Gandhara Journal of Natural Sciences (GJNS) | Enhancing Groundwater Recharge Through Comparative Analysis Of Rainwater Harvesting Solutions In Arid Region Of Southern Afghanistan: A Review | Volume No. 1 | Issue No. 1 | p. 1 - 25 | https://gandhara.kdru.edu.af

Submitted: July 03, 2025 | **Revised:** August 19, 2025 | **Accepted:** September 15, 2025

From Farm to Market: Structural Barriers and Institutional Gaps in Afghanistan's Poultry Value Chain

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A B S T R A C T

Purpose:
This study examines the structure, performance, and constraints of the poultry value chain in Afghanistan. It aims to map the key actors across feed mills, breeder farms, broiler farms, egg producers, processors, wholesalers, and veterinary services, while identifying gaps in input supply, production, and market linkages.

Method:
The assessment applied a cross-sectional survey design conducted between March and June 2022, targeting 601 respondents from eleven poultry value chain actor groups across five regions of Afghanistan. Data was collected through structured questionnaires and analysed using descriptive statistics in SPSS (v.27) and Microsoft Excel.

Results:
Findings revealed 5,696 active broiler farms producing 149,306 MT of meat annually, meeting 86.7% of national demand, with 10.8% imported. Six breeder farms supply only 21.1% of the required day-old chicks, while 78.9% are imported. Twenty-three feed mills meet 99.3% of feed demand, though raw material supply (soybean and maize) remains insufficient, creating reliance on imports. Table egg production reached 699.8 million units (81.8% of demand), with significant hubs in Herat, Kabul, and Nangarhar. Critical constraints include price fluctuations, low quality of vaccines and feed, lack of veterinary support, inadequate government regulation, weak contract farming systems, and unstable markets for processed poultry products.

Practical Implications:
Boosting local breeding capacity, increasing feed crop production through contract farming, stabilising market prices, and strengthening veterinary and union support are crucial to cutting imports and enhancing food security. The poultry sector has the potential to generate significant employment and meet Afghanistan's growing demand for protein.

Originality/Novelty:
This study provides one of the most comprehensive empirical assessments of Afghanistan's poultry value chain, integrating production data, consumption patterns, and challenges faced by various actors within a holistic framework to inform policy and private investment decisions.

Keywords: *Poultry value chain; broiler farms; table eggs; feed mills; Afghanistan; livestock sector; agribusiness; food security.*

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Acknowledgement: This research was conducted with the financial assistance of DAI Global LLC under the AVC-L Project (Afghanistan Value Chains – Livestock). The authors gratefully acknowledge their support in enabling this study.
Conflict of Interest: The authors declare no conflict of interest.

Executive Summary

Poultry farming plays a pivotal role in food security, income generation, and employment creation, particularly in developing and fragile economies like Afghanistan. With a rapidly growing population and increasing demand for affordable sources of animal protein, poultry has become one of the most dynamic and essential components of Afghanistan's agriculture sector. Recent reports estimate the annual domestic chicken meat consumption at approximately 168,000 metric tons, with local production accounting for 86.7% of demand, underscoring its critical role in national food supply chains.

The poultry value chain encompasses a wide array of stakeholders from feed producers and breeder farms to smallholder broiler and layer farmers, processors, wholesalers, retailers, and consumers. However, significant gaps persist in Afghanistan's poultry system, especially in the production of day-old chicks, feed quality, disease control, and market stabilisation. For instance, more than 78% of the country's requirement for day-old broiler chicks is still met through imports, posing biosecurity risks and economic vulnerabilities due to cross-border dependencies.

In developing nations, effective value chain development has been shown to enhance productivity, improve resilience, and stimulate economic diversification. A systemic approach combining value chain analysis with open systems theory has been proposed to address complex agricultural development barriers in Afghanistan and other resource-constrained environments (Garrison, 2010). Similar research in Khorasan, Iran, found that value chain investments, especially in feed and input systems, are the most effective for poultry sector growth, with government policies playing a critical role in enabling or hindering development (Azam Rahmati et al., 2022).

Globally, poultry-meat production has experienced rapid growth, especially in developing countries, with projections showing it will be a dominant contributor to global meat production by 2024. Population increases, rising incomes, and changes in dietary preferences drive this growth (Windhorst, 2017). However, realising this potential requires robust institutional support, infrastructure investment, and comprehensive disease management frameworks. The spread of poultry diseases such as Newcastle Disease and Avian Influenza, often facilitated by informal and traditional marketing chains, further complicates sector growth and sustainability (Molia et al., 2016).

This study presents a comprehensive assessment of the poultry value chain in Afghanistan. It aims to map key actors, quantify national production and demand, and evaluate sectoral bottlenecks, especially in feed production, disease control, DOC availability, and market access. The findings are expected to inform policymakers, development agencies, and private investors about critical intervention points to build a resilient and self-sustaining poultry sector in Afghanistan.

1. Poultry Industry in Afghanistan

To meet the household's needs for income production and the provision of high-quality animal protein, poultry farming is a crucial component of the agricultural economy. One of Afghanistan's most lucrative agricultural sectors is the poultry industry, which produces wholesome meat and eggs for human consumption in the shortest amount of time. The broiler industry is currently among the sectors of the poultry industry that are developing most quickly.
In many regions of Afghanistan, large poultry feed mills have been developed in the past two years.

The body uses protein for a variety of purposes. It enables metabolic processes, helps your body's tissues grow and mend, and coordinates bodily functions. Proteins provide a healthy pH and fluid balance, giving your body a structural foundation. Proteins mostly come from two sources: plants and animals. The most effective strategy to address a human's protein deficiency is to consume protein from chicken sources. In comparison to alternative sources of animal protein, it can deliver high-quality protein and cover the animal protein supply gap in the shortest amount of time.

Afghanistan, where population growth is more rapid, has an increasing food production shortfall, particularly regarding animal-derived foods.
Afghanistan's poultry sector is doing well, but its neighbours still need medicine, vaccines, and day-old broiler chicks. The price volatility is a significant problem for the producers of broiler chickens, table eggs, feed, and day-old chicks. There is no stable market strategy to stabilise the market price across all value chain participants because the market price depends on the global market. The lack of day-

old broiler chicks significantly hinders broiler production; 78.88 per cent of DOC are imported from nearby nations, while only 21.12 per cent are domestically produced. Due to this gap, it appears that Afghanistan still imports day-old broiler chicks from outside markets.

AVC-review Livestock's chicken value chain, completed in June 2022, revealed that the industry has undergone substantial changes recently. In total, 167,964.27 MT of chicken meat will be consumed in Afghanistan in 2021–2022. By the middle of 2022, Afghanistan will have 5696 broiler chicken farms operating in various capacities, producing 149,306.352 MT of chicken meat for the domestic market while also importing a total of 18,657.920 MT of chicken meat from foreign markets. Local production accounts for 87.50 per cent, with imports making up 12.50 per cent.

In 2021, there will be an excess of 826.908 million table eggs consumed annually, of which 699.77 million (or 81.83 per cent) will be produced locally and 127.138 million (18.17 per cent) imported. Afghanistan's largest producers of table eggs are the core commercial cities, Herat, Kabul, and Nangarhar.

Including commercial and imported consumer poultry goods amounts to a total retail value for chicken meat of 405.756 USD million and table eggs of 70.760 USD million at 2021–2022 pricing.

The consumption rate of table eggs per person is estimated to be around 21.76 eggs, while the consumption rate of poultry meat per person in 2021 was 4.42 kg. Compared to its neighbours and the rest of the globe, Pakistan consumes 6.2 kilograms of meat and 56 eggs per person per year, compared to 40 kilograms and 300 eggs annually in affluent nations. Most people in Afghanistan consume only 15.68 grams of the 27 grams of animal protein per day recommended by the World Health Organisation.

According to a recent AVC-Livestock assessment of Afghanistan's poultry industry, the country needs 106.64 million-day-old broiler chicks to maintain the operation of its existing broiler farms. Six broiler breeder farms are currently in process in Afghanistan, primarily in the provinces of Jalalabad, Herat, Balkh, Kandahar, and Khost. These farms produce 22.52-million-day-old chicks annually, accounting for 21.12 per cent of the country's total production. In addition, 78.88 per cent are imported from nearby nations. Due to this gap, it appears that Afghanistan still imports day-old broiler chicks from outside markets.

According to a recent survey by AVC-Livestock, there are 10687 commercial broiler chicken farms, 66-layer farms, and six broiler breeder farms nationwide. Nevertheless, it is possible that some modest poultry farms were overlooked when collecting the data. It is projected that 2,035,393.36 MT of feed is required annually for the existing chicken farms, excluding breeder farms purchased from overseas. According to 92.9% of feed mill owners in Afghanistan, the imbalance of raw materials and their variable prices is a significant hindrance to feed manufacturing. Second, 57 per cent of feed producers reported an inadequate supply of local raw materials. This problem has had a substantial and detrimental impact on the cost of commodities sold for feed production (COGS). Thirdly, 57.1% of feed producers felt that the national electricity supply was insufficient for feed mill operations.

The operational broiler farms (i.e.,5696) have an annual feed demand of 927,990.73 MT, of which 99.3% is satisfied domestically, and the rest is imported from surrounding nations. The yearly demand for soybean meal is 221,115.72 MT, and the total annual demand for corn is 552,783.30 MT, whereas soybeans and corn make up 24 and 60 per cent of chicken feed. There is a good chance that local farmers will contract to supply maize and soy to feed mills at predetermined prices. In 2020, 1,997 MT of soybeans and 27,1777 MT of corn were produced locally, which accounted for 1% of the demand for soybeans and 49% of the corn market, respectively.

The current shortage of fresh broiler day-old chicks is a problem for 83.9% of farmers, and the imported DOCs must travel more than 1000 kilometres, which might have a varying impact on the health of the chicks. The second problem was that 77% of farmers thought that drugs and immunisations were of low quality, and the third problem was that 69% of farmers said they lacked knowledge and expertise in broiler production techniques. In contrast, 83.3 per cent of farmers claimed that market swings in

table egg prices created a problem for the viability of table egg farming. There is no local organisation to support farms that confront challenges like outbreaks of bird flu, Newcastle disease, and other deadly illnesses, according to 67% of farmers who claimed their plans lacked support from the government and poultry associations. The third problem was that 66.7% of farmers said that the production of table eggs in Afghanistan was negatively influenced by the spread of deadly illnesses in layer farms. Due to inadequate management of breeder farms and hatcheries, insufficient operational knowledge, and a lack of capacity to understand the appropriate supply chain management channel, the gap has widened. The public and private sectors have the opportunity to participate in broiler breeder farming, while there is a considerable shortage in the production of day-old broiler chicks.

2. Poultry Value Chain Maps in Afghanistan

The operators that make up the Afghan broiler value chain can be roughly divided into five groups: input suppliers, producers, output dealers, service providers, and consumers. Chicken value chains link the participants and activities necessary to get poultry products to the final customer, with the value of the goods increasing along the way. Breeding farms/hatcheries, feed mills (which purchase feed components from agricultural farmers, such as maize and soy), and meat processing facilities are only a few vertically integrated units of large-scale and small-scale broiler producers. Additionally, broiler producers purchase parent stock chicks and inputs from feed mills, rear them for 45 days until they weigh 2kg live, and then ship them to slaughterhouses or the live bird market. Live birds are slaughtered at slaughterhouses, and packed broiler meat is given to output dealers like wholesalers, supermarkets, contractors, and retailers, who then sell it to consumers. Shops and supermarkets sell both broiler meat and processed meat to customers. In the event of a disease outbreak or the delivery of vaccines and medications, the VFUs provide health services to breeder farms and producers of broilers. Larger and smaller egg production facilities often have feed mills (which purchase materials for the feed, such as maize and soybeans, from agricultural farmers) and egg or packaging facilities that are vertically integrated. Furthermore, the manufacturers of table eggs import parent stock and chicks from adjacent countries, raise them for 71 weeks to produce high-quality and secure table eggs for the customer base and then ship them to the consumer. The producer sells table eggs to the end users, including customers, wholesalers, supermarkets, contractors, and retailers.

Customers purchase processed meat from supermarkets or shops, while broiler meat is bought directly from the live bird market. In the event of a disease epidemic or the administration of a vaccine or treatment, the VFUs offer medical services to producers of table eggs.

Most of the time, production is situated in or adjacent to urban areas, close to input suppliers and processing facilities. These systems primarily serve urban and peri-urban areas. Small-scale commercial farmers often produce comparable goods, but they do so less effectively and face greater challenges in obtaining high-quality inputs, such as chicks and feed.

Pashtoon, R. & Qurishi, J. (2025). From Farm to Market: Structural Barriers and Institutional Gaps in Afghanistan's Poultry Value Chain. *Gandhara Journal of Natural Sciences (GJNS), 1*(1), 1-25.

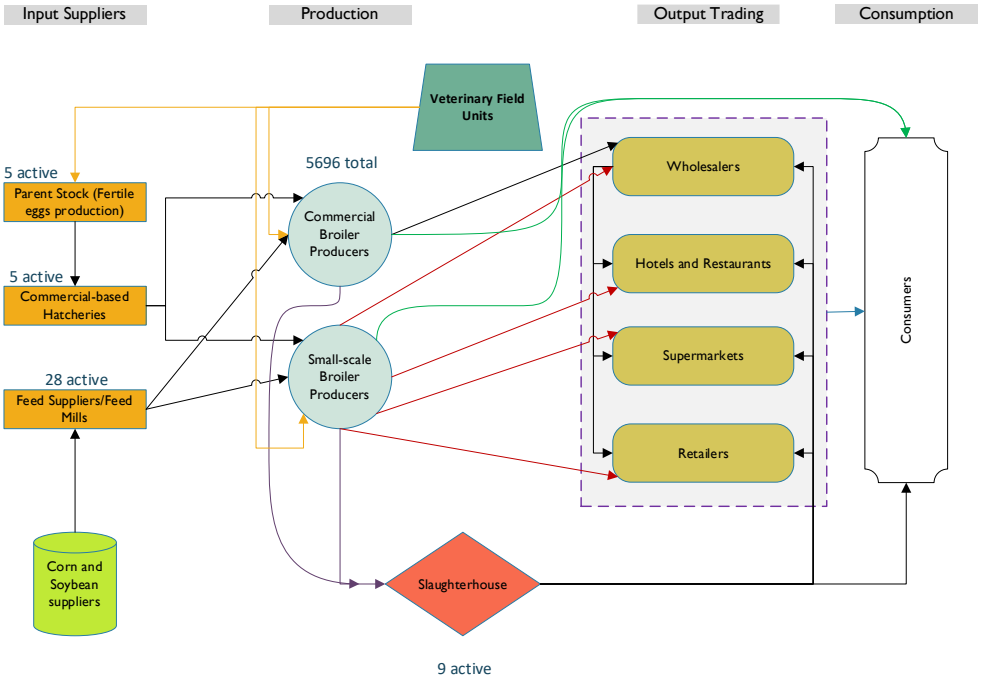


Figure 1 *Broiler Production Value Chain Map in Afghanistan*

Figure 1 provides a comprehensive overview of the poultry value chain in Afghanistan, illustrating the flow of inputs, production, trading, and consumption. It highlights the structural relationships and functional roles of various actors across the value chain—from input suppliers to end consumers. This visual framework helps identify key operational points, active units, and systemic inefficiencies.

Starting with input suppliers, the chain includes five active parent stock farms, which produce hatching eggs for commercial hatcheries. These hatcheries, five in number, provide day-old chicks (DOCs) to broiler producers. Additionally, there are 23 operational feed suppliers/feed mills, which supply feed to both commercial and small-scale broiler producers. The presence of veterinary field units indicates an effort to integrate animal health services into the production process, although the extent of their functionality is not detailed.

The production segment consists of two types of broiler producers: commercial broiler producers and small-scale broiler producers, with a combined total of 5,696 farms. These producers serve as the core of the value chain and are directly connected to both feed mills and hatcheries. However, the differentiation between commercial and small-scale actors suggests potential disparities in scale, quality, and market access, which can influence overall productivity and disease management capacity.

On the output trading side, poultry products are distributed through several marketing channels, including wholesalers, hotels and restaurants, supermarkets, and retailers. These nodes then deliver products to the final consumers, completing the consumption cycle. Interestingly, a portion of production flows directly from small-scale producers to retail outlets, bypassing slaughterhouses, which implies possible inconsistencies in product quality control, hygiene standards, and traceability.

The diagram also shows nine active slaughterhouses, which process poultry before distribution. However, not all broiler producers utilise slaughterhouses, indicating a fragmented supply chain where informal or unregulated meat sales may occur. This poses public health concerns, particularly in the absence of centralised disease screening or cold chain infrastructure.

Critically, the diagram underscores the lack of vertical integration and limited coordination among value chain actors. The heavy dependence on a small number of hatcheries and parent stock farms exposes

the system to significant supply risks, particularly during disease outbreaks or border closures that affect import-dependent inputs. Moreover, the absence of institutional support structures such as producer cooperatives, financial service providers, or cold storage systems suggests structural weaknesses that hinder value addition and sector resilience.

Overall, while the diagram portrays a functional poultry value chain in Afghanistan, it also reveals key vulnerabilities—particularly in disease control, quality assurance, and supply chain coordination. Addressing these gaps is essential for improving efficiency, ensuring food safety, and enhancing the sector's capacity to meet rising domestic demand.

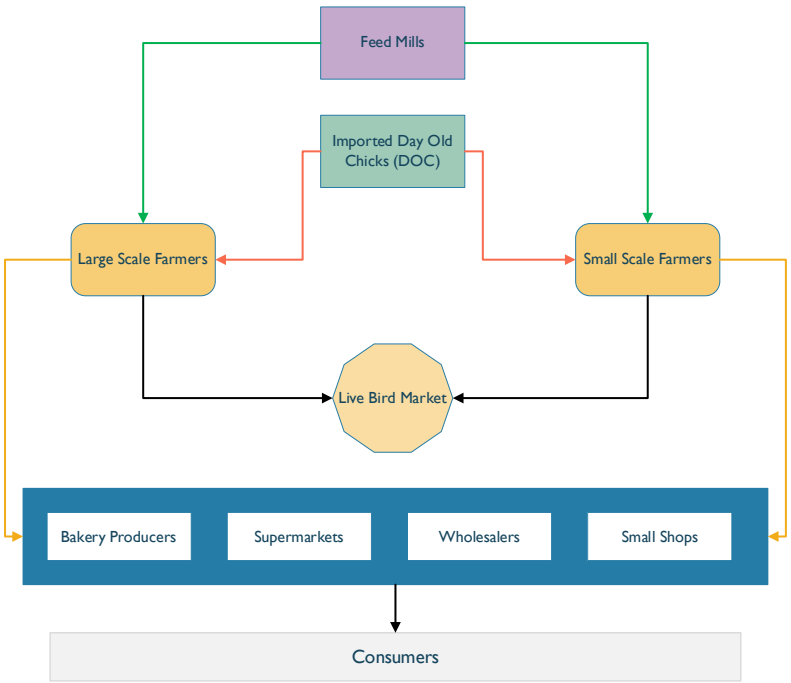


Figure 2 *Table Eggs Value Chain Map in Afghanistan*

Figure 2 illustrates the supply chain of live poultry in Afghanistan, highlighting the flow of key inputs, production activities, and market channels leading to final consumers. It reflects a relatively linear but fragmented value chain, revealing both functional roles and structural limitations in the poultry distribution system.

At the input level, the system relies on two critical components: feed mills and imported day-old chicks (DOCs). Both large-scale and small-scale poultry farmers depend on these inputs, indicating a high level of external dependence, especially for DOCs, which increases vulnerability to cross-border disruptions and disease risk. Feed mills supply feed to both farmer categories, reinforcing their central role in sustaining poultry production.

The next level of the chain is divided between large-scale and small-scale farmers, both of whom rear the birds and supply them to the live bird market. This central node acts as a collection and distribution hub, though its presence also suggests minimal processing or standardisation, which raises concerns about animal welfare, product quality, and disease control. The lack of intermediate processing, such as slaughterhouses or cold chain infrastructure, implies a mostly informal trading environment.

From the live bird market, poultry is distributed to various market actors, including bakery producers, supermarkets, wholesalers, and small shops, all of which ultimately supply end consumers. This indicates that live poultry or minimally processed birds are reaching diverse retail environments, ranging from formal supermarkets to informal shops and bakeries. However, the direct flow from the live bird market to these outlets suggests inconsistent quality standards, limited traceability, and potential public health risks due to the absence of regulated slaughter or hygiene protocols.

Critically, the diagram underscores weak vertical integration and limited regulatory oversight across the value chain. The reliance on live bird markets and the absence of veterinary control or formal slaughter processes reflect systemic inefficiencies and heightened biosecurity risks. Moreover, the value chain appears producer-driven, with limited institutional support, a lack of logistics infrastructure, and an absence of coordinated market mechanisms to stabilise prices or standardise products.

In summary, the diagram presents a poultry supply chain that is functional but vulnerable, heavily reliant on imports and informal market structures. Strengthening local hatchery capacity, introducing regulated processing nodes, and integrating veterinary and cold chain services would be crucial steps toward improving efficiency, safety, and resilience in Afghanistan's poultry sector.

3. Problem Statement

The poultry trade in Afghanistan is characterised by the widespread movement of live birds and poultry products across provincial boundaries and international borders, particularly from neighbouring countries. This dynamic presents a critical biosecurity risk, especially in the context of the country's predominantly informal and poorly regulated domestic poultry sector. The rapid growth of commercial poultry farming, driven by rising demand for poultry meat and eggs, has positioned the sector as a significant component of Afghanistan's agribusiness landscape. With an estimated investment of approximately USD 1 billion and growing interest from private stakeholders, the industry holds considerable potential for self-sufficiency in poultry production. However, the sector remains vulnerable due to limited biosecurity infrastructure and insufficient disease surveillance, which pose significant challenges to controlling infectious outbreaks such as avian influenza.

Despite its economic promise, the Afghan poultry sector lacks a cohesive and evidence-based information system that can support strategic investment and policy formulation. Existing literature and data on Afghanistan's poultry value chain offer limited utility for prospective investors, as they often fail to quantify critical variables such as national demand for broiler meat, table eggs, poultry feed, day-old chicks (DOCs), and the input requirements for feed production, particularly soybeans and corn. Moreover, there is a fragmented understanding of prevalent poultry diseases, production bottlenecks, and the spatial distribution of farm operations. This assessment, therefore, aims to bridge these knowledge gaps by estimating the total number of broiler and layer farms, identifying active farms, and analysing both demand and domestic production for key poultry products. It also evaluates the national requirement for corn and soybeans as essential feed inputs, while documenting the dominant disease burdens in poultry flocks.

This assessment is part of a broader investigation into the structure and performance of Afghanistan's poultry sector. It focuses on five core components: production capacity, consumption demand, import dependency, gap analysis, and the identification of opportunities and constraints within the value chain. The role of value chain analysis in this context is to illuminate systemic inefficiencies and the distribution of value and risk across actors, which is beyond the narrow focus on producers that typically dominates policy discourse. Indeed, neglecting downstream actors such as traders, processors, retailers, and service providers can obscure the full socioeconomic impact of the poultry sector. A comprehensive understanding of the supply-demand dynamics, infrastructure constraints, and disease-related disruptions is therefore essential not only for investment planning but also for designing effective policies that safeguard livelihoods and promote sustainable growth in Afghanistan's poultry industry.

4. Objective Statement

The assessment's primary objectives are to undertake a comprehensive overview of the poultry industry in Afghanistan and understand the entire poultry value chain actors to determine the feasibility of a poultry Industry in Afghanistan.

More specifically, the assessment looked into the following points:

1. Determine the primary inputs of the poultry industry (feed and broiler day-old chicks), demand, and production capacity in Afghanistan.
2. Determine the total number of broiler and layer farms (Active and non-active_

3. Determine the total consumption of the corn and soybean meal for poultry feed production purposes.
4. Determine the total demand for poultry products (table eggs and broiler meat).
5. Assess potential private investors and their financial capacity.
6. Conduct a competitive analysis of imported feed from Pakistan with local meals.
7. Determine per capita consumption of table eggs and broiler meat.

5. Methodology

This assessment primarily utilised the technique to determine whether the research objectives could be achieved. It is essential to comprehend the research problem statement completely. This guarantees that the research questions addressed the assessment's primary concern. This information might create a good assessment plan for an empirical test. Additionally, it will make selecting suitable analytical tools for this research easier (Creswell, 2014).

The problem definition and objectives have been discussed to understand this research further. This is followed by a description of the research tool, including sample selection methods, data collection phases, and the chosen statistical data analysis techniques. Microsoft Excel and the Statistical Package for the Social Sciences (SPSS) v.27 were used as the statistical tools for the data analysis.

5.1 Assessment Approach

This assessment employs a deductive approach following the nature of its research objectives. The assessment's objectives were developed based on a comprehensive understanding of the fundamental concepts and theories about the poultry value chain, broiler production, poultry farming, and value chain analysis.

5.2 Poultry Value Chain Assessment Strategy

According to Saunders et al. (2009), the entire plan for how the researcher will get answers to the assessment questions is called a research strategy. The research method used in this assessment is a face-to-face research survey strategy. The data comes from a sample of 601 datasets, including all 11 poultry value chain actors in Afghanistan.

The choice of survey design for this assessment was also in line with (Sekaran & Bougie, 2016). They assert that if the objective of the investigation is to identify the critical variables related to the problem in a natural setting with minimal intervention, it qualifies as field research. This research was conducted in a natural work setting with minimal interference with the typical workflow, thus in tandem with (Sekaran & Bougie, 2016).

Similarly, the choice was also supported by Organ & Ryan (1995), and state that those who maintain that the field survey is the typical design for empirical research, such as the current assessment. Additionally, the design enabled the collection of required data from a sample, a feat that was impossible with other methods, such as experimental or quasi-experimental processes.

Based on the considerations mentioned earlier, a structured questionnaire instrument was utilised as the primary data collection tool. Since the information was only once obtained from targeted poultry value chain actors based on current self-assessment, the assessment was cross-sectional. In this assessment, each respondent of the chosen value chain actor's response was viewed as an independent data source, and the person was employed as the analytical unit. This was in keeping with the assessment's objective to examine the state of Afghanistan's poultry business at the time.

5.3 Time Horizon

Cross-sectional or longitudinal studies are both possible. Cross-sectional studies can be considered to address an assessment issue where data is acquired just once, possibly across weeks or months (Sekaran & Bougie, 2016). Longitudinal research examines a specific phenomenon or variable over an extended period to characterise events (Hair et al., 2017; Saunders et al., 2009). For our investigation, the data gathered at one point in time is sufficient. As a result, the survey research used

in this assessment has a cross-sectional temporal range. Data were collected between March and June 2022.

5.4 Research Instrument

In this assessment, the research tool was a questionnaire. It is essential to understand that a questionnaire is a group of questions that have been pre-written and are used by respondents or researchers to record their responses. It assembles well-structured inquiries to gather first-hand information for research analysis (Creswell, 2014; Kumar, 2011).

The researcher followed the basic guidelines for questionnaire design while creating the questionnaire, as suggested by Bajpai (2011) and Kothari (2004), as shown in the following Table 1. This section of the research instrument discusses the questionnaire approach used for this assessment. It describes the development, validation, pre- and pilot-testing, and use of the final questionnaire for the assessment.

Table 1 General Rules for Designing a Questionnaire

Item No.	Particulars
1.	Explain the purpose of the questionnaire
2.	Keep the questions as simple as possible
3.	Do not use jargon or specialist language
4.	Phrase each question so that only one meaning is possible to avoid ambiguity
5.	Avoid vague, descriptive words
6.	Avoid asking negative questions, as these are easy to misinterpret
7.	Ask only one question at a time
8.	Include questions that serve as cross-checks on the answers to other questions
9.	Keep the interview schedule or questionnaire as short as possible, but include all the questions required to cover the research purposes
10.	Avoid questions that are nothing more than a memory test

Source: (Bajpai, 2011; Kothari, 2004)

5.5 Development of a Questionnaire

Through the use of questionnaires, the primary data for this assessment were acquired. Since the questionnaire was the only survey tool used in this assessment, careful planning was necessary to collect the information needed and create the questionnaire as a reliable research tool (Shafie, 2013). The most popular research method in social science is the questionnaire (Hay, 2016; Kothari, 2004). The reasons for selecting the administered questionnaire, as suggested by Bairagi & Munot (2019). The suitability of the administered questionnaire for use with literate respondents, combined with the nature of the questions, leads researchers to prefer this approach over in-person interviews. Last but not least, there is a better likelihood of a higher response rate.

It was also noted that a higher response rate is likely when the researcher is present to explain and persuade the respondent to participate in the assessment. Other benefits of administered questionnaires include the ability for busy respondents to complete the questionnaire on their own time without interference from the interviewer. This assessment used questionnaires to collect information from all of Afghanistan's chosen poultry value chain actors.

The questionnaire was created using existing assessment tools from prior research (Bairagi & Munot, 2019; Beatty et al., 2020; Naumann & Richter, 2000). Some assessment components have been modified to meet Afghanistan's poultry value chain assessment theme. The questions were obtained from researchers in the poultry value chain and related fields of assessment to reduce the likelihood of bias and construct the questionnaire according to the desired variables.

5.6 Questionnaire Structure

Much work was put into ensuring the questionnaire's validity in this research. The assessment's research goal was clearly defined to guarantee that the questionnaire utilised as a data collection instrument was well-crafted (Beatty et al., 2020). About 11 questionnaire sets were created, and each one was assigned to a particular participant in the value chain for poultry. Most of the survey's

questions were drawn from earlier research pertinent to the assessment's objectives. Each section includes a set of labelled, linked questions that make it simpler for participants to follow along and respond to the inquiries.

5.7 Samples Selection Method

Three effective methods for choosing the representative sample were used in this research, as recommended by (Hair et al., 2017). Several established procedures are used to select the representative samples. The first steps involve determining the target population, choosing a sampling strategy, and determining the sample size (Hair et al., 2017; Kumar, 2011; Saunders et al., 2009).

5.8 Assessment of Population

The initial step in choosing the assessment population and sample frame was defining the population. The assessment population refers to the group of individuals or events the researcher wishes to examine (Cowles & Nelson, 2015; Johnson & Christensen, 2014; Kumar, 2011; Sekaran & Bougie, 2016). The assessment population is the group from whom the data needed to address the research question is gathered. The research population in this assessment is focused on poultry value chain actors located in all the provinces of Afghanistan. The assessment population, in this case, is the whole of Afghanistan, including the cities and districts of all the sections.

The assessment targets all poultry value chain actors in Afghanistan's five regions. However, this assessment specifically focused on five regions.

5.9 Sampling Technique

The sampling technique employed in this research is both probabilistic and non-probabilistic sampling. The non-probability sampling technique selects the sample using a judgmental and systematic random sampling procedure. However, both systematic and straightforward random samples were employed in probabilistic sampling. The sample is determined based on the criteria mentioned above. When it would be costly to conduct a survey using one of the methods previously stated, purposive sampling is employed to sample the target population. In snowball sampling, individuals from the rare population are meant to be acquainted. Although it may only apply to a small number of people, such as members of certain religious or racial minorities, this is a very restrictive criterion. Initially, only a few members of the odd population are identified, and each is asked to name the other people. Each person is then contacted again and asked to identify more people, and so on. A fixed number of members are found before no more are found, proving that the list of the rare population is complete. Finally, a sample is selected using an acceptable sampling approach from the entire list of the rare population (Arnab, 2017; Kumar, 2011; Shewhart & Wilks, 2012).

5.10 Sampling Size

In the assessment of social sciences, the size of the population is commonly denoted by the letter N, whereas the people from whom the data is gathered are known as the sample. They are selected from the assessment population, where n represents the sample size (Bairagi & Munot, 2019; Kumar, 2011; Saunders et al., 2009). Several variables affect sample size determination, all of which must be considered simultaneously (Bairagi & Munot, 2019; Johnson & Christensen, 2014). There are several factors to consider, including the cost and time constraints, the variability of the targeted population's constituent parts, the required estimate accuracy, whether or not the results should be generalised, and, if so, to what degree of confidence.

Table 2: *Sample size table*

S/N	Value Chain Actor	Total
1	Broiler Primary Producers	90
2	Association	6
3	Broiler Breeder Farm	8
4	Broiler Meat Retailer	90

5	Broiler Meat Consumers	110
6	Table Eggs Consumers	110
7	Broiler Meat Processors	9
8	Feed Mills	23
9	Vet Services Providers	52
10	Eggs Retailers	85
11	Eggs Importers	18
Grand Total		**601**

The final usable questionnaire from the respondents was 601 sets, based on the data collection and analysis. At 601 sets, it was suggested by (Roscoe, 1975). Sample sizes of more than 30 but less than 500 are generally acceptable for most studies. (Roscoe, 1975) Continues to imply that a minimum sample size of 30 is needed for each category if subsamples are to be generated, and in multivariate research, the sample size should be ten times or more than the number of variables in the assessment. This software would help the researcher get a more accurate statistical analysis and a more relevant result. Consequently, this assessment will examine 601 sample sets of returned surveys. Table 2 depicts the total number of samples selected for each poultry value chain actor.

5.11 Method of Data Analysis

The information gathered from the questionnaires was divided into two sections for data analysis. Microsoft Excel and SPSS v. 27 were also used for portions of the question analysis. However, as this assessment of the poultry value chain is purely descriptive, no inferential data were used.

5.12 Results of Data Analysis

Data analysis or screening is used to describe examining data for issues affecting the acceptance of the assessment objectives. Data screening is necessary to ensure that data is input correctly, that there are no outliers or missing values, and that the variables' distribution is normal. The five main steps in this procedure are data coding, audit, normality assessment, testing for non-response bias, reliability assessment, and validity assessment. Data analysis was done using SPSS.

5.13 Data Coding Audit and Treatment of Missing Values

Modifying the raw data was the first step in this assessment's data analysis process. The raw data must be adjusted to be coded appropriately and stored in a data file. The responses from the participants were assigned a number that was entered into a database. Data editing will find errors and omissions, correct them where practical, and certify that the minimum standards for data quality have been reached (Cronk, 2018).

Coding assigns numbers to each response and transfers data from the questionnaire to SPSS (Malholtra & Dash, 2016). This assessment used coding to produce a data file in SPSS. The items on the questionnaire were all pre-coded with numbers. The responses to the data collection questions were then typed into SPSS.

After being entered, the data were checked for accuracy and completeness. The accuracy of each value entered in the data file was verified twice.

It is uncommon to get data without some missing information (Hair et al., 2017). Data is missing when respondents do not respond to one or more survey questions. Questionnaires can perhaps help to resolve these problems. Due to the respondent's ability to swiftly change their response and move back and forth, as well as the utilisation of various on-screen stimuli to keep respondents' attention, more accurate data is likely to be obtained. The questions in this research are set up so that respondents must complete all of the parts before submitting the questionnaire (Sekaran & Bougie, 2016).

6. Findings

Afghanistan currently operates 23 commercial feed mills, which collectively produce 99.3% of the chicken feed used by primary poultry farmers, leaving only 0.7% of feed to be imported from neighbouring countries such as Pakistan and Iran. The total annual demand for broiler feed stands at approximately 989,089.56 metric tons, the vast majority of which is met by domestic production. This demonstrates a high level of self-sufficiency in feed processing, particularly for broiler production. The feed industry heavily relies on two key ingredients: soybean meal and corn, which constitute 24% and 60% of the feed composition, respectively. To meet this demand, the country requires around 239,054.88 MT of soybean meal and 597,637.2 MT of corn each year.

In 2020, local production of soybeans reached 1,997 MT, fulfilling 99.16% of the national soybean requirement, while corn production stood at 271,777 MT, meeting 54.52% of the domestic demand. These figures suggest a relatively strong position in soybean meal sourcing, but a notable deficit in corn supply that necessitates supplemental imports. Efforts to establish contractual agreements between feed mills and local farmers could enhance supply chain stability by ensuring predictable prices and consistent availability of raw materials. However, political instability disrupted data collection and economic planning, making 2020 the most reliable year for reference. Strengthening local crop production and securing agricultural supply chains remain critical for sustaining and expanding Afghanistan's poultry feed industry.

Table 3: *Male labourers employed in feed mills*

Statistics		
N	Valid	23
	Missing	0
Mean		60.70
Mode		13
Range		395
Minimum		5
Maximum		400
Sum		1396

Table 3 provides descriptive statistics on male labour employment in Afghanistan's feed mills, based on data from 23 operational facilities. On average, each feed mill employs approximately 60.7 male workers. However, the mode (the most frequently occurring value) is significantly lower at 13, indicating that most mills operate with relatively small labour forces while a few employ a much larger number. The wide range of 395, with employment figures spanning from a minimum of 5 to a maximum of 400, highlights a substantial disparity in workforce size across feed mills. The total number of male workers employed across all 23 feed mills is 1,396, underscoring the sector's contribution to rural and industrial employment. This variation suggests differences in mill scale, automation levels, and production capacity, with larger mills likely dominating national feed output.

Table 4: *Problems faced by feed mills in Afghanistan*

	Responses		Per cent of Cases
	N	Percent	
Electricity	17	14.0%	73.9%
Chicken diseases	8	6.6%	34.8%
Lack of adequate raw materials	16	13.2%	69.6%
Low quality of the feed	6	5.0%	26.1%
Imbalance and fluctuations in the prices of raw materials	22	18.2%	95.7%
Lack of adequate day-one chicks	10	8.3%	43.5%
Lack of technical skills	8	6.6%	34.8%
Lack of sufficient financial resources	13	10.7%	56.5%
The intervention of the neighbouring countries	8	6.6%	34.8%

Other	13	10.7%	56.5%
Total	121	100.0%	526.1%

6.1 Problems faced by feed mills in Afghanistan

The primary difficulties that feed mills in Afghanistan encounter while they run their plants are listed in Table 4. Table 4 shows that the biggest major issue to date is the imbalance and variations in raw material costs, which comprise 18.2 %. Second, 14% of feed producers claimed that the absence of power in industrial zones always placed their businesses at risk, negatively influencing the cost of commodities supplied for feed production (COGS). Thirdly, 57.1% of feed producers felt that the national electricity supply was insufficient for feed mill operations.

Because there is no contract farming between farmers and feed mills, farmers do not trust the feed mills to buy the maize and soybeans they grow; the availability of local raw materials is the feed mill's main difficulty. Building trust between farmers and feed mills is necessary. AVC-Livestock develops initiatives for connections between the two parties through contract farming; as an illustration, the Kandahar-based Watan Dana Sanaty Company made contracts with 4110 soybean farmers in the South region; Watan Dana supplied them with inputs like soy seed and fertilizer, and the farmers produced soybeans for Watan Dana; Watan Dana continues to maintain contracts with 1200 soybean farmers; they can grow 3000 MT of land for the production of soybeans.

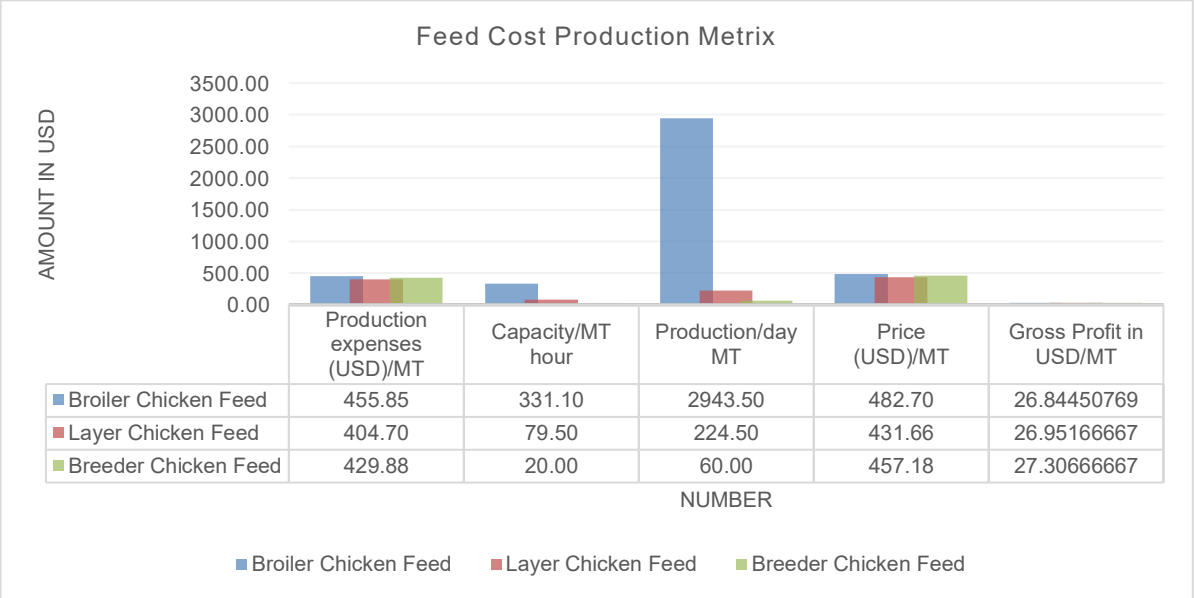


Figure 3 *Feed Cost Production Metrix in Afghanistan*

The "Feed Cost Production Metrix" chart compares the economic performance of producing broiler, layer, and breeder chicken feed in Afghanistan. Among the three, broiler chicken feed shows the highest production capacity at 331.1 MT/hour and a daily output of 2,943.5 MT, significantly outperforming layer (224.5 MT/day) and breeder feed (60 MT/day). However, it also incurs the highest production cost at 455.85 USD/MT. Despite these higher expenses, the selling price for broiler feed (482.70 USD/MT) still yields a gross profit of 26.84 USD/MT, closely comparable to that of layer (26.96 USD/MT) and breeder feed (27.31 USD/MT).

Layer and breeder feeds, though lower in production scale, exhibit relatively similar production expenses, 404.70 USD/MT and 429.88 USD/MT, respectively, and slightly lower prices than broiler feed. Interestingly, gross profit margins across all three types of feed remain nearly identical, suggesting a consistent pricing strategy regardless of scale or production cost. Overall, the chart reflects that while broiler feed benefits from economies of scale in production volume, profit margins

across feed types are relatively uniform, implying that profitability is maintained through careful pricing rather than cost reduction alone.

Table 5 Statistics on feed ingredients of feed mills in Afghanistan

Types of feed	Total Production Capacity MT/Per Year	Total Production Sales Volume USD/Year	**Soybean** Meal Requirement MT/Year	**Corn** Requirement MT/Year	Local Corn Production
Broiler Chicken Feed	921,315.50	$444,716,511.39	221,115.72	552,789.30	59.64%

This data highlights the annual production scale and input requirements for broiler chicken feed in Afghanistan. The total production capacity reaches 921,315.5 metric tons per year, generating sales revenue of approximately \$444.72 million USD annually, which indicates the economic significance of this segment within the poultry value chain. To sustain this level of output, the feed sector requires substantial raw materials, including 221,115.72 MT of soybean meal and 552,789.3 MT of corn per year. Notably, only 59.64% of the required corn is sourced locally, revealing a heavy dependence on imports or external markets for the remaining 40% of corn and potentially an even higher reliance for soybean meals, which are often imported due to limited domestic production. This data emphasises the need to strengthen local crop production, particularly corn and soy, to reduce costs, ensure raw material security, and enhance the sustainability of feed manufacturing in Afghanistan.

6.2 Broiler Breeder Farms

Afghanistan currently operates six broiler breeder farms located in Herat, Kandahar, Balkh, Khost, and Nangarhar, which collectively supply only 21.12% of the country's annual demand for day-old broiler chicks (DOCs). These farms produce approximately 22.52 million DOCs each year. In contrast, the national demand—driven by 5,696 active broiler farms operating with an average of 4.48 production cycles and capacities ranging between 2,000 and 10,000 chicks—reaches 106.64 million DOCs annually. As a result, the remaining 78.88% of DOCs are imported from neighbouring countries. Each breeder farm maintains a flock of 20,000 to 30,000 breeders and produces DOCs at an average cost of 23 Afghanis per chick, which are then sold to farmers for 35 Afghanis. The market price of DOCs is primarily influenced by import costs, with importers typically adding a margin of 5 to 6 Afghanis before distributing them to local producers.

6.3 Problems faced by broiler breeder farms in Afghanistan

Table 6 outlines the main challenges faced by broiler breeder farms in Afghanistan, with the most critical issues being the absence of proper government policies, price fluctuations in chicken meat, and lack of support from the poultry union—each cited by 100% of respondents. These findings suggest that breeder farms operate in a poorly regulated environment with minimal institutional backing, which undermines long-term planning and investment. Other significant problems include inadequate veterinary services and miscellaneous operational issues, each reported by 66.7% of respondents, indicating systemic weaknesses in animal health infrastructure. While factors such as poor feed and vaccine quality, disease control, and limited financial resources were cited less frequently, they remain important constraints affecting farm efficiency. The presence of imported chicken meat further intensifies market pressures on domestic producers. Collectively, the data highlights the need for coherent policy frameworks, reliable veterinary support, and stronger institutional engagement to enable breeder farms to meet national poultry production goals sustainably.

Table 6: *Problems faced by broiler breeder farms in Afghanistan*

	Responses		Per cent of Cases
	N	Percent	
Management of Farms	1	5.3%	33.3%
Controlling diseases	1	5.3%	33.3%
Low quality of the feeds	1	5.3%	33.3%
Low quality of the vaccines and drugs	1	5.3%	33.3%
Inadequate or low veterinary services	2	10.5%	66.7%
Non-availability of proper government policies	3	15.8%	100.0%
Lack of sufficient financial resources for the operation of the farm	1	5.3%	33.3%
Imported chicken meat	1	5.3%	33.3%
Fluctuation in the prices of chicken meat	3	15.8%	100.0%
No support from the poultry union	3	15.8%	100.0%
Other	2	10.5%	66.7%
Total	19	100.0%	633.3%

6.4 Broiler Farms

According to the Assessment, ten thousand six hundred eighty-seven broiler farmers are accessible in Afghanistan in various capacities ranging from 2000 to 10000, with an average of 4.88 cycles produced yearly. Table 7 shows that 5696 farms are currently operating; the others are inactive due to low economic and political developments and inadequate market availability. The current operational broiler farms produce 149,306.352 MT (i.e., 149,306,352 kg/year), which meets (86.72 per cent) of Afghanistan's total demand. In comparison, 18,658 MT is imported from the international market, which meets (10.83 per cent) of the overall need. Furthermore, the current number of layer hens is 2.54 million, and the average weight of the layer chickens after production is 1.65 kg; as a consequence, 4203.7 MT of poultry meat was produced from layer hens in 2021, accounting for 2.44 per cent of overall demand. However, poultry meat demand, including broiler, layer, and imported, is 172,168.05 MT. In 2021-22, Afghanistan's annual per capita consumption rate of poultry meat was 4.59 Kg. At the same time, Afghanistan's present population will be 37,466,414 in 2021.

Table 7 ***Statistics on broiler farms, DOC requirements, and total meat production***

Production Capacity	Number of Farms	Total Active Farms	Total meat production in a year/kg	Average Capacity of the Farms	Total DOC Required/Year	DOC Local Production/Year	Imported DOC/Year
1000 - 2000	2743	1292	13,112,895.60	1500	9,366,354	**22,522,730**	**84,124,664.50**
2001 - 5000	6682	3501	82,909,631.70	3500	59,221,165.50		
5001 - 10000	984	658	33,391,197	7500	23,850,855		
Above 10000	278	245	19,892,628	12000	14,209,020		
Grand Total	**10687**	**5696**	**149,306,352**		**106,647,394.50**		
Percentage						**21.12%**	**78.88%**

Table 7 presents a detailed snapshot of Afghanistan's broiler farming sector, highlighting the distribution of farms by production capacity, the volume of meat produced annually, and the corresponding demand for day-old chicks (DOCs). The majority of active broiler farms fall within the 2,001–5,000 capacity range, contributing the highest total meat production of over 82.9 million kg per year, and requiring nearly 59.2 million DOCs annually. Farms in the 1,000–2,000 capacity range are more numerous but contribute significantly less to total meat output, producing just over 13.1 million kg annually, despite requiring over 9.3 million DOCs. Higher-capacity farms, particularly those above 5,000 birds, show greater production efficiency, though they are fewer in number. Notably, only 21.12% of DOC demand is met by local production, while a staggering 78.88% is fulfilled through imports, pointing to a significant supply gap and dependency on external sources. This imbalance not only exposes the sector to biosecurity risks but also contributes to issues like poor chick quality and high mortality rates reported elsewhere. Overall, the data underscores the need to invest in domestic hatchery infrastructure to boost local DOC production, improve production efficiency, and reduce the industry's reliance on imports.

6.5 Problems faced by broiler farms in Afghanistan

Table 8 presents a comprehensive overview of the challenges faced by broiler farms in Afghanistan, reflecting a complex interplay of operational, financial, and market-related constraints. The most reported issue is the lack of day-old chicks (DOC), affecting 83.9% of farms, which indicates a severe supply chain gap and dependency on external sources. Price fluctuation is the second most significant concern, reported by 80.6% of respondents, suggesting unstable market conditions that hinder profitability and planning. Closely following are issues such as low quality of vaccines and medicines (74.2%), disease control (68.8%), and farm management difficulties (67.7%), all of which point to critical weaknesses in animal health services and on-farm capacity. Additionally, a lack of financial resources and no backup plan were cited by 67.7% of farmers, highlighting economic fragility and risk exposure. Poor feed quality, inadequate veterinary services, and limited market access were also significant barriers, each reported by over half the respondents. Collectively, these findings reveal that broiler farms operate under high levels of uncertainty, with systemic weaknesses in input supply, veterinary infrastructure, financing, and market stability that must be addressed through targeted policy and investment interventions.

Table 8: *Problems faced by broiler farms in Afghanistan*

	Responses		Per cent of Cases
	N	Percent	
Farm Management	63	7.5%	67.7%
Feeding Management	34	4.0%	36.6%
Disease Control	64	7.6%	68.8%
Vaccine Application	45	5.3%	48.4%
Lack of DOC	78	9.3%	83.9%
Low Feed Quality	55	6.5%	59.1%
Low Vaccine and Medicine Quality	69	8.2%	74.2%
Lack of Vet Services	41	4.9%	44.1%
Lack of Enough Financial Sources	63	7.5%	67.7%
Lack of Small Loan Packages	37	4.4%	39.8%
Lack of Market Availability	55	6.5%	59.1%
Imported Frozen Meat	52	6.2%	55.9%
Price Fluctuation	75	8.9%	80.6%
No Backup Plan for Poultry Farms	63	7.5%	67.7%
Other	49	5.8%	52.7%
Total	843	100.0%	906.5%

6.6 Table Eggs Producers

This reflects a total retail value of 70.760 USD million for table eggs in 2021-2022, including the importance of commercial and imported consumer poultry commodities.

The consumption rate of table eggs per person in 2021 was estimated to be around 21.76. Compared to surrounding countries and the rest of the globe, Pakistan's per capita meat and egg consumption is 56 eggs per year. In contrast, industrialised countries' per capita meat consumption is 300 eggs per year. According to the World Health Organisation, an adult requires 27 grams of animal protein daily. However, the majority of Afghans barely consume 15.68 grams.

Table 9 gives the entire figures for table egg production in Afghanistan. According to the AVC-livestock assessment, the overall volume of table egg production capability in Afghanistan is 7,507,500 eggs per day. In addition, the average production cost per carton is 1,191.38 AFN, whereas the average selling price for the same egg carton is 1370.88 AFN. This demonstrates that table egg dealers profit from selling eggs to local consumers. Similarly, Table 9 displays the 66 active table egg producers in Afghanistan, who produce 699.77 million eggs (i.e., 81.83 per cent meet the total demand). In 2021, the demand for table eggs is expected to reach 826.908 million, with 699.77 million (81.83 per cent) produced domestically and 127.138 million (18.17 per cent) imported. It is worth noting that the main commercial centres in Afghanistan (Herat, Kabul, and Nangarhar) are the largest producers of table eggs.

Table 9: ***Table Eggs Production Statistics in Afghanistan***

The volume of the production/daily	Avg. Production Expenses (AFN)/180 eggs	Avg. Price of the egg's carton (AFN)/180 eggs	Daily selling volume	The capacity of the non-active production/daily	Annual egg Production	Local production per carton	Local production sales volume/AFN
7,507,500	1,191.38	1,370.88	2,213,500	401500	699,770,000	3,887,611.11	5,329,428,881.94

6.7 Problems faced by the table egg producers

Table 10 outlines the key challenges confronting table egg producers in Afghanistan, with price fluctuations in the egg market identified as the most pressing issue, affecting 87.5% of respondents. This volatility not only destabilises income but also discourages long-term investment in the sector. Additionally, 75% of producers reported a lack of support from the poultry union, indicating weak institutional backing and limited access to collective bargaining or technical assistance. Disease outbreaks (62.5%) and the poor quality of drugs and vaccines (50%) further compound production risks, suggesting significant gaps in veterinary services and biosecurity. Meanwhile, limited financial resources affected 25% of producers, reflecting broader issues of access to capital and operational funding. Together, these findings reveal a fragile production environment, where economic instability, inadequate institutional support, and health-related challenges severely limit the growth and resilience of the egg production sector in Afghanistan.

Table 10: *Problems faced by table egg producers*

	Responses		Per cent of Cases
	N	Percent	
Diseases	5	20.8%	62.5%
Bad quality of the drugs and vaccines	4	16.7%	50.0%
Lack of financial resources for the operation of the farm	2	8.3%	25.0%
Fluctuation in the prices of eggs in the market	7	29.2%	87.5%
Lack of support from the poultry union	6	25.0%	75.0%

	Total	24	100.0%	300.0%

6.8 Processors (Slaughterhouses)

Food safety is a priority for everyone in the food supply chain. Processors utilise multi-hurdle techniques for food safety to meet food safety criteria and assure safe goods for consumers. However, with current technological standards, broiler meat processing lowers the proliferation of disease microorganisms. Similarly, it decreases foodborne disease, particularly in broiler meat.

In Afghanistan, there are nine chicken slaughterhouses, seven of which are operational and produce quality meat for customers. The slaughterhouses purchase one Kilogram of live broilers for an average of 140 Afs, and the overall production cost per Kilogram, including the live birds and other expenses, is 185 Afs. According to studies, 30 per cent of the total weight of the birds will be lost during processing. As a result, one kilogram of live chicken yields 700 grams of net meat. As a result, the two Kg live broiler will convert to 1.4 Kg net weight; according to the current report, the selling price of one kg net meat is 230 Afs.

Problems faced by processors (slaughterhouses) in Afghanistan

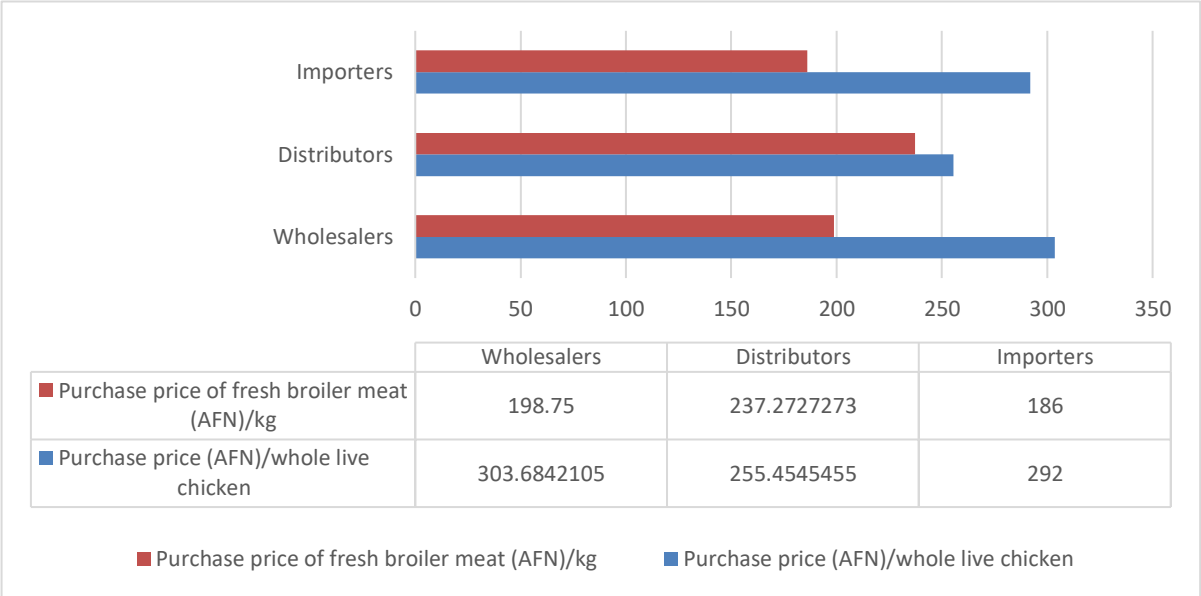
Table 11 identifies the multifaceted operational challenges facing poultry processors and slaughterhouses in Afghanistan, with the non-availability of markets and lack of adequate electricity being the most critical issues, each affecting 100% of respondents. These two factors directly disrupt the capacity of processors to maintain production and reach consumers, undermining profitability and efficiency. Additionally, 66.7% of processors reported problems such as high processing expenses, inadequate space, and lack of spare parts, all of which point to severe infrastructural deficits. Financial constraints, low raw material availability, and limited technical expertise were also cited by one-third of respondents, reflecting the fragile economic and human capital foundations of the processing sector. The presence of imported chicken meat further adds competitive pressure on local processors. Overall, the data illustrate a poorly supported and underdeveloped processing segment that requires urgent investment in infrastructure, technical training, and market linkage to function effectively within Afghanistan's poultry value chain.

Table 11 *Problems faced by processors (slaughterhouses) in Afghanistan*

	Responses		Per cent of Cases
	N	Percent	
High prices for the raw materials	1	5.6%	33.3%
low quantity of the raw materials	1	5.6%	33.3%
Lack of financial resources for the operation of the process	1	5.6%	33.3%
High expenses during the process	2	11.1%	66.7%
Non-availability of the spare parts used in the process	2	11.1%	66.7%
Not having a particular and adequate space	2	11.1%	66.7%
lack of technical know-how skills required in the process	1	5.6%	33.3%
lack of support from the chicken farm owners	1	5.6%	33.3%
Non-availability of the market	3	16.7%	100.0%
Imported chicken meat	1	5.6%	33.3%
lack of adequate electricity	3	16.7%	100.0%
Total	18	100.0%	600.0%

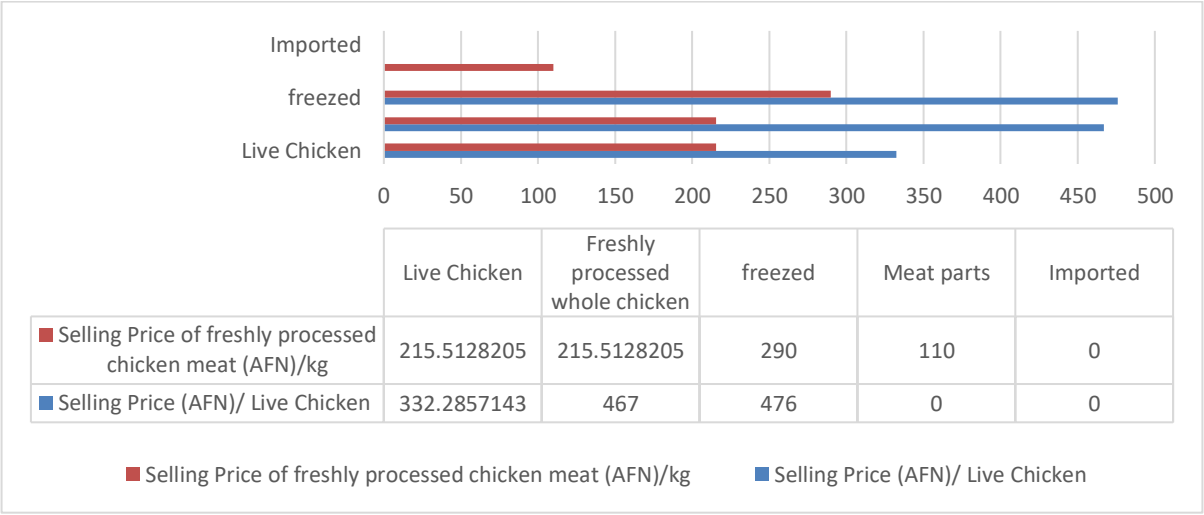
6.9 Broiler Meat Wholesalers

Figure 4compares the purchase prices of fresh broiler meat (per kg) and whole live chicken across three key actors in Afghanistan's poultry market: wholesalers, distributors, and importers. Wholesalers purchase live chickens at the highest average price of 303.7 AFN, yet they buy fresh broiler meat at a comparatively lower rate of 198.8 AFN per kilogram. In contrast, distributors pay a slightly lower price for live chickens (255.5 AFN) but face the highest cost for processed meat at 237.3 AFN per kilogram. Importers benefit from the lowest purchase price for fresh meat (186 AFN), while their cost for live chickens (292 AFN) remains lower than wholesalers' but higher than distributors'. These pricing patterns suggest that local wholesalers and distributors bear higher operational and processing costs, potentially due to inefficiencies in domestic supply chains, lack of economies of scale, or weak negotiation power. Importers, by contrast, likely benefit from more consistent and cost-efficient supply sources, giving them a pricing advantage in the market. This disparity further reflects the competitive pressure faced by domestic actors and highlights the need to strengthen local production systems to reduce cost burdens across the value chain.



	Wholesalers	Distributors	Importers
Purchase price of fresh broiler meat (AFN)/kg	198.75	237.2727273	186
Purchase price (AFN)/whole live chicken	303.6842105	255.4545455	292

Figure 4 *Statistics on purchase price for both fresh broiler meat and whole live chicken*



	Live Chicken	Freshly processed whole chicken	freezed	Meat parts	Imported
Selling Price of freshly processed chicken meat (AFN)/kg	215.5128205	215.5128205	290	110	0
Selling Price (AFN)/ Live Chicken	332.2857143	467	476	0	0

Figure 5 *Selling price of the freshly processed chicken meat per kg and live chicken*

Figure 5 presents the selling prices of various chicken products in Afghanistan, comparing freshly processed chicken meat (per kg) with live chicken prices across different categories. Freshly processed whole chickens and live chickens are both sold at approximately 215.5 AFN/kg for meat, while the live chicken itself is sold at 332.3 AFN. Frozen chicken commands the highest selling price among live products at 476 AFN, followed closely by freshly processed whole chicken at 467 AFN, indicating strong market demand for higher-value, ready-to-cook poultry products. In contrast, meat parts have the lowest selling price for processed meat at only 110 AFN/kg, suggesting lower consumer preference or possibly surplus supply. Notably, imported chicken shows a zero value, indicating either a lack of data or market presence in this specific dataset. These figures highlight that value-added processing significantly increases selling prices, while raw live chickens remain competitively priced but less profitable compared to frozen or freshly processed products. This underscores the potential for expanding cold chain infrastructure and local processing facilities to improve revenue across the poultry supply chain.

6.10 Problems faced by broiler meat wholesalers in Afghanistan

Table 12 outlines the key challenges faced by broiler meat wholesalers in Afghanistan, with all respondents (100%) identifying the lack of a proper mechanism for price control as the most pressing issue. This reflects a volatile market environment where price instability undermines business planning and profit margins. Additionally, the influx of imported chicken meat affects 65.2% of wholesalers, creating intense competition and reducing demand for local products. Nearly 70% of respondents also pointed to the absence of a structured market for broiler meat, indicating weaknesses in distribution channels and retail infrastructure. Although fewer participants cited other problems, the overall data reveal systemic inefficiencies in market regulation, infrastructure, and domestic competitiveness that must be addressed to strengthen the local broiler meat supply chain.

Table 12: Problems faced by broiler meat wholesalers in Afghanistan

	Responses		Per cent of Cases
	N	Percent	
Non-availability of the proper mechanism for controlling the prices	46	40.4%	100.0%
Imported chicken meat	30	26.3%	65.2%
Non-availability of a proper market for chicken meat	32	28.1%	69.6%
Other	6	5.3%	13.0%
Total	114	100.0%	247.8%

The data in Table 13 highlights the significant challenges encountered by table egg wholesalers in Afghanistan, with price fluctuations and imbalance in market control emerging as the most significant issues, reported by 82.9% of respondents. This indicates a lack of regulatory mechanisms to stabilise egg prices, which undermines profitability and market predictability. Packaging-related wastage is the second most prevalent concern, affecting 62.9% of wholesalers, suggesting deficiencies in supply chain logistics and quality control. The absence of a proper market for table eggs, cited by 42.9% of respondents, points to infrastructural and organisational gaps in distribution and sales. Although imported eggs and other issues like transportation or storage were mentioned less frequently, their presence still reflects the competitive and operational pressures local wholesalers face. Overall, these challenges underscore the need for improved market regulation, investment in packaging technology, and stronger domestic supply chain systems to support the egg industry.

Pashtoon, R. & Qurishi, J. (2025). From Farm to Market: Structural Barriers and Institutional Gaps in Afghanistan's Poultry Value Chain. *Gandhara Journal of Natural Sciences (GJNS), 1*(1), 1-25.

Table 13: Problems faced by table eggs wholesalers in Afghanistan

	Responses		Per cent of Cases
	N	Percent	
Fluctuation and imbalance in controlling the prices	29	36.3%	82.9%
Imported table eggs	7	8.8%	20.0%
Non-availability of a proper market for table eggs	15	18.8%	42.9%
Wastages in the packaging of the table eggs	22	27.5%	62.9%
Other	7	8.8%	20.0%
Total	80	100.0%	228.6%

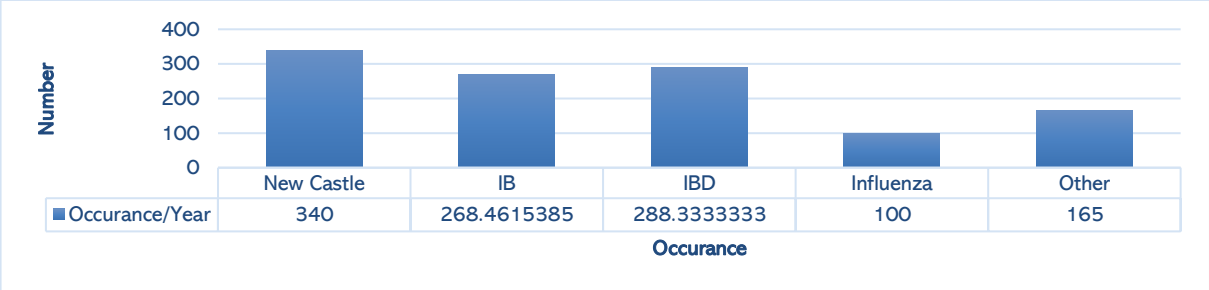


Figure 6 *Poultry diseases occurrence per year in Afghanistan*

6.11 Veterinary Field Units (VFUs)

Figure 6 illustrates that poultry in Afghanistan faces a high burden of infectious diseases, with Newcastle disease occurring most frequently at 340 cases per year, followed by Infectious Bursal Disease (288.3 cases) and Infectious Bronchitis (268.5 cases). These numbers point to significant gaps in disease prevention, vaccination coverage, and biosecurity practices across the sector. Although Avian Influenza has a lower occurrence rate (100 cases), its zoonotic potential still poses a significant threat to both animal and public health. The presence of 165 cases under "Other" diseases suggests that additional illnesses like Coccidiosis and CRD are also affecting flocks but may be underreported or misdiagnosed due to limited diagnostic infrastructure. These trends reflect systemic weaknesses in veterinary services, poor access to quality vaccines, and the risks associated with importing chicks from regions with unknown disease profiles. Addressing these issues requires stronger surveillance systems, better farmer training, and investments in local diagnostic and vaccine production facilities.

Table 14 Problems faced by veterinary field units (VFUs)

	Responses		Per cent of Cases
	N	Percent	
Non-availability of the mechanism to control diseases	12	9.5%	50.0%
Implementation of vaccines	7	5.6%	29.2%
Bad quality of the feeds	10	7.9%	41.7%
low quality of the drugs and vaccines	9	7.1%	37.5%
lack of adequate financial resources	13	10.3%	54.2%
high prices	9	7.1%	37.5%
imported chicken meat availability in the market	20	15.9%	83.3%
Non-availability of a standard mechanism for the drugs	17	13.5%	70.8%
lack of support from the poultry union	20	15.9%	83.3%

Other	9	7.1%	37.5%
Total	126	100.0%	525.0%

6.12 Overall Challenges of the Poultry Industry in Afghanistan

The poultry industry in Afghanistan faces critical systemic and structural challenges that hinder its sustainable development, particularly in regions like Balkh, Parwan, Kandahar, and Herat. A major issue lies in the dependence on imported chicks, with over 85 per cent sourced from neighbouring countries. These chicks often travel long distances, which compromises their health and results in poor weight gain and high mortality rates. Concurrently, poultry producers lack adequate training in broiler management, biosecurity, and disease control, contributing to suboptimal production outcomes. High disease prevalence, including Newcastle, Infectious Bronchitis, and Coccidiosis, exacerbates the situation. Disease surveillance and diagnostic facilities remain insufficient, and there is an urgent need for centralised laboratories to assess immunity levels post-vaccination (Haji-Abdolvahab et al., 2019; Zakeri & Kashefi, 2011).

Production-related constraints are equally severe. Feed costs consume the largest share of operational expenses, exceeding 70 per cent in some regions, primarily due to insufficient local production of key raw materials like soybean meal and corn (Hussein, 2017). Furthermore, high Total Dissolved Solids (TDS) in water sources affects chick health and increases disease vulnerability. Many farms operate below capacity due to financial instability, lack of access to credit, and limited technical infrastructure. The absence of slaughterhouses and rendering plants for poultry byproducts limits value addition and effective waste management. Additionally, inadequate vaccine and medicine quality continue to hamper flock health, and most feed mills do not possess in-house testing capabilities, forcing producers to rely on costly external services abroad (Mehravaran & Nemati, 2025).

Sustainability is further challenged by weak institutional support and poor integration of the agricultural and poultry sectors. Farmers struggle to source local feed materials due to limited coordination between crop producers and poultry enterprises (Informe GEPEC, 2013). Extension services and government interventions remain inadequate, failing to provide the necessary technical and financial backing. The industry requires systemic reforms, including investment in hatcheries, feed processing infrastructure, professional training programs, and integrated disease surveillance mechanisms. Addressing these issues collectively is essential for transforming Afghanistan's poultry sector into a resilient and economically viable industry.

7. Discussions

This study presents a comprehensive analysis of the poultry value chain in Afghanistan, highlighting both its growth potential and systemic constraints. The findings reveal a significant advancement in domestic broiler meat and table egg production, which currently meet 86.7% and 81.8% of national demand, respectively. However, the industry remains highly vulnerable due to its dependence on imported day-old chicks (DOCs), raw feed ingredients, and a fragmented support infrastructure. These vulnerabilities raise serious concerns regarding food security, disease control, and long-term sustainability.

The central limitation of the poultry industry lies in its over-reliance on external inputs. More than 78% of DOCs are imported, primarily from neighbouring countries, which exposes Afghan poultry producers to biosecurity risks and inconsistent quality standards. This aligns with similar observations in fragile states where inadequate domestic breeding programs lead to dependence on cross-border chick supply, often under weak quarantine enforcement (Setianto et al., 2018). The assessment further shows that only six breeder farms are operational, collectively supplying just over one-fifth of the required DOCs. This deficit underscores the urgency of scaling up local breeding infrastructure through public-private partnerships and targeted investment incentives.

Feed production, while predominantly localised through 23 operational mills, is hindered by insufficient domestic production of key raw materials such as soybean meals and corn. In 2020, only 59.64% of

the total corn requirement and less than 2% of the soybean demand were met locally. The dependency on imports contributes to high production costs, pricing volatility, and quality inconsistencies. International literature supports this observation, emphasising that feed cost volatility, driven by global commodity markets, is a principal constraint in low-income poultry systems (Uçak et al., 2024). The absence of robust contract farming between grain producers and feed mills further exacerbates input insecurity, underscoring the need for integrated value chain development.

The value chain mapping demonstrates inefficiencies in both upstream and downstream segments. Small-scale broiler producers face compounded challenges in disease management, technical knowledge, and market access. Veterinary services are sparse, and diagnostic laboratories are either non-existent or poorly equipped, hampering timely responses to outbreaks such as Newcastle disease and infectious bronchitis, which remain highly prevalent across all regions. This aligns with evidence from conflict-affected settings where veterinary services are often deprioritised, leading to systemic disease risks (Mohammed et al., 2013).

Moreover, the lack of a cold chain and standardised slaughterhouses results in considerable post-harvest losses and limits the marketability of locally processed poultry products. Processors and wholesalers consistently cite unstable pricing, limited processing infrastructure, and poor coordination among value chain actors as key bottlenecks. Without a coordinated supply chain management system, market fluctuations will continue to disrupt producer incomes and deter long-term investment. These findings support broader regional trends that emphasise the importance of institutional support, extension services, and cold chain logistics for poultry value chain resilience (Zhou et al., 2024).

Finally, socio-economic indicators, such as employment in feed mills and broiler farms, demonstrate the sector's capacity to generate rural employment. Nevertheless, the labour distribution is uneven, with only a few large-scale operations employing significant numbers. Smallholders, who represent the majority, often lack access to affordable credit, technical training, and market information, factors known to enhance productivity and resilience in livestock systems (Ukpe & Ewung, 2023; Yusuf & Popoola, 2022).

In sum, the Afghan poultry sector holds considerable promise but faces critical structural barriers. Bridging the gap between domestic production and demand for key inputs such as chicks, feed, and veterinary services is vital. Targeted interventions should focus on breeding capacity expansion, feed crop development, disease surveillance, and inclusive market systems. Strengthening institutional support and policy frameworks will be crucial to ensure that Afghanistan's poultry value chain transitions from dependency to self-reliance and long-term food security.

8. Conclusion

This study provides a detailed assessment of Afghanistan's poultry value chain, uncovering both the sector's notable achievements and its critical vulnerabilities. While broiler meat and table egg production have made significant strides in meeting national demand, the industry remains heavily reliant on imported inputs such as day-old chicks, soybean meal, and corn. This dependence exposes the sector to external shocks, quality inconsistencies, and biosecurity risks, particularly in the absence of robust disease surveillance and veterinary infrastructure.

The findings also underscore the limited integration and coordination among value chain actors, particularly in the areas of supply chain management, disease control, and access to finance. Smallholder farmers, who form the backbone of the sector, face persistent challenges related to feed quality, technical know-how, and market access. Meanwhile, processing and distribution systems remain underdeveloped, with a lack of cold chain infrastructure and standardised slaughtering facilities contributing to inefficiencies and product loss.

To ensure the sustainable growth of Afghanistan's poultry industry, strategic investments are urgently required in local breeding programs, feed crop production, disease diagnostics, and market infrastructure. Furthermore, coordinated policy interventions must aim to improve institutional support,

strengthen veterinary services, and foster linkages among stakeholders. Addressing these gaps is essential not only for enhancing national food security but also for unlocking the economic potential of poultry farming as a key contributor to rural livelihoods and employment.

Further research is needed to assess the cost-effectiveness and scalability of localised feed production and hatchery development in Afghanistan's agro-ecological zones. Long-term studies examining the impact of veterinary service reform, producer cooperatives, and digital extension platforms on smallholder productivity could offer valuable insights. Additionally, comparative analyses with poultry value chains in other conflict-affected or fragile states would contribute to the global discussion on creating resilient livestock systems in complex environments.

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