

Review Article

Major Constraints and Opportunities of Poultry Production in Ethiopia: Review

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Abstract

Poultry sector holds significant potential to contribute to income generation, food security, and employment opportunities; particularly it is the most significant livestock sub-sector for Ethiopia's rural populations. However, despite these potentials, the sector faces several challenges; diseases, shortage of feed, and predators are the majors. Disease often bottleneck due to lack of awareness about antibiotic and how to use antibiotic is becoming critical factor for high mortality rate. Poultry ingredients/feeds have been facing absence of availability, affordability and market competition with human food that decrease supply of feedstuff which may limit the future expansion poultry production and cost of feeds in the country. Despite the constraints, considerable opportunities are there in poultry production that enhances its investment and profitability in the country. The low investment costs, and small quantity of land needed, government initiative to create a conducive environment for foreign and local investors and improving legal frameworks and working procedures, export advantage to neighbors countries, good opportunity to invest in feed production, existence of different research institutions working on feeds and nutrition, health, genetic improvement and management practices that will support the expansion, production and productivity of poultry industry in Ethiopia are the major opportunities in the sector. By leveraging the available opportunities and addressing the challenges, Ethiopia can unlock the full potential of its poultry industry and enhance its contribution to national economic development and food security.

Keywords

Poultry Production, Opportunities and Constraints, Diseases, Feeds, Predators

1. Introduction

Poultry collectively refers to domesticated birds, especially those valued for their meat and eggs, such as chickens, turkeys, ducks, geese and guinea fowl [1], though only chicken is popularized in most of African countries like Ethiopia. In Ethiopia, the term poultry is almost synonymous to chicken while guinea fowl, geese, turkeys and ducks are not common in the country [2]. The poultry geographical

distribution in Ethiopia indicates that Oromia region has the largest population of chickens (35.9%), followed by Amhara (31.6%), SNNPR (18.1%), and Tigray (10.5%) respectively where all regions together represent 96% of the total national chicken number. Afar, Somalia, Benshangul Gumuz, and Gambela regions account for only of the remaining 3.9 percent [2]. According to [3] the total population of households

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owned chickens in Ethiopia were 9.6 million and the number of the households that owned chickens with the range of 1 to 9 chickens was 7.7million. However, from 10 to 49 chickens were 1.9 million and 50 to 99 chickens were 7100 households [2, 4].

In Ethiopia, poultry production has a lion share in livestock sector, contributing to food security, income generation, and employment opportunities for different category of the society in the country; and particularly it is the most important livestock subsector for Ethiopia's rural populations [5]. The country has huge number of poultry population, estimated to be 59.5 million being the second largest livestock category after cattle and the breed composition of the poultry indicated that 90.86%, 4.43% and 4.71% are indigenous, exotic and hybrid chickens respectively [6, 3, 7].

Exotic chickens were introduced to Ethiopia in 1953 and 1956 by the then Jimma Agricultural Technical School and Haramaya College of Agriculture. Since their introduction to Ethiopia, different government and non-governmental organizations have disseminated many exotic breeds of chicken to rural farmers and urban-based small scale poultry producers. However, poor management; lack of input and output markets; and shortage of quality feeds, vaccines and veterinary services in country have limited success achieved in terms of improving productivity in villages through the introduction of exotic breeds in the country [8, 3]. In addition, since, 2015 the Ethiopian government, recognizing the ever-increasing gap between supply and demand for poultry products, has included a massive target and initiative in its Livestock Master Plan to boost the supply of poultry products.

Ethiopian ministry of agriculture has set a target to increase egg production in the country with an annual increase of 20% from 2020 to 2030. It also aimed to increase commercial poultry meat production from 30,000 ton from 2020 to 2,415,000 ton in 2030 [5]. In order to ensure the current and future poultry research, development and sustainability in poultry production, it is important to take into account relevant information on the major constraints and opportunities in poultry production in the country. Therefore, this review was attempted to collect, organize and summarize information on the major constraints and opportunities in Ethiopian poultry production for future interventions.

2. Major Challenges and Opportunities of Poultry Production in Ethiopia

2.1. Challenges

Although agriculture remains the backbone of survival for developing countries like Ethiopia, the application of agricultural systems and their sustainability face significant challenges. Variability within the sector are destabilizing the overall economy, revealing excessive demand and posing

major threats to food security. The livestock sector, which plays a crucial role in mitigation efforts, economic sustainability, and food security within agriculture, is also confronted with challenges. Each animal species faces risks alongside embedded opportunities. Among these, poultry stands out as particularly influential, offering multidimensional advantages and playing a critical role in nutrition. However, poultry production is affected by both major and minor factors that hinder its sustainability, limiting its ability to meet the expected potential in the country. The major challenges affecting poultry production in Ethiopia are disease, shortage of feed, and predators [9-15].

2.1.1. Disease

The total chicken population in Ethiopia from 2004 to 2022 is showed in Figure 1. The figure indicates that the total chicken population in Ethiopia has been increased by a slow rate. High chicken mortality is the major reason for the stagnation of the poultry chicken growth in Ethiopia. Disease shared huge percentages of chicken mortality in the country. This is more critical due to majorities of production follows local system with mixed chicken, but with minute vaccination knowledge. The diseases in the poultry farm of Ethiopia, have originated from bacteria, viruses, fungus and parasites. Poultry production in Ethiopia is mainly affected in two ways.

The first one is that the loss of almost many flocks is due to the periodic disease outbreaks especially in the village chicken production systems. Secondly, the constant presence of infectious disease is lead to both death of the entire flock and reduces productivity of chicken in the country [16]. According to [17] due to disease, about 32 million birds died [3, 17]. The Newcastle disease (ND), Infectious bursal disease (IBD), Marek's disease, Mycoplasmosis, Salmonellosis, Colibacillosis, Coccidiosis, Toxoplasmosis and Helminthosis are the major significant economic importance poultry disease both in the family poultry production systems and intensive production systems in Ethiopia. Newcastle disease is identified to be the most important disease in all production systems, being responsible for the largest proportion of morbidity and mortality in all parts of Ethiopia [18, 3, 19, 7]. Newcastle disease causes poultry mortality that ranges from 50-100% and that during dry season, severity is higher, whereas in the central high lands of the country the disease is more widespread especially in the rainy season [20, 21].

To prevent and minimize the risk of the diseases, majority of Ethiopian poultry producers use traditional medicine prepared from local herbs such as garlic, lemon, nim sensel, *feto* and ginger [4, 22, 23]. Misuse and overuse of antibiotics is another challenge emerging as a primary contributor for the development of antibiotic resistance in poultry sector and is becoming a burning question throughout the world. Lack of awareness about antibiotic use is a critical factor contributing for propagation of antibiotic resistant bacteria [24].

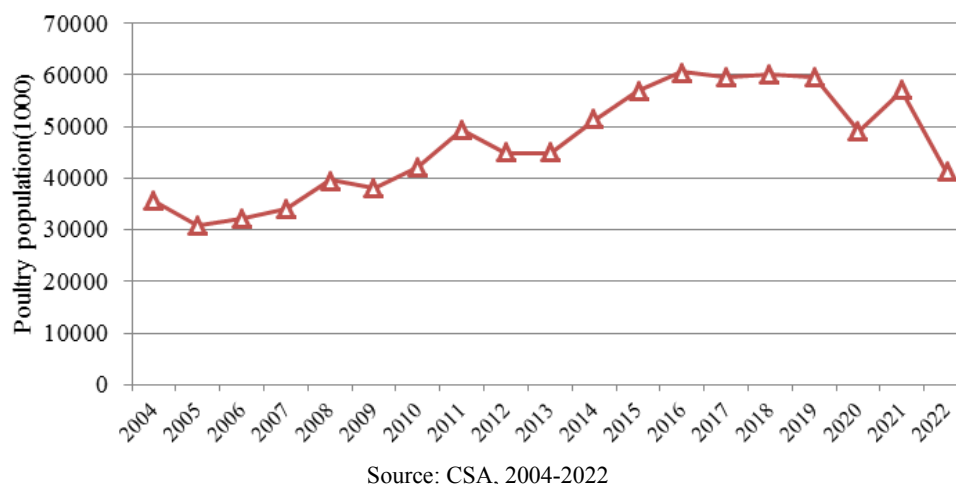


Figure 1. Poultry population distribution in Ethiopia.

2.1.2. Feed Shortages and Quality

Though affordable price and standard qualities are critical for the stability of livestock production, feed is the most important input for poultry production. Feed is a capacious commodity for which all livestock species compete and it is a major pillar towards ensuring economic, social and environmental goals of livestock production in all producing countries [25]. Protein and energy feeds contribute more than 90% of all of the required nutrients for poultry production [26]. In the future, the survival of poultry production in many developing country will undoubtedly, depend on the ability of poultry industry to compete with humans for the available for feeds supply [27].

In Ethiopia, human food demands and poultry feeds and its ingredients have been facing market competition. The competition is happened due to most the common poultry feed ingredients prepared from cereal grains, and oil seed cakes [3]. For instance, feed covers around 70% of the cost of poultry production in the country [10, 26]. As a result, recently, smallholder poultry producers in Ethiopia have complained the increasing cost of feed and quality of feeds on the market. The future expansion of poultry production in Ethiopia is expected to be limited due to the increasing cost and decreasing supply of traditional feedstuff. In addition, recently, ensuring feed safety and quality is one of the key challenges in the commercial feed sectors. According to [26] high aflatoxin levels in compound feeds are the serious concerns in ensuring the desired quality and safety of feed along the food value chain.

2.1.3. Predators

The other major constraint in poultry production is predators which are common in local indigenous chicken production system caused by poor housing and scavenging feeding practices [15, 14]. The major predators responsible for the

loss of a significant number of poultry birds in Ethiopia are birds of prey, hawk, cat, kite (*Elanus caeruleus*), ownerless domestic cats (*Felis catus*) and foxes (*Canis aureus*) (local name Jedelo) and snakes [14, 9]. For instance, predators like birds of prey (34%), dogs and cats (16.3%), and wild animals (15%) cause the death of household poultry in the basin of the Oromia region, Ethiopia [27].

They challenge poultry producers to protect their chickens and limit investment in poultry production and expansion of poultry industry [14]. The consequences of the predators on chicken are related with seasons. Accordingly, eagles are severe concern during dry season while the rest of the birds are more likely to attack chicken during the rainy season. During the rainy season, chicken are highly attacked by wild cats and foxes due to the fact that the scavenging grounds are hidden by vegetation. On the other hand, chicken are more exposed to eagles during dry time, since scavenging sites' foliage is sparser [15].

2.2. Opportunities

Despite many challenges mentioned earlier that affect poultry production in Ethiopia, there are also opportunities to improve chicken production and productivity in the country. In Ethiopia, poultry production is an important economic activity that plays a significant role in generating employment opportunities, improving family nutrition, and empowering women [28, 3]. The small quantity of land and low investment costs required as a starting up and running the operation create a suitable business for poor households in the country [3]. Poultry sector has recognized by government of Ethiopia to reduce poverty, achieving food and nutritional security, and contributing to the national GDP and hence the government developed strategies that boost the production and supply of poultry products in the country. The strategies created a conducive environment for foreign and local investors, and enhancing the ease of doing business in the county

by improving legal issues and working procedures. The increase in the current Ethiopian economy (annual average growth rate of above 7%) and the reduction of poverty rate from 44% in 2000 to 23.5% implies an increase in disposable income, the current huge demand and supply gap of poultry products, the increase in population growth (annual average growth rate of 2.7%) will prompt growth in the demand for consumable products, including poultry.

Ethiopia has a huge opportunity to export poultry products to neighboring countries mainly in East Africa, where demand is also growing and being member of COMESA and CFTA has also another opportunity to share market of poultry products. For instance, in the year 2017 Somalia and Djibouti are the major destination for eggs products where 24,300 kilograms of eggs were exported from Ethiopia and the same year 46,000 day-old chicks and 21,800 exported to Rwanda, Somalia and Djibouti [28]. Currently, federal and regional research institutes, different non-governmental organizations as well as higher learning institutions are engaged in various poultry research activities dealing with feeds and nutrition, health, genetic improvement and management practices that will support the expansion, production and productivity of poultry industry in Ethiopia [29].

3. Conclusion and Recommendations

Despite its potential in contributing to income generation, food security, and employment opportunities, the poultry sector faces numerous challenges that impede its growth; but also there are substantial opportunities for the advancement of poultry industry in Ethiopia. Diseases, shortage of feed, and predators are the major factors affecting significantly the poultry industry in the country. The high mortality rate due to diseases and predators are the major reason for the stagnation of the poultry growth in Ethiopia. Lack of awareness about antibiotic use is also becoming critical factor contributing for propagation of antibiotic resistant bacteria in poultry production system. In Ethiopia, human food demands and poultry feeds and its ingredients have been facing market competition. The future expansion of poultry production in Ethiopia is expected to be limited due to the increasing cost and decreasing supply of traditional feedstuff. Despite the constraints, there are also a lot of opportunities in Ethiopian poultry production that enhance its investment and profitability. The low investment costs, small quantity of land needed and, government initiative to create a conducive environment for foreign and local investors and improving legal frameworks and working procedures, export advantage to neighbors countries, good opportunity to invest in feed production and existence of different stakeholders working on feeds and nutrition, health, genetic improvement and management practices that will support the expansion, production and productivity of poultry industry in Ethiopia. Based on the conclusion made, the following recommendations were drawn.

1. Relevant stakeholders (including, but not limited to research centers, higher educations, ministry of agriculture and international institutions working on poultry), should fully responsible to implement veterinary programs that focused on disease prevention, and vaccination to reduce the high mortality rates of poultry caused by diseases.
2. Promote the development of biosecurity measures through education and providing training to farmers. Preventing disease through biosecurity practices is a proactive approach that is far more effective and cost-efficient than controlling the disease once it has happened.
3. Aware farmers on proper use of antibiotic to prevent the spread of antibiotic-resistant bacteria. Farmers should be informed neither over-use nor underutilize antibiotic to prevent and minimize the risk of disease in poultry farm; otherwise antibiotic-resistant will be wide spread.
4. Invest in local feed production and processing factories and diversify feed ingredients using locally available options but, not limited to crops, and reduce competition with human food demands that encourages improvement in feed availability and sustainability.
5. Build secure housing and implement proper measures to protect poultry from predators, particularly in free-range systems.
6. The government should give high attention to leveraging the available opportunities and addressing the challenges to unlock the full potential of its poultry industry and enhance its contribution to national economic development and food security.

Abbreviations

CFTA	Continental Free Trade Area
COMESA	Common Market for Eastern and Southern Africa
CSA	Central Statistical Agency
DOC	Day Old Chicks
GDP	Growth Domestic Product
SNNPR	South Nation Nationality and People Representative

Author Contributions

Efrem Asfaw: Conceptualization, Methodology, Writing – original draft, Writing – review & editing

Daba Etana: Visualization, Writing – original draft, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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