

## Transformation of Tigray's Poultry Sub-sector from Subsistence to Profitable Business: Strategic challenges and interventions

Yohannes T. Asfaw,<sup>1,2\*</sup> Mehari Riesom,<sup>3</sup> Mebrahtom Niguse,<sup>4</sup> Mearg Fitsum,<sup>3</sup> Teshome Tesfamariam,<sup>4</sup> Biruh Weldemariam<sup>3</sup> and Abreha Tesfaye<sup>2</sup>

### 1. BACKGROUND AND RATIONALE

Poultry sub-sector is a strategic source of cash income, primary supplier of eggs and meat contributing for food and nutrition security and solving the prevalent children malnutrition and stunting problems (Shapiro *et al.*, 2015, Hagos, 2019). It is best equalizer of women empowerment (Sambo *et al.*, 2015) and also provides good number of job opportunity for youth. Poultry production has been practiced for millennia in Tigray and currently, it is getting attention by both private and public actors because of its overall contributions in helping food security and end poverty. However, this sub-sector has been highly constrained by many factors and it is neither modernized nor became profitable business. Hence, it could not satisfy the existing and future market demands. Therefore, this brief report is extrapolated from available empirical evidences, and outlines strategic bottlenecks and interventions to transform the sub-sector.

models, the Bangladesh and Indian models were extensively reviewed and bench marked. Based on these, a thorough sub-sectoral SLOT analysis (Strengths, limitations, opportunities and threats) was made. Accordingly, the following strategic problems and interventions were identified and proposed, respectively.

### 3. IDENTIFIED STRATEGIC CHALLENGES OF POULTRY SUB-SECTOR IN TIGRAY

The researchers from their thorough sub-sectoral SLOT analysis identified the following seven strategic challenges of poultry sub-sector development in Tigray. The identified challenges are of interrelated with each other and hence, addressing them in a comprehensive approach is highly required. Moreover, it is to be underlined that without strategically solving these identified challenges, it is almost impossible to transform the sub-sector from its traditional production system to modern, profitable and regular economic sector.

#### A) Lack of Poultry Business Models

It was identified that Tigray lacks poultry business models specifically designed for rural, urban and peri-urban settings, different scales (small, medium, large poultry businesses) and different specializations (Layer, broiler, breeder businesses). In associated with this, there are no standards and strategies available to help guide the sub-sector development in the region. Moreover, engagement of different actors (Government and private) and partners in this sub-sector is highly uncoordinated for the same reason. Because of this, poultry producers are not adequately institutionally supported and strategically led which in turn led to ill growth of the sub-sector and its contributions remain far below its potential. Hence, this calls to introduce and implement internationally proven poultry business models.

#### B) Lack of Adequate Poultry Breed Supply and Breeding System

It was identified that Tigray lacks adequate improved breed supply and breeding system explained by absence of grandparent stock, uncontrolled breeding practices leading to genetic dilution, complete

#### Affiliations and manuscript citation:

<sup>1</sup>International Livestock Research Institute (ILRI), P. O. Box: 5689, Addis Ababa, Ethiopia

<sup>2</sup>College of Veterinary Sciences, Mekelle University, P. O. Box: 2084, Mekelle, Ethiopia

<sup>3</sup>Tigray Agricultural Research Institute, P. O. Box: 492, Mekelle, Ethiopia

<sup>4</sup>College of Dryland Agriculture and Natural Resources, Mekelle University, P. O. Box: 231, Mekelle, Ethiopia

\* Corresponding author. Email: [john.asfaw@yahoo.com](mailto:john.asfaw@yahoo.com)

**Citation:** Yohannes, T.A., Mehari, R., Mebrahtom, N., Mearg, F., Teshome, T., Biruh, W., and Abreha, T., (2020). Transformation of Tigray's Poultry sub-sector from Subsistence to Profitable Business: Strategic challenges and interventions: a brief report of the document presented in the 2<sup>nd</sup> conference Global Society of Tigrean Scholars (GSTS) held on 29 July 2019, Mekelle, Tigray, Ethiopia. *Ethiop. J. Vet. Sci. Anim. Prod.* (2020), Vol. 4 (1): 14-19

**Date of publication:** September 2020

### 2. APPROACHES USED

Thorough desk review on globally available best experiences and successful models in poultry sub-sector was done. The existing drawbacks of the sub-sector was also reviewed from existing literatures and expert opinions. Among the globally experiences and

dependency on imported chicken breeds, uncoordinated engagement of chicken breed suppliers/distributors, and absence of set standards and distribution of breeds without evaluation. Moreover, there is limited focus on conserving and improving local breeds.

#### **C) Lack of Adequate and Quality Feed Supply and Feeding System**

It was reviewed that Tigray has limited poultry feed supply coupled with unscientific poultry feeding practices and system. This is due to limited feed manufacturers, and unavailability of feeding technologies and materials. Moreover, there is no clearly stated poultry feed production, manufacturing and distribution strategy in the region. Hence, available poultry feed products are expensive, inadequate and with non-suitable packages. In addition, as there is low enforcement of feed controlling and administration bylaw, the nutritional constituents', quality and safety of the poultry feed products found in market are not checked on regular basis.

#### **D) Lack of Poultry Veterinary Services**

It was found that lack of availability of poultry veterinary services and prevailing disease problems seriously affect the poultry sub-sector. There are limited private or public poultry veterinary service providers, lack of poultry health experts, and inadequate poultry veterinary inputs (vaccines, drugs and other medical supplies). Moreover, there is poor knowledge, skill and attitude of poultry producers towards poultry diseases prevention mechanisms. Because of the above reasons, about 50% chicken mortalities, significant direct and indirect economic losses, termination of poultry business, and overall retardation of the growth of the sub-sectors are attributed to diseases and lack of poultry veterinary services in the region.

#### **E) Lack of Properly Designed Poultry Housing and Farm Equipment**

It was reported that Tigray lacks properly designed and adopted poultry houses and farm equipment that meet scientifically recommended minimum standards for optimum poultry physiology and productivity in different systems. As the result of this, poultry are kept in an inappropriately designed and constructed sheds/house and use not suitable farm equipment. This led to poor poultry welfare status and productivity. Hence, such practices created supply-demand imbalance of poultry products and also poor growth of the sub-sector.

#### **F) Lack of Adequate Poultry Products Marketing and Processing**

It was found that in Tigray, informal poultry products marketing is the prominent system and poultry products processing is almost non-existing. Moreover, live-birds marketing, home-slaughtering, seasonal and festivity-oriented trading are the dominant practices.

#### **G) Lack of Suitable Policy, Legal Frameworks and Institutional Enabling Environments**

Lastly, it was also identified that there is lack of suitable policy, legal frameworks and associated institutional enabling environments that promote efficient poultry development in the region. To mention some of the limitations, land is not temporarily given and adequate bank loan is not given.

### **4. STRATEGIC INTERVENTIONS /OBJECTIVES AND ACTIONS TO TRANSFORM THE POULTRY SUB-SECTOR**

#### **A) Proposed Poultry Business Models for Different Settings, Scales and Specialization**

The following strategic poultry business models are proposed to be introduced and implemented in the region and such strategically defined poultry development actions help the sub-sector to grow fast.

##### **1) Improved Family Poultry Production Model (IFPM)**

This is proposed to be introduced and implemented as the smallest poultry business model in Tigray replacing the existing extensive traditional poultry production system. IFPM is characterized by profit-oriented, controlled-semi-scavenging system, formulated ration supplementation and minimum health services. Additionally, farmers and poor urban and peri-urban dwellers are expected to be trained and certified before they start the poultry business. To strategically manage this model, setting minimum standards of technical supports, inputs and services are expected from the state actors.

##### **2. Establishing Specialized Modern Poultry Business Models (SPBM)**

This is proposed to strategically introduce and run specialized poultry business models, at small, medium and large-scales in urban and peri-urban settings. The SPBM should be introduced and established as a full-fledged business with objectives of one or more specialized poultry businesses (layer, broiler, breeders, pullets) in permanently acquired land that hold minimum optimally profitable flock size. This establishment requires trained and certified subject-

matter experts. It is expected to be run by investors, micro and small enterprises, unions and associations and public-private partnership with clearly stated standards, modalities and requirements. This type of poultry business model is expected to be coordinated and managed by fully mandated Government body either by Investment and Export Commission, Urban Agriculture Bureau (New bureau is required), Small and Medium Industries Agency or standalone Poultry sub-sector Development Institution (New and separately established).

## **B) Proposed Interventions on Poultry Breed Supply and Breeding System**

The following strategic interventions are proposed to strategically address the poultry breed supply and breeding system.

### **1. Establishment of Regional Grandparent Stock Center**

This is proposed to strategically solve the absence of regional grandparent stock, avoid dependency and enable sustainable self-sufficiency in improved breed supply. The center shall be established by proclamation as Development Enterprise and it can be run by public and or in the form of public-private partnership. The primary purpose of the center shall be to serve as a center for conservation and developing Tigray's superior breeds out of local breeds and crossed ones.

### **2. Establishment of Breeder Companies Supplying Adequate and Preferred Superior Breeds**

Such companies are proposed to be strategically established and run by private investors (breeder companies). Hence, land, financial loan, machinery importing incentives, technical and institutional supports must be provided to encourage this business. To realize this, there must be special emphasis by the Government and other actors to adequately promote and encourage this type of business model in the region.

### **3. Conserving and Improving Local Breeds**

Efforts on producing superior local breeds through series of research and development activities need to be encouraged to conserve and improve local breeds. All types of chicken local breeds need to be inventoried and characterized to select superior breeds. Hence, research institutes and universities shall be empowered and engaged in this priority agenda. This requires allocation of adequate resources,

establishment of regional poultry research platforms and reorganization.

## **4. Introducing Community-based Poultry Breeding Programs**

This is proposed to be implemented with thorough studies, standardization, and supporting to promote it as a business to be able to supply improved breeds at the community level. To proceed with this, necessary working manuals for the implementation of this community-based chicken breeding business and supply of improved breeds shall be prepared. To realize this, the Bureau of Agriculture and Rural Development need to give special attention so as to mobilize and engage poultry farmers or youth living in the rural areas in this business.

## **5. Establishment of Regional Poultry Technical Team (Advisory Technical Body)**

This must be officially formed independent technical team from different institutions with mandates of performing follow up, monitoring, evaluation, certifying and approving of every imported and or improved chicken breeds prior to introduction and distribution. The team also prepares details on breed supply and working manuals (bylaws) and other standard requirements. Moreover, the team will act as a standing advisory body to the regional government, Non-governmental development partners and poultry producers on issues related to poultry breeding strategies and practices.

## **C) Proposed Interventions on Feed Supply and Feeding System**

To strategically address the feed and feeding system related challenges of poultry sub-sector, the following strategic interventions are proposed.

### **1) Massive Poultry Feed Production and Manufacturing**

In mass poultry feed production and manufacturing must be strategically established to satisfy the increasing demand for poultry feed products. To achieve this, private poultry feed producing companies need to be encouraged to be engaged in mass production and manufacturing of feed through policy incentives (such as access to land, finance, and other institutional incentives).

### **2) Encouraging Research and Developing Endeavors on Alternative Feed Sources**

This is recommended to fill the gap in poultry feed demand in the region. Hence, cheaper, locally

available and potentially nutritious alternative feed sources for poultry can be identified, prioritized and developed. A thorough inventory of available alternative feed sources in the region shall be conducted and studied to developed and manufacture poultry feed products need to be encouraged.

### **3) Community-Based Poultry Feed Production and Formulations**

This is proposed because locally available raw materials may be of interest to feed chickens kept under the improved family poultry production model. Hence, capacity building on how to standardize poultry feed production and formulation, handling practices of such feed products is needed.

### **4) Introduction and Implementations of Innovative Poultry Feed Marketing System**

It is proposed to establish an innovative and suitable marketing channels that help efficient feed distribution and supply across the poultry business models in the region. To proceed with, interested poultry feed traders shall be reorganized and institutionally supported.

### **5) Control and Monitoring of Quality and Safety Poultry Feed products**

Lastly, it is proposed to ensure quality requirements of feed products by responsible body. Particularly, periodically checkup of the inclusion of required micronutrients such as amino acids, minerals, vitamins as well as safety of poultry feed product shall be ensured by responsible body to avoid supply of low quality feed to poultry producers.

### **D) Proposed Interventions on Poultry Veterinary Service Delivery System**

As poultry diseases and lack of poultry veterinary services are the top priority constraints of the sub-sector, the following strategic interventions are proposed to be implemented.

#### **1) Producing Well-Trained Poultry Health Professionals (Experts)**

Immediate training of field animal health experts through postgraduate diploma/certificate, BSc, MSc and PhD degree levels is highly needed. As well as, a continuous professional development training focusing on poultry health shall be given periodically. Both of the training schemes should be dynamic and particular to the proposed poultry business models.

#### **2) Training and Deploying Primary Poultry Health Extension Works (PHEW)**

This is proposed to be part of the poultry health system delivery at the *Tabia* level. Professionally developed and approved competency-based training programs should be used and the training must be given by training institutions.

### **3) Promoting and Establishment of Private Poultry Health Service Providers**

This is highly recommended to effectively and efficiently deliver poultry veterinary services at the doorsteps of the producers. Encouragements through institutional support and policy incentives as well as setting easily achievable requirements to obtain professional license. Additionally, removing unnecessary competition among public and private poultry veterinary services providers and also delineating service goods shall be preconditions to promote the private poultry health service providers.

### **4) Ensuring Sustainable Poultry Health Supplies**

Supply of vaccines, drugs and associated inputs shall be ensured through active engagement of private poultry vaccines and drugs traders, wholesales, importers and manufacturers. Moreover, research and development on development on poultry drugs and vaccines need to be highly encouraged.

### **5) Establishment of Regional Poultry Health Technical Team**

The team shall be established officially with the mandates of overseeing overall issues related to poultry health system in the region (Disease surveillance, quality control, standardization, referral body). The team shall have high-level subject-matter experts and with clear mandates (duties and responsibilities).

### **6) Research and Development Endeavors on Poultry Health System**

To address the limited and lack of scientific evidences on poultry health services, there must be fully-financed and regularly implemented research and development projects on poultry veterinary inputs development, health service improvement and disease surveillances in the region.

### **E) Proposed Interventions on Poultry Housing and Farm Equipment Related Problems**

To address the use of poorly designed poultry houses and farm equipment, regionally standardized prototypes of poultry housing and farm equipment that are feasible and fit-for-purpose must be designed and developed through collaborations of biological/poultry

researchers, engineering researchers and developers/manufacturers. The selected and approved poultry houses and farm equipment prototypes must be registered and then, manufactured in mass. This can be realized through devising regionally accepted poultry housing and farm equipment use guidelines.

#### **F) Proposed Interventions on Poultry Products Marketing and Processing**

To strategically intervene the problems of the inadequate poultry product marketing and processing, introduction of formal and processed products-based marketing system are demanded. Hence, promoting establishment of industry-scale poultry processing plants in the region is needed. As well as small-scale poultry slaughtering facilities should be established in urban settings and value addition to poultry products should be encouraged. Introducing and monitored formal poultry marketing facilities, information, space, channels which links producers and consumers is also recommended. Changing feeding behaviour of the people through training and promotion on consumption of different poultry products is required. Moreover, introducing standards of poultry products handling and safety guideline is also needed.

#### **G) Proposed Interventions on Policy, Legal Frameworks and Institutional Enabling Environments**

To address the identified lack of suitable policy, legal frameworks and associated institutional enabling environment, there must be poultry focused policy, legal frameworks and institutional enabling environments in place. To proceed with, detail study shall be conducted and draft proposals shall be submitted to the Government for considerations.

### **5. Conclusion and Perspectives**

Tigray's poultry sub-sector is a strategic commodity however; it has been constrained with various challenges. The major challenges include lack of strategically defined poultry business models, inadequate and lack of preferred poultry breed supply and breeding System, inadequate and lack of quality feed supply and feeding system, presence of highly prevalent diseases and poor poultry veterinary services, unavailability of properly designed poultry housing and farm equipment, lack of formal poultry products marketing practices and processing, and absence or under enforcement of suitable policy, legal frameworks and institutional enabling environments. Hence, the proposed strategic interventions are

designed to strategically solve the strategic challenges of the sub-sector. Therefore, active engagement of Government, private sector, researchers and academicians, development partners, poultry producers and other stakeholders and beneficiaries is required as prerequisites. With this, Tigray's poultry sub-sector will surely be transformed and modernized and its overall contributions will be maximized. This brief report is a summary of a bigger strategic document prepared to be adopted as the region's poultry development roadmap for the coming 10 years.

#### **6. Selected References**

1. Aklilu, H.A., Almekinders, C.J.M., Udo, H.M.J., van der Zijpp, A.J., 2007. Village poultry consumption and marketing in relation to gender, religious festivals and market access, *Tropical Animal Health and production*, 39(3): 165-168.
2. AU (2014): The 2015-2035 Livestock Development Strategy for Africa (LiDeSA), *the Roadmap to a Successful Livestock Sector. Addis Ababa, Ethiopia.*
3. Berhe, G. Tekola (2013): Facing the Challenge: Ensuring Sustainable Food Security in Africa, Global Feed and Food Congress 2013, 10-12 April 2013, Sun City, South Africa
4. CSA (2018). Agricultural Sample Survey Report on Livestock and Livestock products characterization. Vol. II, Statistical Bulletin 573. Addis Ababa.
5. Dana, N., van der Waaij, L.h., Dessie, T. and Johan A. M. van Arendonk, J.A.M. (2010). Production objectives and trait preferences of village poultry producers of Ethiopia: implications for designing breeding schemes utilizing indigenous chicken genetic resources. *Trop. Anim. Health Prod.*, (42):1519–1529.
6. FAO (2019): Food and Agriculture Organization of the United Nations, Food Outlook, Biannual Report on Global Food Market. Rome.
7. Gebru, L. (2019): Report on poultry mortality in Tigray, presented during Sheep outbreak investigation consultative workshop in Feb 6/2019, in Raya University, Maichew, Tigray.
8. Genene, T. (2019): Challenges and possible solutions of Poultry sub-sector in Ethiopia, a paper presented in Ethiopian poultry producers and processors association regional

- workshop held in July 6/2019, Mekelle, Ethiopia.
9. Hagos, G. (2019): Assessing Poultry Disease Diagnosis and Treatment Practices, and Cost of Diseases in Intensive Farms among Selected City/Towns, Tigray, Northern Ethiopia, MSc thesis submitted to Mekelle University College of Veterinary sciences. Mekelle, Ethiopia.
  10. IGAD (2013): The Contribution of Livestock to the Economies of Kenya, Ethiopia, Uganda and Sudan [ICPALD 8/SCLE/8/2013]. Published by IGAD Centre for Pastoral Areas and Livestock Development (ICPALD).
  11. Sambo, E., Bettridge, J., Dessie, T., Amare, A., Habte, T., Wigley, P. and Christley, R.M (2015): Participatory evaluation of chicken health and production constraints in Ethiopia. *Prev Vet Med.*, 118(1): 117–127. 52.
  12. Shapiro, B.I., Gebru, G., Desta, S., Negassa, A., Nigussie, K., Aboset, G. and Mechal, H. (2015): *Ethiopia livestock master plan*. ILRI Project Report. Nairobi, Kenya: International Livestock Research Institute (ILRI).
  13. Taddese, (2019): Ethiopian poultry resources data, a paper presented in Ethiopian poultry producers and processors association regional workshop held in July 6/2019, Mekelle, Ethiopia.
  14. WATT Global Media (2018): Latest poultry, egg market forecasts available in 2018 WATT Poultry Trend, Illinois, USA.

**Do you have manuscript ready for publication?**

Choose EJVSAP and benefit from:

- On line submission and status monitoring platform through OJS/PKP
- Fast and rigorous peer review process
- Rapid publication on acceptance

Visit [www.mu.ede.et/ejvsap](http://www.mu.ede.et/ejvsap)