सत्यमेव जयते

National Action Plan for Egg & Poultry-2022

For

Doubling Farmers' Income by 2022

Department of Animal Husbandry, Dairying & Fisheries

Ministry of Agriculture & Farmers Welfare

Government of India

Index

Annexure

1. Overview of Poultry Production Systems in India

1.1 Basic structure of Poultry Sector

Poultry sector in India is valued at about Rs. 80,000 crore (2015-16) broadly divided into two sub-sectors – one with a highly organized commercial sector with about 80% of the total market share (say, Rs. 64,000 crore) and the other being unorganized with about 20% of the total market share of Rs. 16,000 Crore. The unorganized sector also referred to as backyard poultry plays a key role in supplementary income generation and family nutrition to the poorest of the poor. It is estimated that with a poultry population of 729 million [30% layers at around 215 million and 40% broilers at around 480 million] small and medium farmers are mostly engaged in contract farming system under larger integrators and there are around 30 million farmers engaged in backyard poultry as per 19th Livestock Census. The needs of organized and unorganized sectors are very different. Discussions with various stakeholders reveal that poultry sector- especially commercial poultry sector- is flourishing in certain pockets, where amenable environment exists, alongwith backward and forward linkages while the unorganized sector is very dispersed and micro-fragmented.

1.2 Organised sub-sector needs conducive environment to grow for which policy support & intervention is required mainly for disease surveillance, Drug residue and drug/ vaccine quality control, standardization & quality control of poultry feed, eggs & meat, Application of HACCP (Hazard Analysis and Critical Control Point) and Good Manufacturing Practices for compliance to WTO & CODEX norms and gradation, value addition, brand promotion & export boosting (about Rs. 532 crore in 2016-17)etc.

The above issues are broadly dealt with by a number of Ministries/ agencies like Export Inspection Council of India, Agricultural and Processed Food Products Export Development Authority (APEDA), Ministry of Food Processing Industries, Food Safety and Standards Authority of India (FSSAI), Bureau of Indian Standards(BIS) etc. Besides, National Institute of Animal Health under Animal Husbandry Department is dealing with quality control of vaccines and the 'The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009' is the key regulation to control important livestock and poultry diseases in the country. Compartmentalization for disease control as per OIE Standards is an important issue being dealt with by DADF to facilitate smooth trade.

1.3. Unorganised sub-sector generates additional income and improvement of nutritional status among the poorest of the poor. However until now there has been little

support to this sector. Now however through one of the components 'Rural Backyard Poultry Development' under Centrally Sponsored Scheme 'Poultry Development' assistance is provided for to cover beneficiaries from BPL families. But this continues to be very little as compared to the demand.

A part of the unorganized sector is the **Transitional Small & Marginal sub-sector:** Due to Government initiatives for entrepreneurship development, small/ marginal units are now coming up. However, these can sustain only if they operate in a clustered manner.

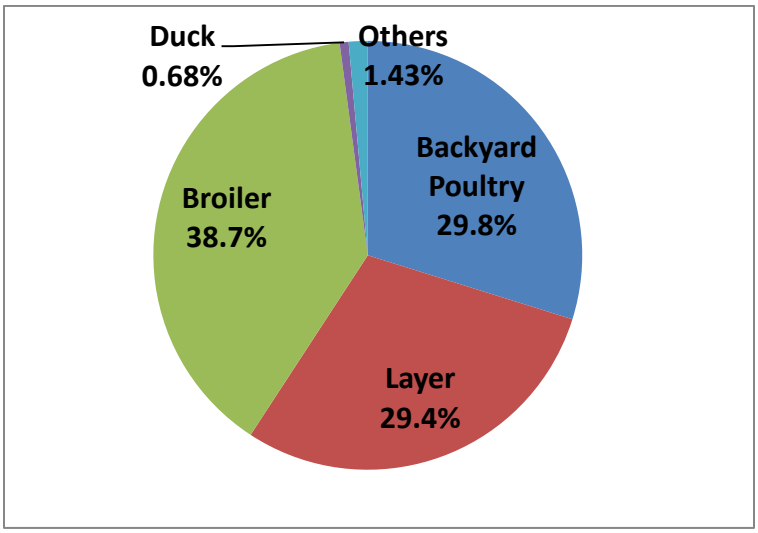
1.5 Poultry Sub-sectoral requirements

2. Egg Production

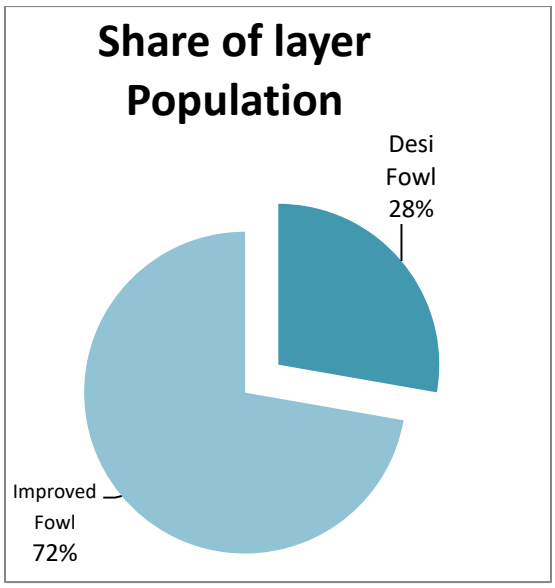
2.1 Background:

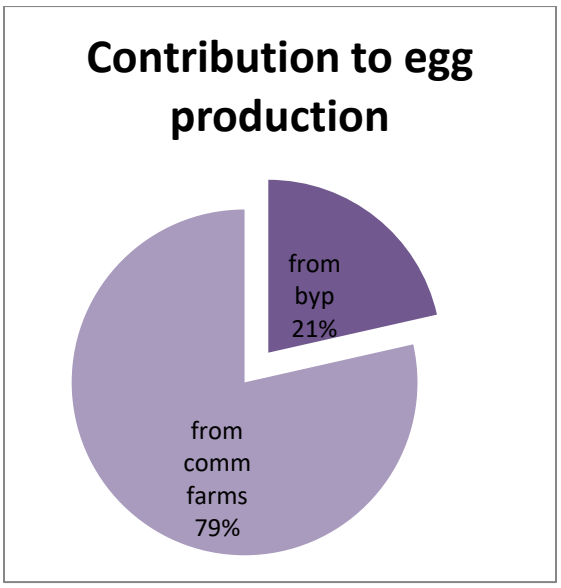
The egg production in the country has increased from around 83 billion nos. in 2015-16 to around 88 billion in 2016-17 registering a growth of about 6%. The per capita availability of egg has increased from 61 in 2013-14 to 66 in 2015-16. In 2016-17 it is 69.

Distribution of Poultry population



Around 214 Million Layers are present





2.2 Top 5 States in terms of poultry population:

S.No.	State	Poultry Population (in million)
1.	Andhra Pradesh	161.33
2.	Tamil Nadu	117.35
3.	Maharashtra	77.79
4.	Karnataka	53.44
5.	West Bengal	52.84
6.	All others	266.45
	Total	**729.21**

Total Poultry Population, share of backyard population and egg production from desi birds is at **Annexure-I**

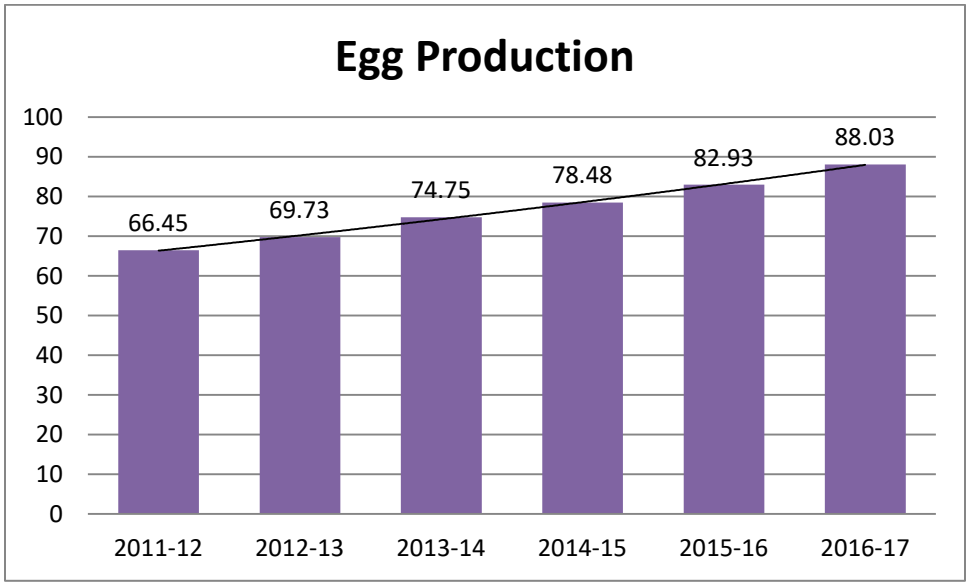
2.3 Egg Production- Growth Rate

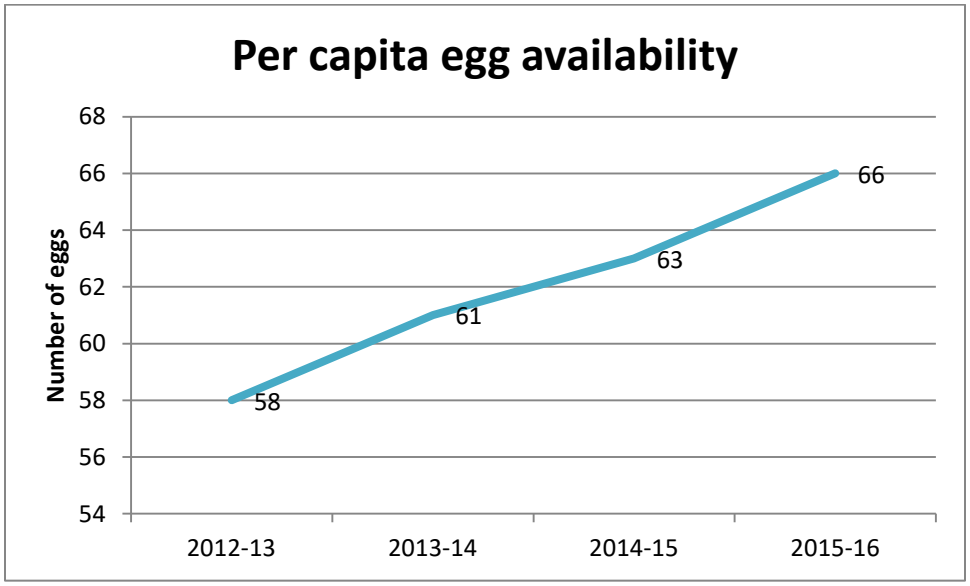
S.No.	Year	Egg production (in billion numbers)	% annual egg production growth rate
1.	2011-12	66.45	5.4%
2.	2012-13	69.73	4.94%
3.	2013-14	74.75	7.2%
4.	2014-15	78.48	4.99%
5.	2015-16	82.93	5.66%
6.	2016-17	88.13	6.28%

The poultry meat production in the country has increased to nearly 3.46 million tons during the year 2016-17 from 3.26 million tonnes during the year 2015-16 at around 6% growth rate.

Total Egg production and yield is at **Annexure-II**.

2.4 Increase in Egg production & per capita availability of protein





2.5 Nutritive value of eggs

Egg is a wholesome, nutritious food with high nutrient density because, in proportion to their calorie count, they provide 12% of the Daily Value for protein and a wide variety of other nutrients like vitamins, essential amino acids and minerals such as vitamin A, B_6, B_{12}, folate, iron, phosphorus, Selenium, Choline and zinc etc. alongwith various other important ingredients so crucial for growth and good health. Protein in the nutrition is one of the most important health indices that affect children's growth and development. Lutein and zeaxanthin are two newly-recognized nutrients that have put eggs in the "functional foods" category. A functional food is one that provides health benefits beyond its basic nutrient content. Recent studies have shown that consuming lutein and zeaxanthin can significantly lower risk of age-related macular degeneration (AMD), a leading cause of blindness affecting people over the age of 65. In addition, there is a less likelihood of cataracts.

2.6 Need for increasing of egg production:

One of the great challenges currently posing us is how to feed an estimated 9 billion people by the year 2050 world-wide, 40% more than presently inhabit the planet, even more formidable is the challenge to achieve this without damaging the environment. The challenge is how to increase the food supply, particularly food of animal origin, in light

of increasing global demand from predominantly urban populations with increased purchasing capacity.

Concomitantly, the rural backyard poultry systems play a pivotal role in achieving nutritional security of the country in rural areas. In village poultry systems the production of poultry meat and eggs is extremely efficient in terms of feed and water inputs. These nutritious products can supplement household grain-based diets. Family poultry have a special place as they are under the control of women, require low investment, assist in pest control and provide manure for fertilizer. Improvements in their production can meet the nutritional demand in the household and in the community by increasing their social standing and financial autonomy.

Major objective of livestock/poultry production is to provide safe and healthy animal food/ protein for the growing population. However there are many serious challenges cropping up on its sustainability.

2.7 World Players in Egg Production

World Egg production: India is currently 3rd in egg production in the world (as per FAO 2014)

S.NO.	Country	Eggs, hen, in shell (in Million Tonnes)
1.	China.	29.36
2.	U.S.A	5.97
3.	India	3.97
4.	Mexico	2.57
5.	Japan	2.50
	World total	**104.89**

The ranking of the top companies in terms of number of hens (layers) as per 2015 Wattagnet is indicated below:

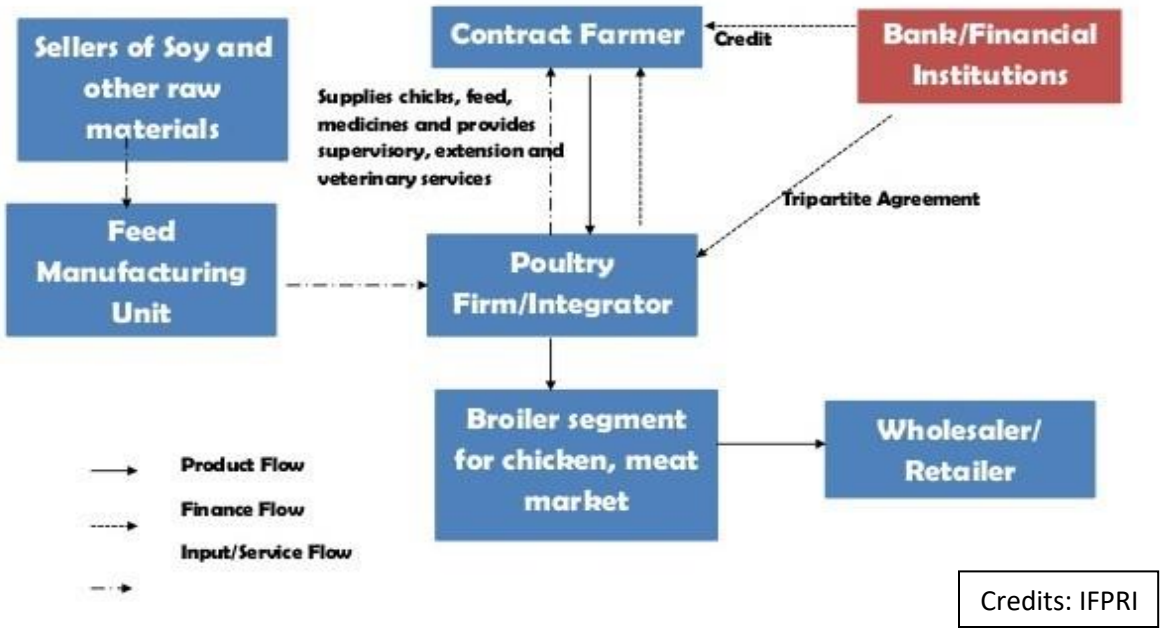
Rank	Company	Country	Hens in production (million)
1	Cal-Maine Foods	USA	32
2	Proteina Animal	Mexico	30
3	Avangard Holdings	Ukraine	27
4	Rose Acre Farms	USA	25
5	Arab Company for Livestock Development (ARCOLID)	Syrian Arab Republic	23
6	Ise Inc.	Japan	20
7	Moark LLC	USA	16
8	Rembrandt Enterprises	USA	14
9	Daybreak Foods	USA	13
10	CP Foods	Thailand	12
11	Michael Foods	USA	11
12	Granja Mantiquera	Brazil	11
13	Trillium Farm Holdings	USA	9
14	Granja Yabuta	Brazil	9
15	Midwest Poultry Services	USA	9
16	Center Fresh Group	USA	8
17	Groupe Glon	France	8
18	Centrum valley farms	USA	8
19	Hillandale Farms	USA	8
20	Weaver Brothers	USA	8
21	Empressas Guadalupe	Mexico	7
22	QL Resource BHD	Malaysia	7
23	Industrias Bachoco	Mexico	7
24	Fremont Farms of Iowa	USA	6
25	Hickman’s Egg Ranch	USA	6

3. Broiler Production

3.1 Background:

The 2017 broiler production is projected at 4.5 million tons which is approximately seven percent more from last year possibly because of rising domestic demand for poultry meat. The growth in the broiler segment is expected to remain strong due to consumer preference for poultry, increasing income levels, and changing food habits. The live market sales of broiler meat still constitute more than 90-95 percent of total volume of sales; the processed chicken meat segment comprises only about 5% of total production.

More than 80 percent of India's poultry output is produced by organized commercial farms. Major poultry companies have vertically integrated operations which comprise approximately 60-70 percent of the total chicken production. Major companies/ integrators, own hatcheries, feed mills, and primary processing facilities and often provide credit, extension services, and veterinary medicine to the contractual farmers. Integrators contract with multiple smaller farmers who rear the chicks to slaughter weight. The live birds are then either purchased by the integrators for slaughter and further processing or by a wholesaler who distributes them via live markets. Broiler production is mainly concentrated in the states of Tamil Nadu, Andhra Pradesh, Maharashtra, Uttar Pradesh, and Telangana.



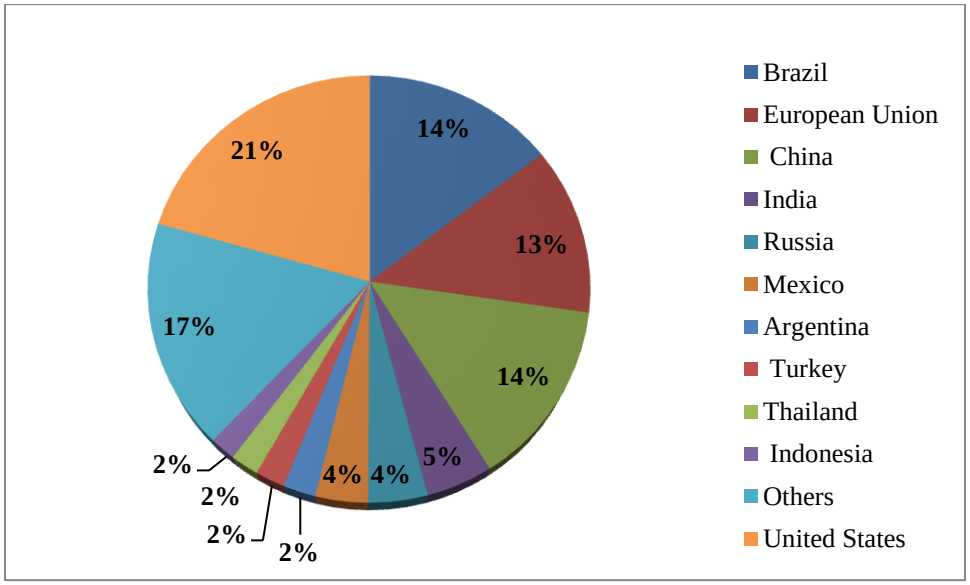
Credits: IFPRI

The Cobb breed constitutes around 65-70 percent of the broiler market. The grandparent stock for Vencobb is owned by one major enterprise which sells parent stock to multiple integrators throughout India. Other popular breeds in India include Ross, Marshall, Hubbard, Hybro Avian, and Anak.

The size of the poultry farms varies significantly from small farms with just 200 birds to large farms of more than 50,000 birds. Most of the poultry farms are simple open sheds while only a few large poultry integrators have controlled-environment housing with automatic feeding and drinking systems. High capital costs and unreliable power supplies restrict large scale adoption of the controlled environment poultry barn model in India.

The broilers in India are usually reared for 35-40 days to a market weight of 1.8 to 2.2 kg. The feed conversion ratio for broilers has reportedly improved considerably over the years to 1.65 from 2.2 in the 1990s. Supply-demand situations generate significant seasonal fluctuation in broiler prices: prices may rise in summer due to reduced production but decline during certain Hindu festivals. The major industry players attempt to support prices by reducing chick placements when demand falls.

Global share of major broiler meat producers (2016)



3.2 Market size and placement of birds: The average bird placement in broiler segment is 65-70 million birds per week. Five major players (Suguna in Coimbatore, Venky's in Pune, CP, Sneha, and Shalimar in Kolkata) constitute 60 per cent of the broiler meat market. The average live wt of 1.8-2.2 Kg. Broiler meat production has been growing in India at a rate of 7-8 per cent. One third of the production is carried out by

individual farmers while two third by contract farmers (integration farmers). Average farm size is 7000-8000 birds.

Birds' placement depends on feed prices, status of disease outbreaks, financial status of farmers and the profitability related to the prevailing demand and price of final product in the market. Feed price constitutes around 80 percent of the total production cost and therefore is the major component in changing production and marketing scenario of poultry and poultry products. At lesser feed prices, more farmers are willing to enter into the business and most of them would want to place more birds.

In absence of any suitable market information, it becomes hard to assess the demand much well in advance every year emphasizing the importance of availability of suitable market information. The industry should work together to assess the actual market size and must introduce a mechanism where demand patterns of the population can be assessed.

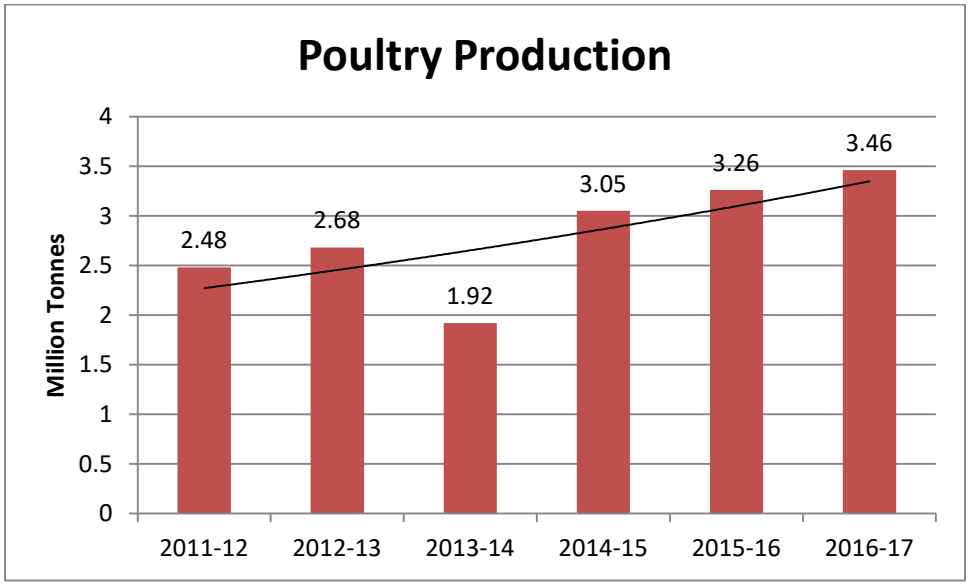
(Credit: GAIN report, 2016)

3.3 Broiler Poultry- Growth Rate

S.No.	Year	Poultry Production (million tons)	% annual poultry production growth rate
1.	2011-12	2.48	13.22%
2.	2012-13	2.68	8.01%
3.	2013-14	1.92	-28.50%
4.	2014-15	3.05	59.16%
5.	2015-16	3.26	6.75%
6.	2016-17	3.46	6.13%

The poultry meat growth is showing fluctuations as the data collection is being standardized and now, commercial poultry and other than commercial poultry data is also gathered.

3.4 Increase in Poultry-Broiler production



India's per capita consumption of broiler meat just 3.35 Kg per person per year as compared to 45 Kg in Brazil, 43 Kg in the United States, 34 Kg in South Africa, 31 Kg in Canada, 10.5 Kg in China, and 6.5 Kg in Indonesia, and 17 Kg for the world. Consumption of broiler meat is increasingly at a faster pace in developing nations, like Brazil, Russia, South Africa, and China.

Small animal holding systems are increasingly becoming unsustainable due to high input costs alongwith meeting environment, food safety regulations etc. and non-remunerative prices for animal products. However increase in the demand for milk, meat and eggs, on the other hand, is creating high expectations from animal husbandry sector to meet the increased demands of the ever growing population. Either there would be emphasis on transformation into an industrialized production system or there alternative integrated farming predominantly comprising of small holders. This type of production is considered to be incredibly important in terms of providing nutrition as well as to have a low carbon foot print ***(World Dairy Summit, 2012)***.

Expansion in the middle class in India is helping to boost the demand for more plentiful and less costly proteins and consequently chicken meat. Because of its huge population of 1.3 billion, even a small rise in average uptake will translate into a large increase in the total volume of chicken eaten. Other factors favoring chicken consumption are: increasing employment levels and incomes; a growing demand for ready-to-eat products;

a rise in the number of quick-service establishments and a general preference for poultry over other meats on a price basis and in some instances cultural and religious reasons. India's chicken meat consumption is around 3 kg /person / year compared to most of the countries at around 10-11 kg/ person/ annum.

Indian Broiler Industry experiences the rapid growth driven by increase in per capita consumption. The impressive growth in the poultry sector in general and broiler industry in particular is the result of technological breakthroughs in breeding, feeding and health, and sizeable investments from the private sector . Broiler industry is growing with the backward integration system providing opportunities for the rural masses with all the technical inputs and assured remunerations. However, these efforts have concentrated on productivity and production by neglecting several front end activities such as wholesaling, processing, retailing and equitable inclusive development. Also, per capita consumption of eggs and chicken in rural India is less than half that in urban areas.

3.5 Nutritive value of poultry meat

Poultry is a good source of protein and vitamins and minerals, such as iron, selenium, zinc, and B vitamins. It is also one of the main sources of vitamin B12. It has several advantages as half of the fat from chicken meat is made up of the desirable monounsaturated fats, and only one-third of the less healthy saturated fats. There are much higher proportions of saturated fats in most cuts of red meat, which also vary considerably in total fat. Chicken meat is therefore seen as a healthy meat. Chicken meat does not contain the trans-fats that contribute to coronary heart disease.

Poultry meat is rich in the omega-3 fats and is an important provider of the essential polyunsaturated fatty acids (PUFAs), especially the omega (n)-3 fatty acids. Scavenging chickens are a particularly good source because of their varied diet. The amounts of these important fatty acids can be increased more easily in chicken meat than in other livestock meats; so too can some trace minerals and vitamins.

Poultry meat can be enriched with several of the important dietary nutrients like Selenium whose deficiency is becoming more widespread in humans because soils are becoming depleted and the foods grown on them are therefore lower in selenium.

3.6 World Players in Broiler Poultry Production

World Chicken meat production: India is 6th in chicken meat production in the world (as per FAO 2014)

S.NO.	Country	Poultry meat production (in Million Tonnes)
1.	U.S.A	20.39
2.	China	18.19
3.	Brazil	13.00
4.	Russian Federation	3.77
5.	Mexico	2.92
6.	India	2.76
	World total	**131.12**

Top 25 Largest Poultry Producers

Sl No.	Company Name	Country	No. of head annually (Million of birds slaughtered)
1	Tyson Foods	United States	1870
2	BRF	Brazil	1664
3	Pilgrim's #	United States	1493
4	JBS Aves Brasil #	Brazil	981
5	Wen's Food Group	China	714
6	Industrias Bachaoco	Mexcio	702
7	New hope Liuhe $	China	700
8	Perdue Farms Inc.	United States	654
9	Koch Foods Inc	United States	624
10	Arab Co. for livestock Development (ACOLIC)	Saudi Arabia	500
11	Sanderson Forms lnc	United States	452
12	LDC	France	370
13	Japfa Ltd	Singapore	368
14	Plukon Food Group	Netherlands	354
15	AIA (Agricola Italiana Alimnetare)	Italy	350
16	PHW Group	Germany	350
17	Wayne Farms LLC	United States	335
18	Mountaire Farms lnc.	United States	322
19	San Miguel Pure Foods @	Philippines	320
20	2 Sisters Food Group	United Kingdom	317
21	Myornivsky Hliboproduct (MHP)	Ukraine	300
22	CP Foods!	Thailand	300
23	Al- Watania	Saudi Arabia	300
24	Foster Farms	United States	294
25	George's lnc	United States	286

Parent Companies: # JBS S.A., $ New Hope Group, *Gruppo Veronesi, @San Miguel Corp., !CP Group

4. SWOT Analysis Poultry Sector- both for eggs and poultry

STRENGTHS	WEAKNESSES
i. Low cost Protein in the country ii. Good growth rate- CAGR is around 5% for eggs and 7% for poultry; The CAGR of GVA for last 5 years for egg and poultry is nearly 13% and 15% respectively. Rising economy & growing emphasis on poultry products. iii. Livestock contributes nearly 12% to rural household monthly Income; Poultry alone can contribute nearly half of the same Coping up with captive production of Soya bean & maize iv. Consolidation of integrated operations would strengthen poultry supply chain	i. Lack of infrastructure facilities for Value addition such as Poultry processing, warehousing, Cold storage, refrigerated vehicles ii. High Maize & Soya price fluctuation leading to availability issues of poultry feed at reasonable prices iii. Small farms, losing out on economies of scale and biosecurity iv. Lack or undefined standards leading to impending cheaper imports
OPPORTUNITIES	**THREATS**
i. 95% Raw/ Wet market – can transform ii. Work on developing alternate breeds and LIT birds for upgraded family poultry iii. Untapped potential for the export & value added chicken products.	i. Avian influenza and other emerging/re-emerging diseases ii. Calamity

5. Growth Drivers and Emerging Trends for eggs and poultry

i. In India, poultry sector growth may be attributed to many factors like rising incomes and a rapidly expanding middle class, together with the emergence of vertically integrated poultry producers that have reduced consumer prices by lowering production and marketing costs.

ii. Integrated production, market transition from live birds to chilled and frozen products, and policies that ensure supplies of competitively priced corn and soyabean are keys to future poultry industry growth in India. Further, disease surveillance, monitoring and control will also decide the fate of this sector.

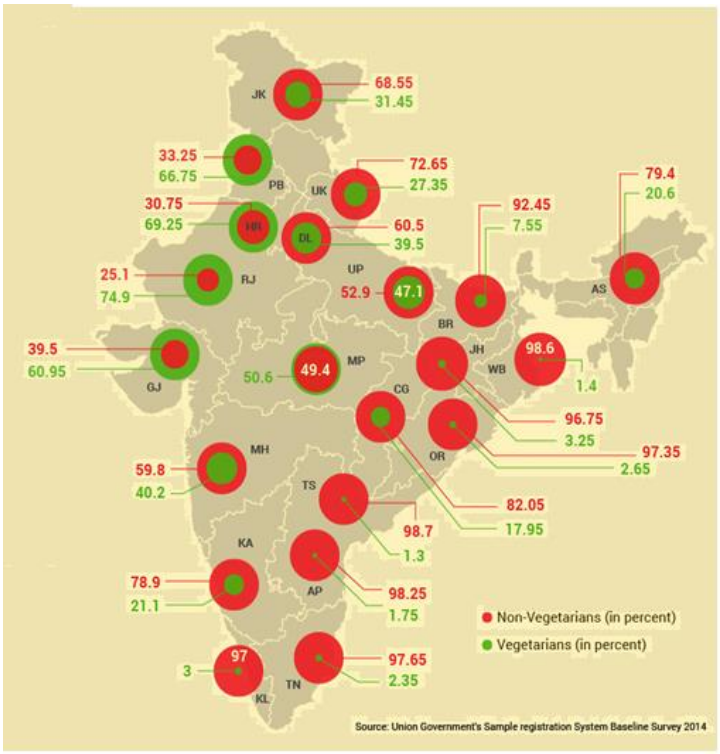
iii. Concurrently, India's unorganised and backyard poultry sector is also one of the potent tool for subsidiary income generation for many landless/ marginal farmers and also provides nutritional security to the rural poor.

iv. These achievements and growth rates are still being sustained despite the ingress of avian influenza which was a severe setback for the industry, showing the resilience of the subsector, perseverance of the private sector and timely intervention by the Government.

v. To assess the future trends we have to review the past planning and present scenario to extrapolate the future. The externalities and variables are often unprecedented and sudden. Both empirical and statistical methods need to be accounted for while making any predictive assumptions. The 'Livestock Revolution 2020' study by Delgado *et. al.* gained such acceptability and popularity because variables and factors like economic crises and increase in consumption of meat products etc. were integrated in the study.

5.1 Food Habits

According to the sample registration system (SRS) baseline survey 2014 released by the registrar general of India, 71 percent of Indians over the age of 15 are non-vegetarian.



One third of the global population resides in India and China. India has currently a population of 1.33 billion which is expected to reach 1.65 billion by 2050 and by 2050, we are expected to surpass China in terms of number of stomach to feed. We cannot sustain as a nation with ever increasing hunger. Thus nutritional security must be addressed with high protein diet which is anyway highly effective than any other dietary component. Thus, we have a high requirement of protein to feed vegetarian and non vegetarian population in each coming year. According to the National Sample Survey Organization, a growth in per capita income is shifting consumer preferences from cereals to fruits, vegetables, dairy and meat.

According to a report by McKinsey and company, the per capita chicken consumption is set to grow from 3.2 to 9.1 Kg by 2030, on account of rapidly changing consumption behavior of individuals. Share of Poultry & other meat in household food consumption is expected to grow from 12 % to 24% by 2030, if the expected growth momentum is harnessed. Disposable income has remained one of the most important factors behind changing consumption patterns. It has been noted that people consume more meat products with an increase in disposable incomes. High income people also tend to consume more of meat products. Besides, the consumption of non-vegetarian food items fluctuates in India with festivals etc. The consumption demand goes down during Shravan months too. Furthermore, Poultry is cheaper than other protein sources, has potential to increase production multi fold and is well poised to manage demand explosion. Fish and lamb meat is available, but highly priced.

5.2 Key Driver: Poultry Breeding

5.2.1 Breeding for Low-Input Technology variety of Chickens

i. One of the most effective ways of improving heat tolerance / temperature modulation is through the incorporation of single genes that reduce or modify feathering, such as those for naked neck *(Na)*, frizzle *(F)* and scaleless *(Sc)*, as well as the autosomal and sex-linked dwarfism genes, which reduce body size.

ii. One of the major breeding strategies in India is based on crossing Aseel breed males with CARI Red hens to produce crossbred CARI Nirbheek hens. Kadaknath is an indigenous breed whose flesh is black is considered not only a delicacy but also of medicinal value and their crosses like CARI-Shyama are also popular. Some of the stocks developed for the purpose are Chabro, Kalinga Brown, Kaveri, Vanaraja, Gramapriya, CARI-Gold, Hitcari, Upcari, Cari-Debendra, Giriraja, Girirani, Krishipriya, Swarnadhara, Nandanam 99 and Rajasri.

iii. New varieties have also up like Srinidhi, Jharsim, Kamrupa and Pratapdhan. A few private sector players like Keggfarms, New Dr. Yashwant Agritech Pvt Ltd, Jalgaon, Indbro Research and Breeding Pvt. Ltd., Shipra Hatcheries, Patna are also producing stocks like Kuroiler, Satpuda-desi, Rainbow Rooster and Shipra in this segment.

5.2.2 High yielding breeding stocks and alternate species

India has the technical know-how in maintaining the high-yielding stocks and some companies have entered into franchisee agreement with pureline/ Grandparent stock providers. Commercial birds with laying capacity of around 320+ in case of layers and broilers with FCR 1.6 are now common in this segment. Some of the stocks available are as follows:

Layers:

i. Purelines: Babcock, CARI Gold layer
ii. Grandparents: Bovans, Hyline, Lohmann

Most of the GP stocks are imported eg. Bovans(Netherlands), Hyline (USA/ Germany) etc. Major market share is of Babcock in layer segment.

Broilers:

i. Purelines: Cobb, Hubchicks, CARIbro, Indbro, Marshall
ii. Grandparents: Ross, Hybro, Hubbard, Lohmann broiler

Most of the GP stocks are imported eg. Ross(UK), Hybro,Hubbard, etc. Major market share is of Cobb in broiler segment.

Alternate Species

- Duck, Turkey, Guinea fowl, farm-bred variety of Japanese Quail, Geese

5.2.3 Using Cutting-edge Technology in Poultry Breeding

i. Biotechnological and immunological tools have to be adopted in combination with breeding methods to develop robust stocks having higher production level like

ii. QTLs through genome wide scan,

iii. microarray analysis for elucidating biological pathways and

iv. identifying the genes involved in particular biological processes, mining of allele for identifying useful alleles affecting phenotype.

v. The genetic modifications like transgenesis, knocking down a gene and RNAi, use of CpG motifs, proteomics, nanotechnology, epigenetics, aptamers, in-ovo approaches and even CRISPR gene editing technology holds immense potential.

vi. Breeds/ strains having high immune competence will be another priority area for research due to adaptability of future stocks to changing farming systems and climate.

vii. For smallholder systems, creep-upgrading or nucleus crossbreeding, community-based breeding programs and strategies to generate sustained replacement stocks in systems where crossbreds are the best option may be explored further.

5.3 Key Driver Poultry Nutrition:

5.3.1. Feed & feed supplements

i. Feed represents the major cost of poultry production, constituting up to 70 percent of the total. Of total feed cost, about 95 percent is used to meet energy and protein requirements, about 3 to 4 percent for major mineral, trace mineral and vitamin requirements, and 1 to 2 percent for various feed additives.

ii. The predominant feed grain used in poultry feeds worldwide is maize. The plant protein source traditionally used for feed manufacture is soybean meal, which is the preferred source for poultry feed. Feed supplements like probiotics, vitamins, minerals, amino acids, mold inhibitors, enzymes, preservatives, coccidiostats, antioxidants etc. are mostly imported.

iii. The total feed requirement of organized poultry sector is nearly 23 MMTs and nearly the whole of it is in compounded form.

5.3.2. Using Cutting-edge technology in poultry nutrition

i. Single-cell protein products such as algae, bacteria and yeasts are now showing promise to meet the demand. Technology has made it feasible to produce transgenic feeds with high protein and amino acid contents (quality protein maize with high lysine & tryptophan), low anti-nutritional factors (Canola meals with low erucic acid, tannins, and glycosinolates) and with high vitamin activity (yellow sorghum with high beta-carotene activity), etc.

ii. The synbiotics (probiotics and prebiotics) have been considered as suitable substitute of antibiotics, which are slowly being phased out, especially the gut-acting ones.

iii. Micro-organism have been selected and optimized by classical biotechnological methods to produce amino acids in fermentation process to produce the limiting amino acids in particular in large quantities for the feed industry.

iv. Production of trace mineral proteinates (organic minerals) utilizing yeast (*Saccharomyces cerevisae*) has become feasible in augmenting availability of various trace minerals including zinc, manganese, chromium, selenium, copper, etc.

v. Using DDGS, or Dried Distillers Grain Solubles which is left over after corn is turned into ethanol and other such alternatives can help alleviate stagnant growth of maize.

5.4 Key Driver: Poultry Health

5.4.1 Veterinary infrastructure, legislative back-up and human resource in India

i. Network of 11,962 Polyclinics / Hospitals, 25,921 Veterinary Dispensaries and around 24,738 Veterinary aid Centers (including Stockmen Centers/ Mobile Dispensaries), 250 Disease Diagnostic Laboratories and 5 Regional Disease Diagnostic Laboratories in States / UTs. Each State Agriculture University / Veterinary College also has disease diagnostic facilities.

ii. Indian Veterinary Research Institute (IVRI) at Izatnagar (Bareilly) and Disease Diagnostic Laboratory of National Dairy Development Board (NDDB) at Anand, National Institute for High Security Animal Diseases (NIHSAD) [BSL-III+] at Bhopal, National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI) at Bengaluru are World Class Laboratories providing disease diagnostic service and play crucial role in assessing epidemiological profile mapping.

iii. 27 veterinary biological units. Of these, 20 are in public sector and 7 in private sector.

iv. National Institute of Animal Health (NIAH) Baghpat is engaged in quality control & monitoring of vaccines and Biologicals.

v. There are a number of ancillary as well as specialized Veterinary Organizations and Institutes, which by employing qualified veterinarians undertake works related to vaccination, treatment and welfare of animals.

vi. Animal Quarantine and Certification Service's objective is to prevent ingress of livestock diseases into India by regulating import of livestock and livestock related products

vii. We have a National Animal Disease Reporting System (NADRS) and we undertake compartmentalization for AI as per OIE guidelines.

5.4.2 Using Cutting-edge technology in poultry health

i. Epidemiology, economics and impact assessment, studying the evolution of pathogenic infectious agents with varying infectivity, virulence, transmissibility and adaptations over time to re-emerge; analysis of social factors responsible for transmission of pathogens, studying genetic resistance factors;

ii. Technology development and improvisation: For example, development of tools for diagnosis, management, control and prophylaxis of diseases; training, infrastructure and information sharing for responding to emerging diseases; combating outbreaks of avian influenza and strengthening Sanitary & Phyto-Sanitary measures to deal with exotic agents; development of effective and convenient biosecurity; establishment of Compartments / Disease Free Zones etc.

iii. Innovation tools that consider effective use and application of new technologies: For example, participatory epidemiological tools, GIS techniques etc. to help effective need-based input and service delivery.

5.5 Key Driver: Poultry processing

5.5.1 Current status of poultry processing & value addition

i. This is still at a very nascent stage but both the quantity and value of the exported processed poultry products have increased during the last few years.
ii. The wet market dominates with processed products accounting for only about 5 -6 percent. In case of eggs the processing is even lesser. Further, value-addition is miniscule.

5.5.2 State of the art Post-harvest technologies

i. Egg processing sector is still in infancy stage in India in spite of commendable production. Installation of about half-a-dozen egg processing units, rapid urbanization and industrialization and proliferating fast food parlours, etc. over the last decade have given some impetus to the growth of egg processing sector.
ii. The country has, thus, begun exporting table eggs, egg powder and frozen egg products on a limited scale in recent years.
iii. At present, hardly 5% of eggs produced are processed into dehydrated/frozen products, primarily for export purpose or used in bakeries and other food and non-food industries.
iv. Low-cost processing technologies have been developed for both cottage and large industries.
v. India is leading in the wet market share compared to other Asian markets. Live broilers are more than 95% of total consumer sales. Small birds 1.8-2.0 kg dressed weights are the norm. Skinless raw poultry products are preferred by many buyers
vi. There is huge preference for freshly slaughtered chicken which is slaughtered in local meat shops or municipal slaughter houses. The reasons behind this preference may be many. Indian consumer is price conscious.
vii. Industry must come forward to create awareness about processed products. This will not only help in the improvement of production lines but will also promote consumption of healthy, safe and hygienic meat products among Indian population.
viii. Chilled poultry is said to be gaining more rapidly than frozen, but both are a very small share of the total market.

5.6 Key Driver: infrastructure & Poultry equipment

5.6.1 Modern poultry equipment in India

i. The demand for modern poultry equipment in India is fuelled by an increase in the size of the poultry farms. Previously poultry farms had production of only a few hundred birds (200-500 chickens) per cycle. However presently, poultry units with fewer than 5,000 birds are an exception with the majority of the farms breeding more than 500,000 birds. Similar is the case with layer poultry farms.

ii. Further with increasing demand for quality poultry products, the adoption of better machinery to ensure quality has become very important to the Indian poultry units. Barring a few items like egg graders, poultry processing equipment etc. most of the equipment are available/ produced in the country. India is almost self-sufficient in indigenous production of most of the basic equipment like hatchers/ incubators, feeders, poultry houses, even environmentally controlled & pre-fabricated houses etc.

5.6.2 Some Modern Farm house innovations

i. Automated public access control system with automatic showers, concrete flooring between houses to reduce vegetation, pad cooling with easy cleaning and disinfecting even when birds are present
ii. Chain-feeder technology promotes efficient feed distribution by accurately measuring feed and providing uniform nutrition for every bird.
iii. Fluid LED light level control, flicker free lighting system, with multiple light level settings.
iv. Air Quality Monitor is designed to sample the air within the building every two minutes, and display the following air quality information CO_2 / Ammonia / Humidity / Temperature.
v. Water system designs to keep water uncontaminated by preventing dirt, faeces and other pollutants from entering the automatic drinking system.
vi. Innovative waste management methods: Manure belt systems in egg production. Pelletization of dried manure further stabilizes the material, reducing dust. Some countries are using Black soldier fly (BSF) larvae are an alternative system for manure treatment.
vii. Remote Access Livestock Monitoring: Our Livestock Monitoring System allows poultry farmers the ability to view their broiler sheds internally from their smartphones, tablets and personal computers, in great detail they can view feed and drinker lines, hoppers, bird spread, all without the need to enter the houses as regularly as they normally would.

5.7 Key Driver: Regulatory Framework

5.7.1. Relevant Acts promulgated by DADF, GoI

i. The Prevention & Control of Infectious and Contagious Disease in Animals Act, 2009 to regulate disease transmission from one state to other with the objectives:
ii. Indian Veterinary Council Act, 1984 regulates Veterinary Practice and Education
iii. Importation of Livestock and Livestock products are regulated by the Livestock Importation Act, 1898

5.7.2 Other Acts, Rules & Regulation

i. Food Safety & Standards Act, 2006
ii. Quality Control of Food Products of Animal Origin (Export-oriented)
iii. Residue Monitoring Plan (export-oriented)
iv. Agreement on Sanitary and Phyto-sanitary Measures (Global Trade-Oriented)
v. Bureau of Indian Standards (BIS) & ISO 22000:2005
vi. APMC model Act, 2017
vii. The Prevention of Cruelty to Animals Act, 1960
viii. The Export (Quality Control and Inspection) ACT, 1963

5.8. Key Drivers: Exports

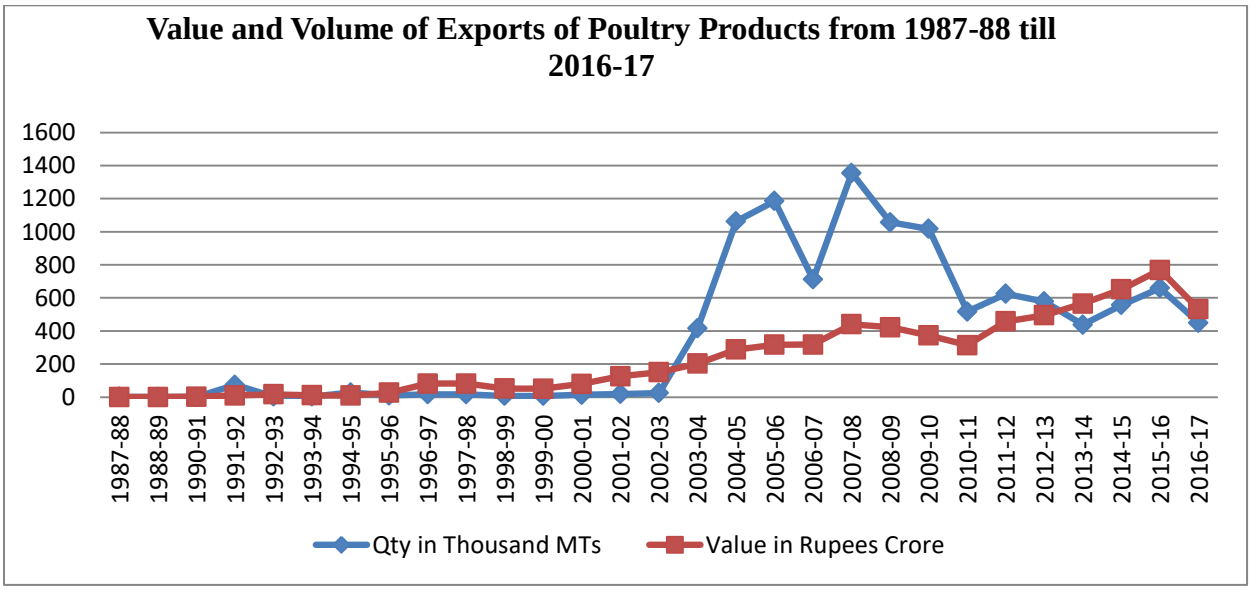
5.8.1. Export of Egg and Poultry / products

i. Major items exported are table eggs, egg powder, hatching eggs, SPF eggs, live birds, and poultry meat. The current export value of Poultry Products is to the tune of around Rs. 532 crore in 2016-17. The strength of exports mainly lies in the competitive cost of production, proximity to international markets and successful regaining of freedom from Highly Pathogenic Avian Influenza (HPAI).

ii. Although some efforts have been made to increase Poultry exports from India, the trade is very small in comparison to the global trade. At present the exports are mainly in table eggs, hatching eggs, frozen eggs, egg powder, and to a small extent for live poultry.

iii. Our major markets are Middle East and Asia. Egg powder is also sent to Japan and in EU. Now we have extended exports to many African countries. We have infrastructure to handle egg exports and we also have primary packing materials and the full logistics cold chain to deliver top quality fresh eggs to all our customers.

5.8.2 Some basic analysis of exports of Poultry Products:



Interestingly, it is noted that though the volume of exports was commensurate with the value of exports, it is desirable to have low-volume high-value products to have more

profitability. We were exporting more raw material than processed product, which explains that either we have less processing capacity or value-addition was negligible.

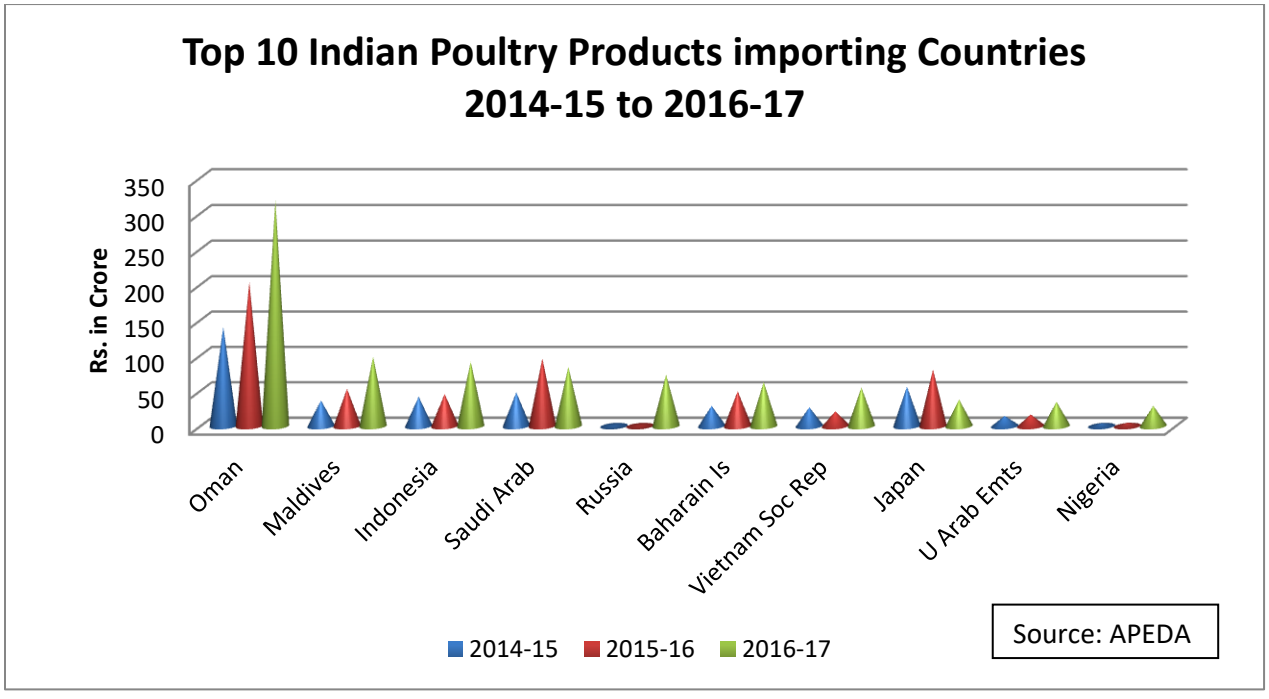
5.8.3. Scope with value added products

i. Whole egg powder, brined and pickled eggs, egg roll, egg strips, egg soufflé, egg cutlet, egg crepe and waffles, albumen flakes/ rings, yolk powder, natural yellow pigment from yolk, lecithin, conalbumin and avidin from eggs used in pharmaceutical industry.

ii. Lysozyme, di-calcium phosphate from shell and shell membranes, cured and smoked chicken, chicken patties, intermediate moisture diced products with long shelf-life, battered and breaded enrobed products, chicken chunkalona, chicken soup, chicken essence, nuggets, kababs, meat spreads, marinated breast fillet, hot-dogs, frankfurters etc.

iii. Giblets, liver, and liver extract, deboned meat for airline industry, chicken gizzard pickle, Feather meal, poultry byproduct meal from inedible portions as a source for poultry feed etc.

iv. High demand for various forms of egg powder and Hatching eggs including Specific Pathogen-Free (SPF) Eggs



This illustrates that exports are not equitable across the globe and are concentrated in certain clusters like Middle-East, South-East and immediate neighbors but as stated earlier, the expansion is taking place across newer territories like Africa.

5.9 Key Driver: Poultry- Skill Development

5.9.1. Skilled manpower requirement

i. India is the third largest egg and fifth largest poultry producer in the world. The structure of India's poultry industry varies from region to region where both organized and traditional systems of poultry farming are followed.

ii. While independent and relatively small-scale producers account for the bulk of production, integrated large-scale producers also account for a share of output in some regions.

iii. Eighty percent of the employment is generated directly by the farms, 20 percent is generated in the provision of feed, pharmaceuticals, equipment and other services required by the poultry sector. Additionally, there may be a similar number of people who are engaged in marketing and other channels servicing the sector.

iv. Rural poultry farming is of great importance in a country like India as it not only generates income levels, employment opportunities to small farmers including women but also brings about desired socio-economic change in rural areas which are vital for rural development and rural prosperity.

5.9.2. Qualification Packs & Curriculum for Poultry Skill Development Activities

i. Broiler Farm Supervisor
ii. Broiler Farm Worker
iii. Chick Grading Technician
iv. Hatchery In charge-Poultry
v. Layer Farm Worker
vi. Poultry Farm Manager
vii. Poultry Feed, Food Safety & Labelling Supervisor
viii. Poultry Shed Designer
ix. Setting Operator
x. Small Poultry Farmer

6. Strategy & Action Plan -2022

6.1 Egg Production- Strategy & Action Plan 2022

6.1.1 Objectives of increasing egg production:

a) To enable doubling of farmers income
b) To fulfill the objective of protein enriched food requirement of the growing population of the country and prevent malnutrition in one of the highest malnourished children population in the world
c) To achieve 2% of world egg market trade through exports

6.1.2 Gap Analysis: Egg Production

As per ICAR data and Basic Animal Husbandry Statistics, following are key targets:

Item	Year	Target 2020	CAGR
Egg production	83 billion (2015-16)	106 billion	5%
Per capita egg availability	63 eggs / annum (2014-15)	81 eggs per annum	4.3%
Total poultry population	729.21 million (2012)	1290.45 million	7.4%

Demand and Supply Projections for Eggs show the following:

indicator	Unit	2015-16	2022-23	Assumption	Required Production 2022-23	Surplus(+)/ Deficit (-) Over 2015-16
Egg production	Billion Nos	83	133	Taking 7% CAGR	121 billion	
per capita Egg availability	per capita	66	93	Around 180 eggs are recommended per person in a year by National Institute of Nutrition. We may take 5% CAGR for increase in demand as well (CAGR for last 15 years was 3.93% with increase from 37 to 66 numbers).	93 eggs x 130 Cr (human popn of the country not considering eggitarians separately)	2022-23: +**15 billion**

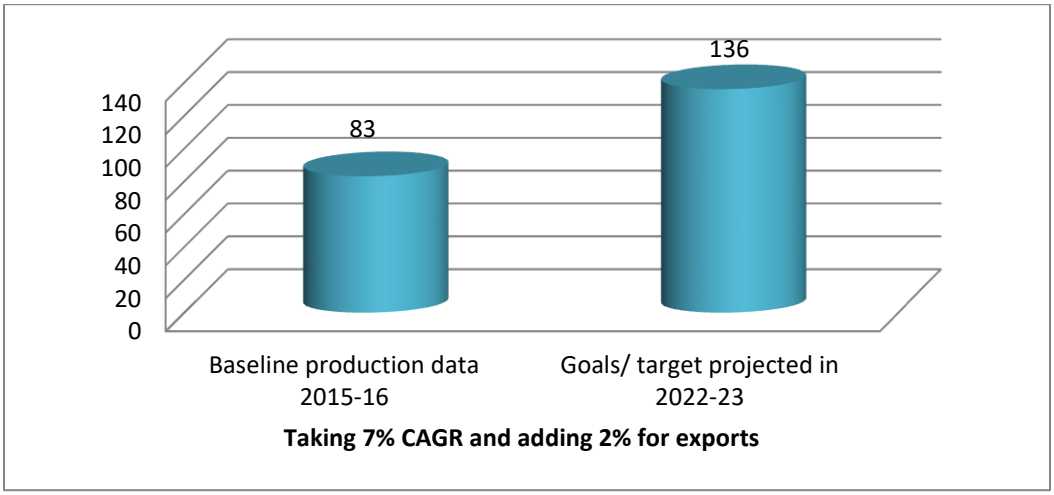
Egg Exports	Billion Nos	nearly 0.6 billion	3 billion (2% of world trade share)		-	-

By 2050, it is expected that the population in India would increase by 34% and to fulfill the dietary recommended levels of the livestock products by Indian Council for Medical Research (ICMR) for a population of 1.7 billion people, the livestock sector should produce 306 billion eggs per annum. From the current level of production, the eggs have to increase by 4.7 folds respectively. Fulfilling the feed demand for this huge livestock from same resource base of land and water is going to be a huge challenge ***(NIANP, 2013).***

As per nutritional requirement half an egg a day is optimal for an average healthy person, which translates into 180 eggs/person/annum and present availability is around 69 only. Therefore, there is a huge gap in demand and supply. However, the limiting factor for growth is the prohibitive prices of important feed ingredients for the hen, namely, maize and soya. Therefore, we propose doubling of egg production assuming that adequate feed would be available at reasonable price.

Egg production is currently having a 5-6% CAGR. However, with newer scientific advances like 500 eggs in 100 weeks compared to present 320+ eggs in 72 weeks we can expect an achievable substantial increase in egg production by 2022-23, provided suitable policy support is provided to poultry industry. Government can limit its fiscal intervention to rural backyard poultry which is about 29% of total egg production.

6.1.3 Egg Production Targets 2022-23



6.1.4. Requirements for Eggs Production Targets 2022-23

Parameter	Baseline data (2015-16)	Required by 2022
Eggs	83 billion	136 billion
Commercial Layers	375 million	550 million (additional 175 million layers required over base period)
Yield- eggs/ annum (taking across India for all varieties)	220	250 (Taking nearly 15% increase in yield)
Total Feed Required	11 MMT (annualized @ 45 Kg in a laying cycle)	15 MMT (also factoring 7% improvement in FCR with 42 kg per bird in a laying cycle)
Feed Ingredient- Maize @ 35%	4 MMT	5.25 MMT
Feed Ingredient- Soya @ 15%	1.7 MMT	2.25 MMT
Vaccine dosages required (8 /bird)	3000 dosages	4400 dosages
Skilled persons requirement (total for poultry sector)	1.85 lakh	5.5 lakh
Entrepreneurship Development & Employment Generation (total for poultry sector)	1,630	8,000
Egg Processing Capacity	12,000 Tonnes annually	15,500 Tonnes annually
Exports- major Egg products	Rs. 474 Crore	Rs. 1,500 Crore @ about 10% CAGR
Requirement of Investment for operational cost of additional 175 million layers	-	Recurring Cost – Rs. 4,000 Crore (@ Rs. 225/ bird every year)

6.2 Poultry Production- Strategy & Action Plan 2022

6.2.1. Objectives of increasing poultry production:

d) To enable doubling of farmers income
e) To fulfill the objective of protein enriched food requirement of the growing population of the country and prevent malnutrition in one of the highest malnourished children population in the world
f) To achieve 2% of world egg market trade through exports

6.2.2. Gap Analysis: Poultry Production

As per ICAR data and Basic Animal Husbandry Statistics, following are the key targets:

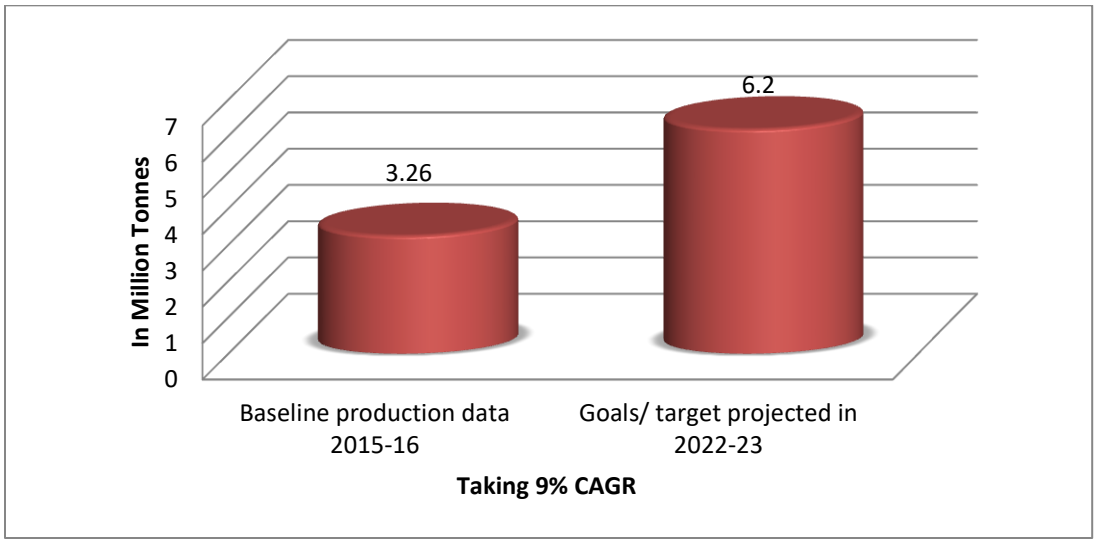
Indicators	Year	2020	CAGR
Poultry Meat production	3.3 million tonnes (2015-16)	4.20 million tonnes	5%
Per capita meat availability	2.22 Kg/annum (2014-15)	3.21 kg/annum	6.3%
Total poultry population	729.21 million (2012)	1290.45 million	7.4%

Another exercise on Demand and Supply Projections for Poultry show the following:

indicator	Unit	2015-16	2022-23	Remarks	Required Production in million tonnes	Gap in million tonnes
Poultry Meat production	Million tonnes	3.26	6.0	Taking 9% CAGR		
Per Capita Poultry Meat availability	In Kg per Capita	3.10	5.00	We may take 7% CAGR (CAGR for last 15 year data available from FAOSTAT 1998-2013 is 6.5% with increase from 0.73 Kg to 1.88 Kg)	6.5 MT (5 kg x 130 Cr entire human popn of the country not considering non-vegetarians separately)	2022-23: **0.50**

Exports of Poultry meat	Thousand Tonnes	5.5	250 (2% of world share)	-	-	-

6.2.2. Poultry Production Targets 2022-23



6.2.3. Requirements for Poultry Production Targets 2022-23

Parameter	Baseline data (2015-16)	Required by 2022
Poultry (Chicken meat)	3.26 MT	6.20 MT
Commercial Broilers	3326 million	5167 million (additional 1840 million broilers required over base period- additional 31-32 million chick placement each week)
Carcass cutting yield in Kg (taking across India for all varieties)	0.98 (70% of carcass yield)	1.2 (Taking nearly 15% increase in carcass yield & 75% carcass cutting yield)
Total Feed Required	12 MMT (@ 3.5 Kg per bird: 1.7 FCR)	15.50 MMT (also factoring 7% improvement in FCR i.e. 1.6 with 3 kg per bird)
Feed Ingredient- Maize @ 40%	4.8 MMT	6.2 MMT
Feed Ingredient- Soya @ 20%	2.4 MMT	3.1 MMT
Vaccine dosages required (4/ bird)	13300 dosages	20668 dosages
Skilled persons requirement (total for poultry sector)	1.85 lakh	5.5 lakh
Entrepreneurship Development & Employment Generation (Total for poultry sector)	1,630	8,000
Poultry Processing Capacity (Bird per hour in organized, small and unorganized sector)	86,500 B.P.H	1,40,000 B.P.H. (@ 10% CAGR)
Exports- major poultry products	Rs. 30 Crore	Rs. 1360 Crore
Investment required on operating cost for additional broilers	-	Operational Cost – Rs. 18,400 Crore (@ Rs. 100/ bird)

6.3 Strategy for Unorganized Sector

6.3.1 Transform Backyard Poultry to commercial economic model: Innovative Poultry Productivity Project (IPPP)

Already Private Industry and NABARD encourage economically viable / bankable projects, wherein the scale is much higher and so, beyond the reach of small and marginal/ BPL farmers. The goal is to bring these landless, small and marginal farmers into mainstream of economic activity.

Presently, we have a component under National Livestock Mission (NLM), namely, Rural Backyard Poultry Development (RBPD) which covers beneficiaries from BPL families to enable them to gain supplementary income and nutritional support. Under RBPD, the chicks/ birds suitable for rearing in the backyard are reared in the mother units upto 4 weeks and are further distributed to the BPL beneficiaries in atleast two batches.

It is proposed to move incrementally from this subsistence model of backyard poultry farming to a scaled-up entrepreneur model, upscaling incrementally upto 400-1,000 birds. In case of Low-input technology (LIT) birds, these would help in transition and upscaling later to 1,000-2,000 birds for larger commercial scale Poultry farming. Similarly, it is also envisaged to introduce smaller scale broilers in rural households for later scaling up to commercial scale and have Poultry as a mainstream source of income. Similarly, small scale broiler farming is envisaged to be introduced in cluster approach.

An Innovative Poultry Productivity Project (IPPP) has already been launched under NLM and details are at **Annexure III and IV(a) & IV (b).**

Pilot Intervention	Activity	Milestones (2017-18 to 2021-22)
Innovative Poultry Productivity Project (IPPP) to be implemented on pilot basis in 15 States	To encourage Broiler Rearing by giving 600 broiler chicks in 4 batches	Distribution over four years of 72 lakh broilers in 4 batches of 150 birds each year at intervals of 3 months; This will produce 123 lakh kg meat valued at Rs. 12312 lakh and benefit around 12,000 beneficiaries. Later it will be upscaled to about 50,000 landless/ marginal farmers.
	400 Low-Input Technology (LIT) birds in 2 batches with a gap of one and a half years	Distribution over 2 years of LIT birds - 200 in first year and then after 18 months to be repeated twice i.e. over 4 years 48 lakh LIT chicks to be distributed to 12,000 beneficiaries; This will produce 61.20 lakh kg meat and 2880 lakh eggs valued at Rs. 26,280 lakh. Later it will be upscaled to about 50,000 landless/ marginal farmers.

An indicative list of LIT birds suitable for States is at **Annexure V**.

6.4 Strategy for Transitional Sector- Small/ Marginal/ Entrepreneurial segment

Boost Entrepreneurship Development and Employment Generation component and allow **'Agripreneurship'**. This will also be ensured in clustered manner with unorganized sector where the IPPP, RKVY and State Programs will all be focused in **clustered** manner to enable **shared services** and attain economies of scale.

Funds released and units assisted under Entrepreneurship Development & Employment Generation - Poultry Venture Capital Fund -Component under National Livestock Mission- 2014-15 to 2016-17 is at **Annexure-VI.**

6.5 Strategy for Organized Sector

i. An interest Subvention scheme of upto 4% will be proposed with a corpus of around Rs. 400 crores initially for small and medium scale entrepreneurs / FPOs, Women SHGs etc.

ii. **Processing** would be encouraged as presently only 6% of the poultry products is processed. An MoU with MoFPI is on the anvil for entire livestock sector. Block/ District level cold storage needs to be established and cold chain needs to be developed.

iii. Encourage **brand development** for certain indigenous poultry like Kadaknath or other birds with some specific attributes (The list of indigenous breeds of Chicken may be seen at **Annexure VII**). Low cholesterol and Omega-3 rich designer eggs are already in vogue in private sector. Further development of value-added novel egg and functional poultry meat products with longer shelf-life is contemplated. Grading and encouraging egg marketing by weight are also areas to be seen.

iv. Intensify **education and awareness** about nutritive value of eggs and poultry through various platforms like World Egg Day etc.

v. Intensify **skill development** in the poultry sector and reduce the gap required (The gaps and requirement of skilled resource persons for various poultry activities is at **Annexure VIII**)

vi. Develop **Marketing Intelligence** domestically and internationally in collaboration with ICAR and other Department/ agencies.

vii. Poultry Stock Requirement: Nearly 460 lakh parent stock and 9 lakh Grand Parent stocks may be required, for which imports are needed to be facilitated. (Requirement for stocks is indicated at **Annexure IX**)

viii. Formulating **Package of Good Practices** (GAPs/ GFPs/ GMPs) where Central Poultry Development Organizations alongwith ICAR can help devising region or even State-specific practices.

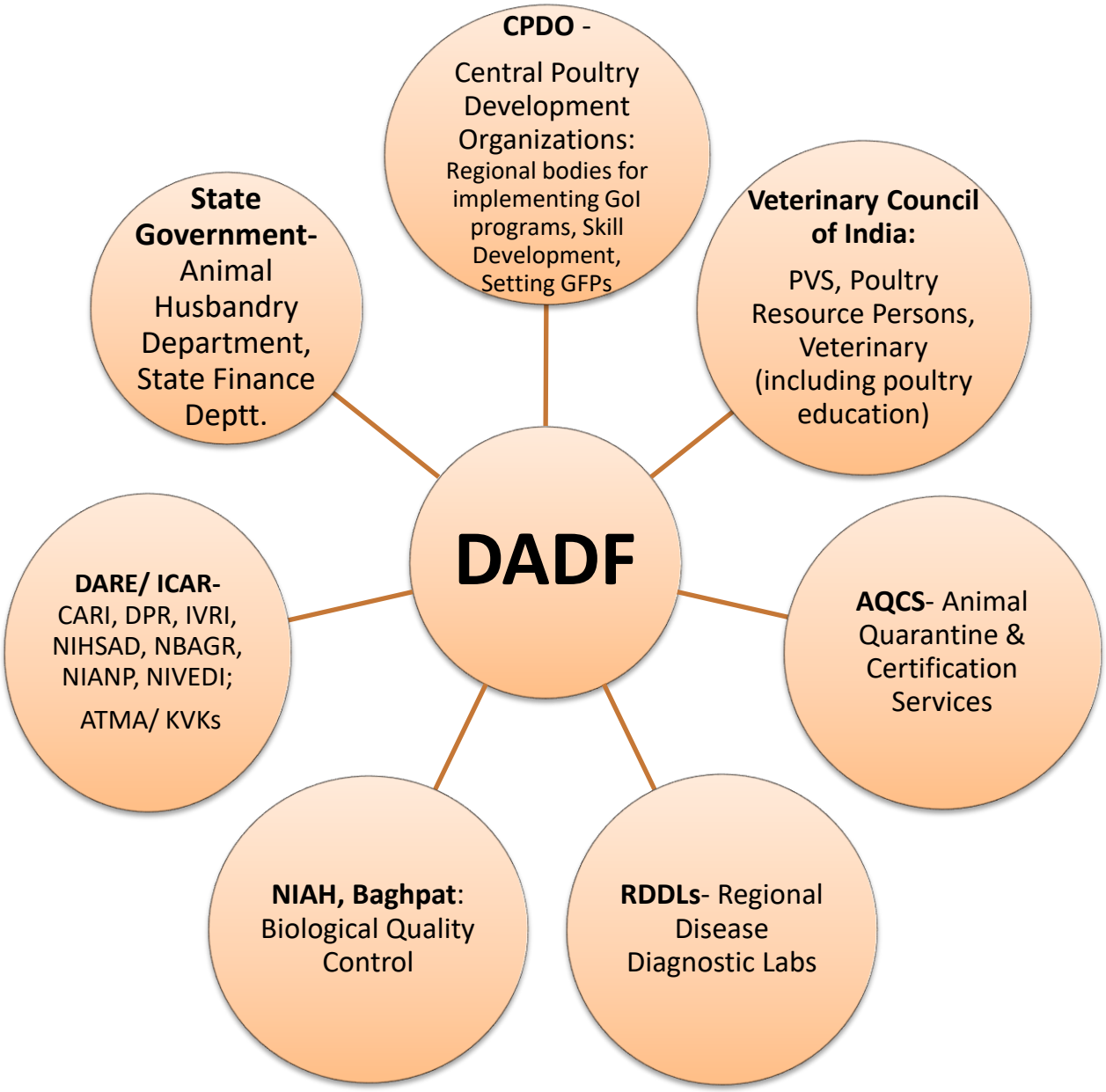
ix. Facilitate **Industry- Academia partnership** so as to enable transfer of technology at the grassroots level. A regular interface with ICAR and Universities is ensured through various technical Committees. An Industry- DADF- State Government Interface Committee is also constituted.

x. For exports dovetailing of efforts with APEDA and also by DADF collaboration with International Egg Commission etc. as well as Inter-Country Buyer-Seller Meets, International Exhibitions etc. will be encouraged (A brief review of export status is at **Annexure X**).

These measures can help sustain GVA from eggs and poultry at 10% CAGR. (The projection of GVA at constant prices is at **Annexure XI**).

7. Coordination & Convergence

7.1. Nodal Central & State Government Agencies



7.2 Other Departments/ Agencies

Annexure-I

Total Poultry Population, share of backyard population and egg production from desi birds

S#	States	Total Poultry Population	Share of Poultry popn	Total Birds in Backyard	% share of Backyard Poultry	House-holds having Backyard Poultry	Avg birds in Backyard per House-holds	Egg Production from Desi / LIT Birds	Yield from Desi Birds
		In million	in %	in million	%	in million	%	in Million	Avg. Annual yield/ bird (eggs in numbers)
1	Andaman & N Is	1.17	0.16	0.72	0.31	0.29	2	52.86	116.44
2	Andhra Pradesh	161.33	22.10	29.08	12.59	3.78	8	645.96	66
3	Arunachal Pradesh	2.25	0.31	2.22	0.96	0.14	16	27.77	132
4	Assam	27.22	3.73	26.19	11.34	2.17	12	330.49	106
5	Bihar	12.75	1.75	7.62	3.30	1.43	5	662.49	147
6	Chandigarh	0.19	0.03	0.002	0.00	0.01	0	0.35	120
7	Chhattisgarh	23.1	3.16	6.29	2.72	0.97	6	159.66	97
8	Dadra& NH	0.09	0.01	0.086	0.04	0.12	1	7.30	123
9	Daman& Diu	0.03	0.00	0.029	0.01	0.01	4	0.00	0
10	Goa	0.29	0.04	0.14	0.06	0.02	7	2.31	93
11	Gujarat	15.1	2.07	4.88	2.11	0.83	6	207.82	131
12	Haryana	42.9	5.88	0.028	0.01	0.60	0	57.07	131

(BAHS, 2016 and 18th Livestock Census data)

Annexure-I (contd.)

Total Poultry Population, share of backyard population and egg production from desi birds

13	Himachal Pradesh	1.2	0.16	0.25	0.11	0.03	8	36.96	261
14	Jammu & Kashmir	8.28	1.13	3.3	1.43	0.39	8	344.45	180
15	Jharkhand	13.56	1.86	11.02	4.77	1.45	8	353.43	85
16	Karnataka	53.44	7.32	9.7	4.20	1.09	9	622.37	107
17	Kerala	24.29	3.33	10.62	4.60	1.95	5	872.02	169
18	Lakshadweep	0.17	0.02	0.14	0.06	0.01	20	1.61	69
19	Madhya Pradesh	11.9	1.63	6.46	2.80	0.81	8	311.33	112
20	Maharashtra	77.79	10.66	17.51	7.58	2.02	9	1062.11	125
21	Manipur	2.49	0.34	2.43	1.05	0.18	14	35.30	92
22	Meghalaya	3.4	0.47	3.26	1.41	0.22	15	85.50	104
23	Mizoram	1.28	0.18	1.27	0.55	0.07	18	26.16	83
24	Nagaland	2.18	0.30	2.13	0.92	0.18	12	11.29	91
25	NCT of Delhi	0.05	0.01	0.04	0.02	0.01	4	0.00	0
26	Odisha	19.89	2.72	12.25	5.30	1.67	7	220.29	64
27	Puduchhery	0.29	0.04	0.14	0.06	0.02	7	5.82	98
28	Punjab	16.79	2.30	0.76	0.33	0.08	10	51.24	216
29	Rajasthan	8.02	1.10	3.04	1.32	0.46	7	307.65	157
30	Sikkim	0.46	0.06	0.44	0.19	0.04	11	0.00	0
31	Tamil Nadu	117.35	16.08	13.92	6.03	3.19	4	492.04	95
32	Telangana (included in AP data wherever not indicated)		0.00	13.52	5.85			686.51	71
33	Tripura	4.28	0.59	3.28	1.42	0.36	9	85.60	80
34	Uttar Pradesh	18.67	2.56	8.12	3.52	1.01	8	534.47	145
35	Uttarakhand	4.64	0.64	0.8	0.35	0.06	13	21.94	111
36	West Bengal	52.84	7.24	29.16	12.62	5.71	5	2263.44	106
Total / Average		**730**		**231**		**31.37**	7	**10585.59**	107

Annexure-II

Total Egg production and yield

S#	State/UT	Current Chicken Egg Production	Av. no. of desi layers (as per 2014-15)	Av. Yield of desi birds	Prodn from desi birds	Av. no. of improved layers (as per 2014-15)	Av. Yield of improved birds	Prodn from improved variety
		(in lakh no.s)	(in '000)	(in no.s/ year)	(in lakh no.s)	(in '000)	(in no.s/ year)	(in lakh no.s)
1	Andhra pradesh	130379	9783	66	6460	44775	277	123919
2	Arunachal Pradesh	417	210	132	278	54	256	140
3	Assam	3466	3116	106	3305	93	172	161
4	Bihar	9341	4520	147	6625	984	276	2716
5	Chhattisgarh	14602	1650	97	1597	5507	236	13006
6	Goa	75	25	93	23	31	165	51
7	Gujarat	16565	1580	131	2078	4757	305	14487
8	Haryana	45790	435	131	571	17959	252	45219
9	Hinachal Pradesh	1084	142	261	370	246	290	715
10	Jammu & Kashmir	4907	1914	180	3445	677	216	1462
11	Jharkhand	4350	4160	85	3534	348	234	815
12	Karnataka	43968	5815	107	6224	14942	253	37745
13	Kerala	23237	5163	169	8720	5751	252	14517

(BAHS, 2016)

Annexure-II contd

Total Egg production and yield

S.No.	State/UT	Current Chicken Egg Production (in lakh no.s)	Av. no. of desi layers (as per 2014-15) (in '000)	Av. Yield of desi birds (in no.s/ year)	Prodn from desi birds (in lakh no.s)	Av. no. of improved layers (as per 2014-15) (in '000)	Av. Yield of improved birds (in no.s/ year)	Prodn from improved variety (in lakh no.s)
14	Madhya Pradesh	4135	2775	112.19	3113	463	221	1022
15	Maharashtra	50792	8522	125	10621	14214	283	40171
16	Manipur	868	383	92	353	277	186	515
17	Meghalaya	1031	825	104	855	82	214	176
18	Mizoram	377	313	83	262	57	205	116
19	Nagaland	353	125	91	113	136	177	240
20	Odisha	2565	3442	64	2203	297	122	362
21	Punjab	42642	237	216	512	14810	284	42130
22	Rajasthan	13202	1963	157	3076	3574	283	10126
23	Sikkim	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	Tamil Nadu	159253	5198	95	4920	53659	288	154333
25	Telangana	106101	9736	71	6865	33472	296	99236
26	Tripura	1531	1069	80	856	444	152	675
27	Uttar Pradesh	9934	3675	145	5345	2301	199	4590
28	Uttarakhand	721	197	111	219	239	210	502
29	West Bengal	34746	21370	106	22634	5214	232	12111
30	A& N Islands	766	454	116	529	156	152	238

Annexure-II (contd.)

Total Egg production and yield

S#	State/UT	Current Chicken Egg Production	Av. no. of desi layers (as per 2014-15)	Av. Yield of desi birds	Prodn from desi birds	Av. no. of improved layers (as per 2014-15)	Av. Yield of improved birds	Prodn from improved variety
		(in lakh no.s)	(in thousand)	(in no.s/ year)	(in lakh no.s)	(in thousand)	(in no.s/ year)	(in lakh no.s)
31	Chandigarh	169	3	120	3	72	230	166
32	D&N Haveli	73	60	123	73	0	0	0
33	Daman & Diu	19	0	0	0	13	148	19
34	Delhi	0	0	0	0	0	0	0
35	Lakshadweep	114	23	69	16	38	255	98
36	Puducherry	113	59	98	58	28	194	55
	All India	**727687**	98941	108	105856	225670	209	621832

Annexure-III

INNOVATIVE POULTRY PRODUCTIVITY PROJECT (IPPP) UNDER NLM

To encourage poultry entrepreneurship in rural educated and unemployed youth the following model are proposed to be introduced under Innovative Project of 'Productivity Enhancement' component of Sub-Mission on Livestock Development under NLM in 15 identified Poultry Potential States viz.

a) 400 low-input technology (LIT) birds (dual purpose : egg and meat : 50:50 ratio of hens and cock) in 2 batches with a gap of one and a half years (**Batches of 200 each**).

b) To encourage Broiler Rearing by giving 600 broiler chicks in 4 batches (**150 each every 2-3 months in a year- 4 batches**).

S#	Parameters	LIT birds	Broilers
1.	Breeds selected for improvement	**For meat and eggs both**	**For meat only**
2.	Name of the States considered	Andhra Pradesh, Bihar, Jharkhand, Rajasthan, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, Telangana, Uttar Pradesh, West Bengal, Assam, Himachal Pradesh, and Uttarakhand,	
3.	Area to be covered	Tentatively 2 blocks in 2 districts will be covered in each year.	
4.	Total farmers to be benefitted	12,000	12,000
5.	Major items to be provided to beneficiary/ mother units as subsidy	1. Cost of 4-week old reared chicks of LIT variety @ Rs. 50/- (for 80,000 birds each year) 2. Cost of night shelter/ initial feeding of newly-arrived chicks/ other miscellaneous and contingent requirement- once to each beneficiary @ Rs. 15,000 (i.e. in first and third year) 3. Mother Units-4 (optional)	1. Cost of construction of shed (1 sq.ft/bird for 150 birds) @ Rs.200/sq.ft = Rs. 30,000 for each beneficiary 2. Equipment 6 Feeder & 3 Waterer @ 150/ feeder and drinker= Rs. 1,350 for each beneficiary 3. Miscellaneous= Rs. 150 for each beneficiary 4. Cost of Day old chick @ Rs 25/DOC (for 600 broiler chicks)= Rs. 15,000 for each beneficiary 5. Cost of Feeding the birds upto 6 weeks – (roughly 3.5 kg @ Rs.30/Kg)= Rs. 63,000 for each beneficiary 6. Miscellaneous cost (Litter, medicine etc.) Rs.5/- per bird=3,000 for each beneficiary
6.	Total chicks to be distributed	0.8 lakh in each State, 12 lakh in 15 States each year (and in 4 years total 48 lakh)	1.2 lakh in each State, 18 lakh in 15 States each year (and in 4 years total 72 lakh)
7.	Financial implication in 4 years w.r.t. 15 States	Total-Rs. 13500 lakh Central share-Rs. 8910 lakh State share- Rs. 4590 lakh	Total-Rs. 4200 lakh Central share-Rs. 2772 lakh State share- Rs. 1428 lakh
8.	Financial implication in first year	Total-Rs. 1500 lakh Central share-Rs. 990 lakh State share- Rs. 510 lakh	Total-Rs. 3375 lakh Central share-Rs. 2228 lakh State share- Rs. 1147 lakh
9.	Financial implication for each State	**60:40** Total-Rs. 280 lakh Central share-Rs. 168 lakh State share- Rs. 112 lakh **90:10** Total-Rs. 280 lakh Central share-Rs. 252 lakh State share- Rs. 28 lakh	**60:40** Total-Rs. 900 lakh Central share-Rs. 540 lakh State share- Rs. 360 lakh **90:10** Total-Rs. 900 lakh Central share-Rs. 810 lakh State share- Rs. 90 lakh
10.	Total production of eggs (in Lakh nos)	2880 lakh	NA
11.	Total production of poultry meat (in lakh Kgs)	61.20	123
12.	Price realization eggs	Rs. 20160 lakh	NA
13.	Price realization meat	Rs. 6120 lakh	Rs. 12312 lakh

Annexure-IV(a)

Poultry Action Plan in selected 15 States - 400 LIT birds in 2 batches of 200 each 1.5 year for 2 years

S.N.	States	No. of beneficiaries to be covered with upto 400 LIT birds in 2 years	Distribution over 2 years of LIT birds - 200 in first year and then after 18 months		Distribution over 2 years of LIT birds - 200 in first year and then after 18 months		Total	Financial implication four years					Price realisation from Eggs	Price realisation from Poultry Meat	Price realisation from Poultry Meat of spent hens	Central Share	Financial implication for Center	Projected State Share
		400 beneficiaries in Year I & II and 400 beneficiaries in Year III & IV (in numbers)	Year I batch of 200 each (in Nos)	Year II batch of 200 each (in Nos)	Year III batch of 200 each (in Nos)	Year IV batch of 200 each (in Nos)		FY 2017 -18 Rs. in lakh	FY 2018 -19 Rs. in lakh	FY 2019 -20 Rs. in lakh	FY 2020 -21 Rs. in lakh	Total Rs. in lakh	@ Rs.7 per egg (Rs. In lakh)	@ Rs.200 per kg (Rs. In lakh)	@ Rs.100 per kg (Rs. In lakh)	(in %)	Rs. In lakh	Rs. In lakh
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
1	**Andhra Pradesh**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
2	**Bihar**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
3	**Himachal Pradesh**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	90	252.00	28.00
4	**Jharkhand**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
5	**Karnataka**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
6	**Madhya Pradesh**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
7	**Maharashtra**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
8	**Odisha**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
9	**Tamil Nadu**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
10	**Telangana**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
11	**Uttarakhand**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	90	252.00	28.00
12	**Uttar Pradesh**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
13	**West Bengal**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
14	**Assam**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	90	252.00	28.00
15	**Rajasthan**	800	80000	80000	80000	80000	320000	100	40	100	40	280	1344	216	192	60	168.00	112.00
Total / Average		**12000**	**1200000**	**1200000**	**1200000**	**1200000**	**4800000**	**1500**	**600**	**1500**	**600**	**4200**	**20160**	**3240**	**2880**		**2772.00**	**1428.00**

Another Rs. 120 lakh may be required for Mother units if some States opts for setting up the same through entrepreneurs (taking around 8 mother units per State)

Annexure-IV(b)

Poultry Action Plan in selected 15 States - 600 broilers in 4 batches of 150 birds each year

S.N.	States	No. of beneficiaries to be covered with upto 600 broilers in 4 batches of 150 birds each year	Distribution over four years of broilers in 4 batches of 150 birds each year					Financial implication four years					Price realisation from Poultry Meat in 4 years	Central Share	Financial implication for Center	Projected State Share
		200 beneficiaries each year (in numbers)	Year I (in Nos)	Year II (in Nos)	Year III (in Nos)	Year IV (in Nos)	Total	FY 2017-18 Rs. in lakh	FY 2018-19 Rs. in lakh	FY 2019-20 Rs. in lakh	FY 2020-21 Rs. in lakh	Total Rs. in lakh	5% mortality & 1.8 kg / bird@ Rs.100 per kg (Rs. In lakh)	(in %)	Rs. In lakh	Rs. In lakh
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**15**	**16**	**17**	**18**
1	**Andhra Pradesh**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
2	**Bihar**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
3	**Himachal Pradesh**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	90	810	90.00
4	**Jharkhand**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
5	**Karnataka**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
6	**Madhya Pradesh**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
7	**Maharashtra**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
8	**Odisha**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
9	**Tamil Nadu**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
10	**Telangana**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
11	**Uttarakhand**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	90	810	90.00
12	**Uttar Pradesh**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
13	**West Bengal**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
14	**Assam**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	90	810	90.00
15	**Rajasthan**	800	120000	120000	120000	120000	480000	225	225	225	225	900	821	60	540	360.00
Total / Average		**12000**	**1800000**	**1800000**	**1800000**	**1800000**	**7200000**	**3375**	**3375**	**3375**	**3375**	**13500**	**12312**		**8910**	**4590**

Annexure-V

Illustrative list of Low-Input Technology breed/ strains suitable for States/ UTs

S.N.	States	Birds suitable for rearing in the backyard
1	**2**	**3**
1	Andaman & N Is	Nicobari, Gramapriya, Vanaraja,
2	Andhra Pradesh	Gramapriya, Vanaraja, Srinidhi (new), Rajashri, Indbro(pvt), Kuroiler (pvt)
3	Arunachal Pradesh	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
4	Assam	Kamarupa (new), Kalinga Brown, Chabro, Nirbheek, Kuroiler (pvt),
5	Bihar	Jharsim (new), Shipra (pvt), Kuroiler (pvt)
6	Chandigarh	Chabro, Nirbheek, Kuroiler (pvt)
7	Chhattisgarh	Narmadanidhi (new), Satpuda Desi (pvt), Chhabro
8	Dadra&N Haveli	Satpuda Desi (pvt), Chhabro
9	Daman& Diu	Satpuda Desi (pvt), Chhabro
10	Goa	Satpuda Desi (pvt), Chhabro
11	Gujarat	Pratapdhan(new), Chhabro
12	Haryana	Chabro, Nirbheek, Kuroiler (pvt)
13	Himachal Pradesh	Chabro, Nirbheek, Kuroiler (pvt)
14	Jammu & Kashmir	Chabro, Nirbheek, Kuroiler (pvt)
15	Jharkhand	Jharsim(new), Shipra (pvt)
16	Karnataka	Giriraja, Girirani, Swarnadhara
17	Kerala	Nandanam 99, Giriraja, Girirani, Swarnadhara
18	Lakshadweep	Nandanam 99, Giriraja, Girirani, Swarnadhara
19	Madhya Pradesh	Narmadanidhi (new), Satpuda Desi (pvt), Chhabro
20	Maharashtra	Satpuda Desi (pvt), Chhabro
21	Manipur	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
22	Meghalaya	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
23	Mizoram	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
24	Nagaland	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
25	NCT of Delhi	Chabro, Kuroiler (pvt)
26	Odisha	Kalinga Brown
27	Puduchhery	Nandanam 99, Giriraja, Girirani, Swarnadhara
28	Punjab	Chabro, Nirbheek, Kuroiler (pvt)
29	Rajasthan	Pratapdhan(new), Chhabro
30	Sikkim	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
31	Tamil Nadu	Nandanam 99
32	Telangana	Gramapriya, Vanaraja, Srinidhi (new), Rajashri
33	Tripura	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown
34	Uttar Pradesh	Chabro, Nirbheek,
35	Uttarakhand	Chabro, Nirbheek,
36	West Bengal	Chabro, Nirbheek, Kuroiler (pvt), Kamarupa (new), Kalinga Brown

Annexure- VI

Entrepreneurship Development & Employment Generation - Poultry Venture Capital Fund -Component under National Livestock Mission- 2014-15 to 2016-17

Units in Number
(Rs. in Lakh)

S. No.	State/ UTs	2014-15		2015-16		2016-17	
		Units	**Amount**	**Units**	**Amount**	**Units**	**Amount**
1	Andaman and Nicobar	2	1.288	12	5.119	1	0.56
2	Andhra Pradesh	192	1215.96	16	86.601	61	115.284
3	Bihar	81	161.025	32	54.08	20	68.0855
4	Chhattisgarh	307	845.852	51	131.045	118	218.024
5	Delhi	0	0	0	0	0	0
6	Goa	2	2.36317	1	2	0	0
7	Gujarat	30	86.948	32	86.252	0	0
8	Haryana	45	137.912	5	23.87	0	0
9	Himachal Pradesh	54	132.266	0	0	7	15.144
10	Jammu & Kashmir	96	200.785	46	79.5278	0	0
11	Jharkhand	7	7.33325	2	0.89	0	0
12	Karnataka	207	523.091	50	115.825	58	128.578
13	Kerala	232	247.693	376	531.587	0	0
14	Madhya Pradesh	10	32.1197	1	1.588	3	5.092
15	Maharashtra	30	85.004	586	1244.82	343	841.176
16	Odisha	34	31.392	10	14.767	23	15.324
17	Punjab	32	87.7275	29	71.087	51	136.797
18	Rajasthan	81	198.036	6	11.287	24	84.457
19	Tamil Nadu	584	848.067	499	620.966	848	1088.4296
20	Uttar Pradesh	53	92.3218	92	194.269	3	10.6
21	Uttarakhand	89	97.064	13	10.046	6	7.304
22	West Bengal	106	164.059	4	2.24	11	15.628
23	Arunachal Pradesh	3	12.999	3	5.32	3	7.88
24	Assam	83	96.88	849	878.589	18	23.88
25	Manipur	0	0	0	0	0	0
26	Meghalaya	0	0	16	13.5122	22	10.023
27	Mizoram	0	0	222	57.516	4	2.5159
28	Nagaland	4	2.7038	0	0	0	0
29	Sikkim	0	0	8	4.378	5	5.406
30	Tripura	0	0	0	0	0	0
	Grand Total	**2364**	**5310.89**	**2961**	**4247.18**	**1629**	**2800.188**

Annexure-VII

Registered Indigenous Chicken Breeds

S.No.	Breed	Home Tract
1	Ankaleshwar	Gujarat
2	Aseel	Chhattisgarh, Orissa and Andhra Pradesh
3	Busra	Gujarat and Maharashtra
4	Chittagong	Meghalaya and Tripura
5	Danki	Andhra Pradesh
6	Daothigir	Assam
7	Ghagus	Andhra Pradesh and Karnataka
8	Harringhata Black	West Bengal
9	Hansli	Odisha
10	Kadaknath	Madhya Pradesh
11	Kalasthi	Andhra Pradesh
12	Kashmir Favorolla	Jammu and Kashmir
13	Miri	Assam
14	Nicobari	Andaman & Nicobar
15	Punjab Brown	Punjab and Haryana
16	Tellichery	Kerala
17	Mewari	Rajasthan
18	Kaunayen	Manipur

Annexure-VIII

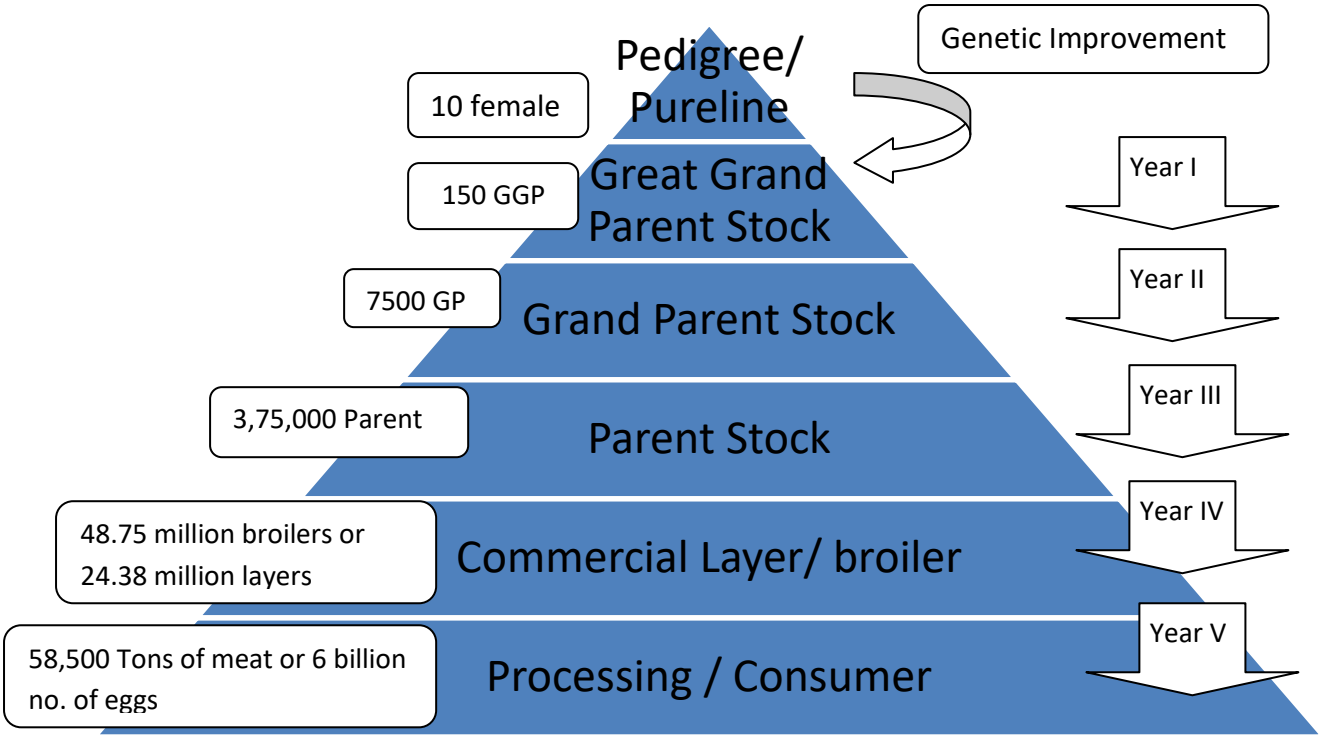
Skilled resource persons for some major poultry activities- gaps and requirement

Areas	Assumptions	Manpower required as on date	Gap calculated for 5 years taking 5-8% CAGR	Existing trained manpower	Gaps
Poultry Farm Managers	Around 12,000 farms assuming all 595 million layers and broilers @ 1 farm for 25,000-50,000 birds; presuming 1 Poultry Farm Manager per farm of 25,000 and @ 8% CAGR	24,000	35,260	12,000	23,260
Farm Supervisors – Broiler, Layer and Alternate Species	3 Poultry Farm Supervisors per farm (as per industry est.) of around 50,000 birds and @ 8% CAGR	36,600	53,780	18,300	35,480
Farm Workers – Broiler, Layer and Alternate Species	20 Farm Workers per farm of a farm of around 50,000 birds and @ 5% CAGR	2,40,000	3,06,300	1,20,000	1,86,300
Small Poultry Farmers	Around 5,000-6,000 farmers covered under EDEG every year; Taking another 9,000-10,000 farmers who may join and @ 8% CAGR	75,000	1,10,000	-	1,10,000
Duck and Other Alternate Species Farmers	Around 15-20 million alternate species in organized commercial sector; taking average all groups - one for each farm of around 50,000 birds i.e. 20 million/ 50,000= 400; and @ 8% CAGR	400	600	200	400
Hatchery Operation Supervisors	Around 1,200 hatcheries @ 1 hatchery for 50,000 birds (layer and broiler breeders) and 1 Hatchery supervisor for around 2 Lakh birds or 4 hatcheries and @ 2% CAGR	320	350	320	30

Hatchery Operators	Around 1,200 hatcheries @ 1 hatchery for 50,000 birds (layer and broiler breeders) and 2 Setting Operators for around 2 birds or 4 hatcheries and @ 5% CAGR	4,800	6,000	4,800	1,200
Chick Sexing Technicians	60 million breeders stock x 150 chicks/breeder= 9,000 million chicks (taking into consideration slection mortality and culling); 1 person can grade 6000-8000 chicks per day; ~2 million chicks a year (260 working days) @ 3.33% CAGR	4,500	5,300	4,500	800
Chick Grading Technicians	60 million breeders stock x 75 female chicks/breeder=4,500 million chicks; 1 person can grade 6000-8000 chicks per day; ~2.0 million chicks a year (260 working days) @ 3.33% CAGR	2,250	2,650	2,250	400
Artificial Inseminators in Poultry	"Broiler Breeders alone is 30 million ie 3 crores. Assuming 60% in cages it is 18 million breeders. daily on an average in only broiler it is 6 million birds are to be put under AI . five people team does daily 2500 to 3000 birds AI in the afternoon between 3-5 pm.	9,795	12,500	10,000	2,500

Annexure-IX

Requirement of Poultry Breeding Stocks



Stocks required to be inducted/ imported:

Parameters	Layers	Broilers
Current annual Population (in lakh no.s)- cumulative annual	3,750	33,260
Required commercial bird to achieve 136 billion eggs and 6.2 MMT poultry (in lakh)	5,500	51,670
Parent Stock required (in lakh)	84	397
Grand-Parent Stock Required (in lakh)	1.67	7.95
Great Grand Parent/ Purelines required (in no.s)	3,500	16,000
Additional Farms required @ 50,000 birds/ farm	3,140	4,600
Large Setters/ Hatchers - around 5 lakh chicks in a year	314	460

Annexure-X

Egg and Poultry Products Exports

Major items exported from India are table eggs, egg powder, hatching eggs, SPF eggs, live birds, and poultry meat. The current export value of Poultry Products is to the tune of around Rs. 532 crore in 2016-17. However, India is way behind in exports at 32nd place as per APEDA data from 2013 to 2014.

Qty. in MT; Value in Million US$

S.No.	Exporting Country	2013		2014		2015	
		Qty	Value	Qty	Value	Qty	Value
1	Brazil	1,52,87,843.41	6,930.55	31,01,897.99	6,775.72	32,85,121.74	6,544.29
2	USA	29,19,191.46	4,657.83	27,85,449.18	4,523.65	25,91,619.51	3,686.12
3	Netherlands	17,49,859.79	4,093.57	17,50,738.68	4,237.66	16,05,648.14	3,591.35
4	Germany	14,21,385.43	2,642.03	13,71,438.15	2,659.21	14,89,644.23	2,339.29
5	Poland	7,62,261.39	1,799.00	8,56,730.78	2,015.59	11,63,695.23	2,303.63
6	France	7,90,431.99	2,157.89	6,81,968.40	2,019.89	6,09,741.31	1,777.28
7	China	2,93,115.36	1,090.00	3,30,120.54	1,283.33	3,58,318.29	1,066.25
8	Belgium	6,72,377.73	1,016.39	5,00,678.95	991.63	5,67,554.06	930.14
9	U.K	4,40,526.80	827.62	4,36,260.33	827.54	4,25,477.34	825.04
10	Hungary	2,37,479.93	882.15	2,34,981.82	869.45	2,57,002.04	763.32
11	Spain	2,09,916.98	449.31	2,19,199.22	509.7	2,78,136.86	535.88
12	Italy	1,39,251.36	438.71	1,46,432.60	482.78	1,70,226.87	454.41
13	Thailand	68,012.68	191.66	1,00,965.20	314.57	1,71,678.35	442.36
14	Denmark	1,55,556.88	416.48	1,70,532.01	450.02	1,80,545.68	398.37
15	Chile	84,197.73	256.8	85,297.51	281.39	1,07,026.91	379.68
16	Malaysia	2,57,226.75	361.96	1,99,115.85	369.44	1,13,562.56	329.99
17	Canada	94,619.67	285.11	1,11,112.72	322.59	1,06,824.40	325.41
18	Argentina	4,35,520.95	300.59	1,58,865.32	289.82	1,55,197.07	289.08
19	Ireland	65,710.89	173.98	82,531.30	242.77	81,875.83	236.71
20	Belarus	1,19,604.75	216.07	1,45,377.68	275.09	1,69,331.20	223.26
21	Slovakia	52,806.44	107.71	58,478.26	124.16	1,21,897.48	220.05
22	Austria	67,920.67	227.98	76,438.05	256.99	78,645.14	218.96
23	Romania	67,957.03	171.91	82,892.34	196.71	1,11,507.44	194.86
24	Bulgaria	66,718.19	200.23	62,322.74	217.96	63,065.79	186.43
25	Ukraine	1,05,836.34	201.74	1,08,014.12	221.33	1,07,400.30	181.96
26	UAE	31,009.76	76.28	39,692.36	100.76	78,831.70	179.13
27	Czech Rep.	93,887.48	197.16	86,594.82	204.54	78,124.09	156.41
28	S. Arabia	63,465.19	169.28	87,421.38	220.95	49,456.17	147.32
29	Portugal	1,11,397.50	144.08	53,866.24	108.2	84,509.83	128.47
30	Lithuania	51,828.72	118.45	60,766.51	154.14	58,635.15	116.37
31	Turkey	66,425.13	103.95	85,643.40	143.25	78,431.20	115.17
32	India	20,344.16	59.31	34,391.32	85.87	37,141.35	87.32

The strength of exports mainly lies in the competitive cost of production, proximity to international markets and successful regaining of freedom from Highly Pathogenic Avian

Influenza (HPAI). Although some efforts have been made to increase Poultry exports from India, the trade is very small in comparison to the global trade.

Our major markets are Middle East and Asia. Egg powder is also sent to Japan and in EU. Now we have extended exports to many African countries. We have infrastructure to handle egg exports and we also have primary packing materials and the full logistics cold chain to deliver top quality fresh eggs to all our customers.

Eggs are imported in Gulf market mostly from India, Holland and USA. India exports about 800 reefer containers of table eggs (0.413 million eggs per container) to the gulf market. Daily about 20 lakh eggs in containers are being sent to the United Arab Emirates, Kuwait, Muscat, Iran, Iraq and several African countries. The egg containers are being shipped to Dubai from where they were distributed to other countries in the Gulf and Africa. Oman and Dubai is the major Market, mostly for white shelled eggs. In Dubai, our major sales are in the institutional market i.e. hotels, restaurants and caterers. Now we have expanded our exports to African market. The major African countries where poultry products including eggs and egg products are exported are Liberia, Sierra Leone and Kenya in Africa were followed by Uganda, Nigeria, Somalia, Malawi, Sudan, Rwanda, Gambia, Senegal etc .

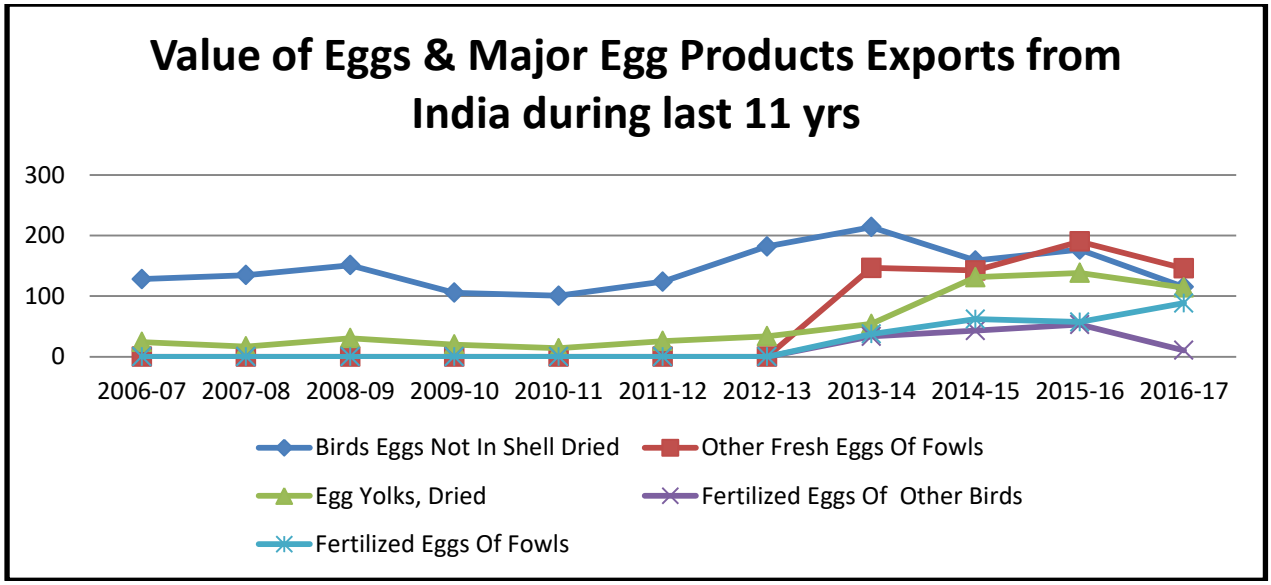
Item-wise Egg Products export trends:

The major egg products exported from India during last 9-10 years shows the following interesting trend:

(Rs. in crore)

HS Code	Product	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
4089100	Birds Eggs Not In Shell Dried	128.08	134.77	150.94	105.7	100.46	123.92	181.94	213.93	158.57	176.61	114.99
4072100	Other Fresh Eggs Of Fowls	0	0	0	0	0	0	0	146.61	142.21	190.05	145.85
4081100	Egg Yolks, Dried	24.31	16.9	30.47	19.95	14.03	25.94	33.88	54.2	131.35	138.47	114.14
4071990	Fertilized Eggs Of Other Birds	0	0	0	0	0	0	0	33.53	43.13	53.05	10.61
4071100	Fertilized Eggs Of Fowls	0	0	0	0	0	0	0	37.5	62.07	57.34	88.35

Wherever Fowls is mentioned it is of the Species ***Gallus domesticus.*** Some items with HS Code discontinued or subsumed later are not included.



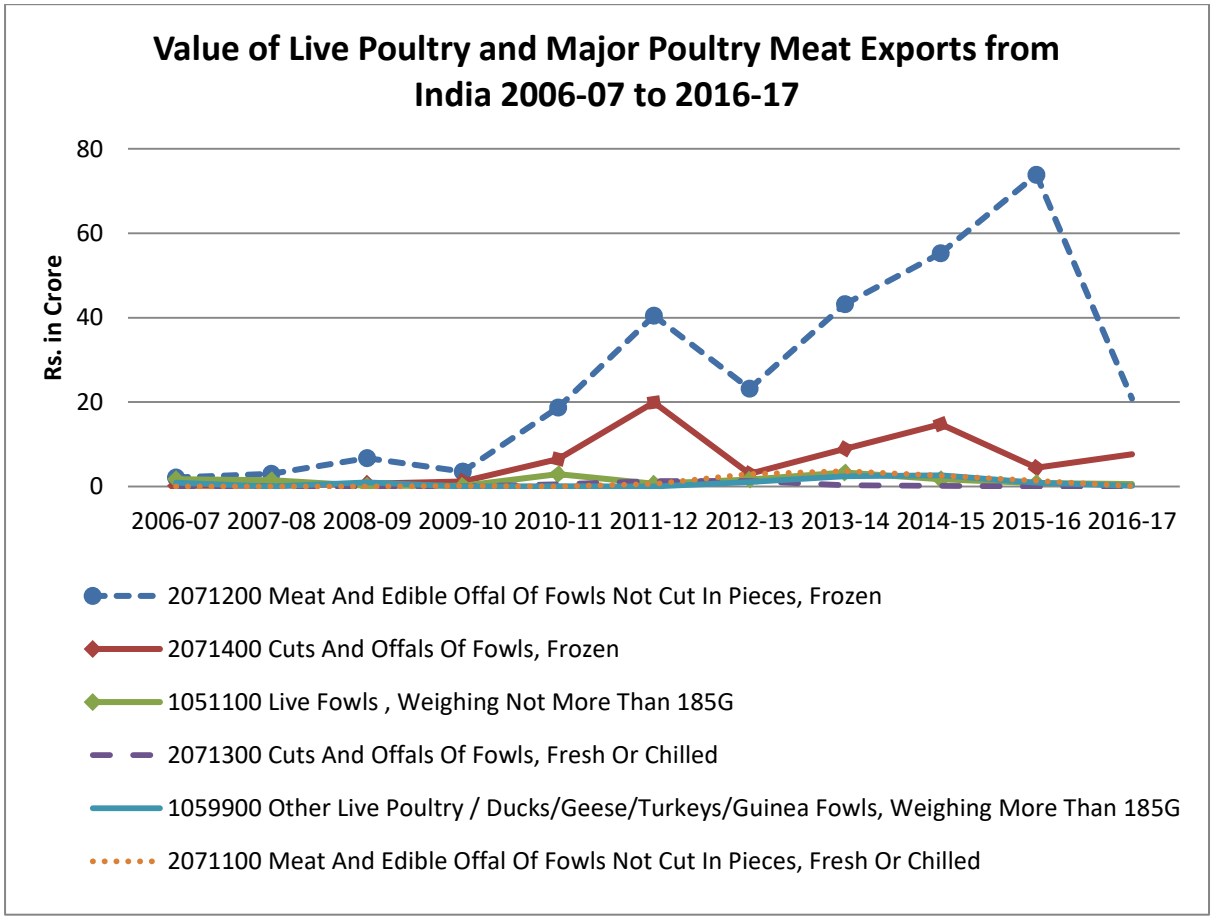
"Other fresh eggs of fowl" holds nearly 25% of the share following "Birds Egg Not in Shell dried'' at 23% of value of exports in 2015-16. Similarly during 2016-17, the export values for "Other fresh eggs of fowl" holds nearly 27% of the share following "Birds Egg Not in Shell dried'' 22% . However, the export of all these products decreased during the year 2016-17 in comparison to previous years except the 'Fertilized eggs of Fowl, which export is in increasing trend. The decrease trend may be due to many direct and indirect factors among which the outbreak of AI is most important one.

Export of Poultry and Poultry products:

The live poultry and major poultry meat products exported from India during last 11 years shows the following interesting trend:

HSCode	Product	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
2071200	Meat And Edible Offal Of Fowls Not Cut In Pieces, Frozen	2.16	3.06	6.75	3.55	18.73	40.48	23.24	43.26	55.32	73.88	20.86
2071400	Cuts And Offals Of Fowls, Frozen	0.21	0.31	0.72	1.25	6.5	19.94	3.04	8.92	14.76	4.51	7.67
1051100	Live Fowls , Weighing Not More Than 185G	1.72	1.5	0.19	0.22	2.99	0.66	1.64	3.34	1.75	0.83	0.62
2071300	Cuts And Offals Of Fowls, Fresh Or Chilled	0	0	0	0	0.5	1.28	1.31	0.32	0.13	0	0
1059900	Other Live Poultry / Ducks/Geese/Turkeys/Guinea Fowls, Weighing More Than 185G	0.89	0	0.98	0.03	0.07	0.01	1.09	2.45	2.67	0.93	0.13
2071100	Meat And Edible Offal Of Fowls Not Cut In Pieces, Fresh Or Chilled	0.01	0.01	0	0.19	0	0.63	2.97	3.63	2.57	1.37	0.08

Wherever Fowls is mentioned it is of the Species ***Gallus domesticus.*** Some items with HS Code discontinued or subsumed later are not included.



The trend of around 11 years from 2006-07 shows that whole frozen chicken exports were highest in terms of value followed by cut-up parts of chicken, live chicks, fresh and chilled chicken, other live poultry and fresh or chilled meat and edible chicken offal. The reasons for sudden surge in exports of whole frozen chicken and cut-up parts of chicken in 2016-17 followed by an acute dip again next year is not known but presumed to be Avian Influenza.

Total World Trade

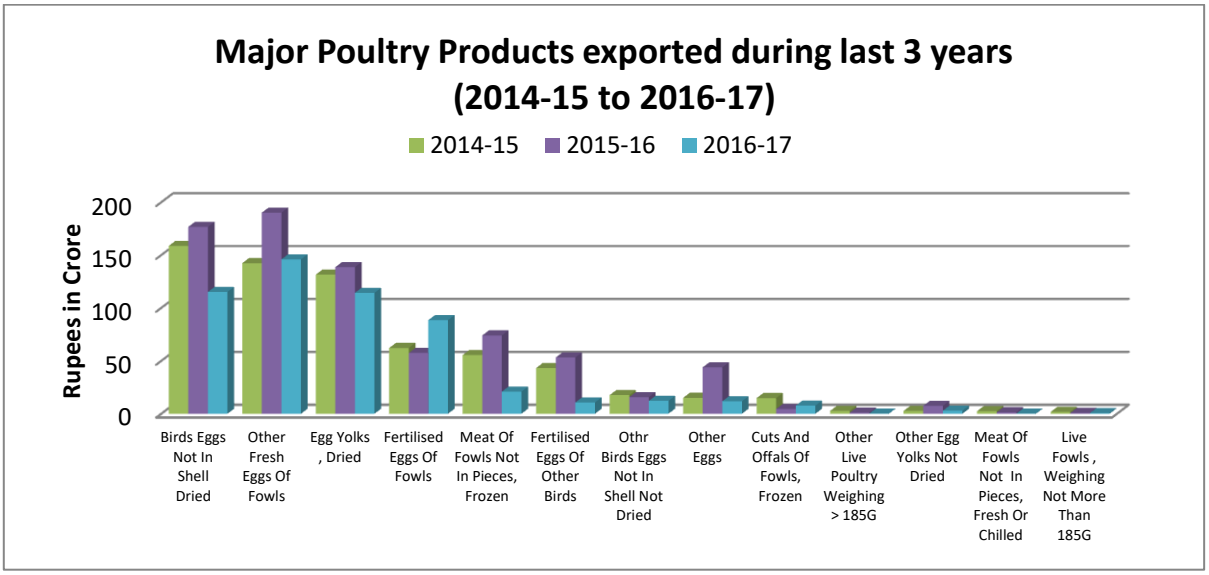
Poultry Meat Production- around 90 MMT; Trade (Exports- 11 MMT- around 12% of total production)

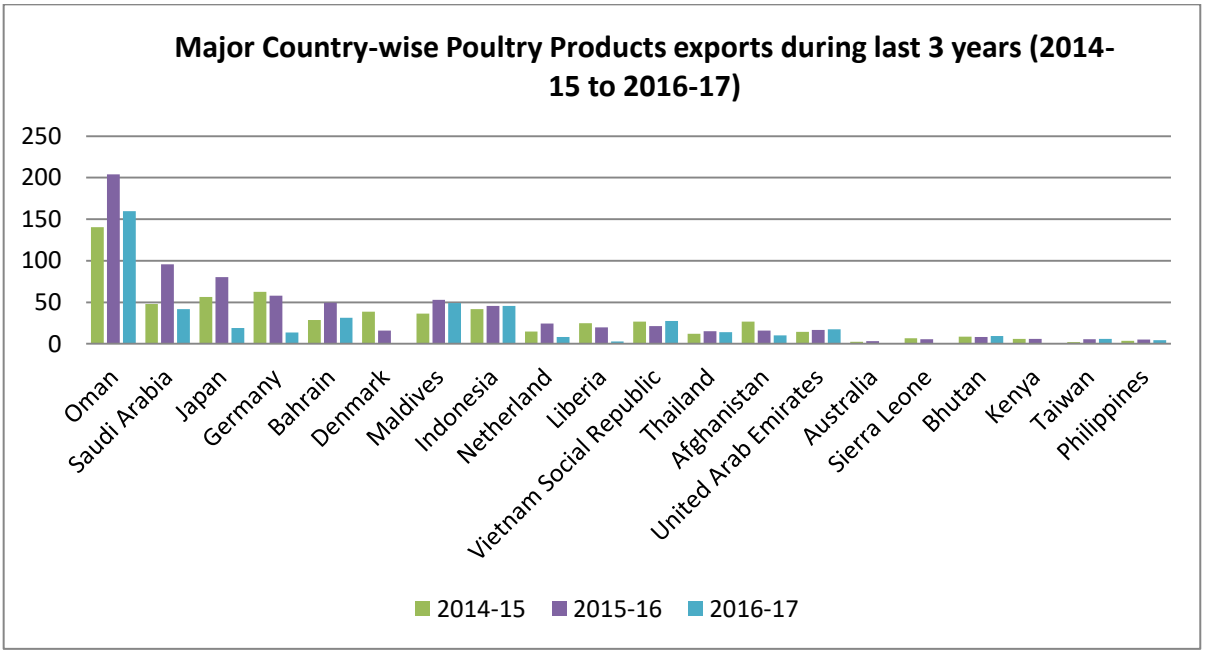
Egg production- around 1400 billion eggs / 70 MMT**;** Trade around 10%- 7 MMT

India's trade share for some of the poultry products:

S.No.	Code	Product Label	Global		India		Trade Indicators		
			Global export value 2014 (Thousand US$)	Product % share	export value 2014 (Thousand US$) from India	Product % share	AGR % of world Exports 2009-2013	India's share in world exports	Ranking
1.	0207	Meat and edible	27069015	22%	7646	0%	9	0	53

		offal of poultry meat							
2.	0408	Birds' eggs dried	1133936	1%	48654	7%	9	4.3	7
3.	0407	Birds'eggs in shell	4256704	5%	30596	4%	10	0.7	21





Strategy for exports through value-addition:

The production of meat and meat products has shown an impressive growth. The total meat production in the country is 7.4 million tonnes, which includes beef, buffalo meat, mutton, goat meat, pork and poultry meat. However, less than one per cent of the total meat is converted into value-added products like sausages, ham bacon, luncheon meat, kababs and meatballs.

As per the "Strategy paper for augmenting exports of value-added products" submitted to APEDA in 2015 by IL&FS, the level of exports of meat and meat products from India is $190 million, the major destinations being the countries in the Middle-East and South-East Asia.

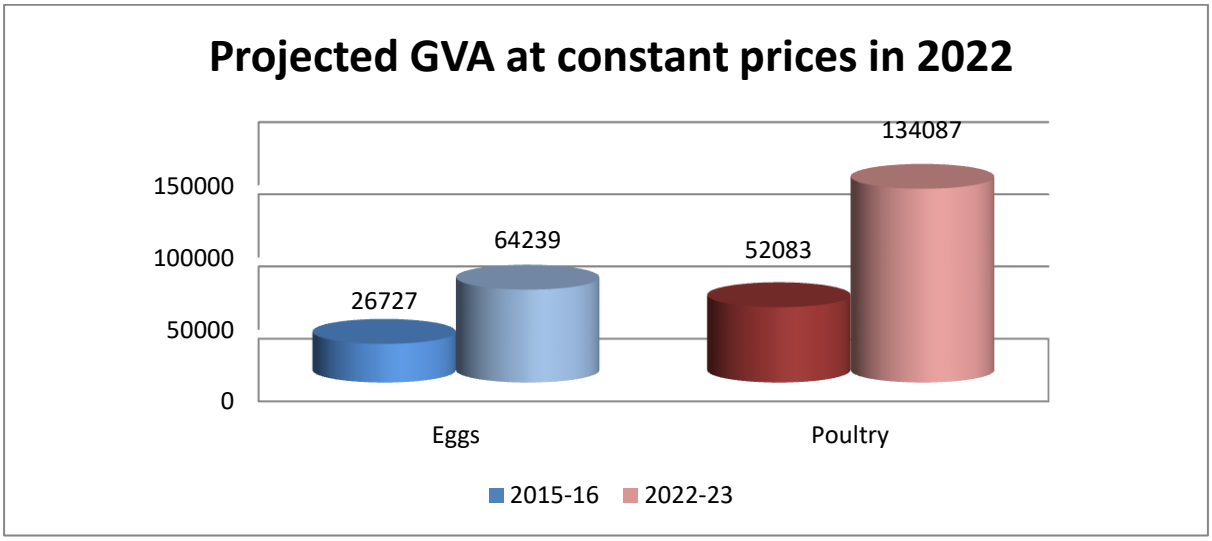
The above study undertook a trend analysis of 130 product categories including poultry and poultry products over a period of five years 2009- 2014. The trend analysis comprised of the following five parameters: (a) Compounded Annual Growth Rate for Volume in Metric Tons (b) Average Volume of Trade in Metric Tons (c) Compounded Annual Growth Rate for Value in percentage (d) Average Value of Trade in Metric Tons (e) Export Value per Metric Ton. The unit used is Rupees Lakhs. The above analysis enabled identification of the key products which showed a substantial positive growth and for poultry the following were analysed:

S.No.	**HS Code**	**Product type**	**CAGR**	**Average**	**CAGR**	**Average**	**Export value per MT**
			Quantity (MT)		**Value (Rs. In lakh)**		**(Rs. In lakh)**
1.	1051	Live Birds	54%	381.80	69%	280.23	0.73
2.	2071	Fresh / Chilled/ Frozen fowl meat	67%	4609.87	87%	3534.41	0.77
3.	2072	Fresh / Chilled/ Frozen turkey meat	-	59.16	-	35.37	0.60
4.	2073	Cut pieces Fresh / Chilled/ Frozen meat of Ducks, Geese and Guinea Fowl	-100%	823.64	-100%	342.52	0.42
5.	2074	Uncut pieces Fresh / Chilled/ Frozen meat of Ducks, Geese and Guinea Fowl	-	17.83	-	7.48	0.42
6.	2075	Fresh/ Chilled offals	-	2.86	-	3.42	1.19
7.	4070	Eggs	-20%	620282.53	-2%	21512.11	0.03
8.	4081	Egg yolks/ unshelled	3%	8462.39	14%	18360.92	2.17
9.	505	Other parts/ feather	3%	14383.96	20%	32917.88	2.29

Therefore, as a strategy we are targeting nearly 2% coverage of world trade volume for:

(a) eggs which is estimated to be around 3 billion eggs (from present around 0.6 billion)
(b) meat which is estimated to be around 250 thousand ton eggs (from present around 5.5 thousand tonnes).

Annexure-XI


Projected GVA at constant prices in 2022
150000
100000
50000
0
26727
64239
52083
134087
Eggs
Poultry
2015-16
2022-23