

THE INFLUENCE OF LIVESTOCK POLICY AND LIVESTOCK PRODUCTIVITY PROGRAMS ON PASTORAL PRODUCTION IN GARISSA COUNTY, KENYA

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ABSTRACT

The effective implementation of livestock policies and programmatic interventions is critical for the development of the pastoral production system in Kenya. Although much emphasis has been put on identifying the challenges that exacerbate the devastating effects in the livelihoods of the pastoral community, there is a critical need to identify favourable policies, best practices and a comprehensive implementation framework that are better tuned to the changing trends of pastoral way of life and examine their influence on pastoral production at the County level. The study aimed to examine the influence of livestock policy and livestock productivity programs on pastoral production. The study also identified the challenges faced in the implementation of livestock policy and livestock productivity programs by the Garissa County government. The study was based on (Hardin,1968) Tragedy of the Commons theory to establish how government regulation and the development of a collective institutional action arrangement influences the effective management of commonly shared natural resources such in a pastoral production system. The descriptive survey research design was adopted. Pastoralist Field Schools (PFS) members involved in best practices capacity building approaches for identifying challenges and testing possible solutions for improved pastoral production

were the target population of the study. The study used stratified purposive sampling approach to sample PFS in Garissa County. Structured questionnaires of Likert format were used. Statistical Package for Social Sciences (SPSS) was used for data analysis to obtain inferential and descriptive statistics. The study used frequencies, percentages tables and pie charts for data visualization. The study established that the national livestock policy covered issues such as livestock marketing, finance and insurance as well as human/wildlife interaction with livestock that have a significant influence on pastoral production. The study revealed that the achievement of meat and milk production were highly dependent on livestock productivity programs. Also, the study found that county funding had a significant influence on the pastoral production in Garissa and that multi-stakeholder collaborative systems had significantly helped mitigate public funding challenges faced by the County. The study recommends that the Garissa County should establish a reporting, monitoring and evaluation system for establishing the impact of livestock policy implementation, impact of livestock programs for improving animal productivity and develop synergies among stakeholders to improve the strategies and plans of actions for an optimum and significant boost to pastoral economic development.

INTRODUCTION

Global scholars seem to have an interest in understanding the forces that contribute to a vibrant pastoral production system and its contribution to economies through livestock production both locally and globally. Dong (2016) highlights that the pasture-based livestock production is the predominant economic activity in the pastoral areas occurring on about 25 % of the world,

mostly in the drylands of Africa; the northeast of Africa on the Arabian Plate to the highlands of Asia and Latin America. The researcher asserts that pastoral production plays a crucial role in supporting global populations, providing environmental services, maintaining strong society, and making significant support to subsistence economy in most deprived parts of the globe. However, he asserts that there is a considerable deficiency in the literature about pastoralists practices and the determinants of the successful pastoral system that can provide knowledge of policymakers. As a result of this knowledge gap, many pastoral areas such as Nepalese Himalaya, in the Indian Himalaya, and on the Qinghai–Tibetan Plateau of China have reported significant pastoral resource degradation.(Dong,2016)

Estimation of overall numbers of pastoralists are highly hypothetical and range from 120 to 200 million (World Bank,2014). A report on policy framework for pastoralism in Africa indicates that pastoralists predominantly occupy about 60% of the total geographical coverage of most African countries with a population estimate of about 12 to 22 million people (African Union, 2010). The report recommended an analysis of comprehensive pastoral policy to address the underlining core issues such as pastoral resource management. Although policies and programs have been made with some positive results throughout the globe, the report asserts that a great deal still needs to be done and that there is a knowledge gap in clearly delineating the influences of the specific livestock policies and programs on pastoral production.

The Kenya Government acknowledges that Arid and Semi-arid areas (ASALs) are the main meat and milk producers in Kenya and accounting for 70 per cent of the Kenya's livestock herd (Nyangito & Omiti, 2000). Further review on the contribution of pastoral production on overall pastoral livestock offtake shows that it is indeed a critical economic activity accounting for 50% of agricultural GDPs in Kenya. An estimated 1.6 million tropical livestock units (TLUs) contributes about 14 per cent of the countries' gross domestic product (GDP). The countries slaughter is mainly from pastoral livestock (Omiti & Irungu,2002)and is worth over US\$800 million (Fitzgibbon,2012). Increasing livestock meat and milk production highly relies on effective implementation of appropriate livestock policies and livestock productivity programs that are at the centre of successes and failures of pastoral production (Abbera et al., 2015). The Government needs to set favourable pastoral policy alternatives, implement plans and programs and create policy space for thriving pastoral production. However, scholars indicate that weak policy support through inappropriate top-down policies and little regard for the unique features of pastoral livelihoods system Kenya is a hindrance to the pastoral production in Dadaab, Narok, Mbeere North and Kyuso Sub-Counties in Northern Kenya. (Ombasa et al., 2015). The scholars indicated that the low quality of meat in some markets in Alikune and Dertu Markets was mainly attributed to pastoralists in Dadaab administering drugs to sick animals by themselves and to a limited number of meat inspectors deployed in slaughterhouses in the area. The study, however, did not delienate the determinants of ineffective disease control programs and their influence on the pastoral production.

The Constitution of Kenya (2010) outlines that the county governments have a role in developing and implementing policies and programs in line with the national laws of the country to ensure the development of pastoral production. The county government collaborate with the national government and development partners for the development of livestock sector policy and implementation of multimillion-dollar projects. Mainstreaming Sustainable Land Management (SLM) in Agro-Pastoral Production Systems of Kenya project is an example of a multi-million project borne of a collaborative partnership between the Global Environment Facility (GEF), Government of Kenya through the State Department of Livestock Production and United Nations Development Programme.

Despite numerous documented programs such as the SLM project for promoting pastoral production by the national Government, the pastoralists of Northern Kenya have continued to remain vulnerable and marginalized. Kenya National Bureau of Statistics (2018) cited that the poorest counties in Kenya are in the Northern region. The top five most destitute counties include Turkana, with 79% of its residents living in poverty then Mandera (78%), Samburu (76%), Busia (69%) and Garissa (66%). From the statistics, the last counties come from the pastoralist community, including Garissa County, the area of study.

Statement of the problem

There are numerous documented efforts by the Government to set favourable policies and implement programs for a thriving pastoral production. However, pastoral communities remain poor. One way to establish the most appropriate strategies and plans of actions for optimum results in the pastoral production system is to examine the influences of the county government livestock policies and livestock productivity programs on pastoral production, particularly in the county level in Kenya.

The literature review suggests a great interest from scholars in understanding the forces that fuel poverty in Northern Kenya. All the research studies found that there are critical economic, policy and institutional issues that bring out adverse challenges faced in the arid lands. These challenges had exacerbated the devastating effects in the livelihoods of the pastoral community, especially in Northern Kenya. Abbera (2015) study on the lesson learned in the best practices of implementation of government policies and strategies in Horn of Africa asserted that governments need to identify a comprehensive implementation framework and that both public and private sector must encourage appropriate policy and regulatory environment as well as best practices for channelling funds into the outlined programs that address pastoral issues.

Ngochembo (2011) cited on his investigation on the economic importance of pastoralism using the case study of Maasai Pastoral beef chain in Kajiado County Kenya that the economic viability of pastoral cattle production depends on many forces. The study cited government policy implementation as a hindering factor for pastoral cattle producers. According to a paper published by the Kenyan Government Vision 2030 Development Strategy for Northern Kenya and Other Arid Lands (2012), the county governments failure to pay policy attention that takes

account of the pastoral production systems unique capacities and challenges could hinder Northern Kenya progress towards achieving Vision 2030

To the best of the researcher's knowledge and available research resource, there was less coverage of specific issues such as how the existing livestock policy had influenced pastoral production in the county level. There was also scanty information or little known of successful documented research on how specific livestock productivity programs had influenced the production of meat and milk at the county level. The study was required for better-tuned strategies within changing context, trends and dynamics of the pastoral way of life in Northern Kenya in the era of devolved functions from central national authority to the lowest feasible structure - the county government. These gaps limit the effectiveness of adaptation livestock sector policies and programs planned by the county government, resulting in challenges the of livestock policy and livestock productivity programs implementation that the study identified.

The fundamental question in this study, therefore, was whether there was an interlinkage between the livestock policies and livestock productivity programs success or failure of the pastoral production system. Perhaps, examining how the livestock policies and livestock productivity programs influence pastoral production, as well as identifying the policy and program implementation challenges faced by the county government in Kenya would respond to the deplorable state of the pastoral economy in Northern Kenya.

It is against this backdrop that this study was conceived. The study focused on Garissa County compared to other pastoral areas in the region since the Pastoralist Field Schools which were the target population of the study were inclusive in membership drawn from all clans and members of pastoralists communities held leadership positions such as village elders, religious leaders and members of the county assembly.

Objectives of the Study

The following objectives guided the study

1. To examine the influence of livestock policy on pastoral production in Garissa County.
2. To examine the influence of livestock productivity programs on pastoral production in Garissa County.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Policies Influence on Pastoral Production System

There exist studies and reports on policy framework for securing and improving pastoral production system. These studies acknowledges that governments from different parts of the world have attempted to adopt and implement policies to support the pastoral production system but unfortunately faced policy implementation challenges and thus the pastoralists have

continued to remain marginalized and poor (Aberra, 2015; Elmi, 2013; PFE, 2007; PFE, 2005; PFE, 2004).

Government policies on pastoralists are inadequate as they focus on equality rather than equity, and for this reason, the problem of insufficient implementation continuity of any good adopted policies was likely to persist (Elmi, 2013). There is, however, differing opinion on the effectiveness of policy and legislation for pastoral areas (Gebrehiwot & Sintayehu, 2013). The report confirms that Ethiopia's Constitution, land laws and strategies provided an enabling framework for pastoralists compared to other regional governments policies and legislation resulting in successful communal landholding system in Ethiopia.

King-Okumu. et al., (2015) study on the policy framework for Kenya and Ethiopia pastoral regions recognizes that government neglect and failure to implement policies that provide alternative livelihoods that would transform pastoral production system in Northern Kenya is said to be the leading contributor to failed pastoral production projects leaving pastoralists lagging in comparison to rest of countries. In agreement, Kratli and Swift's (1999) study on understanding and managing pastoral conflict in Kenya cites that the Government's ineffectiveness in understanding the production system is deliberate and discriminative thus contributing significantly to the aggravation of destroyed local initiative and further failed programs.

In Kenya, policy formulation in support of pastoral production system is evident. Odhiambo (2013) study on policies in the livestock sector in Kenya provided an analytical presentation of the four central policies associated with the pastoral production system. The policies are the National Policy for the Sustainable Development of Northern Kenya and Other Arid Lands (2012), Kenya Vision 2030 (2014), Constitution of Kenya (2010) and the draft national Livestock Policy (2019). Despite the noted existence of policy related to pastoral production system development, there is an acceptance amongst scholars that the developmental gap between pastoral regions and the rest of the country was yet to close, to ensure pastoral households had food security across the ASALs given the aggravated by climate change. (Odhiambo, 2014). However, policies related to the livestock sector have been described as scattered, contradictory, lacking clarity and are at times inconsistent hence further contributing to further issues. (Ongugo et al., 2014; Mosebo, 2015) For example, the land policy in Kenya emphasizes on the planting of trees while the livestock policy encourages clearing of rangeland to give way to the growth of grass (Odhiambo, 2013). Perhaps the unclear and incomprehensive implementation framework influence how devolved funds were channelled to appropriate programs to address vulnerable pastoral groups (Odhiambo, 2013).

Review of the Programmatic Interventions for Livestock Meat & Milk Production

Data shows the gross domestic product for livestock products, including beef, dairy and poultry from pastoral communities, currently at USD 4,7 trillion will triple in Africa by 2050 (FAO, 2018). Booming livestock meat and milk production are influenced by institutional framework and supported by stakeholders' alliances that promote policy innovation as well as

programmatic interventions (FAO, 2018). Some studies highlight effective government action, thus offering a wealth of lessons for strengthening livestock sectors. Uganda's Dairy Master Plan is an example of a government initiative that focuses on the dairy value chain and maintaining self-sufficiency in milk production. The Uganda government privatized the state-owned dairy processing company Dairy Corporation, which has contributed to the transformation of the dairy industry (Malabo Montpellier Panel, 2018). Dedicated policies and a primary focus on the dairy value chain and maintaining self-sufficiency in milk production are attributes to a government commitment to strengthening its dairy sector (Perry et al., 2009)

Government programmatic interventions have not always been successful (Rass, 2006). A study on the functioning of agricultural markets in Mali asserts that livestock sector in Mali has largely failed thus far to vertically integrate owing to poorly managed parastatals that govern livestock sector and slaughterhouses that fail to respect basic standards of hygiene. The study in Mali recommends a well-established animal health system to increase the productivity of livestock through breeding and in conjunction with better marketing and access to finance, enables pastoralists to prosper from livestock production. (USAID, 2018)

One of the government interventions for promoting rich beef and dairy sector is the enforcement of restrictions on movement for mitigating the spread of infectious livestock diseases (Tago et al., 2016). Livestock health programs, particularly in the context of increasing urbanization, have gained prominence along with the opportunity of the livestock sector. (Malabo Montpellier Panel, 2018). It is critical to have in place systems for technical and institutional innovations in the livestock sector and regulations to spur inter-regional and international trade while guaranteeing the animal health and livestock trade flow. (Bailey et al., 1999). The Bilateral Ethiopian Netherlands Effort for Food Income & Trade program is a collaborative initiative that has boosted production, processing, and marketing of livestock and livestock products—all aligned with other ongoing government interventions.(Alemu et al.,2017) The study highlighted the importance of collaborative systems by development partners and Government on increasing productivity and strengthening value chain through building capacity in livestock health, research, and marketing.

In Kenya, 70 per cent of total national meat supply originates from pastoralist systems, including imports from Ethiopia, Somalia, Tanzania, and Uganda (Nyangito et al., 2000) and the estimated annual per capita milk consumption varies between 19 kg in rural and 125 kg in urban areas (Malabo Montpellier Panel, 2018). Considerable evidence exists in successful program implementation for livestock production. Kenya Livestock Insurance Program that uses satellite technology to measure vegetation available to livestock has been used by over 12,000 pastoral households in six counties of northern Kenya to tap more than Ksh 214 million. Feed, veterinary medicines and water trucks payments are activated when the satellite data shows drought is so bad that animal lives are at risk. (ILRI, 2017). The Mainstreaming SLM in Agro-pastoral Production Systems of Kenya Project (SLM) under implementation since 2011 rated highly successful for yielding many results thanks to government and development

partner intervention. (Chapeyama, 2016). According to the terminal evaluation assessment by UNDP SLM project, the disease control and vaccinations programs were conducted in Daadab, Mbeere, Mwingi and Narok to ensure that the pastoral herds were allowed to move freely along the traditional grazing routes and there for preventing the risk from sedentary herds. The improvement of animal health ensured livestock productivity and impacted on the pastoral resident's household income at the areas of study. (Chapeyama, 2016)

The Kenya National Bureau of Statistics (2015) records that there was an increase in livestock and its products owing to an increase in sheep and goats sold to abattoirs. An Accelerated Value Chain Development program is constituting the county government of Garissa and private partnership. The program was focused on improving the livestock value and productivity through livestock disease control and improved healthcare for live animals. However, a 50% mortality rate of goats as a result of a CCPP epidemic was reported in 2016 by the Garissa County vet services department.

Theoretical Framework

Tragedy of Commons by Hardin (1968)

The Tragedy of the Commons' is a policy narrative (Sutton,1999) that illustrates a genuine public policy problem (Tierney,2009). The original example was first described by biologist Garrett Hardin outlining the series of events leading from overgrazing of public land by pastoralists to eventual desertification and depletion of shared environmental resources in the absence of regulation. The theory attempts to organize the complex number of synergy and processes which feature development situations. Policy decisions are based on the stories outlined in development narratives.

The principle can be easily applied to the study. One focus area of the livestock policy in Kenya is standards and quality of livestock products (milk and meat) in the domestic and international markets. Adhering to the National standards and regulations is critical for successful local and international livestock and livestock products trade for enhancement of pastoral production system. The legal framework for regulation of meat under the livestock policy was ambiguous (Kenya Markets Trust, 2019). Livestock slaughter process and meat inspection is regulated by the Department of Veterinary Services through the Kenya Meat Control Act (2012). Regulation of meat is then taken over by, the Ministry of under the Public Health Act (2011). The disconnected regulatory mechanism has resulted in sell of wild and uninspected meat in the butcheries by unscrupulous traders. The Garissa county veterinary officials rely on the cooperation of county public health officials to prosecute traders found selling poor quality meat since their mandate is limited to the slaughterhouses. These loopholes have adversely influenced returns from livestock product trade due to poor quality. On another perspective; the wildlife species are threatened with extinction owing to cartels slaughtering giraffes in Garissa County (Koech, 2017)

The study borrowed from the tragedy of the common's theory that is a powerful influence on development agents. The theory tries to explain how enforcement of regulations through livestock policy by governments influences the use of common resources, such as water and pasture in the pastoral production. Hardin's argument promoted government appropriation and management of common natural resources. Problems associated with governance of commons resources pose a myriad of challenges for governments. The study understood how the county devised governance structures with regards to policy and programs for commons problems to support pastoral production system (Wooten & Hoffman, 2008).

Diffusion Model

This study borrowed from the theory of diffusion model which provides the principle foundation of technical innovation and development (Rogers, 2003) in agriculture. The theory assumes the influence of institutions and government interventions on adoption acceptance of an idea or new practices related to technological innovations requires rural extension practice communicated within a social system. The theory delineates innovation as diffusing through a social organization through its adoption by individuals and groups (Peshin et al., 2009).

The relevance of the diffusion model in the study is that county government extension approaches and methods to disseminate information on policies and programs for the diffusion of agricultural technology is critical for pastoral production. Education programs about meat contamination and other health hazards by workers, butchers and inspectors are a necessary first step towards improving the public health status of the slaughterhouses for improved quality of meat.

Out of all the theories, it was clear that the principle foundation for either high use of agricultural investment tools and resources in an efficient manner or technical innovation and development involved regulation by government and for that basis the study was based on (Hardin,1968) Tragedy of the Commons theory to establish how government regulation and the development of a collective institutional action arrangement influences the effective management of commonly shared natural resources such in a pastoral production system.

RESEARCH AND METHODOLOGY

The research adopted a descriptive survey research design whereby the researcher used standardized questionnaires to collect data from members of the pastoral community and officials working in the County government departments as well as personnel from NGOs working in Garissa County. The descriptive research design was selected for this study for the purpose of giving a detailed description on the influences of county government on the pastoral production system in a formal, objective and systematic process that interests policymakers and county government. The specific questions in the survey generate knowledge that will directly improve government policy and programs. The research took place in Garissa County, a semi-arid part of Northern Kenya located about 100 kilometres from Kenya – Somali border

with the land area of 44,952 km² (Kenya National Bureau of Statistics, 2009). The respondents from the PFS were constituted adult headed pastoral households in leadership positions within two sub-counties of Dadaab and Garissa Township in Garissa County. They were village elders, religious leaders, chief or members of the county assembly. The second group were from the staff working directly with the PFS as extension officers from non-governmental organizations as well as and county officials working as extension officers with the PFS in three (3) government departments – Agricultural Research & Development (ARD), Livestock and Cooperatives Department and Environment, Energy, Natural Resources from six locations (6) Dadaab, Fafi, Lagdera, Balambala, Ijara and Garissa Township. The research adopted a purposive sampling technique where a representative sample of 60 respondents was selected.

A semi-structured questionnaire was administered and completed by the respondents. The data collected was edited in Microsoft Excel 2010 then entered and analyzed in IBM Statistical Package for Social Sciences (SPSS) Statistics Version 26. This research used both qualitative and quantitative analysis. Quantitative data was collected and analyzed using SPSS. The study used descriptive measures of central tendency to carry out data analysis

DATA ANALYSIS, PRESENTATION AND DISCUSSION

The study was carried between May and August 2019. The researcher issued out a total of 60 questionnaires targeting 48 members of pastoral households out of which—another 12 questionnaires issued to County, national government officials and non-governmental organizations personnel within Garissa County. Thirty-six (36) questionnaires were correctly filled and returned. Out of the 36 respondents, seventy-five per cent (75%) were males, and twenty-five (25%) were female. On the age, 2. 8% were below 25 years of age, 38. 9 were between 26 and 35 years, 30. 6% were between 36 and 45 years, 22.2% were between 46 to 55 years while those over 55 years stood at 5. 6%. On the level of education attained, that majority of the respondents (15) have primary level education. Two respondents indicated that college or university degree is their level of education, 5 indicated secondary education as their level of education. On monthly incomes, none of the pastoral communities' members interviewed earns 0, while 42% (10) earn over kshs 25,000,33% (6) earn between Kshs 15,000 and 25,000 while another 25% (6) earn between 5,000 and 15,000.

Livestock Policies Influence on Pastoral Production

The findings of the study were validated by respondent 20A (20 March 2019) who argued that most people were aware of the livestock policy. The county government needs to ensure the pastoralists were involved in policy design and that the policies needed to be customized for each County. The respondent asserted that the diffusion of the policy into the communities was wanting. Pastoralists have been excluded from policy processes resulting in inappropriate policies that impede pastoralism. (Pavanello, 2009)

Potential Policy Influence at County Level	Excellent (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)
	F %	F %	F%	F%	F%
Access to Markets Linkages	3 (8.3%)	7 (19.4%)	15 (42.7%)	6(16.6%)	5(13.0%)
Access to Livestock insurance	5(13.8%)	20(55.5%)	5(13.8%)	3(8.3%)	3(8.3%)
Understanding market requirements	8(22.2%)	10(27.7%)	6(16.6%)	12(33.35%)	0
Access to livestock market information	10(27.7%)	20(55.5%)	6(16.6%)	0	0
Household food supply /income	0	4(11.11%)	15(41.6%)	15(41.6%)	2(5.5%)
Access to Quality Meat in market	2(5.5%)	20(55.5%)	10(27.7%)	2(5.5%)	2(5.5%)
Livestock products pricing	0	6(16.6%)	30(83.3%)	0	0
Livestock mobility supported as an adaptation technology	2(5.5%)	5(13.8%)	25(69.4%)	2(5.5%)	2(5.5%)
Wildlife/Human conflict control	0	5(13.8%)	30(83.3%)	1	0

The study found that on Marketing, Trade and Finance of livestock and livestock products; only (42.7%) respondents indicated that the access to markets linkages for their livestock and livestock products was fair. On access to micro-finance & credit, (5.5%) respondents indicated that the access was excellent, whereas (33.35%) indicated good access, (55.5%) indicated fair access. In comparison (2.755%) and (2.755%) indicated very poor and poor access to microfinance & credit.

On access to livestock insurance, (13.8%) respondents indicated that the access was excellent whereas (55.5%) indicated good access, (13.8%) indicated fair access while (8.3%) indicated very poor and poor.

The study also covered the aspect of food security by asking the respondents to rate in their judgement of their Household food supply /income concerning livestock and livestock products. The results were as follows: (11.11%) indicated excellent food supply while (41.6%) indicated good food supply, (41.6%) indicated poor while (5.5%) indicated very poor food supply.

On human and wildlife interaction with livestock, the respondents felt that the county government response to control it was 83.3% fair and 13.8% good. On Livestock mobility, as an adaptation technology (69.4%) of the respondents felt that the county government support was a fair while (5.5%) was excellent and (13.8%) was good and very poor and poor were (5.5%) and (5.5%).

Livestock Productivity Programs Influence on Pastoral Production

Key Issues	Frequency	Per cent
Animal Disease and Pest Control	10	27.8%
Livestock Breeding	21	58.3%
Livestock Nutrition and Feeds	2	5.6%
Livestock Water productivity	2	5.6%
Livestock Research & Extension	1	2.8%
Total	36	100.0%

27.8% of the respondents indicated that the National Livestock Policy influenced disease and pest control programs in the pastoral production system. The findings were validated by study respondents who asserted that Kenya’s livestock sector is guided by the National Livestock Policy, the National Veterinary Policy, Animal Diseases Act, Veterinary Surgeons and Veterinary Paraprofessionals Act.

According to the results, 58.3% of the respondents indicated that Livestock Breeding had been influenced by the National Livestock Policy and influenced meat and milk production. According to respondent A24 (21 March 2019) “most of the pastoral community relied entirely on open grazing for their maintenance and productivity, and the most common breeds are African Zebu and Sahiwal breed.

On Livestock Nutrition and Feeds, 5.6% of the respondents indicated that livestock nutrition and feeds programs had influenced the pastoral production system in the County.

On Livestock Water productivity, 5.6% of the respondents indicated that livestock water productivity programs had influenced pastoral production in the County. Garissa County economy revolves around livestock production, which has been hampered by high

temperatures that lead to less water being available for animals and fodder production. (Kuria et al., 2015)

On Livestock research and extension services, 2.8% of the respondents indicated that livestock research and extension services had influence livestock productivity. The Beef institute in Garissa organizes, designs and conducts on-station and on-farm beef research per the national livestock policies.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Livestock Policy Influence on Pastoral Production

The study established that the livestock policy that covered issues such as livestock marketing, finance and insurance as well as human/wildlife interaction with livestock had a significant influence on pastoral production in Garissa County, Kenya. The study found that the County government of Garissa had deliberately formulated strategies and action plans that are customized to the unique features of Garissa County such as the County Drought Contingency Plan. The study found that the county leadership led by the CEC - Agriculture, Livestock & Co-operatives had ensured that pastoralists are involved in policy design and implementation process through the Pastoral Fields Schools, which use innovative, participatory and interactive learning approaches. The finding agrees with FAO (2020) that livestock policy is effective when they consider stakeholder engagement and participation approach in designing and formulating.

Livestock Productivity Programs Influence on Pastoral Production

The study established that livestock productivity programs influence pastoral production in Garissa County, Kenya. The study findings established that the pastoral community in Garissa and Dadaab has adopted African Zebu and Sahiwal breeds to improve milk production and to ensure the breed were disease resistant. Also, study findings indicate that fodder production was deemed to influence livestock productivity; therefore, pastoralists in the County of Garissa turn to fodder production training programs through the Pastoral Field Schools as a means of improving livestock productivity. The study found that these skills of livestock breeding, and fodder production were acquired mainly through the Pastoral Fields Schools in Garissa. Therefore, the study found that the Pastoral Field Schools had a significant influence on the pastoral production system of the County.

Conclusions of the Study

The study concludes that livestock policy and livestock productivity programs influence the pastoral production in Garissa County significantly. The aspects covered in the livestock policy such as livestock marketing, finance and insurance as well as human/wildlife interaction with livestock significantly influence the milk and meat production level in pastoral production.

Secondly, the study concluded that livestock productivity programs such as Animal Diseases Control Programs, Livestock Nutrition Programs, Water Use for Livestock and Research/Extension Services Support are critical in promoting pastoral production system in Garissa County as they had a significant influence on pastoral production system.

The study also concluded that the County Governments had a myriad of policy and program implementation challenges such as inefficient governance, mismanagement of county funding and rows between national and county government that had a negative influence on the pastoral production system.

Recommendations of the Study

Given the findings of the study, the study recommended that the Garissa should create awareness of livestock policies by undertaking civic education programs. The county government should also ensure a multi-sectoral and multi-stakeholder approach in policy implementation. The study recommends that the county governments of Garissa should engage Pastoral farmer Field Schools at the centre of planning and implementation so that the decisions and strategies of the county government are diffused by the pastoralists and therefore reflect the needs of the pastoral communities. The study recommends that the county governments should establish a reporting, monitoring and evaluation system for livestock policy and programs implementation. Development of synergies among stakeholders to improve the strategies and plans of actions for the optimum and effective boost to pastoral economic development is also recommended.

The study further recommends that the Garissa county government to improve Garissa – Dadaab transport network to enable pastoralists to deliver the products to markets around the region. The study recommends that the Garissa County government undertake livestock products inspection in Qurahey market in Garissa to ensure meat and milk safety at the market facility. Further, the study recommends an increase in the number of cattle dips and cattle crushes in Dagahaley in Dadaab to manage pest and further increase county funding for disease surveillance. The study recommends the county government to involve the pastoral community in fencing of animal reserves to contain wildlife as well as compensate those whose livestock are attacked by wild animals.

The study also recommends that the county government should scrutinize of programs and expenditures related to pastoral production with the intentions of avoiding duplication of county programs and national government programs which increases wastage of public resources and unauthorized spending at the county level programs. The County Government of Garissa should liaise with the National Government Treasury to ensure that allotted funds are disbursed promptly to the County and establish an internal audit committee to oversee financial transactions are in line with laid down regulations. The study also recommends that the County Government should establish a reporting, monitoring and evaluation system for

establishing the impact of livestock policy implementation, impact of livestock programs for improving animal productivity

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