CGIAR FOCUS Climate Security

CGIAR INITIATIVE ON Livestock and Climate

Livestock, Climate, and Security: A Policy Coherence and Awareness Analysis

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Executive Summary

The African livestock sector is expected to grow exponentially in importance both economically and nutritionally in the coming decades. In the context of Kenya specifically, human population, per-capita income, and urbanisation rates – key drivers for an increased usage of animal source food – are all expected to drastically increase in the coming decades. Yet despite the sector's growing importance for Kenya and the African continent more broadly, there remain notable barriers to sustainable development within the context of livestock. One of the most important of these is the climate crisis and the impacts it will likely have on livestock production systems and value chains, the ecological contexts they exist within, and the communities reliant upon them.

Within Kenya, the arid and semi-arid land regions (ASALs) – where the livestock sector forms one of if not the key source of income for many communities - are some of the most exposed and vulnerable landscapes within Kenya in terms of climate change-related impacts, which affect key ecological variables such as pasture growth and quality, the availability of water resources, and the threat of livestock diseases. These areas are also characterised by longstanding challenge to human development, insecurity, and fragility, including a lack of infrastructure and market access, limited availability of public goods such as healthcare and education, and widespread poverty. Conflicting land use and natural resource management systems – both between different ethno-cultural groups and between traditional and 'formal' institutional arrangements – have further engendered a tradition of competition and conflict over access and usage of resources, and climate-related factors are becoming increasingly interwoven into these sub-national conflict systems.

Given this complex environment, ensuring coherence and coordination between different policy sectors and interventions is critical to avoid negative externalities and unintended consequences. Furthermore, given the presence of conflict and fragility in these contexts, ensuring conflict sensitivity and adopting a pro-peace lens are also essential in order to avoid doing harm and unwittingly contribute to local conflict dynamics. This is certainly also the case for climate adaptation and mitigation interventions in this space, which are likely to have economic, social, political, technological, ecological, and nutritional repercussions. If not cognisant of this interconnectivity – and if designed and implemented in ways that are insensitive to local conflict dynamics and drivers - interventions may heighten the risk of maladaptation and conflict.

This report therefore analyses the degree of horizontal coherence that exists across policies and strategies from sectors relevant to climate security in Kenya – including livestock, adaptation, mitigation, and peace and security (see methodology for full list of sectors); the degree of vertical coherence between national and sub-national level policy outputs for or containing components related to livestock, adaptation, mitigation, and peace and security; and the extent to which these outputs can be deemed sensitive to climate-related security risks and climate-peace opportunities.

Several key trends emerged from this analysis. Firstly, with regards to the relationship between climate, the environment, and livestock, it is evident that the relationship between the natural environment (natural resources) and the livestock sector was much more commonly discussed in policy and strategy documents from across all sectors than the relationship between livestock and climate change. This means that the role and importance of natural resources for livestock production systems and value chains is quite commonly recognised, whereas climate change's escalatory and detrimental effects on said natural resources is less commonly discussed. It is also evident that regarding the presence of specific livestock adaptation and mitigation actions within livestock sector-specific policies, mitigation actions are virtually entirely absent. This trend is also apparent across other sectors, with specific mitigation actions generally featuring much less frequently than specific adaptation actions.

Secondly, in terms of climate security sensitivity and overall awareness of livestock and climate-related security risks, policy and strategy documents – including those livestock sector-specific ones – are overall slightly more likely to draw a link between livestock, the natural environment, and potential security risks as opposed to the relationship between livestock, climate change, and potential security risks. The importance of natural resources for livestock production systems is therefore recognised fairly consistently, whereas the role that climate change-related impacts may play in undermining availability and accessibility of said natural resources is less frequently discussed. This trend also plays out with regards to the intersection of the environment, livestock, and security, which is discussed more frequently than the relationship between climate, livestock, and security.

The results also revealed a very clear gap in conceptual engagement across essentially all policy sectors regarding the intersection of climate, livestock, and gender-based violence (GBV). A similar gap can be seen in the fact that the majority of sectors included in this analysis (bar peacebuilding and social cohesion and, to a lesser extent, development and DRR) displayed no evidence of engaging with or operationalising the principles of conflict sensitivity and 'do no harm'. Furthermore, results also suggest that there is very little cross-fertilisation across the different sectors within this analysis in terms of usage and deployment of conflict-related analyses and climate-related analyses.

Finally, with regards to cross-sectoral and cross-scalar integration, it is apparent that there is a greater degree of horizontal coherence amongst national level policy and strategy outputs produced in sectors relevant to climate security than there is vertical coherence between the sub-national and national level. Climate and environment policies appear to enjoy the greatest degree of mainstreaming across all sectors, whilst peacebuilding and social cohesion policies do not appear to be integrated very well with other policy fields. Additionally, climate and environment policies are also the area where there exists the greatest degree of vertical coherence between sub-national and national governance levels. The livestock sector appears to be very coherent with climate and environment, integrated to a degree with DRR strategies and policies, but not at all coherent with peacebuilding and social cohesion. The following

recommendations were produced to begin addressing some of the gaps and shortcomings identified in the analysis:

1) **Mainstream conflict-sensitivity principles and conflict-sensitive approaches to planning, design, and implementation in livestock sector-specific policies**

2) **More attention, investment, and research efforts should be channelled towards illuminated the relationship between climate change, livestock production systems, and gender-based violence (GBV)**

3) **More efforts should be made to design and implement integrated, livestock sector-specific adaptation and mitigation actions that can simultaneously build resilience to climate impacts and address risks for human security and conflict**

4) **More effort should be given towards improving policy coherence and integration between peacebuilding and social cohesion, climate and environment, and livestock sector policies**

Introduction

The livestock sector constitutes a significant component of the global economy, contributing to economic growth, poverty reduction, and forming a crucial source of nutrition for millions. This is particularly the case for the Kenyan economy, with the sector contributing between 10-13% of national gross domestic product (GDP) and employing up to 50% of the agricultural labour force when factoring in related upstream value chains (Kenya Market Trust, 2020). Production of livestock-related products occurs predominantly through pastoralists, who own an estimated 70% of national livestock, valued at USD 834 million (Kenya Market Trust, 2020). The majority of pastoralist livestock production systems are located in arid and semi-arid land regions (ASALs), which make up over 70% of Kenya's landmass and where income levels are amongst the lowest in the country. Livestock production is particularly salient in these ecological zones, as the potential for crop growth is limited by moisture availability. Cattle, camels, sheep, and goats raised in pastoral systems can in such contexts therefore take advantage of seasonal vegetation growth, thereby forming the only viable form of agriculture (de Haan, 2016).

The livestock sector is also expected to exponentially grow in importance both economically and nutritionally in the coming decades. Africa is currently undergoing substantial demographic, socio-economic, political, policy, and technological transformations that will likely have significant implications for the agricultural sector. The continent's population is, for example, expected to reach 2.5 billion by 2050 compared to 1.2 billion today; 56% of people will live in urban areas, an increase of 16% from the present day; and GDP is estimated to almost triple (Food and Agricultural Organisation, 2018). As economic development progresses, increasingly well-off consumers will likely move away from low-cost, cereal-based diets and start purchasing the high-value proteins offered by meat, milk, and other livestock-related products (Food and Agricultural Organisation, 2018). Livestock producers and associated value chains will therefore likely see an expansion in the decades to come.

In the context of Kenya specifically, the United Nation's Food and Agriculture Organisation (FAO) finds that the three key drivers for animal source food – human population, per-capita income, and urbanisation rates – are anticipated to drastically change in the coming decades. From 1980 to 2012, the Kenyan population grew by over 26 million, and in the next 38 years it is projected to increase by about 50 million, reaching 96 million people by 2050. Whereas in 2012 around 24.4% of Kenyans lived in urban areas, projections indicate that by 2050, just over 46% of the population will live in urban areas. And finally, GDP per capita – a proxy of consumer purchasing power – is estimated to increase from about USD 1200 per capita per year to above USD 2900, representing a more than double increase, between 2012 and 2050 (Food and Agricultural Organisation, 2018).

Whilst policy and decisionmakers working on the livestock sector must certainly consider the potentially negative externalities of expanding the scope and improving the productivity of livestock production systems – such as attendant environmental impacts and the increased

risk of public health threats – these trends also represent an opportunity for the inclusive transformation of Kenya's livestock sector, particularly as smallholder producers become more interwoven with national, regional, and global markets.

Yet despite the sector's growing importance for Kenya and the African continent more broadly, there remain notable barriers to sustainable development within the context of livestock. One of the most important of these is the multivariate impacts of the climate crisis on livestock production systems and value chains, the ecological contexts they exist within, and the communities reliant upon them. The ASALs are some of the most exposed and vulnerable landscapes within Kenya in terms of climate change-related impacts, which affect key ecological variables such as pasture growth and quality, the availability of water resources, and the threat of livestock diseases. Whilst the relationship between livestock-related incomes and climate variables – particularly temperature and precipitation – is non-linear (Kabubo-Mariara, 2009; Lagat & Nyangena, 2017), it is also clear that particularly temperature increases are likely to significantly impact livestock production and incomes associated with it. Lagat and Nyangena (2017) find, for example, that high temperatures reduce grassland productivity, leading to a decline in animal and productivity and thereby fetching lower market prices. High rainfall may cause livestock keepers to switch from livestock to crops due to an increasingly conducive environment for crop production, but also cause floods and facilitate the spread of livestock diseases. An increase in temperature by 1% would decrease livestock net farm revenue by about 38%, whilst a 1% increase in rainfall would reduce the livestock net revenue by just under 2% (Lagat and Nyangena, 2017). Transforming the sector to become less vulnerable to climate change-related impacts is therefore imperative, and these efforts are made all the more crucial given the important role it is expected to play in Kenyan national development going forward.

In response to these challenges, research has found that – at the household and community level - pastoralist and agro-pastoralists in Kenya that are reliant upon livestock for their livelihoods and communal identity have adopted a variety of coping strategies - some production-related, others more market-based - in order to weather increasingly severe and frequent climatic shocks (Kabubo-Mariara, 2008). In preparing for and recovering from shocks such as droughts, pastoralists and agro-pastoralists have been found to engage in activities to preserve pastures, storing adequate amounts of and diversifying types of feed, stocking drugs for treating animals, de-worming healthy stock, changing and diversifying animal breeds, moving animals to other sites, and selling large stock (Ifejika Speranza, 2010; Silvestri et al., 2012). More recently, Quandt (2021) – exploring the human experience of coping with drought through narratives from farmers in Isiolo County, Kenya – classified adaptation responses to climate change into four categories, namely, livelihood diversification (such as through relying on mixed production systems); longer-term coping strategies (shifting crop varieties and implementing irrigation); short-term coping strategies (casual labour and selling livestock); and erosive coping strategies (illegal grazing, reliance on food aid, and producing charcoal).

Measures designed to reduce vulnerability, exposure, and sectoral emissions whilst also building the adaptive capacity of those active within the sector are also being actioned at the institutional level. In her analysis of Kenya's climate, livestock and agriculture, development, and land and environment policies, Ashley (2019) notes that Kenya has the longest record of strong integration of livestock sector adaptation and mitigation strategies. The National Climate Change Response Strategy (2010) – which fully integrates livestock sector adaptation strategies and also contains some initial provisions to address mitigation – has since been complimented by the Climate Smart Agricultural Strategy/Implementation Framework (2018-2027) and the National Climate Change Action Plan (2018-2020), both of which provide robust adaptation and mitigation strategies for the livestock sector and are well-aligned with the Sustainable Development Goals (SDGs). Other livestock-specific adaptation measures are present in the Draft National Livestock Policy (2019), National Policy for the Sustainable Development of Northern Kenya and Other Arid Lands (2012), the Second Medium Term Plan of Vision 2030 (2018-2022), and the National Spatial Plan (2015-2045). These policies contain minimal mitigation-related provisions, however (Ashley, 2019).

Other livestock-specific adaptation and mitigation measures are present within Kenya's United Nations Framework Convention on Climate Change's (UNFCCC) mandated reporting structures, including the Nationally Determined Contributions (NDCs) and the National Adaptation Plans (NAPs). Previous work in this regard has demonstrated that the livestock sector is central to Kenya's climate change ambitions, being the largest source of greenhouse gas (GHG) emissions in the agricultural sector more broadly and accounting for over 50% of emissions in the Second National Communication. The sector is therefore a key target of UNFCCC-oriented mitigation efforts. A Nationally Appropriate Mitigation Action (NAMA) strategy was as of 2020 proposed but not yet implemented for dairy, and whilst other livestock industries also have mitigation potential, technical feasibility, costs, and benefits have not yet been assessed in detail (Mbae et al., 2020). The livestock sector also features within Kenya's NAP, which recognises the increasingly detrimental impacts climate change is having on livestock production systems (particularly in ASAL areas), citing the effects of more frequent drought and flooding on livestock morbidity and mortality (National Adaptation Plan (NAP), 2015). The NAP also sets out a set of sector-specific short-, medium-, and long-term sub-actions to enhance the resilience of the livestock value chain, which mainly address gaps that currently exist in financing, awareness, capacity, and technology.

It is clear, then, that the livestock sector forms a crucial component of Kenya's development trajectory, is on the frontline of the climate crisis and its impacts (particularly in the ASAL counties) and features substantially in some of the most important climate adaptation and mitigation initiatives enacted by the Government of Kenya. Adopting a system's approach, however, underlines the fact that the livestock sector in Kenya (and the various production systems and value chains contained within it) are intrinsically interconnected to a variety of other sectors, system dimensions, and scales. Systems thinking emphasises the idea that problems and issues are interconnected, and solutions designed to counteract them must

consider other problems and factors within the nexus (Fernandes Torres et al., 2019; Morales-Muñoz et al., 2022). This is certainly the case for the livestock sector, as adaptation and mitigation interventions in this space are likely to have economic, social, political, technological, ecological, and nutritional repercussions. If not cognisant of this interconnectivity, such interventions heighten the risk of maladaptation.

Maladaptation can be defined as "action taken ostensibly to avoid or reduce vulnerability of other systems, sectors, or social groups" (Barnett & O'Neill, 2010), and can occur at a range of scales. Erosive coping strategies – as previously mentioned – for instance represent a maladaptation risk at the community and sub-national level. At the institutional scale, the risk of maladaptation often manifests itself at the level of policies and strategies. The potential for impacts of policy interventions in the sector to cascade and have unpredictable knock-on effects – such as undermining economic development, contributing to political instability, and exacerbating human insecurity – is high, particularly in contexts characterised by fragility and pre-existing conflict. These unforeseen effects may arise as a consequence of a lack of cross-sectoral coordination and a lack of conflict-sensitive design and implementation of policies and programs (Rüttinger et al., 2015). It is paramount, therefore, that policy- and decisionmakers strive to ensure, firstly, that policy and strategy outputs from across scales and sectors are coherent with one another's goals and activities and do not contradict or undermine one another, and secondly, that policy formulation and implementation are conflict-sensitive in nature.

There are, in fact, important examples of how adaptation and mitigation interventions that lacked conflict-sensitivity produced unintended and counterproductive impacts within the literature. Effective and equitable implementation of the UNFCCC's Reducing Emissions from Deforestation and Forest Degradation (REDD) program, for instance, is heavily dependent on addressing improved forest governance and controlling forest-linked corruption. Pre-existing corruption in contexts where REDD is implemented could work against the conservationist and developmental motivations behind the scheme by skewing the establishment of baseline carbon data or the monitoring of avoided emissions or benefits to local communities, and may also create additional incentives and opportunities for corrupt activities. Public officials might, for example, engage in corruption to extract rents from REDD resource, bringing with it the 'resource curse' (Bofin et al., 2011). Implementation efforts of REDD programs that remain insensitive to such risks may inadvertently contribute to undermining legitimacy and trust in government. Additionally, program design that is inadequately responsive to local socio-political dynamics can also entrench pre-existing inequalities, demonstrated by an REDD program in Nepal which actually worsened livelihood insecurity and the potential for land conflict, as the alternative livelihood strategies provided to the Chepang ethnic community were not suitable for all groups (Patel et al., 2013).

A closer look at Kenya – particularly the ASAL areas - reveals an intervening context characterised by similar complexity, highlighting the need for conflict-sensitive, integrated, and nexus-based approaches to policymaking and implementation. The ASALs have long

suffered challenges to human development, including a lack of infrastructure and market access, limited availability of public goods such as healthcare and education, and widespread poverty. Conflicting land use and natural resource management systems – both between different ethno-cultural groups and between traditional and 'formal' institutional arrangements – have further engendered a tradition of competition and conflict over access and usage of resources (Mwangi, n.d.). Climate-related factors are, however, becoming increasingly interwoven into these sub-national conflict systems, exacerbating existing fault lines and acting in tandem with other factors to catalyse more frequent and more deadly violence.

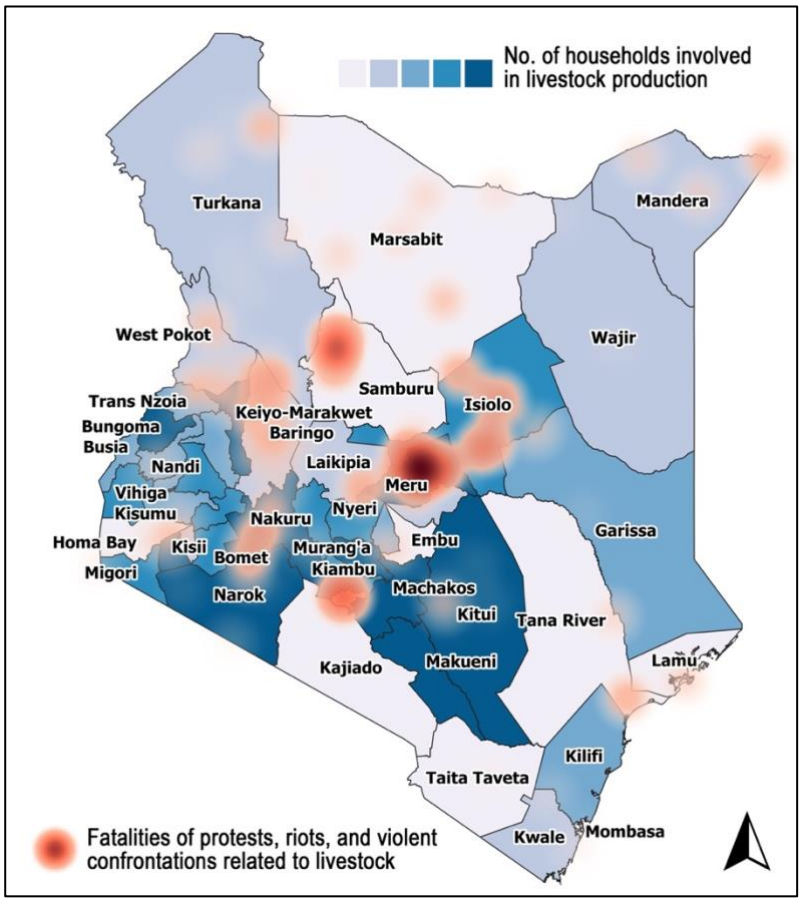

Figure 1. Heatmap of fatalities from protest, riots, and episodes of violence related to livestock.

Climate-related stressors on natural resource availability have for instance been recorded to cause pastoralists to change their traditional migratory routes and timings, resulting in migration to the same scarce resources (water or pasture), leading to clashes between different groups. Whereas such conflicts may have in the past been largely resolved through traditional dispute resolution mechanisms and through tribal elders, increasingly dire livelihood conditions have served to undermine such efforts (Mwangi, N.D.). Pastoralists are also increasingly encroaching upon land used by sedentary agriculturalists in pursuit of land suitable for grazing, again contributing to inter-communal clashes (Dutta Gupta et al., 2021). More frequent droughts have also contributed to food insecurity and higher incidences of livestock raiding, which – although a longstanding cultural phenomenon within and amongst

ASAL communities – have become more frequent and deadlier due to sustained ecological stress and the prevalence of small arms. Banditry too has increased, particularly along frequently used migratory routes. Figure 1 – a spatial representation of fatalities from protests, riots, and episodes of violence related to livestock within Kenya from 2015 to 2020 – shows that such events are quite widely distributed across Kenya and across areas with different production systems. The map also highlights how in many cases this conflict occurs in border areas - either inter-state or inter-country – thereby emphasising the importance of having a unified policy approach to dealing with such events.

Adaptation and mitigation policies seeking to build the resilience of the livestock sector to climate change must therefore remain cognisant of these dynamics and understand how interventions may interact with them. Simultaneously, efforts towards conflict prevention, conflict transformation, and peacebuilding in Kenya's conflict-affected areas must be climate-sensitive and recognise the risk multiplier role that climate change-related impacts can play in triggering and sustaining violent conflict, particularly amongst and between pastoral and agro-pastoral groups. Ensuring the conflict- and climate-sensitivity of these different yet increasingly interconnected sectors therefore requires a whole-of-government approach to policy formulation which is able to ensure policy coherence and effective coordination across different siloes and sectors in order to do no harm (Anderson, 1999). But beyond conflict-sensitivity and doing no harm, there are also key synergies between climate action and peacebuilding that can result in the effective tackling of interconnected problems and issues. Using the theory of co-benefits, Morales-Muñoz et al. (2022) argue that climate action contains clear entry points for contributing to a sustainable peace, and that – vice versa – peacebuilding efforts can create an enabling environment for effective adaptation and mitigation. Cross-sectoral coherence can also ensure that these opportunities are taken advantage of.

The purpose of this analysis is, therefore, to analyse the degree of horizontal coherence that exists across policies and strategies from sectors relevant to climate security in Kenya – including livestock, adaptation, mitigation, and peace and security (see methodology for full list of sectors); the degree of vertical coherence between national and sub-national level policy outputs for or containing components related to livestock, adaptation, mitigation, and peace and security; and the extent to which these outputs can be deemed sensitive to climate-related security risks and climate-peace opportunities. On the basis of these assessments, a set of policy recommendations are made to help address potential gaps.

Methodology

This report introduces a mixed method to assess the degree of policy coherence and awareness from a perspective of integrated climate security programming across policy documents relevant to the livestock sector and climate security in Kenya. The data featured in the analysis includes 56 policy documents from five sectors: agriculture, development,

disaster risk deduction (DRR), environment, land, livestock, and peacebuilding and social cohesion (Table 1). Of these documents, 32 are issued by national authorities while the rest was published by county-level governments from three counties: Baringo, Busia, and Laikipia.

Policy Sector	*No. of national-level policies*	*No. of county-level policies*	*Total no. of documents*
Agriculture	6	0	6
Development	6	22	28
Disaster risk reduction	7	1	8
Environment	7	1	8
Land	2	0	2
Livestock	2	0	2
Peacebuilding and social cohesion	2	0	2

Table 1. Documents divided by sector.

Policies produced prior to 2007 were not included in the initial dataset in order to ensure the relevancy of the results, and in order to reflect the fact that the topic of climate security still represents a fairly new thematic intersection for many (Conway, 2021). The data was collected manually from institutional websites and repositories to represent a wide as possible sample that is still relevant to livestock production systems and their potential role within the climate security nexus. To qualify, documents had to have constituted either a formal policy or a formal strategy output produced by a policymaking or governance entity at the national or regional level. This excluded grey literature or third-party analyses or evaluations of policies and strategies. After the data collection phase, the documents were converted into a homogeneous digital format and parsed into a dataset, which was analysed via an automated content analysis. Using a Python script that was derived from the work of Scartozzi published in International Peacekeeping and International Studies Perspective (2022a, 2022b), the text in the documents was lowercased, stemmed, and removed of stop words. The text was then tokenized into individual sentences that were then assessed via a series of pre-defined queries.

The assessment of the documents was made using 25 variables and 64 proxy measurements outlined in the assessment framework (Table 2). Overall, the content analysis assessed the engagement of documents with topics pertaining to security, livestock, and climate. The content analysis also evaluated the levels of horizontal and vertical integration in the areas of climate and peacebuilding and the presence of conflict sensitive programming. Finally, in support of the content analysis, the study also looked at the geographic distribution of households involved in livestock production and violence linked to livestock. The data on violence was retrieved from the ACLED dataset for a period ranging from 2015 to 2020. The dataset was filtered to only include events which had descriptions that were related to livestock. The household data was retrieved from Kenya's 2019 Census (Kenya National Bureau of Statistics, 2019).

No.	Variables	No.	Proxy Variables
1	environment	1_1	the document mentions words related to the biosphere
		1_2	the document mentions words related to the hydrosphere
		1_3	the document mentions words related to the land
		1_4	the document mentions words related to climate or weather events
		1_5	the document mentions words related to the impact of climate or weather events
2	climate change	2_1	the document specifically mentions climate change and related processes
		2_2	A document that directly mentions climate change also mentions climate or weather processes
		2_3	A document that directly mentions climate change also mentions words related to the impact of climate or weather events
3	mitigation to climate change	3	the document mentions climate change mitigation
4	adaptation to climate change	4	the document mentions climate change adaptation
5	security	5_1	the document mentions topics pertaining to human security (e.g., loss of livelihood, food, migration, and water security)
		5_2	the document mentions topics pertaining to traditional security (e.g., conflict, war, organized violence)
		5_3	the document mentions topics pertaining to environmental security (resource competition, resource scarcity)

		5_4	the document mentions topics pertaining to gender violence
		5_5	the document mentions topics pertaining to crime
6	environment and security	6_1	the document makes a link between environmental factors and human security
		6_2	the document makes a link between environmental factors and traditional security
		6_3	the document makes a link between environmental factors and environmental security
		6_4	the document makes a link between environmental factors and gender violence
		6_5	the document makes a link between environmental factors and crime
7	climate and security	7_1	the document makes a link between climate and human security
		7_2	the document makes a link between climate and traditional security
		7_3	the document makes a link between climate and environmental security
		7_4	the document makes a link between climate and gender violence
		7_5	the document makes a link between climate and crime
8	livestock	8	the document mentions the livestock sector
9	livestock and environment	9_1	the document mentions the livestock sector in relation to biosphere
		9_2	the document mentions the livestock sector in relation to hydrosphere
		9_3	the document mentions the livestock sector in relation to land

		9_4	the document mentions the livestock sector in relation to climate and weather
		9_5	the document mentions the livestock sector in relation to the impact of climate or weather events
10	livestock and climate	10_1	the document mentions the livestock sector in direct relation to climate change
		10_2	the document mentions the livestock sector in relation to the impact of climate and weather processes (in a document that discusses climate change)
		10_3	the document mentions the livestock sector in relation to climate and weather processes (in a document that discusses climate change)
11	livestock and mitigation	11	the document mentions the livestock sector in relation to mitigation
12	livestock and adaptation	12	the document mentions the livestock sector in relation to adaptation
13	livestock and security	13_1	the document mentions the livestock sector in relation to human security
		13_2	the document mentions the livestock sector in relation to traditional security
		13_3	the document mentions the livestock sector in relation to environmental security
		13_4	the document mentions the livestock sector in relation to gender violence
		13_5	the document mentions the livestock sector in relation to crime
14	livestock, environment and security	14_1	the document makes a link between the livestock sector, environmental factors and human security

		14_2	the document makes a link between the livestock sector, environmental factors and traditional security
		14_3	the document makes a link between the livestock sector, environmental factors and environmental security
		14_4	the document makes a link between the livestock sector, environmental factors and gender violence
		14_5	the document makes a link between the livestock sector, environmental factors and crime
15	livestock, climate and security	15_1	the document makes a link between the livestock sector, climate and human security
		15_2	the document makes a link between the livestock sector, climate and traditional security
		15_3	the document makes a link between the livestock sector, climate and environmental security
		15_4	the document makes a link between the livestock sector, climate and gender violence
		15_5	the document makes a link between the livestock sector, climate and crime
16	climate policy integration	16_1	Document makes reference to national-level climate change strategies or legislation
		16_2	Document makes reference to sub-national (county) level climate change strategies or legislation
17	peacebuilding policy integration	17_1	Document makes reference to national-level peacebuilding or conflict prevention frameworks
		17_2	Document makes reference to sub-national level peacebuilding or conflict prevention frameworks

18	disaster risk integration	18	Document makes reference to disaster risk reduction strategies or legislation (note down which)
19	environmental-livestock objectives	19	Document contains objectives relating to adaptation in the context of the livestock sector
20	security-livestock objectives	20	Document contains objectives relating to conflict prevention, or conflict resolution in the context of the livestock sector
21	livestock, climate and security objectives	21	
22	Livestock climate adaptation strategies	22	Document identifies specific adaptation strategies for the livestock sector (note down which ones)
23	Livestock climate mitigation strategies	23	Document identifies specific mitigation strategies for the livestock sector (note down which ones)
24	conflict-sensitivity	24_1	The document contains evidence of having conducted or calling for a peace analysis
		24_2	The document contains evidence of having conducted or calling for a conflict analysis or management strategy
25	climate analysis	25	Policy displays evidence of the following forms of climate-related analysis: climate change vulnerability assessments, social vulnerability assessments, risk and resilience analysis, gender-sensitive risk and resilience analysis.

Table 2. Climate and environment, livestock, and peace and security assessment variables.

Results

The discussion of the results of this analysis is structured in an iterative manner. Firstly, the interpretation will focus on the intersection between livestock, climate, and environment. The results specifically record the extent to which (and how) climate, environment, adaptation, and mitigation feature within livestock-specific strategies and policies and vice versa (the extent to which livestock features within policies and strategies relating to climate and environment), as well as what specific programmatic activities in the realms of livestock adaptation and mitigation appear to feature most prominently within policy and strategy documents. The second stage of interpretation will then evaluate the degree to which policy and strategy documents from across different sectors and scales can be deemed climate security-sensitive, how frequently climate-related security risks are discussed in relation to livestock, and how said risks tend to be understood (for example, in relation to what specific natural resource or climate impact). Finally, this section will evaluate the degree to which different sectors and scales can be considered horizontally and vertically coherent with one another.

Stage 1: Livestock, climate, and environment

With regards to the relationship between topics related to livestock, climate, and the environment within livestock-related policies and strategies, it is evident that 100% of livestock-related policy documents demonstrated at least one instance of engagement with the relationship between livestock and the environment and the effects of climate change on livestock (or vice versa) (variables 9 and 10) (figure 2). When disaggregated to the mean of engagement, however (which records the average percentage of sentences dedicated to each topic within all livestock-related policies), it becomes evident that just under 50% of sentences are related to the relationship between livestock and the environment (natural resources), whereas only around 8% of total sentences demonstrated engagement with the relationship between livestock and climate change. This degree of disparity is somewhat surprising, as it appears to indicate that whilst the dependency of livestock production systems on the natural environment is widely recognised and discussed, the extent to which and how climate change may affect this relationship is discussed much less frequently.

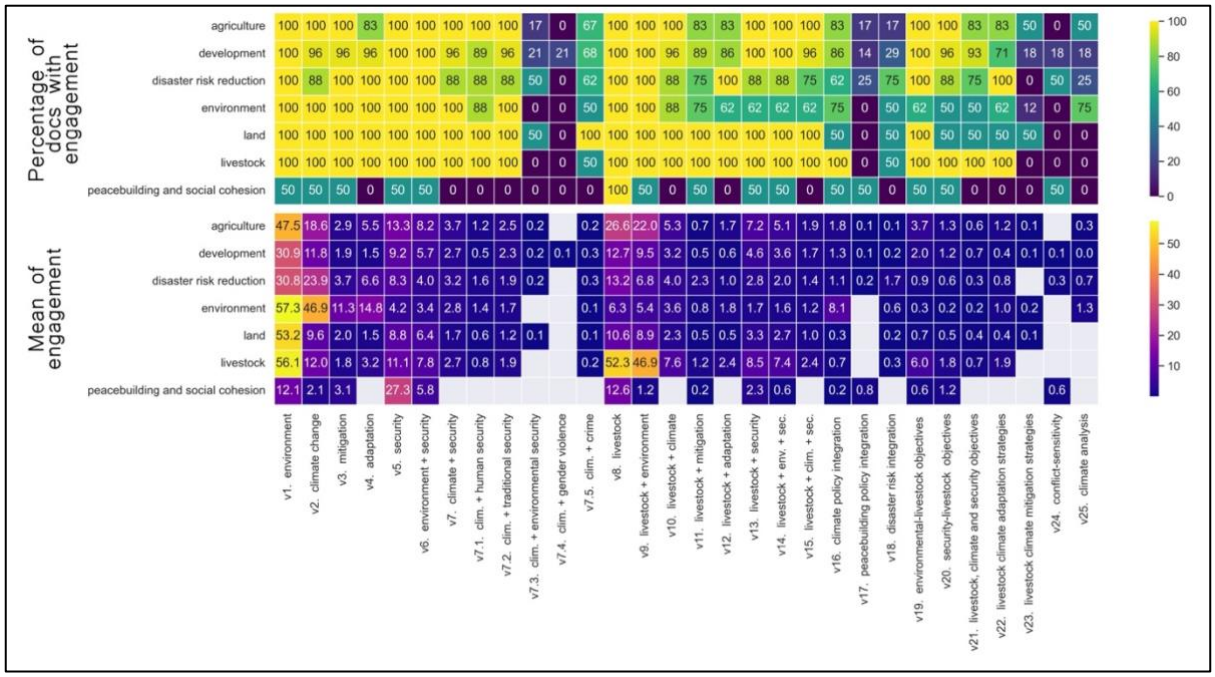

Figure 2. Document's engagement with assessment variables, divided by policy sectors.

With regards to the frequency with which livestock sector policy documents appear to include content related to the sector's role in relation to climate mitigation and climate adaptation, the mean of engagement is low comparative to the frequency with which livestock is discussed in the context of the environment and climate change more broadly (variables 11 and 12) (figure 2). Just over 1% and 2% of sentences in livestock sector policy documents appear to discuss livestock in relation to mitigation and adaptation respectively. This is perhaps to be expected to some extent, as these discussions may largely feature as part of specific adaptation and mitigation activities (which are more likely to feature in action plan policy components) and therefore would feature less frequency in the analysis.

The sector that appears to discuss livestock in relation to mitigation appears to be disaster risk reduction, likely due to the fact that the keywords deployed as part of the content analysis to identify mitigation-related topics overlap significantly with efforts to 'mitigate' the effects of climate change on livestock production systems, rather than these policies and strategies being directly related to emissions reductions (figure 2). Documents from the livestock sector itself are most likely to discuss adaptation in relation to livestock amongst the sectors included in the analysis, followed by documents produced as part of the climate and environment sector.

With regards to policy documents produced as part of the climate and environment sector, it is again apparent that 100% of analysed documents feature at least one mention of the livestock sector in relation to the natural environment, whilst 88% of documents feature at least one reference of the livestock sector in relation to climate change (figure 1). Turning to the mean of engagement, however, shows that only 6.3% of sentences across all climate and

environment policies and strategies included in the analysis feature a discussion on livestock, of which 5.4% and 3.6% discuss livestock in relation to the natural environment and climate change respectively (variables 9, 10, and 11). Given the current and future preponderance of the livestock sector for the Kenyan economy and livelihoods, the comparatively limited degree of attention attributed to livestock within climate and environment-related policies and strategies is somewhat surprising. This is particularly the case given how overall, nearly 60% of sentences within climate and environment policies and strategies make reference to the natural environment, and just under half appear to discuss climate change (variables 1 and 2). That said, it is also true that livestock sector-specific policies do discuss the implications of climate change for the sector to a much greater degree.

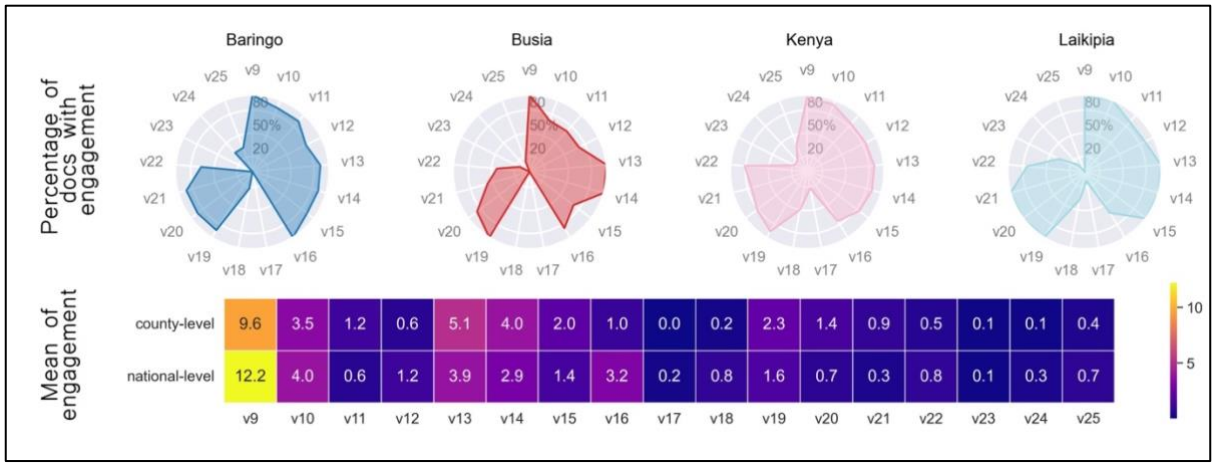

Figure 3. Document's engagement with assessment variables, divided by policy scale.

There does not appear to be a significant disparity across national and county level policy outputs with regards to the above trends and patterns (figure 3). National level documents tend to have a slightly higher frequency of engagement than county level documents across the majority of variables, with a few exceptions. Most notably, county level documents are marginally more likely to contain sentences discussing the relationship between livestock and security (variable 13); livestock, environment, and security (variable 14); and livestock, climate, and security (variable 15). This may be due to their ability to discuss context-specific issues and dynamics in greater detail, as opposed to national level overviews.

In terms of the extent to which and nature of engagement with specific livestock adaptation and mitigation actions feature across policy documents, the results suggest that – within livestock sector-specific policies – just under 2% of sentences contain reference to specific adaptation activities, whilst no livestock sector-specific policy appears to outline mitigation actions for the sector (variables 22 and 23) (figure 2). This comparatively low number is again not unexpected given the degree of specificity involved in this measurement, however, the ubiquitous absence of any form of mitigation action within the sector does perhaps indicate that there remains something of a shortfall within Kenyan livestock policies as to how the

sector could contribute to mitigation efforts and targets. This trend is also the case across other sectors, with specific mitigation actions featuring much less frequently than specific adaptation actions. The sector most likely to discuss livestock-specific mitigation actions and activities is climate and environment, whilst there are also limited mentions in this regard within the agricultural, development, and land sectors.

In regard to mitigation and adaptation strategies, we see a wide range of approaches across documents. On mitigation, some documents – such as the National Climate Change Action Plan (2018-2022) and the Climate Smart Agriculture Strategy (2017) - delineate broad objectives, such as the reduction of GHG emissions via manure management, and efficiency in livestock management. Other documents, for example Baringo County's 2013 Integrated Development Plan, instead put forward specific plans for energy efficiency, such as the use of renewable energy sources and energy efficient light bulbs in slaughterhouses. Finally, some documents (see for instance the Climate Smart Agriculture Strategy, 2017) mention the need for low emissions technologies, capacity building, and guidelines to manage livestock feed from farm residues and manure.

On adaptation we see a broader set of strategies than on mitigation. The documents with the most comprehensive engagement appear to be the 2013 and 2018 National Climate Change Action plans, which call for the establishment of fodder banks, strategic reserves price stabilization schemes, livestock-based food reserves, selective breeding, and livelihood diversification. In these two documents we also find proposal on an inventory of indigenous knowledge, livestock insurance schemes, early warning systems, early action, stocking rates, vaccination campaigns, disease control mainstreaming. Early warning systems and insurance mechanisms are also featured in numerous other documents, often framed as a solution to protect livelihoods generated by the livestock sector in face of climate changes. In conclusion, it should be noted that livestock specific adaptation or mitigation strategies are not mentioned in any documents from the peacebuilding and social cohesion sector.

Stage 2: Climate Security-sensitivity

Some clear trends and gaps emerge when policy content is evaluated against the backdrop of sensitivity to climate-related security risks. Firstly, it is evident that the relationship between the natural environment and security (particularly in relation to natural resources) is discussed to a fairly significant degree across the majority of policy sectors (variable 6). Just over 8% of all sentences in agricultural sector-specific policies discuss environment and security concerns (potentially explained by the fact that key terms such as 'food security' and 'nutritional security' likely feature heavily in these outputs), whilst livestock sector-specific policies discuss environment and security issues in just under 8% of sentences (figure 4). Land, peacebuilding and social cohesion, and development-related policies also appear to engage with this relationship to a comparatively high degree. Engagement with climate security – such as specifically recognising the role played by climate change in impacting natural

resources and thereby indirectly influencing conflict dynamics and risk – is however somewhat less prevalent, with agriculture and DRR policies discussing this relationship the most (with 3.7% and 3.2% of sentences discussing this relationship respectively) (variable 7) (figure 4). This appears to indicate that policy documents are somewhat more likely to engage with the relationship between natural resources and security rather than necessarily reflect on the escalatory effects that climate change may have on these dynamics, although the latter is still present to a lesser degree within the documents subjected to analysis.

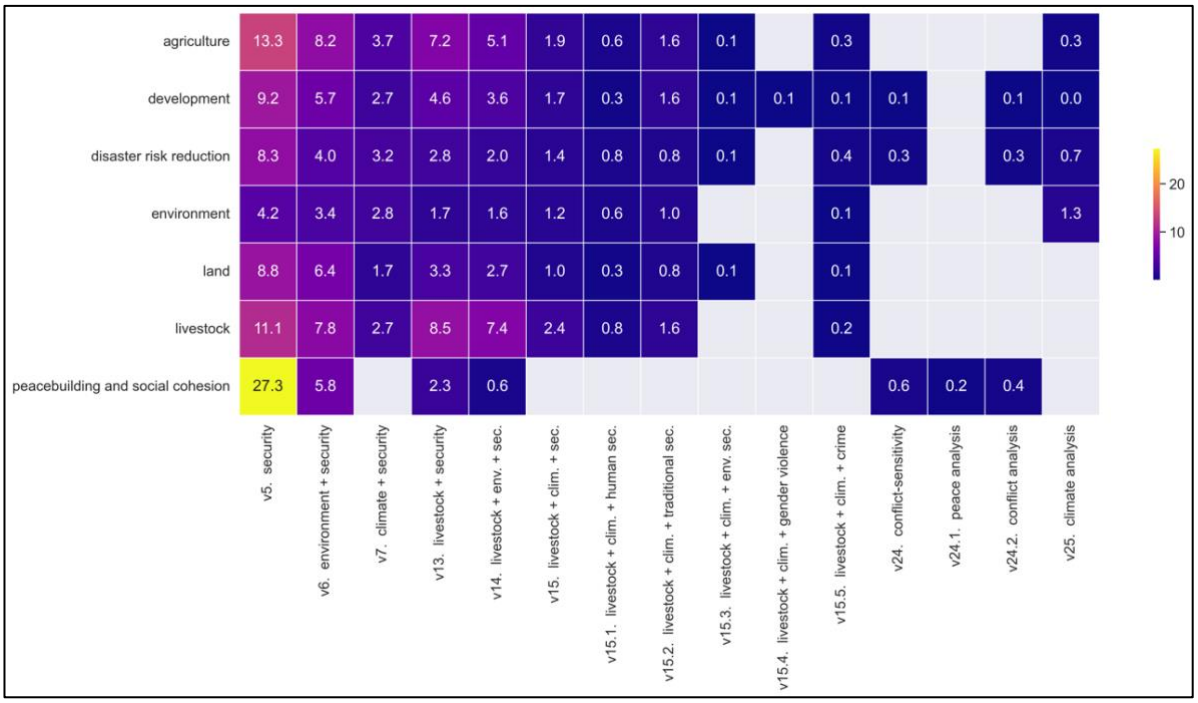

Figure 4. Extent of thematic engagement with security and conflict sensitivity, divided by sectors.

Secondly, it is particularly notable how policy and strategy documents produced as part of the peacebuilding and social cohesion sector do – in keeping with the above trend - display evidence of engagement with the relationship between the natural environment and security (5.8% of sentences) whilst displaying absolutely no engagement with the relationship between climate and security (figure 4). Furthermore, whilst the relationship between livestock and security is discussed in 2.3% of sentences in policies extracted from this sector, and the relationship between livestock, the environment, and security are present in 0.6% of sentences, discussion on the intersection of climate, livestock, and security is again entirely absent. This indicates that although the natural environment and natural resources are considered to have implications for peace and security, recognition of the role played by climate change in potentially exacerbating pre-existing insecurity and heightening the risk of conflict is entirely absent. How these dynamics may interact with the livestock sector and associated systems of production (such as pastoralism and agro-pastoralism) is similarly entirely absent from peacebuilding and social cohesion policies.

Thirdly, it is apparent that livestock sector-specific policies and strategies are most likely to discuss the relationship between environment, livestock, and security (variable 14), as well as the relationship between climate, livestock, and security (variable 15). Agricultural and development sectors are also likely to discuss this relationship. Climate and environment sector-specific policies and strategies are – overall - amongst the least likely to discuss this intersection, with 1.2% of sentences appearing to engage with climate, livestock, and security. However, it is notable that of the nearly 3% of sentences from climate and environment sector-specific policies that do discuss climate and security, quite a large proportion is in the context of livestock. This does suggest that – however limited overall engagement may be – climate-related security risks are frequently understood through the lens of livestock within the climate and environment policy realm.

Interestingly, it appears that when security is discussed in relation to climate and livestock, conceptualisations of security across all sectors are more likely to be realised through a more 'traditional' security understanding, as opposed to a human security lens. This means that words such as 'battle', 'conflict', 'insurgency', and 'violence' are present more often in sentences referring to both climate and livestock than words related to human security, such as 'community', 'economic', 'food', 'health', or 'political'. This may suggest that although links between climate, livestock, and conflict are understood at least to some extent, the intermediary variables that engender this causal sequence (such as detrimental impacts on livelihoods, eroding communal identities, and food and nutritional insecurity) are given less attention. The results also suggest that a clear gap exists within policies from across all the analysed sectors with regards to the intersection of climate/environment, livestock, and gender-based violence (GBV) (variable 15.4). 0.1% of sentences from policy documents produced by agricultural, development, DRR and land sectors respectively displayed evidence of engaging with the intersection of environment, livestock, and GBV, whilst only 0.1% of policy documents in the development sector did so for the intersection climate, livestock, and GBV (figure 4). By contrast, conceptualisations of livestock, climate, and security being anchored around crime are more common (variable 15.5), with 0.4 % and 0.3% of total sentences in DRR and agricultural policies discussing this intersection specifically.

Finally, with regards to the variables in the framework that are more oriented towards programming planning and implementation, it is evident that there is very little technical cross-fertilisation with regards to climate- and conflict-based analyses and tools. Whilst peacebuilding and social cohesion policies are recorded to emphasise the importance of conflict-sensitivity (variable 24), for instance, principles of conflict sensitivity were entirely absent from policies produced by livestock, land, environment, and agricultural sectors (figure 4). DRR policies were the second most likely sector to display evidence of conflict sensitivity, followed by development strategies.

A similar trend emerges regarding the extent to which policies and strategies from across different sectors appear to conduct conflict-related (conflict analysis, pro-peace analysis, conflict driver mapping, etc.) (variable 24.2) and climate-related analyses (climate

vulnerability analysis, site analysis, etc.) (variable 25). Policies and strategies from the peacebuilding and social cohesion, DRR, and development sectors were the only sectors to display (very limited) evidence of having conducted a form of conflict-related analysis, whilst land, livestock, and peacebuilding and social cohesion policies in turn failed to engage in any kind of climate-related analysis.

Stage 3: Horizontal and Vertical Coherence

The third and final results section will evaluate the degree to which – based on evidence of engagement within the policy and strategy documents – cross-sectoral coherence exists between the sectors and scales subjected to analysis. Whilst further research into specific institutional arrangements, structures, and processes is needed to comprehensively evaluate cross-sectoral integration and coherence, this document level analysis aims to provide at least a cursory indication of the extent to which policies from across the sectors make reference to or engage with one another.

Firstly, with regards to climate policy integration (variable 16) – designed to capture cross-sectoral engagement with climate and environmental policies specifically – it is evident that 100% of livestock sector-specific policies make reference to or engage with at least one climate and environment-specific policy (figure 2). This indicates that livestock policies are arguably very integrated and coherent with climate and environment policies. The sectors that by contrast appear to demonstrate the least amount of cross-sectoral engagement with climate and environment-related policies and strategies are land and peacebuilding and social cohesion, of which half of documents subjected to analysis demonstrated evidence of engagement. Overall, however, engagement with climate and environment policies is fairly substantial across all policy sectors, with at least half of all documents from a given sector making reference to a climate and environment policy.

Secondly, however, a different trend emerges in terms of peacebuilding and social cohesion policy integration (variable 17), for which cross-sectoral coherence appears much more limited. Policies from the climate and environment, land, and livestock sectors do not appear to make any reference to or link with any national or sub-national peacebuilding and social cohesion policy. Only a handful of agricultural and development policies appeared to engage with peacebuilding and social cohesion policies, whilst a quarter of DRR policies appeared to do so. The DRR sector therefore appears to be the sector that is most coherent with the peacebuilding and social cohesion sector, whilst coherence appears to be entirely lacking for policies from climate and environment, land, and livestock sectors.

Thirdly, in terms of DRR policy integration, half of Climate and Environment, land, and livestock policies made reference to at least one DRR policy and strategy. Just under a fifth of agriculture sector-specific policies and around a third of development strategies displayed similar evidence of engagement, whilst no peacebuilding and social cohesion policies appear

to demonstrate coherence. With regards to scale, national level documents generally appear to have a higher degree of horizontal coherence with other national level policies and strategies than sub-national level documents have vertical coherence with national level documents (figure 3). Overall, 3.2% of national level documents contain a reference to a climate or environmental policy (variable 16), whereas only 1% of sub-national level documents did so. 0.2% of sentences of national level documents made reference to peacebuilding and social cohesion policies and strategies, whereas no sub-national level policies appear to have engaged with peacebuilding and social cohesion policies. Finally, whilst 0.8% of sentences in national level policy documents contain evidence of making reference to DRR strategies, only 0.2% of sentences in sub-national level documents did so.

In summary, therefore, particularly weak policy integration and coherence appears to be present between the majority of sectors subjected to analysis and peacebuilding and social cohesion policies, which received very limited engagement across the board. Notable in this regard is the fact that DRR policies are those most likely to be coherent with this sector, which may suggest – in line with previous research (Schapendonk et al., publication pending) – that the intersection between climate and security in Kenya currently tends to be conceived of predominantly as a consequence of short-term extreme weather events, upon which the majority of policy design and formulation is based. Peacebuilding and social cohesion policies themselves are in turn unlikely to demonstrate coherence with climate and environment policies, and surprisingly do not make reference to any DRR strategies.

Comparatively strong integration appears to exist between climate and environment and the majority of the other sectors subjected to analysis, suggesting that climatic and environmental priorities and objectives have been fairly successfully mainstreamed across a variety of policy realms. DRR policies also appear to be somewhat integrated across sectors, although substantially less so in the case of peacebuilding and social cohesion, agriculture, and development strategies. Regarding the livestock sector specifically, it appears that the sector is well-integrated with national and sub-national level climate and environment policies and strategies, whilst showing a more limited engagement with the DRR sector and not appearing to engage at all with peacebuilding and social cohesion policies.

In terms of scale, it appears that vertical coherence between national and sub-national level policies and strategies is strongest in the realm of climate and environmental policies, whereas it appears to be non-existent in the peacebuilding and social cohesion policy field. Sub-national policies also demonstrate a very limited degree of engagement with DRR policies and strategies.

Conclusion

This analysis has sought to analyse the degree of horizontal coherence that exists across policies and strategies from sectors relevant to climate security in Kenya (livestock,

adaptation, mitigation, and peace and security); the degree of vertical coherence between national and sub-national level policy outputs for or containing components related to livestock, adaptation, mitigation, and peace and security; and the extent to which these outputs can be deemed sensitive to climate-related security risks and climate-peace opportunities. Several key lessons learned have been generated on the basis of these lines of inquiry.

Firstly, with regards to the relationship between climate, the environment, and livestock, it is evident that the relationship between the natural environment (natural resources) and the livestock sector was much more commonly discussed in policy and strategy documents from across all sectors than the relationship between livestock and climate change. This means that the role and importance of natural resources for livestock production systems and value chains is quite commonly recognised, whereas climate change's escalatory and detrimental effects on said natural resources is less commonly discussed. Furthermore, whilst the engagement of livestock sector-specific policies with the topic of climate and environment was quite substantial, the extent to which policy and strategy documents from the climate and environment policy sphere discussed livestock was notably less frequent in nature. Whilst this is somewhat surprising giving the current and expected future importance of the livestock sector for the Kenyan economy and diet, it should also be recognised that climate and environmental priorities are present in livestock sector-specific policies.

It is also evident that regarding the presence of specific livestock adaptation and mitigation actions within livestock sector-specific policies, mitigation actions are entirely absent. This trend is also apparent across other sectors, with specific mitigation actions generally featuring much less frequently than specific adaptation actions. Given the fact that mitigation actions are entirely absent in livestock sector-specific policies subjected to analysis here, however, this does indicate that a gap remains in terms of the design and implementation of livestock-specific mitigation actions. This result is broadly in line with the work of Ashley (2019), who identifies that mitigation activities relating specifically to livestock in Kenya are less well-developed than those relating to adaptation. Moreover, on both adaptation and mitigation strategies, it appears that most documents put forward broad proposals for strategies rather than discuss the implementation or operationalization. A richer variety of adaptation strategies also appear to be put forward, with mitigation strategies generally being far fewer in number.

Secondly, in terms of climate security sensitivity and overall awareness of livestock and climate-related security risks, policy and strategy documents – including those livestock sector-specific ones – are overall slightly more likely to draw a link between livestock, the natural environment, and potential security risks as opposed to the relationship between livestock, climate change, and potential security risks. The importance of natural resources for livestock production systems is therefore recognised fairly consistently, whereas the role that climate change-related impacts may play in undermining availability and accessibility of said natural resources is less frequently discussed. This trend also plays out with regards to

the intersection of the environment, livestock, and security, which is discussed more frequently than the relationship between climate, livestock, and security. There is also a degree of cross-sectoral variability in the extent to which the intersection of climate, livestock, and security is discussed. Whereas all sectors subjected to analysis demonstrate at least limited evidence of engagement with this intersection, policies extracted from the peacebuilding and social cohesion sector did not engage with this relationship at all.

The results also revealed a very clear gap in conceptual engagement across essentially all policy sectors regarding the intersection of climate, livestock, and GBV. This dimension of the climate security nexus remains severely underexplored within the policies subjected to analysis, despite the urgent need to recognise how climate change can cause gender-differentiated impacts, including with regards to violence. Economic and livelihood insecurity that may emerge as a consequence of climate change-related impacts on pastoralist and agro-pastoralist production systems can, for instance, make adolescent girls more vulnerable to early marriage; spur on male out-migration in seek of employment, which can in turn increase the insecurities and responsibilities faced by female-headed households in increasingly challenging environmental contexts; and expose women to increased domestic violence due to not being able to manage the impacts of climate change at household level (UNEP et al., 2020). Criminal activities such as poaching, raiding, and illegal resource extraction are often associated with GBV, whilst in the aftermath of extreme weather events, women are often at risk of being victims of sexual exploitation, domestic violence, and human trafficking. Given the fact that climate change and environmental degradation can contribute to an increased risk of GBV through numerous causal pathways, this forms a policy area where urgent investment and attention is required.

A similar gap can be seen in the fact that the majority of sectors included in this analysis (bar peacebuilding and social cohesion and, to a lesser extent, development and DRR) displayed no evidence of engaging with or operationalising the principles of conflict sensitivity and 'do no harm'. Furthermore, results also suggest that there is very little cross-fertilisation across the different sectors within this analysis in terms of usage and deployment of conflict-related analyses and climate-related analyses. Policies and strategies from the peacebuilding and social cohesion, DRR, and development sectors were the only sectors to conduct a form of conflict-related analysis, whilst land, livestock, and peacebuilding and social cohesion policies in turn failed to undertake any kind of climate-related analysis. It therefore appears, firstly, that integrated analytical tools and frameworks to evaluate climate-related security risks are absent, and secondly, that current analytical approaches in both conflict and climate realms are not deployed by those working in the other field.

Finally, with regards to cross-sectoral and cross-scalar integration, it is apparent that there is a greater degree of horizontal coherence amongst national level policy and strategy outputs produced in sectors relevant to climate security than there is vertical coherence between the sub-national and national level. Climate and environment policies appear to enjoy the greatest degree of mainstreaming across all sectors, whilst peacebuilding and social cohesion

policies do not appear to be integrated very well with other policy fields. Additionally, climate and environment policies are also the area where there exists the greatest degree of vertical coherence between sub-national and national governance levels. With regards to the livestock sector specifically, it is appears to be very coherent with climate and environment, integrated to a degree with DRR strategies and policies, but not at all coherent with peacebuilding and social cohesion.

Recommendations

1) **Mainstream conflict-sensitivity principles and conflict-sensitive approaches to planning, design, and implementation in livestock sector-specific policies:** although there remains scope for improvement, recognition of climate security and climate-related security risks specific to the Kenyan socio-political and biophysical context were present within a substantial sub-section of the 56 policies subjected to analysis. Specifically, an argument could be made that whilst the role played by environmental factors (natural resource availability, access, etc.) in influencing and triggering livestock-related conflict is widely recorded, the potentially escalatory role played by climate change impacts on those resources is recorded less frequently and should therefore be increased.

   However, our results made apparent that beyond the peacebuilding and social cohesion and DRR policy sectors, no other sector's policy or strategic outputs appeared to include any reference to conflict-sensitivity practices or principles. This is somewhat surprising for the livestock sector in particular, given how pastoral and agro-pastoralist production systems are predominant in contexts and geographies where conflict and fragility are not uncommon. It is also somewhat disconcerting, as it appears to indicate that when programmatic actions related to adaptation, mitigation, development, value chain creation and others are undertaken, they are designed, planned, and implemented without consideration for local conflict dynamics and how the intervention may affect these. By failing to do so, interventions run the risk of undermining human insecurity, negatively impacting or strengthening existing local power dynamics and structures, and increasing the risk of conflict – in other words, do harm (examples of this can be found elsewhere in this report).

   Our first recommendation is, therefore, for the principles of conflict sensitivity to be mainstreamed throughout livestock sector-specific policy design. This will likely involve stepping beyond the existing conceptual recognition of climate and environment-related security risks in challenge statements, and building the technical capacities within ministerial staff to conduct conflict-related forms of analyses. This is particularly so as our results also suggest that conflict-related analyses are very much limited to policies produced as part of the peacebuilding and social cohesion, DRR, and

development sectors. Specific training needs assessments should as a first step be conducted within national and sub-national livestock sector institutions to gauge what capacity gaps may exist with regards to conflict sensitivity, after which tailored training programmes and procedures can be designed.

2) **More attention, investment, and research efforts should be channelled towards illuminated the relationship between climate change, livestock production systems, and gender-based violence (GBV):** our content analysis revealed how virtually every sector included in the analysis omitted any discussion on this perhaps underexplored yet critical nexus. As discussed in the conclusion, research conducted on this topic has revealed several potentially different causal pathways through which climate change impacts may contribute to forms of violence that must be assessed in an intersectional way to truly understand and subsequently mitigate their gender disaggregated nature. Given the essentially ubiquitous absence of this topic within all policy and strategic outputs, this second recommendation draws attention to the need for – firstly – more research on this intersection at the sub-national within Kenya, as the exact causal pathways through which GBV could emerge may differ across various socio-economic and biophysical contexts. Secondly, in order to begin designing programmatic interventions that can counter this specific set of relationships, more efforts at coordination and integration should be made with some of Kenya's gender-related strategies, such as the 2019 National Policy on Gender and Development. These strategies form an existing legislative platform upon which programs responding to this nexus could be designed and implemented.

3) **More efforts should be made to design and implement integrated, livestock sector-specific adaptation and mitigation actions that can simultaneously build resilience to climate impacts and address risks for human security and conflict:** despite an apparently relatively widespread recognition of climate-related security risks – both related to the livestock sector specifically and not – evidence of conflict sensitive, pro-peace, integrated climate-peace programming remains largely absent. There therefore exists a need to work across siloes to a much greater degree and ensure that program planning is conducted through a human security lens and involves a diverse set of sectoral stakeholders throughout the project life cycle. In practice, this would mean bringing together cross-disciplinary teams including those able to understand climate science; those able to understand adaptation, disaster risk reduction, and resilience building; and those able to understand conflict and peacebuilding dynamics and processes. Whilst this is a challenge, it is critical for the design of programming that responds to the multi-layered risk landscape facing contexts in Kenya.

   Specifically, we recommend that efforts are dedicated towards realising the potential co-benefits for peace and security that creating an inventory of indigenous

knowledge, livestock insurance schemes, early warning systems, and early action systems would hold. These livestock-specific adaptation actions were found frequently within the policies and strategies subjected to analysis, and on the surface, are well-suited to including specific components and indicators related to peace and security. As a first step, we recommend creating peace and security-related theories of change (ToCs) that outline a clear set of expected outcomes and co-benefits, constructed on a set of baseline assumptions. For the creation of an inventory of indigenous knowledge, for instance, an example ToC statement could be '*if* indigenous practices are recorded and collated in a participatory and collaborative manner, *then* participation of conventionally marginalised groups in policy- and decision-making processes will improve and state-society relations will be enhanced'. To build a robust evidence base, we also recommend regularly revisiting these assumptions and ToCs throughout a project lifecycle, experimenting with a varied set of intervention types and implementation modalities, and readjusting activities where necessary on the basis of regular context assessments and analysis (de Coning, 2018).

4) **More effort should be given towards improving policy coherence and integration between peacebuilding and social cohesion, climate and environment, and livestock sector policies:** as our results indicate that there exists a fairly poor degree of cross-sectoral coherence between these three sectors, strengthening cross-sectoral coordination across this tripartite for the purposes of managing and mitigating climate-related security risks is particularly crucial. Specifically, we recommend that a new institutional space is created – or an existing one expanded or re-oriented – where actors from the climate and environment, peacebuilding and social cohesion, and livestock sectors are able to coordinate and engage in joint program planning, design, and implementation. Progress has already been made within Kenya on integrating DRR – specifically drought management and mitigation – with development and peace and security-sensitive approaches, for example through the Ending Drought Emergencies Common Program Framework. This existing institutional blueprint could either be expanded or serve as a model for the expansion of integrated program design and implementation into livestock adaptation and mitigation actions.

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