CLIMATE CHANGE & THE LIVESTOCK SECTOR:

Policy Coherence in Uganda

Policy Gap Analysis - July 2024

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List of Acronyms

Ag:	Agriculture
AI:	Artificial Insemination
ASSP:	Agriculture Sector Strategic Plan
BMUB:	Federal Ministry for the Environment, Nature Conservation and
	Nuclear Safety (Germany)
CAN-U:	Uganda Climate Action Network
CBOs:	Community-Based Organizations
CCD:	Climate Change Department
CSA:	Climate Smart Agriculture
DFID:	Department for International Development (now FCDO - Foreign,
	Commonwealth & Development Office)
EIA:	Environmental Impact Assessment
FAO:	Food and Agriculture Organization of the United Nations
GCF:	Green Climate Fund
GEF:	Global Environment Facility
GGDS:	Green Growth Development Strategy
GHG:	Greenhouse Gas
GoU:	Government of Uganda
ILRI:	International Livisiong Research Institute
IWRM:	Integrated Water Resources Management
MAAIF:	Ministry of Agriculture, Animal Industry and Fisheries
MDGs:	Millennium Development Goals
MWE:	Ministry of Water and Environment
NAMA:	Nationally Appropriate Mitigation Actions
NAP:	National Adaptation Plan
NAP-Ag:	National Adaptation Plans for Agriculture
NAPA:	National Adaptation Programmes of Action
NCCP:	National Climate Change Policy
NDC:	Nationally Determined Contributions
NDP:	National Development Plan
NDP III:	National Development Plan III
NEMA:	National Environment Management Authority
NGOs:	Non-Governmental Organizations
NRM:	Natural Resource Management
RAN:	Resilient Africa Network
REDD+:	Reducing Emissions from Deforestation and Forest Degradation
SDGs:	Sustainable Development Goals
UNDP:	United Nations Development Programme
UNEP:	United Nations Environment Programme
UNFCCC:	United Nations Framework Convention on Climate Change
UN-REDD:	United Nations Collaborative Programme on Reducing Emissions from
	Deforestation and Forest Degradation in Developing Countries

Introduction

The livestock sector plays a crucial role in Uganda's economy, supporting livelihoods for a significant portion of the population and serving as a store of wealth and cultural identity for many ethnic groups. Given the extensive management practices preferred, the large pastoral population, and designated grazing lands, livestock in Uganda are closely intertwined with the rangelands they depend on.

Climate change poses a serious threat to Uganda's livestock sector. It is increasingly vulnerable to impacts such as more frequent droughts, dwindling water supplies, disease outbreaks, pest infestations, and desertification due to loss of tree cover (FAO, 2020). Addressing these challenges requires robust policy frameworks, effective legislation, and strong governmental institutions to ensure sustainable livestock management and the health of rangelands.

To assess the effectiveness of current policies in fostering a carbon-neutral livestock sector, it is essential to scrutinize policy commitments, assess alignment between key frameworks, and identify areas for improvement. This policy analysis aims to provide a comprehensive review of Uganda's current climate and livestock policies, focusing on identifying synergies, pinpointing gaps, and proposing strategic actions to enhance climate resilience within the livestock sector.

Mercy Corps is actively involved in climate adaptation and mitigation initiatives in Uganda, implementing projects across diverse sectors including energy, climatesmart agriculture, and rangeland management, particularly in Karamoja. This report is part of Mercy Corps' ongoing commitment to supporting the Ugandan government in bolstering climate resilience across all sectors, including agriculture and livestock.

Mercy Corps acknowledges and appreciates the collaboration and assistance provided by the Government of Uganda and the dedicated staff of the Ministry of Water and Environment (MWE), Ministry of Agriculture, Animal Industries and Fisheries (MAAIF), Ministry of Gender, Labour & Social Development (MGLSD), and the Office of the Prime Minister (OPM). Their expertise and feedback have greatly enriched the quality and relevance of this report.

Aims

The objectives of this policy gap analysis are:

- 1. Evaluate the existing policy, legal, and institutional framework concerning climate change adaptation and mitigation in Uganda's livestock sector.
- 2. Identify specific adaptation and mitigation strategies tailored to address climate change challenges confronting Uganda's livestock sector.
- 3. Identify challenges, synergies, gaps, and opportunities in the implementation of climate change policies within the livestock sector.
- 4. Provide actionable recommendations for policymakers, stakeholders, and organizations in the livestock industry to enhance policy coherence concerning climate change and livestock.

Outline

The document is organized as follows:

- 1. **Introduction and Context:** This section provides an initial overview of the document's focus and emphasizes the importance of addressing climate change impacts on Uganda's livestock sector.
- 2. **Current Policy, Legal, and Institutional Framework:** This section examines the existing policies, laws, and institutions relevant to climate change adaptation and mitigation within Uganda's livestock sector.
- 3. **Analysis of Policy Coherence:** This section investigates the consistency and alignment among different policy frameworks across sectors to tackle climate change challenges affecting the livestock industry.
- 4. Adaptation and Mitigation Strategies: This section discusses specific strategies designed to mitigate and adapt to the effects of climate change on Uganda's livestock sector.
- 5. **Recommendations for Future Policies:** This section presents strategic recommendations aimed at strengthening climate resilience within Uganda's livestock sector.

By adhering to this structured approach, the document seeks to offer a thorough analysis of Uganda's climate-livestock policy landscape. It aims to support informed decision-making and encourage actions that address the challenges posed by climate change in the livestock sector.

Context

Climate Change, Agriculture & Livestock - the Global Overview

Climate change exerts profound effects on agricultural productivity, especially in regions where livestock and rangelands play a crucial role. Shifts in temperature and precipitation patterns can disrupt grazing conditions, water availability, and the prevalence of diseases affecting livestock. Addressing these impacts is essential not only for sustaining agricultural output but also for safeguarding the livelihoods of communities dependent on livestock for income and food security.

Agriculture contributes approximately 24% of greenhouse gas emissions globally, with livestock accounting for a significant portion of methane emissions. According to the Food and Agriculture Organization of the United Nations (FAO), the livestock sector alone generates more than 14.5% of all anthropogenic greenhouse gas emissions (Gerber et al., 2013). This interaction between livestock management and climate change triggers a cycle where poor rangeland management exacerbates climate change impacts, which, in turn, further degrades these lands.

Rangelands, which cover about 50% of the earth's land surface, serve as livestock habitats and play a crucial role in carbon sequestration, a natural process critical for mitigating climate change (Asner et al., 2010). However, mismanagement and overgrazing lead to land degradation and reduced sequestration capacity, accentuating climate change effects.

Climate change in Uganda

Uganda's unique geographical and climatic conditions make it susceptible to various climate risks, which pose significant threats to its agriculture-dependent communities. This section provides insight into Uganda's specific climate-related vulnerabilities and challenges, mainly focusing on its impacts on livestock and rangelands. In the Great Lakes region of East Africa, Uganda's climate is characterized by variability, from semi-arid areas in the Northeast to regions experiencing bimodal rainfall patterns in the Central and Western parts (NEMA, 2020). However, such diversity in climatic conditions is threatened by the increasing unpredictability of rainfall and rising temperatures, directly impacting water resources, agricultural outcomes, and food security.

The Livestock Sector in Uganda

The livestock sector in Uganda is integral to the national economy and demonstrates a dynamic interplay between traditional and modern agricultural practices. Livestock in Uganda includes a diverse array of animals, most notably cattle, goats, sheep, pigs, and poultry. These animals are pivotal for the livelihoods of many households, providing food, income, manure, and, in the case of cattle, a source of prestige within specific communities

The geographical distribution of livestock in Uganda mirrors the country's varied climatic and geographical landscapes. For instance, cattle are predominantly found in the cattle corridor that stretches from the southwest to the northeast of Uganda, covering districts like Mbarara, Masaka, and Soroti, where Ankole and Zebu breeds are prominent. On the other hand, the central and eastern regions, given their smaller land holdings, are more characterized by poultry and pig farming.



A special mention is warranted for the Karamoja region in northeastern Uaanda. where predominantly a pastoralist community lives. In Karamoja, livestock is not merely an economic asset but a cornerstone of cultural identity and social prestige. The region relies heavily on pastoralism, with cattle, goats, and camels playing a central role in the livelihoods of the people there. This pastoralist way of life has evolved, integrating both traditional nomadic practices and semi-nomadic systems, allowing the Karamoja community to adapt to climate variability and resource competition challenges.

Uganda employs both extensive and intensive farming approaches. The extensive system, or free-range system, is commonly practiced with cattle in the rangelands of the cattle corridor, including Karamoja, where pastoral and agro-pastoral systems allow animals to graze over vast areas. Conversely, intensive systems are more prevalent in poultry and pig farming, especially near urban centers like Kampala, where space is limited and the demand for meat and eggs is high.

The livestock sector is a significant employer in Uganda, engaging over 4.5 million households in some form of livestock farming, representing approximately70% of all rural households (Uganda Bureau of Statistics (UBOS), 2019). These households predominantly involve smallholder farmers who rely on mixed farming practices, combining crop production with livestock rearing. This setup not only diversifies their sources of income but also enhances their resilience to climate variability and market fluctuations.

Producer groups in Uganda, such as the Uganda National Farmers Federation and the Dairy Development Authority, play critical roles in advocating for farmers' interests, providing market access, and facilitating capacity building. Major domestic markets for livestock products include urban centers, where there's a growing demand for meat, milk, and eggs due to rising incomes and urbanization. On the international front, Uganda's livestock sector is still burgeoning, with potential markets in the Middle East and neighboring countries for products like beef and dairy.

Economically, the livestock sector contributes approximately 4.2% to Uganda's GDP and about 17% to the aaricultural GDP (Economic Policy Research Centre (EPRC), 2018), making it a significant component of the country's economy. This sector has shown growth potential, especially in dairy and poultry production, propelled by domestic demand and regional trade opportunities. However, realizing this potential requires addressing challenges like disease control, quality feed access, and infrastructure development.

Rangelands in Uganda, covering over 40% of the country's land surface, serve as the backbone for the extensive livestock farming system. These rangelands are crucial for livestock grazing and preserving biodiversity, water catchment, and the cultural heritage of pastoral communities, particularly in regions like Karamoja. However, the encroachment of agriculture, land degradation, and climate change pose significant threats to the sustainability of rangelands, calling for integrated management practices that balance ecological preservation with livestock production.



The livestock sector in Uganda represents an essential component of the national supporting economy, millions of households and contributing significantly to GDP (Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), 2020; Food and Agriculture Organization of the United Nations (FAO), 2017). Its diversity in livestock types and farming approaches, including the pastoral context of Karamoja, illustrates farmers' adaptability to their environments. Investment in research, infrastructure, and policies supporting sustainable practices is crucial for this sector to continue growing.

The Impact of Climate Change on the Livestock Sector

The livestock sector is increasingly vulnerable to climate change's impacts, which pose significant challenges to sustainable livestock management and the health of rangelands (FAO, 2020).

The impacts of climate change on the livestock sector in Uganda are multifaceted and have implications for both animal health and productivity. One of the primary concerns is the increased temperature, which can lead to heat stress in livestock, particularly in regions experiencing more frequent and intense heat waves. Heat stress not only affects the well-being of the animals but also has economic repercussions, as it can result in reduced productivity, reproductive issues, and even increased mortality rates among livestock populations (IPCC, 2018).

Erratic rainfall patterns, another consequence of climate change, present a significant challenge for the livestock sector. Uganda has experienced shifts in precipitation patterns, leading to prolonged droughts followed by intense rainfall events. These variations in rainfall can directly impact water availability for livestock and agricultural activities. Prolonged dry spells reduce the availability of grazing areas and water sources for livestock. At the same time, sudden heavy rains can lead to flooding and waterborne diseases, compromising animal health and productivity (UNDP, 2019).

In addition to thermal and water-related stresses, the spread of diseases poses a significant threat to livestock. Climate change can influence the distribution and prevalence of diseases affecting livestock, potentially leading to increased disease outbreaks and economic losses for farmers. Changes in temperature and precipitation patterns can create favorable conditions for the proliferation of disease vectors and pathogens, increasing livestock's vulnerability to various infectious diseases (WHO, 2017).

The Vulnerability of Rangelands to Climate Change

Rangelands in Uganda are vital for providing grazing habitats for livestock and supporting critical ecological processes such as carbon sequestration. However, unsustainable livestock grazing practices, including overgrazing and land mismanagement, have significantly degraded these critical ecosystems. Overgrazing has resulted in the loss of vegetation cover, soil erosion, and the deterioration of rangeland health, ultimately reducing their carrying capacity for livestock and impairing their ability to sequester carbon (CBD, 2019).

The encroachment of rangelands for agricultural expansion and urban development poses an additional threat to these ecosystems. The increasing pressure on rangelands due to land use changes leads to habitat loss, fragmentation, and degradation, exacerbating their vulnerability to the impacts of climate change (IUCN, 2018). Moreover, these changes further limit the availability of suitable grazing areas for livestock, disrupting traditional grazing patterns and exacerbating competition for resources among pastoral communities.

> Map showcasing the distribution of rangelands in Uganda.

Livestock production systems in Uganda (Source: www.wri.org)



Adaptive Strategies and Resilience Building for the Livestock Sector

A comprehensive strategy is required to address the vulnerabilities and enhance the resilience of the livestock and rangeland sector in the face of climate change. This should include promoting sustainable grazing practices by implementing rotational grazing schemes, controlled grazing periods, and restoration initiatives to enhance rangeland health and resilience (WRI, 2020). Additionally, supporting the breeding, conservation, and dissemination of climate-resilient livestock breeds adapted to changing climatic conditions and engaging local communities in participatory rangeland management can empower communities to adapt to climate change impacts and conserve rangeland ecosystems (UNEP-WCMC, 2019; ILRI, 2020). The vulnerability of Uganda's livestock and rangeland sector to climate change underscores the necessity of integrated and sustainable management approaches. Addressing these challenges requires a holistic and multi-faceted strategy incorporating policy reforms, capacity building, stakeholder engagement, and community empowerment to ensure the long-term sustainability of livestock production and rangeland ecosystems amid climate change uncertainties.

Policy and Management Challenges

Uganda's livestock and rangeland sector's vulnerabilities to climate change necessitate proactive policy interventions and more effective management strategies to enhance resilience and adaptation capacities. These challenges include weak enforcement of regulations related to sustainable livestock management and rangeland conservation, limited adoption of sustainable practices, and cross-sectoral coordination to address the complex interlinkages between livestock management, rangeland conservation, and climate change adaptation (FAO, 2018).

One of the primary challenges in addressing climate change within the livestock sector is establishing policy coherence. The Paris Agreement, adopted in 2015 under the United Nations Framework Convention on Climate Change (UNFCCC), sets out a global framework to avoid dangerous climate change by limiting global warming to well below 2°C. Yet, achieving the commitments under the Paris Agreement requires coherent policies that integrate climate change, livestock, and rangeland management effectively.

Like many other countries, Uganda challenges aligning its national policies with these global commitments. Despite progress in some areas, there is still a gap in creating a synergistic approach that encompasses climate change mitigation, sustainable livestock production, and rangeland management. The National Development Plan (NDP) and the National Climate Change Policy are steps in the right direction, but achieving policy coherence remains a work in progress (Republic of Uganda, 2015).

Moving Forward

To address these complex challenges, multiple stakeholders must work together to harmonize policies and practices, including governments, international organizations, and local communities. This involves embracing sustainable livestock management practices that reduce emissions and adopting rangeland management strategies that enhance resilience to climate change.

For Uganda, this means developing and implementing policies that reduce the livestock sector's vulnerability to climate change and contribute to the global effort to mitigate climate change. By fostering policy coherence, Uganda can ensure the sustainable development of its livestock and rangeland sectors, contributing both to national development and global environmental goals.

The Current Climate Change Policy, Legal, and Institutional Framework in Uganda

Uganda's approach to climate change is structured around a comprehensive policy, legal, and institutional framework. These frameworks are designed to address mitigation of and adaptation to climate impacts, incorporating national strategies and commitments to regional and global agreements.

Uganda's policy, legal, and institutional frameworks reflect a comprehensive approach to climate change, incorporating a multi-sectoral, multi-level strategy that spans local, national, and international levels. These frameworks foster resilience, promote sustainable development, and ensure Uganda's active participation in global climate governance. Continued harmonization between these frameworks, alongside effective implementation and stakeholder engagement, remains crucial for addressing Uganda's climate challenges.

National Frameworks and Key Legislations

- The National Climate Change Policy (NCCP), 2015: The NCCP outlines Uganda's commitment to building climate resilience and reducing greenhouse gas emissions. It identifies priority areas, including agriculture, livestock, water resources, and energy (Ministry of Water and Environment, Uganda, 2015).
- The National Development Plan (NDP III), 2020/21 2024/25: Aligned with the NCCP, the NDP III incorporates climate change as a core issue affecting Uganda's socio-economic progress. It integrates climate action into broader national development goals (National Planning Authority, 2020).
- National Adaptation Plan of Action (NAPA), 2007: The NAPA outlines priority adaptation activities, focusing on community-level interventions and building resilience in the agriculture sector and among rural populations (Ministry of Water and Environment, Uganda, 2007).
- The Climate Change Act, 2021: This Act provides a legal framework for effectively implementing, managing, and coordinating activities related to climate change in Uganda. It emphasizes mainstreaming climate change responses into sectoral and local government plans and enforces compliance with national and international climate obligations (Republic of Uganda, 2021)
- The National Environment Act, Cap 153 (as revised in 2019): This Act includes aspects relevant to climate change, such as environmental impact assessments (EIAs) for projects likely to have an environmental impact, management of natural resources, and pollution control. The 2019 amendment enhanced provisions on climate change, environmental monitoring, and compliance mechanisms.

Institutional Framework

- Climate Change Department (CCD) at the Ministry of Water and Environment: Acts as the focal point for climate policy coordination, ensuring integration of climate actions across various sectors and levels of government.
- National Climate Change Advisory Committee: Established under the Climate Change Act, this committee advises the government on climate change policy and coordination, enhancing institutional collaboration.
- National Environment Management Authority (NEMA): Plays a crucial role in environmental regulation, overseeing the environmental impact assessments that incorporate climate change considerations into development projects.

Regional and International Frameworks

- East African Community Climate Change Policy, 2019: This policy aligns member states, including Uganda, towards common climate action goals emphasizing adaptation, mitigation, and support mechanisms within the East African context (East African Community, 2019).
- The Paris Agreement, 2015: Uganda ratified this global agreement, committing to national contributions towards limiting global warming. Uganda's Nationally Determined Contributions (NDCs) outline specific emission reduction targets and adaptation measures in alignment with the Paris Agreement.
- The United Nations Framework Convention on Climate Bullet Points Change (UNFCCC): As a party to the UNFCCC, Uganda participates in global climate dialogue and action, receiving financial and technical support for its climate initiatives.



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Sectoral Policies and Strategies in Uganda Addressing Climate Change

Uganda has developed various sectoral policies and strategies to incorporate climate change mitigation and adaptation measures across its economy and society. Each sectoral policy aims to tackle specific challenges related to climate change within its domain while contributing to the country's overall resilience.

Agriculture Sector

- Agricultural Sector Strategic Plan (ASSP): The ASSP focuses on increasing agricultural productivity while promoting climate-smart farming practices that are resilient to climate variability and change.
- Uganda Climate Smart Agriculture Program: This program is designed to increase the adoption of climate-smart agricultural practices, enhance institutional coordination, and improve farmer access to climate information.

Water Resources

- The Water and Environment Sector Performance Report: This annual report assesses the performance of the water and environment sector, including the impact of climate change on water resources and the implementation of adaptation measures.
- Integrated Water Resources Management (IWRM) Plan: This plan supports the development and management of water resources in a sustainable, equitable, and climate-resilient manner.

Energy Sector

- The Renewable Energy Policy (2007): Promotes the development and use of renewable energy sources to reduce dependence on non-renewable and carbon-intensive energy sources.
- Energy Sector Investment Plan: Aims to increase access to modern, affordable, and reliable energy services with an emphasis on renewable and sustainable energy.

Forestry and Land Use

- National Forestry Policy (2001) provides guidelines for sustainable forest management, conservation, and commercial forestry, considering climate change impacts and forests' role in carbon sequestration.
- National Land Use Policy (2013): This policy addresses sustainable land management and utilization, encouraging practices that reduce land degradation and improve resilience to climate change.

Urban Development and Housing

- The National Urban Policy (2016) Promotes sustainable urban development and includes measures to address the impacts of climate change on metropolitan areas.
- The National Slum Upgrading Strategy and Action Plan focuses on improving living conditions in informal settlements, with considerations for disaster risk reduction and climate resilience.

Public Health

• The Health Sector Development Plan: Recognizes the impact of climate change on public health and integrates strategies for climate-related disease surveillance, control, and prevention.

Transport

• National Transport Policy: Aims to develop an environmentally sustainable transport system that contributes to reduced greenhouse gas emissions.

Finance and Economic Planning

• Green Growth Development Strategy: Outlines Uganda's plan for achieving lower-carbon economic growth and incorporates climate change adaptation and mitigation strategies into financial planning.

Industry and Mining

• Sustainable Industrial Development Policy promotes the growth of greener and more energy-efficient industries by implementing strategies for reducing industrial carbon emissions and environmental impacts.

Cross-Sectoral Initiatives

- National Climate Change Policy (NCCP) and Implementation Strategy: This policy provides overarching guidance for integrating climate change measures across all sectors and government levels.
- National Adaptation Plan (NAP): Aims to reduce vulnerability to climate change impacts by building adaptive capacity and resilience across multiple sectors.

By integrating climate change strategies into these sectoral policies, Uganda is working towards a holistic approach to climate resilience, sustainable development, and green growth. Successful implementation of these strategies requires strong inter-sectoral coordination, capacity building, adequate funding, and effective stakeholder engagement at all levels.

Stakeholders and Institutions in Climate Policy Development in Uganda

Effective climate policy development and implementation in Uganda depend on multiplestakeholders and institutions collaborating. These can range from government bodies at the national and local levels to non-governmental organizations (NGOs), international donors, research institutions, and the communities directly impacted by climate change. The roles and contributions of these stakeholders are pivotal in creating resilient frameworks to address the nation's climate challenges.

National Government Bodies

- Ministry of Water and Environment (MWE): The MWE houses the Climate Change Department (CCD), which is responsible for coordinating Uganda's response to climate change, developing policies, and implementing climate change programs (Ministry of Water and Environment, Uganda, 2018).
- **Ministry of Agriculture, Animal Industry and Fisheries (MAAIF):** MAAIF plays a crucial role in integrating climate-resilient agricultural practices, ensuring food security, and supporting the livelihoods of communities reliant on agriculture and livestock.
- National Environment Management Authority (NEMA): NEMA implements environmental regulation and conservation policies vital to combating land degradation and promoting sustainable agricultural practices.

Local Government and Administration

At the more granular level, local governments are instrumental in grassroots-level policy implementation. They bridge the gap between national policy frameworks and community needs by tailoring interventions to local conditions and fostering community participation in climate action plans.

Non-Governmental Organizations (NGOs) and Civil Society

NGOs and civil society organizations play a dual role in advocacy and direct action. They are often at the forefront of:

Raising awareness about the impacts of climate change.

Conducting capacity-building programs for local communities.

Implementing adaptation and mitigation projects on the ground.

Prominent examples include the Worldwide Fund for Nature (WWF-Uganda) and the Uganda Climate Action Network (CAN-U).

International Partners and Donors

International partners such as the United Nations Development Programme (UNDP), the World Bank, and the Adaptation Fund support Uganda through funding, technical assistance, and capacity-building initiatives. Their contributions are integral to developing and implementing large-scale climate resilience and adaptation projects.

Research Institutions and Academia

Research institutions and universities contribute through vital research and analysis that inform climate policies. They offer scientific insights into climate impacts and the effectiveness of adaptation measures. Makerere University's Resilient Africa Network (RAN) is an example of research that aims to strengthen the resilience of communities by leveraging academic research and innovations.

Communities and Local Stakeholders

Communities and local stakeholders directly impacted by climate change are critical in the policy development. Their traditional knowledge, experiences, and needs help shape practical and sustainable climate adaptation strategies. Engaging these communities through participatory approaches ensures that policies are grounded in scientific research and the real-world contexts of those most affected.



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Uganda's development policy frameworks: the intersection of climate change and the livestock sector

The following section analyses four major policy frameworks guiding Uganda's development: climate policies, development policies, agriculture and livestock policies, and land and environment policies. For each subsector, the report analyses the extent to which the policies contain guidance, commitments, and directives relating to climate change and/or the livestock sector.

Climate Policies

Uganda's climate policies align with international and national development objectives, though their effectiveness in supporting adaptation and mitigation in the livestock sector varies. The journey began with the National Adaptation Programme of Action (NAPA) in 2007, which marked Uganda's initial foray into climate policy. NAPA recognized the importance of the livestock sector in adaptation strategies, mainly through projects aimed at land degradation management, water conservation, and drought resilience. Despite criticisms regarding its implementation, NAPA was pivotal in initiating national-level adaptation planning.

Building on this foundation, Uganda introduced the National Climate Change Policy (NCCP) in 2015. This policy emphasized adaptation within the livestock sector, with a notable mitigation strategy focused on sustainable rangeland management to combat soil and land degradation. The NCCP established a framework for legal and regulatory measures, designated roles for stakeholders, and outlined coordination mechanisms, although it still needed to provide detailed inter-agency collaboration instructions.

The same year, Uganda's Nationally Determined Contribution (NDC) was submitted, reflecting a continued focus on adaptation strategies for the livestock sector, including breeding and rangeland management. Its mitigation strategies mentioned "livestock breeding research and manure management practices" under its ambitions for further mitigation efforts.

The National Adaptation Plan for the Agriculture Sector (NAP-Ag) was developed in 2018 as an ambitious step toward a comprehensive approach. This plan takes a holistic view of adaptation in the livestock sector and encourages mitigation co-benefits, although specific mitigation strategies need to be more extensively detailed. It prioritizes improving livestock breeds, enhancing feeding practices, managing sustainable lands, overseeing animal health, diversifying livelihoods, and strengthening livestock value chains.

A significant leap towards detailed policymaking was achieved with the National REDD+ Strategy and Action Plan in 2017 and the Nationally Appropriate Mitigation Actions (NAMA) for climate-smart dairy livestock value chains in the same year. While both are mitigation-centric, they offer considerable adaptation benefits. Notably, the NAMA aims to bolster climate resilience in the dairy sector while aiming for a substantial reduction in greenhouse gas emissions.

Despite prior initiatives, the support for developing a nationally Appropriate Mitigation Action (NAMA) focused on creating strategies and techniques to decrease methane emissions from livestock production in Uganda needs to be clarified. However, this initiative's current status remains to be seen due to a lack of available documentation for review.

Climate Policy Summary

The table below shows a systematic overview of the pivotal components of Uganda's climate policy initiatives, particularly highlighting their relevance and effects on the livestock sector. This table has been adapted from the report by Ashley L. (2019) titled "Climate and Livestock Policy Coherence Analysis in Kenya, Ethiopia and Uganda." This work, recognized as CCAFS Working Paper No. 268, is published in Wageningen, the Netherlands, by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), serving as a foundational document for understanding the intersection of climate policy and livestock management within the Ugandan context. Policies were scored for the extent of integration of livestock sector adaptation and mitigation on a scale of 1-5 (Refer to Annex 1). Higher scores designate more dedicated and detailed climate-related strategies for the livestock sector.

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Policy/Strategy	Main Goal	Livestock Sector Focus	Alignment	Key Actors	Finance Sources
NAPA, 2007	Prioritize national adaptation actions	Adaptation:3 Mitigation: 1	Aligned with MDGs and country development policy	Ministry of Water, Lands and Environment; National Climate Change Steering Committee	Government of Uganda, Bi- laterals, multi- laterals, NGOs, CBOs
National Climate Change Policy, 2015	Harmonized and coordinated approach towards a climate-resilient and low-carbon development	Adaptation:3 Mitigation: 1	Aligned with SDGs and country development policy	ligned Ministry of ith SDGs Water and the nd country Environment evelopment olicy	
NDCs, 2023	Address climate change impacts and promote sustainable development and green growth	Adaptation:2 Mitigation: 1	Aligned with SDGs, NDP III, and NCCP	Ministry of Water and the Environment	National sources (~30% of incremental costs), international sources (~70%)
National REDD+ Strategy and Ac- tion Plan, 2017	Sustainable abatement activities	Adaptation:1 Mitigation: 2	Aligned with SDGs and NDP II	Ministry of Water and the Environment; Forestry Sector Support Department	National, district, and local budgets; carbon trading; investors, cooperatives, industries, rural households
NAMA, Climate– smart dairy livestock value chains in Uganda, 2017	Resilient low-carbon development in the dairy sector through climate-smart agricultural practices	Adaptation:2 Mitigation: 3	Aligned with SDGs and NDP II	Ministry of Agriculture, Animal Industry and Fisheries	Yield Uganda Investment Fund; Africa Agricultural Development Company; government, donors
NAP-Ag, 2018	Enhance the adaptive capacity of Uganda's agricultural sector to climate change impacts.	Adaptation:3 Mitigation: 2	Aligned with SDGs, NCCP, NDP II, and NDC	Ministry of Agriculture, Animal Industry and Fisheries	Ministry budget, national budget, GEF, development partners, GCF

Livestock and Agricultural Policies

It is essential to understand the evolution of Uganda's livestock and agricultural policies in a comprehensive assessment of these policies, especially in the context of recent updates in 2023. Uganda has long recognized the impact of climate change on agriculture, as evidenced by the National Agriculture Policy of 2013, which included strategies emphasizing sustainable resource management and the development of institutional capacity to address climate change. This policy was directed towards transitioning from subsistence to commercial agriculture, optimizing production, processing, marketing, and trade to achieve this transformation.

Complementing the National Agriculture Policy is the Agriculture Sector Strategic Plan (ASSP), which sets an ambitious goal for the agricultural sector—to attain an average annual growth rate of six percent. Targeting increased production across key commodities such as dairy, beef, goat, and poultry, the ASSP proposes specific strategies to enhance livestock production and productivity. It incorporates climate change as a pertinent issue, promoting broad strategies like adopting climate-smart agricultural practices; however, it initially presented minimal financial commitment for climate adaptation, with no specific provision for mitigation.

In 2023, the Ugandan agricultural landscape saw noteworthy policy updates and the release of strategic documents that further encapsulate the country's dedication to strengthening its agricultural framework amid changing climatic conditions. The Ministry's 2023 manifesto showcases an increased GDP contribution from the agriculture sector, reaffirming growth and emphasizing the sector's role in ensuring food security, employment, and industrial raw material generation. The implementation of the Micro-scale Irrigation Program demonstrates significant strides in climate resiliency. This highlights the government's initiative to bolster irrigation infrastructure to combat the unpredictable climate and ensure continuous agricultural productivity. Technical guidelines introduced by the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) accentuate a movement towards water sustainability and resource management aimed at climate change mitigation and adaptation.

The most recent National Agriculture Policy updated in January 2023 reiterates the importance of DSIP, aligning with the core mission to make farming in Uganda more commercial and sustainable. Strategic investment plans under this policy underscore the critical nature of agriculture to the nation's economy and food security.

The policy landscape of Uganda in 2023 thus represents an adaptive, strategic approach to agriculture and livestock management. The government has taken significant steps to ensure the sector's resilience and productivity in the face of climate change while also promoting economic growth and sustainability.

Uganda's concerted efforts through these policies and initiatives demonstrate a synergistic commitment to agricultural development, climate responsivity, and sector-wide growth, setting a sustainable course for its farming and livestock sectors well into the future.

Livestock and Agricultural Policy Summary

This table synthesizes the principal elements of each policy document, delineating their overarching goals, objectives pertinent to climate and livestock, their congruence with broader strategic frameworks, the principal actors implicated in the formulation of these policies, and their financing mechanisms. Adapted from the report by Ashley L. (2019) titled "Climate and livestock policy coherence analysis in Kenya, Ethiopia, and Uganda," this compilation serves to highlight the interconnections and specific focal areas of agricultural policies as documented in the CCAFS Working Paper No. 268, published in Wageningen, the Netherlands, by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

Policy Document	Overall– Policy Goal	Policy Objective(s), Climate	Policy Objective(s), Livestock	Alignment	Key Actors in Policy Development	Finance Sources
National Agriculture Policy, 2013	To achieve food and nutrition security and improve household incomes through enhancing sustainable agricultural productivity and value addition, providing employment opportunities, and promoting domestic and international trade.	N/A	N/A	Aligned with national development policy	Ministry of Agriculture, Animal Industry and Fisheries	Not specified, but includes support from development partners
Agriculture Sector Strategic Plan	To achieve an average growth rate of 6 percent per year over the next five years.	To ensure cross-cutting issues, including climate change, are adequately mainstreamed in all activities.	Increase dairy and meat production and productivity through access to critical inputs, improve agricultural markets and value addition, and improve service delivery.	Aligned with SDGs, NDP III, and National Agriculture Policy	Ministry of Agriculture, Animal Industry and Fisheries	National budget framework, development partners, and private sector

Uganda Development Policies

The current development landscape in Uganda, mainly through the framework of the Third National Development Plan (NDP III) spanning from 2020/21 to 2024/25, reflects the country's ambitious aspirations towards substantial economic and social transformation. This plan is foundational to Uganda's broad developmental agenda, targeting a leap from a predominantly peasant society to a modern, prosperous nation as defined in Vision 2040. The strategic thrust of NDP III is to foster sustainable industrialization that promotes inclusive growth, significantly improves employment opportunities, and enhances the overall quality of life for Ugandans.

NDP III strongly emphasizes agriculture, recognizing it as a significant economic backbone, contributing around a quarter to the national GDP and employing the vast majority of Ugandans. The plan explicitly identifies agriculture as one of five primary areas for investment, marking dairy and beef cattle among the twelve priority value chains slated for intensified production and productivity enhancements. It sets ambitious goals, including an increase in local beef consumption per capita, to promote livestock production intensification. Yet, the policy framework's consideration for the full spectrum of the livestock sector, especially pastoralism and extensive livestock systems, needs to be revised. It acknowledges climate change as a cross-cutting concern and advocates for climate-resilient agricultural technologies and practices. However, discussions on the specific impacts of climate change on livestock and detailed adaptation and mitigation strategies are less prominent.

Despite its comprehensive approach to addressing climate change across sectors, the NDP III must offer detailed, livestock-specific adaptation and mitigation strategies. This oversight is noted alongside a general acknowledgment of the need for sustainable agricultural practices resilient to climate variability and change. The brief mention of projects like the "Export Goat Breeding and Production Project" reveals a gap in attention towards non-cattle livestock within national policy frameworks.

In alignment with the broader objectives of sustainable development and climate resilience, Uganda has also established the Green Growth Development Strategy (GGDS) covering the period from 2017/18 to 2030/31. This strategy aims to integrate green growth principles into the national development agenda, stressing agriculture and, implicitly, livestock as critical areas for green growth. Nonetheless, the specifics regarding sustainable management practices for the livestock sector still need to be more specific within this strategy, indicating a missed opportunity to elaborate on conservation agriculture and natural resource management strategies that are tailor-made for the industry.

The overarching policy documents of Uganda, including NDP III and GGDS, underscore an ever-increasing recognition of agriculture's role in economic growth and environmental sustainability. However, enhancing the specificity and focus on the livestock sector, particularly in the context of climate change adaptation and mitigation, is a critical need. These documents provide a foundational framework that could be enriched by incorporating detailed, sector-specific strategies that address the unique challenges and opportunities within the livestock sector. As Uganda advances in implementing these development policies, there lies a pivotal chance to fine-tune the focus on livestock, ensuring that this sector's contributions towards national goals are maximized in an environmentally sustainable and economically viable manner.

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Uganda Development Policy Summary

This table synthesizes the principal elements of each policy document, delineating their overarching goals, objectives pertinent to climate and livestock, their congruence with broader strategic frameworks, the principal actors implicated in the formulation of these policies, and their financing mechanisms. Adapted from the report by Ashley L. (2019) titled "Climate and livestock policy coherence analysis in Kenya, Ethiopia, and Uganda," this compilation serves to highlight the interconnections and specific focal areas of agricultural policies as documented in the CCAFS Working Paper No. 268, published in Wageningen, the Netherlands, by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

Policy Document	Overall– Policy Goal	Policy Objective(s), Climate	Policy Objective(s), Livestock and Agric	Alignment	Key Actors in Policy Development	Finance Sources
National Development Plan (NDP III)	To propel Uganda towards middle-income status by 2020 through strengthening competitiveness for sustainable wealth creation, employment, and inclusive growth.	Key cross- cutting issues, including climate change, will be mainstreamed in government programs and projects.	For agriculture: Increase sustainable production, productivity, and value addition in key growth opportunities. Livestock Sector: Adaptation and Mitigation efforts emphasized.	Aligned with SDGs	National Planning Authority	Public financing, PPPs, development partners (World Bank, UNDP, UN Women, UN-OHCHR, UNICEF, UNICEF, UNFPA, UNDESA, FAO, GIZ, etc.)
Green Growth Development Strategy	An inclusive, low-emissions economic growth process emphasizing the efficient use of Uganda's natural, human, and physical capital while ensuring that natural assets continue to provide for present and future generations.	To ensure social and economic transition through a low carbon development pathway safeguarding environmental and natural resource integrity.	For agriculture: Promote sustainable agriculture production and upgrade value chains focusing on irrigation and integrated soil fertility management. Livestock Sector: Adaptation and Mitigation efforts noted.	Aligned with SDGs and NDP III	National Planning Authority, in partnership with the Climate Change Department (Ministry of Water and Environment)	Public sector allocations, environmental and subsidy reforms, certification of sustainable production, green innovation, payments for ecosystem services, and international funding (UNDP, Global Green Growth Institute, etc.).

Land and Environmental Policy

Uganda's environmental and land use policies are designed to confront various challenges, including soil degradation, deforestation, loss of biodiversity, and pollution. These policies foster an integrated and comprehensive approach to managing environmental issues while promoting sustainable development practices.

The National Environmental Management Policy (NEMP) of 1995 was established to address key environmental challenges by promoting a culture of conservation and sustainable use of natural resources. It led to the creation of the National Environment Management Authority (NEMA), which was responsible for overseeing the implementation of environmental monitoring and evaluation systems. NEMP emphasizes the importance of climate as a crucial natural resource, advocating for the careful monitoring of climate variables to guide land use decisions, stimulate sustainable economic development, and manage air quality and greenhouse gas emissions.

The Land Use Policy 2006 acknowledges the impactofclimate change and proposes strategies to boost resilience. These include enhancing long-term weather forecasting, developing early warning systems, and promoting soil and water conservation practices. Despite its forward-looking provisions, the policy stops short of addressing climate change mitigation directly. It proposes initiatives to balance rural and urban migration and resettlement to effectively manage population density and land use. The National Land Policy of 2013 explicitly addresses pastoralists' concerns, offering strategies for protecting and sustainable development of pastoral lands. It proposes measures to safeguard pastoral lands from unauthorized use and ensure that they remain under the control of pastoral communities through common property under customary tenure. Despite these protective measures, there has been evidence of negative views towards extensive livestock production systems. The policy advocates for zoning to delineate appropriate agroecological and pastoral resource areas, aiming to maintain a balance among different land uses. However, the integration of pastoralism into broader national development plans such as NDP III needs to be improved, with no specific measures to prevent the conversion of rangelands to other uses. Additionally, the call for the Ministry to develop a pastoral land policy for livestock still needs to be fulfilled.

Regarding climate adaptation and mitigation, the National Land Policy outlines strategies to regulate activities that emit greenhouse gases, strengthen adaptive capacities for climate resilience, and facilitate rapid response mechanisms for extreme climatic events. It also focuses on resettling environmental refugees and internally displaced persons, alongside improving natural resource management practices.

As environmental and land use challenges evolve, Uganda continues to refine its policy frameworks to address contemporary issues such as climate change more effectively. The latest policies must build upon the foundation established by existing frameworks, emphasizing the integration of climate adaptation and mitigation strategies across all sectors, including agriculture and livestock. Enhanced focus on sustainable land management, protection of environmental resources, and promotion of resilient agricultural practices is crucial for achieving sustainable development goals.

In sum, while Uganda's existing policies lay a solid groundwork for addressing environmental and land use challenges, ongoing updates and the formulation of new policies are necessary to keep pace with the changing environmental landscape and the pressing need for sustainable development.

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Uganda Environmental and Land Policy Summary

This table synthesizes the principal elements of each policy document, delineating their overarching goals, objectives pertinent to climate and livestock, their congruence with broader strategic frameworks, the principal actors implicated in the formulation of these policies, and their financing mechanisms. Adapted from the report by Ashley L. (2019) titled "Climate and livestock policy coherence analysis in Kenya, Ethiopia, and Uganda," this compilation serves to highlight the interconnections and specific focal areas of agricultural policies as documented in the CCAFS Working Paper No. 268, published in Wageningen, the Netherlands, by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

Policy	Overall– Policy Goal	Climate Objectives	Livestock Objectives	Alignment with SDGs/ National Goals	Key Actors in Policy Development	Finance Sources
National Environment Management Policy, 1995	Address environmental issues with a comprehensive, integrated approach	Monitor climate to direct land use, encourage sustainable development, manage pollution and GHG emissions	Not speci- fied	Not specified	Not specified	Not specified
National Land Use Policy, 2006	Achieve sustainable, equitable socio-economic development through optimal land management and utilization	Promote practices minimizing the impact of climate variability and change	Adopt improved agriculture and land use systems providing lasting ben- efits	Aligned with Poverty Eradi- cation Action Plan (PEAP); references UNFCCC	Ministry of Lands, Housing, and Urban Development; Environmental Management Associates, Development Consultants International, unnamed donors	Innovative financial mechanisms, financial incentives, and support from development partners
National Land Policy, 2013	Ensure efficient, equitable, and optimal utilization and management of land resources for poverty reduction and socio-economic development.	N/A	Government plans and programs to mitigate and adapt to climate impacts	Policy im- plementa- tion within regional and international agreements context	Ministry of Lands, Housing and Urban Development; Ford Foundation	Budgeted through the national development framework

Adaptation and mitigation in the livestock sector: policy coherence analysis

Having reviewed the integration of climate change and the livestock sector into major developmental policy frameworks, the following section analyses the extent to which these frameworks focus on adaptation or mitigation approaches and the relative synergy and coherence between policy frameworks.

Adaptation synergies, conflicts, and gaps

This table shows adaptation actions indicated by various policies in Uganda, and this is adapted from the report by Ashley L. (2019)

Adaptation Strategy	NAPA, 2007	NCCP, 2015	NDC, 2023	REDD+ Strat– egy, 2017	NAMA 2017	NAP- Ag, 2018	Na– tional Ag Pol– icy, 2013	ASSP, 2015	NDP III, 2021	GGDS, 2017	Land Use Policy, 2006	Na– tional Land Policy, 2013
Improve NRM/ SLM	Х	Х	Х			Х	Х	Х	Х	Х	Х	
Support market linkage and value chains	х	х	Х		Х	х	Х	Х	х		Х	
Improve water access and avail– ability	х	х	Х	Х		х		х	х		Х	
Improve breeding	Х		Х			Х	Х	Х				
Establish/ improve ear– ly warning systems	х	х	х				х		х		Х	
Increase cli– mate infor– mation	Х	Х	Х				Х		Х		х	
Improve post–har– vest/ storage	Х					Х			Х		х	
Improve feed/ grazing	Х		Х	Х		Х	Х	Х			Х	
Improve dis– ease control	Х					Х	Х	Х	Х		Х	
Livelihood diversifica – tion/ al – ternative livelihoods	Х	х				х						

Analysis

Focus on Sector Growth and Climate Adaptation

Uganda's agricultural policies, such as the Agriculture Sector Strategic Plan (2015-2020), center around sector growth, mainly through livestock sector intensification. These policies overlap with climate strategies found in the National Adaptation Plan for Agriculture (NAP-Ag), which provides detailed strategies for fostering adaptation within this sector. Although their strategies are relatively broad, the National Climate Change Policy (NCCP) and Nationally Determined Contributions (NDC) also contribute to sector resilience.

Existing Synergies

Significant alignment exists between climate, livestock, agriculture, development policies, and the Land Use Policy (2006), particularly in natural resource management, water access, breeding, and market systems enhancements. Climate-smart agriculture practices are promoted, aiming to address both short-term and long-term adaptation needs. Despite this coherence, obstacles exist, such as low adoption rates of climate-smart agricultural practices.

Gaps in Pastoral Mobility

Uganda's Land Policy (2013) endorsed the protection of pastoralists' land rights, yet the National Development Plan III overlooks pastoralism and fails to protect rangelands from repurposing. Despite the National Land Policy's intent to develop a pastoral land policy, there has been little progress. Additionally, agriculture and mining are increasing encroachment on rangelands, heightening the need for secure pastoral corridors to boost resilience.

Policy Coherence

Core adaptation components such as improved water management, value chain enhancements, and natural resource management are well-integrated across various policies. However, some aspects, such as livestock breeding and feeding, are less consistently covered or lack detail outside the NAP-Ag framework.

For instance, the NAP-Ag emphasizes sustainable practices like pasture water resource development and rainwater harvesting. Similarly, enhanced breeding techniques are advocated across a few policies but are often not explicitly targeted at adaptation beyond the detailed strategies provided in the Agriculture Sector Strategic Plan (ASSP).

Early Warning Systems and Climate Information Services

Enhancing early warning systems and climate information services across policies is generally recognized. However, detailed execution plans are only available in the NAP-Ag framework, which emphasizes integrating Indigenous knowledge into these systems.

Disease Control and Diversification

Disease control strategies are well-delineated within agriculture policies, focusing on vaccination and disease detection improvements. Livelihood diversification is mentioned but needs to be discussed more in detail in policy documents.

Promoting Climate-Smart Agriculture

NAP-Ag advocates for climate-smart agriculture, while other policies touch on the subject less frequently or focus on mitigation rather than adaptation. Insurance in agriculture, particularly livestock insurance, is also recognized but mostly confined to the NAP-Ag discussions.

Need for Updated and Detailed Strategies

The presence of general goals and lack of detail in several policy areas underscore the need for updated, clearly articulated strategies, especially outside of the NAP-Ag framework. Enhanced coherence between existing policies, with explicit plans for implementation and monitoring, could improve Uganda's resilience to climate impacts in the agricultural sector.

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Mitigation synergies, conflicts, and gaps

This table shows Mitigation actions indicated by various policies in Uganda; this is adapted from the report by Ashley L. (2019)

Document	Increase Produc– tivity/Effi– ciency	Improve NRM/ Rangeland Manage– ment	Implement CSA	Improve Feeding	Improve Breeding	Improve Manure Manage– ment	Increase Water Ac– cess
NAPA, 2007							
NCCP, 2015		Х					
NDC, 2023			Х	Х	Х		
REDD+ Strate– gy, 2017	х	Х	х	Х	х		х
NAMA, 2017	х		Х	Х		х	
NAP–Ag, 201814	Х	Х	Х	Х	Х		Х
National Ag Policy, 2013							
ASSP, 2015			Х				
GGDS, 2017	Х						
Land Use Poli– cy, 2006							
National Land Policy, 2013		Х					

Analysis

Overview of Integration Challenges

Climate mitigation in Uganda's livestock sector must be more cohesive and adequately addressed in various national policies. Vital strategic documents, including the National Agriculture Policy and the Agriculture Sector Strategic Plan (ASSP), reference low-emission development and climate-smart agriculture but need more specific strategies for reducing livestock emissions. The National Development Plan III (NDP III) mentions mainstreaming climate mitigation but omits direct strategies addressing livestock emissions.

Detailed Mitigation Policies

In contrast, the National Appropriate Mitigation Action (NAMA) for the dairy sector and the REDD+ Strategy are more substantive, providing more explicit strategies for mitigating emissions within the livestock domain. Uganda's Nationally Determined Contributions (NDC) acknowledges emissions from enteric fermentation but stops short of setting explicit reduction targets for the livestock sector. However, it recognizes potential mitigation initiatives like livestock breeding research and improved manure management practices.

The National Climate Change Policy (NCCP) focuses less on the livestock sector than on promoting sustainable rangeland management. Similarly, the National Adaptation Plan for Agriculture (NAP-Ag) encourages mitigation co-benefits but needs detailed action plans specific to livestock.

Coherence Among Mitigation Actions

Strategies across policies highlight increasing productivity and efficiency, with general approaches focusing on improved feeding and breeding. The REDD+ Strategy and NAMA provide more detailed strategies for emission reduction. This includes advancements in milk production processes and post-production efficiencies such as milk collection, cooling, and storage. Additionally, they emphasize improving water access to increase livestock productivity.

Regarding feeding strategies, the REDD+ Strategy and NAMA are more descriptive, suggesting enhancement of feed quality through supplements, additives, and utilization of industrial by-products. Rangeland management strategies across the policies promote reduced forest clearing for pasture and advocate for agroforestry practices using fodder species.

Specific Mitigation Initiatives

Livestock breeding improvements are partially covered in the NDC and extensively in the REDD + Strategy, emphasizing the introduction of exotic breeds and crossbreeding techniques. Improved manure management is mentioned in the NDC and further elaborated in the NAMA, which discusses the conversion of manure into biogas using biodigesters as a practical mitigation step.

Furthermore, the NAMA outlines establishing a Monitoring, Reporting, and Verification (MRV) system to assess progress towards emissions reduction using tools such as the UNDP Climate Action Impact Tool and the Tier 1 method from the IPCC

Strongest synergies across policies

In Uganda, improving natural resource management, mainly through rangeland and sustainable land management, is prominent in climate change adaptation and mitigation efforts. This dual focus facilitates environmental sustainability and is foundational in bolstering the resilience of agricultural sectors, including livestock.

Asignificant thrust in Uganda's policy landscape is the drive towards commercialization, which is especially noticeable across agriculture and general developmental policies. This strategic direction encourages the adoption of value chain enhancements and market system interventions, which are viewed as particularly effective ways to integrate climate-smart practices into mainstream agricultural operations. One notable initiative in this space is the Nationally Appropriate Mitigation Action (NAMA) for the dairy sector, titled "Climate-smart dairy livestock value chains in Uganda." This initiative exemplifies a progressive approach to harmonizing climate action with commercial growth and productivity in the dairy sector, promoting sustainable practices that reduce greenhouse gas emissions and enhance overall ecosystem resilience.

The National Adaptation Plan for Agriculture (NAP-Ag), formulated in 2018, offers the most comprehensive framework for addressing climate adaptation within the livestock sector. It aligns closely with the National Development Plan III (NDP III) and effectively integrates with other national policies. The NAP-Ag underscores the importance of a holistic approach to livestock sector adaptation and facilitates coordination and synergy across diverse policy areas. This ensures a cohesive strategy that addresses multiple aspects of climate resilience—from water management and soil conservation to sustainable grazing practices and animal health management. Alignment and synergy across Uganda's policies are crucial for successfully integrating climate resilience measures into the livestock sector. By focusing on both adaptation and mitigation strategies through improved natural resource management and by leveraging commercialization opportunities within agriculture, Uganda is poised to create a sustainable, productive, and climate-resilient livestock sector. Continued emphasis on policy integration, such as the linkages between the NAP-Ag and NDP III, will maintain momentum and ensure these strategies translate into tangible benefits for the environment and local communities.

Areas of policy misalignment

In the intricate landscape of Uganda's agricultural and environmental policies, potential misalignment arises from the diverse foci and intended outcomes of different policy frameworks. A primary example is the dichotomy between the objectives of the National Agriculture Policy (NAP) of 2013, which emphasizes the commercialization of agriculture, and the more holistic, climate-oriented approaches advocated by the National Adaptation Plan for Agriculture (NAP-Ag) introduced in 2018.

Conflicting Priorities: Commercialization vs. Environmental Sustainability

The NAP's drive towards agriculture commercialization prioritizes productivity and economic gain, often with limited consideration for integrating climate mitigation strategies. If not carefully managed, this approach could inadvertently lead to increased greenhouse (GHG) emissions, exacerbating the qas climate challenges it seeks to overcome. The emphasis on scaling agricultural production and enhancing market competitiveness needs to pay more attention to the importance of sustainable practices that reduce environmental footprints.

In contrast, the NAP-Ag framework offers a vision of agriculture that is resilient and adaptive and considers the varying capacities and needs of Uganda's farmers, particularly smallholders. It suggests that the blanket approach to commercialization advocated by the NAP may hold limited relevance for many small-scale farmers, who constitute the backbone of Uganda's agricultural landscape. The NAP-Ag underscores the necessity for adaptive strategies that support these farmers in the face of climate variability and change, indicating a potential misalignment with the commercialization narrative.

Navigating Policy Direction: Which Path Forward?

The introduction of the NAP-Ag in November 2018 has sparked critical questions about the future direction of government interventions in agriculture. Will the strategies outlined in the NAP-Ag guide the reorientation of the National Agriculture Policy? Or will the commercialization agenda continue to overshadow the urgent need to integrate climate considerations?

Resolving this dilemma requires nuanced policy harmonization efforts, fostering a balanced dialogue between commercial growth objectives and sustainable, climate-resilient agricultural practices. This dialogue must recognize the importance of both reducing GHG emissions and enhancing adaptive capacities within the farming sector without compromising on the goal of economic advancement.

Recommendations

The analysis of Uganda's policies highlights significant variations in the integration of climate change adaptation and mitigation strategies for the livestock sector. While some policies, particularly those related to climate and agriculture, show moderate to high integration, others, especially in development and land use, require more comprehensive approaches. Future policies should include more detailed and specific strategies within climate, development, and land policies to enhance the integration of livestock sector considerations. There is an urgent need to strengthen mitigation efforts, especially in the livestock and agriculture sectors, ensuring alignment with national development goals and the Sustainable Development Goals (SDGs).

Engaging a broader range of stakeholders in the policy development process including local communities and international agencies—will provide diverse perspectives and promote sustainable practices. Moreover, future policies should focus on underrepresented areas like extensive livestock production and pastoral mobility while incorporating indigenous knowledge and technology. This collaboration across policy frameworks is essential for achieving comprehensive growth that aligns with climate resilience objectives.

The existing Agriculture Sector Strategic Plan emphasizes sector growth, mainly through intensification, which may risk overlooking essential climate change adaptation measures. While the National Adaptation Plan for Agriculture (NAP-Ag) provides vital strategies for livestock sector adaptation, there remains a need for coherent and actionable mitigation strategies across all relevant agricultural and environmental policies, not just specialized ones like NAMA or REDD+. Future efforts should include clear emissions reduction targets, enhanced research on livestock adaptability, and comprehensive manure management strategies.

A thorough review of the NAP and NAP-Ag is necessary to achieve policy harmonization and identify gaps in climate change mitigation and adaptation. Engaging stakeholders in these processes will ensure that policies reflect the needs and aspirations of all farmers, particularly smallholders. Strengthening the capacity of institutions and farmers to implement sustainable agricultural practices is crucial, as is establishing robust monitoring and evaluation frameworks to assess the environmental impacts of commercial farming practices. Addressing potential conflicts between the National Agriculture Policy and the National Adaptation Plan for Agriculture will be vital for fostering a sustainable agricultural model that balances productivity with climate resilience.

Entry points for Mercy Corps' engagement with Uganda's climate and livestock policy frameworks

Mercy Corps has been working in Uganda since 2006 and has helped millions of Ugandans and refugees alike build a path to a stronger tomorrow. Our programs focus on helping people adapt their livelihoods in the face of climate change, supporting small businesses, improving Livestock and agriculture production, bettering public health systems and empowering women and girls. Mercy Corps has been working in partnership with the Ministry of Agriculture Animal Industry and Fisheries (MAAIF), Ministry of Water and Environment(MoWE), Ministry of Gender Labour and Social Developement(MoGLSD) and the Ministry of Energy and Mineral Developemt (MEMD)

In Uganda, climate change and the livestock sector's nexus offer multiple engagement synergies, particularly for Mercy Corps, whose aim is to drive innovative and community-centric environmental and economic resilience. With our wealth of experience, connections, and knowledge in climate resilience and agricultural development, Mercy Corps can significantly contribute to shaping a climate-responsive livestock sector in Uganda. Below are the main areas where Mercy Corps can contribute:

1. Policy Advocacy and Development

- **Strengthening Policy Frameworks:** Mercy Corps can utilize its expertise in climate resilience to push for comprehensive and inclusive climate-livestock policies in Uganda. These policies should incorporate improved rangeland management for both carbon credits and adaptation benefits. These enhanced frameworks can support livelihoods and resilient ecosystems.
- Integrated Approaches: Advocating for policies recognizing the dual benefits of mitigation and adaptation strategies, such as sustainable land management practices that improve soil carbon while enhancing ecosystem services and resilience against climate shocks.

2. Capacity Building and Knowledge Sharing

• **Training Programs:** By training local farmers and stakeholders on climateresilient and improved rangeland management practices, Mercy Corps can empower communities to adopt sustainable grazing and soil management techniques, promoting carbon sequestration and adaptation to environmental changes. • Knowledge Exchange Platforms: Mercy Corps can set up structured platforms for sharing best practices and innovative solutions that address climate change mitigation and adaptation, ensuring that rangeland management strategies are tailored to local conditions and needs.

3. Community Engagement and Empowerment

- **Participatory Strategies:** Employing participatory approaches, Mercy Corps can facilitate community involvement in shaping and implementing rangeland management strategies that balance carbon sequestration objectives with adaptation priorities, such as water conservation and biodiversity protection.
- Livelihoods and Incentives: Linking improved rangeland management practices with initiatives like carbon financing can create economic incentives for communities to maintain sustainable land use. At the same time, Mercy Corps can emphasize how these practices contribute to climate change adaptation, reinforcing food security and community resilience.

4. Innovation and Technology

- **Technology Adoption and Innovation:** Mercy Corps can advocate for using technology in rangeland management, including tools for better monitoring environmental changes and carbon storage. This would inform both adaptation efforts and potential carbon credit generation.
- Strategic Partnerships: Establishing partnerships with technology firms, academic institutions, and other development actors can spearhead the development of innovative tools and approaches that underpin effective rangeland management while yielding verifiable adaptation and mitigation outcomes.

5. Monitoring, Evaluation, and Learning

• Evidence-Based Interventions: Comprehensive M&E systems that assess the impact of rangeland management practices on carbon sequestration and adaptation measures are essential. Mercy Corps can generate critical data to inform policy decisions and refine climate-livestock strategies for greater efficacy.

Mercy Corps is well-positioned to play a supporting role in enhancing climate-livestock policy in Uganda, bringing forth the full potential of improved rangeland management practices for both carbon credits and adaptation. Through a concerted focus on advocacy, capacity building, community engagement, technological innovation, and robust monitoring and evaluation, Mercy Corps can support the development of policies and practices that not only mitigate the effects of climate change but also fortify the resilience of agricultural communities, thereby fostering sustainable development and resilience across the region.

Conclusion

In Uganda, the intersection of climate action, livestock sustainability, and rangeland governance presents a unique opportunity to harmonize national policies into a cohesive strategic framework that ensures resilience and sustainability for its lands and communities. This endeavor is about overcoming existing challenges and integrating policies to secure a sustainable future.

Uganda's diverse rangelands, from the Karamoja savannas to the Ankole pastures, are vital to the nation's cultural heritage and economic sustenance. Livestock rearing is deeply embedded in community life. However, climate change poses significant threats to these traditional practices. In response, Uganda is committed to aligning its policies, ensuring that livestock management and rangeland governance meet economic and nutritional needs and enhance climate resilience.

To strengthen this alignment, future policies should focus on detailed strategies integrating climate adaptation and mitigation across all agricultural sectors, particularly livestock. Engaging a broader range of stakeholders—including local communities and civil society organizations—will provide diverse perspectives essential for effective policy development. Additionally, enhancing institutional capacities and establishing robust monitoring and evaluation frameworks will be crucial for assessing the impacts of agricultural practices on the environment.

The Government of Uganda's efforts to create policy coherence can serve as a model for how sectoral integration amplifies the impact of climate action. By embedding climate resilience within national policies governing livestock and rangelands, Uganda can develop a comprehensive strategy that promotes sustainable development and environmental stewardship.

Looking ahead, fostering strong partnerships among key stakeholders will facilitate coordinated policies and promote sustainable practices, ultimately enhancing adaptive capacity to address climate challenges. By implementing these recommendations, Uganda can build a sustainable future that prioritizes environmental resilience, community well-being, and economic prosperity for generations to come.

Annex 1: Integration of Livestock Sector Adaptation and Mitigation Strategies into Development Policy Frameworks in Uganda

Uganda's policy landscape reflects an awareness of climate impacts, but the integration of robust adaptation and mitigation strategies tailored explicitly for the livestock sector still needs to be improved. This analysis scores various policy areas climate, livestock and agriculture, development, and land and environment—on their integration of livestock sector climate change adaptation and mitigation. The scoring matrix utilized in assessing the integration of livestock sector adaptation and mitigation strategies within various policies indicates the level of detail with which these strategies are articulated in each policy. Policies were scored for the extent of integration of livestock sector adaptation and mitigation on a scale of 1-5. Higher scores designate more dedicated and detailed climate-related strategies for the livestock sector. Adapted from the report by Ashley L. (2019) titled "Climate and livestock policy coherence analysis in Kenya, Ethiopia, and Uganda," this compilation serves to highlight the interconnections and specific focal areas of agricultural policies as documented in the CCAFS Working Paper No. 268, published in Wageningen, the Netherlands, by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

Climate Policy Integration

Average Score for Adaptation: 2.3 Average Score for Mitigation: 1.7

Policy Document	Livestock Adaptation Score	Livestock Mitigation Score
NAPA, 2007	3	1
National Climate Change Policy, 2015	3	1
NDC, 2023	2	1
National REDD+ Strategy and Action Plan, 2017	1	2
NAMA, Climate-smart dairy livestock value chains in Uganda, 2017	2	3
NAP-Ag, 2018	3	2

Livestock & Agriculture Policy Integration

Average Score for Adaptation: 2 Average Score for Mitigation: 0.5

Policy Document	Livestock Adaptation Score	Livestock Mitigation Score
National Agriculture Policy, 2013	2	0
Agriculture Sector Strategic Plan 2021-2025	2	1

Development Policy Integration

Average Score for Adaptation: 1.5 Average Score for Mitigation: 1

Policy Document	Livestock Adaptation Score	Livestock Mitigation Score
National Development Plan (NDP III)(Vision 2040)	2	1
Green Growth Development Strategy 2017/18 – 2030/31	1	1

Land & Environment Policy Integration

Average Score for Adaptation: 1.5 Average Score for Mitigation: 0.5

Policy Document	Livestock Adaptation Score	Livestock Mitigation Score
National Land Use Policy, 2006	2	0
National Land Policy, 2013	1	1

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