



## Poultry farming in India : An overview

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### ABSTRACT

Poultry farming has traditionally been an important part of India's livestock production system. In the previous four decades, India's poultry production has evolved from an utterly unstructured and unscientific agricultural practice to a commercial production system with cutting-edge technology innovations. The Indian poultry business has evolved significantly as a result of the industry's scientific approach and the government's creation of an enabling environment. In terms of structural and management changes, poultry production is quite dynamic. In today's corporate world, the sooner you can react to changing system requirements, the faster you can expand. However, long-term viability frequently necessitates reliance on other sectors, such as feed/ingredient inputs and processing facilities. Many reasons, including growing earnings and a fast expanding middle class, have contributed to the rise of the poultry business in India, as well as the advent of vertically integrated poultry farmers who have decreased consumer prices by decreasing production and marketing expenses. Integrated production, the move from live birds to chilled and frozen goods, and regulations that maintain supplies of competitively priced maize and soyabean are all important factors in India's future poultry sector growth. Furthermore, disease surveillance, monitoring, and management will determine the sector's fate.

**Key words:** Broiler farming, egg production, poultry farming

### INTRODUCTION

India has a population of 1.38 billion people, with the population growth rate at 1.2%. In India all communities accept eggs and poultry and they are available at very low costs (Landes, 2004). Poultry generally refers to all bird species that may be domesticated by humans for the purposes of producing eggs, meat, pleasure, and excrement on a regular basis, as well as feathers, bones, blood, oil, and other industrial products. Poultry includes chicken (bird), duck, guinea fowl, turkey, quail, geese, ostrich, and other animals that are raised across the country and around the world. Over the course of four

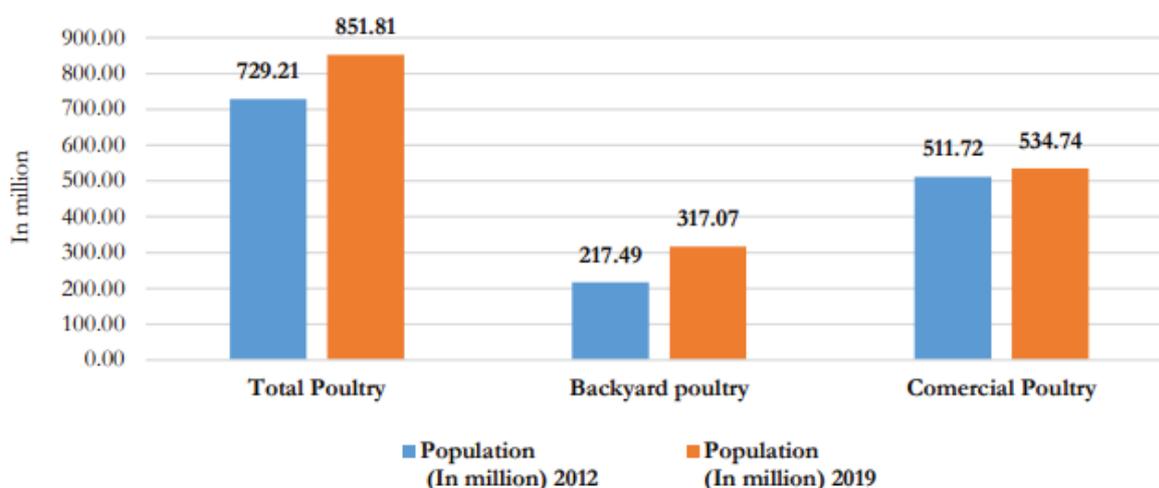
decades, India's chicken business has evolved from a simple backyard occupation to a large commercial agri-based enterprise. High-yielding layer (310-340 eggs) and broiler (2.4-2.6 kg at 6 weeks) varieties, combined with a standardized package of nutrition, housing, management, and disease control practices, have helped India achieve spectacular growth rates in egg (4-6 % per year) and broiler production (8-10 % per year). In line with improved output, annual per capita availability climbed to 60 eggs and 2.5 kg. of meat. Poultry sector along with livestock provide a major contribution to India's economy (Nath et al., 2012)

In India, chickens account for almost 95% of total egg production, with ducks and other poultry species contributing the rest. Based on the size of the operation and level of biosecurity, the FAO divided chicken production systems into four categories: village or backyard production, commercial production with low biosecurity, large scale commercial with high biosecurity, and industrial and integrated production systems. Feed contributes for 65-70 % of the cost of broiler production and 75-80 % of the cost of layer production. India now ranks third in the world in egg production and fifth in chicken meat output (DADF, 2018). Total poultry in the country is 851.81 million in 2019, increased by 16.8% over previous year whereas total backyard poultry in the country is 317.07 million in 2019, increased by 45.8% over previous census. The total commercial poultry in the country is 534.74 million in 2019, increased by 4.5 % over previous census (Fig. 1). In India, 260 million layers generate 3.4 million tonnes (74 billion) of eggs per year, while 3000 million broilers create 3.8 million tonnes of chicken meat (Singh, 2019). The poultry industry contributes over Rs.70,000 crores to the national GDP and employs over 4 million people directly and indirectly. As a byproduct, around 2-2.5 million tonnes of chicken litter, a valuable organic fertilizer, are generated each year. (Mehta et al., 2002). According to the 2019 census, India has 852 million

birds, with 20 recognized chicken varieties and two duck species. India is the world's third-largest egg producer (after China and the United States) and fourth-largest broiler producer (Srikanth et al., 2018). Tamil Nadu, Andhra Pradesh, Telangana, Maharashtra, Karnataka, and West Bengal are the top five states in terms of poultry population, with Assam (71.63 %) and West Bengal (46.34 %) having the highest growth rates from 2012 to 2019 (Table 1).

**Table 1.** Poultry population of major states of India during 2012 and 2019

Sl. No.	States	Population (In million) 2012	Population (In million) 2019	% Change
1.	Tamil Nadu	117.3	120.8	2.92
2.	Andhra Pradesh	80.6	107.9	33.85
3.	Telangana	80.8	80.0	-0.93
4.	West Bengal	52.8	77.3	46.34
5.	Maharashtra	77.8	74.3	-4.49
6.	Karnataka	53.4	59.5	11.33
7.	Assam	27.2	46.7	71.63
8.	Haryana	42.8	46.3	8.11
9.	Kerala	24.3	29.8	22.61
10.	Odisha	19.9	27.4	37.95



**Fig. 1.** Poultry population 2012 and 2019 (DADF, 2019)

### IMPORTANCE OF POULTRY PRODUCTION

Poultry provides direct and indirect employment to nearly 6 million people in the country. The poultry industry has evolved from subsistence farming to an organized, scientifically oriented, and technologically driven industry over the last four decades, and this growth can be attributed to a number of factors, including government support, R&D efforts, high per-capita income growth, and international collaborations. Among all animal industries, the Indian poultry sector has shown the fastest yearly increase of roughly 6% in egg production, 10% in meat output, and 8.35 % in broiler production during the previous decade. In the livestock sector, the poultry industry accounts for around 1% of national GDP and 14% of animal GDP. Meat products account for about two-thirds of livestock GDP, while dairy products account for 22.5% and poultry goods for 12.5 %. (DADF, 2018).

- Given to its traditional form of monetary operation, it has the best market shock absorption ability of any agricultural farm;
- It has huge potential to bring about quick economic growth, notably helping the poor, due to its cheap investment need and short gestation period.
- Among other livestock sectors, it has the greatest employability/unit of investment.
- Adding poultry farming to agricultural diversification adds to the necessity of resolving the agrarian problem.
- It satisfies all requirements for quick R&D, allowing the generation of genetically better birds capable of high output in a shorter time frame.

**Table 2.** List of poultry population

Poultry population (%)		Share of layer population (%)		Contribution to egg production (%)	
Backyard Poultry	29.8	Desi fowl	28	Backyard Poultry	21
Layers	29.4				
Broilers	38.7				
Ducks	0.68	Improved fowl	72	Commercial farms	79
Others	1.43				

The Indian poultry business, worth over Rs. 80,000 crore in 2015-16, is divided into two sub-sectors: one with a highly organized commercial sector and the other with an unorganized commercial sector, accounting for around 80% and 20% of the total market share, respectively (Mohanty and Rajendran, 2003). The unorganized sector, often known as backyard poultry, is critical for the poorest of the poor in terms of additional revenue creation and family nutrition. Small and medium farmers are largely engaged in contract farming systems under bigger integrators, and there are >30 million farmers engaged in backyard poultry, with a chicken population of 729 million (30 % layers and 40 % broilers (Chakrabarti et al., 2014) Organized and unorganized sectors have quite distinct demands. The commercial poultry business is thriving in

areas with a favorable environment and backward and forward connections, but the unorganized sector is dispersed and micro-fragmented.

The unorganized sub-sector creates additional revenue and helps the poorest of the poor improve their nutritional status. However, until today, this sector has received little assistance. However, help is being given for beneficiaries from BPL households under one of the components of the Centrally Sponsored Scheme, 'Rural Backyard Poultry Development.' However, this is little in comparison to the need. The transitional Small and Marginal sub-sector of the unorganized sector is where small/ marginal entities are currently emerging as a result of government measures for entrepreneurship development. These, on the other hand, can only be sustained if they work in a clustered

fashion. Omonona and Oni (2004) described that poultry was one of the fastest ways for increase the high-quality protein supply in short interval of time. Bujarbaruah and Gupta (2005) observed that rural poultry farming has been responsible to produce 40% of meat and 44% of egg requirement in India. For disease surveillance, drug residue and drug/vaccine quality control, standardization and quality control of poultry feed, eggs, and meat, application of Hazard Analysis and Critical Control

**Table 3.** Egg production-growth rate

Year	Egg production (in billion no.)	% Annual egg production growth rate	Per capita egg availability
2011-12	66.45	5.40	...
2012-13	69.73	4.94	58
2013-14	74.75	7.20	61
2014-15	78.48	4.99	63
2015-16	82.93	5.66	66
2016-17	88.13	6.28	69
2017-18	95.20	8.03	74
2018-19	103.30	8.51	79

China, the United States of America, India, Mexico, and Japan are the major egg producers in the world.

## PRODUCTION OF BROILERS

Broiler production is centered in the states of Tennessee, Arkansas, Mississippi, Oklahoma, and Telangana, with the Cobb breed accounting for 65-70 % of the market. Ross, Marshall, Hubbard, Hybro Avian, and Anak are other prominent breeds. Poultry farms range in size from 200 to over 50,000 birds. Only a few big poultry integrators have controlled-environment housing with automatic feeding and drinking systems, whereas the majority of the farms are basic open sheds (Mehta et al., 2002). The controlled environment poultry barn idea is not widely used due to high capital costs and unpredictable power supply. Broilers are typically raised for 35-40 days to reach a market weight of 1.8 to 2.2 kg and an FCR of 2.2. Broiler prices are subject to considerable seasonal fluctuations due to supply-demand imbalances, which may climb in the summer due to lower output but fall during Hindu holidays. Because of customers' appetite for chicken, rising income levels, and changing eating habits, broiler growth is likely to stay high.

Point (HACCP) and Good Manufacturing Practices for compliance with WTO and CODEX norms and gradation, value addition, brand promotion, and export boosting, among other things, the organized sub-sector requires policy support and intervention. The country's egg output climbed by around 6% from around 83 billion in 2015-16 to over 88 billion in 2016-17. Egg availability per capita has risen from 58 in 2012-13 to 79 in 2018-19.

Broiler meat sales at the live market still account for >90-95 % of overall sales, whereas processed chicken meat accounts for just around 5% of total output (Singh, 2019). Organized commercial farms produce more than 80% of India's chicken production. Vertically integrated operations account for 60-70 % of total chicken production at major poultry corporations. Major corporations/integrators operate hatcheries, feed mills, and main processing facilities, and they frequently offer loans, extension services, and veterinary treatment to contractual farmers. Integrators work with a number of smaller farmers who raise the chicks until they are ready to be slaughtered. Integrators acquire live birds for slaughter and processing, while wholesalers distribute them through live marketplaces (Desai, 2004).

## MARKETING

In the broiler category, 65-70 million chickens are placed every week on average. 60 % of the broiler meat business is dominated by five

large players: Suguna in Coimbatore, Venky's in Pune, CP, Sneha, and Shalimar in Kolkata. In India, broiler meat output has increased by 7-8%. Individual farmers produce one-third of the crop, while contract farmers (integration farmers) produce the other two-thirds, with an average farm size of 7000-8000 birds (Islam, 2002). The placement of birds is determined by feed prices, the condition of disease outbreaks, the financial situation of farmers, and the profitability of the current demand and price of the final product on the market. Feed

price accounts for around 80% of production costs and is thus a critical factor in shifting production and marketing scenarios.

### GROWTH OF BROILER POULTRY

Poultry meat output in the country has risen from roughly 2.48 million tonnes in 2011-12 to 4.14 million tonnes in 2018-19, an increase of more than 6%. The United States, China, Brazil, the Russian Federation, Mexico, and India are all major broiler poultry producers in the world.

**Table 4.** Growth of Broiler Poultry

Year	Poultry production (million tons)	% Annual poultry production growth rate	Per capita broiler meat availability	Consumption volume in metric ton ('000)
2011-12	2.48	13.22	2.1	...
2012-13	2.68	8.01	2.2	2872.85
2013-14	1.92	-28.50	2.2	3064.96
2014-15	3.05	59.16	2.8	3283.7
2015-16	3.26	6.75	2.9	3428.04
2016-17	3.46	6.13	3.0	3540.6
2017-18	3.96	7.0	3.1	3700.3
2018-19	4.14	8.0	3.8	3737.3

### POULTRY FARMING SYSTEMS

In a nation like India, where farmers' access to resources varies greatly, poultry production techniques vary as well, ranging from traditional small-scale production (with dual-purpose indigenous breeds) to intense commercial production systems (with hybrid birds specially bred for meat or egg). The FAO divided poultry production systems into four groups, or 'sectors,' depending on their amount of operation and level of biosecurity. Within each of these, there is a lot of variety between different types of production systems and value chains.

#### PRODUCTION IN THE VILLAGE OR IN THE BACKYARD

Rural India is home to about 70% of the country's population. These types of manufacturing methods may be found in both rural and urban locations. It is believed that "backyard" poultry farming accounts for around 15% of overall chicken output in India today (Landes et al., 2004).

Traditional local, native breeds are used to produce both eggs and meat birds. Improved backyard types such as Vanaraja, Gramapriya, Srinidhi, Giriraja, Kroiler, Rainbow rooster, and others are now being kept to help resource deprived households increase their dietary protein consumption and revenue (Chakrabarti, 2014).

#### LOW BIOSECURITY COMMERCIAL POULTRY PRODUCTION

Although this sector is centered on commercial production, it preserves certain aspects of traditional backyard systems, notably in the sale of live birds. The scale of production units is typically moderate, ranging from 200 to 10,000 to 50,000 birds. Birds are frequently not permanently housed, mixed flocks of chickens and ducks are common, birds are typically marketed live, and a variety of marketplaces, unmonitored for health hazards, are utilized for produce (eggs and broiler) sales and input supplies. (BAHS, 2017, 2019).

### COMMERCIAL ON A LARGE SCALE WITH A HIGH LEVEL OF BIOSECURITY

Commercial flocks of broilers, layers, or breeding birds on a bigger scale (50,000 to 1,00,000 birds) make up this industry. For these larger-scale ventures, only relatively rich people or commercial joint-stock corporations have the requisite investment money or can obtain adequate financing. Birds are continually kept, rigorously prohibiting interaction with other flocks or wildlife, using automation as seen in four southern states, which together generate 57 % of the nation's egg output. In India, native chicken varieties reared in backyard conditions contribute about 11 % of total egg production in India (Kumaresan et al., 2008).

### INDUSTRIAL AND INTEGRATIVE PRODUCTION

This sector includes the poultry industry's largest and most industrialized farms (>1.00 lakh birds), where multiple stages of the value chain are vertically and horizontally integrated into a single industrial organization. The broiler and layer components are either completely integrated or distinct production units, while feed grinding, with or without a feed unit, remains a separate economic entity. The introduction of better, exotic genetic material is a critical initial step in the commercial poultry sector's growth and development (Ravisankar et al., 2012). New strains are often less resilient and resistant to endemic illnesses than native birds. Complementary inputs of specifically formulated concentrate feeds, as well as enhanced housing, management, and veterinary care, are required to achieve the higher productive potential. Nonetheless, the addition of new genetic material serves as the foundation for further technical advancements.

The majority of commercial poultry production is currently centred in urban and peri-urban regions. Only roughly a quarter of the population in metropolitan areas consumes 75-80 % of eggs and chicken meat.

### THE POULTRY INDUSTRY'S CHALLENGES

- In comparison to the suggested levels, per capita availability is still low, with roughly 73 vs. 180 eggs and 3.4 vs. 11 kg of chicken meat per year.

(The National Institute of Nutrition). This reflects a wide disparity between availability and ever-increasing demand for poultry goods.

- To be sustainable and progressive, the sector must be internationally competitive.
- Disease outbreaks (bird flu, etc. ), a lack of processing/storage facilities, and increased feed component prices all have a negative impact on the export of poultry and poultry products.
- Financial institutions' reluctance to assist in the establishment of small/medium chicken production units.
- Birds are exposed to climatic stress, illnesses, and epidemics due to inadequate facilities.
- Due to a lack of comprehensive governing power, poultry farm production, processing, and transportation requirements do not meet international standards.
- Farm licenses are granted at the municipal level, which sometimes lacks professional experience to properly enforce quality requirements.
- A lack of infrastructure between producers, markets, and consumers, which frequently causes the system to become paralyzed in order to fulfil seasonal demand.

### INTERVENTIONS BY THE GOVERNMENT

NABARD provides financial infrastructure to support poultry production.

- National Coop. Dev. Cooperation (NCDC) to finance small and marginal farmers, IRDP for poultry insurance, FSSAI for meat processing license, and National Livestock Mission for the livestock and poultry sector's long-term growth and development
- A web-based Farmer Portal and a mobile-based M-Farmers SMS Portal for delivering digital data and informing farmers.

### CONCLUSION

The dearth of fundamental infrastructure, such as storage and transportation, as well as the cold chain, is a key impediment to the chicken industry's expansion in India. As a result, the

prices of chicken goods, such as eggs and broilers, fluctuate dramatically. Another stumbling block to expansion is a sluggish marketing infrastructure. Both the producer and the customer are harmed by the existence of so many market middlemen. The price availability of feed supplies is a third issue. Corn, often known as maize, plays a significant role in broiler production, accounting for 50 to 55 % of broiler feed. Because the broiler sector is expanding at a 15 % annual pace, maize demand is expected to rise. India now grows just 11 million tons of maize and has only 5 million tons available for poultry, which is insufficient to continue the industry's present growth pace. Despite a number of setbacks over the years, India's poultry output has continued to increase at a phenomenal rate. With rising demand for chicken eggs and meat, India's poultry industry is expected to expand and industrialize. The adoption of small-scale chicken farming in rural families' backyards would improve the nutritional and economic condition of rural residents. Future obstacles will not be a deterrent with the advancement of knowledge and new discoveries in many disciplines of poultry, and thus envisions a bright future for poultry production in this nation.

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