



Ethiopia National Poultry Development Strategy 2022–2031





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MINISTRY OF AGRICULTURE

Ethiopia National Poultry Development Strategy 2022–2031

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Foreword

Ethiopia is blessed with vast poultry resources. However, the country is unable to meet the ever-increasing demand for poultry and poultry products from domestic sources. Ethiopia's poultry sector is predominantly subsistence-oriented and is characterized by low production and productivity. This is mainly attributed to the poor genetic makeup of indigenous chickens, huge disease burden and poor veterinary services, lack of quality and affordable feeds, and absence of supportive poultry sub-sector-specific policies, strategies and programs. Indigenous chickens remain vital in the substandard production system where exotic chickens hardly survive.

The Ethiopia Livestock Master Plan (LMP) that was released in 2015 identified critical strategic issues to be considered and areas of interventions to be acted upon over a five-year period. The plans could have resulted in considerable positive changes had all the conditions for its implementation been met.

Cognizant of the substantial contribution that the poultry sub-sector makes towards household food and nutritional security, promotion of healthy diets, and its livelihood significance to the diverse value chain actors such as input suppliers, traders and processors, the Federal Government of Ethiopia continues to prioritize poultry farming. Given this, it is high time that the myriad experiences with poultry development in Ethiopia be assessed, assumptions and targets of the LMP be revisited and a new roadmap produced to lead the development of Ethiopia's poultry in an informed manner.

This National Poultry Development Strategy has identified the key technical, socio-economic, organizational, policy and capacity challenges affecting the rapid transformation of the poultry sub-sector. It has also identified the roles and responsibilities expected of the different key stakeholders. Thus, it is believed that this strategy, which is the first of its kind in the history of poultry programming in Ethiopia, will guide poultry development in the country in the next decade. This document has been prepared by experts from the national agricultural research system (NARS) as well as researchers from ILRI has also funded this initiative.

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Director General, ILRI

Acronyms and abbreviations

AGP	Agricultural Growth Program
CRGE	Climate-Resilient Green Economy
CSA	Central Statistical Agency
DAs	Development agents
EARO	Ethiopian Agricultural Research Organization
EIAR	Ethiopian Institute of Agricultural Research
EPPPA	Ethiopian Poultry Producers and Processors Association
FTC	Farmers training centre
GDP	Gross domestic product
GHG	Greenhouse gas
GO	Governmental organization
GP	Grandparent
GTP	Growth and Transformation Plan
HLI	Higher Learning Institutions
IAR	Institute of Agricultural Research
ICT	Information and communication technology
IFP	Improved family poultry
IGAD	Intergovernmental Authority for Development
ILRI	International Livestock Research Institute
JATS	Jimma Agricultural and Technical School
LMP	Livestock Master Plan
M&E	Monitoring and evaluation

MoA	Ministry of Agriculture
MoH	Ministry of Health
MT	Metric tonnes
NAGII	National Animal Genetic Improvement Institute
NAHDIC	National Animal Health Diagnostic and Investigation Centre
NARS	National Agricultural Research Systems
NGO	Non-governmental organization
NHI	National Health Institute
NVI	National Veterinary Institute
PANVAC	Pan African Veterinary Vaccine Centre of the Africa Union
PPP	Public-Private Partnership
SAPA	South African Poultry Association
SBCC	Social and behaviour change communication
SFR	Scavenging feed resources
SFRB	Scavenging feed resource base
SMEs	Small and medium enterprises
SNNPRS	Southern Nations, Nationalities, and Peoples' Region
SP	Specialized Poultry
SSA	Sub-Saharan Africa
TFP	Traditional Family Poultry
TOT	Training of Trainers
TPS	Traditional Production Systems
US	United States
USDA	United States Department of Agriculture
USOM	United States Operations Mission
VC	Value chain
VDFACA	Veterinary Drug and Animal Feed Administration and Control Authority

Executive summary

Ethiopia is a predominantly agrarian country with a satisfactory growth level. Livestock is an integral part of agriculture, accounting for about 20% of total GDP and 45% of the total value of agricultural production, and supporting the livelihoods of a large share of the population. One of the promising areas in the livestock economy is poultry production. Poultry keeping plays a major role as a livelihood source, and makes a valuable contribution to the country's economic development. It is the source of the most versatile and near-perfect foods which fulfill the need for high-quality protein whose demand in Ethiopia has been rising sharply due to population growth, booming urbanization, and relative improvement in the standard of living.

The country's production systems are traditional, improved family and specialized poultry farming based on the producer's objectives, type and number of animals, plus management practices. Though the potential of indigenous chickens under an improved nutritional regime and the disease-free situation is not well known, exotic breeds generally have a comparative advantage of better reproductive and productive performance. Poultry farming and its processing and marketing in Ethiopia are unable to satisfy the ever-increasing demand for poultry products. The government has revised the agricultural policy and designed a Ten-Year Perspective Plan where poultry development has gained greater emphasis. It is a general truth that ambition to change policy and design perspective plans, alone, without a consecutive strategy for implementation rarely place development on the right track. Hence, the Poultry Development Strategy is imperatively the smooth pathway to tap into the economic opportunity of poultry farming. The envisaged strategy generally aims to guide future development initiatives into organized, rationalized, scientific and sustainable development actions to capitalize on the existing opportunities and address the challenges. Critical strategic interventions in the strategy focus on increasing the production, productivity, and competitiveness of farming, processing, and marketing. They also put emphasis on the supply of inputs; improved genetics; quality and affordable poultry feed; designing and implementing coordinated disease control services; strengthening surveillance and diagnostic capacity; ensuring access to quality drugs and vaccines; and facilitating innovative platforms to create an enabling environment to enhance private sector participation. Other areas of focus are improving the efficiency and competitiveness of market development and addressing the cross-cutting issues in poultry development initiatives.

1 Introduction

1.1 Background

Ethiopia is a predominantly agrarian country, and the performance of its economy is dependent on the agricultural sector. With a gross domestic product (GDP) of about 44%, agriculture employs approximately 80% of the workforce and accounts for 70% of export earnings (Denu et al., 2005). Livestock is an integral part of agriculture, accounting for about 20% of total GDP, 45% of the total value of agricultural production and supports the livelihoods of a large proportion of the population. Beyond providing food and other goods and services, the livestock sector contributes to export earnings, mainly through exporting live animals and their products. The industry makes a regular but modest contribution to employment opportunities.

Livestock provides a paramount opportunity in Ethiopian agribusiness, and the poultry sub-sector is among the promising ones. Poultry production is deeply embedded in Ethiopian society and is practised by all strata of humanity, from the landless rural poor to the richest in cities (Wilson, 2010). Poultry keeping plays a key role in reducing malnutrition, reducing poverty and promoting economic growth among resource-poor households in Ethiopia. It also makes a valuable contribution to the country's economic development (Dessie et al, 2003). Poultry production also has social, cultural, and religious importance and plays a significant role in food, income generation, job creation, poverty reduction and other essential economic and socio-cultural functions. Poultry is the source of the most versatile and near-perfect foods to fulfill the need for a high-quality protein whose demand in Ethiopia is gradually rising due to population growth, booming urbanization, and relative improvement in the standard of living.

The production systems are classified as traditional family poultry production, improved family poultry production, and specialized poultry production based on the purpose, flock size and composition followed by the Livestock Master Plan (LMP) document. Indigenous chickens are the predominant poultry species in Ethiopia, with the emerging practice of managing commercial lines. According to CSA, 2019 the total chicken population of Ethiopia was estimated at 59.5 million. Breed composition indicated that 54.06, 2.6 and 2.8 million are indigenous, exotic and hybrid chickens respectively. The productivity of the indigenous chicken is low (in terms of number and size of eggs) and they take longer to attain sexual maturity. However, the potential of indigenous chickens under an improved nutritional regime and the disease-free situation is unknown (de Gonçalves, 2005). Exotic breeds generally have the comparative advantage of better reproductive and productive performances. The egg production potential of a local chickens is 30–60 eggs/year with an average egg weight of 38 g under village management conditions, while the exotic once produce around 250 eggs/year at about 60 g egg weight in Ethiopia (Alganesh et al., 2003).

The commercial poultry industry in Ethiopia is yet to develop to satisfy the ever-increasing demand for poultry and poultry products. Production and marketing are predominantly subsistence-oriented and complicated by several fundamental constraints which have a negative impact on the rate of poultry development. Reduced effectiveness of extension services; low absorption of modern technologies; reduced availability, high cost and poor quality of critical inputs; limited capital and access to affordable credit; inappropriate legal and regulatory framework;

coherent land transferring and utilization policy, and inadequate developmental, processing and marketing infrastructure and facilities have led to the currently prevailing underdevelopment of poultry farming.

It is a general truth that higher ambition from targets set, alone, cannot be achieved without the strategic plan to move from the traditional scavenging family poultry (TFP) system to the improved family poultry (IFP) system that advances in increasing the scale to specialized layer and broiler production of the large-scale commercial poultry farming.

Ethiopia has limited information on the export of either live poultry or processed chicken meat and eggs. The Ethiopian LMP aims to achieve an exportable surplus of poultry meat by 2020; however, export during this planned period appears to be impractical because of the local demand that surpasses supply. Complementary to the LMP, the government has designed a Ten-Year Perspective Plan that puts emphasis on poultry development. The Poultry Development Strategy is a vital tool that can be used to tap into the economic opportunity of poultry farming.

1.2 Rationale

The government and private sector have made attempts to develop modern poultry production that comprises interventions to improve the productivity of Traditional Production Systems (TPS) in rural areas and promote Semi-scavenging/Improved Family Poultry Farming and Specialized Production Systems in urban and peri-urban regions. However, the development efforts have not had a significant impact on the sub-sector's growth, production, productivity and competitiveness. Therefore, this Poultry Development Strategy identifies the responsibility of the government to play its role and to support the development of a vibrant and full-fledged poultry industry.

The Ten-Year Development Plan for the poultry development strategy addresses production and productivity improvement at grassroot level, improved poultry technologies, inputs/services supply and utilization systems development, integrated farming system establishment, product quality and control system arrangement, facilitating reliable market linkage, food/nutrition security, rural job creation, and central coordination and monitoring of poultry development and issues to attain the macro-economy strategic pillars and targets. A continental framework of the 2063 Agenda to see a prosperous Africa and with an agreement of the Comprehensive Africa Agricultural Development Program where agriculture will be the primary source of development to reduce poverty by half through implementing inclusive agriculture. Therefore, poultry development strategy will support for achieving the dreamed transformation agendas in the poultry sector of the country and valuable that helps to inform policymakers, as well as investors involved and willing to involve in poultry development, on the status of the poultry value chain and the potential of future priority investment options for poverty reduction and economic growth.

1.3 Vision

By 2031 the Ethiopian poultry will be among the most recognized sub-sectors in the African continent that delivers competitive products to the domestic and export markets: strongly supporting the national economy, and reducing poverty and malnutrition among both rural and urban dwellers.

1.4 Mission

To ensure efficient utilization of poultry resource development by increasing poultry production and productivity, improving nutritional quality, import-substitution, and sustainable utilization for the betterment of the livelihoods of producers, thereby making a positive contribution to the national economy.

1.5 Goal

To enhance the poultry sub-sector's production, productivity and competitiveness to ensure food/nutrition security, income generation, poverty reduction, import-substitution and export promotion.

1.6 Objectives

To guide the poultry sub-sector's future development, move and transform existing fragmented development initiatives into organized, rationalized, scientific and sustainable development programs through facilitating knowledge and technology transfer, and improving the efficiency and effectiveness of institutional service delivery.

Specifically, the poultry development strategy aims to:

- Establish a sustainable system of providing improved inputs, services and modern technologies that are helpful to increase production and productivity and ensure the quality and safety of poultry products.
- Enhance institutional efficiency and effectiveness in implementation and service delivery in different production systems.
- Facilitate a consistent system to build domestic and export market linkages that are critical to stimulate increasing productivity and commercialization of enterprises.
- Enhance the links between development and research institutions, thus creating enabling environments and building strong public-private partnerships (PPPs).

1.7 Scope

The current Poultry Development Strategy aims to address poultry development at the national level. A timeline of 10 years is set to revamp existing development programs, identify priorities for new ones and develop a framework for development programs. This strategy document will serve as a guideline for future development interventions in improving and promoting efficient utilization of poultry resource potentials in Ethiopia.

1.8 Guiding principles

The strategy will be guided by the following principles:

- Aligning with the development policy and plans of the country.
- Strengthening links with national and international institutes working in the poultry sector.
- Capitalizing on fundamental knowledge that is globally available, and making good use of experiences and practices from other countries in the tropical region. Will also avail information and technology to users.
- Considering cross-cutting issues such as socio-economic factors and nutrition sensitivity.
- Accountability to client and user, plus promotion of a vibrant PPP in poultry resource development and utilization.
- Participatory planning, implementation, monitoring and effective technology transfer.
- Creating a favourable environment for stakeholders for long-term engagement and shared responsibility.

2 Situation analysis

2.1 Development goals in the livestock sector

The Ministry of Agriculture in Ethiopia has developed a 10-year leading plan, inclusive of targets. These are presented in Table 1.

Table 1. Projections of livestock sector development set in the Ministry of Agriculture's 10-year leading plan

Production type/sub-sector	Unit of measure	Baseline year target (2019/20)	MoA 10-year leading plan target for 2029/30
Milk from cows, goats, and camels	Million litres	4.30	11.60
Meat from cattle, goats, sheep, and camels	Thousand tonnes	294.00	1,759.00
Skins and hides	Millions	13.50	72.50
Chicken meat	Thousand tonnes	48.00	106.00
Eggs	Millions	2,854.20	5,546.30
Honey	Thousand tonnes	59.00	152.00
Wax production	Thousand tonnes	6.00	10.00
Silk production	Tonnes	29.96	77.70
Fish	Thousand tonnes	57.40	260.00

2.2 Development goals in the poultry sub-sector

The Ethiopian Ministry of Agriculture's Ten-Year Indicative Plan set a target of increasing egg production from the commercial system from 189 in 2019/20 to 568 in 2029/30, with an annual increase of 20%. It also aimed to increase commercial poultry meat production from 30,000 tonnes in 2019/20 to 2,415,000 tonnes in 2029/30.

If attained, it would ensure food and nutrition security for the growing population and produce a surplus for export. This would be possible through an improved husbandry system and flock productivity, increase in the use of technology, and provision of health and production inputs.

2.3 Institutional capacity and policy framework

Efforts were made by research and tertiary institutions, plus the private sector to improve the poultry sector through additional research and development strategies, programs and projects. Currently, there are regional multiplication centres in each region – Fitcha, Ambo, Nekemt, Adelle, Kombolcha, Bonga and Pawi. Moreover,

privately-owned breeder farms have their parent stocks, including Alema Farms, ELFORA, SW farm, Bistate Gabriel, Elere Farm, Chico Meat, Hawassa Farms, Golden Farms, Gerardo, and Ethio-chicken. Currently, these farms have about 71,000 broiler breeder stock, 87,300 layer breeder stock and 141,700 dual-purpose parent stocks (ENTAG, 2020).

Poultry feed is one of the critical inputs for the sector; currently, there are commercial animal feed-producing companies owned by private or farmer unions. The number of enterprises producing animal feeds as a retail business in different regions of Ethiopia is less than 100. Private plants account for 84% of compound feed production, while farmer unions produce 16%.

Veterinary supplies include veterinary medicine, veterinary equipment and laboratory equipment. The only local producer of poultry vaccines in Ethiopia is the National Veterinary Institute (NVI). However, the NVI has not been able to produce all the required vaccines for commercial poultry production. In addition, there is no strong in-country capacity to produce the required vitamins and equipment.

Poultry disease diagnosis and surveillance are critical for the sector. The National Animal Health Diagnostic and Investigation Centre (NAHDIC) is Ethiopia's most critical veterinary laboratory. It is state-owned and serves as a centre of excellence for animal disease surveillance, investigation, diagnosis, and veterinary research. However, given the rapid growth of the sector and wide distribution of poultry disease, it is important to establish a specialized poultry disease diagnostic laboratory. Research on the poultry sector is currently carried out by the Ethiopian Institute of Agricultural Research (EIAR), universities, and development partners like the International Livestock Research Institute (ILRI).

2.4 Commercialization status

The gap between the demand and supply of poultry products in Ethiopia is high. Previous attempts to increase productivity using indigenous chicken and cross-breeding to a limited extent fell short of expectations. The government has now placed huge emphasis on the commercial sector, and today there are several layer and broiler farms across the country. The number of small-, medium-, and large-scale commercial farms has been increasing over the years. Currently, a total of 4.3 million broiler day-old chicks (DOCs) are producing a total of 47.9 tonnes of poultry meat, while 12 million layer chicks produce around 2.5 billion eggs annually (Management Entity, 2021).

Commercial breeds

Several commercial parent stocks are imported into the country. There aren't any grandparent farms in the country. The most common and adapted commercial broiler breeds are Cobb500, Ross 308 and Hubbard; commercial layer breeds include Bovans Brown, Bovans White, ISA Brown, Lohmann Brown, TETRA-SL, and dual-purpose breeds Sasso and Koekoek (ENTAG, 2020).

2.5 Current research and development strategies

National development programs

Modernization in the development of the agricultural sector, expansion of industrial development with a primary focus on light manufacturing and a significant shift in export development are at the core of the Growth and Transformation Plan (GTP) II. Moreover, during implementation of GTP I, public participation was mobilized. This created a sense of ownership, motivation and national consensus around key development issues of national significance among the public and citizens across the nation.

The concept of the Agricultural Commercialization Clusters (ACC) initiative was introduced during GTP I as a mechanism to integrate the interventions prioritized in the transformation agenda within specific geographies targeting a limited number of high-value commodities. The approach aims to identify a means through which geographically-targeted interventions could be integrated to ensure rapid, sustained and inclusive development of priority agricultural commodity value chains. The ACC approach is modelled on successes from countries that deployed geographically-focused strategies to transform their agricultural sectors and drive rural industrialization. It also incorporated lessons learned from Ethiopia's experience with similar initiatives in the past. The ACC initiative contains clearly defined geographic clusters specializing in priority commodities across the Amhara, Tigray, Oromia and SNNPRS. The clusters will serve as centres of excellence and models for learning as Ethiopia intensifies the ACC approach and scales up best practices across the country. In parallel, regional governments in the country have begun to replicate the model across other geographies and commodities that created an opportunity to produce forage feeds and feed ingredients for the poultry industry.

National poultry development targets (LMP, GTP II, CRGE strategy)

The Ethiopian government, recognizing the ever-increasing gap between supply and demand for poultry products, has included a massive target in its Livestock Master Plan (LMP) (Shapiro, et al. 2015) for the second Growth and Transformation Plan (GTP) to boost the supply of poultry products over a period of five years (2015-2020). The overall target was to achieve chicken meat production of 164,000 tonnes and 3.9 billion eggs by 2020 through IFP and expanded Specialized Poultry (SP), respectively. The Climate-Resilient Green Economy (CRGE) strategy of Ethiopia envisages a significant shift towards increasing the share of chicken meat consumption to total meat consumption from the current 5% to 30% by 2030, by substituting red meat that comes from larger high-emitting ruminants. The second Agricultural Growth Program (AGP II) has also emphasized the development of small-scale poultry production.

Poultry research in Ethiopia

Poultry research in Ethiopia started in the early 1950s with the establishment of the Jimma Agricultural and Technical School (JATS), Alemaya College of Agriculture (ACA), and the US Operations Mission to Ethiopia (USOM/Ethiopia) (Yami and Dessie, 1997). However, it experienced a lag phase between the mid-1960s and the mid-1990s. During this period, poultry remained outside the research agenda of the national institution mandated to conduct agricultural research, the Institute of Agricultural Research (IAR). Poultry research was finally recognized as a national program during the inception of the Ethiopian Agricultural Research Organization (EARO) in 1997. Since then, poultry research has been carried out nationally and is coordinated by the Ethiopian Institute of Agricultural Research (EIAR). Its aim is to provide packages of technologies suitable for increasing the productivity of chickens, mainly among smallholder farmers.

Genetics improvement: The research on genetic improvement mainly focused on introducing and evaluating exotic breeds of layers, broilers and dual-purpose chickens under research stations and on-farm conditions. At the first stage of introduction, four breeds of exotic chickens (Rhode Island Red, Australorp, New Hampshire and White Leghorns) were imported from Kenya, Denmark and the United States by Jimma Agricultural and Technical School and Alemaya College of Agriculture in 1953 and 1956, respectively (FAO. 2008). Later, the DZARC was involved in evaluating the performance of these breeds, including introduction of breeds such as the Brown Leghorn, Light Sussex and Barred Rock (esatu et al, 2016). In 1996 the Ministry of Agriculture introduced the Fayoumi chicken from Egypt. This breed was directly distributed to rural households to improve the scavenging production system. Later, the supply of pure breeds from foreign sources declined for various reasons while the demand for improved chickens remained high. Thus, local interest shifted to commercial breeds. Following this, the DZARC initiated the introduction and evaluation of commercial lines of chickens. Starting from 2008, the research centre introduced three layers of strains (Lohmann Silver from Germany, Dominant CZ from Czech and Bovans Brown from the Netherlands), two broiler lines (Hubbard Classic and Hubbard JV from France), and one dual-purpose breed (Koekoek from Lesotho), testing their performance

both under research station and village production environments. The Lohmann Silver did not adapt well to the village production system, while Koekoek performed well in several villages (Esatu et al., 2011). In 2010, a layer grandparent (GP) breed was imported and tested at the Debre Zeit poultry research farm for the first time. Two commercial broiler parent stocks from Hubbard breeders (Hubbard Classic and Hubbard JV) were also tested. The parents and commercial broilers of classic line outperformed their JV counterparts. The GP was generally found to be adaptive and suitable under on-station conditions at Debre Zeit. In addition to ensuring the sustained supply of improved genetics to producers, the establishment of the grandparent stock enabled the national poultry research program to develop the skill required to manage larger breeder flocks and demonstrated the capacity of the research farm as a future source of the parent stock. In 2015, more exotic breeds, known for their wider adaptation and high performance, were tested. Three dual (Red Barred, Lohmann Dual and Novo Color) and three layers (Lohmann Brown, Dominant Sussex and Novo Brown) breeds are kept at the Debre Zeit research centre. These six breeds were under evaluation until mid 2017 under research station and on-farm conditions. The on-farm tests on those different lines were performed in different agro-ecologies and management conditions. Cross-breeding was also conducted among the strains to identify the best cross for future use in Ethiopia. Studies on local genetics involved genetic and phenotypic characterization of local ecotypes for further use and conservation and selective breeding for increasing egg production and growth. Indigenous chickens have been reported to have inherent scavenging, foraging and nesting behaviour, and are well adapted to harsh environmental conditions (Halima et al., 2007). Under village conditions, birds are continuously exposed to pathogens, and thus survival or longevity in such environments indicates their ability to withstand bacterial or viral infections. Such resistance to various disease-causing agents is a result of years of natural selection under scavenging conditions. Studies conducted by several researchers showed that despite their low overall productivity, indigenous chicken populations have a wide range of morphological and phenotypic variation within and among them.

Feeds and nutrition: The Scavenging Feed Resource Base (SFRB) in the lowland, midland and highlands was assessed to quantify and design an appropriate supplementary feeding scheme for traditional poultry production (Dessie et al, 2002). National-level non-conventional feed resources are also being evaluated various formulations meant for small-scale and commercial production systems were developed and tested on farms (Dessie et al., 2002). Some attempted to design products like improving egg yolk colouration and meat flavour to meet local consumer preferences by including an industry by-product (pepper spent), cassava root, moringa leaf and alfalfa. Tests have been undertaken on the use of insect larvae and earthworm meals as potential protein feed supplements. The science of hydroponics, which increases the nutritive value and biomass of different grains, is also being tested nationally in the centre. Tailor-made feed formulae, feed manuals and consultations with other stakeholders and producers are always significant contributions. Post-graduate students are also seeking to address the issue of poultry feeds by testing alternative feed resources through advisee and research placement.

Health: Some of the significant research undertakings related to poultry health include evaluating vaccines against Newcastle, Marek's and Gumboro diseases, developing strategies for application under commercial layer and broiler production systems, and bio-security gap analyses for the poultry value chain. Some of the studies led to the development of vaccines such as that for Marek's disease and fowl typhoid. Although several research outputs were made available through the years, use by farmers was limited. The main reasons for poor utilization of vaccines, particularly under village production systems, were the presentation of the vaccines in large doses and the lack of cold chain facilities for transporting the vaccines. Research has indicated that prevention and control of Newcastle disease in village systems can significantly improve the production system and increase flock size at household level. The other focus of research in poultry health includes testing different herbs and ethnoveterinary practices, and developing scientific recommendations and standard manuals for users.

Husbandry and management: Significant successes were achieved in developing technologies for raising day-old chicks in areas with no access to electricity and designing and testing improved chicken houses for smallholder producers. The Bangladesh integrated poultry development model was tested under smallholder rural and urban producers' conditions using different packages. The model emphasizes mapping and addressing constraints in the poultry value chain by involving and benefiting all value chain actors has provided valuable lessons for enhancing rural poultry development in Ethiopia. A complete technology package based on commercial layers among peri-urban smallholder producers showed successful outcomes.

Market and value addition: Some of the intervention documents developed by the government, such as the Livestock Master Plan in 2015; Home Grown Economic Reform Policy in July 2018, and Ten-Year Perspective Plan of the Agricultural Sector in 2020, have identified significant challenges of poultry marketing with possible solutions to be deployed to address them. However, due to poor implementation of these recommendations, the poultry marketing system remains disorganized and value addition from this sub-sector is still at embryonic stage. The market supply of poultry meat and eggs and per capita consumption of these products have been very low (see Figure 1).

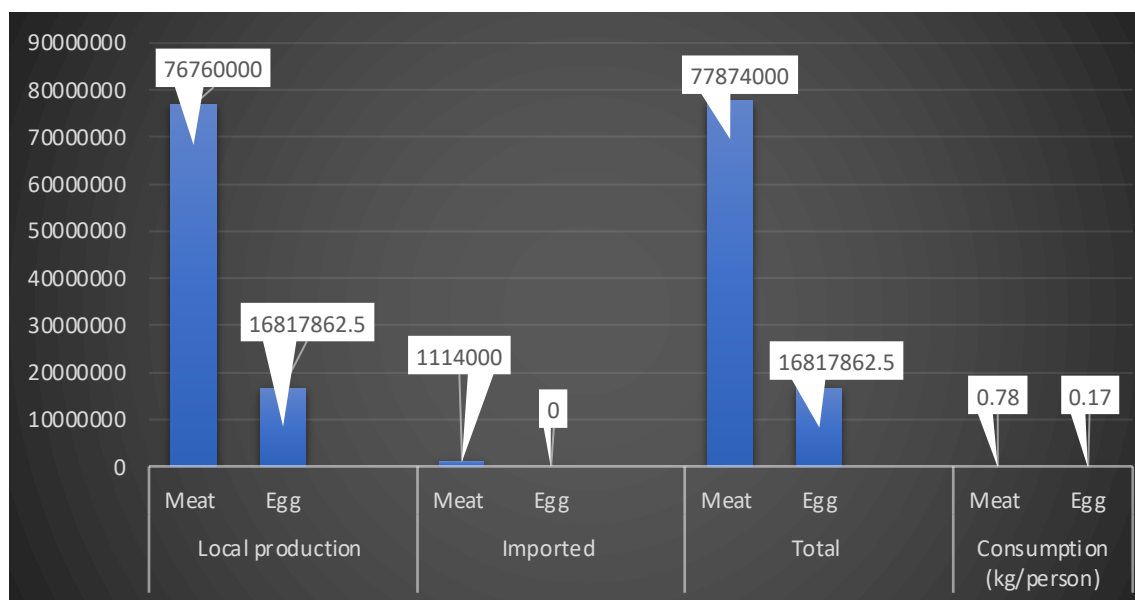


Figure 1: Market supply and per capita consumption of poultry products (CSA, 2019)

The Central Statistical Agency (CSA) underestimates egg and poultry meat production as the reports did not include the commercial sector, as its areas of study focused on the backyard production system. Currently, there are few poultry meat-processing facilities owned by large vertically-integrated private commercial poultry farms. Some are modern and fully automated, while others are very traditional and old. There are no poultry slaughterhouses that provide slaughtering service to small- and medium-scale commercial farms, and as a result, smallholders process meat in extremely unhygienic condition. Most of the small- and medium-scale commercial broiler poultry producers slaughtered chickens in their backyards. The slaughtering is carried out within the farm premises where the chickens were grown. The materials used to slaughter the chicken and process meat are usually traditional and unhygienic. Besides, the butchers have inadequate knowledge of the risk of food safety and quality due to faecal contamination and inappropriate implementation of the required procedures during processing. About 48% of broiler meat at supermarkets came from backyard slaughtering sites (Alemayehu, 2019).

Poultry slaughterhouses are constrained by lack of capacity and cooling systems. The main chicken meat processing plants in the country utilize only 20.6% of their designed capacity (see table 2).

Table 2. Available poultry meat processing facilities' designed capacity and actual performance (Management Entity, 2021)

No.	Processing facility	Designed capacity (MT) Per annum	Performance (MT) in 2019	Operating capacity (%) in 2019
1	Alema Farms	2,592	1,108.60	42.80
2	ELFORA Farms	1,080	268.30	24.90
3	Chico-Meat	2,160	186.60	8.60
4	SW Poultry Processing	2,160	86.30	4.00
Total		7,992	1,649.80	20.60

Future trends in poultry development

The Government of Ethiopia envisions attaining the chicken meat and egg demand for its growing population and producing surplus for export, thus making a substantial contribution to reducing poverty and malnutrition among the rural and urban poor. This can be achieved by transforming the traditional backyard family system (TFP) to improved family poultry (IFP) and increasing the scale of the operation of the specialized layer and broiler production (SP) indicated in the LMP (Shapiro et al., 2015) and other measures in the current strategy.

2.6 Strengths, weaknesses, opportunities and challenges analysis

Internal environment		External environment	
Strengths	Weaknesses	Opportunities	Challenges
General			
Breeding and genetics			
<p>Experience in importation and evaluation of breeds</p> <p>Experience in genetic improvement of indigenous and synthetic chicken breeds</p> <p>Presence of tropically-adapted productive chicken strains</p>	<p>Poor productivity of indigenous chickens</p> <p>Lack of skilled poultry breeder</p> <p>Shortage of breeder multiplication centres</p> <p>Unable to meet current improved breed demand for different production systems</p> <p>No productive and commercial breed produced locally</p> <p>Inadequate system to release locally-improved indigenous and synthetic breeds</p> <p>Inadequate effort of conservation through utilization strategy</p>	<p>Presence of diverse indigenous breeds adapted to different agro-ecologies</p> <p>Adequate market in the region</p> <p>Supporting policy to breed importation</p> <p>Existence of the NAGII (National Animal Genetic Improvement Institute)</p> <p>Potential to produce new Ethiopian breed by research and universities</p> <p>Improved resistance to local diseases and well adaptation to harsh environments</p>	<p>Seasonality of chicken demand and supply (DOC, pullets)</p> <p>Heterogeneity in farmer's preference towards breeds/traits</p> <p>Unsustainable supply of poultry breeds/strains either locally or abroad</p> <p>Shortage of hard currency to import chicken strain from abroad</p> <p>Lack of adequate breeds adapted to different environment</p> <p>Lack of breed registry and release mechanism</p> <p>Lack of locally available GP</p> <p>Higher farmer preference for exotic than local chicken breeds</p>

Internal environment		External environment	
Strengths	Weaknesses	Opportunities	Challenges
Feeds and nutrition			
<p>Ample experience in feeding trials and evaluation of different feed ingredients</p> <p>Availability of skilled manpower to guide issues in the themes</p> <p>Availability of raw materials (non-conventional).</p> <p>Presence of private poultry feed processors, laboratories</p> <p>The presence of emerging initiative to establish feed database</p>	<p>Lack of proper marketing channels for feed ingredients and compound feed</p> <p>Underutilization of some potential feed resources (fish meal, brewery, and sugar industry by-products)</p> <p>Limited knowledge on poultry feed formulation</p> <p>Low production capacity of existing feed compounding industry</p> <p>Lack of advanced well-equipped laboratory facilities and manpower</p> <p>Potential alternative feed resources not thoroughly mapped, studied, and documented across the country</p> <p>Lack of proper feed storage and risk of aflatoxins</p> <p>Limited evidence on dietary manipulations on product quality (meat and eggs)</p>	<p>High demand for quality feed</p> <p>High potential for increased domestic production of compound feed and ingredient</p> <p>Presence of varied non-conventional feed resources, by-products from flour, sugar, brewery, abattoir, oil industries</p> <p>Varied agro-ecology for production of feed ingredients</p> <p>The presence of an institution to regulate feed quality and safety</p> <p>Land availability for private investment in feed ingredient production</p> <p>Alternative feed sources (yellow maize, insects, worms), oil factories</p>	<p>Limited supply and ever-increasing feed price</p> <p>Lack of mandatory feed-quality and safety control mechanisms</p> <p>Higher inclination towards the export of oil seeds and some by-products</p> <p>Increasing feed-food competition</p> <p>Double taxation on compounded feed</p> <p>Absence of industries that produce vitamin-premixes and synthetic amino acids locally</p>
Health			
<p>Presence of laboratories such as NAHDIC and NVI and regional laboratory) which can diagnose poultry diseases and assist the research program</p> <p>Presence of local vaccine production company (NVI)</p> <p>Presence of pharmacies, health clinics and importers</p> <p>Existence of a surveillance system</p>	<p>Lack of efficient poultry-specific diagnostic laboratory</p> <p>Poor coverage of surveillance system for circulating strains of major poultry diseases</p> <p>Weak response system for disease outbreak</p> <p>Less coordinated and ineffective disease prevention and control system</p> <p>Lack of poultry disease specialists</p> <p>Limited access for poultry health input (vaccines, equipment and drugs)</p> <p>Lack of national bio-security standards</p> <p>Low coverage of vaccination and weak cold-chain facility</p> <p>Limited access to poultry-tailored short-term training</p> <p>Lack of waste management/ treatment guidelines</p>	<p>Presence of various functional veterinary service institutions</p> <p>Presence of vaccine quality assurance lab (AU-PANVAC) in the country</p> <p>Availability of all-in-one and effective lifelong vaccines worldwide</p> <p>Private importers and investors</p>	<p>High burden of poultry disease</p> <p>Failure of some vaccines to provide protection against some diseases</p> <p>Limited or lack of proper system for quality control of drugs and vaccines</p> <p>Poor prevention and control of emerging and re-emerging poultry diseases</p> <p>Unavailability of diagnostic kits, reagents and vaccine raw materials</p> <p>Limited vaccine-producing companies (no vaccine producers and facilities at regional level)</p>

Internal environment		External environment	
Strengths	Weaknesses	Opportunities	Challenges
Extension, coordination and linkages			
<p>Availability of farmers training centre (FTCs) and livestock development agents at Kebele level</p> <p>Availability of identified extension packages</p>	<p>Weak poultry technologies extension system and inadequate implementation</p> <p>Inadequate skills of extension agents</p> <p>Limited availability of context-specific technologies for each production system</p> <p>Absence of specialized poultry extension approach</p> <p>Poor linkage between research and extension activities</p> <p>Limited engagement of the private sector and perceiving poultry extension as only public mandate</p>	<p>Involvement of HLI and community-based services for extension</p> <p>Growth of market-oriented production system demanding improved extension service</p> <p>Presence of ICT infrastructure (i.e., 8028 toll-free service)</p>	<p>Absence of strong poultry technologies extension structure and service from federal to regions</p> <p>Limited private sector engagement in extension services</p> <p>Poor logistical support for extension services and inadequate incentive mechanisms</p>
<p>Presence of national framework and discussion forum for planning and reporting of federal and regional government activities</p> <p>Presence of some coordination mechanisms such as ADPLAC, research – extension forum, NGO platforms</p>	<p>Limited functionality and linkage among different stakeholders</p> <p>Absence of platforms for coordination of poultry related issues</p>	<p>Presence of extension structures at the federal and regional government structures</p>	<p>Absence of binding policy framework for coordination and linkage within and among GO, NGO and private sector actors</p> <p>Overlapping of mandates between institutions</p> <p>Lack of financial resources to implement poultry development programs</p>
Business management and market development			
<p>Extensive experience in traditional poultry production systems</p> <p>Experience in outgrower scheme (45-day and 3-month network)</p>	<p>Limited knowledge and capacity on improved poultry business management</p> <p>Lack of comprehensive evidence of contribution of different poultry production systems</p> <p>Weak market linkages</p> <p>Limited practice on value addition</p> <p>Poor transportation facilities, market infrastructure and safety issues</p> <p>Limited business models for access to inputs and marketing of outputs</p> <p>Limited access to market information</p>	<p>High domestic market demand</p> <p>The strategic location of Ethiopia for export market</p> <p>Continental free trade partnership and duty free/ quota free privilege</p> <p>Rise in the number of supermarkets, international hotels and restaurants</p> <p>Potential regional network</p> <p>Presence of competent airline and railway development</p> <p>Presence school feeding initiatives</p> <p>Presence of World Egg Day</p> <p>Focus on Nutrition-sensitive Agriculture</p>	<p>Inadequate infrastructure to support development and expansion of poultry business</p> <p>Limited incentives to encourage producers and market actors</p> <p>Market seasonality and limited consumption habits</p> <p>Lack of legal framework to out-growers farms</p> <p>Increasing product price</p> <p>No quality standard for egg and meat</p>

Internal environment		External environment	
Strengths	Weaknesses	Opportunities	Challenges
Investment in commercial farming and processing industry			
<p>Presence of livestock investment directorate that facilitates commercial farming</p> <p>Experience in commercial poultry businesses</p> <p>Emergence of integrated agro-processing industry parks in the country</p>	<p>Insufficient production and marketing infrastructure</p> <p>Lack of ease of doing business in the sector</p>	<p>High demand for poultry products</p> <p>Large and diversified poultry population for investors to set up local breed ranches</p> <p>Suitable environment</p> <p>Manpower (youth and women)</p> <p>Government attention/ focus, tax relief and duty free to import machinery and necessary inputs</p>	<p>Limited access to land and land provision policy</p> <p>Long and tedious land transfer procedures</p> <p>Limited incentives to encourage private investors</p> <p>Feed processors rely mostly on imported raw materials</p> <p>Lack of financial support (loan and foreign exchange)</p>
Capacity Building			
<p>Human: presence of graduates and experienced personnel in animal science, poultry production, animal health and marketing</p> <p>Physical: presence of hatcheries, feed plants, modern houses, processing plants and abattoirs</p> <p>Institutional: poultry research centre, poultry association, and colleges in all regions</p>	<p>Inadequate poultry sciences/ production curriculum</p> <p>Shortage of sustainable on-the-job short-term training</p> <p>Shortage of skilled professionals</p> <p>Inefficiencies in the poultry business</p> <p>Lack of poultry training centres</p> <p>Lack of dedicated institutions (poultry board, poultry research centres)</p> <p>Limited physical capacity/working under capacity</p> <p>Weak university/college-poultry industry linkage</p>	<p>Existence of commercial farms contribute to knowledge transfer</p> <p>More than 43 universities and agricultural colleges</p> <p>Possibility of opening new farms</p> <p>Government policy support of the sector</p>	<p>University students not interested in poultry as field of study</p> <p>Lack of knowledge among farmers on management, health, feeds and nutrition, and marketing of poultry</p> <p>Limited practical skills among instructors of higher learning institutions in poultry farming</p>
Cross-cutting issues (human nutrition, gender and environment)			
Human nutrition			
<p>Presence of institutions such the Ethiopian Public Health Institute (EPHI), MoH and MoA nutrition directorates</p>	<p>Limited evidence on reasons for inadequate consumption of poultry products</p> <p>Lack of adequate multi-sectoral approach to promote integrated nutrition interventions</p> <p>Lack of appropriate technologies for poultry products preservation and consumption</p>	<p>Presence of national food policy and implementation strategies</p> <p>Wide distribution of poultry production across different agro-ecologies</p>	<p>Cultural and religious taboo that hinders consumption</p> <p>Seasonality of consumption and ever-increasing costs of poultry products</p> <p>Lack of adequate knowledge on how to cook poultry products</p>

Internal environment		External environment	
Strengths	Weaknesses	Opportunities	Challenges
Gender			
<p>Presence of dedicated directorate at different levels of the MoA</p> <p>Presence of better awareness on gender roles at community and household levels</p>	<p>Inadequate mainstreaming of gender/women economic empowerment in poultry development initiatives</p> <p>Limited effort to exploit opportunities for women and youth</p> <p>Limited women and youth sensitivity in development initiatives</p>	<p>Presence of NGOs and GOs focusing on gender and youth</p> <p>Supportive policy to engage women in decision-making</p>	<p>Presence of huge gap in gender equality</p> <p>Cultural and religious restrictions which mainly affect women</p>
Environment (GHG)			
<p>Better understanding on the contribution of poultry in reducing GHG emissions</p>	<p>Failure to promote efficiency in poultry farming in order to reduce GHG emissions</p> <p>Lack of poultry waste-handling and litter disposal guide to minimize methane emission during storage</p>	<p>Lower negative environmental footprint</p> <p>The focus given to poultry on the climate-resilient green economy (CRGE)</p>	<p>Collaborate with partners in develop implementation guideline</p> <p>Limited practice of measuring methane emission from poultry waste</p> <p>Possible human health effect of improved poultry waste at smallholder level</p>
Monitoring and Evaluation			
<p>Presence of monitoring and evaluation (M&E) operational structures at different levels</p>	<p>Absence of effective M&E systems (monitoring, evaluation, and feedback measures)</p>	<p>The move for result-based and digitized M&E and learning systems</p>	<p>Poor infrastructure to support and align modern M&E system at different levels</p>
Enabling Policy and Regulatory Frameworks			
<p>Government interest in developing the livestock sector in general, and poultry sector in particular</p> <p>Establishment of standards agency, VDFACA, FMHACA, trade practice and consumers' protection authority, Ethiopian standards control and accreditation institute</p> <p>The presence of a 10-year Agricultural Perspective Plan</p> <p>Presence of livestock breeding policy, poultry breeding strategy, national feed resource feed development, poultry research strategy</p>	<p>Poor implementation of policy initiatives such tax reliefs and incentives</p> <p>Mismatch between incentive packages and poultry investment demands</p> <p>Poor enforcement of existing legal frameworks</p>	<p>Lessons and best practices drawn for implementation of LMP and GTP</p> <p>Tax exemption on poultry inputs, manuals and technologies</p> <p>Availability of home-grown economic reform program</p>	<p>Absence of comprehensive poultry development policy</p> <p>Limited access to financial services and inadequate interest of loan providers towards poultry</p> <p>Land and land use policy</p> <p>Finance</p> <p>Value-addition to poultry products</p>

2.7 Benchmarking

Benchmarking is a methodology used in management, particularly strategic management, in which organizations evaluate various aspects of their processes in comparison to best practices, usually within their own sector. This allows them to develop plans on how to make improvements or adopt best practices, usually with the aim of increasing some aspect of performance (Dragolea and Cotirlea, 2009). There are two types of benchmarking, namely, internal and external. Internal benchmarking involves benchmarking against its own units or branches, for instance, business units of the company situated in different locations. External benchmarking is used by companies to seek the help of organizations that have succeeded on account of their practices. This kind of benchmarking provides one with an opportunity to learn from high-end performers.

Considering the lack of development in the poultry industry in Ethiopia, the external benchmarking with best performing countries was adopted. According to a World Bank report, the level of development and contribution of the poultry industry to the global production is extremely low. Although Africa represents 13% of the global population, it only provides 4% of the world's poultry products. The average African eats one egg every five or six weeks, as compared to the average Japanese who eats eggs almost daily. In one year, the average African consumes only 3.3 kg of poultry meat, compared to 28 kg for the average French person, and 14 kg worldwide. Poultry production remains very low due to lack of adequate financing, the dearth of high-level technical expertise, and input-related problems.

Table 3. Chicken egg production status (FAO, 2021)

No.	Geographical entity	2016		2019	
		Production (tonnes)	Ethiopia (% share)	Production (tonnes)	Ethiopia (% share)
1	Ethiopia	41,000	–	53,662	–
2	East Africa	420,850	9.74%	481,058	11.15%
3	Africa	3,082,367	1.33%	3,424,102	1.57%
4	World Total	68,262,486	0.060%	83,483,675	0.064%

Table 4. Chicken meat production status (FAO, 2021)

No	Geographical entity	2016		2019	
		Production (tonnes)	Ethiopia % (share)	Production (tonnes)	Ethiopia (% share)
1	Ethiopia	61,840	–	76,760	–
2	East Africa	527,002	11.70%	782,059	9.82%
3	Africa	4,731,771	1.30%	6,206,974	1.24%
4	World total	96,141,163	0.10%	118,017,161	0.07%

In this strategy, three countries – Brazil, South Africa, and India – were used for benchmarking. These countries started small, and have an agro-ecology just like Ethiopia's which is conducive for feed production and poultry farming. They achieved a high level of performance within a few decades and can serve as good examples. Besides, these countries adopted strategies like those indicated in the LMP of Ethiopia. The LMP, although ambitious, indicated the major areas of actions/interventions for establishing successful poultry industry.

South Africa

African poultry production is dominated by South African companies – four of the top six broiler producers are headquartered in South Africa (Graber, R. 2018). In addition, South Africa leads in egg production. The South African poultry industry evolved from a backyard industry to a more efficient and highly productive commercial operation within a few decades, assisted by strong associations involved in a continuous process of identifying issues affecting the industry and taking positive steps to deal with these (Nkukwana, T. T. 2018).

In 2019, the South Africa government extended its commitment and attention to establishing the Poultry Sector Master Plan. The master plan was developed in close partnership between government and several stakeholders in the industry, drawn from poultry farmers, processors, exporters, importers, and organized labour with the aim of stimulating local demand, boosting exports and protecting the domestic chicken industry. The industry focuses on driving local demand and protecting the local industry, feed costs (primarily maize and soya), meeting safety and veterinary requirements, as well as ensuring compliance to boost exports and transform the South African sector.

Brazil

According to the Brazil Poultry Industry, 2016 report, the country's poultry industry, especially broiler meat production, is one of the best in the world. About four out of every 11 kg of poultry exported in the world come from Brazil (Azevedo, 2021). In Brazil, poultry farming employs more than 3.6 million people, directly and indirectly, and accounts for almost 1.5% of the national GDP (Mansilha et al., 2019). The sector is represented by tens of thousands of integrated producers, hundreds of processing companies and dozens of exporting companies. From 2000 to 2005 the industry doubled in size, expanded exports fourfold, and increased its share in Brazil's trade balance. The industry's supply chain is based on the "integration system", especially in southern Brazil. Slaughter companies provide inputs in advance, and producers are obliged to trade ready poultry exclusively with the company. Brazil is one of the few major poultry-producing countries that has never recorded a single case of avian influenza (bird flu). In addition, in egg production, Brazil's egg production is expected to reach 54.503 billion eggs in 2022, which is 2% more than the 53.533 billion registered in 2020. Once again, this is a new sector record. Domestic egg consumption will reach 255 units per capita, a new historical index, with an increase of 1.5% compared to the index registered in 2020, with 251 eggs (Azevedo, D. 2021).

India

The poultry industry in India which was largely a backyard venture before the 1960s, has been transformed into a vibrant agribusiness, making the country the third largest egg producer in the world, and the 19th largest broiler producer (Mehta, 2002). This was made possible due to several factors, such as active developmental support from the state and central government, research, plus development support from research institutes, etc. The Indian poultry industry is self-sufficient, and is supported by a broad and strong genetic base in which the productivity levels of broilers and layers are equal to those achieved elsewhere (e.g., in USA and the European Union).

Table 5. Formulated feed production comparison between Ethiopia and one of the benchmarked countries (MoA, 2019)

Status/best practices	Indicator	Ethiopia	South Africa
Industry base and capacity	Annual production of compound feed	0.061	11.74
	Feed processing plants	60	-
	Production capacity	Working under capacity	Working with full capacity
	Diversity	Limited to private and farmer's union feed companies	Supported with integrated feed production (commercial livestock integrated feed production)
	Number and level of expertise	Dominated by junior experts with very limited industry experience	Several world-class nutritionists who have years of experience in the industry. Keeping up to date with international developments in the science of animal nutrition
	Equipment	Traditional feed processing facilities	Modern and state-of-the-art facilities and equipment for feed processing/ration formulation
	Ingredient supply	Insufficient and expensive	Reliable, affordable domestic supply with excess for export
Advisory services and regulatory capacity	Advisory	Underdeveloped advisory service	Effective and capable advisory service
	Feed standard and regulation	Underdeveloped and emerging regulatory landscape	Well-developed and strictest self-regulations to ensure safe feed for safe food are always produced
Policy support	Ingredient supply	Lack of focus and absence of higher-level policy support for streamlining domestic production of feed ingredients, pre-mixes and feed additives	Focused and strong commitment of government in domestic production of feed ingredients and domestic production of pre-mixes and feed additives
	Research and extension support	Lack of focus and government attention in public service to the commercial feed industry	Strong public support
	Market	Underdeveloped marketing system	Well-developed and efficient marketing system for input (ingredient) and finished product

3 Strategic issues and interventions

3.1 Breeding and genetics

One of the major bottlenecks in the Ethiopian poultry industry is lack of sustainable supply of more productive and adaptable chicken strains. Most of the chickens used in Ethiopia are poor-performing indigenous breeds. A different approach is needed to accommodate the needs of the ever-increasing population and demand for affordable poultry products.

This strategy, therefore, identifies the major strategic interventions aimed at addressing the recognized production systems. The interventions vary from system to plan based on the type of breeds used and production objectives. The key strategic issues identified are lack of a sustainable supply of improved dual-purpose/tropically-adapted chicken strains and breed technological options for an improved family production system, plus an inadequate supply of high-yielding layers and broiler poultry breeds for a specialized poultry production system. Other issues include weak capacity of breed multiplication for sustainable supply, lack of public-private partnership in poultry breed development, expansion and dissemination, lack of long-term and sustainable investment and commitment for genetic improvement, lack of quality standards for poultry breed technologies across production systems and lack of a guiding framework for the utilization of identified genetic resources based on agro-ecological potentials and production systems that are unique to the country.

3.2 Feeds and nutrition

The traditional and improved family poultry production systems target smallholder farmers who can utilize potential feed resources locally. Most poultry products (88.5%) are obtained from the conventional family poultry production system (CSA, 2019). Therefore, interventions that increase traditional and improved family poultry production and productivity through improved feed technologies are critically important. The strategy aims to implement potential plant and animal source feeds like insects and worms. In addition, it will work towards the establishment of small-scale micro-enterprise feed processing associations to produce and deliver formulated feed for improved family poultry producers.

A specialized poultry production system requires an adequate supply of quality and safe feed. Increasing the supply of quality compound feed requires interventions that will enable the availability of feed ingredients or inputs to produce sound and quality compound feed for domestic utilization or export. Potentially available, utilization and management of alternative poultry feed ingredients across various geographies for the compounding feed industry is an intervention area which aims to improve the supply of formulated rations at a reasonable price. In addition, large-scale production of primary ingredients like maize and soybean is an essential intervention for the poultry feed compounding industry. Most of our country's agricultural system is rain-fed, thus most of the arable land remains idle during the dry season. Youth groups need to be organized to produce major poultry feed ingredient grains (maize, soybean, and other oil cake seeds) through irrigation.

Moreover, ensuring the safety of compound feed is crucial if one hopes to remain competitive in the feed industry and for safe poultry production and delivery of products. Domestic production and supply of premixes, minerals, and feed additives are essential to produce quality feed. Government incentives and demand intervention will enhance investment opportunities in the domestic production of such premixes and feed additives. The cost of feed accounts for more than half of the cost of production. Hence, different strategic issues and interventions to ensure the sustainable supply of adequate, quality, safe and affordable formulated poultry feed are in the forefront of the agenda on feed and nutrition intervention for transformation of the country's poultry sector.

3.3 Health

The poultry sub-sector will play a key role in ensuring food and nutrition security, plus youth and women's economic empowerment. The sector is becoming a source of income and jobs for many citizens. However, the industry faces many challenges that could hamper its progress in its infancy stage. Recurring poultry diseases are a major bottleneck to development in the industry. This strategy will support the design and implementation of a coordinated disease control strategy, strengthen surveillance and diagnostic capacity, and provide quality drugs and vaccines. All these will contribute towards the alleviation of poultry health challenges.

3.4 Extension, coordination and linkages

The Ethiopian poultry production system is undeveloped and remains traditional. Provision of inputs (improved breed, feed source, medicaments, equipment, etc.) is very limited and rudimentary. In addition to the shortage of information, its supply faces challenges from illegal brokers who make the process complex and unreachable. Health, credit, extension and other similar services also face the same problem. To improve the poor linkage between poultry input, service and markets, and achieve the envisioned strategy, robust poultry innovation platforms need to be created at the national, regional and local levels. Innovation platforms are a space for learning and change. A group of individuals (who often represent organizations) with different backgrounds and interests: farmers, traders, food processors, researchers, government officials, etc., can be the innovation platform members and activators. The members come together to diagnose problems, identify opportunities and find ways to achieve their goals. Platforms formed at the national level rely on adjusting policy and regulatory issues. The middle and local level innovation platforms focus on generating new ideas, technologies and practices, and scaling up new ideas, technologies and techniques to all farmers. Besides, establishing and strengthening innovation platforms, material and financial support to the existing association will help strengthen the group and create several villages and small-scale poultry associations.

3.5 Business management and market development

Marketing is the pooling factor in stimulating production and productivity improvement. It is effective in the creation of new and activation of the current demands if supported with effective promotion. Marketing facilitates the development of technological/technical innovations, and provides employment opportunities for all engaged actors. However, poultry marketing is complicated mainly by several fundamental constraints, which subdue its rate of growth.

3.6 Investment in commercial farming and processing industry

Smallholder poultry farming might not be considered an economically viable long-term activity that would contribute to sustainable household food security, national capital accumulation, foreign exchange earnings, import substitution, and employment creation. It is no longer seen as the sole engine of economic transformation.

Successful investment in poultry improvement can result in an overall surplus of all meat and egg production over projected consumption requirements by 2028. Private sector investment in the poultry farming and processing industry contributes an indispensable pathway towards economic growth for most developing countries that rely on the agricultural sector. However, poultry investment and processing activities in Ethiopia are at their infancy, and their contribution to the development of the poultry industry and the country is minimal. The farms are poorly managed, and hygienic practices are hardly implemented. It is imperative that a better strategy be set up to renovate this sector and scale up the industry. Possible transformation to large-scale poultry farming and processing industry investment typically leads to increased diversity of marketable commodities at the national/international level based on the comparative advantages of a given product.

Access to land resources

Access to land is typically one of the significant constraints that poultry entrepreneurs face when investing in new operations. Obtaining land for initial investment and expansion is extremely difficult. A recent study found that suitable land is generally not available for poultry entrepreneurs to purchase or enter into a long-term leasehold. Small-scale producers have short-term leasehold arrangements on a recurring three- to six-month basis, especially in urban and semi-urban areas, where regional governments usually avoid leasing out land to livestock businesses due to health and environmental concerns. The Ethiopian constitution gives regions power to administer land, consistent with the constitution and federal laws. This is reinforced in the Federal Rural Land Administration and Use Proclamation, which allows areas to make laws to manage and administer land within their region. This vesting of powers at the regional level means there can be great diversity between areas in terms of rules, practices and incentives for different types of investments. For example, land lease fees vary between regions and are paid to either the regional or woreda governments. The length of land leases also varies for different areas. Licensing requirements can also prevent land access for new entrants or small-scale farms. For instance, poultry producers in most parts of Ethiopia with limited flock sizes cannot obtain an investment license, which prevents them from lodging a request for land. Acquiring an investment license appears to be seamless for foreign investors, even when securing land close to the city.

Access to financial products and services

Financial resources support business growth and can help businesses enter the poultry market and existing companies to scale up faster. In Ethiopia, financial services can be accessed through an array of providers. The state-owned Commercial Bank of Ethiopia (CBE) and 16 private commercial banks offer regular banking services. While a dedicated policy bank – the Development Bank of Ethiopia (DBE) – primarily lends to priority sectors, including agriculture. The share of loans disbursed by banks to the agricultural sector increased by 38.5% in 2019/2020 from the previous year; however, this remains under 10% of total loan disbursement. At the practical level, entrepreneurs, farmers and cooperatives find it difficult to borrow from banks for reasons related to the supply and demand of loans. With these pitfalls, stakeholders in the agricultural sector have historically contended with limited access to capital and other financial services. Poultry producers from resource-poor households, in particular, face several hurdles, including limited access to financial assistance.

3.7 Capacity building

The progress towards improved economic infrastructure, abundant and affordable labour, and its excellent climate and fertile soil remains Ethiopia's comparative advantage for poultry producers and easily attracts investors. The infrastructure development, particularly that pivotal for the production, processing and marketing, is inadequate for the desired coverage and level. Labour, while low cost and abundant, lacks the necessary skills and therefore requires training and education. Enhancing the capacities of institutions in both the public and private sectors (including research and development institutions) to support the breeding and multiplication of appropriate chicken and feed breeds is essential. It is crucial that financial institutions enhance their marketing systems, and that conventional financial institutions provide working capital to sustain the activities of poultry industry actors. They must come up with feasible and practicable development, research, extension, and policy intervention options to help address the challenges and enhance poultry farming and processing efficiency.

3.8 Cross-cutting issues (human nutrition, gender, and environment)

Mainstreaming cross-cutting issues in any development intervention is critically important. The national cross-cutting issues in agricultural development comprise gender sensitivity, nutritional sensitivity and CRGE development initiatives. Besides the issue human rights, there are strong economic reasons why gender equality needs to be promoted across the agriculture sector. However, if equal access to agricultural inputs and support is not guaranteed, women will be less productive and will not share the benefits with their male counterparts. Similarly, failure to mainstream nutrition sensitivity and climate change issues in agricultural development, particularly poultry farming, limits the relative gains from the poultry sub-sector. Therefore, this blueprint on development of the poultry sub-sector will significantly contribute to mainstreaming the cross-cutting issues. It will ensure that due consideration is given to the cross-cutting issues of gender and youth, human nutrition and climate change in the overall farming and non-farming poultry development initiative.

3.9 Monitoring and evaluation

Monitoring and evaluation (M&E) should be an integral part of all the interventions, generating reliable and timely data, and providing information to stakeholders and the ministry on progress of activities, results and outputs achieved, plus the challenges faced during implementation. The absence of a well-established M&E system in poultry development activities remains a key weakness. Hence, establishing context-specific and tailored M&E systems will have multiple benefits. The Ministry of Agriculture and other stakeholders will monitor and evaluate planned interventions and take appropriate corrective actions at different levels. This will help the ministry and its partners to fine-tune the strategic interventions and establish accountability during implementation. The M&E activities will be carried out by a group of experts in the ministry and partners at different levels.

3.10 Enabling policy and regulatory frameworks

An appropriate policy and legal framework that supports the private sector's active engagement will ensure transformation of the sub-sector. Hence, formulating and implementing comprehensive policy and legal frameworks is crucial for success in improving the production and productivity of the sectors. Currently, there is no specific and supportive policy and regulatory framework that enhances the active engagement of the private sector in inputs supply, production and processing in the poultry sub-sector. Moreover, existing policy frameworks are characterized by multiple and complex laws and regulations to access land and finance, supply of inputs, plus import and export of products. Access to land and finance for small- and medium-scale commercial

production remains a key challenge even in the rural areas. Inadequate incentives and subsidies, double taxation and excessive duty when importing production inputs such as feed are vital challenges. The role of the public and private sectors in providing inputs and services is not clearly streamlined at different levels of the value chain. Together with other partner institutions, the strategic interventions under this theme will focus on addressing the above issues.

Table 6. Strategic issues and strategic interventions

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Breeds and genetics			
Poor productivity of indigenous chicken breeds in traditional family poultry production systems	<p>Encourage evaluation and selection of indigenous breeds that are well adapted to their environment</p> <p>Encourage genetic improvement programs on selected and promising indigenous chicken strains</p> <p>Support poultry research centres or universities/colleges working on poultry research to distribute improved breeding cockerels to small-scale chicken producers to improve blood levels of their indigenous breeds</p>	<p>Encourage crossing dual purpose breed (Koekoek, DZ-White) with improved local strains</p> <p>Develop comprehensive guidelines for multiplication and dissemination of selected strains</p> <p>Support poultry research centres or universities/colleges working on poultry research to distribute improved breeding cockerels to small-scale chicken producers to improve blood levels of their indigenous breeds</p>	<p>Establish sustainable and functional systems for supply and delivery of improved indigenous breeds</p> <p>Support indigenous breed ranch establishment for production and conservation in different agro-ecologies</p> <p>Support poultry research centres or universities/colleges working on poultry research to distribute improved breeding cockerels to small-scale chicken producers to improve blood levels of their indigenous breeds</p>
Lower survival and lower productivity of chicken breed in improved family poultry production system	<p>Identification, documentation of potential tropically-adapted chicken strains</p> <p>Support and encourage importation and use of tropically-adapted chicken strains</p> <p>Adopt or distribute technologies such as haybox-brooder, portable chicken house, solar assisted mini-hatchery, and others</p>	<p>Identification, documentation of potential tropically-adapted chicken strains</p> <p>Support a new approach to strengthen effective breed multiplication and delivery (partial privatized and management contract)</p> <p>Design conservation through utilization strategy for controlled breeding</p> <p>Adopt or distribute technologies such as haybox-brooder, portable chicken house, solar assisted mini-hatchery, and others</p>	<p>Establish sustainable and functional tropically-adapted chicken breed supply system (public-private partnership)</p>

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Lower efficiency (production and productivity) of commercial strains in specialized production systems	<p>Promote brooding sites/mother units to improve the survival and distribution of appropriate high performing strains</p> <p>Encourage the establishment and use of composite chicken strains developed locally</p> <p>Document and advise on performance of strains suitable for the system</p> <p>Support and ensure the efficient supply of high yielding layers and broiler poultry breeds</p>	<p>Establish and support sustainable/ efficient breed supply system</p> <p>Encourage and support establishment of local breeder and GP farms</p>	Support establishment of big breeding farms based abroad to facilitate sustainable supply
Feeds and nutrition			
Poor scavenging feed resources (SFR) in traditional poultry production systems	<p>Promote adaptable and locally available poultry feed resources (plant leaves, root crops, insects, worms, etc.)</p> <p>Provide support to small-scale chicken producers to improve their feeding practices (e.g., training of agricultural development workers to support FTC centres)</p>	<p>Develop appropriate supplementary feeding schemes for traditional and family poultry based on locally available feed ingredients</p> <p>Train farmers to locally produce feed from waste products and improve their feeding strategies</p>	Continue implementation
Limited access to context-specific feed technologies for improved family poultry production systems	Design and develop appropriate feed technologies for various poultry production systems (traditional, improved, and specialized poultry production)	Implement the newly developed and existing best-bet technologies for end users	Continue implementation
Insufficient access to farm machineries and equipment for feed production locally	Government incentives (tax and duty free)	<p>Facilitate and support access to loan to purchase poultry farm machinery and equipment</p> <p>Support locally produced poultry farm equipment's and machinery</p>	Continue provision of support and strengthening for sustainable production of compound feed
Absence of well-organized and established small- and medium-scale feed processing units/ cooperatives	<p>Government incentives (land, loan for micro-enterprises)</p> <p>Encourage farmers to use locally available feed ingredients</p> <p>Run promotions to attract local or international investors to join the business</p>	<p>Build the capacity of actors to produce major feed ingredients</p> <p>Run promotions to attract local or international investors to join the business</p>	<p>Increase volume of production</p> <p>Enhance and promote to medium-scale feed compounding industry</p> <p>Run promotions to attract local or international investors to join the business</p>
Lack of sustainable feed supply in sufficient quantity and quality	<p>Develop policy framework to provide land and other inputs for enhanced commercial scale production of maize and soybean targeted for poultry</p> <p>Create an incentive mechanism for the private sector to invest in agro-processing and value addition</p>	Continue/enhance commercial scale production of maize and soybean targeted for poultry	Continue/enhance commercial scale production of maize and soybean targeted for poultry

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Inadequate mandatory test and compliance of feed standard for safety and quality of compound poultry feed, plus a weak regulatory system	<p>Strengthen the standards for poultry compound feed quality and safety for different classes of poultry</p> <p>Establish quality control/Enhance regulatory efficiency</p> <p>Set mandatory rules</p> <p>Strengthen human and physical capacity to regulate feed safety and quality</p>	<p>Build the capacity of feed producers to put in place internal feed safety and quality checks</p> <p>Continuous monitoring and evaluation of good manufacturing practices followed by feed producers</p>	Continue implementation
Limited access to feed technologies such as feed formulation software and android application software	<p>Creation of a national database on geographic area-based availability of feed ingredients</p> <p>Integration of the list of poultry feed resources with available data on their chemical composition</p> <p>Customize available tools or develop new ones for ration formulation advisory purposes based on available resources</p> <p>Provision of training on poultry ration formulation</p> <p>Software application for feed formulation</p>	<p>Continuous provision of training on poultry ration formulation</p> <p>Ration formulation implementation for various classes of poultry production systems</p> <p>Capacity building</p>	Continuous customization of available tools on implementation
Absence of incentives for domestic production of premixes and feed additives	<p>Put in place policy incentive mechanisms for investment and domestic production of premixes and feed additives</p> <p>Run promotions to attract investors in domestic production of premixes and feed additives</p>	Implementation continues	Implementation continues
Lack of compound feed and poultry producer unions	<p>Encourage compound feed and poultry producers to form unions</p> <p>Support the existing poultry association to widen and encompass regional poultry and feed producers to share identified problems and challenges in the sector</p>	<p>Strengthen and empower the existing association</p> <p>Create a linkage between large-scale maize and soybean producers with the union of feed compounders</p> <p>Create a linkage between feed compounding union with poultry producer union</p> <p>Support the existing poultry association to widen and encompass regional poultry and feed producers to share identified problems and challenges in the sector</p>	Enhance and strengthen the unions

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Health			
Absence of strong disease surveillance and control programs for traditional and improved family poultry production	<p>Strengthen poultry health extension and clinical services</p> <p>Design proper community-based disease control scheme (vaccination scheme) using village community-based vaccinators</p> <p>Decentralize vaccination-producing institutes to regionals/clusters</p> <p>Attract or encourage private investors to invest in vaccination production</p>	<p>Strengthen poultry health extension and clinical services</p> <p>Ensure the availability of vaccines with required packages and ensure access to other poultry health inputs</p> <p>Design proper community-based disease control scheme (vaccination scheme) using village community-based vaccinators</p> <p>Strengthen knowledge and skill capacity of development workers</p> <p>Ensure readily available cold chain system to maintain quality of vaccines</p> <p>Support NVI to establish standard storage facility for vaccination at regional or universities to serve stakeholders in different regions</p>	<p>Strengthen poultry health extension and clinical service</p> <p>Design proper community-based disease control scheme (vaccination scheme) using village community-based vaccinators</p> <p>Strengthen knowledge and skill capacity of development workers</p> <p>Ensure readily available cold chain system to maintain the quality of the vaccines</p> <p>Support NVI to establish standard storage facility for vaccination at regional or universities to serve stakeholders in different regions</p>
Absence of disease control program for specialized poultry systems	<p>Registration of farm locations and actively present flocks</p> <p>Design bio-security standards for different levels of commercial poultry farms</p> <p>Improve professional competence on poultry health knowledge and skill</p>	<p>Registration of farm locations and actively present flocks</p> <p>Application of bio-security standards and audit systems in poultry farms</p> <p>Make available vaccines for major poultry diseases throughout the country</p> <p>Improve professional competences on poultry health knowledge and skills</p> <p>Ensure participation of private sector animal health workers in poultry disease control</p> <p>Revision of curriculum – be more practical</p>	<p>Registration of farm locations and actively present flocks</p> <p>Application of bio-security standards and audit systems in poultry farms</p> <p>Make available vaccines for major poultry diseases throughout the country</p> <p>Improve professional competences on poultry health knowledge and skill</p> <p>Ensure participation of private sector animal health workers in poultry disease control</p>

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Inefficient poultry disease surveillance and diagnostic capacity	<p>Design and apply regular poultry disease surveillance system for early detection and intervention</p> <p>Identify the type and distribution of poultry disease throughout the country</p> <p>Ensure strong linkages among laboratories and vaccine-producing companies</p>	<p>Establish central poultry disease diagnostic laboratory at NAHDIC</p> <p>Design regular poultry disease surveillance system for early detection and intervention</p> <p>Build capacity of regional veterinary laboratory on poultry disease diagnosis and surveillance</p> <p>Identify type and distribution of poultry disease throughout the country</p> <p>Ensure strong linkages among laboratories and vaccine-producing companies</p>	<p>Design regular poultry disease surveillance system for early detection and intervention</p> <p>Build capacity of regional veterinary laboratory on poultry disease diagnosis and surveillance</p> <p>Identify the type and distribution of poultry disease throughout the country</p>
Poor access to quality vaccines, drugs and other health inputs	<p>Strengthen the existing quality and safety control and certification system for local and imported poultry health inputs</p>	<p>Build the capacity of National Health Institute (NHI) to produce vaccines for important poultry diseases</p> <p>Ensure production and distribution of vaccines with suitable packaging for village poultry</p> <p>Strengthen existing quality and safety controls, and certification systems for local and imported poultry health inputs</p>	<p>Build the capacity of NHI to produce vaccines for important poultry diseases</p> <p>Ensure production and distribution of vaccines with suitable packaging for village poultry</p> <p>Strengthen existing quality and safety controls, and certification systems for local and imported poultry health inputs</p>
Extension, coordination and linkages			
Poor linkage among stakeholders and absence of innovation platforms	<p>Establish platforms at national, regional and local levels</p> <p>Strengthen collaboration and networking among different platforms</p> <p>Establish strong linkages among input suppliers and poultry producers</p> <p>Develop legal framework to establish a poultry board</p>	<p>Establish control mechanisms to deter illegal brokers</p> <p>Strengthen linkages and promote networks among poultry producers and other sectors</p> <p>Develop a modality for central coordination of platforms</p> <p>Facilitate the establishment of agro dealers and agro shops</p> <p>Establish a poultry board</p>	<p>Continue the strengthening and central coordination of innovation platforms at different levels</p> <p>Continue strengthening established linkages and scaling up</p>

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Inconsistent extension structure and poor services in the sector	<p>Identify key strategies to strengthen the system</p> <p>Build the technical capacity of livestock extension workers</p> <p>Develop a coordinated poultry extension system (structure and service)</p> <p>Support FTCs to cascade services to smallholders in the village</p>	<p>Develop private extension services</p> <p>Promote use of digital technology</p> <p>Continue to enhance capacity development of the actors</p> <p>Conduct monitoring and evaluation</p> <p>Support FTCs to cascade services to smallholders in the village</p>	<p>Continue use of digital technology</p> <p>Continue implementation of selected strategies</p> <p>Conduct monitoring and evaluation</p> <p>Support FTCs to cascade services to smallholders in the village</p>
Business management and market development			
Inadequate capacity and limited experience in farm planning, budgeting and business management	<p>Performance evaluation of poultry businesses at different levels</p> <p>Develop business models for inputs delivery and output marketing</p> <p>Develop improved business management and record-keeping system</p> <p>Prepare training manuals and guidelines for farm managers and other actors working in the sector</p>	<p>Develop and deploy context-specific poultry business models for small-/medium-scale producers</p> <p>Establish poultry business risk management options</p> <p>Build the capacity of producers in improved poultry business management and record-keeping systems</p> <p>Build the capacity of farm managers and other actors</p>	<p>Improve poultry business management systems at different levels</p> <p>Build poultry farm and business management capacity for efficient poultry production at different levels and scales</p>
Lack of comprehensive evidence on the economic, social and nutritional contribution of poultry sub-sector to the overall economy	<p>Document the economic contribution of important on-farm and non-farm poultry activities</p> <p>Valuation of poultry business activities along the VC</p>	<p>Establish system to track economic (GDP) contribution and per capita consumption</p>	<p>Develop a centrally-managed national database system on the overall contribution of the poultry sub-sector</p>
Uncompetitive and inefficient poultry marketing system	<p>Identify marketing models that work best for different production systems</p> <p>Explore niche market opportunities for specific products</p> <p>Establish a consumer-driven market approach/value addition</p>	<p>Develop and deploy innovative marketing models/systems</p> <p>Empower poultry associations to improve marketing efficiency</p> <p>Create reliable market linkages of inputs and outputs</p> <p>Enhance access to marketing information and other services</p>	<p>Develop rules and regulations to establish efficient and competitive marketing of poultry products and develop the value chain</p> <p>Develop rules and regulations to ensure enforcement of access input and output markets</p>
Investment in commercial farming and processing industry			
Lack of ease of doing business	<p>Arrange feasible business development service delivery</p> <p>Improve partnership for effective service provision</p>	<p>Close supervision and support to improve the investment performance</p>	<p>Revise investment protection policies</p>

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Reduced and ineffective remunerative incentive packages	<p>Critically identify appropriate incentive packages</p> <p>Revise rules and regulations against incentive packages</p> <p>Establish stocktaking system for commercial farming and processing</p> <p>Develop business model and investment framework</p>	<p>Ensure adequate and effective incentive packages to encourage investors</p> <p>Popularize investment opportunities to attract potential investors</p>	<p>Ensure guidance from government to improve access to incentive packages</p>
Poor competitiveness of poultry farming and processing industry	<p>Investigate possible opportunities on positive economies of scale</p> <p>Support product diversification to meet market demand and innovation to drive production and marketing costs down</p>	<p>Expand application of sorting, grading and packaging processes</p> <p>Establish pre- and post-slaughter traceability initiatives</p>	<p>Rationalize quality standards, the bio-safety procedure, disease control, inputs and outputs management, plus consumer protection</p>
Weak integration and linkages among different value chain actors	<p>Strengthen investment cluster development initiative to link with integrated agro-industrial parks</p> <p>Introduce innovative business integration and networking to improve access to inputs such as quality feed</p>	<p>Establish innovative platforms for multistakeholder partnerships to enhance efficiency and effectiveness in the sector</p>	<p>Facilitate strong PPP to improve infrastructure development, access to inputs and output markets</p>
Lack of investment in raw materials production for compound feed processing	<p>Assess conventional and alternative raw materials and additive investment for compound feed processing</p>	<p>Encourage investment in raw materials production for compound feed processing</p>	<p>Encourage entrepreneurs to supply ingredients for compound feed processing</p>
Access to land resources			
Shortage of suitable land available for poultry production and processing, including feed development	<p>Identify and zone suitable land for poultry investment</p> <p>Review and revise land acquiring procedures</p> <p>Awareness creation to change the negative perception of displaced landholders against the investment</p> <p>Design legal framework to regulate utilization of transferred land, adhering to the defined timeframe and compelling owners to pay back the opportunity cost of idle land</p> <p>Enhance participation of local community in managing collective opportunity cost of idle land</p>	<p>Continuously identifying and zoning suitable land for poultry investment</p> <p>Continuously creating awareness to change the negative perception of displaced landholders against the investment</p> <p>Arranging inclusive land allocation mechanism to safeguard the livelihoods of displaced landholders</p>	<p>Continuously identifying and zoning suitable land for poultry investment</p> <p>Continuously arranging inclusive land allocation mechanism to safeguard the livelihoods of displaced landholders</p> <p>Continuously creating awareness to change the negative perception of displaced landholders against the investment</p>
Lack of attractive incentive packages to access land for poultry investment	<p>Review and revise land leasehold sale policy (feasible land valuation and payment methods, lease holding rate, ceiling of land lease period, compensation modalities of property situated on landholding, land expropriation payment setting mechanism, compliance mechanism with lease agreements, lease agreement renewal after lease period)</p>	<p>Review and revise the essential legal provisions in lease contracts (rights and obligations of the lessee)</p>	<p>Establish platforms/ database of institutions mandated to oversee land governance</p>

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Access to financial products and services			
Limited rural financial institutions to serve poultry sector	Set up remunerative incentive packages for financial institutions to serve the poultry sector	Put in place a coordinated capacity building program of stakeholders on both supplier and customer side	Improve regulatory environment for financial institutions to serve poultry sector Strengthen credit provider/rural financial institutions to support the poultry sector
Financial institutions view poultry farming as not bankable due to high level of associated risk	Positively impact the understanding of financial institutions about poultry business Build the capacity of financial institutions to assess and measure the risk and benefit of financing actors in poultry farming	Change the perception of asking for very high interest rates on poultry business loans	Improve the inclusiveness of financial institutions in lending Put emphasis on financing of the entire poultry value chain including output buyers and input suppliers
Lack of physical collateral that can be pledged against the loan	Channel credit to poultry businesses that offer reasonable collateral Pledge short recurring land provided on a leasehold basis as collateral	Arrange group lending methodology as collateral system for smallholder producers	Pledge the flocks with insurance agreement as collateral for bank loan
Complex bureaucracy and longer process to access financial services	Build knowledge and skills in development of business plans Improve efficiency of application procedure and fulfil the initial saving obligations	Put in place financial management practices that help them qualify for loans	Continuously putting in place financial management practices that help them qualify for loans
Poor financial product design	Understand what smallholder producers really value Design tailored financial services in response to producer demand Improve the offering for greater accessibility Facilitate affordable lending rates Organize member-owned localized financial innovative development	Develop new innovative financial models and approaches for smallholder producers to improve access to financial services Adapt existing innovative financial models and approaches to improve financial access	Continuous implementation of innovative financial service delivery models Continuous implementation of member-owned localized financial services

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Lack of convenient methods of saving vehicles to leverage finance and investment	<p>Develop cost-effective and safe saving system and prioritize savings to purchase inputs</p> <p>Link up savings accounts of poultry producers to other financial products</p> <p>Incentivize and prepare bonuses for high savings balances over longer periods of time</p>	<p>Continue incentivizing and preparing bonuses for high savings balances over longer periods of time</p> <p>Continue implementation of cost-effective and safe saving systems and prioritize savings to purchase inputs</p> <p>Continue linking up savings accounts of poultry producers to other financial products</p>	<p>Continue incentivizing and preparing bonuses for high savings balances over longer periods of time</p> <p>Continue implementation of cost-effective and safe saving systems and prioritize savings to purchase inputs</p> <p>Continue linking up savings accounts of poultry producers to other financial products</p>
Inadequate financial risk management tools	<p>Develop innovative approach to improve resilience of vulnerable poultry producers</p> <p>Build the capacity of poultry producers to proactively assess, prepare for, absorb and adapt to risks</p> <p>Production and marketing insurance (index-based) to support credit</p>	<p>Continue implementation of innovative approach to improve resilience of vulnerable poultry producers</p> <p>Continuously build the capacity of poultry producers to proactively assess, prepare for, absorb and adapt to risks</p> <p>Continue implementation of index-based insurance to support credit</p>	<p>Continue implementation of innovative approach to improve the resilience of vulnerable poultry producers</p> <p>Continuously build the capacity of poultry producers to proactively assess, prepare for, absorb and adapt to risks</p> <p>Continue implementation of index-based insurance to support credit</p>

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Limited availability of foreign currency is a key challenge that permeates into every area of the poultry business	<p>Develop possible strategies to address challenges associated with imposed restrictions on currency exchanges to import goods</p> <p>Shorten the process of accessing foreign currency exchange to import DOC</p> <p>Develop standardized repatriation directive to regulate the amount of foreign currency deposited into National Bank of Ethiopia from the export gain</p> <p>Formulate legal framework to strictly monitor the revenue and control illegal money transfers</p>	<p>Arrange and closely follow proper utilization of duty-free vehicles, machines, spare parts, construction materials, consumable goods, and bank loans for the proposed aim</p> <p>Launch the mechanism of benefiting import substituting suppliers of basic inputs, capital goods and spare parts at the calculated amount of nationally saved foreign exchange</p>	<p>Establish a system of allocating foreign currency retention accounts of accumulated interest as a dividend to shareholders</p> <p>Continue follow-up of proper utilization of duty-free vehicles, machines, spare parts, construction materials, consumable goods and bank loans for the proposed aim</p> <p>Continue implementation of the mechanism of benefiting import substituting suppliers of basic inputs, capital goods and spare parts at the calculated amount of nationally saved foreign exchange</p>
Capacity building			
Human capacity			
Shortage of technically-skilled extension service providers at different levels	<p>Direct and TOT short-term training of extension service providers</p> <p>On-job learning of experts to actualize improved extension service</p> <p>Local and abroad exposure visits for service providers</p> <p>Equip producers/processors and their employees with business management skills and existing rules & regulations</p>	<p>Long-term specialization training of extension service providers</p> <p>Recruitment of competent extension service providers</p> <p>Basic business skill development for extension service providers</p> <p>Link up FTC centres with nearby institutions like research centres and universities/colleges and support them to serve as training nuclei for development agents (DAs)</p>	<p>Model poultry farming as a nucleus to create learning space on improved oriented extension services</p> <p>Link up FTC centres with nearby institutions like research centres and universities/colleges and support them to serve as training nuclei for DAs</p>
Physical capacity			
Lack of poultry commercialization cluster approach in poultry investment	<p>Feasibility study of poultry cluster farming</p> <p>Design national standard for poultry cluster farming</p>	Develop basic infrastructure in the cluster	Develop suitable cluster for poultry farming
Lack of continuous professional skills development centre	Modern public training centre for poultry farmers	Zonal level semi-privatized incubation centre	Poultry business-oriented private training centre

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Inadequate quality assurance technologies	Improve laboratory coverage to ensure quality of inputs and outputs	Develop prototype for the construction and machinery design	Farm-integrated laboratory to ensure quality of inputs and outputs
Lack of input and output production, processing and storage facilities	Prepare standard designs and specifications for various facilities	Semi-privatized slaughterhouse Farm-integrated small-scale abattoir Whole egg powder processing plants	Inputs and outputs collection and distribution vendors under the management of poultry associations
Institutional capacity			
Weak performance of poultry training service providers	Regular assessment of poultry labour market Training of service providers in entrepreneurial skills	Adequate resource allocation to build the capacity of training service provider institutions	Renovate training service provider institutions Promote platforms where partners can share experiences, organize for apprenticeships, etc.
Lack of digital technology utilization to improve extension service delivery and facilitate market linkages	Identify and propose suitable digital technologies to improve extension service delivery and facilitate market linkages	Equip extension service providers to actualize digitalized extension service delivery Equip potential market actors to actualize digitalized market linkage	Digitalized extension service delivery Promote digitalized market linkage facilitation Establish remote-based extension service delivery and market linkage mechanism
Cross-cutting issues			
Human nutrition			
Inadequate mainstreaming of gender/ women economic empowerment in poultry development initiatives	Map out key farm/non-farm poultry activities for employment creation of women and youth Improve gender- and youth-sensitivity in development initiatives	Revise gender mainstreaming framework and training manual Build the capacity of women/ youth interest groups to engage in poultry business activities Provide comprehensive range of services	Assess implementation status and gaps in gender equality Establish national platforms (Female Food Heroes, etc.)

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Inadequate mainstreaming of poultry in nutrition-sensitive agriculture, and lack of improved technologies for better utilization of poultry products	<p>Collaborate with partners to improve dietary diversity and food preparation</p> <p>Identify underlying factors for inadequate consumption of poultry products</p> <p>Introduce integrated nutrition interventions to enhance poultry products consumption (SBCC packages)</p> <p>Promote technologies for poultry product preservation and consumption to enhance food and dietary diversification at the community and household level</p>	<p>Collaborate with partners to revise the national nutrition-sensitive framework</p> <p>Introduce integrated nutrition interventions to enhance consumption of poultry products (SBCC packages)</p> <p>Promote technologies for poultry product preservation and consumption to enhance food and dietary diversification at the community and household level</p>	<p>Collaborate with partners to mainstream the nutritional demonstration corners to improve per capita consumption</p> <p>Introduce integrated nutrition interventions to enhance consumption of poultry products (SBCC packages)</p> <p>Promote technologies for poultry product preservation and consumption to enhance food and dietary diversification at the community and household level</p>
Gender			
Inadequate mainstreaming of gender/women economic empowerment in poultry development initiatives	Facilitate equitable access to agricultural technologies and inputs	<p>Promote gender lens perspective into development interventions</p> <p>Bring more women into the workforce and leadership positions</p> <p>Facilitate equitable access to agricultural technologies and inputs</p>	<p>Promote gender lens perspective into development interventions</p> <p>Bring more women into the workforce and leadership positions</p> <p>Facilitate equitable access to agricultural technologies and inputs</p>
Environment greenhouse gas (GHG)			
Poor handling of poultry waste and litter disposal, and lack of guidelines on how to minimize GHG emission during storage	<p>Develop guidelines on waste handling and litter disposal</p> <p>Promote feed technologies that reduce GHG emission</p>	<p>Implement waste handling and litter disposal guidelines</p> <p>Promote feed technologies that reduce GHG emission</p>	<p>Implement waste handling and litter disposal guidelines</p> <p>Promote feed technologies that reduce GHG emission</p>
Failure to exploit the efficiency poultry farming in reduced GHG emission	<p>Collaborate with partners to review efficiency of reduced GHG in poultry farming</p> <p>Develop guidelines on poultry waste handling and faecal disposal to minimize methane emission during storage</p>	<p>Collaborate with partners to establish legal and institutional framework</p> <p>Developing guidelines on poultry waste handling and faecal disposal to minimize methane emission during storage</p>	<p>Collaborate with partners to develop implementation guidelines</p> <p>Measure methane emission from poultry faecal storage and set standards</p>

Strategic issues	Strategic interventions		
	Short-term strategy 2 years (2022–2023)	Medium-term strategy 5 years (2024–2028)	Long-term strategy 10 years (2022–2031)
Monitoring and evaluation			
Limited implementation of M&E in poultry development activities	Identify major issues in existing M&E structure and possible measures Develop context-specific and tailored results-based M&E systems	Establish results-based and digitalized M&E and learning systems	Establish results-based and digitalized M&E and learning systems
Enabling policy and regulatory frameworks			
Inadequate policy framework and limited implementation of existing policy initiatives at different levels	Initiate/develop comprehensive poultry development policy Facilitate and support implementation of policy initiatives/incentive packages	Initiate and facilitate implementation of policy initiatives/incentive packages	Evaluate policies and strategies, and generate lessons

4 Roles and responsibilities of institutions

S/N	Stakeholders	Role and responsibilities
1	Ethiopian Ministry of Agriculture	Approval of the poultry strategy
		Prepare guidelines for implementation of interventions identified in the strategy
		Oversee, guide and coordinate implementation of the strategy
		Mobilize and allocate financial and physical resources for implementation of the strategy
		Attract investors and motivate them to join the poultry development sector
		Ease bureaucratic barriers to poultry investors
		Provide training on poultry production and processing, plus on feed formulation
2	Regional Livestock and Fishery Resource Development Agency/ regional bureaus of agriculture	Lead and implement the strategy in the region
		Allocate necessary resources for implementation of the strategy
		Compile lessons learnt towards further implementation of the strategy
		Cascade the strategy, closely monitor implementation and provide feedback to MoA
3	Institutions of higher learning	Revise and create appropriate curriculum to produce skilled and well experienced poultry experts
		Undertake technology shopping from global experience and generate and avail impactful technology or knowledge for wider use
		Conduct research on poultry-related activities and generate affordable technologies
		Contribute through human capacity building
		Provide training to nearby regional agricultural bureaus on poultry production, processing and management
4	National Animal Genetics Improvement Institute of Ethiopia (NAGII)	Conduct research, coordinate and cooperate to improve breed supply
		Develop guidelines for dissemination
5	Ethiopian Agricultural Transformation Agency (ATA)	Supervise and support transformation activities in the poultry sector
6	International Livestock Research Institute (ILRI)	Generate technology and support the NARS and development sector

S/N	Stakeholders	Role and responsibilities
7	National Veterinary Institute (NVI)	Support the sector by producing effective vaccines
8	National Animal Health Diagnostic and Investigation Centre (NAHDIC)	Design and implement proper poultry disease surveillance and diagnostic capacity
9	Ethiopian Meat and Dairy Industry Development Institute (EMDIDI)	Capacity building and introduction of new technology for the poultry processing industry
10	Food, Medicine and Health Care Administration and Control Authority of Ethiopia (FMHACA)	Oversee feed quality or poultry product quality; assure quality of poultry drugs and vaccines imported from abroad.
11	Veterinary Drug and Feed Control Authority (VDFACA)	Ensure quality and safety of feed, drugs and vaccines
12	Ethiopian Biodiversity Institute (EBI)	Poultry breed identification, characterization and conservation
13	Agricultural research institutes (ARIs)	Conduct research to generate and adopt suitable technologies in different thematic areas in the poultry sub-sector
14	Ethiopian Standard Control and Accreditation Institute	Evaluation and certification
15	Ethiopian Investment Commission	Investment promotion and licensing
16	Financial institutes and insurance companies	Provide financial support
17	Ethiopian Ministry of Trade	Provide business licenses
18	Federal Cooperative Agency	Organize cooperatives and create inputs-outputs market linkages
19	Federal Job Creation Commission	Facilitate job creation
20	Ethiopian Ministry of Labour and Social Affairs	Create smooth relationship among regulatory bodies, private sector and the society
21	Ethiopian Poultry Producers and Processors Association (EPPPA)	Create market linkages, organize platforms to facilitate the marketing of inputs and products
		Organize capacity building activities to increase production and productivity of the sector
22	Ethiopian Standard Agency (ESA)	Establish standards on poultry production, products, inputs, processing, and poultry feed processing
23	Public poultry multiplication centres	Multiply and supply chicks
24	Private input supply enterprises	Provide improved inputs and services
25	Ethiopian Animal Feed Industry Association (EAFIA)	Coordinate private sector involvement in feed production and marketing
26	Non-government development partners	Provide technical and financial support
27	Ethiopian Ministry of Foreign Affairs	Effect diplomacy work to attract foreign direct investments (FDIs)
28	Ethiopian Airlines	Provide inputs, logistics and outputs transportation service
29	Ethio-Djibouti Railway Corporation	Provide inputs and logistics transportation service
30	Ethiopian Road Authority	Develop and expand road infrastructure
31	Ethiopian Electric Power Corporation	Develop and expand electric service infrastructure

S/N	Stakeholders	Role and responsibilities
32	Ethiopian Telecommunication Corporation	Develop and expand telecommunication service infrastructure
33	Ministry of Water and Sewage	Develop and expand portable water service infrastructure
34	Ethiopian Customs Commission	Facilitate rules and regulations to import and export goods and services
35	Ethiopian Ministry of Revenue	Facilitate taxation rules and regulations
36	AU-PANVAC	Provide international independent quality control for veterinary vaccines produced in Africa and imported to Africa.

5 Expected outputs

The expected outputs of the Poultry Development Strategy interventions include:

- Development of a comprehensive National Poultry Development Plan.
- Lead the design of poultry development programs and projects for the respective production systems.
- Sustainable and affordable breed supply system will be in place.
- Contribute to increasing egg and meat production to meet the ever-increasing demand for poultry products.
- Poultry feed supply substantially improved.
- Improved poultry disease surveillance and diagnostic capacity.
- Improved access to poultry inputs (vaccines, drugs, equipment, feed, breeds etc.).
- Strong coordination and linkage mechanisms will be in place at both national and regional levels.
- Technically- and practically-skilled extension service providers, plus related staff, will be available.
- Adequate infrastructure and suitable facilities will be established.
- Consistent market linkages to build consensus toward the mutual benefit of partners will be developed.
- Ease of doing poultry business will be facilitated so that large numbers of potential and competitive private sector entities will be attracted to poultry investments.
- Importation of poultry and their products from abroad replaced by local supply.
- Duplication of mandates between different institutions will be minimized.
- Cross-cutting issues will be mainstreamed into poultry development initiatives.

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