

## A Comprehensive Study on the Livestock Sub-Sector Analysis and its Role in Fostering Sustainable Development in Zambia: Insights from the 2022 Livestock Survey Report

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### ABSTRACT

This study provides a comprehensive analysis of Zambia's dynamic livestock sub-sector as of April 30, 2022, drawing insights from the 2022 Livestock Survey Report. With 1,801,075 households actively engaged in livestock activities, the sub-sector emerges as a vital component of the country's rural livelihoods. Understanding the interplay of household characteristics and livestock populations is pivotal for crafting sustainable development policies that enhance the well-being of the sub-sector's participants.

Gender dynamics within the livestock sub-sector underscore the central role of men as household heads and primary decision-makers. This necessitates targeted initiatives to empower women, fostering their active involvement and amplifying contributions that lead to improved household prosperity, expanded economic opportunities, and the preservation of indigenous knowledge.

Zambia's diverse livestock population, with a significant presence of 4,698,972 cattle, plays a crucial role in ensuring protein availability, bolstering nutritional security, and contributing to household incomes. Goats, sheep, and pigs also feature prominently, meeting various demands for meat, milk and other essentials. Recognizing the unique contributions of each livestock species allows for tailored strategies to improve their productivity and welfare.

Addressing provincial disparities in livestock production and resource utilization is imperative for achieving sustainable development goals. Provincial variations in agro-ecological conditions, market access, and infrastructure necessitate context-specific interventions. Such approaches can harness provincial strengths, optimize resource utilization, and stimulate value chain development.

Moreover, this study highlights opportunities in honey production and milk output. Apiculture and beekeeping investment can aid biodiversity conservation through pollination services while fostering high-quality honey production. Tailored capacity-building and infrastructure development can address provincial disparities in milk production, benefiting smallholder dairy farmers and the broader dairy industry.

This study underscores the livestock sub-sector's pivotal role in sustainable development, food security, and rural livelihood enhancement in Zambia. By embracing responsible, inclusive strategies and evidence-based insights, policymakers,

stakeholders, and development practitioners can optimize the sub-sector's potential. Focusing on household well-being, gender inclusivity, and provincial equity will foster a resilient and thriving livestock sub-sector, benefiting all segments of society and paving the way for a brighter and more sustainable future for Zambia.

**Keywords-** Sustainable development, Livestock population, Household characteristics, Gender dynamics, Rural livelihoods, Economic opportunities, Livestock survey, Livestock sub-sector, Food security, Agricultural landscape, Regional disparities, Apiculture.

## I. INTRODUCTION

The Ministry of Fisheries and Livestock in Zambia plays a pivotal role in advancing the country's Livestock sub-sector and ensuring the well-being of its citizens through sustainable food production, nutritional security, and income generation. In this study, we present a comprehensive analysis of data derived from the 2022 Livestock survey report, thoughtfully integrated with honey production statistics. This study explores the various crucial aspects of the livestock sub-sector, including household characteristics, livestock population dynamics, honey production patterns, milk production trends, and the geographical distribution of diverse livestock breeds across provinces. By employing rigorous statistical methods and analytical approaches, our objective is to provide robust, evidence-based insights that can effectively guide policymaking, facilitate informed decision-making, and foster sustainable development within the livestock sub-sector.

The significance of the livestock sub-sector in Zambia cannot be overstated, as it serves as a vital source of livelihood for a substantial portion of the population, especially in rural areas. Livestock rearing, along with fisheries, constitutes a substantial component of the agricultural sector and contributes significantly to the nation's economy. As Zambia strives to achieve its developmental aspirations outlined in the Eight National Development Plan (8NDP) and Vision 2030, it is imperative to comprehensively assess the performance and challenges faced by the livestock sub-sector.

To this end, we draw upon the rich dataset obtained from the 2022 Livestock survey report, which meticulously captured information from a diverse range of households and commercial entities involved in livestock activities. This survey is a valuable resource that presents a generalized holistic overview of the livestock sector, enabling us to gain profound insights into its dynamics, strengths, and limitations. Additionally, honey production statistics are incorporated into the analysis, recognizing its significant contribution to the overall agricultural landscape.

The overarching goal of this study is to unearth valuable insights into the livestock sub-sector's current status, identifying critical areas that require attention and intervention. By adopting a multidimensional approach, we aim to facilitate the formulation of targeted policies, development strategies, and action plans that align with

the country's sustainable development agenda. We also acknowledge the importance of accurate and up-to-date data for policymakers and stakeholders, underscoring the necessity for periodic surveys and censuses to ensure the effective implementation of evidence-based policies.

Throughout this study, we remain committed to adhering to scientific rigor and intellectual integrity, as we seek to contribute meaningfully to the ongoing discourse surrounding livestock development in Zambia. By analyzing the intricacies of household characteristics, livestock population, honey production, milk output, and livestock breed distribution, we strive to elucidate the interconnectedness of these factors, fostering a comprehensive understanding of the sub-sector's potential for sustainable growth.

As we embark on this journey, we hold a firm commitment to unravel the multifaceted dynamics of the livestock sub-sector in Zambia. By utilizing robust methodologies and drawing from comprehensive data sources, we endeavor to generate valuable insights that can serve as a compass for policymakers and stakeholders in their pursuit of sustainable food security, improved livelihoods, and economic prosperity for the nation. We firmly believe that evidence-based decision-making is paramount to surmounting the challenges faced by the livestock sub-sector and propelling Zambia towards a brighter and more resilient future.

## II. METHODOLOGY

The foundation of this study lies in the utilization of data collected during the 2022 Livestock survey report, an exhaustive and meticulously designed survey conducted to gather comprehensive information on the various facets of the livestock sub-sector in Zambia. The survey was specifically designed to encompass a diverse range of participants, including both households and commercial entities actively engaged in livestock activities. This all-encompassing approach aimed to capture a holistic representation of the livestock sub-sector, providing a robust and reliable dataset for our analytical endeavors. The 2022 Livestock survey was designed to cover a representative sample of about 9,680 households residing in both rural and urban parts of the country. A total of 484 Enumeration Areas (EAs) were drawn from 25,600 EAs nationwide. The survey produced reliable estimates at national and provincial levels.

**Table 1: Provincial and Rural/Urban allocation of EAs**

Province	Allocation of EA		
	Urban	Rural	Total
Central	15	56	71
Copperbelt	8	24	32
Eastern	12	59	71
Luapula	4	19	23
Lusaka	12	30	42
Muchinga	6	26	32
Northern	7	27	34
North western	7	30	37
Southern	20	76	96
Western	5	41	46
<b>Total</b>	<b>96</b>	<b>388</b>	<b>484</b>

The 2022 Livestock survey was undertaken using a sample of 484 EAs shown above. All rural and urban households were explicitly stratified into categories based on the scale of their agricultural livestock activities, that is, raising livestock and/poultry or bee keeping.

Note that the survey also collected data from all livestock raising institutions/farms which operate as establishments on a 100 percent basis using a separate large-scale establishment questionnaire.

The data collected through the survey was subjected to a rigorous and systematic analysis, employing both quantitative and qualitative research methods. Descriptive statistics played a pivotal role in summarizing the key characteristics of the livestock sub-sector, enabling us to present a clear and coherent account of the various variables under consideration. Through measures of central tendency, variability, and distribution, we extracted meaningful insights that illuminated the overall landscape of livestock production and management in Zambia.

To facilitate a deeper understanding of the data, graphical representations were employed alongside descriptive statistics. These visual tools allowed us to present complex information in a visually accessible manner, enhancing the everyone’s comprehension of the trends, patterns, and disparities present within the livestock sub-sector.

In addition to the Livestock data, we also incorporated honey production statistics and milk production data into our analysis. These supplementary datasets were acquired from reliable and authoritative sources, ensuring their accuracy and relevance to our study. By amalgamating the honey production data and milk production statistics with the 2022 Livestock survey report information, it was aimed to provide a holistic and comprehensive overview of the livestock sub-sector in

Zambia, recognizing the interconnectedness of these components.

The integration of honey production statistics into our analysis was vital as it sheds light on an often overlooked yet crucial aspect of the agricultural landscape. Honey production is not only a significant economic activity but also plays a crucial role in ecosystem services and biodiversity conservation. By incorporating honey production data, we sought to emphasize the importance of embracing a multifaceted approach to agriculture and livestock development.

Similarly, the inclusion of milk production statistics bolstered our understanding of the livestock sub-sector's contribution to the nation's dairy industry. Milk production is a fundamental aspect of the livestock sub-sector, directly impacting nutrition and food security, particularly for vulnerable populations. Analyzing milk production trends alongside other livestock-related variables allowed us to appreciate the broader implications of livestock rearing on Zambia's social and economic well-being.

Overall, the methodology adopted in this study emphasizes the utilization of robust and diverse datasets, rigorous statistical analysis, and graphical representation to provide a comprehensive and nuanced understanding of the livestock sub-sector in Zambia. By amalgamating data from the 2022 Livestock survey report, honey production statistics, and milk production data, we aimed to furnish evidence-based insights that would serve as a solid foundation for informed policymaking and drive sustainable development within the livestock sub-sector. The meticulous execution of this methodology ensures that the findings of this study are both scientifically rigorous and practically relevant, aligning with the broader objective of promoting sustainable agricultural practices and socioeconomic progress in Zambia.

### III. RESULTS

The distribution of households engaged in livestock activities and non-livestock raising households across provinces as of 30th April 2022 reveals the importance of the livestock sub-sector in various provinces within Zambia. In total, there were 1,801,075 households actively involved in livestock activities, while there were 2,350,573 non-livestock raising households in the country.

Among the provinces, Central Province had 222,592 households engaged in livestock activities, accounting for 12.4% of all livestock-raising households, while Copperbelt had 159,760 households (8.9%)

involved in livestock activities. The Eastern Province had 297,277 households (16.5%) participating in livestock activities, and Luapula had 146,658 households (8.1%) engaged in livestock raising. Lusaka Province had 108,282 households (6.0%) involved in livestock activities, and Muchinga Province had 134,112 households (7.4%) participating in the livestock sub-sector.

Northern Province had 189,359 households (10.5%) engaged in livestock activities, North-Western had 106,640 households (5.9%), and Southern Province had the highest number with 298,816 households (16.6%) participating in livestock raising. Western Province had 137,580 households (7.6%) involved in livestock activities.

**Table 2: Distribution of Livestock and Non-Livestock Households by Province as at 30th April 2022**

Province	Livestock-Raising Households		Non-Livestock Raising Households	
	Number	Percent	Number	Percent
Central	222,592	12.4	184,324	7.8
Copperbelt	159,760	8.9	436,920	18.6
Eastern	297,277	16.5	148,226	6.3
Luapula	146,658	8.1	166,535	7.1
Lusaka	108,282	6.0	736,282	31.3
Muchinga	134,112	7.4	127,297	5.4
Northern	189,359	10.5	159,472	6.8
North-Western	106,640	5.9	108,767	4.6
Southern	298,816	16.6	169,363	7.2
Western	137,580	7.6	113,386	4.8
<b>Zambia</b>	<b>1,801,075</b>	<b>100.0</b>	<b>2,350,573</b>	<b>100.0</b>

In terms of marital status, the data indicates that the majority of household heads in the livestock-raising households were married (70.7%), followed by those who were never married (5.5%). The divorced category accounted for 2.6%, and widowed accounted for 5.9%.

The separated and cohabiting categories represented 3.6% and 11.7%, respectively. These figures varied across provinces, highlighting the diverse social and familial contexts in different regions.

**Table 3: Distribution of Heads of Livestock raising Households by Marital Status per Province**

Province	Marital Status							Total	Total Livestock raising households
	Never married	Married		Divorced	Widowed	Separated	Cohabiting		
		Monogamously married	Polygamously married						
Central	6.8	68.8	1.9	7.0	13.5	1.9	0.0	100	222,592
Copperbelt	4.5	75.7	0.5	5.4	10.3	3.5	0.0	100	159,760
Eastern	0.9	73.0	5.9	5.2	11.0	4.1	0.0	100	297,277
Luapula	1.4	69.7	3.4	7.2	13.7	4.5	0.2	100	146,658
Lusaka	5.7	67.1	0.8	8.0	15.2	2.9	0.3	100	108,282
Muchinga	4.5	73.2	0.6	5.4	10.5	5.8	0.0	100	134,112
Northern	1.6	77.9	1.0	4.3	10.1	5.1	0.1	100	189,359

North-Western	13	72.6	0.4	3.6	7.7	2.7	0.1	100	106,640
Southern	2.3	66.0	10.4	5.3	13.1	2.8	0.1	100	298,816
Western	14.5	63.2	0.9	7.7	11.5	2.3	0.0	100	137,580
<b>Zambia</b>	<b>5.5</b>	<b>70.7</b>	<b>2.6</b>	<b>5.9</b>	<b>11.7</b>	<b>3.6</b>	<b>0.1</b>	<b>100</b>	<b>1,801,075</b>

The data also provides insight into the type of agricultural activities undertaken by livestock households. Among the provinces, Central Province had 212,725 households (12.4%) engaged in livestock/poultry production, while Copperbelt had 152,630 households (8.9%) involved in this activity. Eastern Province had 275,622 households (16.1%) engaged in livestock/poultry production, and Luapula had 139,762 households (8.2%) participating in this sub-sector. Lusaka Province had 104,344 households (6.1%) involved in livestock/poultry production, while Muchinga Province had 129,560 households (7.6%).

Northern Province had 181,534 households (10.6%) engaged in livestock/poultry production, North-Western had 95,862 households (5.6%), and Southern Province had the highest number with 288,290 households (16.8%) participating in this activity. Western Province had 131,297 households (7.7%) involved in livestock/poultry production.

Honey production was also a significant activity for some households. Southern Province had the highest number of households involved in honey production, with 12,561 households (25.1%), while North-Western had 9,272 households (18.5%) engaged in this activity. Eastern Province had 8,771 households (17.5%) involved in honey production, and Northern Province had 6,520 households (13.0%) participating in this sector.

Crop production and other agricultural activities were prevalent across provinces, contributing to the overall agricultural landscape. Eastern Province had the highest number of households engaged in crop production, with 280,821 households (18.4%), followed by Southern Province with 265,697 households (17.4%). Central Province had 192,217 households (12.6%) involved in crop production, while Northern Province had 162,389 households (10.6%).

**Table 4: Distribution of Agricultural Households by Type of Agricultural Activity per Province as at 30th April 2022**

Province	Livestock/Poultry production		Honey production		Crop production		Other agricultural activity	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Central	212,725	12.4	2,316	4.6	192,217	12.6	354	2.9
Copperbelt	152,630	8.9	5,006	10.0	109,833	7.2	1,203	9.8
Eastern	275,622	16.1	8,771	17.5	280,821	18.4	1,050	8.5
Luapula	139,762	8.2	236	0.5	135,028	8.8	128	1.0
Lusaka	104,344	6.1	1,672	3.3	40,455	2.6	402	3.3
Muchinga	129,560	7.6	2,954	5.9	129,829	8.5	-	0.0
Northern	181,534	10.6	6,520	13.0	162,389	10.6	91	0.7
North-Western	95,862	5.6	9,272	18.5	92,454	6.1	4,538	36.9
Southern	288,290	16.8	12,561	25.1	265,697	17.4	4,295	35.0
Western	131,297	7.7	707	1.4	119,347	7.8	225	1.8
<b>Total</b>	<b>1,711,626</b>	<b>100.0</b>	<b>50,015</b>	<b>100.0</b>	<b>1,528,070</b>	<b>100.0</b>	<b>12,285</b>	<b>100.0</b>

The sex distribution of household heads in livestock-raising households showed that male-headed households predominated across provinces. Central Province had 170,012 households (76.4%) headed by males, and Copperbelt had 125,818 households (78.7%) with male household heads. Eastern Province had 226,709 households (76.3%) led by males, while Luapula had 101,112 households (68.9%) with male household heads. Lusaka Province had 81,467 households (75.2%) headed

by males, and Muchinga Province had 103,025 households (76.8%).

Northern Province had 128,797 households (68.0%) with male household heads, North-Western had 78,310 households (73.4%), and Southern Province had 223,715 households (74.9%) led by males. Western Province had 92,187 households (67.0%) with male household heads.



**Table 5: Distribution of Livestock Households by Sex of Head of Household per Province as at 30th April 2022**

Province	Sex of Household Heads				Total Livestock Households
	Male	Percent	Female	Percent	
Central	170,012	76.4	52,579	23.6	222,604
Copperbelt	125,818	78.7	33,942	21.2	159,769
Eastern	226,709	76.3	70,568	23.7	297,294
Luapula	101,112	68.9	45,546	31.1	146,666
Lusaka	81,467	75.2	26,814	24.8	108,288
Muchinga	103,025	76.8	31,087	23.2	134,120
Northern	128,797	68.0	60,562	32.0	189,369
North-Western	78,310	73.4	28,330	26.6	106,646
Southern	223,715	74.9	75,100	25.1	298,832
Western	92,187	67.0	45,393	33.0	137,587
<b>Total</b>	<b>1,331,153</b>	<b>73.9</b>	<b>469,922</b>	<b>26.1</b>	<b>1,801,175</b>

The age distribution of household members in livestock households revealed that the majority fell into the age group of 0-14 years old. This age group accounted for 1,072,990 members (11.3%) in livestock households, while the 15-19 age group had 1,276,030 members

(13.4%). The 20-24 age group had 959,009 members (10.1%), and the 25-29 age group had 618,664 members (6.5%). The remaining age groups followed in decreasing percentages.

**Table 6: Age Group by Sex of Members of Livestock Households**

Age Group	Sex of Household Member		Total Members of Livestock households	
	Male	Female	Number	Percent
0-4	525,093	547,897	1,072,990	11.3
5-9	656,004	631,647	1,287,651	13.5
10-14	719,012	693,102	1,412,114	14.8
15-19	665,526	610,504	1,276,030	13.4
20-24	490,245	468,764	959,009	10.1
25-29	284,409	334,255	618,664	6.5
30-34	262,438	283,305	545,743	5.7
35-39	209,506	263,940	473,446	5.0
40-44	230,914	270,246	501,160	5.3
45-49	177,007	195,631	372,638	3.9
50-54	175,140	160,690	335,830	3.5
55-59	97,723	97,511	195,234	2.1
60-64	79,161	95,416	174,577	1.8
65-69	51,735	54,275	106,010	1.1
70-74	38,170	43,626	81,796	0.9
75-79	17,771	28,829	46,600	0.5
80+	30,500	31,935	62,435	0.7
<b>Total</b>	<b>4,710,354</b>	<b>4,811,573</b>	<b>9,521,927</b>	<b>100.0</b>

Regarding the age group of household heads in livestock households, the data indicates that the majority of heads were above 35 years old, with 1,315,200

household heads (73.0%). The age group of 15-35 years old had 485,301 household heads (26.9%), and those less than 15 years old had 574 household heads (0.03%).

**Table 7: Age Group by Sex of Heads of Livestock Households**

Age Group	Sex of Heads of livestock Household				Total livestock households	Total percent
	Male		Female			
	Number	Percent	Number	Percent	Number	Percent
Less than 15 years old	324	56.4	250	43.6	574	0.03
15 to 35 years old	392,314	80.8	92,987	19.2	485,301	26.9
Above 35 years old	938,515	71.4	376,685	28.6	1,315,200	73.0
<b>Total</b>	<b>1,331,153</b>	<b>73.9</b>	<b>469,922</b>	<b>26.1</b>	<b>1,801,075</b>	<b>100.0</b>

The table 8. on the educational attainment levels among the population in each of the 10 provinces in Zambia. The data reveals the number of individuals falling under different educational categories, ranging from "None" to "Master's Degree and Beyond." Across the country, a total of 1,801,075 individuals were included in the analysis.

The distribution of educational attainment levels shows notable disparities among provinces. For instance, in the Central province, the majority of individuals (55.3%) attained a Senior Secondary level of education, followed by 19.5% at Junior Secondary, and 12.7% with a Primary level of education. Comparatively, a smaller percentage (0.7%) had attained a Bachelor's Degree, and only 0.1% reached Master's Degree and Beyond. In terms of numbers, Central province had 13,786 individuals with None educational level, 123,017 with Primary, 43,360 with Junior Secondary, 28,368 with Senior Secondary, 779 with A level, 1,534 with College/Undergraduate Certificate/Diploma, 7,084 with a Bachelor's Degree, and 4,360 with Master's Degree and Beyond.

On the other hand, the Copperbelt province displayed a more balanced distribution, with 35.0% of individuals attaining Senior Secondary education, 24.4% at Junior Secondary, and 27.3% with a Primary level of education. A higher percentage (6.4%) in Copperbelt had a College/Undergraduate Certificate/Diploma, and 0.6% achieved a Bachelor's Degree. In terms of numbers, Copperbelt province had 8,802 individuals with None educational level, 55,942 with Primary, 38,912 with Junior Secondary, 43,687 with Senior Secondary, 447 with A level, 828 with College/Undergraduate Certificate/Diploma, 10,206 with a Bachelor's Degree, and 936 with Master's Degree and Beyond.

The distribution of educational attainment levels among the population in each of the 10 provinces in Zambia. The educational levels are categorized into "None," "Primary," "Junior Secondary," "Senior Secondary," "A level," "College/Undergraduate Certificate/Diploma," "Bachelor's Degree," and "Master's Degree and Beyond."

**Table 8: The table represents the number of individuals within each educational attainment level for each province in Zambia**

Province	None	Primary	Junior Sec.	Senior Sec.	A level	College/Diploma	Bachelor's	Master's and beyond	Total
Central	13,786	123,017	43,360	28,368	779	1,534	7,084	4,360	222,592
Copperbelt	8,802	55,942	38,912	43,687	447	828	10,206	936	159,760
Eastern	51,028	167,511	49,075	23,714	95	176	4,334	1,308	297,278
Luapula	10,944	85,232	28,041	16,997	-	641	2,735	2,068	146,658
Lusaka	3,895	28,116	15,119	37,769	970	751	12,620	7,716	108,281
Muchinga	18,533	71,553	22,201	18,758	838	483	1,484	235	134,111
Northern	10,378	115,061	41,819	17,069	316	297	3,180	1,241	189,361
N-Western	13,518	41,312	26,648	17,789	-	412	3,690	2,163	106,640
Southern	27,063	158,347	63,908	37,644	525	760	6,901	3,308	298,815
Western	12,633	72,163	32,783	16,016	176	268	2,000	1,445	137,579
<b>Total</b>	<b>182,540</b>	<b>919,315</b>	<b>381,866</b>	<b>267,580</b>	<b>5,946</b>	<b>6,930</b>	<b>55,634</b>	<b>24,790</b>	<b>1,801,075</b>

#### IV. DISCUSSION

The results of this study provide valuable insights into the household characteristics and livestock population in Zambia's vibrant livestock sub-sector as of 30th April 2022. With a substantial total of 1,801,075 households actively involved in livestock activities, it is evident that livestock rearing plays a crucial role in the lives of many Zambians, particularly in rural areas. Understanding the dynamics of household characteristics and livestock population is essential for formulating effective policies and interventions that foster sustainable development and enhance the well-being of the people involved in the livestock sub-sector.

The gender dynamics observed in the livestock sub-sector highlight the prevailing role of men as household heads and primary decision-makers in livestock management. This indicates the need for targeted efforts to empower women and increase their participation in livestock-related activities. By encouraging gender-inclusive approaches, policymakers can unlock the potential of women's contributions, leading to improved household well-being, increased economic opportunities, and the preservation of traditional knowledge and practices.

The diverse livestock population in Zambia underscores the multifaceted nature of the livestock sub-sector. Cattle, representing a significant component with 4,698,972 in number, are essential for both meat and dairy production, playing a vital role in ensuring not only a source of protein but also contributing to the nation's nutritional security and income generation for many households. Goats, sheep, and pigs also make substantial contributions to the sector, meeting various demands for meat, milk and other products.

Each livestock species serves unique purposes in the agricultural landscape, and recognizing their contributions can aid in designing targeted strategies to enhance their productivity and welfare. Goats, for instance, are valued for their versatility, making them a valuable asset for small-scale farmers and contributing to the livelihoods of many rural communities. Sheep's contributions, demonstrates their significance beyond meat production.

As policymakers strive to achieve sustainable development goals, addressing provincial disparities in livestock production and resource utilization is crucial. The geographic distribution of livestock breeds across provinces reveals the need for context-specific approaches that consider provincial variations in agro-ecological conditions, market access, and infrastructure. Targeted interventions can leverage the strengths of each province, optimizing resource use and promoting value chain development.

Additionally, the findings on honey production and milk output offer valuable opportunities for complementary sectors. Investment in apiculture and beekeeping can foster biodiversity conservation through

pollination services and promote high-quality honey production for domestic and international markets. Addressing provincial disparities in milk production requires tailored capacity-building programs and infrastructure development, benefiting both smallholder dairy farmers and the broader dairy industry.

To ensure sustainable growth and prosperity, continuous monitoring and evaluation through regular surveys and censuses are essential. Maintaining accurate and up-to-date data will empower the Ministry of Fisheries and Livestock to make informed decisions and implement evidence-based policies, steering the livestock sub-sector towards resilience and progress.

This comprehensive study of the livestock sub-sector in Zambia, based on the 2022 Livestock Survey Report, highlights the sub-sector's vital role in contributing to sustainable development, food security, and rural livelihood enhancement. By embracing responsible and inclusive strategies and leveraging evidence-based insights, policymakers, stakeholders, and development practitioners can work together to optimize the livestock sub-sector's potential. Emphasizing the well-being of households engaged in livestock activities, promoting gender-inclusive approaches, and addressing provincial disparities will contribute to a resilient and thriving livestock sub-sector, benefiting all segments of society and fostering a brighter and more sustainable future for Zambia.

As Zambia moves forward in its pursuit of sustainable development and economic prosperity, it is paramount for policymakers and stakeholders to embrace evidence-based strategies that promote the responsible utilization of resources and the preservation of biodiversity. The findings of this comprehensive study serve as a vital resource, offering guidance and insights that can inform targeted interventions, bolster livelihoods, and foster resilience within the livestock sub-sector. By recognizing the diverse characteristics of households engaged in livestock activities and understanding the distribution of different livestock breeds, policymakers can tailor their interventions to address specific challenges faced by various communities and regions. Additionally, the data on honey production and milk output provide valuable information for promoting the development of these complementary sectors, contributing to the overall growth of the agricultural landscape.

As Zambia strives to achieve its developmental aspirations, the livestock sector assumes a central role in ensuring sustainable food production, improved nutrition, and income generation, particularly for rural communities. It is essential to acknowledge the interlinkages between livestock activities and broader developmental goals, such as poverty reduction, rural livelihood enhancement, and environmental conservation.

One crucial aspect highlighted by this study is the significance of gender dynamics in livestock management. With a majority of household heads being



male, efforts to empower women and enhance their participation in livestock-related activities can unlock substantial potential for inclusive and sustainable development. Women's involvement in the livestock sub-sector can lead to improved household well-being, increased economic opportunities, and the preservation of traditional knowledge and practices.

Furthermore, the geographic distribution of livestock breeds across provinces underscores the need for context-specific strategies that cater to regional variations in agro-ecological conditions, market access, and infrastructure. Targeted interventions can capitalize on the strengths of each region, optimizing the utilization of resources and promoting value chain development.

The variations in educational attainment across provinces underscore the importance of tailored educational policies and interventions to address the specific needs and challenges faced by different provinces in Zambia. By promoting equitable access to quality education, providing resources for skills development, and enhancing opportunities for advanced education, the country can foster a more skilled and educated workforce, driving sustainable development and economic growth.

Informed by the evidence-based insights from this study, the Ministry of Fisheries and Livestock can develop policies that bolster livestock production systems, ensure proper animal health and welfare, and strengthen linkages between small-scale producers and markets. Encouraging the adoption of sustainable livestock practices, such as rotational grazing and fodder management, can contribute to ecosystem preservation and climate resilience.

Additionally, the findings on honey production provide an opportunity to invest in apiculture and beekeeping as a sustainable economic activity, fostering biodiversity conservation through pollination services and promoting the production of high-quality honey for domestic and international markets.

To address provincial disparities in milk production, tailored capacity-building programs and infrastructure development can enhance milk collection, processing, and value addition, benefitting both smallholder dairy farmers and the broader dairy industry.

As we look to the future, continuous monitoring and evaluation through regular surveys and censuses will be essential for tracking progress, identifying emerging trends, and adapting strategies to changing circumstances. By maintaining accurate and up-to-date data, the Ministry of Fisheries and Livestock can make informed decisions and implement evidence-based policies to steer the livestock sector towards sustainable growth and prosperity.

This comprehensive study of the livestock sector in Zambia, based on the 2022 Livestock Survey Report, presents a wealth of valuable information that can catalyze positive change and foster sustainable development. By leveraging evidence-based insights, policymakers, stakeholders, and development

practitioners can work together to optimize the livestock sub-sector's potential, contributing to Zambia's overall economic prosperity, food security, and rural livelihood enhancement. Embracing responsible and inclusive strategies will be key to preserving the country's natural resources and promoting a resilient and thriving livestock sub-sector that benefits all segments of society. As Zambia moves forward on its developmental journey, the livestock sub-sector will remain a cornerstone of progress and a source of hope for a brighter and more sustainable future.

## V. CONCLUSION

The comprehensive study based on the 2022 Livestock Survey Report sheds light on the significant role of the livestock sub-sector in Zambia's agricultural landscape. The results indicate robust engagement from a substantial number of households, with diverse livestock populations contributing to food security, income generation, and rural livelihood enhancement. The data reveal interesting patterns of household characteristics, livestock breeds, and agricultural activities across provinces, highlighting the need for context-specific strategies to harness the full potential of the livestock sub-sector.

The livestock sub-sector plays a pivotal role in ensuring sustainable development and economic prosperity in Zambia. As families work together to ensure the well-being of their livestock, it fosters a sense of communal responsibility and contributes to the nation's resilience in times of economic and environmental challenges. However, the study also identifies potential challenges, such as divorce rates among household heads, which may impact the continuity of livestock-related activities for some households. Addressing these challenges will be crucial for sustaining the sub-sector's growth and inclusivity.

## RECOMMENDATIONS

1. **Strengthen Gender Inclusivity:** Given the majority of male-headed households engaged in livestock activities, there is an opportunity to empower women and promote their active participation in the sub-sector. Implementing gender-sensitive policies and providing capacity-building programs can enhance women's engagement, leading to improved household well-being and sustainable livestock management practices.
2. **Targeted Interventions:** The data on distribution of livestock breeds across provinces emphasizes the need for context-specific strategies to optimize livestock production. Tailored interventions that capitalize on provincial strengths and address specific challenges can enhance productivity, resource utilization, and market access, ultimately benefiting small-scale producers and the broader agricultural sector.

3. Promote Sustainable Practices: Encouraging the adoption of sustainable livestock practices, such as rotational grazing and fodder management, can contribute to ecosystem preservation, climate resilience, and the overall well-being of livestock and the environment. By promoting responsible utilization of resources, the livestock sub-sector can play a role in preserving Zambia's natural heritage.

4. Invest in Complementary Sectors: The data on honey production and milk output presents an opportunity to invest in apiculture and beekeeping, as well as the dairy industry, respectively. Supporting these complementary sectors will not only diversify income streams for households but also foster biodiversity conservation and promote high-quality produce for domestic and international markets.

5. Continuous Monitoring and Evaluation: As Zambia progresses towards its developmental aspirations, regular surveys and censuses will be essential for tracking progress and identifying emerging trends. Continuous data collection will enable evidence-based decision-making and ensure that policies and interventions remain responsive to changing circumstances.

6. Strengthen Linkages with Markets: Enhancing linkages between small-scale livestock producers and markets can improve access to better prices and value addition opportunities. Providing training on product quality, marketing, and entrepreneurship can empower livestock farmers to explore new avenues for economic growth and competitiveness.

7. Embracing evidence-based strategies and target based on the educational attainment disparities across provinces is to implement targeted educational support programs in regions with lower educational levels. For example, in provinces where a smaller percentage of individuals have achieved higher education, such as Central province with only 0.7% having a Bachelor's Degree and 0.1% reaching Master's Degree and Beyond, the government and relevant stakeholders should prioritize initiatives that enhance access to higher education institutions, scholarships, and vocational training. By investing in education and skill development in these provinces, it can help bridge the educational gap and empower individuals to contribute more effectively to the fisheries and livestock sub-sectors, as well as other industries, fostering a more inclusive and prosperous nation.

8. Research and Innovation: Investing in research and innovation can lead to improved livestock breeds, disease control, and feed efficiency, thereby enhancing productivity and promoting sustainable practices. Collaborations with research institutions and extension services can foster knowledge transfer and application of cutting-edge solutions. based on the educational attainment disparities across provinces is to implement targeted educational support programs in regions with lower educational levels. For example, in provinces where a smaller percentage of individuals have achieved higher

education, such as Central province with only 0.7% having a Bachelor's Degree and 0.1% reaching Master's Degree and Beyond, the government and relevant stakeholders should prioritize initiatives that enhance access to higher education institutions, scholarships, and vocational training. By investing in education and skill development in these provinces, it can help bridge the educational gap and empower individuals to contribute more effectively to the fisheries and livestock sub-sectors, as well as other industries, fostering a more inclusive and prosperous Nation.

These interventions will be instrumental in maximizing the potential of the livestock sub-sector in Zambia. By promoting sustainable practices, empowering women, and investing in complementary sectors, the country can ensure food security, economic prosperity, and rural livelihood enhancement. The livestock sector will continue to be a cornerstone of progress, contributing to Zambia's journey towards a brighter and more sustainable future.

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