.	Scheme Covered under all districts of state categories wise.	Central	Directorate of Veterinary Services & Dairy Federations.	1999 Power-operated chaff cutter distributed in which 1399 general and backward classes and 600 Scheduled Castes-Category beneficiaries distributed on grants.
18	Human Resource Development	Organisation of Training Programme	Training visit of the farmers.	State	State Co-operative Dairy Federation Limited	Practical training of 6786 cattle keepers for milk production techniques. 714 farmers trained by National Dairy Development Board, Anand (Gujrat)
19	Ghar Pahuch Pashu Chikitsa Seva (Gowardhan) Yojana	Expansion of animal health, reproduction and preventive vaccination and fodder development program.	Gowardhan Yojana started by NGO's .	State	State Co-operative Dairy Federation Limited	3 mobile veterinary units and 30 integrated cattle development/ Artificial Insemination Centre in the Mahasamund and Raigarh district. 3 mobile veterinary units operated under Corporate Social Responsibility (CSR) Scheme in Dharmari district. 5 Integrated Live Stock Centers operated under Corporate Social Responsibility (CSR) Scheme in pakhanjoor area of Kanker district. 2 Integrated Live Stock Centers operated under Corporate Social Responsibility (CSR) Scheme in Janjgir- radapa district.
20	Measures of Transparency	Transparency of payment		State	State Co-operative Dairy Federation Limited	Direct payment to milk Societies through Corporate Banking.

Source: www.ahd.cg.gov.in , www.rkvy.nic.in, www.cgcoopdairyfed.in

Annex III (a): Suggested Convergence of Schemes in Chattisgarh

Sl.	Activity
	Animal Production
1	Develop inventory of feed resources available locally.
2	Establishment of elite herd of high pedigreed Male/Female calves of Gir and Kankrej breed
3	Establishment of A.I. service centres .
4	Training should be done to farmers for information about the benefits of pure breed animals.
	Livestock Health
5	Improvement in the feed-fodder for the milch animals.
6	Aid for Concentrate, Feed to Pregnant Animals
7	Establishment of Silk with Milk Scheme training centre in hilly & dry land areas.
8	Extension of animal health services.
9	Castration of scrub bulls
10	Establishment of Dairy school for farmers and new young.
11	Establishment of Animal health centres, Animal Breeder Centres and fertility improvement projects.
12	Transportation cost of calves/bullocks
	Dairy Development
13	Establishment and increasing of communication facilities for awareness of various schemes
14	Establishment of Women Dairy Program for interial areas.
15	Establishment of Mini Dairy Schemes for the Marginal and small farmers.
16	Participate to the farmers in Dairy education.
17	Establishment of Co-operative societies.
18	Provide the financial help on less interest rate for the marginal and small farmers which live in interial areas.
19	Provide the facility for milk packing, distribution and marketing.
20	Support for cattle shed, water tank, store room and steel bucket
21	Provide the facility for cattle shed
22	Establishment of milk adulteration testing machine (MADM) for women operated DCS
	Others
23	Provide the training to the farmers for motivation Organic Farming.
24	Organize village visit time to time.
25	Increase the awareness in the farmer for Animal Insurance.
26	Animal fairs should be organized from time to time
27	Organize visit to village
28	Organisation of Training Programme

Annex IV (a) : Policies/ Schemes Implemented in Jharkhand

(A).Rastriya Krishi Vikas Yojana : Milch cattle induction, Breed improvement programme & Heifer rearing programme

(i) Milch cattle induction programme

This is a programme to provide subsidy for induction of high yielding milch cattle with a view to boost the milk production of the state and to provide gainful self employment opportunity to the rural families. Under this a prototype scheme shall be implemented for 2 cattle/buffalo, 5 cattle/buffalo mini dairy, 10 cattle buffalo midi dairy, 20 cattle/buffalo commercial dairy, 50 cattle/buffalo modern dairy scheme and large dairy farms with the subsidy and bank loan.

Beneficiary Selection Procedure and Area of Implementation

- Identification of Milk production potential areas especially in command area and vicinity of JDP, Dairy Cattle Development Centres and Milk route.
- Formation of milk route.
- Identification of potential villages on identified milk route.
- Organizing farmer awareness camps in the identified villages.
- Generation of application forms.
- Scrutinization of applications by Districts level committee under the chairmanship of concerned Deputy Commissioner.
- Training and orientation of selected beneficiaries.

Towards subsidy under this programme, a total sum of Rs. 12184.00 lakh for 12th Five Year Plan (2012-17) and a sum of Rs. 1804.00 lakh for Annual Plan 2012-13 have been proposed.

(ii) Breed Improvement Programme

This is a scheme for providing artificial insemination services for improvement of less productive breed and also to provide other services like feed and fodder development and other inputs, deworming, vaccination and infertility-cum-health of milch cattle. With a view to provide these services, 200 Dairy Cattle Development Centres (DCDC) established under RKVY required to be funded for their recurring expenditure in the management control of BAIF Development Research Foundation and non-recurring expenditure proposed for 430 AI Centres established under SIA and 1000 AI Centres proposed to be established during the year 2012-

13.A sum of Rs. 2058.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 333.00 lakh for Annual Plan 2012-13 have been proposed towards operation of Dairy Cattle Development Centre.

(iii) Heifer Rearing Programme

This is a programme to support for crossbred heifer rearing especially produced under breed improvement programme as well as from milch cattle inducted under Milch Cattle Induction Programme shall be registered and reared to ensure early maturity of the crossbred heifer to provide longer location life.

Assistance to progressive farmers and small entrepreneurs for establishment of Heifers Farms of improved breed heifers is proposed under this programme.

A sum of Rs. 2025.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 300.00 lakh for Annual Plan 2012-13 have been proposed under this programme.

(B) Centrally Sponsored Schemes (CSSs)/Centrally Assisted Scheme (CAS)

1. Fodder Development Scheme

i. Assistance to Fodder Block Making Unit

This is the scheme to promote conservation of fodder by converting crop residues into fodder blocks through the use of modern technologies, baling machines etc. into fodder blocks in order to fulfil the existing gap between availability and requirement of fodder. This will also be useful during drought.

ii. Establishment of silage making unit

This is the scheme for establishment of silage making unit to preserve surplus fodder available during the period of surplus production of green fodder and to preserve the green fodder in the form of silage for feeding during lean (shortage) period of fodder.

The scheme shall be implemented by District Dairy Development Offices of the concerned district. The farmer having opted for commercial milk production as a source of additional income and having essential resources i.e., land, irrigation facilities and are producing surplus green fodder. However the selection of beneficiary shall be done jointly by concerned District Dairy Development Officer & District Programme Officer of BAIF and representative of Jharkhand Dairy Project in the Project Districts of JDP after due approval of concerned DC.

For setting up new silage making units in the state, 100% central grant-in-aid will be provided by Government of India.

iii. Demonstration of Azolla cultivation and production unit

This is the scheme to encourage production of Azolla as an alternate source of green fodder. The feature of this scheme is to train the farmers for production of Azolla providing necessary material to the farmers for establishing of Azolla production unit on 50.00 per cent central share and 50.00 per cent state share basis. The scheme shall be implemented by dairy cattle development centre managed by BAIF. The Progressive farmers, who used it as commercial milk production for additional income and essential resources, have adopted Azolla cultivation and demonstration. However, the selection of beneficiary shall be done jointly by concerned district dairy development officer & district programme officer of BAIF and representative of Jharkhand dairy project in the project districts of JDP.

iv. Power driven chaff cutter

This is the scheme to reduce wastage of fodder by chopping and to promote better utilization of fodder. One time grant of 75.00 per cent cost of the chaff cutter (central share) will be provided by Government of India. Balance 25.00 per cent of share will be borne by the beneficiaries. The selection of beneficiary shall be done jointly by concerned district dairy development officer & district programme officer of BAIF and representative of Jharkhand dairy project in the project districts of JDP. The beneficiary selection procedure shall be done under following norms:

- a. The beneficiary having minimum five (05) milch cattle and are producing green fodder.
- b. Having facility of electricity at their cost.
- c. Should not have been benefited earlier under this scheme by any govt./semi govt. agency.

v. Hand driven chaff cutter

This is the scheme to reduce wastage of fodder by chopping and to promote better utilization of fodder. One time grant of 75.00 per cent cost of the chaff cutter (central share) will be provided by Government of India. Balance 25.00 Per cent of share will be borne by the beneficiaries. The selection of beneficiary shall be done jointly by concerned district dairy development officer & district programme officer of BAIF and representative of Jharkhand dairy project in the project districts of JDP. The beneficiary selection procedure shall be done under following norms:

- a. The beneficiary having minimum one (01) milch cattle and are producing green fodder.
- b. Should not have been benefited earlier under this scheme by any govt./semi govt. agency.

However, the milk pourer members of the nearby dairy managed by government/district milk union shall be preferred during selection process.

vi. Grassland development including grass reserves

This is the scheme for improvement of degraded land as grassland and production of seasonal and perennial green fodder and forage grasses on government land/gochar land/community land/private land. Currently, government of India has decided to implement this scheme in 5-10 hectare area of land. Individual farmers can also take up perennial fodder crops cultivation in their fields on 100 % central assistance.

During the 12th Five Year Plan (2012-17) a sum of Rs. 338.00 lakh and a sum of Rs. 50.00 lakh for Annual Plan 2012-13 have been proposed as state share to various centrally sponsored schemes viz., grassland development including grass reserves/assistance to fodder block making unit/azolla cultivation and demonstration unit and other fodder conservation programme.

(C) State Sponsored Scheme for Dairy Development

i. Input distribution and productivity enhancement programme

This is a scheme for providing infrastructural facilities to dairy cooperative societies (DCS), such as procurement and testing equipments, distribution of minerals, calcium, vitamin feed supplement and preventive medicines, distribution of hygiene kit for clean milk production, organization of infertility, vaccination and deworming camps for dairy cattle and mastitis control programme and other inputs distribution programme for milch cattle.

The farmers having milch cattle and are being benefitted by dairy cattle development programme through DCDC or are pourer members of the nearby dairy managed by government/district milk union/Jharkhand dairy project (JDP) shall be benefitted under this programme. A sum of Rs. 4046.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 600.00 lakh for Annual Plan 2012-13 have been proposed under this programme.

ii. Breed improvement programme

To cover the 80.00 per cent breedable cattle population of the state for providing artificial insemination services for improvement of less productive breed and also to provide other services like feed supplement and other inputs, deworming, vaccination and infertility-cum-health camp of milch cattle about 2600 AI centres are required in the state. With a view to provide these services, 609 dairy cattle development centres (DCDC) have been established. Apart from this, establishment of 401 new dairy cattle development centres has been sanctioned and selection of suitable agency for establishment of 1000 AI is under process.

With a view to provide AI services at the farmer's door step, 755 dairy cattle development centres (DCDC) established in the management control of BAIF development research foundation under state plan required to be funded for their recurring expenditure and also recurring expenditure proposed for 430 AI centres established under SIA and 1000 AI centres proposed to be established during the year 2012-13. A sum of Rs. 7690.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 1367.00 lakh for Annual Plan 2012-13 have been proposed under this programme.

iii. Feed and fodder development

This is a scheme to promote production of quality fodder (especially) green fodder, sale of concentrate balance feed at subsidized rate, enrichment of dry fodder for milch cattle to get the desired level of productivity in the genetically improved milch cattle with an adequate feed base in terms of both quality and quantity. The farmers having milch cattle and are being benefitted by dairy cattle development programme through DCDC or are pourer members of the nearby dairy managed by government/district milk union shall be benefitted under this programme. Implementation of grassland development scheme on private unproductive land, subsidy on establishment of cattle feed plant by small entrepreneurs, sale of balanced cattle feed on subsidized rate, fodder seed cultivation and distribution by government farm/progressive farmers for meeting the fodder requirement of milch cattle under feed and fodder development scheme. A sum of Rs. 4380.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 650.00 lakh for Annual Plan 2012-13 have been proposed under this programme.

iv. Training and extension

It is felt that the training of milk producers and the staff dealing with extension is paramount for success of the dairy development programmes. Therefore, it is proposed to train the milk producers, dairy personals and rural unemployed educated youths in the practice of high yielding dairy cattle management, modern techniques of dairy farming, milk testing and society management, clean and hygienic milk production, indigenous milk products manufacturing training, training of Gokul Gram Mitra. Apart from this strengthening of existing farmers training centre, workshop, seminar, milch cattle fair-cum-dairy development exhibition and other extension activities with intervention of new technologies and establishment of new Animal Resource Management Training Institute for advance training of paravet-cum-resource person and refresher training of dairy technologist is proposed. A sum of Rs. 2975.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 439.00 lakh for Annual Plan 2012-13 have been proposed under this programme.

v. Regional and district administration and extension

To meet the expenses and infrastructural support for proper implementation of the dairy development programme in the state, construction of new building for distinct level offices in Jamshedpur, Dhanbad, Giridih, Lohardaga and Ranchi districts. Purchase of new vehicles for directorate of dairy development, regional level and district level offices as well as administrative expenses for execution of the dairy development activities in the state and milch cattle fair-cum-dairy development exhibition at state level, division level and district level. A sum of Rs. 2075.00 lakh for the 12th Five Year Plan and a sum of Rs. 306.00 lakh for Annual Plan 2012-13 have been proposed under this programme.

vi. Consultancy services

The Scheme to pay the consultancy charges to prepare the suitable project proposal for concurrent and mid-term evaluation and feasibility studies of the different dairy development programmes implemented by the department. A sum of Rs. 277.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 50.00 lakh for Annual Plan 2012-13 have been proposed under this programme.

vii. Milk procurement, processing and marketing

This is a scheme to provide infrastructure for procurement and processing facilities with a view to provide proper marketing support to milk producers at remunerative price and subsidy for the selected entrepreneurs/agencies for setting up of new dairy farm/milk processing plant on PPP mode. A sum of Rs. 4050.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 600.00 lakh for annual plan 2012-13 have been proposed under this programme.

viii. Gokul gram vikas yojana

With a view to provide breeding services, milk procurement facilities and for storage of feed and fodder at village level in each cluster of 4-5 villages one gokul gram vikas kendra is proposed to be established. The location for establishment of gokul gram vikas kendra shall be selected where dairy cattle development centres (DCDC) can be established and the location should be on identified milk route of the nearby dairy.

The proposed gokul gram vikas kendra shall be established in Simdega, Khunti, East Singhbhum, Saraikela-Kharsawan, Pakur, Sahebganj, Garhwa, Palamau, Chatra, Koderma, Dhanbad, Bokaro, godda, Ramgarh, Hazaribagh and Giridih. A sum of Rs. 1342.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 200.00 lakh for Annual Plan 2012-13 have been proposed under this scheme.

ix. Establishment of multipurpose sale centres and milk vending units (for milk and milk products)

This is the scheme for setting up of milk booths and milk vending units in the urban area for sale of milk and milk products to the urban consumers. These booths will be constructed in the area of Jharkhand dairy project and for dairies under the control of district milk unions. The milk booth shall be established in Ranchi, Gumla, Lohardaga, Latehar, Ramgarh, Dhanbad, Hazaribagh, Deoghar and Bokaro. A sum of Rs. 1350.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 200.00 lakh for Annual Plan 2012-13 have been proposed under this programme.

x. Khatal rehabilitation plan

Under this by the order of Hon'ble High Court of Jharkhand in the matter of W P (PIL) No. 149/2003 for rehabilitation of khatala located in the Ranchi municipal area a rehabilitation plan has been prepared for rehabilitation of 900 khatala have been prepared by the NABARD consultancy services (NABCONS). A sum of Rs. 10.00 lakh for the 12th Five Year Plan (2012-17) and a sum of Rs. 1.00 lakh for Annual Plan 2012-13 have been proposed under this scheme.

Annex IV (b): Suggested Convergence of Schemes in Jharkhand

Implementation

- **Involvement of NGOs**

For breed improvement and feed fodder development BAIF development research foundation has been nominated as implementing agency. Apart from this, for extension of the programmes some more NGOs are proposed to be involved through expression of interest.

- **Consideration of outsourcing**

Impact study and midterm evaluation of programmes, outsourcings through consultancy services are proposed.

- **Indication of women component involved**

Rural women empowerment is proposed through their involvement in modern animal husbandry practices for sustainable livelihood.

- **Indication of outlay for special component plan/tribal sub plan**

Proper and adequate outlay for special component plan/tribal sub plan has been proposed as per set norms.

- **Identification of PPP Projects**

In this era of inclusive growth, PPPs can serve as a major step towards development of people and economy of state on the whole. The PPP models have been overwhelmingly successful in driving a major wave of urban infrastructure development but now the onus lies on the government to expand the scope of these partnerships into new horizons of rural development.

Agriculture being a state subject and confined to the rural Jharkhand is yet to get a glimpse of PPP's on the National level but nevertheless opening up avenues for the PPP in agriculture and allied fields like dairy can really churn out benefits in terms of organising the sector as well as diffusing the growth and prosperity to grass root levels.

The objective to bring in private participation into the dairy sector through public private partnerships is to provide a comprehensive approach towards overcoming the present challenges in the industry and prepare a long term competitive strategy towards inclusive growth. While we narrow down on the various models of PPP in terms of structure, contracts, and operational details, it is imperative to demarcate the areas where private participation can be promoted by the government and most important the inducements that would accrue out from these PPP arrangements currently as well as in the near future.

This section focuses on some of the vital areas of the dairy industry where the private players can integrate into the system and the PPP model can be replicated and transformed in this sector. The potential thrust areas like establishment of dairy plants, cattle feed plant and Paravet School in the dairy sector where the private partner can intervene have been proposed on PPP mode during 12th Plan.

Annex V (a): Policies/ Schemes Implemented in Odisha

The Department of Fisheries & Animal Resources Development Department (F&ARD) in Odisha came into existence in 1991 after being bifurcated from the erstwhile Forest, Fisheries & Animal Resources Development Department. Within F&ARD, there is a Directorate for Animal Husbandry & Veterinary Services (AH&VS) which is headed by a Director. In the field, AH&VS has thirteen Chief District Veterinary Officers in charge of 13 districts and in remaining 17 districts, the Sub-Divisional Veterinary Officers functioning in the district headquarter are looking after the districts affairs. Besides, there is a Frozen Semen Bank and 2 Orissa Biological Product Institutes. There are 540 veterinary hospitals (VDs), about 3,000 Livestock Aid Centres (LAC) to provide veterinary services. The activities of the department are supported by:

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1. Odisha Livestock Resource Development Society (OLRDS): Formed and registered in 2000 for spearheading livestock breeding activities and ensuring timely and meaningful implementation of National Project for Cattle & Buffalo Breeding" (NPCBB) in the State of Orissa for breeding activities;
2. The Odisha Cooperative Milk Producers Federation Ltd (OMFED): Established in the year 1980, the major objectives of the Federation is to carry out activities for promoting production, procurement, processing and marketing of milk and milk products for economic development of the rural dairy farming community.
3. Utkal Gomangal Samiti (UGS): Established in the year 1936, the aim and objectives of the Samiti is to bring all round development of the livestock through up-gradation of local indigenous stock by providing improved bulls, Cows, Calves, Buffalo Bulls and Bucks etc. and to propagate different types of fodder cultivation, Cattle Feed and encourage public for the same.
4. State Society for Prevention of Cruelty to Animals (SPCA) 59 of 1960 (Central Act): In 1976, Government of Odisha has enforced the Act in the state for wellbeing of animals. The main objective of this act is to generate public consciousness towards kindness and compassion to animals. Besides this, Animal Birth Control Programme (ABC), relief and rescue operation, animal health camp, media programmes, relief and rescue operations are also organised.

The ongoing schemes can be classified into four categories viz.

- A. Central Schemes for animal husbandry;
- B. States Schemes for animal husbandry;
- C. Central Schemes for dairy development;
- D. State Plan for dairy development – a) state sector & b) district sector.

A. CENTRAL SCHEMES FOR ANIMAL HUSBANDRY (BUDGET HEAD 2403 – AH)

Central Scheme :		
1	Assistance to States for Control of animal disease	This Centrally Sponsored Scheme is implemented with funding pattern of 75:25 as CS: SS. It aims to control livestock diseases through conducting mass vaccination and diagnosis of diseases in the newly established DDLs to reduce the morbidity & mortality of animals.
2	Establishment & Strengthening of existing Veterinary Hospitals & Dispensaries (ESVHD)	This Centrally Sponsored Scheme is implemented with funding pattern of 75:25 as CS: SS. It has been proposed to strengthen the existing veterinary hospitals
National Livestock Mission		
3	Sub - Mission Livestock Development	It addresses the concerns pertaining to Poultry, Sheep & Goat development in the State.
4	Sub- Mission: Fodder and Feed Development	It aims to encourage the farmers for take up production of high yielding varieties of fodders to meet the feed and fodder demand. It envisages procuring seed from the Central Govt. Seed Production Farms.
5	Sub- Mission: Skill Development Technology Transfer & Extension	It strengthens regional and district training centers to deliver a range of trainings with appropriate modules, manuals, training materials, reference materials, posters, leaflets, documentary films etc. It also envisages to disseminate the information through various means like Electronic/ Print Media, Melas etc
Centrally Sponsored Plans :		
6	Grant to Orissa Veterinary Council for Professional Efficiency Development	This is a centrally sponsored plan with the funding pattern of 50:50 and aims to ensure the professional efficiency by implementing the norms of Veterinary Council of India.
7	Salary for Integrated Sample Survey (ISS)	This scheme supports conducting of annual ISS for compiling & disseminating authentic information.
Central Plan Schemes :		
8	National Livestock Health & Disease Control	It strengthens veterinary services, surveillance of syndromic diseases like Avian Influenza, BSE & CBPP. It supports strengthening of BSL - II laboratory at ADRI, Phulnakhara. It creates awareness among the farmers regarding syndromic diseases.
9	National Animal Disease Reporting System (NADRS)	Under this scheme, information relating to animal diseases is disseminated amongst all stake holders to facilitate remedial action in a timely and efficient manner. To this end, computerized network link all Block, District head quarter for instant alert.
10	Brucellosis Control Programme	In Odisha, Brucellosis is observed in animals both at organized and unorganized farms. In order to curb this disease, there is continuous surveillance along with screening of samples suspected for Brucella infection. Accordingly, facilities have been put in place at the DDL/ CIL/ SVL/ ADRI. Moreover, provision for procurement of 50,000 doses of Brucella vaccine is made.
11	National Dairy Plan Phase-I (NDP-I)	In order to increase productivity of milch animals and thereby increase milk production to meet the rapidly growing demand for milk and to provide a greater access to the organised milk-processing sector to rural milk producers, NDP-I is being implemented in Odisha. The scheme provides 100 per cent grant-in-aid for animal nutrition & breeding activities and 50 per cent grant on cost of capital items for village-based milk procurement system

B. STATE SCHEMES FOR ANIMAL HUSBANDRY

State Level Scheme :		
1	Strengthening of OBPI	Odisha Biological Products Institutes (OBPI) at Bhubaneswar and Berhampur are engaged in production of bacterial & viral vaccines. The State Plan Assistance has been extended to meet the expenditure on purchase of chemicals, vaccine bottles, packaging materials, AMCs of OBPIs.
2	Up-gradation of Livestock Health Care Services	Under this scheme, essential life saving medicines are made available at veterinary dispensaries and above to provide curative treatment of livestock. Further, animal health camps in the dairy intensive blocks and de-worming camps of livestock are being organized using scheme funds
3	Up-gradation of skill in self employment under Animal Resource Development (ARD) Sector	The funds of this scheme are used to update the skill of the livestock owners; motivate educated unemployed youth for taking up the animal husbandry activity for self-employment & enriching knowledge of existing livestock farmers.
4	Establishment of Odisha University of Veterinary & Animal Science	It is a new scheme initiated to streamline veterinary education and research activities to benefit livestock farmers.
5	Establishment of College of Veterinary & Animal Science	In order to provide impetus to livestock sector, funds have been earmarked to open one new Veterinary College at Gosala village in Chipilima taluk of Sambalpur district.
District Level Schemes :		
6	Capacity Building and strengthening of Training infrastructure under ARD Sector	Regular in-service training of field functionaries is strengthened by renovating existing training infrastructure at Livestock Inspector Training Centers, Veterinary Officers' Training Institute, Animal Disease Research Institute and hostels. In addition, exposure visits are planned for AHD staff at premier institutions outside the state.
7	Training and Demonstration in Fodder Cultivation and Pasture Development and strengthening of Departmental Fodder Farms	Under the scheme infrastructure at Departmental Fodder Farms are created to provide training and demonstration in fodder cultivation and pasture development. Funds under this scheme are being used for this purpose and to encourage production of certified fodder seeds at farmers' farm on buy-back arrangement. A provision has been made for procurement of seed produced under different State & Central programmes under fodder seed procurement and distribution.
8	Utilization of Crop Residues	The scheme assist farmers of the intensive and potential dairy zones to enrich their crop residues for optimum utilization and preservation of excess seasonal fodder for the lean period.
9	Organization of Exhibition for Buyer-Seller meets and transfers of technical know-how to the farmers	The Government organises "Buyer-Seller meet", "Annual exhibition in Adivasi Mela at Bhubaneswar" & "Regional Krishi Mohastav" to provide technical knowhow to farmers and establish direct contacts between stake-holders.
10	Nabakalebar	Annually the deities of Shri Jagannath Temple are taken out in a chariot procession called Ratha Yatra covering three-kmlong distance. This re-embodiment of deities is known as Nabakalebara festival. The Government arranges for feed & fodder to the stray cattle and bulls during this festival.
11	Information, Education & Communication Programme	The Government finances extension activities in dairy sector. It includes support provided for bi-monthly farmers training in Gramsat, hiring of vehicles for extension, advertisements, cultural programmes, film making, exhibition arrangements etc.
12	Conservation and Improvement of threatened indigenous breeds	In Odisha, elite indigenous breeds are identified from farmers herd and bred for production of quality progenies. The resultant male progenies are selected for further improvement of breeds based on their dam performance. Funds for such conservation and selective breeding of indigenous breeds come from this scheme.
13	Strengthening of Disease Surveillance by Animal Disease Research Institute (ADRI)	This scheme facilitates disease surveillance to control contagious diseases of livestock. It provides support for routine surveillance and monitoring activities for containment of diseases, attending out breaks and disease investigation. Cost towards vehicle hiring, emergency medicines, sensitization expenses and other support required for functioning of ADRI are funded through this scheme.
14	Mobile Veterinary Unit	The aim of the programme is to establish 53 mobile veterinary units (MVUs) in tribal dominated districts of the state like Sundergarh, Keonjhar, Mayurbhanj and other interior Blocks such as Badamba, Narsinghpur block in Cuttack district and Nilagiri block in Balasore district to strengthen the service delivery mechanism.

DAIRY DEVELOPMENT**C. CENTRALLY SPONSORED SCHEMES UNDER BUDGET HEAD 2404-DD**

1	Strengthening of Infrastructure for Quality & Clean Milk Production Programme (CMP)	This scheme is implemented through OMFED to strengthen the infrastructure for Quality & Clean Milk Production Programme (CMP). The Organisation share is being borne by OMFED. It is being implemented by OMFED in the District of Ganjam, Bolangir, Kalahandi, Nuapada, Koraput, Malkangiri, Nawarangpur & Raygada districts of Odisha. Under the project, the farmers are trained. This project includes training of farmer, supply of 5 ltr Stainless Steel Milk Can & distribution of Saffit & laboratory equipment for BMC Level for Clean Milk Production.
2	National Programme for Bovine Breeding (NPBB)	The major objectives of the programme is to strengthen liquid nitrogen transport system; cure infertility control amongst dairy animals; extension &

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		strengthening of the breeding network to cover more number of breedable bovines etc.
3	National Programme for Dairy Development (NPDD)	This is a new project being implemented by OMFED under NPDD. The aim of the scheme is to organize Dairy Cooperative societies, support members, install BMCs, up-grade skills, provide margin money, expand processing plants etc.
4	Intensive Dairy Development Programme (IDDP)	The IDDP Projects are being implemented by OMFED in different districts of Odisha like IDDP-VII project is implemented in Jagatsinghpur, Kendrapada & Nayagarh districts, IDDP-VIII in Koraput, Malkanagiri, Nawarangpur & Raygada districts, IDDP-IX in Ganjam & Gajapati districts, IDDP-X (Sambalpur, Baragarh, Jharsuguda, Sonepur & Deogarh districts).

D. DAIRY DEVELOPMENT-STATE PLAN UNDER BUDGET HEAD 2404-DD

1	Strengthening of Dairy Organization	The scheme envisages supply of breeding inputs to field Frozen Semen Artificial Insemination (FSAI) centres of the AH department as well as Gomitra centers for conducting AIs and production of CB females. Identified bull mother farms of the State are being strengthened to rear quality bull mothers for production of donor bulls for the future. To this end, a MOU has been signed with NDDB to establish the Sperm Station for Eastern Region at Kathpal.
2	Promotion to Dairy Entrepreneurship	The scheme facilitates dairy entrepreneurs to set-up modern dairy farms having 2 to 10 animals. As per the scheme, 10 per cent is entrepreneur's margin, 25 per cent comes as capital subsidy (33.33 per cent for SC/ST beneficiaries) from state government and balance is financed by banks. The primary objective is to generate self-employment.
District level :		
3	Interest Subvention on Long Term Credit Support to Dairy Farmers	Livestock farmers used to avail term loan from banks for equipments, machineries, shed, procurement of livestock and other activities towards asset creation in dairy farming through the ongoing schemes like DEDS, PDE, self finance etc. In order to increase the uptake of term loan in the state, the government provides interest subsidy/ subvention of 3 per cent of the interest rate charged on term loan availed by the dairy farmers. Further, additional interest subvention of 2 per cent will be provided to the farmers for regular/ timely repayment of their loan installment/ dues. The upper ceiling of project cost will be ` 10.00 lakh for availing the interest subvention.
4	Interest Subvention on Short Term Credit Support to Dairy Farmers	The scheme intends to facilitate credit linkage for livestock farming. Under the scheme, farmers pursuing dairy farming as an income generating activity and availing short term loan at 12 to 14 per cent interest rates would be eligible to avail interest subvention of 5 per cent and if they make timely payment, a further, 3 per cent interest incentive is given. Thus, a farmer availing short term loan for dairy farming and regular in repayment would get interest subvention of 8 per cent.

Ongoing Scheme /Programme for Animal husbandry and Dairy development in Odisha 2015-16

S. No	Name of Scheme / Programme	Objective of the Scheme	Quantifiable / Deliverables Physical Outputs	Project Outcomes
ANIMAL RESOURCES DEVELOPMENT SECTOR				
1	Strengthening of Odisha Biological Product Institute (OBPI)	The scheme has the objective of producing Veterinary Biologicals for preventive vaccination of livestock and poultry birds	237.23 lakh doses of vaccine production	i) Reduction of mortality due to contagious diseases ii) Enhanced production of milk, meat, egg
2	Upgradation of Livestock Health Care Services	To render Veterinary Health Service towards curative treatment for improving the health of the livestock and their productivity.	Upgradation of veterinary services for curative treatment at 541 VDs and 3239 LACs / Organization of Animal Health Camp- 1884 / Deworming of Animals-15 lakhs	Increasing the productivity of the animal by providing adequate health coverage at the grass root level.
3	Upgradation of Skill in Self Employment under ARD Sector	The objective of the scheme is to organize training programme & exposure visits for developing the basic skills amongst the livestock holders and unemployed educated youths for taking up animal husbandry activities for self employment	Training of 6280 farmers	i) Improvement in productivity through better management. ii) Increased income to the farmers and generation of new livelihood opportunities iii) Empowering women beneficiaries
4	Support to Private Goshala	To support the Private Gaushals of State to	Support to Gaushalas those involved in rehabilitation of	i) To help various Gaushala

Policies and Programmes/Schemes for Dairy Development

		increase their activities towards rehabilitation of old, sick & abandoned animals.	old, sick & abandoned animals.	to become self-sustainable by way of providing financial/technical guidance. ii) To conserve & preserve pollution free environment by way of proper management of stray cattle.
5	CapacityBuilding and Strengthening of Training Infrastructure under ARD Sector	To update the knowledge of human resources involved in this sector along with creation of training infrastructure.	Infrastructure development of training centres-8 / Induction training for Vet - 2 batches / In-service training of Paravets - 9 batches / Exposure visit for AHD staff-10 / Construction of conference hall-1/ Strengthening of SMILE-1	Delivery of quality veterinary services by AHD staff will be possible as per the need of the stakeholders
6	Training & Demonstration in Fodder Cultivation and Pasture Development	The objective of scheme is to transfer the technology at farmer's level with on-farm demonstration and training	Production of 250 quintals of Certified Seeds / Strengthening of State gosadan- 1 / Infrastructure Development of Seed Production Farm-7/ Development of Perineal Azolla Plot-4/Training of farmers on fodder cultivation -6280	Promotion of fodder cultivation in farmer's field through production of planting materials
7	Utilization of Crop Residues	Enrichment of the crop residue for better utilization and preservation of seasonal excess fodder for the lean period. Organizing the demonstration to enrich / ensiling of crop residue	Enrichment / ensiling of 2500 MT of crop residues	i) Availability of quality fodder during the lean period. ii) Reduction of feeding cost of animals.
8	Feed & Fodder Production in different Agro-Climatic Zone of Odisha for utilization by livestock	To take up nutritional management programme based on agro-climatic zones for realizing the potential yield of dairy animals in the State.	Assessment of production, availability & effective demand of feed & fodder (Green & Dry) in different Agro- Climatic Zone of Odisha	i) Assessment of present utilization/feeding pattern & estimation of nutritional values of crop residues/ roughages
9	Information, Education & Communication Programme	To aware and improve the skills and competence of the primary stake holders involved under this sector.	Organization of cultural programme -30 at District level, 314 at Block level Annual Exhibition in Krushi Mahotsav-1 Awareness campaign through Print & Electronic media	Enabling the livestock farmers for taking informed decision in animal husbandry.
10	Establishment of Animal Help Line facility with Ambulance Service	To attend emergency cases particularly accidents during odd hours in urban areas.	Establishment of Animal Help Line facility with Ambulance Service-3 nos.	Stray animals and abandoned animals can get veterinary assistance at the time of need.
11	Establishment of AH Extension Service through Mobile Advisory	To develop information advisory services model for collation and dissemination of latest and timely information to farmers owning livestock through voice messages.	i) Disseminated through mobile advisory services to 1.00 Lakh farmers. ii) Awareness Program for farmers-34 workshop	Bridging the gap between farming community and extension system through usage of Mobile Advisory Service.
12	Conservation and Improvement of Threatened Indigenous	Preservation and improvement of valuable native germ	Conservation and selective breeding of one buffalo breed.	Strategic planning for improvement of

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	Breeds	plasm through Selective breeding so as to prevent from further dilution of their genetic potentiality.		native germ plasm
13	Strengthening of Disease Surveillance by Animal Disease Research Institute	To control / eradicate the contagious diseases of livestock and poultry having economic and zoonotic importance through conduction of routine surveillance.	Functioning of Surveillance unit- 1(ADRI)/ Mobility support & contingency to ADRI, DDLs & RDILs - 31	Creation of disease free zone through routine surveillance
14	Mobile Veterinary Units	Extending the Veterinary service delivery mechanism to the interior and remote areas of the State.	Operationalization of 158 Mobile Veterinary Units in tribal dominated Block of the State.	Ensuing accessibility of Veterinary Services provided by the Government machineries.
15	Strengthening of Dairy Organization	The scheme has the objective of streamlining livestock breeding operations in the state	Operational cost for Management of Livestock Breeding Dairy Farms- 8/ Running Cost for FSB- 1/ Semen Straw Production- 10 Lakh/ High Pedigree Semen Procurement- 3 Lakh/ Liquid Nitrogen Cost and Intra District Transportation- 30 Districts	Augmentation of milk production through production of female calves of improved variety
16	Promotion of Dairy Entrepreneurship	To develop Dairy Entrepreneurship amongst the educated unemployed youth.	Release of subsidies to 1800 Dairy Entrepreneurs of State	Sustainable promotion of Entrepreneurship in dairy sector leading to enhancement of milk production
17	Interest Subvention on Short Term Credit for Dairy Farming	To facilitate credit linkage for dairy farmers to avail input loan.	Assistance to 500 Dairy Farmers	Boosting up productivity and production of milk Assuring gainful employment to dairy farmers
18	Interest Subvention on long term Credit for Dairy Farming	To facilitate long term credit flow towards asset creation in dairy farming	Interest subvention for 67 Dairy Entrepreneurs	Augment milk production
19	Establishment of State Referral Laboratory	To strengthen the Infrastructure of Livestock Service Institutions through establishment of a State Referral Laboratory for disease diagnosis at ADRI, Phulnakhara.	Establishment of a State Referral Laboratory-1	Proper & timely diagnosis of livestock diseases.
20	Strengthening & Modernisation of OBPI (Establishment of GMP compatible Bacterial Vaccine Production Unit)	To strengthening & modernization of OBPI for converting it to a GMP compatible Bacterial Vaccine Production unit.	Converting OBPI to a GMP compatible Bacterial Vaccine Production unit-1	Production of quality livestock vaccine for prevention of contagious livestock disease.
21	Installation of 5 Lakh LPD Dairy Plant	To establish a 5LLPD automatic composite dairy plant by OMFED.	Establishment of 5LLPD automated Dairy Plant-1	Increased marketing capability of processed milk by OMFED.
22	Veterinary Services & Animal Health	To provide curative treatment and other support services for quality health care services for livestock.	Medicine and equipments at 541 VDs and 3239 LACs with an average of 300 animals per LAC and 1000 animals per VD	Genetic Up-gradation of local cattle and Buffalo to increase productivity
23	Cattle & Buffalo Development	Operationalization of Dairy Breeding Farms and Bull maintenance	To provide medicine, equipments and feeding of dairy animals at 8 dairy	Genetic Up-gradation of local cattle and

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		at Frozen Semen Bank for genetic Up-gradation of local cattle & buffalo.	farms. Feeding and maintenance of bulls for production of quality semen.	Buffalo to increase productivity
24	Fodder & Feed Development	To enhance seed and planting material production at Government fodder farms.	Supply of fertilizers, Pesticides and other inputs at 8 Seed Farms	Dairy farming would become a viable option for livelihood by reducing the cost of production through promotion of intensive fodder cultivation
RESTRUCTURED CENTRALLY SPONSORED SCHEME ANIMAL RESOURCES DEVELOPMENT SECTOR				
WHITE REVOLUTION - RASTHRIYAPASUDHANVIKASYOJANA (RPVY)				
25	Assistance to State for Control of Livestock Disease (ASCAD) (SS:98490& CS:60754)	This is an important programme with the financial support of Government of India in order to control Livestock Diseases through conducting mass vaccination and diagnosis of diseases in the newly established DDLS for ensuring dispensation of casualties and loss to the farmers	Vaccine and vaccination cost- 332 lakh doses/ Strengthening / modernization of Biological production unit-1/ Strengthening DDL & RDIL- 26 & 4/ Training prog.-Vets & Para-vets-400 Organization of Awareness-cum-Animal Health Camp- 628 (Block level) and 60 (District level)	Reduction of mortality due to contagious diseases/ Health coverage through organization of animal health camps/ Enhancement of Milk, meat & egg production
26	Establishment and Strengthening of Veterinary Hospital & Dispensary (CS:7620&S:5080)	To strengthen infrastructure of the veterinary hospital and dispensaries for bringing parity among all these institutions.	Renovation of hospital-5/Furnishing of Vety. institutions-20/ Construction of dispensary-2/ Machinery & Equipments-24	Enhancement in livestock productivity through improved veterinary service delivery
27	Grants to OVC for Professional Efficiency Development (CS:1500 &SS:1500)	To develop the professional efficiency of the Veterinary Doctors	Conduct of Workshop-1/ Infrastructure Development- 1	Usage of advanced technology in the sector for production visà-vis productivity promotion
28	National Programme on Rinderpest Surveillance and Monitoring(CS:816&SS:0)	To strengthen surveillance of syndromic diseases like BSE, CBBP. Steps will be taken for strengthening BSL - II laboratory at ADRI, Phulnakhara	Strengthening of BSL II Lab - 1	Reduction of mortality due to the disease
29	National Programme on Bovine Breeding (NPBB) (CS:71219 & SS:43479)	To expand the field livestock breeding network to cover more breedable bovine population under organized breeding	Training of AI workers-200/ Artificial Insemination in Cattle & Buffalo - 18.00 lakhs/New AI centers - 150/ Conversion of Static Center to mobile-200/Computerization for monitoring-100/ Conservation of native breeds3 / Strengthening of trg. Center-2/ Organization of seminars & workshops-2/ Strengthening of Dist. Semen Depot-5/ Procurement of AI Bulls-50/ Procurement of Bulls for natural Service-100/ Strengthening of FS Staion-1	To genetically upgrade the cattle & buffalo to enhance milk production
30	Strengthening of Infrastructure for Quality & Clean Milk Production	To ensure marketing network for disposal of surplus milk	Quality control laboratory, Cleaning of utensils and containers - LS	The quality of the milk produced at farmer's

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	(CS:1200 & SS:800)	produced by dairy farmers		level will be improved.
31	National Programme for Dairy Development (NPDD) (CS:48000& SS:32000)	To expand Dairy Processing infrastructure for dairy development in the State	Infrastructure development in , training & capacity building, expansion of dairy plants, BMC installation in the districts of Keonjhar,Balasore, Bhadrak, Puri, Dhenkanal, Jajpur, Cuttack &Khordha	To ensure disposal of surplus milk produced at farmers' field
32	Intensive Dairy Development Programme (CS:15000 & SS:10000)	To support MPCs and Milk Union for dairy development in the State	IDDP-VII (Kendrapada, Jagatsinghpur and Nayagarh District) IDDP-VIII (Koraput, Nawarangpur, Malkangiri and Rayagada District) IDDP- IX Ganjam&Gajapati IDDP-X (Sambalpur, Jharsuguda, Baragarh,Deogarh&Sonepur District)	To ensure disposal of surplus milk produced at farmers' field
33	PasudhanaSanjeebani (CS:6000 & SS:4000)	To carry out animal wellness programme	Issue of animal health card	Creation of a data base to address the livestock issues at individual livestock level
	CENTRALLY SPONSORED PLAN SCHEME			
34	Sample Survey on Estimation of Production of Milk, Meat , Egg & Wool (ISS) (CS:16308; SS:14708)	To estimate of Livestock products such as milk, meat, egg and wool	Sample Survey in 900 villages	Strategic planning for achieving growth under the sector.

Annex VI (a): Policies/ Schemes Implemented in UP and Convergence suggested

Sr No.	Name of the Schemes on Dairying	Starting Year	Aim and objectives of Scheme	Funding pattern	Area of Operation	Target/ Beneficiaries	Component funded under scheme	Implementing Agency	Remarks
1	2	3	4	5	6	7	8	9	10
(I)	Centrally sponsored								
A	Schemes for Cattle and Buffalo Development	2002	Animal Breeding AI, Self Employment through AH	Phase wise	5043 AI centres in U.P.	1365 straws for 2013-14	Semen production hiring of bulls for A.I.	Animal Husbandry department U.P.	--
B	Fodder Development Schemes	Before 2010-11	Seed production, development of grazing land	Through state, districts and central	U.P.	47661 qtls. seed, not achieved fully	75% Central, 25% State special component for G.F. Development of grazing land	Animal Husbandry department U.P.	Suggested convergence in district
C	Veterinary Services Schemes	Before 2003-04	Animal medicine and health	Centre and State	U.P.	301.650 lakh animals feeding	Vaccination, medicine, castration	Animal Husbandry department U.P.	Suggested convergence in district
D	Other dairy Development Schemes	2011-12	Clean milk production	GOI	15 districts of U.P.	15 district upto 2013-14	Central & state	PCDF	

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		2009-10	Self employment	GOI	41 districts of U.P.	Phase 20, 21	Central & state	PCDF	
		2015-16	Nutritional Development	GOI	20 districts of U.P.		Central & state	PCDF	
(II)	State sponsored								
A	Schemes for Cattle and Buffalo Development	2002	Animal Breeding AI, Self Employment through AH	Phase wise	5043 AI centres in U.P.	1365 straws for 2013-14	Semen production hiring of bulls for A.I.	Animal Husbandry department U.P.	
B	Fodder Development Schemes	Before 2010-11	Seed production, development of grazing land	Through districts	All districts of U.P.	Target not achieved fully	25% State	Animal Husbandry department U.P.	Suggested convergence in district
C	Veterinary Services Schemes	Before 2003-04	Animal medicine and health	State	All districts	Achieved fully	Vaccination medicine castration	Animal Husbandry department U.P.	Suggested convergence in district
D	Other dairy Development Schemes								
	Assistance to milk cooperative	Before 2006-07	Strengthen of Milk Production	State	All districts	Achieved fully	50% state	PCDF	
	Encouraging member milk	2006-07	Milk production	State	All district	Achieved fully	Gokul Puraskar	PCDF	
	Information Technology on computerization	Before 2007-08	New technology	State	All milk union	Under progress	ERP software tally system	PCDF	
	Establishing Dairy Development	Before 2007-08	Automatic milk collection	State	5 to 10 milk union	Under progress	BMC establishment	PCDF	
(III)	Milk Union sponsored								
A	Schemes for Cattle and Buffalo Development	2002	Animal Breeding AI, Self Employment through AH	Phase wise	AI Centre	Under progress	Semen distribution	All district of U.P.	
B	Fodder Development Schemes	2010-11	Seed production	Through state, district plan	Veterinary hospital	Under Progress	Special component	Animal Husbandry department U.P.	Suggested convergence in district
C	Veterinary Services Schemes	2003-04	Animal medicine and health	Through state, district plan	Districts Plan	Under Progress	Vaccination medicine castration	Animal Husbandry department U.P.	Suggested convergence in district
D	Other dairy Development Schemes								
	Strengthening reorganization	Before 2006-07	Financial support	Through state, district plan	Districts Plan	Under Progress	Financial Assistance	PCDF	
	Technical investment scheme	2007-08	Technical information	Through state, district plan	Districts Plan	Under Progress	Dewaring	PCDF	
	Farmers training scheme	2007-08	AI, producers and marketing staff	Through state, district plan	Districts Plan	Under Progress	Training	AH, Deptt. PCDF	

Annex VII (a): Policies/ Schemes Implemented in West Bengal

A. Central schemes for Animal Husbandry Development

1.	National Programme for Bovine Breeding (NPBB)	NPBB sponsored by Government of India is implemented in West Bengal through BGSBSP. The Sanstha has more than 3,000 Pranibandhu working at Gram Panchayat level for delivery of breeding inputs at the farmer's doorstep. These workers perform Artificial Insemination (AI), vaccination of animals and provide primary health care. Funds are also used for improvement in quality of bulls used for natural service and artificial insemination, imposing strict quality control of services and inputs, consolidation and initiation of programme for development and conservation of recognized indigenous breed so as to improve the genetic makeup as well as their availability. The chief objective of the Program is to arrange quality AI services at Farmers' door step and to bring all breedable females under organized breeding through AI or Natural service using germplasm of High Genetic Merit. It also aims to conserve, develop and proliferate selected Indigenous Bovine breed of High Socio economic importance.
2.	Rashtriya Krishi Vikas Yojana (RKVY)	During the year 2016-17, the total outlay under RKVY for the state was to the tune of Rs. 62.24 crore to ensure a comprehensive development in agriculture and allied sectors. The ARD Department has implemented the following projects/ schemes under RKVY during the year 2016-17. i. Extension of Animal Health Care Services in remote areas of West Bengal through the Mobile Veterinary Clinic (MVC); ii. Livelihood improvement of poor and tribal people through livestock based enterprises in selected villages of Jhargram Block ; iii. Prani-Shakti - Tablet PC & Web-enabled Animal Resources Extension & Information Management System; iv. Purchase of new Freeze Drier Machine at IAH&VB, Belgachia; v. Setting up of the Mineral Mixture Plant by WBCMPFL; vi. Optimization of productive efficiency through organization of Animal Health Camps (Parasitic Control & Fertility Improvement) vii. Modernization and Strengthening of Bull Mother Farm, Haringhata; viii. Certificate Course on Artificial Insemination (Pranisebee); ix. Establishment of FSBS at Pedong, Darjeeling.
3.	Rural Infrastructure Development Fund (RIDF)	Under RIDF, the following activities were undertaken by the State during 2016-17: i) Strengthening and modernising treatment & diagnostic facilities at Block Level ii) Modernization of Haringhata Dairy iii) Upgradation of Infrastructure Facilities of Sperm Station at Beldanga, Murshidabad iv) Establishment of Murrah Buffalo Bull Mother Farm at Turkidanga, Bishnupur, Bankura
4.	Professional Efficiency Development	Through this Programme, the West Bengal Veterinary Council has trained 320 (three hundred twenty) nos. of Veterinarians and provided advance knowledge in the field of Veterinary & Animal Sciences during 2016-17. The Central Government provides 50 per cent assistance for setting up and functioning of Veterinary Council.
5.	National Dairy Plan-I	Under NDP-I, the mandate is to strengthen the Frozen Semen Stations located at Haringhata & Salboni and increase its production by two fold. Moreover, under Bull Production Programme through imported Embryo the Project, production of pure Jersey & Holstein bulls were aimed through advanced Embryo Transfer technology.
6.	Assistance to States for Control of Animal Diseases (ASCAD)	This scheme aims to control livestock diseases through conducting mass vaccination and diagnosis of diseases in the newly established DDLs to reduce the morbidity & mortality of animals. It is implemented in the state from the year 2004-05 with 75 per cent central share and 25 per cent state share
7.	Establishment and Strengthening of Veterinary Hospital and Dispensaries (ESVHD)	The West Bengal, DAIRPOUL is entrusted the responsibility of implementing of Centrally Sponsored ESVHD scheme. The corporation has renovated as well as constructed Veterinary Hospitals and Dispensaries.
8.	National Animal Disease Reporting System (NADRS)	DAR&AH is implementing NADRS in West Bengal. NADRS involves computerized linking 333 block, District and the State headquarters in the State with the central project monitoring unit New Delhi to record and monitor livestock disease situation.
9.	National Livestock Mission (NLM)	Under NLM, four different components were covered during 2016- 17 with a total outlay of ` 11 85.84 lakh
	a. Risk management and Insurance of Milch Animals	The scheme, being implemented by PGSBS, aims towards risk Management and Insurance of 143,000 nos. of Milch Animals. With 16 per cent of premium payment, the beneficiary can insure his dairy animal and Centre & State Governments bear 40 per cent and 44 per cent of premium cost respectively.
	b. Modernization and Development of Breeding Infrastructure	It proposes development of Kotulpur Fodder Farm into a Model State-of- the-Art Farm. This is being implemented by the Directorate of AR&AH, GoWB on funding pattern of 60 per cent Central & 40 per cent State share.
	c. Fodder Seed Production, Procurement & Distribution	The objective is Fodder Seed Production, Procurement & Distribution. Target is to supply of 14,000 Minikit. This is being implemented by the Directorate of AR&AH, GoWB (Funding pattern of 60:40 as CS:SS)
10.	Integrated Sample Survey (ISS)	As per the guidelines of Gol, the Department of ARD regularly conduct field survey work to generate season-wise and annual estimates (district-wise & for the state) of production of milk and other livestock products and by-products. For this purpose, 50 per cent central assistance is provided to the State.
11.	Livestock Census	In addition to ISS, the Department of ARD conducts Quinquennial Livestock Census every five years to capture total livestock population, male & female bovines, milch & in-milk population.

Source: NDDB, 2017

B. State Schemes

1.	Cattle & Buffalo Development	The Scheme aims to augment milk production in the State through the following: i. Breed up-gradation / crossbreeding of low milk producing local Cattle & Buffalo through artificial insemination ii. Frozen Semen Straws production of elite bulls of Gir, Sahiwal, Jersey & Murrah (buffalo) breed iii. Infrastructure development, which are not included under NDP & NPBB iv. Maintenance and updation of e-PBGSBS Management System, a bovine Breeding management System.
2.	Establishment of Fodder Development Plot	This program aims to develop Fodder Demonstration Plot in 10 (ten) cottaahs of land in farmers' field to encourage livestock farmers in production of Green Fodder
3.	Enrichment of dry fodder	It aims to enrich the straw/ cellulosic waste by addition of urea for enhancing the nutritional value
4.	Fodder Seed production through JV initiative	It aims to enhance the production of Certified Fodders Seeds in Government Fodder Farms, Kishan Vikas Kendra & Agriculture Universities

c. Central Schemes for Dairy development in the State

1.	National Dairy Plan-I	In order to increase productivity of milch animals and to provide a greater access to the organised milk-processing sector to rural milk producers, NDP-I is being implement in West Bengal. The scheme provides 100 per cent grant-in-aid for animal nutrition & breeding activities, 25 per cent grant-in-aid for capital expenditure on new semen station and 50 per cent grant on cost of capital items for village milk procurement system.
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D. State Schemes for Dairy Development

1.	Development of Milk Co-operatives	A) Developments of Milk Co-operative Societies by extending special financial assistance to meet up milk production cost to the dairy cooperative farmers through the Dist. Milk Unions. B) Improvement of the quality of milk and enhancement of milk yield, providing of Milk Scanner and Special Feed Additives to the members of the Milk Coop Societies to maintain quality milk supply chain and to save the milk farmers from the clutches of unscrupulous traders and to deliver good quality processed milk to the urban consumers.
2.	Creation of Capital Assets (Infrastructure Development)	Setting up of infrastructure for Value Added Products, expansion of basic Civil Infrastructure for installing Dairy Machineries. Keeping these factors in view, extension of Civil Infrastructure in the Dairy Plants of the Milk Unions and installation of Dairy Equipment.
3.	Women Empowerment in Milk Cooperatives	Assistance towards construction of Society Building, Furniture, AMCU(s), Milk Cans for Women Dairy Cooperative Societies and Milk Pails, Cattle Insurance, Chaff Cutter, Cattle Shed for Individual Women Farmers. Involvement of rural women in restructuring of their socio-economic status and promoting of rural women empowerment as a Govt. policy.
4.	Incentive for Cattle Feed Subsidy to the Milk Cooperative Farmers	Incentive for providing balanced Cattle Feed to the Milk Cooperative farmers for their cattle to maintain the health and enhancement of milk yield.
5.	Fodder Development Programme	A) Azolla Cultivation among the Marginal Farmers having almost no land for Fodder cultivation opted for Production Unit as an alternative source of Green Fodder. Production of raw milk after Azolla feeding increases and more milk price earned which can be considered to be profitable to the farmers as Low Cost Technology with trouble free cultivation. B) Fodder Seed - Due to high price rise of concentrates, farmers are now finding difficulty in maintaining cattle. Encouraging farmers in taking Green Fodder for better nutrition of cattle and thus enhancement of milk yield, steady conception and good growth by providing Green Fodder as Feed would help to minimize the cost of Milk production and execution of the same among the Dairy Cooperative Farmers through the Dist. Milk Union

Source: NDDB, 2017

Annex VIII (a): Policies/ Schemes Implemented in Gujarat**(a) Policies/Schemes implemented in Gujarat**

No	Activity	Scheme/ Institutions	Central/ State	Nodal Dept.	Relative Components/ Description
1	Establishment of Milch Animal Farm	Scheme for Subsidy on Interest for establishment of Milch Animal Farm of 1 to 4 milk cattle unit	State	Deputy Director Animal Husbandry	On the basis of the cost of the cattle unit determined by NABARD or the amount of loan per unit of the bank for purchase of cattle, the bank will be actually paid up to 12% interest subsidy or up to 12% interest subsidy.
2	Establishment of Milch Animal Farm	12% interest subsidy to SC/ST/General Subsidiaries for establishment of 1 to 20 milk cattle unit	State	Deputy Director Animal Husbandry	For the cost of cattle unit or bank animal purchase, which is less than the lending of the unit, the bank will actually be eligible for a cylindrical interest or up to 12% interest subsidy under the main scheme for a period of

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					five years. For the purpose of setting up a unit through the Nationalized Bank or the Reserve Bank of India through the Reserve Bank of India. 12% interest subsidy to SC/ST/General Subsidiaries for establishment of 1 to 20 milk cattle unit
3	Support for cattle shed, water tank, store room and steel bucket (ICDP)	Support for construction of cattle shed, water tank, store room and steel bucket for cattle	State	Deputy Director Animal Husbandry (ICDP)	Only for Scheduled Caste farmers are eligible for construction of Cattle shed, water tank and aid for water bucket (ICDP) to apply for help on iKhedut portal. To take advantage of this scheme, the farmers should have at least two animals (cows / buffaloes). The cattle keeper should have his own land to cattle shed construction. Cattle-shed will be set up in the 90-day time limit of the beneficiary's approval order. If the beneficiary fails to establish cattle shed in the prescribed time limit as per this, or canceling the approval order given to the beneficiary, it will be given an approval order to the other beneficiary in the waiting list. 50% of the total approved cost or maximum Rs. 18,000 / - whichever is lower
4	Support for cattle shed, water tank, store room and steel bucket	Support for construction of cattle shed, water tank, store room and 7 (seven) liter steel bucket for 10 cattle	State	Deputy Director Animal Husbandry (ICDP)	Generally, genuine cattle breeders seeking help for Cattle shed, water tank, store room and 7 (seven) liter steel bucket will have to apply on iKhedut portal. Print out of application will be submitted to the intensive cattle rehabilitation scheme office. To take advantage of these schemes, the farmer should have at least ten (10) animals (cows / buffaloes). The farmer should have his own land according to cattle construction. Cattle Shed will be established in the 120-day time limit for the beneficiary's approval order. If the beneficiary fails to establish Cattle Shed in the prescribed time limit as per this, or canceling the approval order given to the beneficiary, it will be given an approval order to the other beneficiary in the waiting list. For cattle breeders seeking assistance for cattle shed, water tank, store room and 7 (seven) liter steel buckets for cattle - 50% of the original cost or maximum Rs. 1, 25,000 / -.
5	Support for cattle shed, water tank, store room and steel bucket	Support for construction of cattle shed, water tank, store room and 7 (seven) liter steel bucket for 5 cattle	State	Deputy Director Animal Husbandry	In order to get help for Cattle shed, water tank, manger, store room and steel for 7 (seven) liter bucket, the general cattle breeders will have to apply on iKhedut portal and the application will be printed out and submitted to the intensive cattle rehabilitation scheme office. For cattle breeders seeking the help to construct cattle shed, water tank, manger, store room and 7 (seven) liter steel buckets for cattle - 50% of the original cost or maximum Rs. 63,000 / -. To take advantage of these schemes, a cattle keeper must have at least five animals (cows / buffaloes).The cattle keeper should have his own land according to Cattle shed construction. Cattle Shed will be established in the 120-day time limit for the beneficiary's approval order. If the beneficiary fails to establish Cattle Shed in the prescribed time limit as per this, or canceling the approval order given to the beneficiary, it will be given an approval order to the other beneficiary in the waiting list.
6	Artificial Insemination services	Assistance for Promotion scheme for Calves born through artificial insemination	State	Deputy Director Animal Husbandry	Main objective of this scheme is to protect and increase native breed of cattle. After the birth of a pure native breed with artificial insemination, the beneficiary will have to apply on the iKhedut portal. The benefits of this scheme are to be met once per year for maximum five calves per livestock. In the form of cash assistance of Rs.3000 / - for the birth of a pure native breed, by artificial insemination in the state of his native cow (cow).Assistance for maximum five shepherds per cattle keeper will be available.

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7	Animal Insurance	Assistance for Animal Insurance Assistance for all female DCS members of SC/ST/General category of farmers	State	Deputy Director Animal Husbandry	After taking insurance for the scheme, the beneficiaries will be required to apply on the iKhedut portal or nearest veterinary hospital, after receiving the policy. Assistance provided for women member of SC/ST/General in the state, 75% of the sum assured per animal or Rs. 1125 / - for those who are less than two and maximum five (5) animals per cattle
8	Aid for Concentrate, Feed to Pregnant Animals	Scheme for provide assistance on Concentrate, Feed Aid to Pregnant Animals	State	Deputy Director Animal Husbandry	This scheme is only for women beneficiaries . The female beneficiary has to apply on the iKhedut portal and the application will be printed out and submitted to the intensive cattle rehabilitation scheme office. This assistance is Rs. In the limit of Rs.3000 / - (as per 75% of total purchase cost), a maximum of one pregnant cows per animal will be given as cattle feed. The woman member, who buys the bill by purchasing himself, will be receivable only after scrutinizing the purchase amount.
9	Concentrate, Feed Aid to Pregnant Animals	Scheme for provide assistance on Concentrate, Feed Aid to Pregnant Animals	State	Deputy Director Animal Husbandry	This scheme is only for women beneficiaries. The female beneficiary has to apply on the iKhedut portal and the application will be printed out and submitted to the intensive cattle rehabilitation scheme office. This assistance is being provided to Scheduled Caste woman beneficiaries. In the limit of Rs.300 / - (as per 75% of total purchase), a maximum of one cows per animal will be given as cattle feed. The woman member, who buys the bill by purchasing himself, will be receivable only after scrutinizing the purchase amount.
10	Concentrate, Feed Aid to Pregnant Animals	Scheme for provide assistance on Concentrate, Feed Aid to Pregnant Animals	State	Deputy Director Animal Husbandry	This scheme is only for women beneficiaries. The female beneficiary has to apply on the iKhedut portal and the application will be printed out and submitted to the intensive cattle rehabilitation scheme office. This assistance is being provided to Scheduled Tribe beneficiaries. In the limit of Rs.300 / - (as per 75% of total purchase), a maximum of one cows per animal will be given as cattle feed. The woman member, who buys the bill by purchasing himself, will be receivable only after scrutinizing the purchase amount.
11	Establishment milch cattle farm/unit	Scheme for subsidy on interest for woman farmer for establishment of 1 to 10 milch animal farm	State	Deputy Director Animal Husbandry	Women beneficiaries will be eligible only if they are given loans to establish a unit through the Nationalized Bank or the Reserve Bank of India through a recognized financial institution. The beneficiary will have to apply on iKhedut portal. Dairy farming is an important source of constant subsidiary income. The small woman farmers can purchase 1 to 10 animals as per their need and capacity to maintain. If any bank recognized by Reserve bank of India, sanction loan for any dairy animal cow & buffalo, the beneficiary can gets 7% interest Out of which 5 % would be assisted by Govt. of Gujarat and remaining 2% would be borne by Gujarat Co-operative Milk Marketing Federation Ltd. and District co-operative milk unions equally for five years on bank loan amount (as per unit cost of NABARD guide line).
12	Financial Assistance for Automatic Milk collection system	AMCS Assistance for Women/General PDCS	State	Deputy Director Animal Husbandry	To be purchased from a valid seller / dealer Empanelment by Animal Husbandry Director /GCMMF. This scheme is for women / general milk producer co- operatives, in whom the maximum amount of money on automatic milk collection system (machine) (AMCS) 80,000 / - per unit or 80% of the cost, whichever is less, are eligible to be assisted.
13	Financial Assistance for Automatic Milk collection system	AMCS Assistance for Women/General PDCS	State	Deputy Director Animal Husbandry	To be purchased from a valid seller / dealer Empanelment by Animal Husbandry Director /GCMMF. This scheme is for the milk producer co-operative societies of the Scheduled Caste area Women, In which the maximum amount of money on automatic milk collection system (machine) (AMCS) 80,000 / - per unit or 80% of the cost, whichever is less, are eligible to be assisted.

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14	Financial Assistance for Automatic Milk collection system	AMCS Assistance for Women/General PDCS	State	Deputy Director Animal Husbandry	To be purchased from a valid seller / dealer Empanelment by Animal Husbandry Director /GCMMF. This scheme is for women milk producer co-operative societies belonging to Scheduled Tribes area In which the maximum amount of money on automatic milk collection system (machine) (AMCS) 80,000 / - per unit or 80% of the cost, whichever is less, are eligible to be assisted.
15	BMC assistance for Women operated DCS	BMC assistance for Women operated/General PDCS	State	Deputy Director Animal Husbandry	To be purchased from a valid seller / dealer Empanelment by Animal Husbandry Director /GCMMF. This scheme is for women / general milk producer co-operatives in which the unit price fixed on the bulk milk cooler (BMC). Financial assistance will be given to (1000 lt-7.75 lakh, 2000 lt-9.25 lakhs, 3000 lt. 11.00 lakhs, 4000 lt. 12.50 lakhs, 5000 lt-14.00 lakh, 10000 lt-23 00 lakhs). Assistance in the limit of 80% of the unit price or purchase price, whichever is less
16	BMC assistance for Women operated DCS	BMC assistance for Women operated PDCS in Scheduled Castes area	State	Deputy Director Animal Husbandry	To be purchased from a valid seller / dealer Empanelment by Animal Husbandry Director /GCMMF. This scheme is for women milk producers' co-operative societies in Scheduled Castes , in which the unit price fixed on Bulk milk Cooler (BMC). Financial assistance will be given to (1000 lt-7.75 lakh, 2000 lt-9.25 lakh, 3000 lt. 11 lakh lakhs, 4000 lakh 12.50 lakh, 5000 lt-14.00 lakh) Assistance in the limit of 80% of the unit price or purchase price, whichever is less.
17	BMC assistance for Women operated DCS	BMC assistance for Women operated PDCS in Scheduled Tribes area	State	Deputy Director Animal Husbandry	To be purchased from a valid seller / dealer Empanelment by Animal Husbandry Director /GCMMF. This scheme is for the milk producer co-operative women in the Scheduled Tribes , with the unit price fixed on the bulk milk cooler (BMC). financial assistance will be given to (1000 lt-7.75 lakh, 2000 lt-9.25 lakh, 3000 lt. 11 lakh lakhs, 4000 lakh 12.50 lakh, 5000 lt-14.00 lakh) Assistance in the limit of 80% of the unit price or purchase price, whichever is less.
18	Establishment of milk adulteration testing machine (MADM) for women operated DCS	Assistance for the establishment of milk adulteration testing machine (MADM) for women operated /General DCS of SC/ST/General area	State	Deputy Director Animal Husbandry	To be purchased from a valid seller / dealer Empanelment by Animal Husbandry Director /GCMMF. The standard of assistance for scheduled Women/General co-operative milk producers' associations of SC/ST area will be 75% of the unit cost and for General/Women DCS area will be 50% of the unit cost.
19	Establishment of milk house/Godown for women operated DCS	Scheme for Assistance for the establishment of house/Godown for DCS (women/general) for SC/ST/General population area	State	Deputy Director Animal Husbandry	Women / General Beneficiary Society shall have to undergo the supervision of the Civil Engineer of the respective dairy union as per the layout and standards laid down by the GCMMF, Anand. This scheme is for all milk producer co-operative societies. Under this scheme financial assistance is given Up to Rs. 10,00,000 / - per unit cost of establishment of milk house/godown or actual cost of establishment which is less than 50% of the cost, not more than Rs. 5,00,000 / -
20	Milking machine	Scheme for Assistance for the on buying the milking machine For the female member of PDCS for all category of farmers	State	Deputy Director Animal Husbandry	The purchasing of a milking machine from an authorized dealer of the manufacturer, authorized by the Animal Husbandry Director / GCMMF. The applicant has to have five (5) or more milch animals belonging to the concerned Rural Milk Producers' Co-operative Societies, as well as the certified certificate as per the requirement of regular milk. Assistance will be given For the female member of DCS in the state, for purchase of a matching machine 75% of the purchase price or Rs. 33,750 / - whichever is lower
21	Award distribution	Scheme for planning the state's best Animal rears award distribution ceremony	State	Deputy Director, Deputy Director (ICDP) Animal	(1). Taluka level award will be given in District Animal Husbandry Camp (2). State level awards and district level awards will be awarded at any one departmental level. (3). Best Animal Achievement Scheme will have to apply on iKhedut portal and the application

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				Husbandry	will be printed out and submitted to the intensive Animal Recovery scheme office. financial assistance for (1). Taluka Level Award - (Total Taluka 248 x Taluka 2 prize = Number of total prize 496) - First prize - Rs. 5000, second prize - Rs. 3000 (2). District Level Award - (Total District 33x 2 prize = District of total prize - 66) - First prize - Rs. 7000, second prize - Rs. 5000 (3). State level award - first prize - Rs. 25000, second prize - Rs. 15000, Third Prize - Rs. 10000 Total Award = 565 (Total prize of taluka = 496 + Total prize of district = 66 + Total prize of state = 3)
22	Chaff Cutter	Scheme for Assistance to Power Operated Chaff Cutter for all common Beneficiary	State	Deputy Director Animal Husbandry	The benefit of this scheme will be available to the cattle of five (5) or more cattle. An authorized manufacturer / authorized dealer approved by the Animal Husbandry Director / Agriculture Director will have to purchase an electric powered chaffer. financial assistance at the rate 75% of the purchase price or Rs. 15,000 / -, whichever is lower
23	Assistance for Poly Propylene Silage Bag	Assistance for Poly Propylene Silage Bag for all Common Beneficiary	State	Deputy Director, Deputy Director (ICDP) Animal Husbandry	Animal care taker, who wants to take advantage, will have to apply on iKhedut portal or near veterinary hospital and the application should be taken print out and submit to the intensive ICDP office. for SC/ST farmers financial assistance is 75% of the purchase price or maximum Rs.750 for General farmer it is 50% of the purchase price or maximum Rs. Help up to Rs.500 / -
24	Fodder Development	Minikits for fodder seed for All farmers	State	Deputy Director, Deputy Director (ICDP) Animal Husbandry	To acquaint farmers with improved fodders and help them to routinely use these, Fodder Minikits and necessary information related to fodder are provided by Seed Development Centers. Free of cost Fodder Minikits for all farmers
25	Compensation for Accidental Animal Death Scheme	Scheme for Compensation for Accidental Animal Death Scheme for All farmers	State	Assistant/ Deputy Director, Deputy Director (ICDP) Animal Husbandry	Animal Husbandry is a Subsidiary to Agriculture for helping poor farmers. There are Certain conditions like Anthrax, Bird flu, Rabies, Food poisoning, chemical poisoning, snake bite cases. There is no provision to give any assistance to the animal owner for death of their livestock due to aforesaid reasons. In such conditions animal owners lose their animals and livelihood also. So that in these conditions the animal owner can purchase the replacement of his lost animal and continue his income generation. So the relief assistance per animal for Cow: 16,400/- (maximum 2 animals/Family), Buffalo : 16,400/-(maximum 2 animals/Family), Bullock : 15,000/-(maximum 2 animals/Family), Calves/Heifers (Above six months), Donkey, Pony, Khachchar : 10,000/- (maximum 2 animals/Family), Sheep/Goat (Adults) : 1650/-(maximum 100 animals/Family), Camel & Horse (Adults): 15,000/-(maximum 2 animals/Family).
26	Milk Competition	Scheme for Milk Production competition for All farmers	State	Assistant/ Deputy Director, Deputy Director (ICDP) Animal Husbandry	This scheme is meant for giving prizes to encourage the owners of high milk producing animals in the state by arranging state level milk yield competition. Under this competition in each breed of Cattle and Buffalos. Only for Gir and Kankrej Cattle 1st Prize of Rs.51,000/- and for remaining breeds 1st Prize of Rs.25,000/- 2nd Prize of Rs.20,000/- 3rd Prize of Rs.15,000/- and runner up Would be distributed to the tune of Rs.5000/- in each case by the state Government. Consolation prizes of Rs.1000/- are also distributed to the each entry of competition.
27	Integrated Gaushala Development Scheme	Scheme for Integrated Gaushala Development Scheme	State	Gauseva and Gauchar Vikas Board, Gujarat state	The Gaushalas registered under Public Registration Act and rearing pure breed Gir and Kankrej cattle are eligible for subsidy against different development works like Construction of Cattle Shed, Construction of grass godown, Bore well/ Compound wall at 75 % of the total expenditure incurred for the respective work in

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					the limit of the amounts. On basis of cows reared (10,20,30,40,50) For one development work in a year. Maximum for 5 (Five) years. 75% of the total expenditure.
28	Establishment of elite herd of high pedigreed Male/Female calves of Gir and Kankrej breed	Scheme for establishment of elite herd of high pedigreed Male/Female calves of Gir and Kankrej breed	State	Gauseva and Gauchar Vikas Board, Gujarat state	The Gaushala has scientifically rear breed male/female calves of the pure breed Gir/Kankrej cows, producing more than 1500 liters and 1800 litres milk respectively in a lactation period. Gaushalas adhering to these conditional numbers are eligible to get subsidy for maintenance of male/female calves at the rate of 50% of the expenditure incurred in the limit of Rs.10000 per male/female calf for maximum three years.
29	Seminar/Conference for representative of Gaushalas/Panjarapoles	Scheme for conducting district level seminar/conference for representative of Gaushalas/Panjarapoles	State	Gauseva and Gauchar Vikas Board, Gujarat state	The organizers of such seminar have to prior approvals of place, date and time of the seminar/conference. To compensate different expenditure to organize seminar like rent of hall or mandap, lunch with tea and breakfast, there is provisions to give financial assistance. Post production of vouchers of actual expenditure in conducting the seminar with the optimum limit of Rs.50000 only.
30	Pure breeding and supply of bull	Scheme for pure breeding and supply of bull	State	Gauseva and Gauchar Vikas Board, Gujarat state	The main objective of the scheme is to provide good genetically potential breeding bulls to the institute involved in pure breeding activities. The institute registered under public charity act, gram panchayat and village milk producer cooperative societies are eligible to get the benefits the scheme. The provision for financial assistance for Purchase of Pure Gir/Kankrej Bull (actual purchase price or Rs.30000/ whoever is less, construction of bull shed (actual cost of construction work or Rs.50000 whichever is less, maintenance charges(Maximum up to Rs.20000
31	Castration of scrub bulls	Scheme for Castration of scrub bulls	State	Gauseva and Gauchar Vikas Board, Gujarat state	The voluntary organizations like lions clubs, Rotary clubs etc. which may organize camps for castration of scrub bulls in collaboration with NGO need prior permission from the board. Such organizations will be entitled to get financial assistance at the rate of Rs. 100/- per Castration.
32	Production of organic bio fertilizer from cow dung	Scheme for production of organic bio fertilizer from cow dung	State	Gauseva and Gauchar Vikas Board, Gujarat state	Under this scheme, financial assistance limited to Rs.50000 at the rate of 50% of the estimated one time expenditure of Rs.1 lakh towards the cost of bio starter, enrich media, bags to pack manure, labour charges and other ancillary expenditures, shall be given to the SakhiMandal and gram Panchayats having animal hostel on first come first basis. Organizations possessing Gobar gas plant and producing green fodder will be given priority. Those organizations who have more than 100 animals or who collect the dung in sufficient quantity, shall be eligible for this scheme.
33	Financial assistance to create infrastructural facilities	Scheme for financial assistance to create infrastructural facilities	State	Gauseva and Gauchar Vikas Board, Gujarat state	The Gaushalas and Panjarapoles, registered under Public Charity Act having their own land are eligible to get benefits of this scheme at the rate of 75% of total expenditure for above each item or Rs. 4.00 lacs whichever is less for additional development works like construction of additional cattle shed, compound wall, water troughs, new tube wells, deepening of existing wells, diesel engine or submersible pumps, procurement of pipeline, purchase of new chaff cutter, construction of grass godown etc. rs.
34	Financial assistance to create infrastructural facilities	New Panjarapoles	State	Gauseva and Gauchar Vikas Board, Gujarat state	The trust registered under public charity trust act, which desires to establish a new Panjarapoles within the radius of 15 km of the urban area, will be eligible to get benefits of financial assistance for development works for five years to maximum up to Rs.2 lakh at a stretch (single installment). The institution, which desires to get benefit of this scheme, must have at least 100 breedable cows.
35	Financial assistance to	JivDaya Helpline	State	Gauseva and	The organisation, desiring to start JivDaya helpline for treatment of cattle, must have at

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	create infrastructural facilities			Gauchar Vikas Board, Gujarat state	least 500 animals in the institute /organisation. Under this scheme, organisation shall have to purchase a mobile van, medicines and equipments etc. they also have to appoint a veterinary officer. The organisation will be eligible for financial assistance in the limit of Rs.3.0 lakh in first year, rs.2.00 lakh in second year and Rs.1.00 lakh in third year or 50% of the total expenditure incurred, whichever is less in the respective year.
36	Financial assistance to create infrastructural facilities	Managerial Assistance	State	Gauseva and Gauchar Vikas Board, Gujarat state	Under this scheme, an organisation rearing more than 500 animals, if appoints a veterinary officer as technical officer, will get financial assistance at the rate of Rs.15000 per month for three years, and if appoint a livestock inspector as technical employee, will get financial assistance of Rs.7000 per month for three years as remuneration charges of the employee.
37	Supply of bull for pure breeding	Scheme for supply of bull for pure breeding to Gram Panchayats, Gaushalas, Panjarapoles and Gauseva Committee of the State	State	Gauseva and Gauchar Vikas Board, Gujarat state	A bull of pure Gir or Kankrej breed is provided to Gram (Panchayats, Gaushalas, Panjarapoles and Gauseva Committee of the State) for breeding their own cows as well as cows in neighboring villages Total financial assistance in First Year: Purchase of bull, Rs. 1.00 lacs Insurance Premium, Maintenance of bull: Construction of bull shed Rs. 0.42 lacs, Total Rs. 1.42 lacs Second year: Maintenance of bull Rs. 62,000 Third Year: Maintenance of bull Rs. 62,000
38	Research, publicity and dissemination of information to improve usage of cow products	Scheme for Training	State	Gauseva and Gauchar Vikas Board, Gujarat state	For economically sustainable cow husbandry, it is necessary to get benefits in the field of health and environment through usage of cow urine and dung along with cow milk products. Under this scheme, organisation involved in cow rearing will have to organize training programs, with prior permission of the board. Financial Assistance of maximum Rs.6000/- for a training class towards payment of Rs. 200 per day per trainee will be provided to the training organisation to meet the training expenses.
39	Research, publicity and dissemination of information to improve usage of cow products	Scheme for Financial Assistance for purchase of equipments	State	Gauseva and Gauchar Vikas Board, Gujarat state	Financial assistance of 50% out of total expenses, limited to Rs. 1.5 lakhs will be provided for procurement of equipments used for manufacture of medicines in form of extract, tablets, capsules, powder etc. and pesticides from cow urine along with procurement of packing machine.
40	Research, publicity and dissemination of information to improve usage of cow products	Fellowship scheme for Research Work	State	Gauseva and Gauchar Vikas Board, Gujarat state	This is a scheme to provide fellowship to each Post-Graduate student of any recognized University of Gujarat State must be engaged in Cow based research work. Maximum Rs. 2.00 lacs
41	Incentive for Gaushalas/ Panjarapoles and Gau-Rakshaks (cow protectors)	Scheme to Provide Incentive Prize for Gaushalas/ Panjarapoles	State	Gauseva and Gauchar Vikas Board, Gujarat state	Scheme of providing incentive has been sanctioned with a view to encourage healthy competition among cattle rearing organizations to strengthen arrangement for cattle and rearing them in a better way. The organization has to apply in a prescribed form. The board will decide the order of first three winner organization accordingly to recommendations of the Selection Committee. The best organization honored by cash award and certificates. Implementation - Every three years. Financial Assistance For first winner of Gaushala, Panjarapole get Cash Price (Rs.) 150000, 150000 respectively. For second winner of Gaushala, Panjarapole get Cash Price (Rs.) 100000, 100000 respectively. For third winner of Gaushala, Panjarapole get Cash Price (Rs.) 50000, 50000 respectively
42	Incentive for Gaushalas/ Panjarapoles and Gau-Rakshaks	Scheme for incentive prize to cow protectors (Gau-Rakshaks)	State	Gauseva and Gauchar Vikas Board,	A scheme is implemented by the board, with a view to encourage the person who rescues the cows and cows progeny from being taken to slaughter houses and to take legal actions against the persons involved in such illegal

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	(cow protectors)			Gujarat state	activities. Gau-Rakshaks has to apply in a prescribed form. To lodge police complaint. To inform police. Three persons will be awarded with cash prize and certificate. Post humus award will be also taken in to consideration on basis of biodata of the Gau-Rakshaks. Financial Assistance: Three persons - every three year to be awarded. Cash prize. Rs. 50,000/- to each person.
43	Maintenance of the rescued Cattle being to slaughter house and assistance to the Cow Protectors	Scheme for financial assistance for maintenance of the rescued Cattle being to slaughter house and assistance to the reporting person (Cow Protectors)	State	Gauseva and Gauchar Vikas Board, Gujarat state	Encouragement scheme has been implemented for maintenance of the resettled cattle being taken to slaughter house as well as for the cow protectors, involved in rescue operation of such cattle with the help of police. The Financial Assistance for Panjarapole -Rs. 2500/- per accepted cow progeny. Cow Protector - Rs.500/-per informed cow progeny.
44	Maintenance of stray cattle	Scheme of financial assistance for maintenance of stray cattle	State	Gauseva and Gauchar Vikas Board, Gujarat state	The objective of the scheme is to be helpful in taking away stray cattle for public roads and resident areas by LSG bodies. Under this scheme. One time financial assistance of Rs.1000 per cattle will be given to the Panjarapoles.
45	Rearing of elite pure breed Gir/Kankrej Male Calves of best genetic potential				
46	Modernize / upgrade Gaushalas	Scheme of financial assistance to Gaushalas/ Panjarapoles, Govt./ Semi .Govt. Organizations, Other Agencies, Progressive cow breeders /Farmers to modernize/upgrade their Gaushala	State	Gauseva and Gauchar Vikas Board, Gujarat state	Gaushalas/ Panjarapoles, Govt./ Semi .Govt. Organizations, Other Agencies, Progressive cow breeders /Farmers in the state who own must have 3 to 5 acres land and Beneficiary must rear at least 50 breed able cows are eligible for financial assistance of Rs. 4 lakh or 75 % of the total expenses, whichever is less for each development work/item. List of Infrastructure facilities: Milk pouch packing machine 200 liter capacity bulk milk coolers (with/without generator) Panchgavya based machine production equipments. Ripper machine Mini/ Large tractor. Hydraulic trolley. Solar water pump. Solar Unit. Water fogger, Gobar Gas plant (compulsory) Drip irrigation facility (3-5 acre land) (compulsory) Wormy Compost shed (compulsory) etc.
47	Gauchar/fodder Development	Gauchar Development scheme for improvement of fodder/pasture production in the gauchar owned by gram panchayat, gaushalas and Panjarapoles	State	Gauseva and Gauchar Vikas Board, Gujarat state	Gram Panchayat, Gaushala, Panjarapole are eligible to get benefits of this scheme. The organization has to apply in a prescribed form. The organization has to carry out work like, Removal of babuls, scrubs from Gauchar land, Leveling of the land. Plaguing, Cultivation by sowing fodder seeds, Wire fencing the land etc. under this scheme Financial Assistance : Rate of subsidy :- (75% subsidy of total expenditure incurred) Rs. 0.75 lacs for 1 hector of land, Maximum: Rs. 15.00 lacs for 20 hector of land (75% of the total expenditure incurred)
48	Fodder Development	Scheme to provide improved varieties of fodder seeds to the Organizations/ individual desired for Gauchar Development	State	Gauseva and Gauchar Vikas Board, Gujarat state	Gaushalas/Panjarapoles, Gram Panchayats, Older organization, Progressive cow breeders can avail benefit of the scheme. Purchase of Labeled improved verity seeds of fodder crops through Gujarat State Seed Corporation Ltd and providing Free supply of fodder crop seeds to Gaushalas/ Panjarapoles, Grampanchayats and land holder organizations and progressive, cow breeders.
49	Organize visit to village	Scheme to organize visit to village -Dharmaj, Dist. Anand for demonstration of ideal /model Grass land (Gauchar).	State	Gauseva and Gauchar Vikas Board, Gujarat state	Under this scheme Gram Panchayat, Village service Co-operative society, Village milk producer Co-operative society, Sakhi Mandal (Female Self Help Groups) Organizations engaged in animal husbandry activities will visit the Model grass land in groups. One batch of maximum 50 visitors. The managing

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					organization has to make necessary arrangements of to and through travelling journey. The tour programme shall be planned only after pre sanction of the board for visit of grass land. Rs.1000/- per person (visitor) towards travelling fare, refreshment and meal expense to visitors. The travelling expense will be encashed by Gram Panchayat, Dharmaj, on submission of vouchers of travelling area by managing organization.
50	Transportation cost of calves/bullocks	Scheme for financial assistance for transportation of cow male calves/bullocks	State	Gauseva and Gauchar Vikas Board, Gujarat state	Under this scheme healthy bullocks area selected from Gaushala /Panjarapoles and supplied to the needy farmers free of cost. The use of bullocks for agriculture purpose will be increased and saved from slaughtering. The bullocks supplied to farmers will be selected from Gaushala /Panjarapoles free of cost and Transportation charges, at the rate of 2 Rs per km (Minimum 500 and maximum 2000/) will be paid to the beneficiary farmers
51	Organisation of Training Programme	organisation of training programme of Animal breeders and farmers for cow husbandry, cow breeding, Panchgavya therapy and gauchar development	State	Gauseva and Gauchar Vikas Board, Gujarat state	It is planned to organize training programme of three day period, at least 6 batches in the year, at each selected ideal 10 Gaushalas and Panjarapoles with strength of 50 trainees in each batch.
52	Castration of scrub bulls	Scheme for Castration of scrub bulls	State	Gauseva and Gauchar Vikas Board, Gujarat state	The state government has sanctioned Scheme for Castration of scrub bulls for genetic improvement of indigenous breed of cattle with the budget provision of Rs.350 lakhs for the year 2016-17 and the scheme is continued with budget provision of Rs.200 lakh for the year 2017-18. it is planned to castrate 110000 scrub cow bulls during the year 2016-17 & 2017-18 in the state.
53	Establishment of Nandi-Ghar	Scheme for establishment of Nandi-Ghar under Hon. chief minister sponsored cattle development programme	State	Gauseva and Gauchar Vikas Board, Gujarat state	Under this scheme, the cows of breeders of surrounding areas of the Gaushala will be bred with the bull, will be with high milk production efficiency. so the breeders will obviously get or earn more income from sale of milk. Their economic & social status. The financial assistance of Rs. 2.50 lakh is to be provided to each Gaushala for purchase and maintenance of bull and construction of Nandi Ghar
Milk Union sponsored					
1	Calf rearing activity	Shwet Sarita calf rearing project for tribal area development	State	District Planning office-	Under the developing taluka scheme, Dairy cooperative societies will be formed in 20 villages will be selected from Dediapada taluka of Narmada district under the developing taluka scheme. In this selected DCS, 10 cattle calves will be given to 200 tribal HHs and training is also given for scientific calf rearing.
2	Animal Health	Fertility improvement project	GCMMF, Anand	Milk Union, Bharuch	Financial assistance will be given from GCMMF under the fertility improvement project. 50% percent financial assistance will be provided by federation and remaining 50% will be provided by milk union
3	Cattle loan	Bankable cattle loan scheme	Milk Union, Bharuch	DCS	Milk union is signed MOU with BOB, IDBI, ICICI Bank for Financial assistance for cattle purchase will be given to members. Member should have two acre land.
4	Infrastructure creation	Electronic Milko Tester Machine	Milk Union, Bharuch	DCS	Under this scheme financial assistance will be given up to Rs.10000. New registered DCS and repeated after seven years of completion
5	Infrastructure creation	Milko screen machine	Milk Union, Bharuch	DCS	Financial assistance of Rs. 50000 will be given, Unit cost is Rs.275000, remaining amount of Rs.225000, after subtraction of financial assistance will be given by cooperative society
6	Infrastructure creation	Automated Milk collection system	Milk Union, Bharuch	DCS	Financial assistance of Rs. 25000 will be given under newly purchased system, only for new unit purchasing
7	Infrastructure creation	Construction of Milk House (Dudh Ghar sahay)	Milk Union, Bharuch	DCS	Under this scheme financial assistance will be given up to Rs.50000 after completion of New Milk House. Under the government financial assistance scheme Rs.3 lakh loan will be given at 12 % interest to dairy cooperative society.

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8	Infrastructure creation	To provide of AI crate	Milk Union, Bharuch	DCS	Under this scheme financial assistance will be given up to Rs.2000 for provider of AI crate facilities to DCS.
9	Cattle Feed & Animal nutrition	Assistance for Mineral Mixture	Milk Union, Bharuch	DCS	Under this scheme financial assistance of Rs.25 per kg will be given for purchasing of mineral mixture to DCS
10	Infrastructure creation	working BMCU will transfer to name of village milk producer societies	Milk Union, Bharuch	DCS	Charges of token of amount will be taken from dairy cooperative societies, maintenance of unit will be responsibility of respective village dairy cooperative society. under this scheme financial assistance of Rs.50,000 for 1000 litre, Rs.75,000 for 2000 litre, Rs.1,00,000 for 3000 litre, Rs.1,25,000 for 4000/5000 litre capacity, 1 Rs. token amount charged for 100% assisted unit, for new unit union will be given 15% assistance and 12% (@12% interest) loan will be given by union and 3% cost will be barred by respective cooperative societies.
11	Infrastructure facility	49 developing taluka scheme	State	District planning office-Milk union, Panchmahals	Under the 49 Developing taluka scheme financial assistance will be given for construction of milk house, infrastructure development/creation, for animal purchasing, cattle farm
12	Infrastructure facility	Integrated dairy development project (IDDP)	State	Tribal Development Department Gujarat	Financial assistance will be given for purchasing of milch cattle, animal insurance, transportation cost, cattle feed, training, animal treatment, purchasing of instruments.
13	Calf rearing	Calf rearing project	State	Tribal Development Department Gujarat	Under this project 100% assistance will be given by government for calves development
14	Infrastructure facility	New Gujarat pattern scheme for tribal development department	State	Tribal Development Department Gujarat	under this scheme financial assistance will be given to milk union for creating infrastructure and development of dairy activity
15	Establishment of Milch Animal Farm	Mini Dairy Farm scheme	Milk Union, Panchmahals	DCS	Financial assistance 7% interest subsidy will be given for establishment of 5 to 10 milch animal farm, for women member 5% interest subsidy will be given by government, 1% interest subsidy will be given by federation, 1% interest subsidy will be given by milk union
16	Insurance	Animal insurance scheme	Milk Union, Panchmahals	DCS	Group insurance scheme will be implemented
17	Infrastructure Development etc.	Establishment of BMCU	Milk Union, Panchmahals	DCS	To procured good quality milk
18	Infrastructure facility	Establishment of AMCS	Milk Union, Panchmahals	DCS	To procured good quality milk
19	Infrastructure facility	Establishment of AMCS	Milk Union, Panchmahals	DCS	Accurate measurement of fat, quantity & transparency in accounting
20	Infrastructure facility	Construction of Dudhghar	Milk Union, Panchmahals	DCS	To provide infrastructure facility to DCS
21	Infrastructure facility	Construction of Biomass silo	Milk Union, Panchmahals	DCS	Preservation of feed & fodder
22	Infrastructure facility	Establishment of Milko tester machine	Milk Union, Panchmahals	DCS	Accurate measurement of milk quality
23	Infrastructure facility	Supply of milk collection accessories	Milk Union, Panchmahals	DCS	Accurate milk procurement
24	Infrastructure facility	Silage making unit	Milk Union, Panchmah	DCS	To make availability of green fodder throughout the year

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25	Infrastructure facility	VMS programme (vision mission strategy workshop- 3 days village level programme)	Milk Union, Panchmahals	DCS	To aware the milk producers to adopt the scientific practices in animal husbandry & maximize the profit by implementing the scientific practices
26	Infrastructure facility	VMS annual review (1 days village level programme)	Milk Union, Panchmahals	DCS	To aware the milk producers to adopt the scientific practices in animal husbandry & maximize the profit by implementing the scientific practices
27	Infrastructure facility	DIVA programme (DCS member integrated Vikas Aayojan- 3 days village level programme)	Milk Union, Panchmahals	DCS	To aware the milk producers to adopt the scientific practices in animal husbandry & maximize the profit by implementing the scientific practices
28.	Infrastructure facility	PMP Programme (Progressive milk producers programme-2 days village level programme)	Milk Union, Panchmahals	DCS	To aware the milk producers to adopt the scientific practices in animal husbandry & maximize the profit by implementing the scientific practices
29	Infrastructure facility	EDP Programme (Entrepreneurship Development Programme- 8 Days programme)	Milk Union, Panchmahals	DCS	To aware the milk producers to adopt the scientific practices in animal husbandry & maximize the profit by implementing the scientific practices
30	Social responsibility	Tree Plantation	Milk Union, Panchmahals	DCS	Social responsibility
31	Infrastructure facility	Milking Machine (only one time through subsidy, than after original price)	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 30% on purchase value for speedy, clean milk facility
32	Infrastructure facility	Hand operated chaff cutter	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy on purchase of hand operated chaff cutter , 25 % to 30% saving of fodder
33	Infrastructure facility	Animal cooling system (Sprinkler system)	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy for 10 milk cattle (only one time benefit, then after original price)
33	Infrastructure facility	Animal cooling system (Sprinkler system)	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy for 20 milk cattle (only one time benefit, then after original price)
34	Infrastructure facility	Electric chaff cutter	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 30% subsidy (only one time benefit, then after original price)
35	Infrastructure facility	Electric chaff cutter	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 30% subsidy (only one time benefit, then after original price)
36	Infrastructure facility	Providing of Travis For AI facility	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 30% subsidy (only one time benefit, then after original price)
37	Animal Health	PIPERAZINE (Deworming)	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy for effective Deworming in calves
38	Animal Health	Botox medicine	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy
39	Animal Health	Tick kill power medicine	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy
40	Animal Health	Beticoal medicine	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy
41	Animal Health	Clean kit for FMD	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy
42	Education	Scholarship for study in dairy technology	Milk Union, Mehsana	DCS	Under this scheme financial assistance will be given 50% subsidy
C	Central Govt.				
1	Dairy Development and Infrastructure	Dairy Entrepreneurship Development Scheme (DEDS)	NABARD	CBs,RRBS,UBS, SCBs,SCARDB, institutions, which are eligible for refinance from	Farmers, Individual Entrepreneurs and Groups of unorganized and organised sector. Groups of unorganized sector, includes SHGs on behalf of their members, Dairy Cooperative societies, Milk Unions on behalf of their members, Milk federations, Panchayati Raj Institution (PRIs) etc. are eligible under the scheme. Back ended capital subsidy @25% of the project cost for general category and 33% for SC/ST

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				NABARD	farmers. The component-wise subsidy ceiling will be subject to indicative cost arrived by NABARD from time to time. entrepreneur contribution for loans beyond Rs.1 lakh *-10% of project cost (minimum), Bank loan-Balance option.
2	Animal Husbandry & Dairy Development	Rashtriya Krishi Vikas Yojana	Central	Ministry of Agriculture and Farmers welfare	100% Grants would be provided to the states by central government
3	Livestock Health	Livestock Health and Disease Control	Centrally Sponsored	Department of Animal Husbandry	Livestock Health & Disease Control (LH & DC) during 10th plan, a centrally sponsored macro-management scheme called "Livestock Health and Disease Control" is being implemented with an outlay of Rs 525.00 crores.
4	Cattle and Buffalo Breeding	National Project for Cattle and Buffalo Breeding	Central	Department of Animal Husbandry	At present 28 States and one UT are participating under the project. The project envisages 100% grant-in-aid to Implementing Agencies.
5	Infrastructure Development	Assistance for Modernization of Slaughter Houses and Carcass Utilization Plants	Central	State Governments /Directorates of Animal Husbandry/ Municipal Corporations / Local Bodies /Livestock Corporations	Modernization of Slaughter houses 50% of the project cost from GOI and 50% from the State. Establishment of Carcass Utilization Centers 100% grants-in-aid to meet capital expenditure for building, plant & machinery and effluent treatment plant. Only 50% grant is provided for electricity, water fencing boundary, essential housing, etc. by the GOI and remaining from State Govt.
6	Feed and Fodder Development	Assistance to States for Feed and Fodder Development	Central	Directors, Animal Husbandry of the State Governments	
7	Livestock Insurance	Livestock Insurance	Central	Government of India Ministry of Agriculture Department of Animal Husbandry, Dairying & Fisheries	The Livestock Insurance Scheme, a centrally sponsored scheme, which was implemented on a pilot basis. The premium of the insurance is subsidized to the tune of 50%. The entire cost of the subsidy is being borne by the Central Government. The benefit of subsidy is being provided to a maximum of 2 animals per beneficiary for a policy of maximum of three years. The scheme is being implemented in all states except Goa through the State Livestock Development Boards of respective states.
8	Livestock Census	Livestock Census	Central	State government	It is a Central Sector Scheme with 100% central assistance. The ultimate responsibility for conducting the Livestock Census rests with the Animal Husbandry Departments of the States/UTs. The Central Government coordinates the work of the States and gives necessary guidance to ensure uniformity in collection of census data.
9	Livestock Statistics	Integrated Sample Survey Scheme for Estimation of Major Livestock Products	Central	All State Governments /UT Administrations.	The Central Government provides grant-in-aid to the States on 50:50 basis For ONER States, 90:10 for NER and 100% basis to the UTs for the implementation of the scheme. The major part of the funds is utilized on the salaries and allowances of the staff employed under the scheme.
10	Animal Health	National Programme for Prevention of Animal Diseases	Central	Government of India	100% Centrally assisted To prevent ingress of livestock diseases, to provide export certificate for livestock and livestock products. Monitoring the quality of vaccines and biological. Strengthening Central/Regional Disease Diagnostic Laboratories. Implementing Agencies: Government of India
11	Cattle Breeding	Central Cattle Breeding Farms	Central	subordinate offices of the Department	Various cattle and buffalo development agencies are benefited from the scheme by way of using high quality bulls produced at the farms. These bulls are used for semen production and natural breeding to help upgrade the animals in the country.
12	Fodder	Central Minikit Testing	Central	Department	The scheme is for the benefit of Dairy farmers

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	Development	Programme on Fodder Crops		Of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, Government of India implements the Scheme directly.	for improvement of fodder and fodder seed production to meet the requirement of these farmers of nutritive fodder for their animals. Fodder seed Minikits of different fodder varieties are supplied to the State Departments of Animal Husbandry for onward distribution to the farmers free of cost.
13	Fodder Development	Regional Stations For Forage Production & Demonstration	Central	These are subordinate offices under the Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture.	100% Central funding. Dairy farmers and the State Governments of the respective station's jurisdiction.
14	cattle and buffalo development	Central Herd Registration Scheme	Central	CHRS Unit	The primary aim is to identify elite germ plasm for further improvement in milk production. Indigenous breeds covered at present are Gir, Kankrej, Haryana, Ongole of cattle and Murrah, Jaffrabadi, Surti and Mehsani of buffaloes. Under the scheme incentives for rearing of elite cows, buffaloes and their male calves is given to the owners of the elite animals. 100% Central Grant.
15	Intensive Dairy Development	Centrally Sponsored Scheme 'Intensive Dairy Development Programme (IDDP)	Central	State Dairy Federations / District Milk Union	The modified scheme has been named as 'Intensive Dairy Development Programme' (IDDP) and is being implemented in hilly and backward areas and also in the districts, which received less than Rs.50.00 lakh for dairy development activities during Operation Flood, programme. The funds are now released directly to the implementing agency i.e. State Dairy Federation / District Milk Union. The Scheme is being continued during the 11th plan with a total plan outlay of Rs.275.00 Crore as merged scheme together with 'CMP'. The pattern of funding is 100% grant-in-aid from Central Government for the districts where investment (central grant) under Operation Flood (OF) programme was less than Rs.50.00 lakh. There is a maximum allocation of Rs.300.00 lakh per district under the programme. For establishment of dairy processing capacity up to 20,000 litres/day will be 100% grant-in-aid basis. Above this cap, OF pattern will be followed, namely, 70% loan and 30% grant.
16	Strengthening Infrastructure & Clean Milk Production	Strengthening Infrastructure for Quality & Clean Milk Production (CMP)	Central	State Government by District Cooperative Milk Union/ State Level Milk Federation.	75% grant-in-aid for all components by Government of India to profit making unions (accumulated project above one crore as on 31st March of previous year). 100% grant-in-aid for all milk unions.
17	To revitalize the sick dairy cooperative unions at the district level and cooperative federations at the State level.	Assistance to Co-operatives	Central	District Cooperative Milk Unions/State Dairy Federation.	The funds are released on 50:50 sharing basis between Union of India and the concerned State Government. The maximum assistance of grant is limited to the minimum amount required so that the net flow becomes positive within seven years. In any case, the total grant does not exceed the accumulated cash losses.

Annex VIII (b): Suggested Convergence of Schemes in Gujarat

No.	ACTIVITY	SCHEME/INSTITUTIONS	CENTRAL/STATE
A Animal Production			
6	Artificial Insemination services	Assistance for Promotion scheme for Calves born through artificial insemination	State
52	Castration of scrub bulls	Scheme for Castration of scrub bulls	State
8.	Infrastructure creation	To provide of AI crate	Milk Union, Bharuch
36.	Infrastructure facility	Providing of Travis For AI facility	Milk Union, Mehsana
11.	Cattle Breeding	Central Cattle Breeding Farms	Central
14.	cattle and buffalo development	Central Herd Registration Scheme	Central
28	Establishment of elite herd of high pedigreed Male/Female calves of Gir and Kankrej breed	Scheme for establishment of elite herd of high pedigreed Male/Female calves of Gir and Kankrej breed	State
30	Pure breeding and supply of bull	Scheme for pure breeding and supply of bull	State
37	Supply of bull for pure breeding	Scheme for supply of bull for pure breeding to Gram Panchayats, Gaushalas, Panjarapoles and Gauseva Committee of the State	State
45	Rearing of elite pure breed Gir/Kankrej Male Calves of best genetic potential		
1.	Calf rearing activity	Shwet Sarita calf rearing project for tribal area development	State
13.	Calf rearing	Calf rearing project	State
4.	Cattle and Buffalo Breeding	National Project for Cattle and Buffalo Breeding	Central
B Livestock Health			
3.	Livestock Health	Livestock Health and Disease Control	Centrally Sponsored
2.	Animal Health	Fertility improvement project	GCMMF, Anand
37.	Animal Health	PIPERAZINE (Deworming)	Milk Union, Mehsana
38.	Animal Health	Botox medicine	Milk Union, Mehsana
39.	Animal Health	Tick kill power medicine	Milk Union, Mehsana
40.	Animal Health	Beticoal medicine	Milk Union, Mehsana
41.	Animal Health	Clean kit for FMD	Milk Union, Mehsana
10.	Animal Health	National Programme for Prevention of Animal Diseases	Central
C DAIRY DEVELOPMENT			
2.	Animal Husbandry & Dairy Development	Rashtriya Krishi Vikas Yojana	Central
21.	Infrastructure facility	Construction of Biomass silo	Milk Union, Panchmahals
22	Chaff Cutter	Scheme for Assistance to Power Operated Chaff Cutter for all common Beneficiary	State
53	Establishment of Nandi-Ghar	Scheme for establishment of Nandi-Ghar under Hon. chief minister sponsored cattle development programme	State
32.	Infrastructure facility	Hand operated chaff cutter	Milk Union, Mehsana
34.	Infrastructure facility	Electric chaff cutter	Milk Union, Mehsana
35.	Infrastructure facility	Electric chaff cutter	Milk Union, Mehsana
8	Aid for Concentrate, Feed to Pregnant Animals	Scheme for provide assistance on Concentrate, Feed Aid to Pregnant Animals	State
9	Concentrate, Feed Aid to Pregnant Animals	Scheme for provide assistance on Concentrate, Feed Aid to Pregnant Animals	State
10	Concentrate, Feed Aid to Pregnant Animals	Scheme for provide assistance on Concentrate, Feed Aid to Pregnant Animals	State
23	Assistance for Poly Propylene Silage Bag	Assistance for Poly Propylene Silage Bag for all Common Beneficiary	State
24	Fodder Development	Minikits for fodder seed for All farmers	State
47	Gauchar/fodder Development	Gauchar Development scheme for improvement of fodder/pasture production in the gauchar owned by gram panchayat, gaushalas and Panjarapoles	State
48	Fodder Development	Scheme to provide improved varieties of fodder seeds to the Organizations/ individual desired for Gauchar Development	State
9.	Cattle Feed & Animal nutrition	Assistance for Mineral Mixture	Milk Union, Bharuch
24.	Infrastructure facility	Silage making unit	Milk Union, Panchmahals
6.	Feed and Fodder Development	Assistance to States for Feed and Fodder Development	Central
12.	Fodder Development	Central Minikit Testing Programme on Fodder Crops	Central
13.	Fodder Development	Regional Stations For Forage Production & Demonstration	Central
15.	Intensive Dairy Development	Centrally Sponsored Scheme 'Intensive Dairy Development Programme (IDDP)	Central

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16.	Strengthening Infrastructure & Clean Milk Production	Strengthening Infrastructure for Quality & Clean Milk Production (CMP)	Central
17.	To revitalize the sick dairy cooperative unions at the district level and cooperative federations at the State level.	Assistance to Co-operatives	Central
1	Establishment of Milch Animal Farm	Scheme for Subsidy on Interest for establishment of Milch Animal Farm of 1 to 4 milk cattle unit	State
2	Establishment of Milch Animal Farm	12% interest subsidy to SC/ST/General Subsidiaries for establishment of 1 to 20 milk cattle unit	State
11	Establishment milch cattle farm/unit	Scheme for subsidy on interest for woman farmer for establishment of 1 to 10 milch animal farm	State
1	Dairy Development and infrastructure	Dairy Entrepreneurship Development Scheme (DEDS)	NABARD
3	Support for cattle shed, water tank, store room and steel bucket (ICDP)	Support for construction of cattle shed, water tank, store room and steel bucket for cattle	State
4	Support for cattle shed, water tank, store room and steel bucket	Support for construction of cattle shed, water tank, store room and 7 (seven) liter steel bucket for 10 cattle	State
5	Support for cattle shed, water tank, store room and steel bucket	Support for construction of cattle shed, water tank, store room and 7 (seven) liter steel bucket for 5 cattle	State
12	Financial Assistance for Automatic Milk collection system	AMCS Assistance for Women/General PDCS	State
13	Financial Assistance for Automatic Milk collection system	AMCS Assistance for Women/General PDCS	State
14	Financial Assistance for Automatic Milk collection system	AMCS Assistance for Women/General PDCS	State
15	BMC assistance for Women operated DCS	BMC assistance for Women operated/General PDCS	State
16	BMC assistance for Women operated DCS	BMC assistance for Women operated PDCS in Scheduled Castes area	State
17	BMC assistance for Women operated DCS	BMC assistance for Women operated PDCS in Scheduled Tribes area	State
18	Establishment of milk adulteration testing machine (MADM) for women operated DCS	Assistance for the establishment of milk adulteration testing machine (MADM) for women operated /General DCS of SC/ST/General area	State
20	Milking machine	Scheme for Assistance for the on buying the milking machine For the female member of PDCS for all category of farmers	State
46	Modernize / upgrade Gaushalas	Scheme of financial assistance to Gaushalas/ Panjarapoles, Govt./ Semi .Govt. Organizations, Other Agencies, Progressive cow breeders /Farmers to modernize/upgrade their Gaushala	State
4.	Infrastructure creation	Electronic Milko Tester Machine	Milk Union, Bharuch
5.	Infrastructure creation	Milko screen machine	Milk Union, Bharuch
6.	Infrastructure creation	Automated Milk collection system	Milk Union, Bharuch
10.	Infrastructure creation	working BMCU will transfer to name of village milk producer societies	Milk Union, Bharuch
11.	Infrastructure facility	49 developing taluka scheme	State
12.	Infrastructure facility	Integrated dairy development project (IDDP)	State
14.	Infrastructure facility	New Gujarat pattern scheme for tribal development department	State
17.	Infrastructure Development etc.	Establishment of BMCU	Milk Union, Panchmahals
18.	Infrastructure facility	Establishment of AMCS	Milk Union, Panchmahals
19.	Infrastructure facility	Establishment of AMCS	Milk Union, Panchmahals
22.	Infrastructure facility	Establishment of Milko tester machine	Milk Union, Panchmahals
23.	Infrastructure facility	Supply of milk collection accessories	Milk Union, Panchmahals
31.	Infrastructure facility	Milking Machine (only one time through subsidy, than after original price)	Milk Union, Mehsana
5.	Infrastructure Development	Assistance for Modernization of Slaughter Houses and Carcass Utilization Plants	Central

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19	Establishment of milk house/Godown for women operated DCS	Scheme for Assistance for the establishment of house/Godown for DCS (women/general) for SC/ST/General population area	State
27	Integrated Gaushala Development Scheme	Scheme for Integrated Gaushala Development Scheme	State
33	Financial assistance to create infrastructural facilities	Scheme for financial assistance to infrastructural facilities	State
7.	Infrastructure creation	Construction of Milk House (Dudh Ghar sahay)	Milk Union, Bharuch
15.	Establishment of Milch Animal Farm	Mini Dairy Farm scheme	Milk Union, Panchmahals
20.	Infrastructure facility	Construction of Dudhghar	Milk Union, Panchmahals
33.	Infrastructure facility	Animal cooling system (Sprinkler system)	Milk Union, Mehsana
33.	Infrastructure facility	Animal cooling system (Sprinkler system)	Milk Union, Mehsana
D	Other		
8.	Livestock Census	Livestock Census	Central
9.	Livestock Statistics	Integrated Sample Survey Scheme for Estimation of Major Livestock Products	Central
34	Financial assistance to create infrastructural facilities	New Panjrapoles	State
35	Financial assistance to create infrastructural facilities	JivDaya Helpline	State
36	Financial assistance to create infrastructural facilities	Managerial Assistance	State
7	Animal Insurance	Assistance for Animal Insurance Assistance for all female DCS members of SC/ST/General category of farmers	State
25	Compensation for Accidental Animal Death Scheme	Scheme for Compensation for Accidental Animal Death Scheme for All farmers	State
3.	Cattle loan	Bankable cattle loan scheme	Milk Union, Bharuch
16.	Insurance	Animal insurance scheme	Milk Union, Panchmahals
7.	Livestock Insurance	Livestock Insurance	Central
21	Award distribution	Scheme for planning the state's best Animal rears award distribution ceremony	State
26	Milk Competition	Scheme for Milk Production competition for All farmers	State
41	Incentive for Gaushalas/ Panjarapoles and Gau-Rakshaks (cow protectors)	Scheme to Provide Incentive Prize for Gaushalas/ Panjarapoles	State
42	Incentive for Gaushalas/ Panjarapoles and Gau-Rakshaks (cow protectors)	Scheme for incentive prize to cow protectors (Gau-Rakshaks)	State
29	Seminar/Conference for representative of Gaushalas/Panjarapoles	Scheme for conducting district level seminar/conference for representative of Gaushalas/Panjarapoles	State
38	Research, publicity and dissemination of information to improve usage of cow products	Scheme for Training	State
39	Research, publicity and dissemination of information to improve usage of cow products	Scheme for Financial Assistance for purchase of equipments	State
40	Research, publicity and dissemination of information to improve usage of cow products	Fellowship scheme for Research Work	State
49	Organize visit to village	Scheme to organize visit to village -Dharmaj, Dist. Anand for demonstration of ideal /model Grass land (Gauchar).	State
51	Organisation of Training Programme	organisation of training programme of Animal breeders and farmers for cow husbandry, cow breeding, Panchgavya therapy and gauchar development	State
25.	Infrastructure facility	VMS programme (vision mission strategy workshop- 3 days village level programme)	Milk Union, Panchmahals
26.	Infrastructure facility	VMS annual review (1 days village level programme)	Milk Union, Panchmahals
27.	Infrastructure facility	DIVA programme (DCS member integrated Vikas Aayojan- 3 days village level programme)	Milk Union, Panchmahals
28.	Infrastructure facility	PMP Programme (Progressive milk producers programme-2 days village level programme)	Milk Union, Panchmahals
29.	Infrastructure facility	EDP Programme (Entrepreneurship Development Programme-8 Days programme)	Milk Union, Panchmahals

42.	Education	Scholarship for study in dairy technology	Milk Union, Mehsana
31	Castration of scrub bulls	Scheme for Castration of scrub bulls	State
32	Production of organic bio fertilizer from cow dung	Scheme for production of organic bio fertilizer from cow dung	State
43	Maintenance of the rescued Cattle being to slaughter house and assistance to the Cow Protectors	Scheme for financial assistance for maintenance of the rescued Cattle being to slaughter house and assistance to the reporting person (Cow Protectors)	State
44	Maintenance of stray cattle	Scheme of financial assistance for maintenance of stray cattle	State
50	Transportation cost of calves/bullocks	Scheme for financial assistance for transportation of cow male calves/bullocks	State
30.	Social responsibility	Tree Plantation	Milk Union, Panchmahals

Annex IX (a): Policies/ Schemes Implemented in Rajasthan

Sr .	Name of the Scheme	Aim and objectives of Scheme	Funding pattern	Target/ Beneficiaries	Component funded	Implementin g Agency
A Animal Production						
1	National Programme For Bovine Breeding	Infrastructure Development for dairy development	Funding pattern - 50-100% grant-in-aid (100% grant-in-aid for all breeding related activities).	<ul style="list-style-type: none"> ➤ To create and strengthen infrastructure for production of quality milk including cold chain infrastructure linking the farmer to the consumer. ➤ To create and strengthen infrastructure for procurement, processing and marketing of milk ➤ To create training infrastructure for training of dairy farmers. ➤ To strengthen dairy cooperative societies/ producers companies at village level. ➤ To increase milk production by providing technical input services like cattle-feed and mineral mixture etc. 	National Programme for Bovine Breeding	Rajasthan Livestock Development Board
B Animal Health						
1	Livestock Health & Disease Control (LH & DC)	To prevent economic loss due to FMD and to develop herd immunity	Central 60:40	Provided on cost of vaccine, maintenance of cold chain and other logistic support to undertake vaccination. State provides other infrastructure and manpower to undertake vaccination in a systematic manner	Foot and Mouth Disease Control Programme (FMD-CP)	Department of Animal Husbandry
2	Livestock Health & Disease Control (LH & DC)	The ultimate objective of eradication of this disease	Central 60.40	<ul style="list-style-type: none"> · Under this scheme funds are provided for procurement of vaccine, mass vaccination against PPR, strengthening of ELISA labs, Information, Education & Communication (IEC), purchase of animal identification health cards, equipments & consumables etc. · Research institutions will also be assisted for undertaking surveillance and monitoring under PPR-CP. 	Peste-des-petits Ruminants Control Programme (PPR-CP)	Department of Animal Husbandry
3	Livestock Health & Disease Control (LH & DC)	strengthening of existing State Disease Diagnostic laboratories	Central 60:40 and 100 % assistance is provided for conducting training and seminar/ workshops.	Assistance is provided to State for the control of economically important and zoonotic diseases of livestock, strengthening of existing State Veterinary Biological Production Units, and strengthening of existing State Disease Diagnostic laboratories, holding workshops/seminars and in- service training to Veterinarians and Para-veterinarian.	Assistance to State for Control of Animal Diseases	Department of Animal Husbandry

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4	Livestock Health & Disease Control (LH & DC)	Strengthening of Veterinary Hospitals and Dispensaries	Central 60:40	Funds are provided to States/ UTs for establishment of new hospitals and dispensaries and up-gradation of existing ones, for improving efficiency as per approved norms.	Establishment and Strengthening of Existing Veterinary Hospitals and Dispensaries (ESVHD)	Department of Animal Husbandry
5	Livestock Health & Disease Control (LH & DC)	vaccination of brucellosis	Central 60:40	vaccination of all female calves between 6-8 months in the areas where incidence of the disease is high	National Control Programme for Brucellosis	Department of Animal Husbandry
6	Livestock Health & Disease Control (LH & DC)	To record and monitor livestock disease situation in the country	Central 100%	Monitor livestock disease situation in the country with a view to initiate preventive and curative action in a timely and speedy manner.	National Animal Disease Reporting System (NADRS)	National Informatics Centre
7	Livestock Health & Disease Control (LH & DC)	for imparting training on latest technical knowledge by way of Continuing Veterinary Education	50:50	50% Central Assistance is provided to the States for improvement in the efficiency of Veterinary professionals.	Professional Efficiency Development	State Veterinary councils
8	RKVY	Assistance by free veterinary medicine and reduced cost on veterinary service	50:50	Veterinary medicine distribution	Livestock Free Health Yojana	Department of animal husbandry, GoR
9	RKVY	Assistance by veterinary facility through camp in those area where Veterinary facility is not available	50:50	Vaccination, Information dissemination regarding animal health, Fodder Production management, AI and nutritious feed	District Livestock Health Moving Unit	Department of animal husbandry, GoR
10	RKVY	Infertility prevention camp	50:50	5 day Infertility prevention camp and selection of animal on the basis district animal Population	Combat Infertility in Cattle (Livestock Free Health Yojana)	Department of animal husbandry, GoR
11	RKVY	Vaccine carrier	50:50	electrify veterinary institute and district hospital and vaccine carrier	Cold Chain Scheme	Department of animal husbandry, GoR
12	RKVY	Breed Improvement and AI	50:50	Breed improvement	Integrated Live stock Centre Scheme	Department of animal husbandry, GoR
C Dairy Development						
1	Fodder Development Schemes	Production & Distribution of Quality Seed	Central 100 %	Public / Private entrepreneurship including Cooperatives and Self Help Groups (SHGs).	Establishment of Fodder Block Making Units.	GoI
2		Assistance by Fodder seed	Central 60:40	Farmers will be benefitted. The State Govts may involve SIAs/Dairy Cooperatives/ NGOs for implementation of the project. At the rate of Rs.5, 000 per quintal, total 37,000 quintals of fodder seed will be procured by the State Govt and seeds will be distributed among farmers.	Fodder Seed Procurement & Distribution	RCDF Under National Livestock Mission
3			Central 60:40	Farmers and Members of Milk Cooperatives/ ATMA/ KVKs	Distribution of Hand Driven Chaff Cutter	RCDF Under National Livestock Mission
4	Dev Narayan Yojana	The scheme for dairy development sanctioned	State 100	➤ Organization and revival of 650 Women DCS - organization/revival of 50 WDCS in each tehsil		RCDF

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		from department of Social Justice & Empowerment		<ul style="list-style-type: none"> ➤ Establishment of 650 Electronic Milko Tester - establishment of EMT at each organized/revived DCS ➤ Aluminium Milk cans for 650 WDCS - Four aluminium milk can set to each DCS for milk collection ➤ Milk transport subsidy for milk collection of 65000 kgs per day - subsidy of Rs. 1/- per kg. on transportation of milk Distribution of 130 up-graded Bulls - distribution of bulls for natural service in - Alwar 40, Bharatpur 20, Jhalawar 30, Sawaimadhapur 20 and Karouli 20 under the scheme 		
1	Aam Aadmi Bima Yojana(Saras Surksha Kavach Yojana)	Insurance will provide for Registered member of DCS	12.5 % premium for member of DCS and 20% premium for Women's, SC, ST	<ul style="list-style-type: none"> ➤ Insurance profit on death: Rs.30000/_ ➤ Accidental Death- Rs.75000/_ ➤ Accidental Full handicap -Rs. 75000/_ ➤ Accidental partially handicap- Rs.37500/_ ➤ Additional Education benefit - 100 Rs./month Scholarship for two child (9 to 12 standard) or ma 4 year 	Saras Surksha Kavach Yojana	RCDF
2	Durghatna Bima Yojana (Accidental Insurance Scheme)(Saras Surksha Kavach Yojana)	Insurance will provide for Registered member of DCS	Premium will pay 20 % for member of DCS and 12.5% for Women's, SC, ST by Federation and 12.5 % by Milk Union, 30 % DCS and 45 % by member of DCS	<ul style="list-style-type: none"> ➤ Insurance profit on death: Rs.100000/_ ➤ Accidental of Death or Fully handicap of Life Partner(Wife /Husband) Insurance benefit - Rs.50000/_ ➤ Rs. 30000 Compensation amount for loss through natural calamities in Pakka House ➤ Rs. 30000 Compensation amount for stolen of Household goods in Pakka House ➤ Rs. 10000 compensation amount for During the move the home or bank bucks from DCS 	Saras Surksha Kavach Yojana	RCDF
3	Saras Samuhik Aarogay Bima Yojana (Saras Group health Insurance Scheme)	Insurance will provide for Registered family of DCS member	20 % Premium will pay By RCDF, 20 % Milk Union , 30 % by Capable DCS and remaining by member of DCS		Saras Surksha Kavach Yojana	RCDF
4	Integrated Sample Survey Scheme for Estimation of Major Livestock Products	To estimate The Cost and production of milk, egg, wool and meat, as per unit basis	Central (50:50)	This is a scheme to estimate the production of major livestock products of the country and study animal husbandry practices and related information.	Integrated Sample Survey Scheme for Estimation of Major Livestock Products	Department of animal husbandry, GoR
5	Live stock Census	To collect detailed information on livestock population	Central 100	To formulate, implement, monitor and evaluate any programme/scheme of the Government or private organizations meant for bringing further improvement in Livestock Sector the basic data of population of different species of livestock are required		Department of animal husbandry, GoR

Sources: GOR, Department of Animal Husbandry and Dairying & RLDB, Jaipur.

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NABARD Subsidy for Dairy Farming Scheme

Sl.	Particulars	Exp (in Lakh)	Subsidy
1	Small Dairy (10 Animal) (Hybrid Cow/ Milch local breed i.e Sahiwal, Red Sindhi, Gir, Rathi, etc/ Buffalo 1. Margin Money 10 per cent 2. Repayment period 6-7 year Grace period 3 years	6 (min 2 Max 10 Animals)	General 25 % SC/ST 33.33%
2	Calves Farming (Hybrid/ Milch Local cattle and Buffalo) (max 20 Calves) Margin Money 10 per cent 2. Repayment period 6-7 year	5.30 (Min-5 calve & Max 20)	General 25 % SC/ST 33.33%
3	Vermi-compost Margin Money 10 per cent 2. Repayment period 6-7 year Grace period 3- 6 Month	0.22	General 25 % SC/ST 33.33%
4	Milking Machine (Capacity 2000 litre) Margin Money 10 per cent 2. Repayment period 6-7 year Grace period 3- 6 Month	20.00	General 25 % SC/ST 33.33%
5	Transportation and Cold Storage Facilities for Dairy Product Margin Money 10 per cent 2. Repayment period 6-7 year Grace period 3- 6 Month	26.50	General 25 % SC/ST 33.33%
6	Cold Storage Facilities for Milk and Milk Product Margin Money 10 per cent 2. Repayment period 6-7 year Grace period 3- 6 Month	35.00	General 25 % SC/ST 33.33%
7	Private Animal Health Clinic 1. Private mobile Animal Health Clinic 2. Private Stationary Animal Health Centre 3. Margin Money 10 per cent 2. Repayment period 6-7 year Grace period 3- 6 Month	2.60 2.00	General 25 % SC/ST 33.33%
8	Dairy Marketing Outlet Margin Money 10 per cent 2. Repayment period 6-7 year Grace period 3- 6 Month	1.00	General 25 % SC/ST 33.33%
9	instrument for Local Milk product	13.20	General 25 % SC/ST 33.33%

Source: GOR- Department of Animal Husbandry, Jaipur.

Annex IX (b): Suggested Convergence of Schemes in Rajasthan

No	ACTIVITY	ACTIVITY
A	Animal Production	Artificial Insemination services
		National Programme for Bovine Breeding
		Integrated Live stock Centre Scheme
B	Livestock Health	Foot and Mouth Disease Control Programme (FMD-CP)
		Peste-des-petits Ruminants Control Programme (PPR-CP)
		Assistance to State for Control of Animal Diseases
		Establishment and Strengthening of Existing Veterinary Hospitals and Dispensaries (ESVHD)
		National Control Programme for Brucellosis
		National Animal Disease Reporting System (NADRS)
		Livestock Free Health Yojana
		District Livestock Health Moving Unit
		Combat Infertility in Cattle (Livestock Free Health Yojana)
C	Dairy Development	Establishment of Fodder Block Making Units.
		Fodder Seed Procurement & Distribution
		Cold Chain Scheme
		Distribution of Hand Driven Chaff Cutter
		Fodder Development
D	Others	Gaushala development Programme
		Animal Insurance
		Accidental Insurance Scheme
		Organization of Training Programme