REPUBLIC OF KENYA

DEPARTMENT OF AGRICULTURE, LIVESTOCK, FISHERIES & COOPERATIVE DEVELOPMENT

MAKUENI COUNTY CHICKEN VALUE CHAIN DEVELOPMENT STRATEGY 2024-2028

FOREWORD

Agriculture is the backbone of Makueni County's economy, putting it at a pivotal position in the continued effort to end hunger, achieve food security and improve nutrition in line with Sustainable Development Goals (SDG number 2). It is also in line with the Makueni Vision 2025 that aims, among other things, at achieving accelerated and inclusive economic growth and development; increased household incomes and sustainable food security. This, therefore, calls for the agriculture sector to develop suitable strategies that will lead to the achievement of these goals.

The key existing policies this strategy aligns to are the National Livestock Policy 2020, The National Poultry Policy 2013 and the Bottom Up Economic Transformation Agenda (BETA) 2022-2027. Others are the Makueni County Agriculture and Livestock Policy 2020 as well as the Makueni County Integrated Development Plan III 2023-2027.

The Department of Agriculture, Livestock, fisheries and Cooperative development remains committed to her vision: A food secure, healthy and wealthy county for sustainable socio-economic development. Our mission is to improve the livelihoods of the Makueni citizens through sustainable management of crop and livestock resources and prudent management of co-operatives.

Makueni County experiences inadequate feed resources to meet the increasing demand that has been occasioned by the climate change and variability effects leading to a negative feed balance.

Therefore, the County Government in partnership with stakeholders-initiated development of an animal feed strategy as a framework to mitigate precarious feed challenges.

The objective of this Strategy is to enable the county to bridge the existing chicken value chain gaps and exploit opportunities towards an effective, commercialized, profitable, quality-oriented and sustainable chicken industry in the county.

The focus will priorities four over- arching investment areas in order to overcome the identified gaps in the industry. These are:

(i) Enhancing the production, productivity, and profitability of specific rural small-scale chicken farmers in the county;

(ii) Facilitating the connection between research and extension services to promote the adoption of technologies, innovations and management practices (TIMPs) that improve productivity;

(iii) Broadening the availability of profitable markets for processed products by adding value, and;

(iv) Collaborating with stakeholders to enforce policies and regulations in the sub-sector and develop or update policies that improve the value chain, such as breeding and animal feed policies, poultry regulations and standards.

The County government and key partners will mobilize resources to boost the chicken enterprise with a clearer focus on building sustainable enterprise investments that not only guarantee chicken productivity, income, food and nutrition security for the people but also increase employment opportunities for the youth and women in line with the Kenya Vision 2030.

Multi-sector support and participation was required in the successful development of this strategy. To this end, we appreciate the National Government through the National Agriculture Value Chain Development Project for their financial and technical contributions. We appreciate the policy makers, Researchers, private sector organizations including producer co-operatives, agro-dealers, processors and financial institutions for their active engagement towards the development of this strategy.

I therefore invite all stakeholders, development partners and investors to collaborate with the Department of Agriculture, Livestock, Fisheries and Co-operative development in the implementation of this Makueni County Chicken Value Chain Development Strategy 2024-2028.

JOYCE MUTUA
COUNTY EXECUTIVE COMMITTEE MEMBER - AGRICULTURE, LIVESTOCK, FISHERIES AND CO-OPERATIVE DEVELOPMENT.

PREFACE

The Makueni County Chicken Value Chain Development Strategy 2024-2028 is informed by the fact that Chicken rearing is practiced in almost all households in the county. Compared to cattle and goats, these short-cycle livestock are popular among women and youths thus present a high potential for rapid socio-economic transformation of household incomes, food and nutrition security.

The strategy provides the value chain status and strategic approaches and framework to address the deficit through the chicken value chain investment plans. The chicken value chain in Makueni faces a set of constraints that affect its efficiency and overall productivity. These challenges range from downstream and upstream issues such as limited access to quality inputs, including feeds and veterinary services, to mid-stream challenges like disease outbreaks affecting bird health and supply disruptions. Infrastructure-related concerns, such as high transport costs due to poor road conditions, also contribute to the complexities within the value chain. Additionally, downstream obstacles, including market access and fluctuating demand, pose hurdles for both small-scale indigenous chicken farmers and larger commercial producers.

The strategy is therefore developed to provide a means for addressing these challenges and improve value chain efficiency for sustainable and increased productivity in the chicken subsector.

The overall strategy objective is to enhance chicken production, income and profitability with Specific objectives as;

a) Increase chicken meat and egg production and productivity by 20% in 2028

b) Increase market participation and access

c) Develop and review policies and regulatory frameworks

The strategy has identified opportunities and investment areas including; Avail quality breeds of chicks by type, increase availability of quality affordable chicken feeds, enhance chicken health management, support the adoption and dissemination of TIMPS across the value chain, establish market structures, review regulatory instruments development and sensitization on chicken regulations, hatcheries, breeding farms inspection protocols. The strategy presents a roadmap for the Directorate of Livestock and Fisheries to develop a competitive chicken industry to drive vibrant commercially oriented enterprises in the county.

The successful implementation of the strategy will require substantial resources to be deployed through proper coordination mechanisms guided by clear financial and investment plans.

The Government of Makueni County will support services to realize implementation of this strategy. Let's all join hands as we develop and exploit the available resources and opportunities in the chicken subsector for the betterment of our people.

JAPHETH KIMINZA
CHIEF OFFICER- LIVESTOCK, FISHERIES AND COOPERATIVE DEVELOPMENT.

ACKNOWLEDGEMENTS.

The Directorate of Livestock and Fisheries Development wishes to acknowledge with deep appreciation the participants whose tireless efforts resulted in the development of the Makueni County Chicken Value Chain Development Strategy 2024-2028.

Special appreciation goes to the National Agricultural Value Chain Development Project (NAVCDP) for the financial and technical support towards development of the strategy. We also acknowledge the technical support from all the stakeholders in the chicken value chain. Further appreciation goes to the team that worked tirelessly to ensure delivery of this important strategy as named below;

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COUNTY DIRECTOR OF LIVESTOCK AND FISHERIES DEVELOPMENT

MAKUENI COUNTY.

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ABBREVIATIONS AND ACRONYMS.

CG	County Government
CIG	Common Interest Groups
ES	Extensive system
FPO	Farmer Producer Organization
IC	Improved Chicken
IS	Intensive system
KNBS	Kenya National Bureau of Statistics
MoALD	Ministry of Agriculture and Livestock Development
MT	Metric Tonnes
NAVCDP	National Agricultural Value Chain Development Project
NGO	Non-Governmental Organization
TIMPs	Technologies, Innovations, and Management Practices
PPP	Public Private Partnerships
VC	Value Chain

1.0 INTRODUCTION AND BACKGROUND INFORMATION

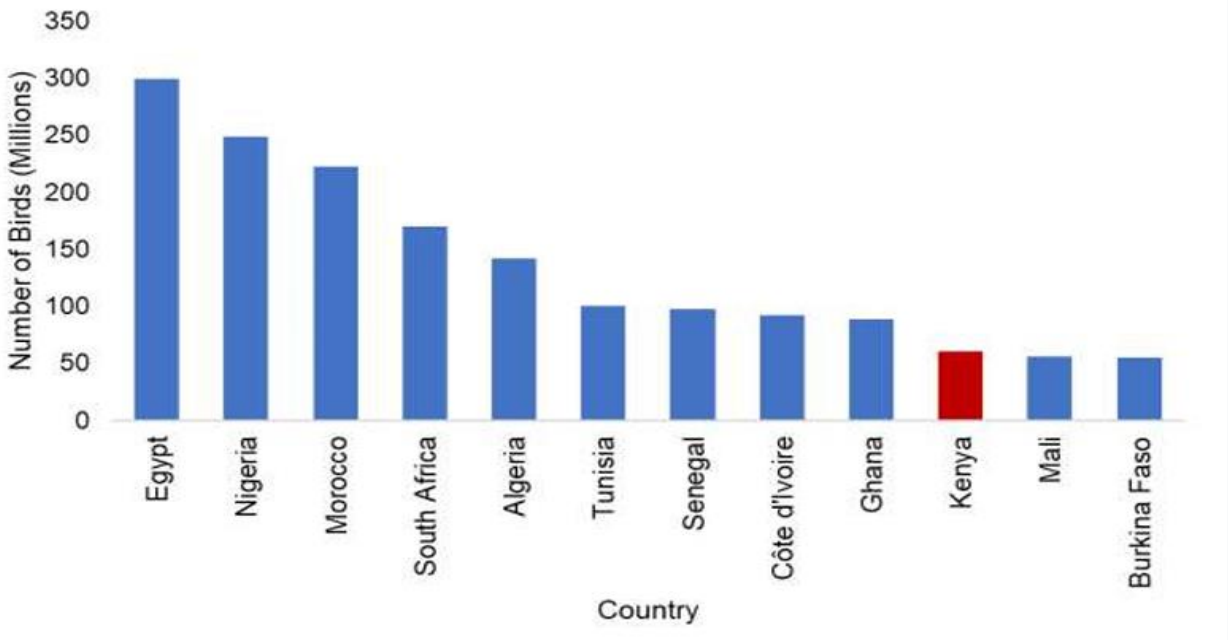
1.1 National overview

The global poultry industry is valued at over $300 billion and employs over 12 million people worldwide. The average global consumption of poultry meat per capita is estimated 15.7 kg per year. The industry is expected to grow at a compound annual growth rate (CAGR) of 4.5% from 2020 to 2025.

Global Poultry Meat Production

Continent	1970	1980	1990	2000	2010	2020	Increase (absolute)	Increase (%)
Asia	2,702	5,216	10,037	22,907	34,814	53,401	50,699	1,876.40
N America	5,092	7,014	11,492	17,64	20,801	24,642	19,547	383.9
Africa	598	1,056	1,969	2,962	4,782	7,329	6,731	1,125-6
Oceania	142	353	403	767	1,144	1,537	1,395	982.4
CS America	1,25	3,92	5,258	12,522	21,549	27,74	26,495	2,128.10
Europe	5,315	9,115	11,758	11,859	16,227	22,38	17,065	321.1
World	15,095	25,946	40,997	68,656	99,317	137,029	121,934	807.8

In Africa, the leading country is Egypt with over 300 million chicken. Kenya holds the 10th position in chicken population, reflecting its significant presence in the global and regional poultry landscape



In Kenya, the Livestock sub sector contributes 12% GDP to the Kenyan economy. Poultry contributes 1.7% to the National GDP, 4% to the agricultural sector's GDP and 3.7% of per capita annual animal protein consumption. The total contribution by the Agriculture sector is 30%.

The industry features three primary types of chickens: broilers, layers, and indigenous chicken comprising a total population of 61,353,678 birds. The indigenous chicken population comprises 48.3 million birds (79%), with an average flock size of less than 30 birds per household. Broilers constitute 7%, with a population of 4,484,199 birds, layers account for 10%, with 5,984,449 birds, and other birds make up 4%, totaling 2,617,643 birds (SDL, 2021).

1.2 County Overview

In Makueni County, according to the 2019 census, the county recorded the fourth highest population of 1,397,211 indigenous chicken in the country after Nakuru, Machakos and Kakamega counties respectively.

The number of households keeping chicken in the County was found to be 133,836 out of the total 244,669 house-holds in the County. The ***CSA validated data 2023*** indicates in 2022, the poultry industry in the county was worth Ksh 3,770,937,800 with a population of 1,569,911 birds (Indigenous chicken 1,502,975, Layers 43,029 and broilers 23,907). This was an increase of about 55% from the 2013 value of Ksh 2,063,659,280. Annual chicken meat production was 5,313,700 kg and egg trays 35,208,360 during the same period.

The current (2024) production of chicken meat is 6,593 metric tons against a demand of 12,647 metric tons while the current (2024) production of eggs is 44,790, 000 against a demand of 189,700,380 egg (*CSA projections 2024)*. The chicken per capita consumption in the county stands at 0.7kgs against the national per capita consumption of 1.7 kg (FAOSTAT, 2021).

Indigenous chicken is largely marketed through informal channels dominated by middlemen. The situation works to the disadvantage of farmers. The main breeds are indigenous. Poultry volumes for the County have been in an increasing trend since 2013 to date. The current production systems are free range and semi intensive production system where the former is dominant. There is low utilization of poultry inputs especially feeds, drugs, vaccines and modern equipment. There is low coverage of poultry extension services from both private and public service providers.

1.3 Justification

The Strategy focuses on the Government of Makueni County (GMC) aspirations on wealth creation, food and nutrition security and creation of decent employment through transformation of subsistence chicken production systems into commercially-oriented enterprises. This is in line with the county vision 2025 agenda and CIDP III (2023- 2027) that focuses on transformation and commercialization of the chicken value chain. The strategy provides the guidelines that will inform projects' planning at county level in chicken value chain. Despite the chicken production potential role in food security and resilience, it remains untapped, hence limited commercialization. Major challenges in the chicken industry are embedded at different nodes within the value chain. The inefficiencies are witnessed at input supply, production, processing, transportation, marketing and policy levels.

Major producing sub counties and Wards

Sub county	Sn	Ward	Households participating in indigenous chicken production	Indigenous chicken 2024 KIAMIS Estimate	Current egg production	Current chicken meat production in Kgs	Potential meat production
Mbooni	1	Tulimani	5,548	62,507	1,052,862	197,412	493,529
	2	Kiteta/Kisau	5,807	63,147	796,912	149,421	373,553
	3	Waia/Kako	3,649	37,827	969,987	181,872	454,681
	4	Kalawa	4,286	57,052	1,118,445	209,708	524,271
	5	Kithungo	3,675	22,587	617,579	124,950	293,631
	6	Mbooni	4,576	26,002	710,953	155,584	338,026
Kilome	7	Kasikeu	5,945	31,318	1,001,326	187,749	469,372
	8	Mukaa	4,162	14,381	574,029	107,630	269,076
	9	Kiimakiu/Kalanzoni	3,584	36,928	878,060	164,636	411,591
Kaiti	10	Kee	3,313	14,836	470,697	88,256	220,639
	11	Kilungu	5,362	34,083	658,683	123,503	308,757
	12	Ilima	4,188	18,309	645,367	121,006	302,516
	13	Ukia	3024	37,827	1,034,275	102,816	491,751
Makueni	14	Muvau/Kikumini	3,845	45,005	773,944	145,114	362,786
	15	Mavindini	3,679	34,518	456,911	85,671	214,177
	16	Kitise/Kithuki	3,459	17,772	886,458	166,211	415,527
	17	Mbitini	4,798	30,994	519,145	97,340	243,349
	18	Kathonzweni	5,326	45,969	1,256,896	181,084	597,597
	19	Nzakika	5,338	52,063	1,423,520	181,492	676,819
	20	Wote	4,680	38,819	1,061,399	159,120	504,647
Kibwezi West	21	Kikumbulyu North	3,177	15,460	502,769	94,269	235,673
	22	Kikumbulyu South	4,049	24,669	514,567	96,481	241,203
	23	Emali/Mulala	3,959	31,646	750,452	140,710	351,774
	24	Makindu	5,245	35,486	970,267	178,330	461,318
	25	Nguu	4,328	40,483	1,106,896	147,152	526,279
	26	Nguumo	4,753	29,630	810,151	161,602	385,190
Kibwezi East	27	Masongaleni	5,091	35,460	1,499,136	281,088	702,720
	28	Mtito Andei	5,450	32,943	1,577,779	295,834	739,584
	29	Thange	5,010	55,639	1,437,696	269,568	673,920
	30	Ivingoni	4,530	47,191	1,290,308	154,020	613,483

		TOTAL	**133,836**	**1,070,551**	**27,367,469**	**4,749,629**	**12,897,439**

Number of households keeping poultry

Approximately 133,836 households are involved in chicken keeping in the County while 605,000 are engaged in the enterprise.

Value chain production systems

Production systems include semi-intensive systems for improved indigenous chicken with average flock sizes of between 100 – 500 birds and free-range (extensive) system with flock sizes less than a100 birds. Indigenous chicken production is characterized by low inputs and low outputs which has a negative impact on commercial viability. They attain a market live weight of 1.5 kg in eight months under a free-range system. However, the improved indigenous chicken mature in four months under an intensified system. This represents more than 50% reduction in production time due to intensification. The production percentage for indigenous chicken stands at 98.8% in the County. The indigenous chicken start laying at the age of 24 weeks and continue laying for a period of 12 months with each bird laying an average of 180 eggs per cycle.

Production technologies adopted include; improved breeds (Kenbro, Sasso, Rainbow rooster, Kuroiler, and KALRO improved), brooding, feed formulation and supplementation (Azolla, BSF, termites, maggots) technologies, incubation, diseases, parasite control and management (vaccination, biosafety and bio security), Improved housing and improved transportation.

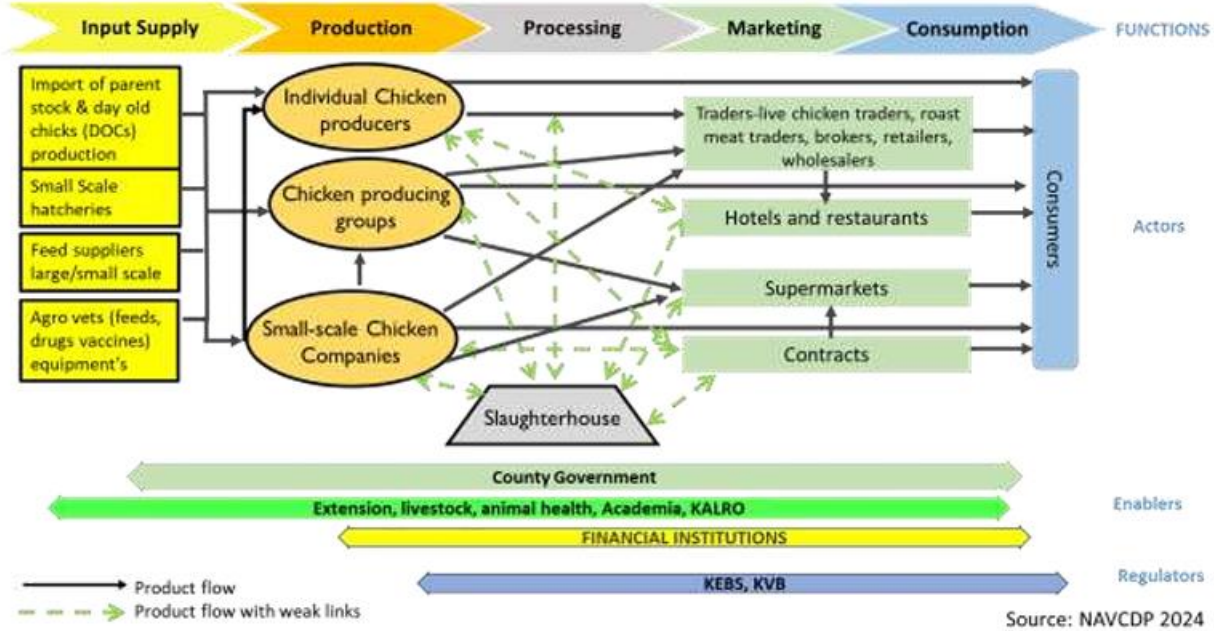
2.0 CHICKEN VALUE CHAIN ANALYSIS

2.1 Chicken Value Chain Structure

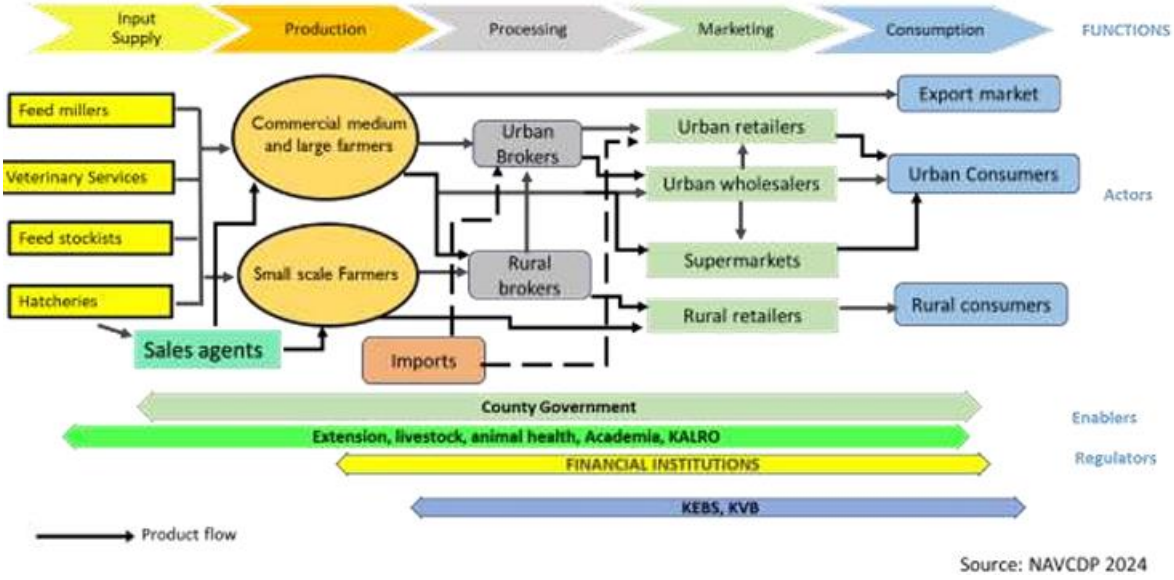
Chicken value chains link the actors and activities involved in delivering chicken and chicken products to the final consumer, with products increasing in value at every stage. A chicken value chain involves input supply, production, transport, processing, marketing and consumption. To develop this strategy, a value chain analysis was conducted with stakeholders, which identified gaps and opportunities along the chicken value chain. The gaps and opportunities were prioritized, and investment areas identified along the value chain to make it more competitive. Two value chain maps for the chicken meat and eggs have been drawn to visualize the chain activities, actors, and chain supporters.

A chicken value chain map is a graphical representation detailing the sequential stages and inter-connected activities involved in the production and distribution of chicken products. It begins with the sourcing of inputs and services such as feeds, day-old chicks, progressing through various phases like production, processing, and distribution, ultimately reaching the end consumer. This visual tool enables stakeholders in the chicken industry to analyze each stage's specific processes, identify potential areas for improvement, and streamline the overall chicken production and supply process for increased efficiency and quality throughout the entire value chain.

Chicken meat value chain map



Chicken egg value chain map



Chicken Value Chain Actors

1. Input Providers

The chicken production input supply level of the chain involves several key actors, including research and development institutions specializing in the breeding and multiplication of improved chicken, agro-veterinary dealers, feed manufacturers, hatcheries, and extension service providers. At the input level, supplies consist of day-old chicks, feeds, veterinary supplies, feed ingredients, extension services, vaccines, and equipment. Research and development institutions play a pivotal role in advancing various aspects of chicken production, encompassing breeding, nutrition, health, and value addition. They include

entities like KALRO, universities, and international organizations. Through their efforts, these institutions contribute to the continual improvement and innovation within the poultry industry.

Breeding and multiplication companies: Several private farms specialize in chicken breeding and operate hatcheries, where they breed, multiply, and supply chicken to producers. Some of these companies may also import grandparent stock in the form of eggs or day-old chicks to support their breeding programs.

Agro-veterinary dealers: They are primarily distributed across the country and play a crucial role in the chicken production chain. They specialize in stocking and supplying veterinary drugs, vaccines, feeds, and equipment to chicken producers. Various companies and institutions manufacture veterinary drugs and vaccines. In Kenya, the Kenya Veterinary Vaccines Production Institute (KEVEVAPI) is a key manufacturer of vaccines, while private companies contribute to the production of veterinary drugs. These agro-veterinary dealers serve as essential links in ensuring the health and well-being of chicken populations through the distribution of necessary supplies to the farmers through their outlets across the farming community.

Feed manufacturers: They are responsible for producing chicken feeds and are categorized into small, medium, and large-scale operations. The range of feeds manufactured encompasses Kienyeji mash, chick mash, growers mash, starter cramps, finisher mash, layers mash, and pelleted forms. These companies contribute significantly to meeting the diverse nutritional needs of chicken at various stages of growth. Most of the feed ingredients are imported or supplied by feed ingredients' suppliers.

Extension service providers: They are both public (county governments) and private institutions. Private companies like Kenchick, Isinya feeds among others also offer chicken value chain-based extension services to their contracted farmers. Public extension officers provide demand driven extension services and are based across the producing counties.

Equipment manufacturers: They either import or fabricate through Jua Kali artisans. Automated equipment are mostly imported while feeders and drinkers are locally fabricated.

2. Production

Farmers/producers: The concentration of indigenous chicken producers is primarily in rural areas, where the main actors are small and medium-sized farmers, farmer groups, and small companies who play a dominant role in production. The prevalent production system is extensive or free-range, with semi-intensive and intensive production systems being practiced to a lesser extent. In the indigenous chicken production system, the numbers are categorized as follows: small (less than 30 birds), medium (31-100 birds), and large-scale (more than 100 birds). The increasing demand for indigenous chicken meat necessitates intensification of production.

Commercial chicken producers are concentrated in urban and peri-urban areas, strategically located close to their niche markets for eggs and meat. Broiler and layer production are predominantly intensive and commercially oriented. The production scale for broilers and layers can be categorized as small (<250), medium (251-5,000), and large (above 5,000), reflecting the diverse scale of operations within the commercial poultry sector.

3. Processing

The main actors in the processing level of the chicken value chain are the slaughterhouses. The role played by chicken processors is pivotal within the intricate web of the food supply chain. These processors serve as key players, skillfully navigating the complexities of processing and distributing chicken products to meet the ever-expanding demands of the Kenyan populace. Their multifaceted responsibilities cover the entire spectrum of chicken production, encompassing tasks that range from the initial sourcing of chicken from local farmers to the final dissemination of processed goods to retailers and wholesalers.

There are very few slaughter facilities for chicken in the country located in Chwele, Bungoma County, Nandi, Kitale, Nakuru, Kisumu, Mombasa, Nyeri, Kiambu and Nairobi among others which mainly process broilers and spent layers. Processing of indigenous chicken is minimal and only concentrated in urban areas mainly for slaughtering and packaging whole chicken either at the household level or in public slaughterhouses owned and managed by the county governments. The capacity of a mobile slaughter house is 1200 birds per day. For broiler chicken, processing involves several stages before they reach the market. The process includes slaughtering, packaging, and value addition processes, all of which contribute to the transformation of the birds before they are made available to consumers. Some of the chicken processed products include sausages, chicken pie, chicken meat, liquid and powered eggs.

4. Marketing

The main actors at the marketing level of chicken value chain include aggregators, distributors, retailers, wholesalers, supermarkets, hotels/eateries and government regulatory bodies. Chicken and chicken products are traded through formal and informal market channels. Trade in indigenous chicken and products is normally informal. Indigenous chicken products traded included live birds (wet chicken markets) and dressed chicken. The marketing for broilers is organized with some firms contracting farmers to raise chicks to maturity and then sold to contracting firms. Other farmers have direct market access to hotels and institutions. Lastly, there are those who sell to the middlemen who then link up with terminal markets. Large and medium scale egg producers have access to direct markets in supermarkets, hotels and institutions. The small-scale egg producers have direct access to markets and others sell eggs through middlemen.

Aggregators/middlemen*:* Aggregators collect and combine indigenous chicken products from multiple producers, creating larger quantities for more efficient marketing and distribution. They play a role in consolidating supply and meeting the demands of larger markets. In some cases, for broilers, farmers sell directly to local consumers, hotels, eateries and other consumer institutions.

Transporters/Distributors: Are involved in the physical movement of chicken products from production areas or processing facilities to distribution points, markets, and retailers. They ensure that products are delivered in a timely manner and under suitable conditions to maintain product quality. They use various modes of transportation, including trucks, vans, and bicycles depending on the distance and infrastructure.

Traders: These can be categorized as retailers and wholesalers. They often act as intermediaries between producers and consumers, facilitating the movement of products through the market. Men generally dominate the trading of indigenous birds (locally and in regional markets). Women are quite a few in brokerage owing to the heavy burden associated with buying and selling indigenous chicken. Brokers must be very aggressive, travel long distances, and use bicycles, motorbikes, and public transport to source for the birds, which is time-consuming and tedious. Women are also few in chicken trading because they lack adequate capital and the nature of chicken and chicken products trade. As household managers, the demand for domestic chores makes it difficult for them to engage in any activity that requires them to be away from home for long periods.

Hotel/eateries*:* Hotels and eateries often purchase chicken in bulk quantities to meet the demand for their menus. This creates a substantial market for chicken producers and processors. Large-scale farms with slaughter facilities contract small-scale farmers, provide them with day old chicks which they rear to maturity and sell to the firms. Finally, large-scale farmers have direct access to markets for their finished product.

Indigenous chicken eggs from local farmers either sell directly to consumers or to local market centers. Eggs from commercial layers are sold directly to hotels and consumer institutions, others are sold to intermediaries in market centers where they are aggregated and sold to consumers or other traders. Examples of aggregation centers are; Wangige and Thika, which play a major role in determining the egg market prices.

Market interventions to address consumer safety and health concerns include a) reviewing policy and legal framework to improve safety and address quality concerns; b) retail outlets should innovate and develop hygienically produced value-added products; c) supporting entrepreneurs in engaging/developing indigenous chicken meat standards to meet market requirements; and d) enforcement of regulations on meat handling from slaughter to the retail outlets. Finally, research institutions should be encouraged to develop innovative technologies that can aid in detecting drug residues in source markets to enhance consumer safety.

5. Consumers

Chicken consumers are found in both rural and urban areas. The rural consumers are usually households residing in the same villages as the chicken farmers, but occasionally, these include visitors in the areas of production. Urban consumers include individuals who purchase chicken from large assemblers at various estates and markets. The current per capita consumption of eggs is 32 while for meat is 1.7kgs against WHO requirement of 180 and 12 kgs, respectively. The consumption for both eggs and meat is far much below the recommended WHO requirement. Therefore, there is a need to put more effort into increasing productivity and production in order to meet the deficit.

6. Policy and Regulation

Regulatory bodies may also be involved across the entire value chain to ensure production of safe and quality chicken and chicken products, fair trade practices, prevent market manipulation, and enforce quality and safety standards. The Ministry of Agriculture and Livestock Development (MoALD) plays a central role by overseeing chicken farming activities and establishing policies, guidelines, and regulations to maintain adherence to national standards. Organizations like the Kenya Bureau of Standards (KEBS) contribute significantly to the market's integrity by developing and implementing standards for poultry products, emphasizing quality, safety, and hygiene. The Directorate of Veterinary Services (DVS), working under the MoALD, focuses on the health and well-being of animals, implementing regulations related to disease control and prevention in the poultry sector. At the county level, Livestock Departments tailor regulations and guidelines to local conditions, engaging in licensing, inspection, and monitoring of poultry farms. Industry associations, such as the Kenya Poultry Farmers Association (KEPOFA), Kenya Poultry Breeders Association contribute to self-regulation and advocacy, establishing codes of conduct and best practices for poultry farmers.

Local authorities and municipalities play a crucial role in the regulatory landscape by formulating bylaws and regulations related to zoning and waste management in poultry farming activities. Additionally, consumer protection organizations such as Consumer Federation of Kenya (COFEK) advocate for fair pricing and the availability of quality poultry products, protecting consumers from fraudulent practices. The Competition Authority of Kenya ensures fair competition within the poultry market, investigating and preventing anticompetitive practices that could adversely impact both poultry

farmers and consumers. The collective efforts of these regulatory entities create a robust framework that promotes the integrity and sustainability of the poultry market in Kenya.

Inventory of available resources/facilities in the county

Currently Holland for farmers chicken feed factory is under construction by a private investor in Ukia ward, Kaiti subcounty. Within the county, a number of installed equipment are in place including 2 privately owned feed millers with a capacity of 1500 tones. There exist about 240 group and individual owned egg incubators with an average hatching capacity of 1million eggs per annum. There is also a private owned- functional slaughter house of 1000 birds per day in Ukia ward.

Partners and potential for collaboration;

Sno.	Partner	Role
1	Farmers	Production of chicken products
2	Input suppliers	Supply of feeds, veterinary supplies and chicken equipment
3	Breeding companies (KALRO, Kenchic Ltd, Uzima chicken, Kukuchic	Supply of day-old chicks
4	KEVEVAPI, KALRO	Production of vaccines
5	Private partners, other training institutes	Extension
6	KALRO	Development of TIMPs and Dissemination of TIMPs
7	KALRO, training institutes (universities and technical Institutes)	Dissemination of TIMPs Curriculum development on chicken Capacity building Capacity Development, Disease surveillance and diagnosis
8	KEBS	Development of standards Quality control of feeds and chicken products
9	AKEFEMA	Lobbying for favorable policies for Feed manufacturing
10	County government	Extension services Livestock sale yards Slaughter facilities Disease surveillance, diagnosis and control

11	National government	Executing, and overseeing agricultural laws, rules, and policies; Aiding agricultural research and advancing technology adoption; Facilitating and representing state-owned agricultural entities.

2.3 Economic Analysis

Current Chicken Enterprise Profit and Loss Analysis

The economic analysis for improved indigenous chicken was undertaken both at current, break-even and commercial levels.

Economic analysis, particularly break-even analysis, plays a crucial role in the success and sustainability of a chicken enterprise. Break-even analysis is instrumental in determining the point at which total revenue equals total costs, marking the threshold between profitability and loss. For a chicken enterprise

understanding the break-even point helps farmers make informed decisions regarding pricing strategies, production volumes, and resource allocation.

Table: Gross margin analysis for improved indigenous chicken

Gross margin analysis for current status potential status-determine the break-even points

Cost of production for 30 improved indigenous chicken from day old to 4 months (A complete production cycle for meat bird)

Input description

1	**Variable costs**	**Units**	**Cost**	**Quantity**	**Unit cost**	**Total cost**
	a). Day old chicks			30	100	3,000
	b. Feeds (Chick mash)	50 kg bag	4,000	2	80	4,800
	Grower mash	50 kg bag	3,400	2	68	3,876
	c). Water (3 times the qty of feed)	20 lt can	5	12	1	180
	d). Litters (Wood shaving)	Bags	50	0.02	100	60
	e). Labour		1	4	1,541	6,165
			Sub total			**18,081**
	f). Drugs and Vaccines					
	Gumboro (1st and 2nd dose)	100 doses		2	250	500
	NCD (2 doses)	100 doses		2	250	500
	Multivitamin	Litres		1	1,000	1,000

	Disinfectants	Litres		1	1,000	1,000
			Sub total			**3,000.00**
	g). Brooding charges					
	Hard board	Pcs		1	580	580
	Charcoal	Bags	50	0.02	1,000	600
	Jiko	Pcs	1	1	1,000	1,000
	Transport		1	30	5	50
			Sub Total			**2,330.00**
	Total variable costs					**23,411.00**
2	**Incidental costs**					**702.33**
	Grand Total cost of production is (1+2+3)					**24,113.33**
	INCOME					
	Worked cost benefit analysis (Consider Mortality Rate of 5% maximum)		95%			
	Sales of Live chicken			29	700	19,950
	Sales of processed chicken meat	kg	1.5	29	750	21,750
	Sales of empty gunny bags			2	50	120
	Sales of manure	Bags		1	300	410
	TOTAL INCOME					**20,480.40**
	Profit					**(3,632.93)**
	Profit per month		4			**(908.23)**
	Interest on funds invested					**-15%**

The breakeven analysis for improved chicken is estimated to 50 birds as shown in the below table.

Gross margin analysis for indigenous chicken meat break even

Cost of production for 50 improved indigenous chicken from day old to 4 months (A complete production cycle for meat bird)

Input description

Variable costs	**Units**	**Cost**	**Quantity**	**Unit cost**	**Total cost**
a). Day old chicks			50	100	5,000
b. Feeds (Chick mash)	50 kg bag	4,000	2	80	8,000
Grower mash	50 kg bag	3,400	2	68	6,460
c). Water (3 times the qty of feed)	20 lt can	5	12	1	300
d). Litters (Wood shaving)	Bags	50	0.02	100	100
e). Labour		1	4	1,541	6,165
		Sub total			**26,025**
f). Drugs and Vaccines					
Gumboro (1st and 2nd dose)	100 doses		2	250	500
NCD (2 doses)	100 doses		2	250	500
Multivitamin	Litres		1	1,000	1,000
Disinfectants	Litres		1	1,000	1,000
		Sub total			**3,000.00**
g). Brooding charges					
Hard board	Pcs		1	580	580
Charcoal	Bags	50	0.02	1,000	1,000
Jiko	Pcs		1.00	1,000	1,000
Transport			50	5	250
Sub Total					**2,830.00**
Total variable costs					**31,855.00**
Incidental costs					**955.65**
Grand Total cost of production is (1+2+3)					**32,810.65**

INCOME **Worked cost benefit analysis (Consider Mortality Rate**					
of 5% maximum)		95%			
Sales of Live chicken			48	700	33,250
Sales of processed chicken meat	kg	1.5	48	750	
Sales of empty gunny bags			4	50	200
Sales of manure	Bags		2	300	684
TOTAL INCOME					**34,134.00**
Profit					**1,323.35**
Profit per month		4			**330.84**
Interest on funds invested					**4%**

At commercial level a flock size of 1000 chicken was considered with 3 rearing cycles of 4 months each.

Gross margin analysis for indigenous chicken meat commercialization level
Cost of production for 1000 improved indigenous chicken from day old to 4 months
(A complete production cycle for meat bird)

Variable costs	**Units**	**Cost**	**Quantity**	**Unit cost**
Land rent	Land	1		
Chicken house	House			75,000
Day old chicks	Bird	1,000	120	120,000
Chick mash	Kgs	2,000	76	152,000
Growers mash	Kgs	7,000	63	441,000
Layers mash	Kgs	46,000	67	3,082,000
Veterinary services Vaccines (NCD*3+IBDx2+ Fowl Pox + Fow typhoid) in 200 doses	Vials	14,000	2.5	35,000
Dewormers (4 times)		4,000	0.5	2,000
Disinfectants		4	1000	4,000
Water	litres	165,000	0.5	82,500
Electricity		504	21	10,584
Labour	MD	9.00	6000	54,000
Wood shavings		20.0	300	6,000

Cardboards	pieces	8.0	550	4,400
Brooder lamps	pieces	1.2	750	900
Brooding jikos	Pieces	1.2	1500	1,800
Chicks feeders	pieces	6.0	350	2,100
Chicks drinkers	Pieces	3.0	350	1,050
Round Feeders	Pieces	12.0	600	7,200
Round drinkers	Pieces	6.0	600	3,600
Egg trays	Pieces	900	30	27,000
Transport of chicken	Bird	975	5	4,875
Production costs				4,117,009
Miscellaneous				123,510
Total production cost				4,240,519
Production costs per bird	Bird	4,241		4,241
Revenue Eggs	Numbers	292,000	16	4,672,000
Sale of culled chicken	Numbers	950.0	400	380,000
Poultry Manure	Tonnes	20	1000	20,000
Empty bags	Numbers	825.00	30	24,750
Total Revenue				5,096,750
Total Profit to Farmers				856,231
Income per month				47,568
Break Even Price				15
Break Even Yield				265,032
Min birds				279

Variable costs	Unit	Cost	No	Cost	Unit cost	Total cost
a). Day old chicks			1,000	100	100,000	100,000
b. Feeds (Chick mash)	50 kg bag	4,000	2	80	8,000	160,000
Grower mash	50 kg bag	3,400	4	68	11,900	226,100
c). Water (3 times the qty of feed)	20 lt can	5	17	1	83	7,838
d). Litters (Wood shaving)	Bags	50	0.02	100	1	2,000
e). Labour		1	2	206	411	24,660
		Sub total			120,395	520,598
f). Drugs and Vaccines						
Gumboro (1st and 2nd dose)	1000 doses		2	500	1,000	1,000

NCD (2 doses)	1000 doses		2	500	1,000	1,000
Multivitamin	Litres		2	1,000	2,000	2,000
Disinfectants	Litres		2	1,000	2,000	2,000
		Sub total			6,000.00	6,000.00
g). Brooding charges						
Hard board	Pcs		10	580	5,800	5,800
Charcoal	Bags	50	0.02	1,000	20	20,000
Jiko	No	250	4	1,000	4,000	4,000
Transport			1,000	5	5,000	5,000
Sub Total					14,820.00	34,800.00
Total variable costs						561,397.50
Incidental costs						16,841.93
Grand Total cost of production is (1+2+3)					141,214.50	578,239.43
INCOME Worked cost benefit analysis (Consider Mortality						
Rate of 5% maximum)		95%				
Sales of Live chicken			950	700	665,000	665,000
Sales of processed chicken meat	kg	1.5	950	750		
Sales of empty gunny bags			80	50	4,000	4,000
Sales of manure	Bags		46	300	13,680	13,680
TOTAL INCOME					682,680.00	682,680.00

Profit					541,465.50	104,440.58
Profit per month		3				34,814
Interest on funds invested					383%	18%

Value Share

Value share is a percentage of an actor's added value to the overall retail price or consumer price. The size of the value share reflects the amount of effort, cost and risk that an actor has put in the chain. The value share for different actors in the chicken value chain based on indigenous chicken and eggs are presented in Tables 4 and 5 below. In both indigenous chicken meat and eggs enterprises, the producers had the highest value shares of 40.2% and 28% respectively while traders and processors had the lowest value shares.

However, despite recording a high value share, indigenous chicken enterprises have a negative gross margin which is mainly attributable to operating below the breakeven level. The need to support commercialization of indigenous chicken broiler farming is underscored. At commercial level, with a flock size of 1,000 chickens, profitability is projected to be at least KES 34,814 per month. Of critical importance is to support the farmers to form producer groups to achieve tradable volumes and better income.

Interventions should aim at supporting the chicken farmers to become more competitive in the VC by increasing production and productivity and linking them to remunerative markets.

Table 4: Value share for Chicken meat actors in the indigenous chicken value chain

Chain actor	Variable costs KES	Revenue (Selling price)	Gross income	Gross margin	Added value	Value share
	A	B	C=B-A	(C/B) x 100	Revenue– previous actor's revenue	Added value / Retail price X 100
Producer	589	650	61	9.38	650	40.2%
Primary Traders	670	700	30	4.28	50	3%
Secondary Traders (Processors)	750	800	50	6.25	100	6.25%
Tertiary traders/ retailer)	900	1000	100	10	200	12.5%
Consumer/Institutions	1200	1600	400	23.33	600	37.5%

Table 5: Value share for Table egg actors in the indigenous chicken value chain

Chain actor	Variable costs KES	Revenue (Selling price)	Gross income	Gross margin	Added value	Value share
	A	B	C=B-A	(C/B) x 100	Revenue– previous actor's revenue	Added value /Retail price X 100
Producer	9.70	12.30	2.6	21.6	12.3	41%
Primary Traders	13	14	1	7.1	1.7	5.6%
Tertiary traders/ retailer)	15	16.6	1.6	9.6	2.6	8.6%
Consumer/Institutions	20	25	5	20	8.4	28%

3.0 CONSTRAINTS IN CHICKEN VALUE CHAIN

The chicken value chain supports over 133,836 rural households (55%) in Makueni County. The demand for chicken eggs and meat surpasses the supply and this presents an opportunity for investment in the sector. The chicken value chain in Makueni faces a set of constraints that affect its efficiency and overall productivity. These challenges range from downstream and upstream issues such as limited access to quality inputs, including feeds and veterinary services, to mid-stream challenges like disease outbreaks affecting bird health and supply disruptions.

Infrastructure-related concerns, such as high transport costs due to poor road conditions, also contribute to the complexities within the value chain. Additionally, downstream obstacles, including market access and fluctuating demand, pose hurdles for both small-scale indigenous chicken farmers and larger commercial producers.

3.1 Poor Quality Feeds

Numerous animal-feed brands in Kenya find themselves trapped in a cycle of producing contaminated feeds as a means to maximize profits. The presence of adulterants in chicken feed poses severe risks, including the potential for mortality, reduced productivity, impaired reproductive and liver function, compromised immune responses, and heightened susceptibility to illnesses. These adulterants have the capacity to contaminate a broad spectrum of livestock feeds, leading to substantial economic loss and posing threats to consumer health as well as rural livelihoods.

The absence of robust infrastructure and a weakened regulatory framework has resulted in inadequate or non-existent enforcement of quality standards within the industry. Addressing these challenges is imperative for safeguarding both the integrity of the poultry value chain and the well-being of consumers and livestock alike.

3.2 Poor Quality Breeds

The availability of high-quality inputs, particularly day-old chicks with desirable genetic traits, significantly influences overall productivity in the chicken value chain. However, breed-related

constraints pose challenges across various segments. Due to a scarcity of quality breeding or parent stock, many small- scale farmers are compelled to raise sub-optimal breeds, resulting in poor growth, susceptibility to diseases, in-breeding issues, and elevated mortality rates.

The emergence of un-regulated incubators exacerbates the problem, as farmers often hatch non-selected and poor-quality eggs, leading to the sale of inferior day-old chicks to other farmers. Additionally, the unchecked importation of low-quality breeding material through porous borders further complicates the situation.

The heightened demand for day-old chicks from reputable farms often leads to delivery delays, prompting farmers to seek alternatives, which may involve resorting to poor-quality breeds. These breed-related challenges collectively have a detrimental impact on entrepreneurship throughout the chicken value chain.

3.3 High Operational Costs

A significant impediment within the chicken value chain is the formidable challenge of high operational cost of production. This encompasses various elements, including feed, labour, equipment, veterinary care, and housing. Consequently, any alterations in these material prices directly impact the overall cost of production. The financial burden is further exacerbated by labour costs, as well as expenses related to processing and farm management.

Substantial investments in modern machinery and technology, essential for efficient manufacturing, contribute significantly to the overall production expenses. Moreover, veterinary services and disease prevention strategies incur additional costs, further augmenting the comprehensive production expenditure. Addressing these multi-faceted cost factors is imperative for ensuring the sustainability and competitiveness of the chicken value chain.

3.4 Low Adoption of Technologies, Innovations Management Practices (TIMPs)

Chicken value chain participants often face a deficiency in skills and knowledge regarding TIMPs. This knowledge gap may be attributed to insufficient coverage of extension services, stemming from a shortage of qualified public and private extension service providers. There is need for Livestock extension agents to sensitize and train farmers on TIMPs. Currently, the extension officer to farm household ratio is 4,400 against the recommended 1:400 (Odongo, 2014). There is also need to strengthen linkages between research, extension and other chicken value chain actors to enhance the dissemination and adoption of TIMPs.

3.5 Limited Processing Capacity

The constraint of limited processing capacity in the chicken value chain is particularly pronounced in the case of indigenous chicken, where a notable deficiency in processing facilities exists, especially for small-scale farmers. This deficiency hinders the optimal development of the indigenous chicken value chain.

Currently, the total production of processed chicken meat in Makueni is 6,593 MT against a demand of 12,647 MT based on the WHO recommended per capita consumption of 12 kg. To double the production by 2027 to 13,186 MT, there is need for robust processing plants.

Small-scale farmers, who often constitute 92% of those engaged in indigenous chicken farming, face challenges due to the lack of adequate processing facilities tailored to their scale of operation. Processing facilities are essential for activities such as slaughtering, packaging, and preparing

chicken products for the market. The absence of such facilities restricts the potential growth of the indigenous chicken value chain, as small-scale farmers encounter obstacles in efficiently processing and bringing their products to market.

Market access constraints, such as access to demand and price information, and specific market demands, such as production in accordance with quality standards, severely limit value addition. Efforts should be put in place to create standards for indigenous chicken products. To avoid misuse/over-use of antimicrobials and maintain quality products for end users/consumers, processors will be educated on testing contaminants in chicken.

3.6 Unstructured markets

The producer decides to sell based on profit economics and stock availability. Since Kenya lacks formal indigenous marketing organisations, commercially- oriented producers typically have regular primary collectors. Live chicken marketing is frequently erratic and unpredictable for subsistence producers. The producer's decision to sell is influenced by the household's need for cash, which is especially important during human food scarcity, disease outbreaks, and the need to de-stock whenever the population exceeds the household carrying capacity.

The accessibility of timely market information is restricted for participants, which impedes their ability to make effective decisions concerning prices, demand, and supply. The complexity of the situation is exacerbated by ineffective distribution systems, which hinder producers from locating suitable buyers and consumers who can obtain high-quality products.

The lack of standardized market structures exacerbates challenges related to maintaining consistent product quality, promotes variations, and may give rise to safety concerns. Additionally, the enforcement of regulations is complicated by the reliance on informal trading practices in un-structured markets, which promotes unethical behavior and hinders the expansion of the industry. In order to tackle these obstacles and promote a more sustainable chicken sector in Makueni, it is imperative that measures be taken to formalize the market, institute transparent pricing mechanisms, enhance information accessibility, and improve quality control protocols.

3.7 Weak Farmer Organizations

Weak farmer organizations in county pose a substantial obstacle to the chicken value chain. This is exemplified by the formation of farmer groups that possess restricted capabilities. The insufficiency further encompasses critical elements, including storage facilities utilized for compounding and aggregation, which impedes the effective management of poultry products.

Inadequate farmer organizations encounter difficulties in procuring inputs, which complicates the task of securing a consistent and dependable supply of vital resources for poultry farming. The lack of structural capacity within these organizations hinders the effective promotion and distribution of poultry products to wider markets, thereby impeding their marketing efforts. Additionally, there is a challenge related to providing financial help to farmers through credit facilities. This means that these organisations face difficulties in offering enough financial support to farmers.

3.8 Policy and Legal Framework Regulations

Chicken production by small-scale actors falls short of meeting local, regional and international standards in production, trade, regulations, processing, marketing, and waste disposal. Weaknesses in the legal and institutional framework have been identified as significant contributors to the constraints affecting the value chain's operation.

Among the constraints are policy issues concerning chicken breeding; a) Kenya lacks a poultry breeding policy or a livestock breeding programme to provide guidelines for the improvement of indigenous chicken, b) limited institutional framework to support chicken breeding in the Country.

There is lack of regional accredited facilities to support quality chicken feed production and build capacity in feed formulation.

There are various policy and regulatory instruments under review, which includes: National Livestock Policy Paper Number 3 of 2022, Sessional Paper Number 2 on Veterinary of 2022, Veterinary Practice and Veterinary Medicines Bill, animal feeds regulations, poultry industry regulations, Animal Health Act, Animal Welfare Bill, Animal Production Professionals and Technicians Bill. All these instruments, once enacted, will streamline the operations in the chicken value chain. The Hatcheries and Breeding Farms Inspection Protocol should guide establishment and operations of the hatcheries and breeding farms.

4.0. DESIGN PRINCIPLES

The implementation of the chicken strategy is guided by several design principles to ensure its effectiveness and impact. These include the following:

4.1 Government-led and private sector-driven:

The strategy acknowledges the importance of a collaborative approach, with active involvement from both government and the private sector. This dual leadership recognizes the complementary roles these entities play in steering the chicken value chain towards sustainable growth.

4.2 Focus on priority intervention areas:

The strategy prioritizes specific areas where interventions can have a transformative impact on the poultry sub-sector. By concentrating efforts on these key priority areas, the initiative aims to achieve meaningful and positive changes that contribute to the overall success of the chicken strategy.

4.3 Whole Value Chain approach:

Embracing a holistic approach, the strategy considers the entire value chain of chicken production, from breeding and farming to processing, distribution, and marketing. This comprehensive perspective ensures that interventions address challenges and opportunities at every stage, promoting integrated and seamless operations within the chicken industry.

4.4 Data-driven and farmer-focused intervention:

The strategy places a strong emphasis on data-driven decision-making, utilising accurate and timely information to guide interventions. Additionally, the approach is farmer-focused, recognizing the importance of understanding and meeting the needs of small-scale farmers, whose active participation is critical to the success of the chicken value chain initiative. This farmer-centric focus ensures that interventions are practical, sustainable, and tailored to the realities faced by those on the front lines of poultry production.

4.5 Social Inclusion

Chicken production fosters social inclusion, especially for women, youth, and vulnerable populations, depending on the enterprise's production and commercialization levels. In remote rural areas, it serves as a viable livelihood option, reducing poverty and promoting economic development. The industry empowers women through income generation and entrepreneurship, while providing accessible opportunities for youth to engage in agriculture and entrepreneurship with relatively low entry barriers.

4.6 Climate Change

Chicken have a lower environmental footprint with reduced greenhouse gas emissions and efficient feed conversion. Their production requires less land and water, contributing to sustainable resource use and conservation. Chickens' adaptability to different climates, particularly indigenous breeds, makes them resilient, offering farmers a diversification strategy in areas affected by climate change.

4.7 Circular Economy

Chicken production play a role in the circular economy, which is a regenerative system that minimises waste and maximizes use of resources. Chicken manure can be valuable as an excellent organic fertilizer for crops. The manure can be used for biogas to generate energy needed for brooding and other activities in the poultry unit. Chicken by-products such as feathers can be utilized in the textile, cosmetic and craft industries. By-products from food processing and agriculture, such as crop residues or surplus grains, can be recycled into chicken feed. Chicken farming can be integrated into broader farming systems.

4.8 Private Sector Engagement

The implementation of the strategy is government-driven and private sector-led. This will be achieved by leveraging resources, expertise, and innovation of different players to contribute to the integrated and resilient development of the chicken industry.

4.9 Food Safety

The implementation of the chicken commercialization strategy emphasizes paramount consideration for food safety. Rigorous measures, spanning production to distribution, will be enforced, encompassing adherence to hygiene standards, control of veterinary drug usage, proper waste disposal, and sanitary processing conditions. Stakeholder education, regular inspections, audits, and collaboration with regulatory bodies will further ensure alignment with international food safety standards, fostering public health, trust in the market, and sustainable growth in the chicken commercialization initiative.

4.10 Disruptive Agricultural Technologies

These are digital technologies and innovations, which include the use of mobile apps in agriculture to provide extension information, and market and credit facilities to actors along the value chains. Leveraging on such platforms would enable actors in the value chain to access input, market and financial information, hence improved productivity and efficiency of the value chain. Such channels will also enable access to extension information to chicken farmers in the county.

5.0 STRATEGIC AREAS

The county chicken value chain development strategy would priorities four over- arching investment areas in order to overcome the identified gaps in the industry. These are:

(i) Enhancing the production, productivity, and profitability of specific rural small-scale chicken farmers in the county;

(ii) Facilitating the connection between research and extension services to promote the adoption of technologies, innovations and management practices (TIMPs) that improve productivity;

(iii) Broadening the availability of profitable markets for processed products by adding value, and;

(iv) Collaborating with stakeholders to enforce policies and regulations in the sub-sector and develop or update policies that improve the value chain, such as breeding and animal feed policies, poultry regulations and standards.

Strategic objectives are to:

- Increase chicken meat and egg production and productivity by 20% in 2028
- Increase market participation and access
- Develop and review policies and regulatory frameworks

5.1 Strategic objective 1: Increase chicken meat and egg production and productivity by 20% in 2028

These strategic objective addresses availability of quality day-old chicks, setting up breeding farms and creating brooding farms for young chicks. To address the issues, the following investments are required.

Activity 1: Avail Quality Breeds of Chicks by Type

This investment area will increase access to quality hatching eggs, day-old chicks, month-old chicks, breeding cocks and point of lay pullets for farmers to increase production and productivity of chicken products. The following are the specific investments.

Establish 3 chicken multiplication farms (hatcheries): Multiplication farms are responsible for multiplying of parent stock from the breeding farms to produce hybrid chicks. Chicks will be produced and sold to brooding farms and farmers.

Create 23 brooding farms for young chicks: These farms will obtain chicks from hatcheries and raise them from day-old until they are one or two months old, or until they are about to start laying eggs. The growers or pullets will then be sold to the final farmers who will raise them for the market. The purpose is to avert risks associated with early mortality at brooding stage. The brooding farms will target mainly indigenous chicken.

Mechanization of the chicken farming operations at 3 multiplication farms and the 23 brooding farms: Mechanization of the chicken production operations such as feeding, watering, vaccinations and disease health monitoring would not only reduce the cost of labour operations but will also increase the efficiency of production and increase productivity. This should be undertaken in the breeding,

multiplication and brooding farms.

Activity 2: Increase availability of quality affordable chicken feeds

The strategic approach focuses on enhancing access to high-quality chicken feeds by establishing a robust system to produce essential raw materials used in feed manufacturing. This will be achieved through the following specific intervention areas.

Promote commodity-based contract farming to enhance access to feed ingredients for feed millers. The crop should include white sorghum, millet, ground nuts, sunflower, among others. The production of these crops will catalyze establishment of agro-based industries by private investors to increase availability of by-products like soya bean and sunflower cakes for poultry feed manufacturing.

Promote alternative feed resources: The strategy will increase use of cheap alternative sources of protein in chicken feed manufacture, e.g., Azolla, insects such as black soldier fly (BSF), crickets, grasshoppers and white ants among others. The alternative energy sources would include *prosopis juliflora*, sorghum, millet etc.

Establishment of 30 feed centres and 1 feed miller: The strategy will promote establishment of 30 poultry feed centres – one in every ward and 1 feed mill plant in the county to be strategically positioned. The strategy will stimulate and incentivize private sector investments in factories for chicken and other animal compounded feeds.

Enforce standards for feed quality: Strengthen mechanisms and infrastructure for controlling feed quality, involving field inspectors and regional laboratory analytical equipment and standards.

Activity 3: Enhance chicken health management

This strategic investment initiative seeks to enhance access to quality vaccines and medications, strengthen chicken disease diagnosis and surveillance capabilities, and promote the adoption of disease control strategies among stakeholders. Key investments include the following:

Promote private sector investment in chicken health: The strategy will incentivize private sector investment in chicken health service provision, input and distribution. This will involve establishing agro-vet/ input supply networks in the ward to facilitate seamless information sharing, fostering improved disease management practices and overall productivity. This will improve animal health, extension, and regulatory capacity services for chicken value chain players.

Enhance diagnosis of disease surveillance and control infrastructures: The strategy will strengthen pest and disease surveillance and control infrastructure. The strategy will promote establishment of community livestock health workers that would report incidences of chicken disease outbreak. Framework on sample collection, diagnosis and laboratory establishment in the county will be developed. The community livestock health workers will be capacity built on KABI system of disease surveillance and reporting. The strategy will also help build capacity of vaccine producing institutions and promote the need for small size packaging of chicken vaccines to meet the needs of small-holder farmers.

Activity 4: Support the adoption and dissemination of TIMPs across the value chain

This activity will be achieved through the following.

Training and capacity building of specialized value chain actors: Targeted training will involve all value chain actors including day-old chick multipliers, animal health service providers, artisans and extension service providers on TIMPs. The implementation approach will comprise hybrid extension architecture for County staff to become Trainers of Trainers; cascading the knowledge to Sub-County Trainers (SCTTs) and Community-Based Facilitators (CBFs), Agri-prenuers and Lead farmers. The Lead Farmers will then train the CIG members. The poultry sector demands essential accessories to facilitate proper feeding, watering, and overall chicken well-being. These crucial tools encompass feeders, drinkers, laying boxes, and perches. As part of the initiative, artisans will receive training on the precise standards for producing the equipment.

Strengthen chicken demonstration/model farms in the 30 wards: Chicken model farms will be established in every ward for local farmers and to develop the capacity and competence of poultry farmers by engaging agri-preneurs in each ward.

Disruptive Agricultural Technologies: The strategy will promote adoption of digital technologies. Leveraging on such platforms would enable actors in the value chain to access input, market and financial information, hence improved productivity and efficiency of the value chain. Such channels will also enable access of extension information to majority of the chicken farmers in the county.

5.2 Strategic objective 2: To increase access to structured profitable markets

The focus of this investment area is to connect farmers to meat and egg markets, enhance access to markets and increased market participation. This could be achieved by investing in the following activities.

Activity 1: Establish Market Structures

This strategy will promote formation and strengthening of 1200 CIGs. The CIGs will be federated into Farmers Producer Organizations (FPOs) that will aggregate both inputs and outputs from value chain players. FPOs will be encouraged to establish distribution networks and retail markets for chicken products. The FPOs will facilitate market linkages between producers and traders through contract farming. The FPOs will receive incentives and assistance to develop effective market distribution networks and chicken meat markets.

Establishment of 30 chicken products aggregation centers: These centers will be established in each ward and linked to feed centers and mass off- takers. The centers will have cold storage facilities for dressed chicken meat and eggs for storage and distribution.

Form market linkages and information systems: The strategy will promote development of market information system platform that will deliver up-to-date and pertinent data on market prices, demand patterns, and consumer preferences to marketing producer organisations (POs). This information will equip POs to guide farmers on optimal production and timing for product sales. The specific investment initiative will encompass the creation of electronic market platforms, seamlessly integrated with existing systems such as the Kenya Integrated Agricultural Market Information System (KIAMIS). The platform will bridge market information asymmetry between chicken producers and other value

chain actors. The platforms will include creation of B2B (business-to-business) and B2C (businesses to consumers) e-commerce platforms as well as establishment and integration of FPOs with market information systems (e.g., KAMIS). These initiatives will amplify real-time access to market data, enabling stakeholders to make well-informed decisions, calibrate production levels, and optimize resources. The result will be a more competitive and agile chicken value chain.

Drive the consumption of chicken meat and eggs: Promote outreach efforts to change consumer attitudes toward chicken meat and egg consumption, intensify promotional and outreach campaigns aimed at reshaping consumer perceptions and encouraging higher chicken meat and egg consumption. The strategy will promote the consumption of chicken products among the community through the development of diverse affordable products and giving the nutrient composition of chicken products. The strategy will promote the development of new products to elevate consumption, such as Halal and organic. In this regard, processors will be aided to create an array of value-added products derived from chicken meat and eggs, catering for the preferences of a diverse consumer base. Support entrepreneurs to engage in chicken finishing to produce products that meet market needs.

Support specialized means of transport for live chicken and chicken products: Transportation of chicken and chicken products compromises the animal welfare. This affects product quality. The strategy will promote establishment of specialized means of transport for live chicken that considers animal welfare and chicken products to protect quality and food safety.

Capacity building on food safety: The strategy will create awareness and capacity build actors in the chicken value chain on importance of food safety and product traceability, compliance to sanitary and phytosanitary standards of different market segments and export market.

5.3 Strategic objective 3: Strengthen the Policy and Regulatory framework within the sector

Activity 1: Review Regulatory Instruments:

There are various policy and regulatory instruments under review, which include: National Livestock Policy Paper Number 3 of 2022, Sessional Paper Number 2 on Veterinary of 2022, Animal Feeds Regulations, Poultry Industry regulations, Animal Health Act, Animal Welfare Bill, and Animal Production Professionals and Technicians Bill. All these instruments, once enacted, will help streamline the operations in the chicken value chain.

Activity 1: Development and Sensitization on chicken regulations:

This activity will involve development of county regulations, creation of awareness of the poultry regulations to the stakeholders in the poultry value chain.

Activity 3: Hatcheries and breeding farms inspection protocol:

There is need to enforce the hatcheries and breeding farms inspection protocol to ensure production of quality and healthy chicken breeding stock. This will minimize spread of chicken diseases and enhance biosecurity and safety.

6.0 TARGET AREA AND BENEFICIARIES

The strategy will cover all chicken producers in the County, reaching 133, 836 households. Other beneficiaries include youth agri- preneurs, chicken producer organizations, input suppliers, poultry processors, traders, and other actors in the chicken value chain. Based on the comparative advantage in chicken enterprise development, wards will select chicken enterprise guided by data and facts to ensure sustainability. The criteria will include: (i) potential to develop and improve the production of the chicken value chain; (ii) potential to develop and improve access to markets; (iii) availability of farmers who can undertake commercial production; (iv) organizational level of farmer organizations, and (v) socio-economic data and the population of chicken farmers.

Table 7: Implementation matrix

Narrative Summary	Baseline Target					
	Target	2024	2025	2026	2027	2028
Objective 1. To Increase chicken meat and egg production and productivity						
Activity 1.1: Avail Quality Breeds of Chicks by Type						
Establish 3 chicken multiplication farms (hatcheries)	3		1	1	1	
Create 23 brooding farms for young chicks	23		6	6	6	5
Activity 2: Increase availability of quality affordable chicken feeds.						
Establishment of 30 feed centres	30		7	7	7	2
Establish 1 feed miller	1		1			
Activity 4: Support the adoption and dissemination of TIMPs across the value chain						
Training and capacity building of specialized value chain actors:						
Tots	4	4				
SCCT	32		32			
CBFs	30		30			
Agripreneurs	150		150			
Lead farmers	300		150	150		
CIGs/VMGs	1200		400	400	400	400
Strengthen chicken demonstration/model farms in the 30 wards:	30		300			

Objective 2: To increase access to structured profitable markets Activity 1: Establish Market Structures						
Establishment of 30 chicken products aggregation centers	30		10	10	10	
Drive the consumption of chicken meat and eggs:	4		1	1	1	1
Capacity building on food safety	1200		400	400	400	400
Objective 3: Strengthen the Policy and Regulatory framework within the sector						
Activity1. Support development of chicken regulations to guide the industry						
Development of chicken regulations to guide the industry	2		2			
Sensitization on chicken regulations	1		1			
Support enforcement of the hatcheries and Breeding Farms Inspection Protocol	1		1			

BUDGET SUMMARY

Table 8: Budget summary

Objective 1. To Increase chicken meat and egg production and productivity	
Activity 1.1: Avail Quality Breeds of Chicks by Type	
Establish 3 chicken multiplication farms (hatcheries)	60,000,000
Create 23 brooding farms for young chicks	48,500,000
Activity 2: Increase availability of quality affordable chicken feeds.	
Establishment of 30 feed centres	150,000,000
Establish 1 feed miller	50,000,000
Activity 3: Enhance chicken health management *Promote private sector investment in chicken health* *Enhance diagnosis of disease surveillance and control infrastructures*	50,000,000
Activity 4: Support the adoption and dissemination of TIMPs across the value chain	
Training and capacity building of specialized value chain actors:	80,000,000
Tots, SCCT, CBFs, Agripreneurs, Lead farmers, CIGs, using ATC Model where applicable	
Strengthen chicken demonstration/model farms in the 30 wards:	60,000,000
Objective 2: To increase access to structured profitable markets	
Activity 1: Establish Market Structures	
Establishment of 30 chicken products aggregation centers	150,000,000
Drive the consumption of chicken meat and eggs	30,000,000
Capacity building on food safety	15,000,000
Objective 3: Strengthen the Policy and Regulatory framework within the sector Activity1. Support development of chicken regulations to guide the industry	
Development of chicken regulations to guide the industry	10,000,000
Sensitization on chicken regulations	8,000,000
Support enforcement of the hatcheries and Breeding Farms Inspection Protocol	5,000,000
Total	**716,500,000**

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