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Trends in Meat Production, Demand, and Pricing Dynamics in Ethiopia: A 15-Year Analysis

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Abstract

This 15-year analysis examines Ethiopia's meat production, demand, and price trends by collecting and analyzing CSA data reports from 2005/2005 to 2018/2019. The results show 82.01% growth in total meat production, reaching 123,670 tons by the end of the analysis period in 2018/2019. Cattle meat emerged as the dominant contributor, accounting for 67,488 tons or 54.6% of the total production, followed by sheep at 26,969 tons (21.8%), goats at 18,806 tons (15.2%), poultry at 8,285 tons (6.7%), and camels at 2,122 tons (1.7%). Despite the overall increase in meat production, the study highlights that the average meat yields per animal for sheep, goats, poultry, and camels remained largely stagnant during the 15-year analysis. This indicates that the growth in total production was mainly attributed to an increase in the animal population, rather than improvements in productivity or efficiency. The analysis also examined trends in domestic meat consumption, which showed a substantial rise of 24.7% over the study period. This growing consumer demand, coupled with the relatively slow productivity growth, suggests a potential supply-demand imbalance in the Ethiopian meat market. Notably, the study also found a consistent upward trend in meat prices for all animal types, further corroborating the supply-demand dynamics. This price increase may have implications for Ethiopian consumers' affordability and accessibility of meat products. Generally, the findings reveal that Ethiopia's meat production growth is primarily driven by expanding animal population, rather than enhanced productivity. The study underscores the need for robust policy support and targeted interventions to address the productivity challenges and ensure adequate and sustainable meat supply to meet the growing domestic demand. These insights can inform policymakers, researchers, and industry stakeholders in their efforts to improve the productivity and overall competitiveness of Ethiopia's meat sector.

Keywords: Animal Meat, Supply, Demand, Price

1. Introduction:

Meat is a crucial source of animal protein and holds a prominent position in the human diet. Global per capita meat consumption has steadily increased over the past five decades, outpacing population growth (Ritchie & Roser, 2017). Annual global meat production now exceeds 340 million tonnes, with approximately 800 billion animals slaughtered each year (Mappr, 2019; Ritchie & Roser, 2017). In 2018 alone, staggering numbers were recorded, including 69 billion chickens, 1.5 billion pigs, 656 million turkeys, 574 million sheep, 479 million goats, and 302 million cattle (Shapiro,et. al., 2017; Ritchie H. & Roser M., 2017).

Meat consumption varies across countries, with emerging economies and high-income nations exhibiting higher per capita consumption due to increased affordability (Ritchie H. & Roser M., 2017; Whitton et al., 2021). The global average meat consumption is 41.90 kg per person annually (OECD, 2021). European Union countries have an average consumption of about 77.1 kg, the United States consumes approximately 124 kg, China consumes around 60 kg, while most African countries have a consumption rate of 10 kg or lower, with South Africa being an exception at 60-70 kg per capita (Mappr, 2019; Seleshe et al., 2014).

Global meat prices have risen due to factors such as feed prices, supply and demand dynamics, production costs, trade policies, global economic conditions, changes in consumption patterns, dietary preferences, and trade dynamics, particularly in economically emerging countries like China (FAO, 2021; Shahbandeh, 2022).

Ethiopia, with the fifth-largest cattle population globally, heavily relies on livestock for its economy, food production, and cultural significance. However, it ranks relatively low in global meat production, accounting for only 0.2% of the world's total meat production. In Ethiopian culture, meat holds significant cultural and social importance and plays a central role in traditional celebrations, social ceremonies, and meals (Birhanu, 2019, Seleshe et al., 2014). Meat consumption patterns and dietary choices in Ethiopia are influenced by cultural values, religious beliefs, and socioeconomic factors (Birhanu, 2019; Seleshe et al., 2014). Raw meat consumption is socially and culturally accepted across different ethnic and religious backgrounds in Ethiopia, and rearing livestock for meat production is common, contributing significantly to household nutrition (Frelat et al., 2016).

Understanding the dynamics of meat production, demand, and consumption patterns in Ethiopia is crucial for leveraging the country's livestock resources and improving its meat industry. This study aims to address the limited information available on Ethiopia's meat production and productivity trends (irhanu, 2019; Seleshe et al., 2014). By analyzing meat production, consumption patterns, prices, and factors influencing the industry, it contributes to a better understanding of Ethiopia's livestock sector and its potential for meeting domestic demand and exploring export opportunities. The study's findings will provide valuable insights for policymakers, researchers, and industry stakeholders, enabling evidence-based decision-making and the development of strategies to enhance meat production and productivity in Ethiopia.

2. Materials and methods

In this study, a retrospective analysis method was employed, wherein secondary data from various sources were collected. The annual reports of the Central Statistical Agency (CSA) from 2005/2006 to 2018/2019 served as the primary data sources for livestock statistics, including meat production and productivity for each species and meat prices. Microsoft Excel was used to analyze the data, utilizing simple descriptive statistics and linear models. These analytical tools were used to detect and visualize trends in meat production and productivity, and meat price trends. Apart from the CSA reports, previously published documents and expert opinions were consulted to identify significant obstacles or factors influencing the industry, highlight key findings, and propose potential solutions.

3. Results and discussions

3.1. Trends in total meat production growth

Over 15 years, meat production in Ethiopia consistently demonstrated an upward trend, with the total output increasing from 67,950 tons in 2005/06 to 123,670 tons in 2018/19, representing an impressive overall growth rate of 82.01%. However, it is important to note that the annual growth trends displayed fluctuations, with a decline in 2012/13 and 2013/14, followed by a peak in 2017/18 and a slight decrease in subsequent years (**Error! Reference source not found.**). These findings are in line with Ritchie H. & Roser M., (2017), who also reported significant growth trends in meat production for the entire East Africa region and a 121.1% increase specifically for Ethiopia.

The analysis highlights the reliance of meat production in Ethiopia on various livestock species, with cattle and sheep playing prominent roles. This corresponds with the findings of Bachewe et al., (2018); FAO & Palladium Group, (2019) , which emphasize the contributions of these animals to the Ethiopian meat industry. Additionally, the study reveals that the increase in meat production is primarily attributed to the expansion of livestock numbers rather than productivity improvements, as reported by Mohamed, (2019) (Figure 1).

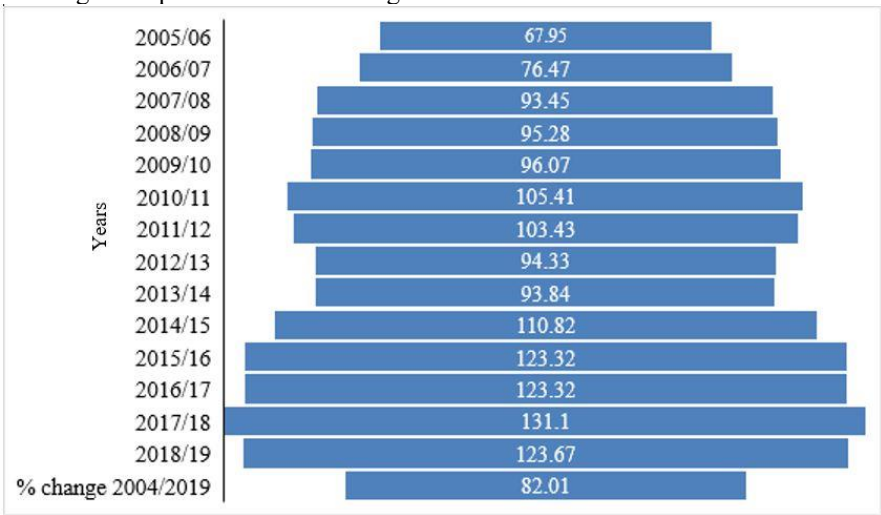

Figure 1: Analysed total yearly meat production from all kinds of livestock

The analysis of cattle meat production in Ethiopia demonstrates consistent growth trends, with a notable 35% increase over the analyze periods. Cattle consistently maintain their position as the major contributors to the country's meat production, accounting for an average annual contribution of 41% (ranging from 35% to 47%) to the total output. This finding aligns with the research conducted by Bachewe et al. (2018), which emphasizes the significant role of

The analysis of cattle meat production in Ethiopia demonstrates consistent growth trends, with a notable 35% increase over the analyze periods. Cattle consistently maintain their position as the major contributors to the country's meat production, accounting for an average annual contribution of 41% (ranging from 35% to 47%) to the total output. This finding aligns with the research conducted

cattle meat in Ethiopia's overall meat production. Similar to the overall trend in total meat production, the graph depicting cattle meat production also exhibits variations over the years (Figure 2), signifying fluctuations in the country's total meat production are largely influenced by changes in cattle-sourced meat that underscore the importance of cattle in Ethiopia's meat production sector.

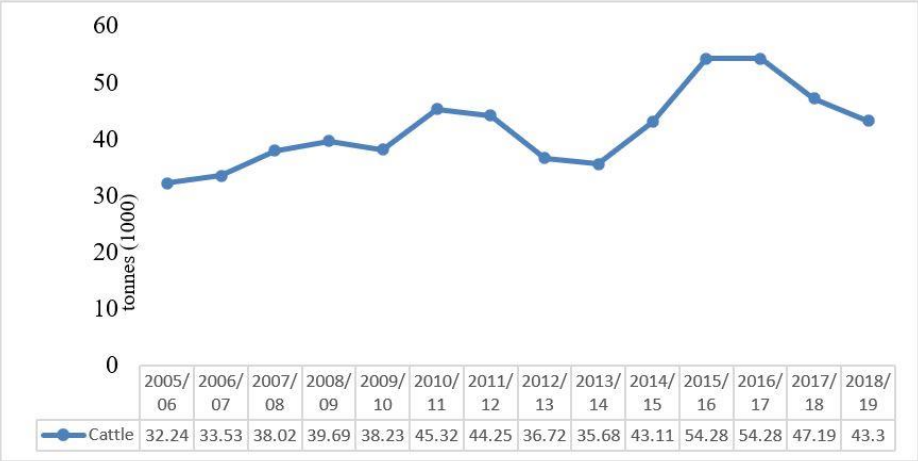

Figure 1: Yearly produced cattle meat (analysed)

Ethiopia's beef meat production is roughly equivalent to Kenya's but significantly lower than Egypt's (Ritchie H. & Roser M., 2017, Boeckel et al., 2017). While Ethiopia and Kenya have comparable beef meat production levels, Ethiopia's production is notably lower than Egypt's due to Egypt's well-established and larger-scale beef industry (Boeckel et al., 2017).

The sheep and goat meat production trend analysis reveals that sheep and goats have made substantial contributions to Ethiopia's total meat production, next to cattle; (Bachewe et al., 2018). Reports indicate that sheep rank second in importance after cattle (Bachewe et al., 2018). Sheep meat production increased by 118.3%, and goat meat production increased by 179% over the analyze period, with significant quantity rises in both categories (Figure 3). Sheep meat production ranged from 19.71 to 43.04 thousand tons, while goat meat production increased from 8.75 to 24.41 thousand tons (Figure 3). On an annual basis, combined meat production from sheep and goats averaged 49.6 thousand tons, with sheep making a larger contribution compared to goats. This increasing trend in sheep and goat meat production can be attributed to their recognition as a source of livelihood for the poor and their popularity for individual/household slaughter (Negassa, etal., 2011). Additionally, their smaller size compared to cattle makes them preferred choices in recently expanded hotels and restaurants. Projections indicate that sheep and goat meat production will continue to rise, with a minimum projected growth of 157% between 2015 and 2050 (FAO & Palladium Group, 2019).

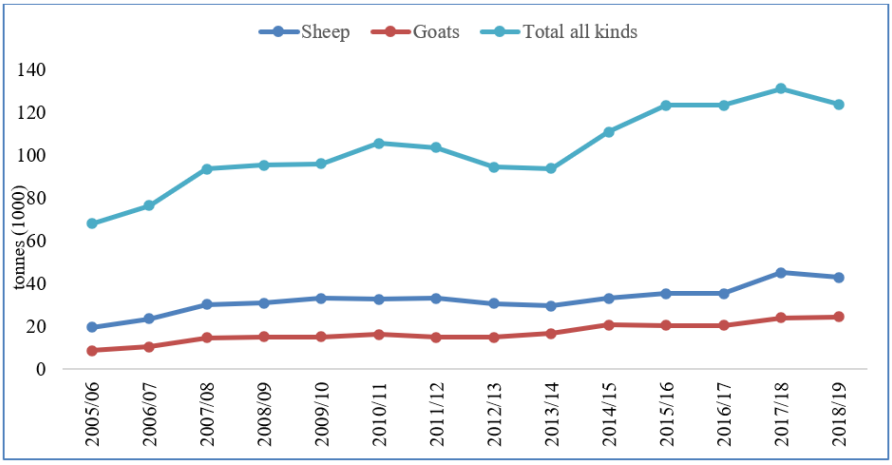

Figure 2: Meat produced from sheep and goat compared with total produced meat from all kinds

The analysis reveals that poultry meat production in Ethiopia has experienced a significant growth rate of approximately 87%, rising from 6.06 to 11.33 thousand tons. Poultry meat's contribution to total meat production has also seen a remarkable increase of 106% (Table 1). These substantial increases in poultry meat production suggest a growing adoption of poultry farming practices, driven by

factors such as its family-oriented nature, space efficiency, and relatively low capital requirements (Sewunet, 2015; Sopov, 2018). The stable and sustainable growth observed in poultry meat output, as well as its contribution to the country's total meat production, can be attributed to favourable policies that promote the introduction of high-performing exotic poultry breeds/species and the active involvement of private sectors and small micro-enterprises in poultry production and meat processing (Abera Geleta, 2022). Reports indicate that annual poultry production contributes 72,300 metric tons of meat to the country's overall production (Abera Geleta, 2022). Projections indicate that poultry meat production in Ethiopia is expected to continue its upward trajectory, with a predicted growth of 377% between 2015 and 2050 (FAO & Palladium Group, 2019).

The analysis reveals significant increases in camel meat production and its contribution to the total meat production in Ethiopia over the analyses periods. Camel meat production increased and its contribution to total meat production grew from 13,940 tons to 32,568 tons, marking a substantial increase of 136.6%. The growth can be attributed to the rise in the number of camels used for meat production, which increased by 263.7% from 7,516 to 27,338. The increased number of camels in Ethiopia is a result of the priority given to camel husbandry by pastoral societies, as camels exhibit exceptional adaptability to arid and semi-arid environments, making them suitable for meat and milk production during droughts when other livestock species struggle (Catley, 2013; Mirkena et al., 2018). Despite the significant increase, camel meat production still contributes a relatively small amount to the overall meat production in Ethiopia. The limited consumption of camel meat outside of pastoral areas contributes to its smaller role in the country's total meat production. Camels are typically not slaughtered for home consumption, except on specific cultural occasions or in cases of accidental injury (Kena, 2022; Mirkena et al., 2018).

Table 1: Poultry meat production and its proportion to total meat production of the country

Year	Poultry	Total	Proportion (%) form the total production
2005/06	6.06	67.95	8.92
2006/07	7.49	76.47	9.79
2007/08	9.14	93.45	9.78
2008/09	8.24	95.28	8.65
2009/10	8.72	96.07	9.08
2010/11	9.72	105.41	9.22
2011/12	9.99	103.43	9.66
2012/13	10.82	94.33	11.47
2013/14	11.4	93.84	12.15
2014/15	12.93	110.82	11.67
2015/16	12.27	123.32	9.95
2016/17	12.27	123.32	9.95
2017/18	13.52	131.1	10.31
2018/19	11.33	123.67	9.16
% Change 2004/2019	86.81	82.01	105.85

3.2 Progress in meat productivity

The analysis indicates that productivity improvements in meat production have been limited in Ethiopia, particularly for local breeds that have not been specifically bred for meat. Animal breeding efforts have primarily focused on crossbreeding for dairy development, rather than meat specialization. The study examined meat productivity trends per animal for sheep, goats, poultry, camels, and cattle from 2004/05 to 2018/19. On average, meat yield per animal remained relatively constant at approximately 10 kg for sheep, 8.5 kg for goats, 0.8 kg for poultry, and around 170 kg for camels. Cattle showed a productivity range of 108 to 109.2 kg per animal (Eshetie, 2018; FAO & Palladium Group, 2019). However, comparisons with other developing countries, such as Brazil and South Africa, should be interpreted with caution due to limited data and questions about accuracy.

A comparison between indigenous sheep and goat breeds in Ethiopia and South African breeds revealed differences in various aspects, including birth weights, breastfeeding duration, and slaughter weights (FAO & Palladium Group, 2019). Ethiopian sheep and goats have smaller body weights at slaughter age (18-20 kg for sheep and 16-18 kg for goats) and lower carcass weights (10 kg), resulting in lower meat productivity with an estimated annual production of 3-3.5 kg per animal. Similarly, there is a notable disparity in beef slaughter age weights between Ethiopia and Brazil, which significantly impacts meat productivity in the two countries.

The stagnant meat productivity across livestock types in Ethiopia suggests that the growth in meat output is primarily due to herd expansion rather than significant productivity improvements. This highlights the limited influence of animal science and technology in areas such as breeding, nutrition, and animal health, resulting in low production efficiency and minimal genetic advancements. The

lack of progress and low livestock productivity can be attributed to factors such as poor management practices, slow growth, inadequate veterinary services, and the less productive genetic potential of livestock breeds, feed shortages, and unfavorable production environments (EARO, 2000).

3.3 Meat demand situations in the country

Ethiopia has 14 export abattoirs that produce approximately 200,000 tons of sheep, goat, and beef per year. The country's average annual exports consist of 1.5 million live sheep, over 200,000 camels, about 100,000 goats, and around 3,000 tons of sheep meat (Girmay & Yeserah, 2019; Mummed & Webb, 2019). Additionally, there is an increased domestic demand due to urbanization and economic growth (Shapiro,et. al., 2017; Eshetu & Abraham, 2016).

Domestic meat consumption in Ethiopia has shown a 24.7% increase from 1993 to 2013, with a notable rise starting from 2000. Furthermore, between 2015 and 2020, the consumption requirements for red meat rose due to factors such as the rapidly growing population, increasing urbanization, and rising incomes, presenting significant market opportunities for the red meat sub-sector (Shapiro et al., 2017). This indicates a substantial demand for meat within the country. However, despite these trends, the average meat available for consumption per capita in Ethiopia is relatively low compared to neighbouring countries and the African average (Eshetie, 2018; FAO & Palladium Group, 2019). For instance, while Ethiopia's average is 20 kg per year, the mean for Africa, Egypt, and Kenya is 32 kg, 49 kg, and 42 kg, respectively (Boeckel et al., 2017). Similarly, the country's mean daily meat consumption is 18.71 grams, which is considerably lower compared to Kenya (40.5 grams), Egypt (71.92 grams), and Sudan (56.5 grams). Also, the per capita meat consumption in Ethiopia was 8.3 kg per year, including 3.69 kg of beef, 2.34 kg of sheep and goat meat, 0.58 kg of poultry, and the remainder from pork and fisheries (Boeckel et al., 2017).

3.4 **Meat price trends**

According to data from the Ethiopian Statistical Service (ESS), beef prices in Ethiopia exhibited a consistent upward trend from 2009/10 to 2020/21, with occasional fluctuations. Prices steadily increased from 40.91 Birr per kilogram in 2009/10 to 268.29 Birr per kilogram in 2020/21. The most significant increase occurred between 2011/12 and 2013/14, with prices nearly doubling. The upward trend continued at a slightly slower pace from 2013/14 to 2019/20, and there was a notable acceleration in price growth between 2017/18 and 2020/21 (ESS, 2021) (
Figure **3**).

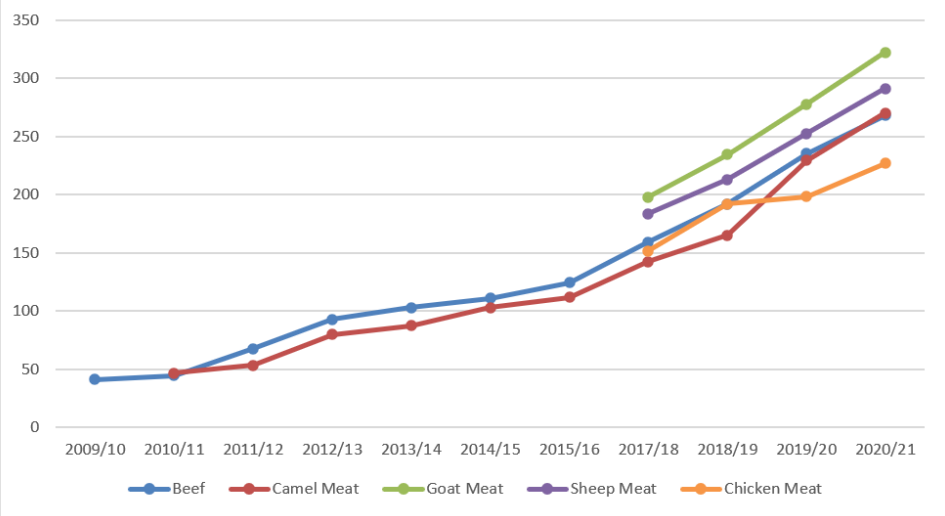

Figure 3: The meat price growth trends in Ethiopia by sourcing animal types

Similarly, the price of camel meat in Ethiopia experienced a consistent upward trend from 2010/11 to 2020/21. Starting at 46.49 Birr per kilogram in 2010/11, the price steadily increased each year. Notably, there were significant jumps in price between certain years, such as the increase from 229.29 Birr to 270.24 Birr per kilogram between 2019/20 and 2020/21 (ESS, 2021). These trends suggest growing demand or increased production levels for camel meat over the specified period.

The prices of shoats (goat and sheep) and chicken also followed a steady upward trend from 2017/18 to 2020/21, showing consistent annual growth (ESS, 2021). A 10-year study of beef and chicken meat prices in 22 markets in Ethiopia found significant increases of 280.82% and 273.54%, respectively, compared to the base year. The overall consistent upward trend in meat prices from all animal types suggests that demand for meat in Ethiopia may have been outpacing supply growth, resulting in rising costs for consumers. Factors such as population growth, increasing affluence, and shifting consumer preferences likely drove the increased demand for meat products. Additionally, market conditions, inflation, and supply and demand dynamics are likely to have influenced these price changes (OECD-FAO, 2021; ESS, 2021).

3.5. Challenges of meat production and marketing

The meat production and marketing sector in Ethiopia face several challenges due to the predominant traditional or extensive livestock husbandry system. These challenges include limited availability of improved breeds with higher meat productivity, which restricts the potential for increased meat production and quality. Insufficient access to quality animal feed, limited availability of feed resources, lack of technical knowledge and skills, and inadequate management of animal diseases also hinder livestock productivity and impede meat production. Furthermore, the sector faces obstacles in terms of infrastructure for meat processing, storage, and transportation. Limited market access and compliance with quality standards, as well as a lack of capacity for value addition

and processing, pose additional challenges to efficient meat marketing. These challenges contribute to the complexity of the beef cattle production system in Ethiopia, characterized by long marketing chains, extensive distances, multiple feeding regimes, numerous levels of formal and informal traders, and various steps involved in processing for export

3.6. Conclusions and recommendations

The analysis of 15 years of meat production trends in Ethiopia demonstrates notable progress, with an overall increase of 82.01% in total meat production. Cattle are the major contributors to the country's meat production, followed by small ruminants such as sheep and goats. However, the productivity per animal has remained relatively unchanged, resulting in low meat availability per capita for consumption.

Domestic meat consumption has experienced a significant increase of 24.7%, indicating a growing demand for meat products. This surge in demand has created a substantial gap between supply and demand that needs to be addressed.

The consistent upward trend in meat prices for all animal types suggests that the demand for meat in Ethiopia is outpacing supply growth, leading to higher costs for consumers. The livestock sector faces numerous challenges in meeting this demand, including poor husbandry practices, shortages of feed and water, inadequate health services, limited policy support, insufficient value addition and processing capabilities, and inadequate infrastructure.

In conclusion, to increase meat productivity in Ethiopia and meet the growing demand, it is crucial to develop and implement clear livestock policies and strategies that address key areas such as livestock management, veterinary services, genetic improvement, feed availability, and water development. Strengthening livestock institutions, improving management practices, enhancing veterinary services, introducing high-performing livestock breeds, ensuring year-round provision of animal feed and water, encouraging investments by small-scale producers, and engaging the private sector while increasing public investment are essential steps. By implementing these strategies, Ethiopia can enhance meat supply, meet rising demand, and stabilize prices to ensure food security and promote a sustainable and thriving meat industry.

Data availability: The data supporting this study's findings are available in CSA from 2005/2005 to 20018/2019. These data were derived from the following resources available in the public domain: https://www.statsethiopia.gov.et/our-survey-reports/

Conflicts of interest/Competing interests: The authors assert that work was conducted impartially and without any personal or financial influences that could compromise the integrity of their findings. Hence, the Authors declare no Conflict of Interest for this article.

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Declarations: By submitting this manuscript to the Journal of Advances in Agriculture, the authors declare that the work has not been published previously and is not under consideration elsewhere, the submission has been approved by all authors, the research protocol was solely based on data obtained from the Central Statistical Agency (CSA) and adhered strictly to publication ethics without violating any ethical clearance requirements, and if the manuscript is accepted, it will not be published elsewhere without the written consent of the copyright holder. Furthermore, the Journal of Advances in Agriculture will not be held legally responsible for any claims for compensation or disputes concerning authorship that may arise.

Consent to participate: we acknowledge that we understand the purpose, procedures, and potential risks and benefits of participating in the preparations of the article.

Consent for Publication of Data: The authors provide consent for the publication of their data, images, photographs, illustrations, or visual representations in the meat supply, demand, and price article, including their identifying name, email address, and institution's name.

Authors' contributions: Dr. Desalegn Begna conceptualized the project, conducted the literature review, interpreted and compiled the information, and wrote the manuscript. Zemene Yohannis gathered information from data sources and conducted statistical analysis, and Netsanet Jote participated in the preparations of the manuscript.

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References:

1. Abera Geleta, S. (2022). Review on poultry production, processing, and Utilization in Ethiopia. International Journal of Agricultural Science and Food Technology, 8(2), 147–152. https://doi.org/10.17352/2455-815x.000156
2. Aklilu, Y., & Catley, A. (2009). Livestock Exports from the Horn of Africa: An Analysis of Benefits by Pastoralist Wealth Group and Policy Implications. Feinstein International Center, Oct 2009, 54 Pp., October. http://proxy.library.carleton.ca/login?url=http://search.proquest.com/docview/853230368?accountid=9894%5Cnhttp://wc2pu2sa3d.search.serialssolutions.com/?ctx_ver=Z39.88-2004&ctx_enc=info:ofi/enc:UTF-8&rfr_id=info:sid/PAIS+Index&rft_val_fmt=info:ofi/fmt:kev
3. Bachewe, F., Minten, B., Tadesse, F., & Taffesse, A. S. (2018). The Evolving Livestock Sector in Ethiopia: Growth by heads, not by productivity. August, 26. https://www.ifpri.org/cdmref/p15738coll2/id/132771/filename/132980.pdf
4. Bachewe, F. N., Berhane, G., Minten, B., & Taffesse, A. S. (2018). Agricultural Transformation in Africa? Assessing the Evidence in Ethiopia. World Development, 105, 286–298. https://doi.org/https://doi.org/10.1016/j.worlddev.2017.05.041
5. Barry Shapiro,et. al., 2017. (2017). since 2000, consumption of both livestock products has started to increase.
6. Birhanu, A. F. (2019). A Review on Ethiopian Meat production trends, consumption and meat quality parameters. International Journal of Food Science and Agriculture, 3(4), 267–274. https://doi.org/10.26855/ijfsa.2019.12.002
7. Catley, A. (2013). Pastoralism and Development in Africa: Dynamic Change at the Margins.
8. EARO. (2000). National Small Ruminants Research Strategy Document. EARO, Addis Ababa, Ethiopia.

9. Eshetie, T. (2018). Meat production, consumption and marketing tradeoffs and potentials in Ethiopia and its effect on GDP growth: a review. Journal of Nutritional Health & Food Engineering, 8(3), 228–233. https://doi.org/10.15406/jnhfe.2018.08.00274
10. Eshetu, E., & Abraham, Z. (2016). Review on live animal and meat export marketing system in Ethiopia: challenges and opportunities. Journal of Scientific and Innovative Research, 5(2), 59–64. https://doi.org/10.31254/jsir.2016.5206
11. FAO. (2021). 6 Meat. Agricultural Outlook 2021-2030, 163–177.
12. FAO & Palladium Group. (2019). Livestock growth, public health and the environment in Ethiopia – A quantitative assessment. Rome.
13. FAO, & Palladium Group. (2019). Livestock growth, public health and the environment.
14. Frelat, R., Lopez-Ridaura, S., Giller, K., Herrero, M., Douxchamps, S., Djurfeldt, A., Erenstein, O., Henderson, B., Berresaw, M., Paul, B., Rigolot, C., Ritzema, R., Rodriguez, D., Van Asten, P. J. A., & Van Wijk, M. (2016). Drivers of household food availability in sub-Saharan Africa based on big data from small farms. 113, 458–463.
15. Girmay, G., & Yeserah, S. (2019). the Impact of Live Animal Export on Meat and Meat Products Export in Ethiopia. International Journal of Research -GRANTHAALAYAH, 7(9), 162–171. https://doi.org/10.29121/granthaalayah.v7.i9.2019.585
16. Guardian. (2018). Meat consumption farming. 1–5. https://www.theguardian.com/environment/2018/may/31/avoiding-meat-and-dairy-is-single-biggest-way-to-reduce-your-impact-on-earth?CMP=share_btn_fb
17. Kena, D. (2022). Review on camel production and marketing status in Ethiopia. Pastoralism, 12(1), 38. https://doi.org/10.1186/s13570-022-00248-2
18. Mappr. (2019). Meat Consumption by Countries. 1–17. https://www.mappr.co/thematic-maps/meat-consumption-by-countries/
19. Menbere, S. (2014). Livestock production constrains priorities and its determinant factors in mixed farming system of southern Ethiopia. World Journal of Agricultural Sciences, 10(4), 169–177. https://doi.org/10.5829/idosi.wjas.2014.10.4.914
20. Mirkena, T., Walelign, E., Tewolde, N., Gari, G., Abebe, G., & Newman, S. (2018). Camel production systems in Ethiopia: a review of literature with notes on MERS-CoV risk factors. Pastoralism, 8(1), 30. https://doi.org/10.1186/s13570-018-0135-3
21. Mohamed, A. A. (2019). Pastoralism and Development Policy in Ethiopia: A Review Study. Budapest International Research and Critics Institute (BIRCI-Journal) : Humanities and Social Sciences, 2(4), 1–11. https://doi.org/10.33258/birci.v2i4.562
22. Mummed, Y. Y., & Webb, E. C. (2019). Carcass Weight, Meat Yield and Meat Cuts From Arado, Boran, Barka, Raya Cattle Breeds in Ethiopia. Journal of Agricultural Science, 11(18), 45. https://doi.org/10.5539/jas.v11n18p45
23. Negassa, Asfaw, Shahidur Rashid, & Gebremedhin., B. (2011). Livestock Production and marketing the Ethiopia strategy support program ii (essp ii) working papers about essp ii. 26. Finfinne. www.ifpri.org. http://essp.ifpri.info/files/2011/04/ESSP2_WP44_SpatialAnalysisLivestockProduction.pdf
24. OECD-FAO. (2021). Chapter 6: Meat. OECD-FAO Agricultural Outlook 2021-2030, 163–177. http://dx.doi.org/10.1787/agr-outl-data-
25. OECD. (2021). Chapter 6: Meat. OECD-FAO Agricultural Outlook 2021-2030, 163–177. http://dx.doi.org/10.1787/agr-outl-data-
26. Agriculture, M., & Institute, I. L. R. (2013). Review of past policies and strategies for livestock in Ethiopia. Ethiopia: Ministry of Agriculture and International Livestock Research Institute, 15.
27. Ritchie H., & Roser M. (2017). Meat and Dairy Production. Our World in Data, November 2019, 1–17. https://ourworldindata.org/meat-production
28. Seleshe, S., Jo, C., & Lee, M. (2014). Meat consumption culture in Ethiopia. Korean Journal for Food Science of Animal Resources, 34(1), 7–13. https://doi.org/10.5851/kosfa.2014.34.1.7
29. Sewunet, Z. (2015). Institutions and policies to implement the Ethiopia livestock master plan. Ethiopia LMP Brief, 5(August 2015), 1–4. https://cgspace.cgiar.org/bitstream/handle/10568/68038/LMP_5.pdf?sequence=1&isAllowed=y
30. Shahbandeh, M. (2022). Production of meat worldwide from 2016 to 2021, by type (in million metric tons). Farming, 212, 2–5.
31. Sime, A. G. (2022). Review on poultry production , processing , and Utilization in Ethiopia. May. https://doi.org/10.17352/2455-815X.000156
32. Sopov, M. (2018). disease prevention and control in the commercial poultry sector of Ethiopia. November.
33. Van Boeckel, T. P., Glennon, E. E., Chen, D., Gilbert, M., Robinson, T. P., Grenfell, B. T., Levin, S. A., Bonhoeffer, S., & Laxminarayan, R. (2017). Reducing antimicrobial use in food animals. Science, 357(6358), 1350–1352. https://doi.org/10.1126/science.aao1495
34. Whitton, C., Bogueva, D., Marinova, D., & Phillips, C. J. C. (2021). Are we approaching peak meat consumption? Analysis of meat consumption from 2000 to 2019 in 35 countries and its rela-tionship to gross domestic product. Animals, 11(12). https://doi.org/10.3390/ani11123466
35. Wodajo, H. D., Gemeda, B. A., Kinati, W., Mulem, A. A., van Eerdewijk, A., & Wieland, B. (2020). Contribution of small ruminants to food security for Ethiopian smallholder farmers. Small Ruminant Research, 184(February 2019). https://doi.org/10.1016/j.smallrumres.2020.106064.