

8<sup>th</sup> Series



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animal industry expo

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# DAIRY INDUSTRY VISION 2030

"Reimagining Indian dairy"

A Result chain oriented action plan

Feb 20, 2014

Organizer



# Message



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I would like to express my gratitude to DAIRY INDUSTRY VISION 2030-White Paper Research team for compiling such a valuable information within a short span of time. I would also like to take the opportunity to thank the entire dairy fraternity to have shown an overwhelming response to our concurrent conference on the same topic. I feel that this document which is second in the series will help to bring a change that will help India to attain a sustainable dairying with leading position by the year 2030.

Regards

# ACKNOWLEDGEMENTS



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# PREFACE



# PREFACE

## Tracking the progress

Vision	2000	2005	2010	2020
<b>Estimate of milk Prod. (M.T.)</b>	78.3	91	110	<b>180/160*</b>
<b>Per capita Availability (gm/Day)</b>	217	241	261	<b>350*</b>
<b>Growth rate of Live Stock %</b>	-0.01	-0.33		
<b>No. of Milch Animals (000)</b>	1,00,960	1,05,311	109849	<b>119317*</b>
Cross Bred (000)	8,355	11231	15096	<b>25490*</b>
Indigenous (000)	49,875	46856	44020	<b>38691*</b>
Buff (000)	42,730	47224	52191	<b>63169*</b>
<b>Value of output from L. stock(Milk only)</b>				
at current prices (crores)	129531	180231	2,40,601	<b>700000*</b>
at 1999-2000 price (crores)	129531	160824	1,73,864	
<b>No. of Dairy plants Regd.</b>		791	832/100	<b>1250/200*</b>
<b>Human population in billions</b>	1.01	1.14	1.17	<b>1.33*</b>
<b>Value of output of Dairy Industry in crores</b>	83.8	150	253	<b>271*</b>
<b>House hold milk demand (Million tons)</b>		Proj		
	-5.5	-59	-143	<b>-91/-111</b>

Looking at the current situation, the dairy industry in India seems to be moving on track and achieving growth in line with the projections. Since the last vision document was prepared in 2011, the following series of events have occurred as a result of a promising environment due to good monsoons, rising incomes and uninterrupted flow of investments.

# Changing landscape of INDIAN DAIRY INDUSTRY 2011-2014

*“Private sector procuring more milk from farmers than cooperative.”*

- Tier 1 cities showing higher growth promising markets.
- More & more producer companies entering the market (inclusive growth)
- UHT Milk and other value added products like cheese, SFM, Curd booming in innovative packaging like PET HDPE.
- Large number of corporate houses entering in large integrated dairy formats including commercial dairy farms from 2000-10000 animals.
- IT enabled automatic milk collection units with bulk milk coolers penetrating deep down the value chain.
- Private sector procuring more milk from farmers than cooperative.
- Large semen producing companies like ABS, Semex, CRV, WWS, Prime Bovine and many more making inroads in Indian market, with latest technology like sexed semen. As well as some other European companies creating their research farms for innovative bypass protein based feeds and supplements.
- Milk prices at farm gate as well as at consumer end moving north.
- Amul emerging as a global brand and expanding as a global brand with top position in Asia and expanding its horizons by setting up dairy plants in developed world as well as becoming first company from India to become part of global dairy trade network.
- Regional players becoming strong in North West and South India.
- FSSAI still not implemented, date got extended to Aug 2014 for mandatory registration.
- National Dairy Plan approved and phase I launched in 14 states in India.
- Large multinationals like Lactalis, Danone, Nestle, Schreiber, Fonterra, Yakult, Kraft, Kerry and few others have expanded their presence in India through organic and inorganic growth.
- Private equity firms offering an all-time high enterprise evaluation for dairy industry at 1.1 to 1.2 of its turnover.
- Emergence of commercial dairy farmers association foraying into forward integration by launching farm branded milk and milk products in Indian Markets.
- Establishment of IT enabled dairy supply chain companies, with cold chain, on the lines of developed world.



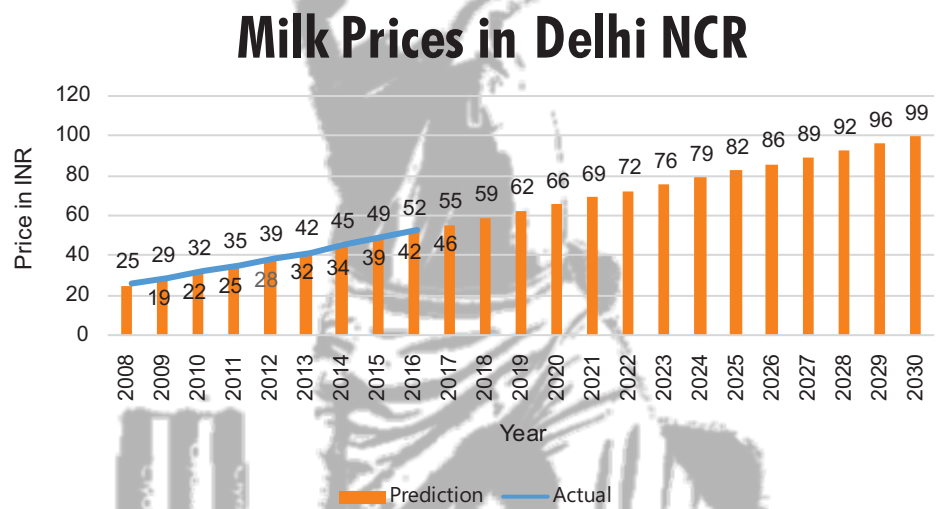


*“17% of world's total dairy production in India.”*

- Bihar, Rajasthan, UP, Haryana, J&K, Kerala showing the growth in land use for fodder cultivation while Maharashtra to register maximum decline in land usage.
- Indian economy grew by 8.4% at pinnacle in past and it is anticipated to grow at 4.7% in Fiscal Year 2013 (ending 31 March 2014).
- The economy is expected to grow by 5.7% in FY2014 and seems to maintain it over the next 2-3 years.
- Post white revolution Indian Dairy industry has grown by 3-4% constantly even during global dairy slowdown.
- Fluid milk production shoot to 140.6 million tons in CY 2014 on a normal monsoon, increased demand for dairy products and rising consumer income.
- Strong farm gate prices and rising demand for value-added products stimulating increased milk production.
- Growing private investment in the sector both from Indian and multinational corporates.
- The market for non-dry fat milk picked up in 2013 on strong prices and lift of the export ban in June 2012.
- Milk grew from 53.9 million tons in 1990-91 to 127 million tons in 2011-12.
- Per capita availability of milk has increased from 176 grams per day in 1990-91 to 290 grams per day in 2011-12
- 17% of world's total dairy production in India.
- India is ranked at 18th position in world exports with a 1.6% share in total world exports. India has shown a 16 % growth from 2008 to 2012 as against the 6% growth in total world's exports. India has shown a negative growth of around 6 % from 2011 to 2012. Our exports are highly concentrated in SMP, casein and Ghee contributing close to 45 %, 30% and 15% of our total exports respectively.
- The cattle feed production at current levels of around 6 Million MT per annum is just 10 % of the total requirements of around 60 Million MT per annum.
- India has majority of Medium size cattle feed plants 50100 TPD serving 100 kms radius.
- EU-FTA being posed as a threat to Indian dairy industry.

# FCM Milk price in DELHI & NCR HITTING A TON IN 2030

Farm gate prices may cross **Rs. 75/-** by 2030.



## Executive SUMMARY

India is set to become world's most populated country by 2030 with around 1.53 billion people and 19 %+ of world's population by the same time. India, with current approximately 18% of world population which is growing with the rate of 1.3% annually, has only 7.3% of global arable land faces a huge challenge ahead for its agricultural sector to feed these extra mouths. This task becomes more challenging against climate change and tightening natural resource constraints (water and soil foot print) and reducing cultivable land in wake of magnum's unplanned urbanisation. There is clearly a massive challenge facing the Indian industry.

With global populations set to rise from 7 billion today, to 8 billion by 2030 and 9 billion by 2050, opportunities for Indian food producers to respond to this growing market place are considerable. FAO has analysed global dairy trends as far as 2050. Their analysis predicts that as incomes rise, people generally prefer to spend a higher share of their food budget on animal protein, so meat and dairy consumption tends to grow faster than that of food crops. As a result, the past three decades have seen buoyant growth in the consumption of livestock products, especially in newly industrialising countries and emerging markets.

Post white revolution Indian dairy industry has shown a constant growth in milk production as well as in per capita milk availability. That is 51.4 million tons in 1990 to about 127 million tons in 2011-12 and 291 gm/day respectively. Few reports suggest that with current growth rate of approx. 3%-4% it is thought to grow to 185 million tons and become a \$24 billion (Rs 144000 Crore) organised industry by 2020 and \$140 billion (Rs 840000 Crore) including unorganised sector. However our research consider the same production levels by 2022-23 only. Even such volumes could only be attained if the system wakes up and begin to act fast on the new context being suggested by us by focussing on farmer's groups, societies and associations rather than individuals.

Based on extrapolations of mega Indian economic story and analysis of domestic growth, India will shoot ahead of Japan in mid 2030s to become the world's third biggest economy. Consequently a huge surge in GDP and PPP is expected. Reflecting in enhanced protein consumption in form of dairy products in India. During next few years till 2030 the demand of dairy products is expected to grow at a rate of 9%-12% and industry at a rate of 4-5%. Clearly Indian industry will struggle to maintain 100% self-sufficiency due to huge local demand, between 160 to 170 Million Tonnes of milk at would be required by 2030. The industry will have to overhaul to meet ends. With the potential to accommodate imports with home produced dairy products Indian industry will present to be a very lucrative market.

Net area sown has not grown in proportion to the rate of growth of population. There could be marked decline in the area allocated for pastures and animal grazing from 7 % to 6% by 2020 and with the increased pressure of urbanization and modified land bills it could further reduce to below 5 % by 2030. The land for green fodder production will only grow from 5 to 6 % by 2030 if strong measures to induce contract farming or focus on commercial fodder production by corporate for captive or group usage are not taken up. The compound feed market is also underserved and the installed capacity is only 10 % of the expected total demand of around 60 million MT per annum at current levels. A lot of investments need to be directed towards building this capacity as well as to incentivise and subsidise cattle feed manufacturers to set up mineral mix plants also. This will ensure better nutrition to the animal over and above the feed for health.

The current deficit for green fodder ,dry fodder and concentrates have a deficit of 63% ,24 % and 76% (2010 data) respectively which means that even at today's demand level for milk production there is a need to double up the land for fodder growing and pastures feed lots for dairy . There has been large gap in production of medicines and vaccines for animal industry.

# Executive SUMMARY

A robust plan to raise the current home delivered AI levels for animal breeding from around 20 % to 80% needs to be implemented. Farmers in interior are perceptually not ready to accept AI as a technique for their animal breeding. It puts more pressure on the system to develop large scale capacity building programs at community levels over and above looking out for establishing bull breeding farms or semen production.

Male calves and stray bulls of poor pedigree are considered to be the biggest impediment to the sustainability of the Indian dairy industry. Both of these categories put a lot of pressure on limited resources therefore some pragmatic solution by using latest technologies like sexed semen and injection based sterilisation could be evaluated and implemented. The same problems could also be better handled through a community led approach rather than an individual farmer focus.

From 2009 to 2014 the middle class in Africa grew by 3 times from 120 to 330 million and by 6 times from 500 million to 3.2 billion. This trend has yet to bloom fully and these booming economy and expanding cash rich middle class, would mean a lucrative and very incentivising market. This would make India a hotspot of globally competitive and compliant dairy destination. Dairy Industry would witness further consolidation of organised dairy structure to an impressive 35% by that time. Post 2020's industry will see increased dominance and importance of "A" class global brands and emergence of "private labels" meaning Indian dairy industry would be under pressure to become globally competitive at all stages of the supply chain.

Customer maturity along with FSSAI norms and adaptations of newer versions of food quality norms like FSMA would coerce industry to improve efficiency and effectiveness and where possible benchmark their performance. 2030 will see the apotheosis of long sighted dream of becoming a global giant in international dairy market with Indian companies positioning themselves in hall of fame global dairy arena. In 2030, it would be rather a surprise to not to see mega dairy brands like Fonterra, Avonmore, Campina, Alra and etc when you walk in to a store even in a Tier 2 and 3 level cities and towns.

Dairy Industry Vision 2030 is second in series of the white papers published by **Suruchi Consultants** in association with PCSL (Pixie Consulting Solutions Ltd). In Dec 2011, first edition of white paper i.e. vision 2020 of the Indian dairy industry was launched and deliberated. It was accepted very well by the Public, private, research and academia.

The current paper on Dairy Industry Vision 2030 is an attempt to reimagine dairying in India for the perspective of 2030. This year we are also organizing a one day conference on "**Dairy Industry Vision 2030 : A Plausible future**" to bring together eminent dairy plant owners from private and public sector, bureaucrats, investor bankers, financial Institutions, consultants, decision maker and key actors in the dairy sector , researchers, academia and dairy stakeholders from all over the world to come and deliberate on their insights for future of dairying in India.

The research has brought out a 5I model consisting of Identification, Inventorization, Integration, Institutionalization and Investment as a mantra for developing a national level strategy to meet the humongous demand of milk and milk products through sustainable dairying in India through community mobilization.

# DAIRY INDUSTRY VISION 2030 STATEMENT

## Reimagining Indian dairy industry

### Rationale

“Mass production is production by masses” has been the mantra behind Indian context of agricultural development and a strong conviction of Mahatma Gandhi. Since independence most of our policies for agriculture sector have been an outcome of this context.

Dairy comes under fragmented industry as per the definition of uber guru on strategy Michael Porter, which means local requirements have to be met through local supplies as the production is scattered and available locally. The strategy for dairy development till date lies with decentralising the production and centralising the processing and marketing. In this model with individual focus to a farmer or even a village level society, scaling is difficult. The only strategy to counter this state is by building economies of scale at all levels of business by developing a critical mass. Indian dairy production comes majorly from small and marginal farmers with an average animal holding of 2-4 animals. Barring very few areas in the country where dairy is not considered as the main occupation at household level, it may be perceived as a pocket money business for the homemaker or pass-time activity for the elderly at home. The farmer also keeps a major part of nutritional milk for his family at home. Cost of production is imputed as the input to animals are either assortment of agriculture residues or by grazing at community owned pastures land. In such cases though a religious commitment to animal is visible but business wisdom to grow the business is missing or in other words in the whole model sustainability is missing. In this vision document we propose to set a new context while reimagining dairying in India.

The research shows that now only a radical change in our national policy making could bring about the required growth in milk production by 2030 for supply to meet demand. It requires a scale orientation and development of critical mass at all levels of the value chain for cost effective interventions and investments. The industry does not have time to pursue uninterested farmer with an indifferent generation “Y” to identify himself with the animal rearing. However much better result at a faster pace could be achieved by focussing on existing dairy communities in the form of societies or associations or by developing dairy clusters of various stakeholders in the dairy value chain.

A progressive community not only brings in scale to the business but also brings in necessary commitment to grow and build a professional model attractive enough for young generation to become part of it. In the later part of the report we will offer a blue print of an implementation plan to further support our vision statement. Let us try to prove it empirically.

### Growth in dairy industry could be defined empirically as:

$$Dg = Pa \times Ay \times Dfa \times Lf \times li \times Mo$$

**Dg** = Dairy Growth potential

**Pa** = Population of milch animals

**Ay** = Average yield of the animal

**Dfa** = Dairy farmer affluence as representation of the intent of a dairy farmer to consider dairying as a full time business

**Lf** = Land availability for feed

**li** = Investment available for infrastructure for milk production, health, feed and nutrition, breeding, chilling, quality and logistics

**Mo** = Market opportunity

*“Sustainable production is production by progressive communities”.*

DAIRY INDUSTRY  
VISION 2030  
STATEMENT

$$Dg = Pa \times Ay \times Dfa \times Lf \times Li \times Mo$$

Now let us examine all these factors one by one and look at challenges which exist against each of these variables and reimagining our approach to obtain sustainable growth in Indian dairying

RATIONAL	VARIABLE	STATUS	CHALLENGE	REIMAGINE
<b>Pa</b>	Population of milch	High	We have very high population of animals but most of them are underfed and mis-managed by small and marginal farmers.	By enrolling these farmers into workable groups, associations, society, clusters could facilitate capacity building on health, breeding and feeding systems in a cost effective manner
<b>Ay</b>	animals Average yield of the animal	Low	It is very low but improving in case of cross bred animals only. Very little has been attained with Indian descript cows and buffaloes due to their scattered presence.	It is much easier to implement a cluster breeding program for pockets of indigenous cows and buffaloes as well as by announcing schemes for large commercial dairy farms for corporates or other relevant stakeholders as a CSR or otherwise.
<b>Dfa</b>	Dairy farmer affluence as representation of the intent of a dairy farmer to consider dairying as a full time business	Low	It is the toughest problem with the farmers at least in those districts where formal milk collection is not available and markets are far off. At an individual level the farmer is an easy prey to the existing unorganized middle men network. With lots of development and other opportunity the intent of the farmer and his next generation is no more inclined towards animal rearing. Dairying without farmer's commitment is not sustainable.	Developing formalised groups with progressive thoughts and a strategy for long run to grow and sustain will help in engagement of the farmers and their family. It is only through mobilizing the groups that dairy could be made a professionally looking white collar activity to lure next generation to identify themselves with dairying. It is only through community development that market linkages backed by investment in infrastructure for chilling and processing could be justified.
<b>Lf</b>	Land availability for feed, fodder and pastures	Low	Rapid unplanned urbanization in terms of land use has reduced the availability of land for pastures and feed and fodder development drastically.	Contract, community or corporate farming is the only solution to make dairy growth in the country sustainable as two thirds of milk production cost is that of a feed alone.
<b>Li</b>	Investment available for infrastructure for milk production, health, feed and nutrition, breeding, chilling, quality and logistics	Moderate	Though investment is visible in the sector at all levels of value chain but impact is not. It is due to either farmer oriented investments are not reaching the last mile or they are not being utilised for the purpose they were meant to create an impact.	Community oriented schemes with special incentives to investments done by community, associations or corporates for large scale dairy farming, processing, cattle feed, animal health missions, feed programs or breed development could only be the solution. The time has come to change the mode of investment from PPP to PCP (Private- community- partnership) at least in the operational and market oriented investment models. Public –Private-Community Partnership (PPCP) model could be used for all kinds of development oriented investments as a support function.
<b>Mo</b>	Market opportunity	Moderate	India is polarizing to around 7000 towns and cities from 635000 villages. There has been much larger consumption of market potential in these towns than the metros or mini metros. Changing lifestyle and socio economic conditions are raising the aspirational levels of consumer both at rural and urban level. The unidentified raw milk from a doodhwala (cycle vendor) is seen with scepticism and packed dairy product of high quality with health and nutrition is becoming the order of the day.	Such situation offer a huge potential for setting up community driven small scale mini dairies nearby all these cities. Communities or associations might develop Farm branding rather than product branding thereby developing a sustainable market volume with trust and longevity of operations. Regionalism has made high level of acceptance for such initiatives. Such projects could be developed under PCP (Private –community-partnerships rather than PPP (Public –Private – partnerships).

Looking beyond  
the Horizon:

# OPPORTUNITIES

## Product mix projections 2030

Product	2013	2020*	2030**
Liquid Milk	66	60	55
Ghee	8	6	5
Milk powder	5	3	3
Other	21	31	37
Cheese	2	3	5
Flavored milk	1	2	2
UHT	2	3	5
Paneer	1	1	1
Dairy whitener	2	1	1
Ice cream	4	8	9
Dahi	2	4	6
Butter	3	2	2
Baby foods	4	5	4
Other		2	2
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

\* Est. Rabo Bank  
\*\* Est. Team Suruchi

## Looking beyond the Horizon: Opportunities

*“Packaged food segment to grow 9% annually to become Rs 6 lakh crore industry by 2030.”*

- Total milk production in India may touch 216 Million Metric ton by 2030 with a per capita consumption of around 390 ml at an estimated population of 1.53 billion.
- Packaged milk, to grow from \$7.76 billion to \$32.9 billion by 2030, with 8% annual growth.
- 73% milk sold by 2030 would be branded, against 31 % at present. Sweets and savoury snacks will be second largest category at an estimated \$16.39 billion by 2030 from \$1.28 billion in 2010, clocking a 13% growth annually.
- India’s per capita GDP is expected to leap 320% in the next 20 years, with a parallel increase in overall food consumption by 4% per annum from INR 11 lakh crore in 2010 to INR 22.5 lakh crore in 2030.
- Agricultural output (at farm-gate prices) could grow from INR 12.69 lakh crore in 2011 to INR 29.28 lakh crore by 2030.
- Processing could grow from INR 1.1 lakh crore in 2011 to INR 5.65 lakh crore by 2030. Food exports could rise from INR 1.4 lakh crore in 2011 to INR 7.72 lakh crore by 2030.
- India world’s biggest producer of mango, banana, papaya, milk, spices, sesame, and castor oil-seed in 2010.
- With improvements, farmers could aspire four times better income, reducing gap with national average income in 20 years.
- Agricultural GDP grew at the rate of approx. 3% between 1980 and 2012. India becomes third largest agricultural producer by value (closely behind China and the United States).
- India spending more on high value foods. Consumption shifting from plant to animal-based protein.
- Agricultural productivity grew over the last decade, with a qualitative shift from basic food grains to high value agriculture like fruits and vegetables.
- Between 2000 and 2010, high value produce moved from forming 38% to 45% of total produce by weight.
- High value foods like soya bean, potato, mango, banana, and poultry grew 4 times faster than like rice and wheat.
- There was a 4.35 times increase in total agriculture outlay from the 10th Five Year Plan to the 11th Five Year Plan.
- Agricultural outlay in Percentage to increase from 5.2% in the 10th FYP to 5.6% in the 11th FYP. Highest proportion allocated to agriculture in the last 20 years.
- Consumers could benefit from better milk supply to match per capita consumption. Having access to safe and healthy milk at affordable prices.
- Packaged food segment to grow 9% annually to become Rs 6 lakh crore industry by 2030. Packed milk, sweet and savory snacks and processed poultry, to dominate.
- Branding to enhance realization of packaged foods by up to 30% by 2030.
- India has a huge potential in Animal medicines market. With current levels of around Rs 2000 Crores this is just around 2 % of world’s market share even after having largest animal population in the world. With high growth rate of cross bred animals in the country as well as current alarm against Indian dairy products in certain countries due to F&M the demand of medicines and vaccines may be on the rise. The current rate of growth is about 10 % on YoY.
- BRIC Report by Goldman Sachs predicts India’s third largest economy by 2032, ranking just after the US and China.
- Animal nutritional product market is close to Rs 800 crore with around 20 % YoY growth.



# Focus and CHALLENGES



## Focus areas

- To improve productivity in large pool of animals so as to meet large demands of milk and milk products
- To promote indigenous animals for A2 milk as well as on chemical free and organic milk to meet future demands
- To improve capacity utilization of existing capacities by making value added products
- To develop critical mass for economies of scale both through community projects and by supporting setting up of large dairy farms

## Challenge areas

Small farmer market puts pressure on distribution costs, especially vaccines requiring cold chain. On the other side, trade exerts pressure on margins due to the dispersed market. Affordability is a big issue at individual farmer level at the last mile and thus the end result is unregulated competition at both quality and price levels for all markets of farm input at rural India.

- Availability of green fodder for the animals
- To keep unproductive and low quality animals away from accessing the high value natural resources as well as from reproducing more of their likes.
- Developing a mass scale extension services for dairying in a fragmented scenario as well as for developing a large pool of trainers for dairy industry.
- To develop an appropriate distribution and pricing policy for milk from
- Indian descript cows
- To set up common service center for milking, natural/AI, silage, hydroponics, biogas, processing (SPV), capacity building for CMP, health and nutrition, effluent treatment plant, packaging recycle units, community dairy waste treatment for milk collection and chilling center.
- To create opportunities of higher ROI in the industry by wise product mix selection.

# STRUCTURE & POLICY IMPLEMENTATION

STAGE	PRIORITY	AGENT	ISSUES	EXPECTED (2030)
<b>Policy environment</b>	Developing livestock policy Breed development	Dept. of Animal Husbandry, Dairying and Fisheries	Lack of a coherent livestock development policy Ineffective implementation of policy and projects due to lack of clarity in roles of different agencies Lack of resources Lack of clarity between roles of different departments Lack of regulation for quality of feed and medicines	Making registration of all animals, dairy farms mandatory through process of identification and linking these to better breeding facilities at their doorsteps. Proper linking of these stakeholders should be done with communities or associations or cluster for real-time recording, evaluation and scaling up.
<b>Services</b>	Disease control/health/breeding/extension services Support to dairy farmer organizations/women's self-help groups	Dept. of Animal Husbandry, Dairying and Fisheries Cooperatives NGOs Private dairies	Inadequate coverage of veterinarian and breeding services Non-existent extension services Scope to enhance activities of NGOs in these areas Lack of private sector involvement in dairy development services and activities	Making registration of all animals, dairy farms mandatory through process of identification and linking these to better health facilities at their doorsteps. There should be proper inventorisation of local practices in animal rearing, animal health and nutrition and later to build capacity through communities for best practices.
<b>Inputs</b>	Feed supply Fodder Medicines/vaccine supply	Cooperative Feed companies Medicine companies Medicine store	Quality/cost of feed Ineffective approach for management of common property resources Quality of medicines	Inventorization of all kinds of feed and fodder with homemade compound feed to be developed and later evaluated from health and nutrition. A cluster based approach should be adopted before developing fodder supply through communities in all parts of the country.
	Formal credit for animal purchase	Banks/financial institution Cooperatives Self-help group	Very poor access to formal credit at the farm level	Investments are required to be routed through specific Institutions to the communities or associations. Finance and Insurance should be made available at the interface of communities and members in an integrated dairy development model.
	Informal loans for animal purchase or other dairy needs	Trader Private company agent	Very high rate of interest; farmer has to sell milk at low price to the trader if he/she has borrowed money from the trader	Some Institutions should be developed to regulate the funding from informal players so as to avoid exploitation. It would be a good idea to channelize all such financial dealing through communities or groups to which that individual farmer is associated with.

STAGE	PRIORITY	AGENT	ISSUES	EXPECTED (2030)
<b>Production</b>	Dairy farming Selling milk cooperatives/traders/ private dairy agents	Farmer	Poor management and feeding practices because of lack of information in the absence of extension activities. Low productivity because of poor genetic potential, poor feeding and management practices, poor access to health and breeding services, lack of good-quality animals Availability of milk per household very low profitability from dairy enterprise	Strong market linkages and integration of all dairy farmers to registered groups, societies, private or public companies would streamline the capacity building and input management for growth and sustainability.
<b>Marketing/ processing</b>	Collection of milk from farmers through village society, processing and marketing of milk in cities and urban areas	Cooperative society	Lack of coverage of villages Lack of transparency in milk testing and pricing Lack of democracy in village societies Marketing only in peri-urban/urban areas Maintaining quality of milk/infrastructure Milk prices declared by cooperatives kept low and used as a benchmark price by other players	A strong Institution building to stop selling of raw milk directly to any commercial processor or vendor without being chilled and without enrolling with a community, association, society or a group. This will ensure better quality, production, pricing and curb the opportunity for any kind of adulterated or synthetic milk.
	Purchase milk from farmers and selling milk and processed products to consumers	Trader	No transparency in milk pricing Adulteration and quality of milk and milk products Unhygienic conditions for milk processing	A strong Institution building to stop selling of raw milk directly to any commercial processor or vendor without being chilled and without enrolling with a community, association, society or a group. This will ensure better quality, production, pricing and curb the opportunity for any kind of adulterated or synthetic milk. The onus and accountability of quality will be on the community and groups. Only registered groups will be allowed to do milk trading at farm level.
	Purchase of milk from farmers through village agents, processing and selling milk	Trader Private –Public- Community dairy plant	No transparency in pricing of milk Quality of milk	A strong Institution building to stop selling of raw milk directly to any commercial processor or vendor without being chilled and without enrolling with a community, association, society or a group. This will ensure better quality, production, pricing and curb the opportunity for any kind of adulterated or synthetic milk. The private or public dairy will have to take the responsibility of product stewardship.
<b>Retailing</b>	Selling of milk and milk products processed by cooperatives and private dairies	Retailers		A strong Institution building to stop selling of raw milk directly to any commercial processor or vendor without being chilled and without enrolling with a community, association, society or a group. This will ensure better quality, production, pricing and curb the opportunity for any kind of adulterated or synthetic milk.

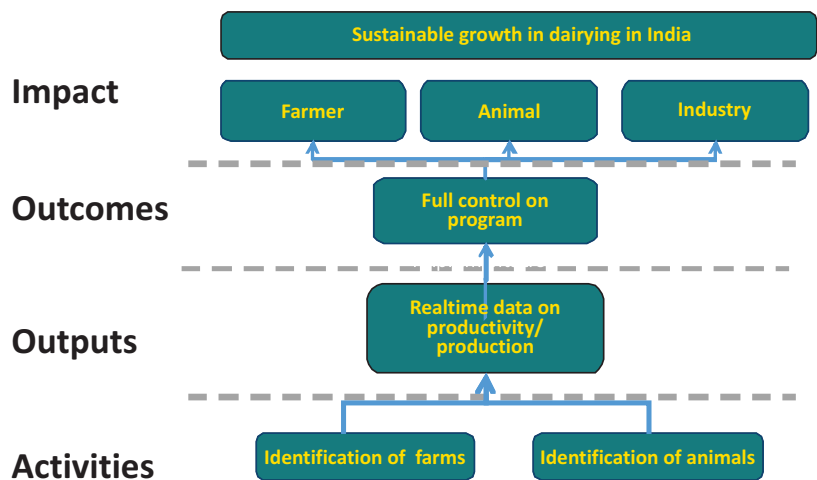
# Results chain approach to ACHIEVE VISION 2030

*“The results Chain Model design”*

A results chain is a tool that shows how a project team believes a particular action it takes will lead to some desired result. In essence, results chains are diagrams that map out a series of causal statements that link short-, medium-, and long-term results in an “if...then” fashion. As shown in Figure below, there are three basic components of a results chain: a set of strategy/activities, their outputs, expected outcomes, and desired impact. Using these components, a project team can then go on to define objectives and goals that describe desired future outcomes and impacts, respectively.

Results chains are often derived from conceptual models. But they differ in that conceptual models show the state of the world before the project takes action, while a result chain shows the state of the world resulting from this action. Results chains are similar to the logic models used by many organizations, but results chains have the added benefit of showing more detail and the direct relationship between one result and another.

A Sample of draft design as shown below symbolises the results chains emerging out of first activity or strategy from 5I approach i.e Identification .Now this model links the output, outcome of this activity with the final impact which we would like to create in dairy industry. Similarly this chain could be built up around all other steps from 5 I approach at different levels. All these result chains in part would then be integrated together as a honey comb so as to develop a national strategy for sustainable dairy development in the country.



We could facilitate this process of developing a result chain for a block/state/national level strategy if required by any government or private agency.



In order to be more result oriented we have followed a result chain approach. This approach looks at any program as a business case and align all the activities with its output, outcome and final goals to be achieved. This way the impact orientation towards a project is never ignored. We have identified a 5 step process to shape the future of sustainable dairy industry driven by progressive communities, groups, societies and organizations (both public and private). The 5 key steps of this process are as follows:



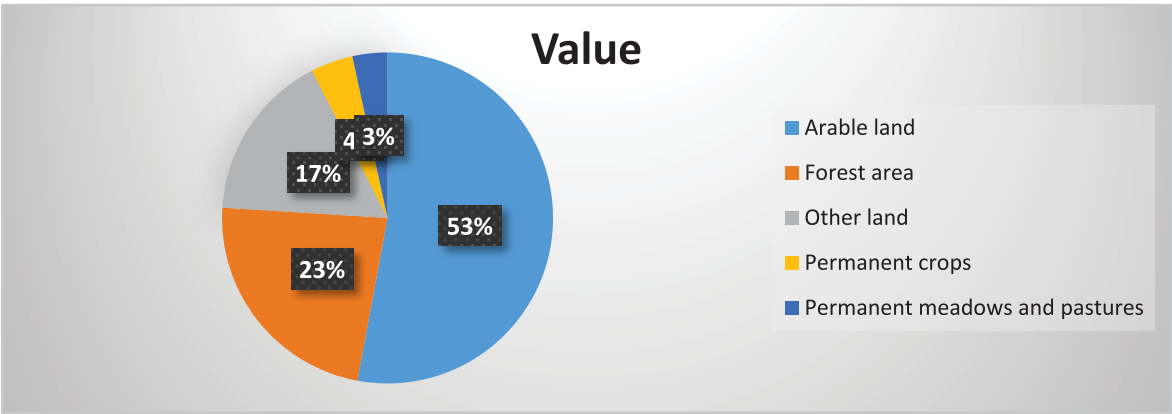
5 I model for dairy development in India

## 5 I model for dairy development in India

STEPS	ACTIVITIES PLANNED
<b>Identification</b>	<p>Identifying and enrolling all dairy farmers, farms and animals all groups, communities, associations ,organizations working as actors in dairy value chain for milk production , collection, chilling ,processing ,logistics and marketing all actors in feed, fodder, silage, hydroponics, compound feed, oil cakes, by pass protein, research, urea molasses block and nutrients like mineral mixture all actors in breeding, AI, semen, ET, bulls, research, imports, sexed semen, animals trading all actors in farm and process equipment's, cold chain, technology, packing and packaging material all actors in quality control, food safety, certification, testing labs, calibration and training all research institutions, colleges, Universities, open Institutions in both private and public domain in dairy based knowledge dissemination all actors in modern trade and supply chain management for input as well as raw and finished dairy products</p>
<b>Inventorization</b>	<p>Developing inventory of Existing norms, standards, local practices, SOP, skill set at all levels of identified actors Matching the same with best manufacturing practices and standards/norms from developed world encompassing issues of people, planet along with profits Dividing all the groups on the basis of community at geo- demographic as well as standards/norms and developing a national inventory of clusters and placing them on national canvas Developing and implementing capacity building programs after identifying gaps at the cluster level through communities/relevant groups</p>
<b>Integration</b>	<p>Integrating all the relevant actors for completing the value chains at cluster/state/regional level so as to develop a critical mass necessary for sustainability at people, profit and planet level for the dairy sector</p>
<b>Institutionalization</b>	<p>It is high time for the industry to be patronised and run through highly fragmented institutions with very low level of alignment with the National dairy growth goal. Except for National dairy plan which has taken an integrated holistic approach, there is no other such scheme or networked program currently running in the country.</p> <p>We need to have a separate ministry for dairy development in the country .The ministry must control the dairy development through clear cut policies on milk production, breeding, fodder, vaccination programs, bio security, germ plasm/progeny protection, milk collection, food safety, certification and capacity building for dairy extension.</p> <p>The current size of the sector will not be possible by handling these issue at state and central level separately. It is high time and an alarming state of affairs as stated earlier in the report. The ministry should also look into ethics and governance in this sector.</p>
<b>Investments</b>	<p>The last step is to mobilise huge investment to develop industrial structure and necessary infrastructure for clean milk production, chilling, transportation, processing, fodder, breeding programs, feed and fodder.</p> <p>A large number of global MNCs are looking forward for FDI in Indian dairy sector but due to ethics and governance related issues they are still holding back.</p> <p>The government might bring in long term National Dairy Bonds for 1000 crores for developing infrastructure for milk collection and chilling at all district levels.</p> <p>Cess could be introduced on milk processing, cattle feed production, imported semen suppliers, dairy technology suppliers and all other relevant value added service provider to the industry.</p> <p>Direct subsidies at state level to farmers creates an imbalance in the local dairy eco system. This populist measure could bring in interim relief to the farmers but not sustainability to the industry.</p>

Annexure -I

# Indian Dairy Industry Scenario A STATISTICAL JOURNEY

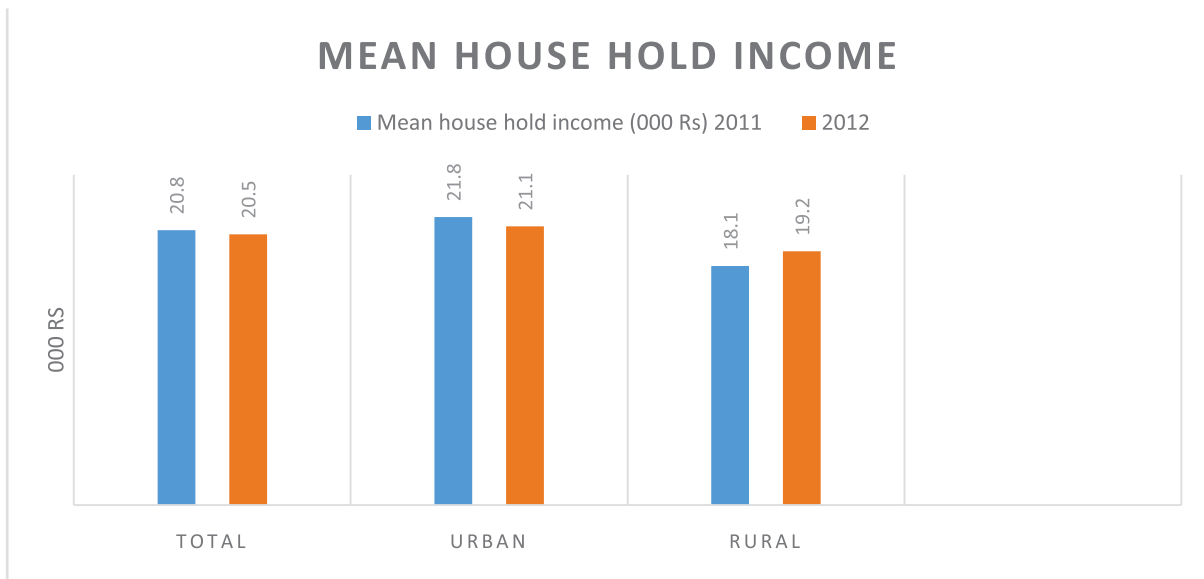


Land use in India

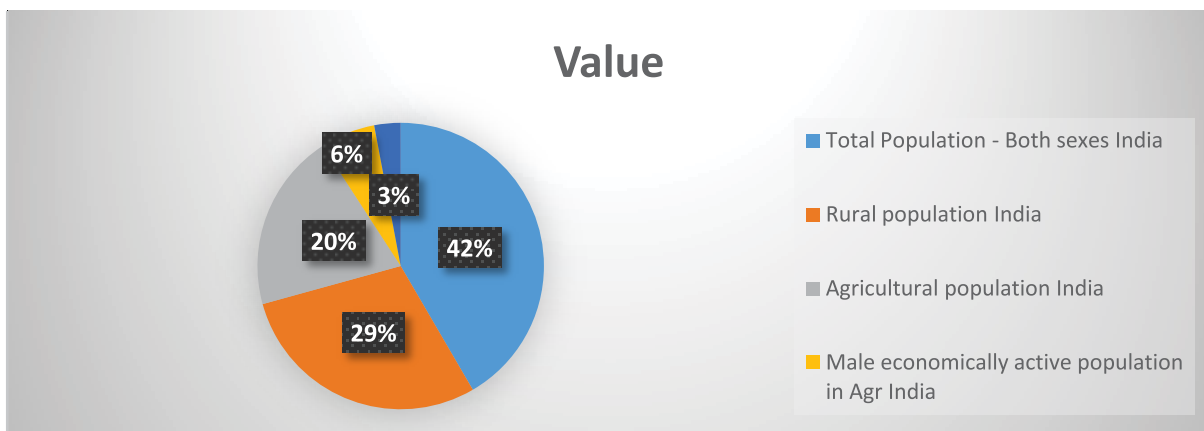


Middle Class consumer : Source: The emerging middle class will reach close to 5 billion by 2030. OECD

## MEAN HOUSE HOLD INCOME

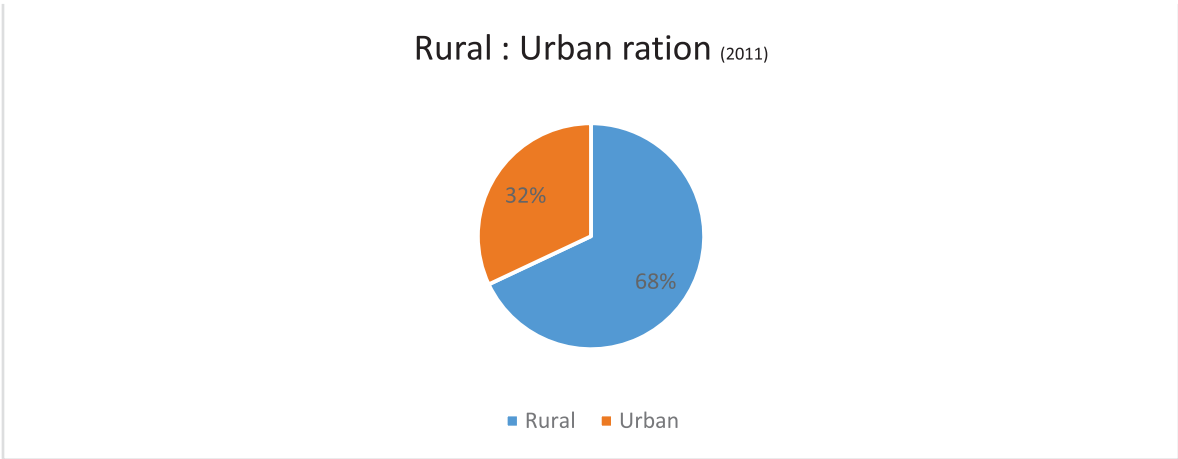


## Value

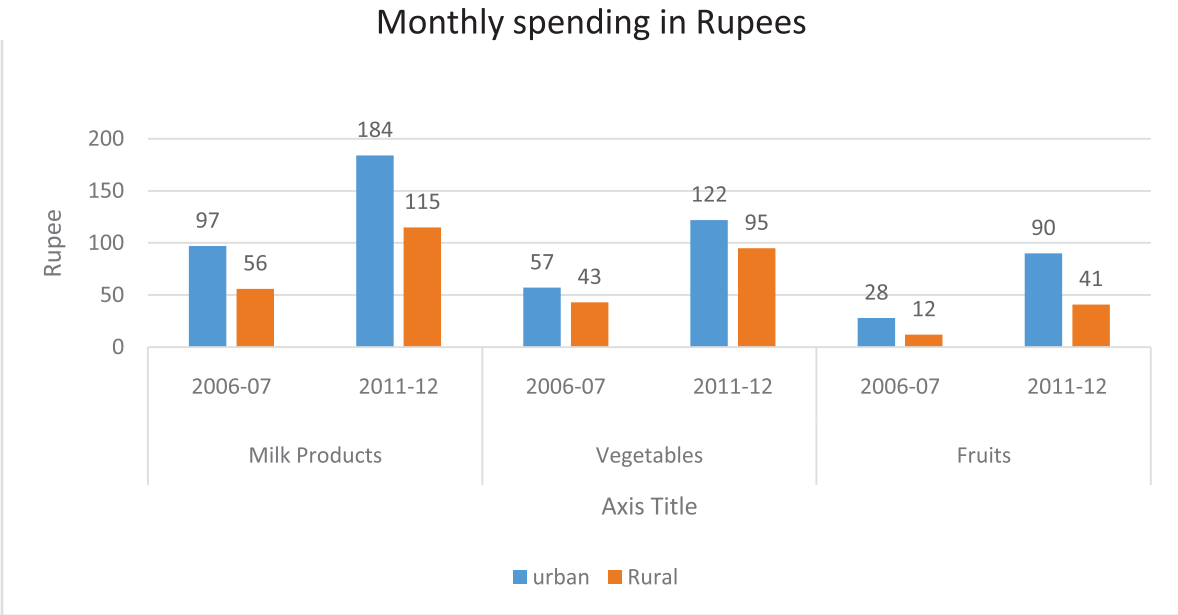


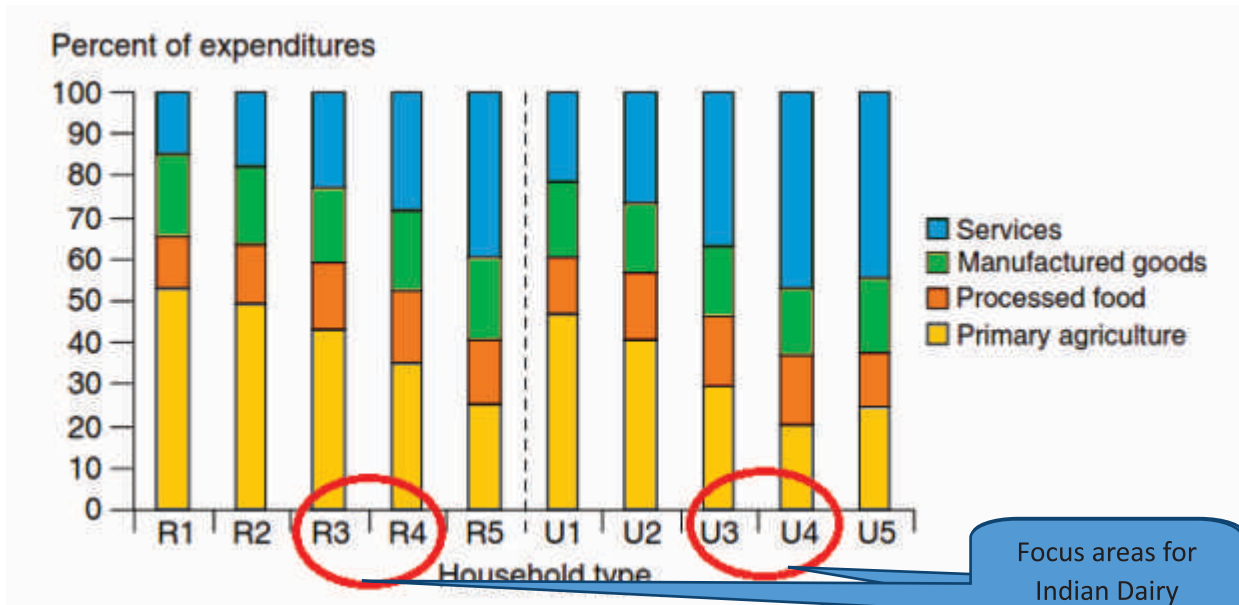
Source FAOSTAT



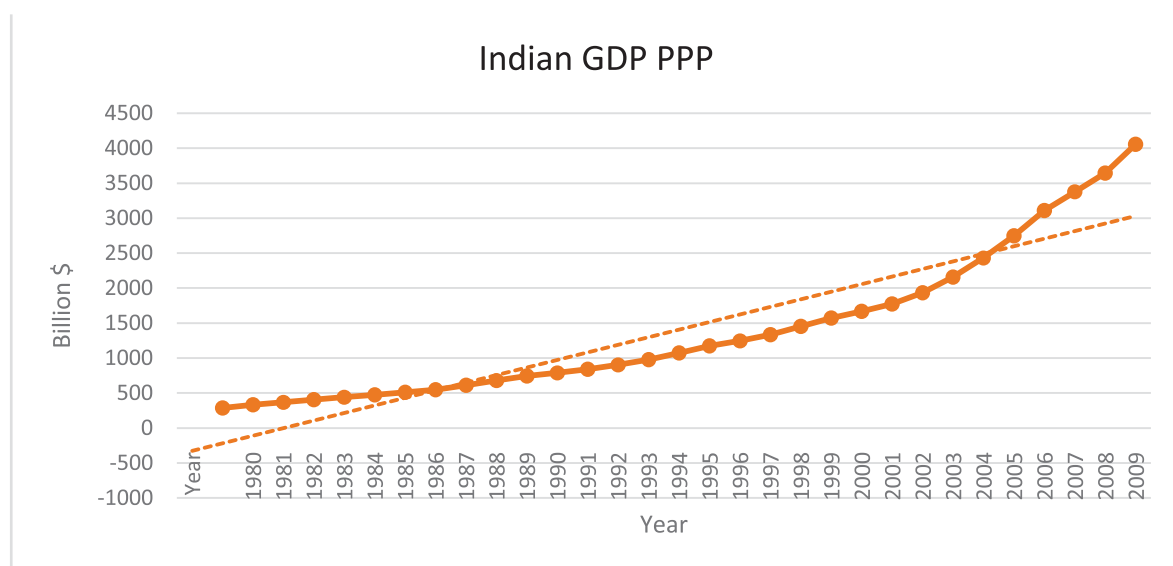


Source: Rural: Urban ration, Census 2011

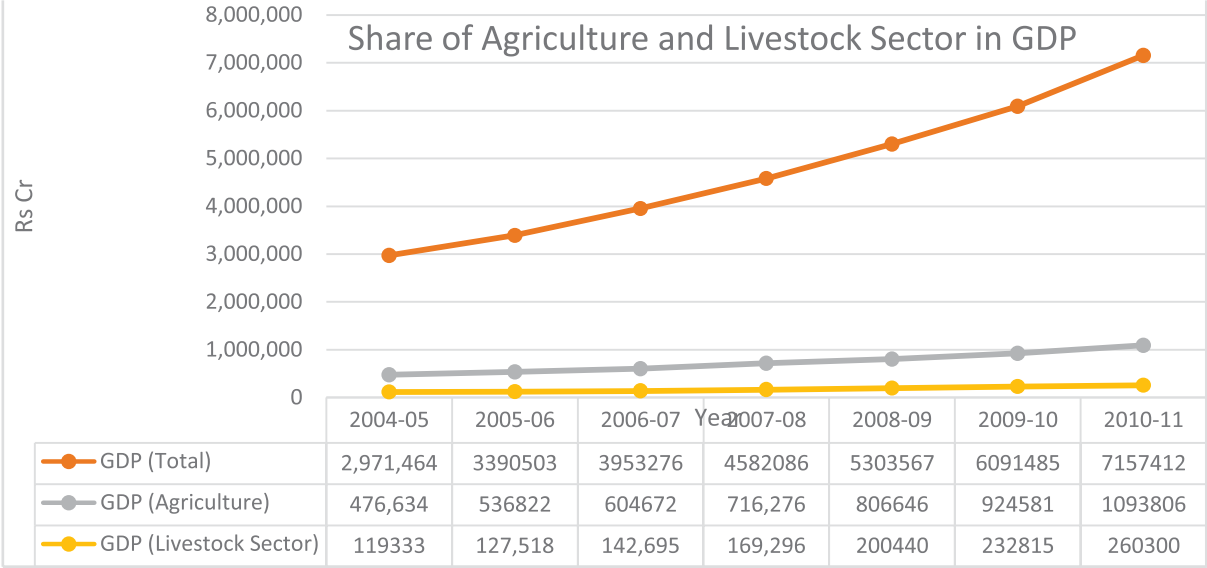




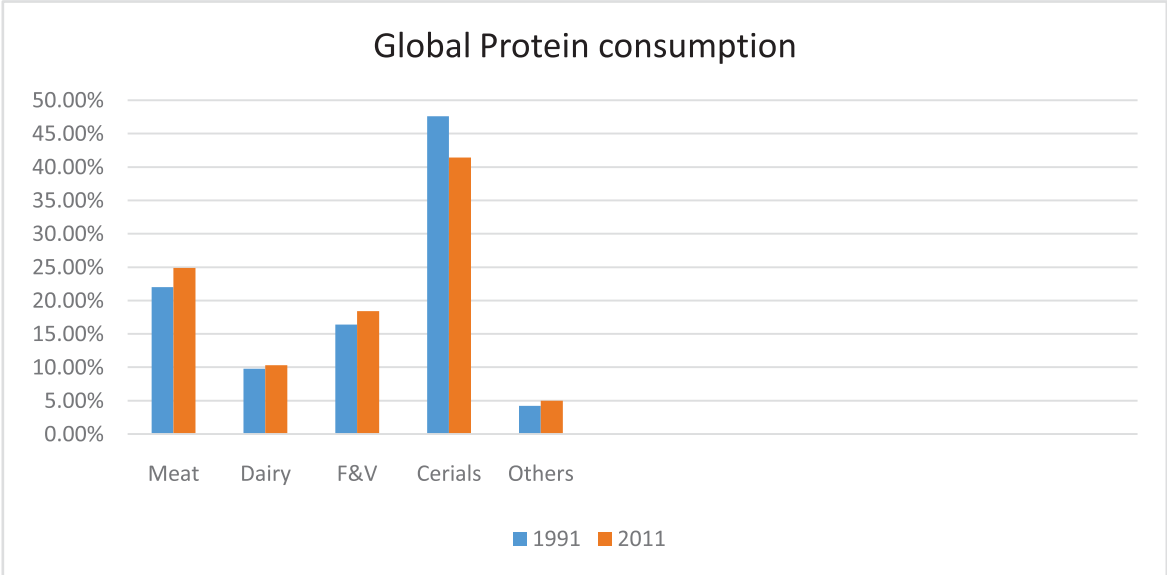
R = Rural; U = Urban; R1, U1 = Abject poverty; R2, U2 = Poverty; R3, U3 = Middle income; R4, U4 = Upper income; R5, U5 = High income.  
 Source: Growth and Equity Effects of Agricultural Marketing Efficiency Gains in India / ERR-89 Economic Research Service/USDA



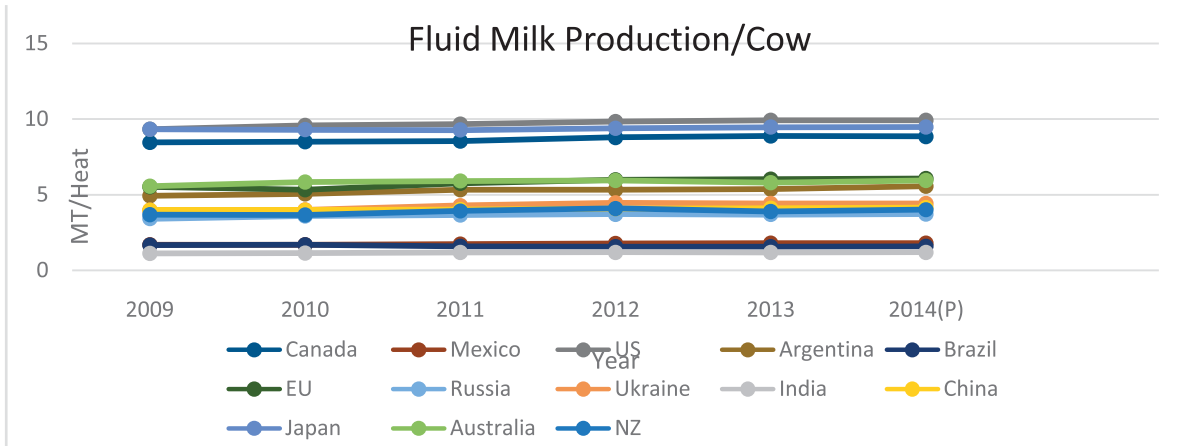
Indian GDP by PPP: International Monetary Fund - 2011 World Economic Outlook



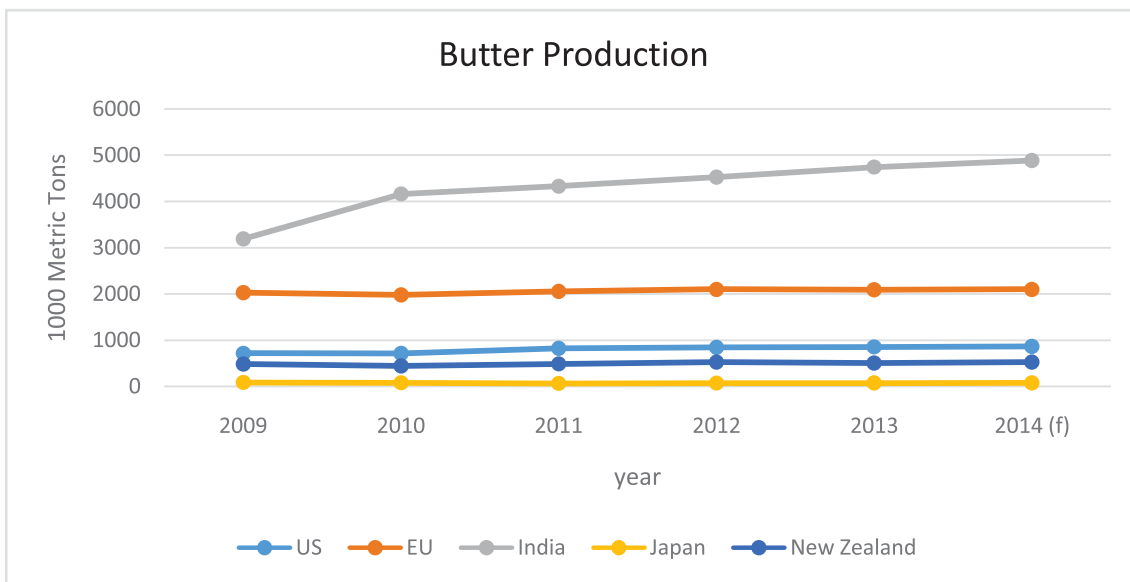
Source: NDDDB



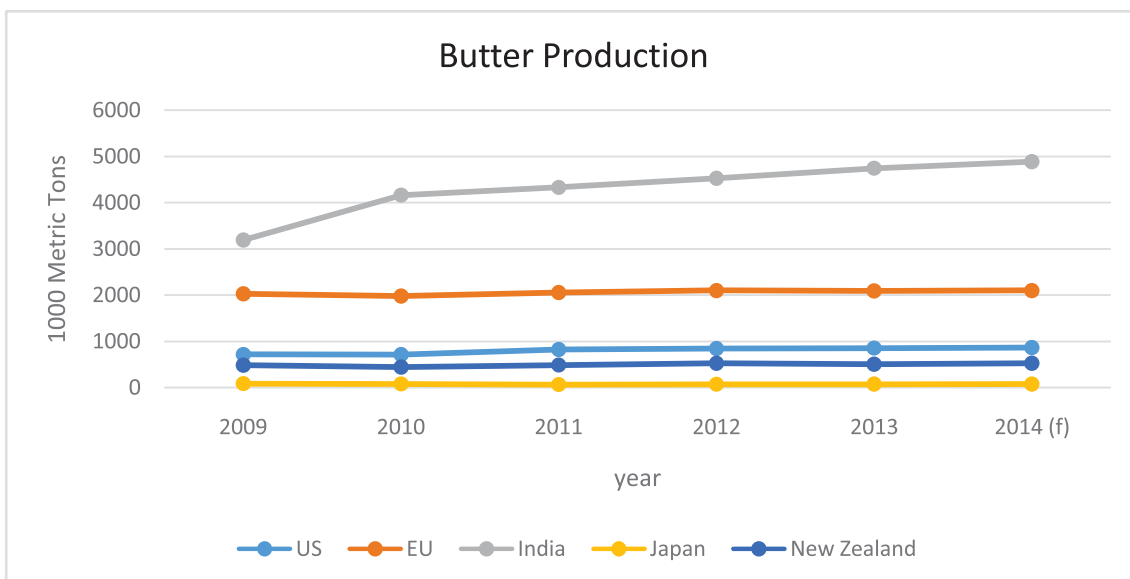
Source: FAOSTAT



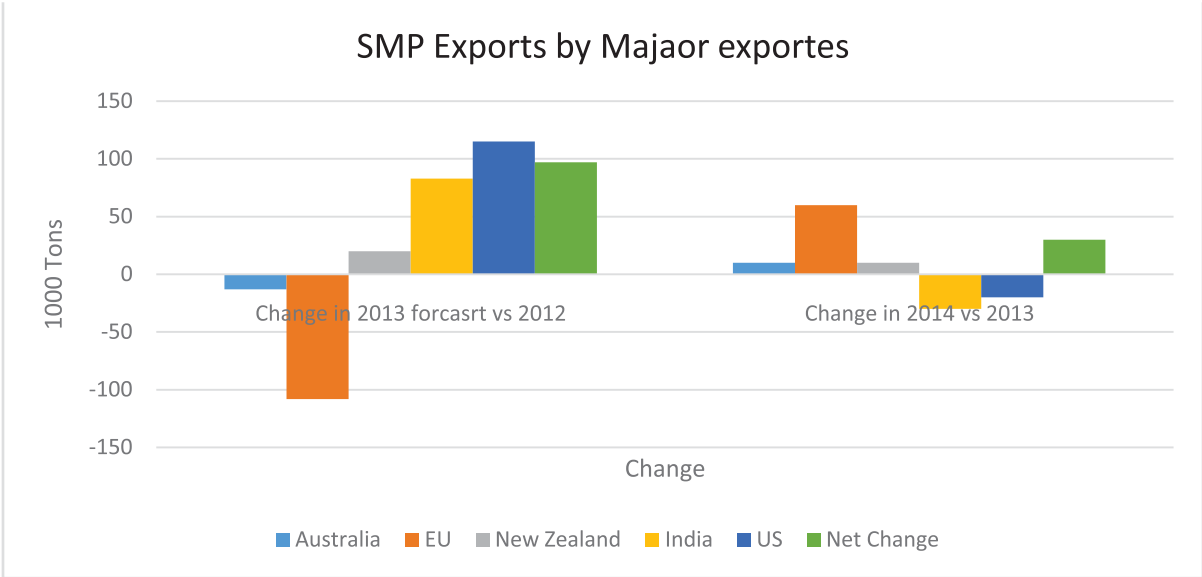
Source: USDA: Milk Production Country wise.



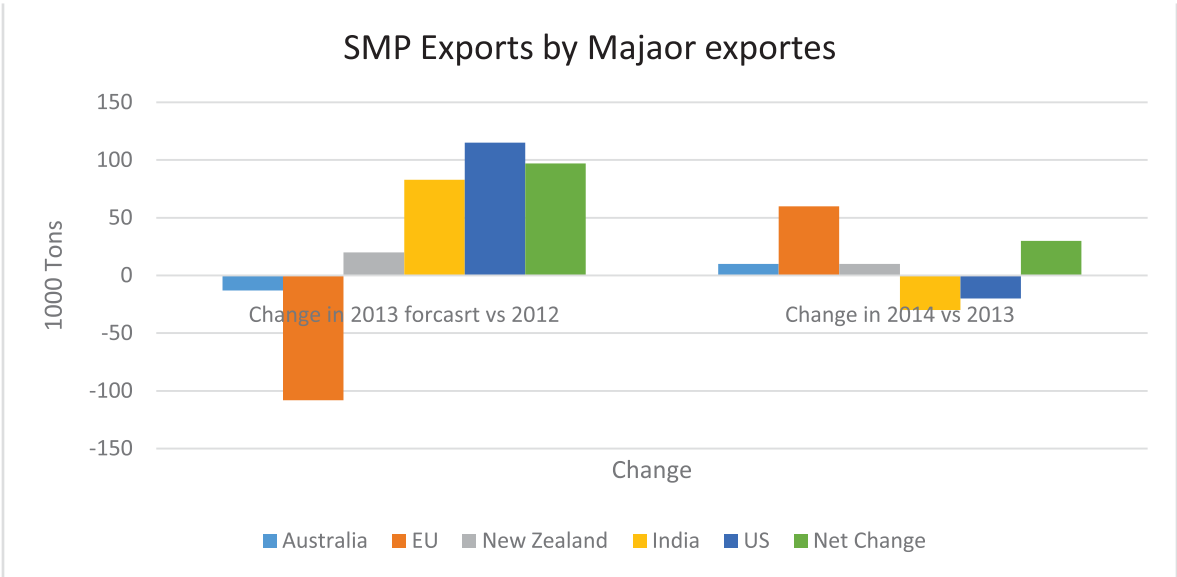
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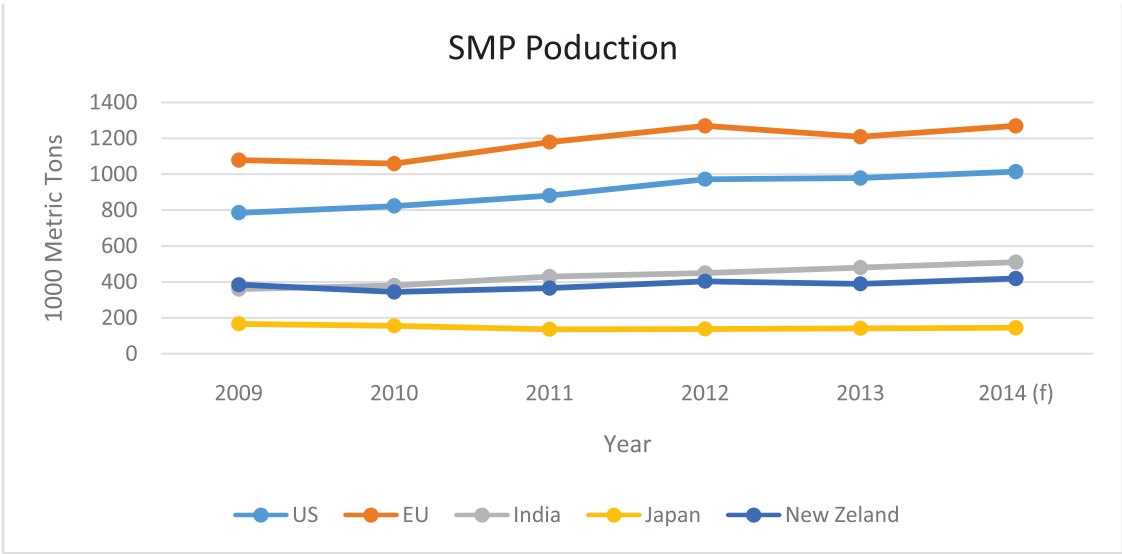
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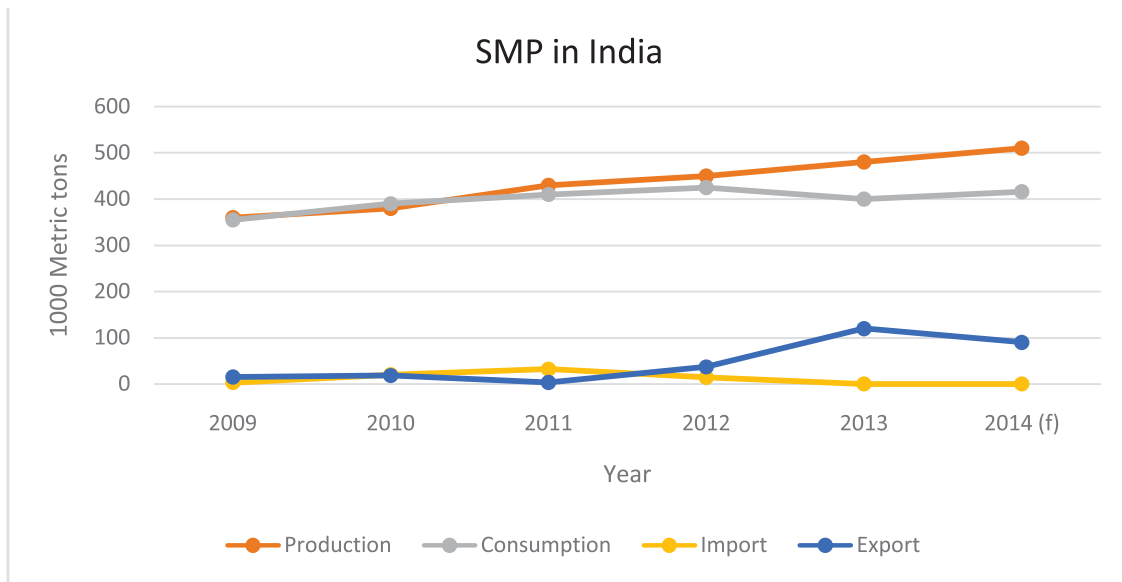
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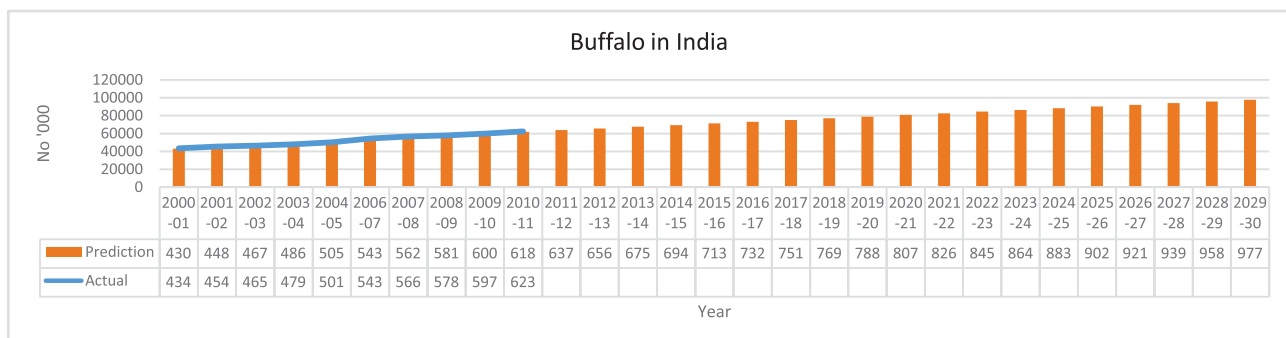
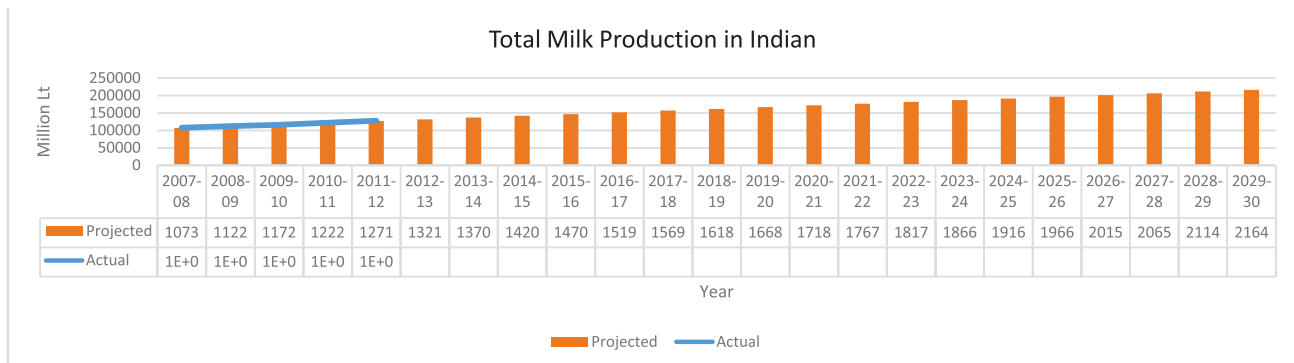


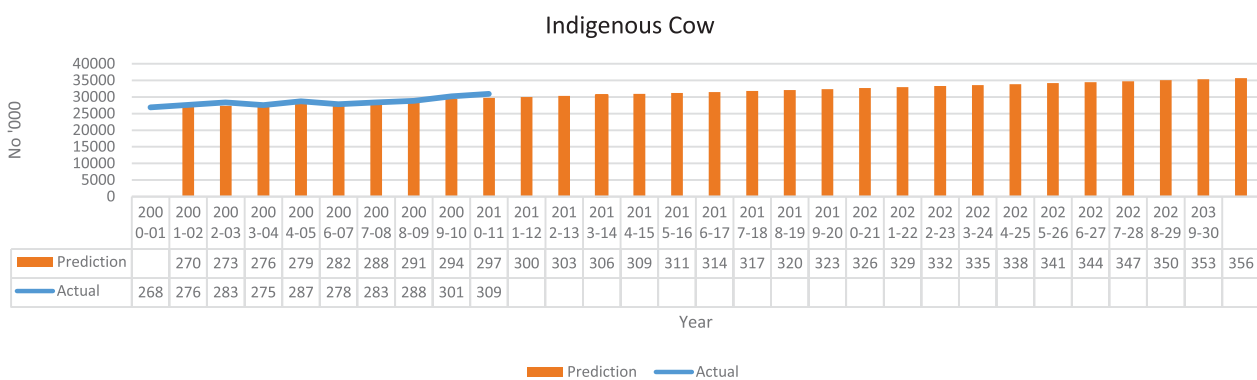
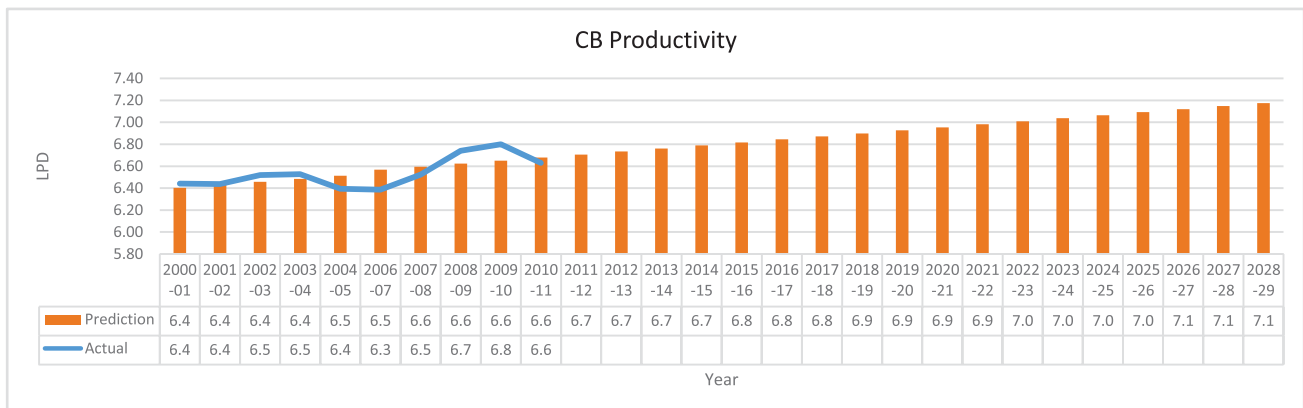
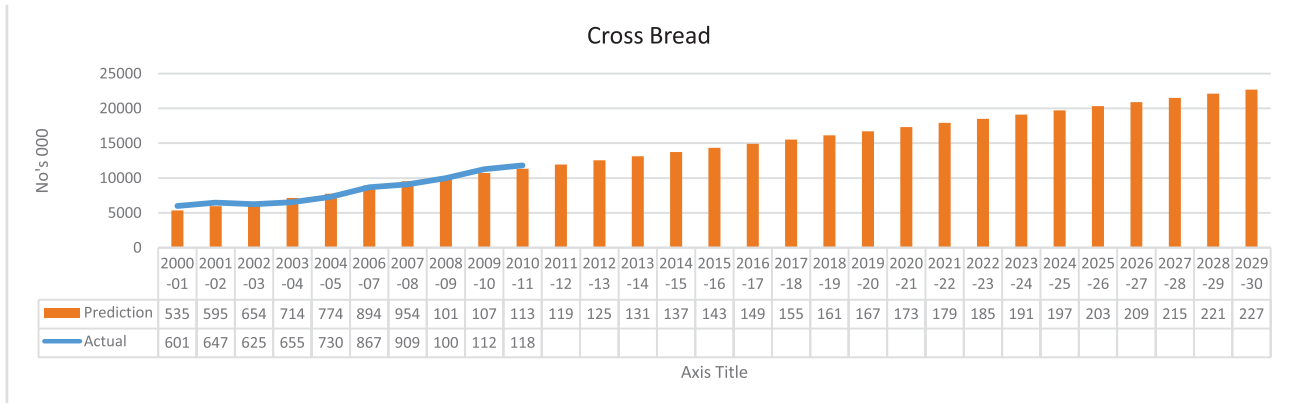
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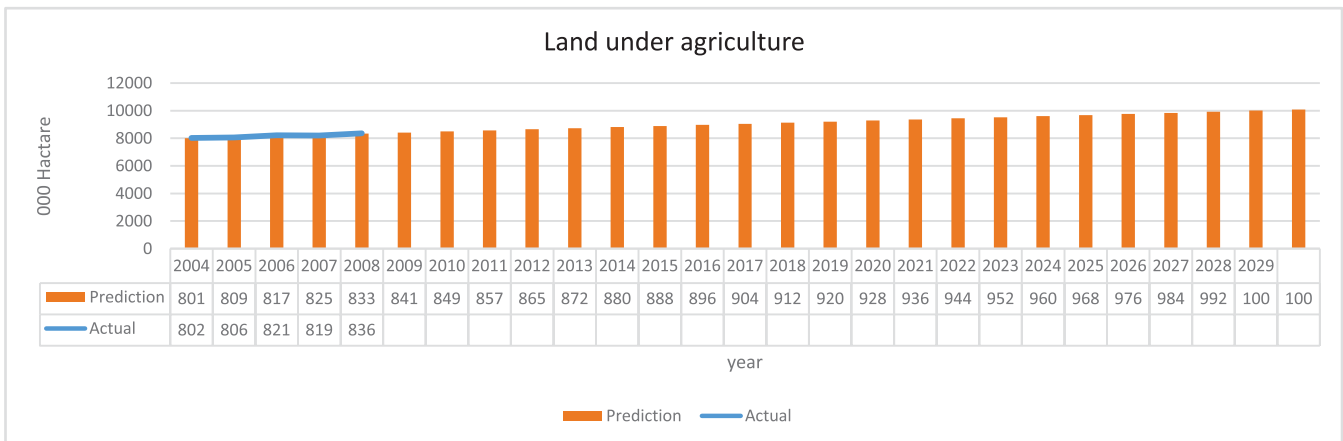
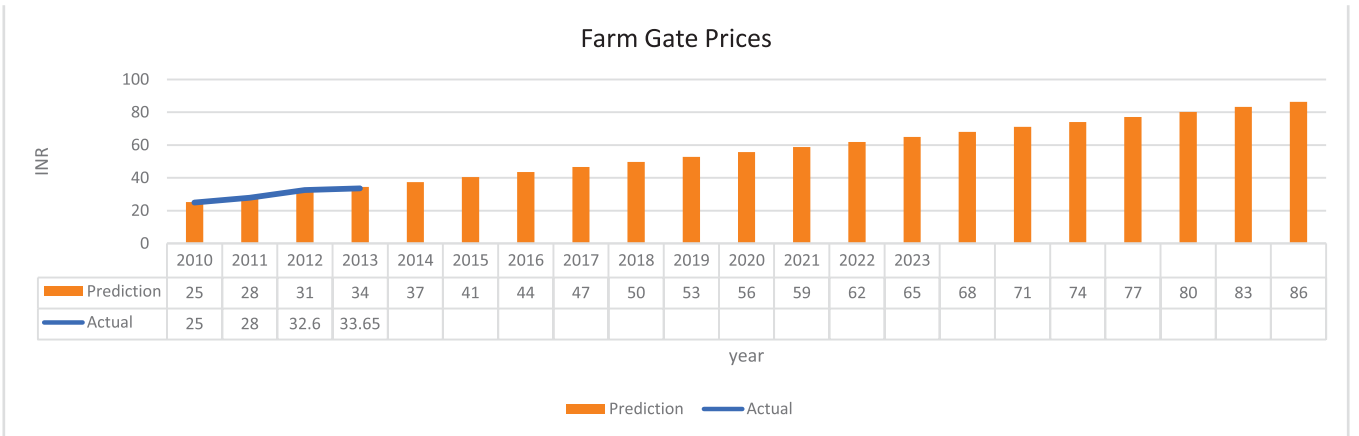
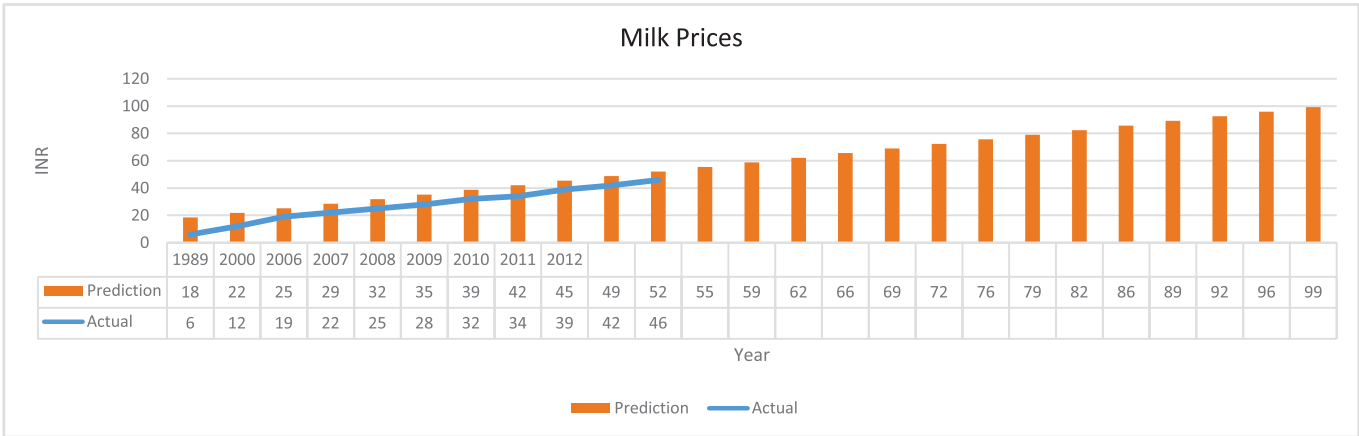


Source USDA

### Vital stats of Indian Dairy 2030 (A Suruchi Research & Analysis)











## India & Global DAIRY INDUSTRY

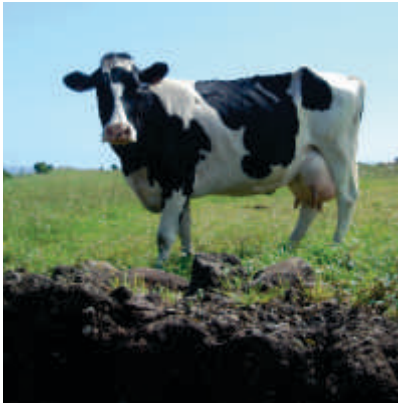
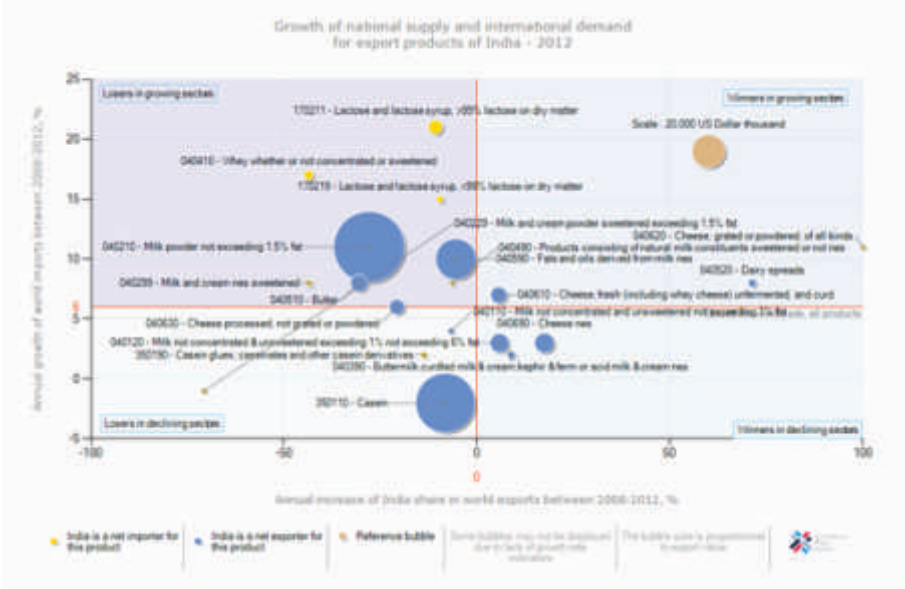
Despite having the largest milk production, India is still a minor player in the world market. India is ranked at 18th position in world exports with a 1.6% share in total world exports. India has shown a 16 % growth from 2008 to 2012 as against the 6% growth in total world's exports. India has shown a negative growth of around 6 % from 2011 to 2012. Our exports are highly concentrated in SMP, casein and Ghee contributing close to 45 %, 30% and 15% of our total exports respectively.



The major export destinations for the Indian dairy products are Bangladesh, Mid East, US and Egypt. In terms of products SMP , Casein and ghee are the most important product exported from India followed by butter and whole milk powder. Export figures clearly demonstrate that the Indian dairy export is still in its infancy and the surplus esareoccasional. There has been exports of Indigenous milk products and desserts also, particularly Panir and channa based sweets like Rosogolla. Panir is being exported in both frozen and Ready to eat format in long shelf life packaging. These products get a large demand from ethnic population in other parts of the world.

Looking at the International markets, India is a net exporter of all the dairy products except Lactose and Lactose syrups. There has been good potential for Indian casein and milk powders. whey cheeses are also in the rise.

# Annexure -II



## Advantage India

India has merely managed to capture only 1% of global dairy trade despite being the largest milk producer. But India has clearly two distinct competitive advantages, which can be leveraged to enhance exports and capture a better share of annual International trade of dairy products.

## Advantage India

**Low Production price**  
**Proximity to milk deficit markets**

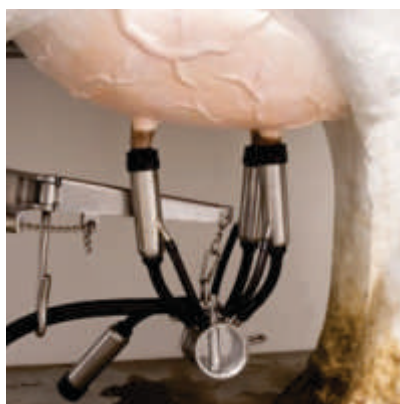
Amongst the important milk producing countries, Argentina, New Zealand and Australia have slightly lower farm gate prices than India, but these account for only 10% of the global milk production. India has locational advantage to serve milk deficit areas in the neighbouring countries in south East Asia and Southern Asia. In addition, demand for milk products in these markets are expected to be strong.

Cost of Production (US \$/100 Kg)	Country
>20 <= 30	Argentina, Pakistan, Vietnam, Indonesia, Chile (Small farms), China (Small farms)
>30 <=40	Estonia, Czech Republic, Brazil, Bangladesh, Thailand, Brazil (Small Farms), Poland, NewZealand, Western Australia, India, Russia.
>40 <=50	Spain, Denmark, Ireland, United Kingdom, Hungary, United States of America, Germany (Large Farms), Netherlands (Large Farms), Israel (Large Farms), Brazil
>50 <=60	Austria, France, Sweden, Netherlands (Small Farms). China
>60 <=120	Switzerland, Norway, Finland, Canada, Germany (Small Farms)

Source: IFCN Dairy Report, 2011

Despite these advantages, India has not able to capitalize the opportunity and also not been able to compete in global markets mainly due to:

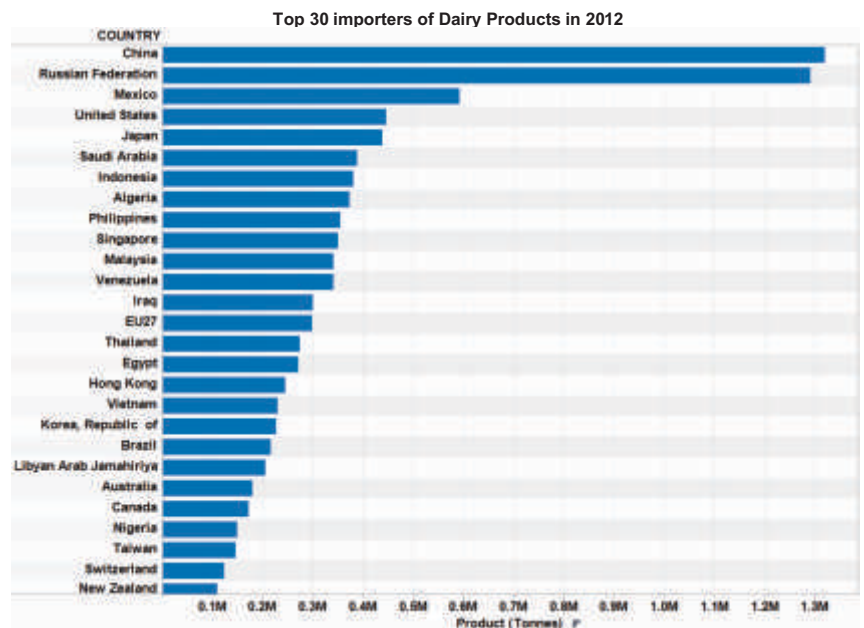
- **Low quality and hygiene standards**
- **Lack of experience and information**
- **Significant growth in domestic consumption leading to limited surplus for exports.**



As the market opens up, consumption trends associated with the large importing markets will increasingly influence the world trade. Amul has recently joined the Global dairy Trade an international trade network to bid with global giants for large quantities of dairy commodities in international trade. This will present a vast potential for the export of dairy products by India because the cost of milk production in India is very low as compared to other countries. Most of the dairy plants in the Government, Cooperatives and Private Sector produce almost similar dairy products like varieties of milk, butter, ghee, skimmed milk powder and whole milk powder. With some R&D and modern technology, these plants can be used to produce value added products that are being demanded by the importing countries. Hence there exists an immense scope for the broadening the products range to include those products which are likely to have a considerable demand in the future.

Another factor favouring India is the diminishing importance of Europe as a key exporter of dairy products with the reduction in subsidies under the WTO regime. This is likely to give India, which offers no subsidies and has competitive milk producers, a chance to export its dairy products. Also recent events of botulism bacteria have given a setback to New Zealand dairy industry. This again provides Indian dairy inc. and opportunity to leverage the situation and increase its presence in china and South East Asian markets.

India has an edge over many developed countries also because its cost of production is lowest in the world because it enjoys a comparative advantage in the production of milk as compared to other countries. The only problem with India is high cost of conversion to dairy products. It might be due to lack of scale at both production and processing level.



**Source: Fonterra: Global Trade**

This significant potential for exports and the rapid growth in domestic demand pose huge challenges as well as opportunities for the Indian dairy industry. In spite of India being the number one milk producing country in the world, still only about 35% of milk produced in India is processed and that too is facing a number of challenges in terms of infrastructure, operational efficiencies, quality and marketing among other aspects.

As the world is getting integrated in to one market, quality certification is becoming essential. However, there are very few plants in the country, which have successfully obtained the ISO and the HACCP certification. This non compliance with international quality and food safety norms such as International Product Standards, HACCP, and GMP/GHP is a major bottleneck, which becomes a barrier to India's competitiveness in exports.

Further, to remain competitive in the world market, the dairy industry constantly needs to reinvent itself and to develop capacities for continuous improvement by using the cutting edge world class management techniques for strengthening coreoperational strengths to stay competitive, efficient and profitable.

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Target	Module	Deliverables
New Projects	Navigator	Site selection/suitability report Raw milk potential area report Potential market report Technology suitability report Channel selection report
New Projects	Simulator	Technical prefeasibility report Commercial prefeasibility report Techno-commercial feasibility report for banks
New Projects	Drawing board	Site layout Plant and machinery layout Process layout P&I diagrams Masterplan Process and piping layouts Drainage and Effluent layout Civil and structural drawings Electrical and cabling drawings Utilities layout Project timeline charts
New Projects	Accerelator	Tender documents for complete plant Comparative of offers Order processing and supply agreements Onsite /vendor site inspection Supervising erection and installation Supervising commissioning Supervising project stabilization
New/Existing Projects seeking expansion or diversification	Integrator	Buying from multiple vendors Integration services of all the vendor in a project Turnkey direct supplies
Existing Projects seeking expansion or diversification or acquisition	Assessor	Due diligence reports on - Technology - Capital expenditure - Operational cost - Quality capability - Manpower capability - Market - Raw milk procurement potential - Viability assessment
New/Existing Projects seeking expansion or diversification	Motivator	Mentoring and capacity building for - Top management - Middle management - Operator in different sections - Food safety coaching and manual preparation - Functional areas - SOP and manual development - Export Inspection certification - Profit making

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