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Opportunities and Challenges to Afghanistan's Self-Sufficiency in the livestock Production Sector

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ABSTRACT

Afghanistan is an agricultural country where livestock is the main source of income for most of the people. Although hundreds of thousands of metric tons of livestock products are produced, large amounts of animal products are still imported to the country. Therefore, a cross-sectional study was conducted to identify the opportunities and challenges confronting Afghanistan's self-sufficiency in livestock products. The data were collected from 48 key professionals by semi-structured interviews using a pre-designed questionnaire. More than 52% of the respondents hold bachelor's/DVM degrees, while the rest have master's (35.4%) and PhD (12.5%) degrees in veterinary (72.1%) and animal science (27.9%) fields. About 80% of the respondents believed that Afghanistan has sufficient capacity to become self-sufficient in the animal products sector. At the same time, only half of them thought that Afghanistan is moving on the right track towards self-sufficiency in animal production. Destruction of pastures (95.7%), neighboring countries' interventions in the market (95.1%) and importation of low-quality animal products (89.4%), insufficient scientific research projects (84.8%) and funds (84.5%) in the animal health and production sector, lack of proper packaging (87.2%) and suitable domestic market (80%) for animal products, traditional husbandry system (83.3%), shortage of concentrated feeds (78.3%) and excessive paperwork for the investors (69.6%) are the main challenges in front of self-sufficiency in animal products. The results of this study could help policymakers prioritize the animal health and production sector and adjust existing policies regarding animal products to meet the country's needs and accepted standards.

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INTRODUCTION

The livelihood of the majority of rural societies in developing countries is livestock-dependent, and this sector serves as the most valuable source of income and food for these already deprived societies (Magiri *et al.*, 2020; Cheng *et al.*, 2022). Globally, livestock products generate about 40% of agriculture gross domestic product (GDP), provide over half

of global and one-third of developing countries' agriculture values, play a critical role in food security and food supply, and constitute 33% and 17% of the global per capita protein and calorie supply of the human population. Moreover, livestock have a remarkable contribution to income generation and employment, especially for poor communities and women, draught power, transportation, poor soil enrichment, and diversification (Dastagiri, 2003; Godde *et al*., 2021; Magiri *et al*., 2020; Cheng *et al*., 2022). About one billion poor people around the world rear livestock in the regions severely affected by climate change, where crop production is limited or not possible (Grace *et al.*, 2015; Mekonnen, 2018; Magiri *et al*., 2020). Furthermore, about 6% of meat and 30% of milk are produced by ruminants from grazing systems on areas poorly suited for cropping (Godde *et al*., 2021).

Over the last decades, the demand for livestock products has increased dramatically. Therefore, many countries are trying to achieve food security and food self-sufficiency based on their domestic products (Li *et al*., 2021). Globally, there are about 30 billion livestock animals at any given time, and more than 60 billion livestock, mainly poultry, are slaughtered for meat purposes annually worldwide (Moran and Blair, 2021). The ratio between livestock and human population is about 1:5, and almost 81% of global livestock is present in developing countries (Grace *et al.*, 2015; Mekonnen, 2018; Magiri *et al*., 2020; Muhammad *et al*., 2023).

Many factors, including infectious diseases and their consequent high incidence and prevalence, prolonged drought, flooding, and crop production decline due to climate change, threaten the survival, health, and productivity of the livestock populations (Magiri *et al*., 2020; Muhammad *et al*., 2023). The annual estimated mortality rates for ruminants and poultry are 20% and more than 50% in developing countries, respectively, which causes approximately 300 billion USD in losses each year (Grace *et al.*, 2015; Mekonnen, 2018).

Afghanistan is an agricultural country where about 80% of the population is involved in agriculture and livestock activities, and more than 73% of its population lives in rural areas (NSIA, 2024; McMahon, 2008; Worldometer, 2025). Over 25.5% of Afghanistan's gross domestic product (GDP) and about 45 percent of the national workforce are from the agriculture sector. At the same time, agriculture, including livestock products, especially Qaraqul leather and Afghan carpets, contributes significantly to Afghanistan's total export items (FAO, 2023). Moreover, this sector is the most valuable source of employment and food for rural communities and income generation for more than 45% of women in these areas (FAO, 2023; Samadi *et al*., 2019; Samadi & Zadran, 2023).

Ruminants (cattle, buffalo, sheep, goats, and camels) and poultry are the main livestock species that are raised/reared for meat, milk, wool, cashmere and egg production by Afghan people mostly in sedentary and nomadic production systems (FAO, 2023; Samadi *et al*., 2019; Samadi & Zadran, 2023). According to previous census results conducted by FAO in 2003, more than 13 million poultry and about 20 million ruminants, including sheep (8.8 million), goats (7.3 million), cattle (3.7 million), and camels (>175000) were present in Afghanistan. Based on this report, the average livestock number per family was as follows: 1.22 cattle, 2.88

sheep, 2.39 goats, 0.06 camels, and 3.99 chickens (FAO, 2008; McMahon, 2008). However, recently, there has been remarkable development in the livestock sector in the country, where more than 15,000 poultry farms and hundreds to thousands of dairy cattle farms and fisheries have been established throughout the country (Sahab *et al*., 2020; Samadi & Zadran, 2023; TOLOnews, 2025). It is worth mentioning that about one billion US dollars have been invested only in the poultry sector (TOLOnews, 2025), which shows promising promotion to nearly self-sufficiency in chicken meat shortly (Berkhout, 2021). Furthermore, the average meat and milk product production per cattle in the country is 176 kg and 161.9 kg, respectively. In addition, average poultry meat and egg production per bird is 0.84 kg and 2.11 kg, respectively, which is considered very low compared to per animal production levels in the neighboring countries (Our World in Data, 2025).

Besides the presence of a large number of livestock in the country and high capacity in the livestock sector, large amounts of livestock products are still imported to the country, which costs hundreds of millions of dollars for the national economy of Afghanistan. Meanwhile, there are no formal studies to analyze and determine the supply and demand of animal products in domestic markets. Therefore, the main objective of this research was to determine the opportunities, challenges, and obstacles in front of Afghanistan's self-sufficiency in the animal production sector and to identify the professional beliefs regarding the main solution and recommendations to overcome the challenges in front of Afghanistan's self-sufficiency in the animal production sector.

METHODS AND MATERIALS

Study Design and Sampling Strategy

A cross-sectional study was conducted from 7th Oct to 30th Dec 2023. Forty-eight well-experienced professionals and key informant professionals holding veterinary and animal science degrees were selected from 12 governmental and non-governmental organizations using a non-random judgment sampling strategy. The participants were University professors, directors of animal health, animal production, poultry production, animal breeding, animal feed, artificial insemination, central veterinary diagnostic and research laboratories (CVDRL) and vaccine production and other specialist from general directorate of animal health and production (GDAH&P); directors, coordinators and specialist from food and agriculture organization (FAO) of United Nations, Dutch committee for Afghanistan, Agha Khan Foundation and other governmental and non-governmental national and international organizations.

Data collection method

For data collection, a structured interview with a pre-designed questionnaire was used. A pilot study was performed on 15 non-surveyed participants to ensure clarity and comprehension of the questions. The researcher filled the questionnaires using the face-to-

face key informant interview technique. The researcher approached the study participants in their offices; however, to collect the required data and information from those key informant persons who were outside the country, the soft copy of the questionnaire was sent to them by email, and the responses were received back in the same method.

The questionnaire was divided into five sections: 1) respondents' demographic information, including education level, field of study, job title, job station, age, and work experience; ; 2) current opportunities regarding self-sufficiency of Afghanistan in animal production sector (12 close-ended questions); 3) challenge and obstacles in front of Afghanistan' self-sufficiency in animal production sector (18 close-ended questions); 4) the solutions and recommendations to surmount the challenge and obstacles in front of Afghanistan' self-sufficiency in animal production sector (14 close-ended questions); 3) three open-ended question about current opportunities, challenge, solutions and recommendations regarding self-sufficiency of Afghanistan in animal production sector. The close-ended questions were presented with a five-point Likert scale format (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree).

The reliability among the items in each scale was measured using Cronbach's Alpha values. After testing the effect of deleting items from the opportunity and challenges scales using "Cronbach's Alpha if Item Deleted" option in SPSS to find the most fitted Cronbach's Alpha value for the scales, five items from opportunity scale and two items from challenges scale were removed and the final obtained Alpha Cronbach values were 0.815 and 0.726 for the opportunity and challenges scales respectively, indicating very good reliability.

Statistical analysis

The data from close-ended questions were analyzed using SPSS software (IBM, version 25, USA). Descriptive statistics, tables, and graphs were produced by this software. The five-point Likert scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree) was converted into three categories ("strongly agree and agree,"; "disagree and strongly disagree," and "neutral").

FINDINGS

Demographic Information of the Respondents

Based on the obtained data, 52.1% of the respondents hold bachelor/DVM degrees, 35.4% had master's degrees, and 12.5% hold PhD degrees in veterinary (72.1%) and animal science (27.9%) fields. The median, mean, and standard deviation of the participants' age were 43, 46.0±10.7 years, respectively (min: 30, max: 69), while their median work experience was 18.0 years (min: 2, max: 42).

Opportunities for Afghanistan to become self-sufficient in the livestock production sector

Based on the results, nearly four-fifths of the respondents agreed that Afghanistan has sufficient capacity for self-sufficiency in the animal products sector, while only half of the

participants believed that Afghanistan is moving in the right direction towards self-sufficiency in animal production (Table 1). Furthermore, more than fourth-fifth of the respondent beliefs that that there is a good enough opportunity for Afghanistan to become self-sufficient, mostly in sheep and goat meat (85.7%), chicken meat and milk (83.3%), beef and egg (81.0%), while 66.7%, 47.6% and 40.5% of the respondent's beliefs that self-sufficiency is possible in honey, leather and wool, and fish meat, respectively (Figure 1). However, the majority of the respondents thought that Afghanistan's existing governmental policies and strategies are not suitable for becoming self-sufficient in the animal products sector and do not provide a suitable platform for investment in this sector. Meanwhile, insufficient coordination among governmental and non-governmental organizations' activities, lack of a professional authorized board in the animal health and production sector, and person–based decisions are other challenging issues in this sector (Table 1).

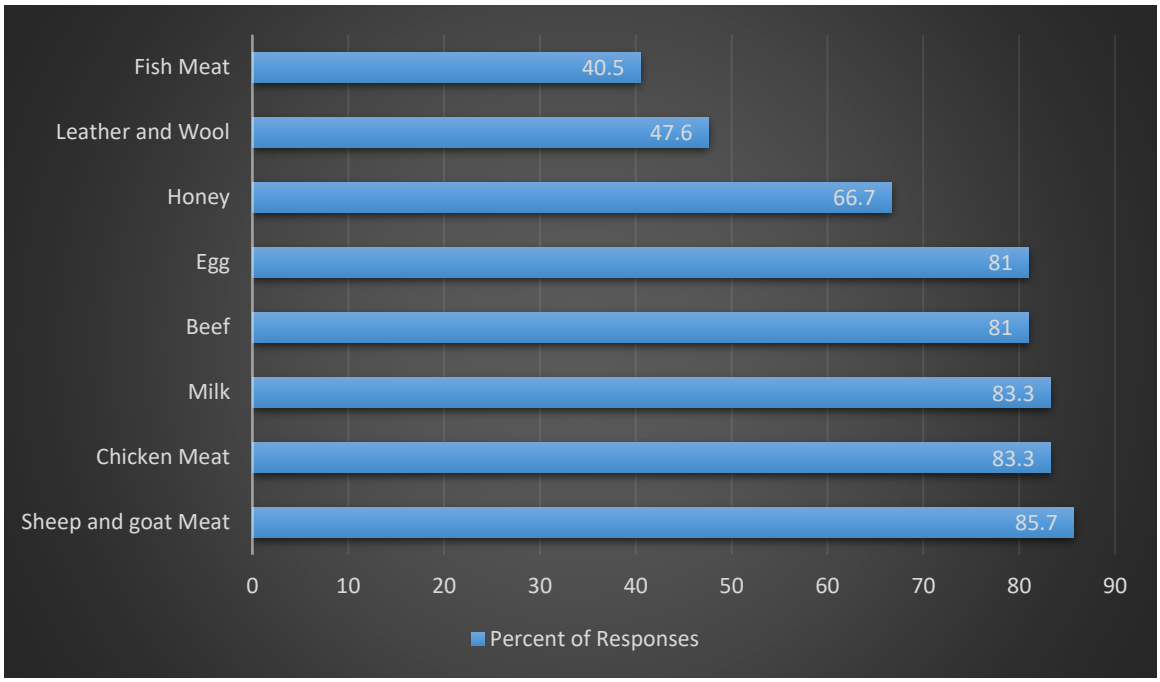

Figure 1. *The possibilities of Afghanistan's self-sufficiency regarding different types of animal products based on the participants' beliefs, 2023*

Table 1*. The opportunities for Afghanistan's self-sufficiency in the animal production sector, 2023*

Questions	Strongly agree /agree N[a] (%)	Disagree/strongly disagree N (%)	Neutral N (%)
Afghanistan has sufficient capacity for self-sufficiency in the animal products sector.	38 (79.1)	9 (18.8)	1 (2.1)
Afghanistan is moving towards self-sufficiency in animal production.	24 (50.0)	15 (31.3)	9 (18.7)
The existing strategy in the country provides the basis for Afghanistan's self-sufficiency in the animal products sector.	10 (20.8)	20 (41.7)	18 (37.5)

Questions	Strongly agree /agree N[a] (%)	Disagree/strongly disagree N (%)	Neutral N (%)
The government has a clear policy for the growth of the livestock sector and the country's self-sufficiency in animal products.	13 (27.1)	22 (45.8)	13 (27.1)
The government has provided a suitable platform for investment in livestock and animal products.	8 (16.7)	26 (54.2)	14 (29.2)
The Governmental and non-governmental organizations have the necessary coordination in the implementation of livestock activities and veterinary services.	17 (36.2)	27 (57.4)	3 (6.4)
There is a professional authorized board to solve the livestock-related challenges and problems in Afghanistan.	4 (8.3)	31 (64.6)	13 (27.1)
Decision-making authorities value the expert opinions regarding the livestock sector and veterinary services.	17 (35.4)	21 (43.8)	10 (20.8)
Farmers and ranchers have full access to all diagnostic, treatment, and prevention facilities.	7 (14.6)	35 (72.9)	6 (12.5)

[a]The differences in total numbers are due to missing data.

Challenges in front of Afghanistan's self-sufficiency in the livestock production sector

Many challenges regarding the self-sufficiency of Afghanistan in animal products are noticed by the respondents. Most of the interviewed professionals thought that lack of sufficient funds for livestock and veterinary services including vaccination campaigns in the national budget, continuous movements and transfers of animals within and between neighboring countries and traditional livestock farming and extensive husbandry facilitate high incidence prevalence of animal diseases in the country has greatly affected the productivity of animals. In addition, 78.3% and 95.7% of the respondents believed that the shortage of concentrated food in the country and the destruction of pastures and the reduction of agricultural products due to climate change are challenging issues in the livestock sector, respectively (Table 2).

Animal product importation and selling are another issue in the livestock sector in Afghanistan. About 80% of the interviewed professionals believed that the lack of a suitable domestic market for the country's animal products has affected the investment in this sector, and 87.2% of the participants thought that the lack of proper packaging of animal products has affected the supply and sale of domestic animal products in Afghanistan. Meanwhile, 95.1% and 89.4% of the participants believed that neighboring countries' interventions in the market of animal products and the import of low-quality animal products from these sources have discouraged livestock farmers and other domestic producers and hurt the growth of the livestock sector in Afghanistan, respectively. In addition, excessive paperwork or bureaucracy when investing in the livestock and animal products sector and the absence of accurate data about the animal population in the country are other discouraging investment issues in this regard that were raised by the interviewers (Table 2).

Recommended action to overcome the challenges confronting Afghanistan's self-sufficiency in the livestock production sector: The research respondents recommended specific actions to overcome the challenges confronting Afghanistan's self-sufficiency in the

animal production sector. Almost all the respondents (95.7%) agreed that considering more specialization in the appointments or recruitment in livestock and veterinary services vacancies has an effective role in increasing animal products. At the meantime, most of the interviewed professionals recommended establishment of an independent veterinary service department (82.6%), Increasing the budget of the livestock sector and veterinary services in the national budget (95.6%), governmental support for creative works and project in animal health and production sector (91.3%), prioritizing and conducting research project in animal health and production related topics (89.1%), amending the existing laws and regulations regarding investment in the livestock sector (80.4%) and government participation and support of such investment (84.8%) as the basis for the country's self-sufficiency in the animal products sector (Table 3).

Table 2*. The challenges confronting Afghanistan's self-sufficiency in the animal production sector, 2023*

Questions	**Strongly agree /agree N[a] (%)**	**Disagree/strongly disagree N (%)**	**Neutral N (%)**
The lack of sufficient funds for livestock and veterinary services in the national budget has caused a decrease in animal production in the country.	41 (85.4)	4 (8.3)	3 (6.3)
The lack of sufficient scientific research has provided the basis for the spread of animal diseases and, as a result, the reduction of animal yields	39 (84.8)	0	7 (15.2)
The lack of timely implementation of animal vaccines has created the basis for the spread of various infectious diseases.	42 (87.5)	5 (10.4)	1 (2.1)
The lack of control over the quality of vaccines and animal medicines has provided the basis for the spread of more diseases.	37 (80.4)	2 (4.3)	7 (15.2)
The continuous movements and transfers of animals within and between neighboring countries have provided the basis for the spread of more animal infectious diseases.	45 (93.8)	0	3 (6.3)
Traditional livestock farming is one of the main factors of production reduction and a serious challenge to the country's self-sufficiency in animal products.	40 (83.3)	5 (10.4)	3 (6.3)
The high prevalence of various diseases has greatly affected the productivity of animals.	41 (85.4)	4 (8.3)	3 (6.3)
The shortage of concentrated food has discouraged investors from establishing commercial farms in the country.	36 (78.3)	5 (10.9)	5 (10.9)
The destruction of pastures and the reduction of agricultural products due to climatic change impacts have severely affected the survival and growth of the livestock sector.	44 (95.7)	0	2 (4.3)
The lack of a suitable domestic market for the country's animal products has affected the investment in this sector.	38 (79.2)	9 (18.8)	1 (2.1)
The lack of proper packaging of animal products in the country has affected the supply and sale of domestic animal products.	41 (87.2)	3 (6.4)	3 (6.4)

Questions	Strongly agree /agree N[a] (%)	Disagree/strongly disagree N (%)	Neutral N (%)
The high tax on farms and domestic animal products has provided the basis for the failure of this sector.	22 (47.8)	7 (15.2)	17 (37.0)
The intervention of the neighboring countries in the market of animal products has caused the discouragement of livestock farmers and other domestic producers	46 (95.1)	1 (2.1)	1 (2.1)
The import of low-quality animal products has harmed the growth of the livestock sector.	42 (89.4)	2 (2.1)	4 (8.5)
Excessive paperwork or bureaucracy when investing in the livestock and animal products sector has discouraged investors.	32 (69.6)	1 (2.1)	13 (28.3)
The lack of accurate statistics of animal populations has invested in the livestock sector a challenge.	43 (93.5)	1 (2.2)	2 (4.3)

[a]The difference in total number is due to missing data.

More than four-fifth of the respondents believed that production of animal medicines and vaccines inside the country could have a positive impact on country's self-sufficiency in the animal production, while 65.2% of the participants thought that provision of free vaccines against for all endemic diseases of animals and poultry will be essential to reach the self-sufficiency goal in animal production sector. At the same time, 87.0% of respondents stated that increasing the taxes on imported animal products facilitates a good market for domestic animal products, which eventually provides the basis for a self-sufficient Afghanistan (Table 3).

To become self-sufficient in the animal production sector, improvement of native animal breeds, establishment of more commercial animal and poultry farms, and revival of the country's pastures are also recommended by 97.8%, 93.5%, and 95.8% of the participants, respectively. Finally, 95.8% of the interview professionals believed that continuous training programs to enhance the capacity of employees of the livestock sector and veterinary services are vital and provide the basis for the self-sufficiency of the animal production sector in the country (Table 3).

DISCUSSION

It is obvious that livestock is an important and fast-growing sector which has vital role in livelihood, poverty reduction, food security and socio-economic stability especially for rural communities in developing countries including Afghanistan (Chakraborty *et al*., 2014; Duong *et al*., 2024; FAO, 2011, 2023), however, there are many challenges confronting animal production in these setting which limit self-sufficiency in livestock production sector. Many factors should be considered when a self-sufficiency strategy is planned in animal–origin foods, but food security and animal-source foods supply and demand are critical issues that should always be considered. Food security is defined as "all people, at all times, have social, economic, and physical access to sufficient, safe, and nutritious food that meets their dietary

needs and food preferences for an active and healthy life", where food availability, access to food, the stability of food supplies, and food utilization are the main four pillars of food security (Li *et al.*,, 2021; Duong *et al.*, 2024). On the other hand, food self-sufficiency is the ability of a household, country, or region to maintain its food requirements at different levels (Enriquez, 2020). However, food security self-sufficiency is still a slogan in most of the low- and middle-income countries (LMICs), including Afghanistan.

Table 3*. The respondents' recommendations about Afghanistan's self-sufficiency in the animal production sector, 2023*

Questions	**Strongly agree /agree N[a] (%)**	**Disagree/strongly disagree N (%)**	**Neutral N (%)**
More specialization in the appointments of government offices in livestock and veterinary services has an effective role in increasing animal products.	44 (95.7)	0	2 (4.3)
The establishment of an independent veterinary services department plays a vital role in the country's self-sufficiency in the animal products sector.	38 (82.6)	2 (4.3)	6 (13.0)
Increasing the budget of the livestock sector and veterinary services in the national budget will provide the self-sufficiency of this sector.	43 (95.6)	1 (2.2)	1 (2.2)
The government's financial and spiritual support for the creative works of individuals provides the basis for the country's self-sufficiency in the animal products sector.	42 (91.3)	0	4 (8.7)
The prioritization of livestock and veterinary services research and its implementation by scientific and academic centers such as universities plays a fundamental role in the country's self-sufficiency in the animal products sector.	41 (89.1)	1 (2.2)	4 (8.7)
Amending the existing laws and regulations regarding investment in the livestock sector will facilitate more investment in the livestock sector and veterinary services.	37 (80.4)	1 (2.2)	8 (17.4)
The government's participation in livestock sector investments encourages investors in this sector.	39 (84.8)	5 (10.9)	2 (4.3)
The production of animal medicines and vaccines inside the country provides the basis for better control and treatment of animal diseases.	39 (84.8)	3 (6.5)	4 (8.7)
Provision of free vaccines for all animal and poultry diseases causes effective control of diseases and increase of animal products.	30 (65.2)	10 (21.7)	6 (13.0)
Increasing the taxes on imported animal products provides the basis for better marketing of domestic products and thus the self-sufficiency of this sector.	40 (87.0)	3 (6.5)	3 (6.5)
Improvement of native animal breeds is a suitable method to increase the yield and self-sufficiency of the livestock sector.	45 (97.8)	0	1 (2.2)

Questions	Strongly agree /agree N[a] (%)	Disagree/strongly disagree N (%)	Neutral N (%)
The establishment of commercial farms is the best option for the country's self-sufficiency in animal products.	43 (93.5)	0	3 (6.5)
Revival of the country's pastures creates the basis for the growth of the livestock sector and self-sufficiency of the country in the animal products sector.	46 (95.8)	0	2 (4.2)
The implementation of continuous training programs to improve the capacity for employees of the livestock sector and veterinary services inside and outside the country will provide better conditions for providing services and the basis for the self-sufficiency of this sector.	46 (95.8)	0	2 (4.2)

[a]The differences in total number are due to missing data.

As mentioned in the results section, although there are good enough opportunities in Afghanistan to become self-sufficient in the animal products sector, many obstacles and challenges are present in the country to reach this goal. The main challenges in front of the country self-sufficiency in animal products that raised by the respondents are: improper governmental policies and strategies regarding animal products, insufficient budget for veterinary livestock production services, saturation of domestic markets by foreign animal products and absence suitable market for the country's animal products, high burden of animal diseases and low coverage of animal vaccination campaigns, extensive and nomadic husbandry, destruction of pastures and shortage of animal and poultry feeds, insufficient coordination among governmental and non-governmental organizations' activities, lack a professional authorized board in animal health and production sector, and person – based decisions regarding professional issues.

Ruminants and backyard poultry are the main livestock species reared by many rural families in Afghanistan for the production of meat, milk, wool, leather, and eggs (Samadi *et al*., 2019). However, infectious diseases, animal feed shortage due climate change and consequence drought and flood, low level of veterinary services, long political instability and conflict and other factors threaten the life and productivity of these animal population (Samadi, 2024; FAO, 2011, 2023; Godde *et al*., 2021; Habib-ur-Rahman *et al*., 2022; Hubbart *et al*., 2023). Therefore, the situation of the country regarding types of animal breeds and species, climate conditions, availability of feed for the animals, the country's market demand for animal production, and the amount of animal products importation should be analysed, and new policy should be developed according to the need of the country.

The livestock sector in Afghanistan is divided into nomadic and sedentary systems. Most of the sedentary farmers keep cattle and some sheep, goats, and poultry, while nomadic communities mostly raise/rear sheep and goats. Nomadic farmers are almost dependent on grassland and pastures to feed their animals, while sedimentary farmers use a mixed crop-livestock system(FAO, 2023). Meanwhile, as stated by most of the respondents, animal and

poultry feed and concentrate shortages are another challenge in Afghanistan's self-sufficiency in the animal production sector. Prolonged drought and flood due to climate change could be one of the reasons for such a shortage of feed for the livestock population in the most affected countries, including Afghanistan (Samadi, 2024; Manyike *et al*., 2025). Since livestock production is one the most important source of income generation, employment and poverty reduction in LMICs especially for rural communities (Manyike *et al*., 2025; Azine *et al*., 2025), and more than 73% of Afghanistan is living in rural areas, therefore, finding alternative feed sources and identifying more adaptive animal species and breeds are crucial for Afghanistan to become self – sufficient in animal production sector. Although animal grazing is common in all grassland ecosystems, climate change, continuous drought and flood, soil erosions, deforestation, and overgrazing destroy most of the grassland and animal pastures in many affected areas, especially in Asian countries, including Afghanistan. Therefore, most of the grasslands and pastures are not suitable for some animal species grazing, especially cows (FAO, 2011, 2023; Godde *et al*., 2021; Habib-ur-Rahman *et al*., 2022; Hubbart *et al*., 2023). Recent evidence showed that rearing goats instead of other types of livestock could be considered one of the good choices for climate change-affected and arid, semi-arid, and mountain areas. Goats have a high growth rate, high prolificacy, short gestation period, low body mass and low metabolic requirements, ability to survive on limited pastures, high disease resistance, high thermal and drought resilience, and easily adapt to harsh environmental conditions. In addition, they do not have any competition with human beings for food and can survive for a prolonged time after facing a feed shortage. Furthermore, goat have mobile upper lips which can easily feed in areas and land that cannot feed any other livestock species. Meanwhile, it's the only livestock species that can consume and digest tannin-rich herbs, and their milk is more tolerable among those individuals who have some allergies to the milk (Hegde, 2020; Nair *et al*., 2021). Therefore, goat could be considered the most important livestock species that can be reared in climate change-affected and arid, semi-arid, and mountain areas of Afghanistan and compensate for the livestock and animal production decline in these settings.

Although there is no published data about Afghanistan, there has been a dramatic increase in animal–source food demands, especially in developing countries. Such increased demands are mainly due to world population growth, changing consumption patterns, and urbanization (FAO, 2011; Abu Hatab *et al*., 2019). Recent estimation shows a 725 percent increase in animal–source foods, especially for chicken meat in South Asia from 2000 to 2030 (FAO, 2011). In some countries like India, the estimation shows that even if the population size remains static, the demand for animal-origin food due to increased per capita consumption would increase by 69 percent by 2030. Meanwhile, it has been projected that urbanization will occur more in developing countries, which will increase the per capita demand and consumption of animal-origin food (FAO, 2011; Abu Hatab *et al*., 2019). There has to be a balance between the per capita needs of the population, supply and demand, and

import and export of animal-origin foods. Therefore, the amount of local production, food security, and animal origin food market analysis should be conducted simultaneously to determine the priority for the Afghanistan government and to decide whether to close the border or open trade in animal source foods. On the other hand, food insecurity is a critical public health issue in most developing countries, including Afghanistan (Duong *et al*., 2024; Sundram, 2023). Recent data shows that 48.3 percent of the Afghan population was poor as of April–June 2023 (World Bank Group, 2023), and about 85 percent of Afghans live on less than one dollar a day (UNDP, 2024). Meanwhile, 20–25% of the total protein in food-deficient countries like Afghanistan is supplied from animal sources (Hubbart *et al*., 2023). On the other hand, rural communities are predominant in Asian countries, including Afghanistan, where about 70% of Asia's total population lives in these settings, and 75% of such communities are at high risk of climate change impacts, including higher temperatures, flooding, and drought. These factors severely affect the survival, health, and productivity of livestock species in these areas (Godde *et al*., 2021; Cheng *et al*., 2022; Habib-ur-Rahman *et al.*, 2022). Therefore, continuous hard struggles are needed to increase the livestock production and fulfill the population's needed food, especially protein, in the country.

One of the most important key indices of a country to announce self-sufficiency in the animal products sector is the amount of animal products produced and the demand and required amount of animal products of its population. Although currently there is no valid data about food animal statistics and the amount of animal products which are produced annually in the country, an old data (2003) shows that there are about 20 million ruminants (sheep, goat, cattle) and more than 13 million poultry (chicken, duck and turkey) in the country (FAO, 2008). However, based on the latest estimates in 2022, there are 5.57 million cattle, 12.5 million sheep, 7.98 million goats, and 14 million poultry in Afghanistan. Meanwhile, 46.67 million animals, including 35.77 million poultry, 3.66 million goat, 6.7 million sheep, and about 520,000 cows, were slaughtered for meat production in 2022 (*Our World in Data*, 2025). Furthermore, 21,564.4 tons of eggs, 81,640.2 tons of beef, 28,791 tons of chicken meat, 10,100 tons of fish, and 2.23 million tons of milk were produced in 2022 in Afghanistan. Meanwhile, per capita meat consumption in the country in 2021 was 8.74 kg, which was twice less than Pakistan (18.62 Kg) and almost 4 times less than Iran (31.58 Kg), while milk consumption per capita in the same year was 39 Kg, which was almost 3 times less than Pakistan (116 Kg) and 1.63 time more than Iran (24 Kg). In addition, per capita egg consumption in Afghanistan in 2021 was 2.52 Kg, which was lower than in Pakistan (3.66 Kg) and Iran (8.87 Kg) (Our World in Data, 2025).

Based on the latest estimation, there is more than 43 million population Afghanistan, where 73.3% of its population lives in rural areas (Worldometer, 2025), which involves in agriculture and livestock activities (Samadi *et al*., 2021). Although there is no any need assessment about the demand of domestic market for animal products in Afghanistan, to consider the total livestock production in the country including meat (beef, chicken and fish) (120,531 ton), milk (2.23 million ton) and egg (21,564.4 ton), per capita consumption of meat,

milk and egg and total population of Afghanistan, 255,288.8 ton more meat and 86,795.6 ton more egg are needed which are imported to the country, while 0.55 million ton extra milk are produced than consumed which may be changed to milk products or lost due to insufficient domestic markets or demand in the production areas. However, if recommended requirement of human body for protein (0.8 g/kg of protein per day) (Hubbart *et al.*, 2023) is considered, or if the per capita consumption of animal products in the neighboring countries are considered, very large amount of such products should be produced in/or imported to the country.

CONCLUSION

Livestock is an important sector in Afghanistan and plays a vital role in food supply, income generation, poverty reduction, employment, and rural communities' empowerment. Food insecurity and food self-sufficiency are critical issues in Afghanistan. Afghanistan has good enough capacities to become self-sufficient in the animal production sector; however, many obstacles and challenges limit the country's capability to become self-sufficient in this sector. The absence of data regarding the amount of domestic production and market demand, uncontrolled importation of animal products, shortage of animal feeds, long term endemicity of many livestock diseases, improper governmental policies and strategies regarding animal products and insufficient budget for veterinary livestock production services are the main challenges confront self-sufficiency in animal production sector. The results of this study will help the policy makers of livestock sector to prioritize the food security, analysis of domestic supply and demands of animal origin foods, the amount of animal origin food importation, the budg*et al*location required for animal health services and the need assessment to change the current policies and strategies regarding animal products based on the country's needs and situation, and accepted standards.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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DATA AVAILABILITY

Data is available upon request.

COMPLIANCE WITH ETHICAL STANDARDS

This article does not contain any invasive studies with human participants or animals performed by any of the authors, as all of the data were collected through structured interviews or questionnaires.

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