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# **Developing the Livestock Emergency Management Guidelines and Standards for Emergency Recovery in Nigeria.**

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# DEVELOPING THE LIVESTOCK EMERGENCY MANAGEMENT GUIDELINES AND STANDARDS FOR EMERGENCY RECOVERY IN NIGERIA.


Abiola Ogunlusi<sup>1</sup>

## Abstract

The importance of government-led coordinated efforts in livestock disaster management and the livestock emergency response to safeguard livelihoods and food security brought up the development of Livestock Emergency Management Guidelines and Standards (LEGS) in Nigeria. This study examined the application of LEGS and investigated the effectiveness of current Livestock Emergency Practices in Northern Nigeria.

The study also compared livestock emergency practices in Nigeria with those in New Zealand, Australia, and Canada, highlighting existing gaps. Despite the sector's potential, challenges persist, thus effective emergency practices are needed because this plays a fundamental role in the country's agricultural development. This study emphasised the importance of LEGS and other livestock emergency practices in safeguarding livestock, reducing mortality rates during crises, and bridging gaps in livestock emergency management. This research used qualitative research by obtaining data through open-ended questions which informed the interpretation of the findings using a thematic analysis. It was gathered during the interview session with the respondents that *“Sharing of information helps to see what other livestock farmers have done well and imitate them, it helps to ensure that what works for some livestock farmers to recover from the impact crises are replicated by other livestock farmers to see how effective the solution is”*. Another respondent stated that *“Improving the awareness of the people on the need for livestock emergency management”* would be effective. The development and implementation of LEGS in Nigeria can lead to better crisis response and recovery, enhance livestock welfare, and ensure the well-being of livestock producers.

**Keywords:** Livestock Emergency Management Guidelines and Standards, Livestock Emergency Management, Livestock Emergency Practices, Nigeria, and Livelihoods.

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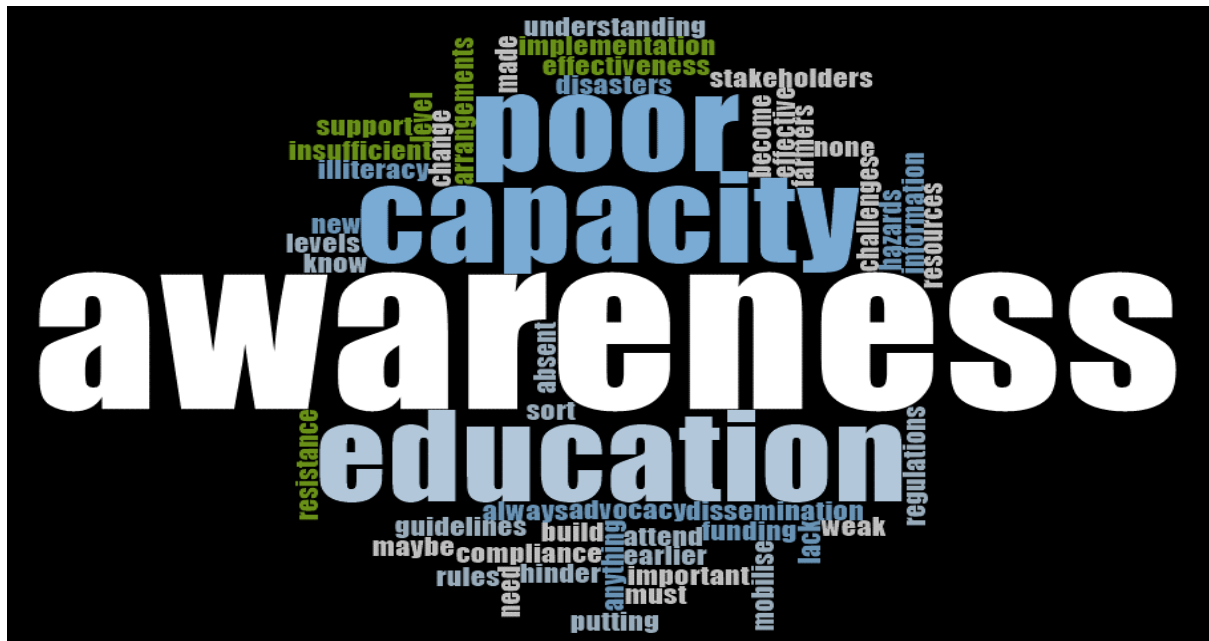


Figure i: Word Cloud Showing the Factors Impeding the Effectiveness of Livestock Emergency Management Guidelines and Standards (LEGS)

## GLOSSARY OF ACRONYMS AND NOMENCLATURE

**ATA** - Agricultural Tenancies Act

**AWEM** - Animal Welfare Emergency Management

**CP** - Crude Protein

**GDP** - Gross Domestic Product


**GDPR** - General Data Protection Regulation

**LEGS** - Livestock Emergency Management Guidelines and Standards

**NLRPIR** - Nigeria Livestock Roadmap for Productivity Improvement and Resilience

**RUGA** - Rural Grazing Areas

**USDA** - United States Department of Agriculture

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## 1. Introduction

This section provides the background of the study. In the last few decades, disasters have emerged as a significant cause for concern due to the increasing severity of natural disasters that resulted in devastating consequences for both human and livestock populations (Hussain *et al.*, 2020). A disaster is defined by the United Nations as a significant disturbance in the operations of a community or society that results in widespread impacts on infrastructure, human beings, the environment, and the economy (Verma, 2022). Though livestock is not mentioned in this definition of disaster, livestock is widely acknowledged as an essential part of most communities due to the income and nutritional value they provide to humans (Tembo *et al.*, 2014). Livestock plays an important and noteworthy role in Africa's economy and the livelihoods of its people. A substantial portion of the continent's livestock production originates from small-scale operations, where individuals owning less than 20 hectares contributed to 72% of Africa's livestock output in 2010 (Dalla Villa *et al.*, 2020).

Disasters tend to exert various levels of impact on livestock production, ranging from direct to indirect and even tertiary consequences. These events can also precipitate public health concerns, including the proliferation of diseases and threats to food security. When livestock activity is disrupted, it affects the livelihoods of livestock farmers who rely on it for income and food security. The loss of livestock can result in a decline in household income and an increase in poverty levels. These negative consequences highlight the importance of supporting and maintaining sustainable livestock production systems to ensure the well-being and resilience of individuals and communities. During disasters, livestock faces numerous challenges such as contaminated feed and water supply, reduced dairy and livestock production, high mortality rates, and the spread of diseases (Sen and Chander, 2003). Determining what qualifies as an emergency is not always straightforward because an emergency refers to a circumstance that is connected to a current event or incident and its aftermath. The aftermath effect could cause adverse impacts on both human and livestock health, with potential threats to food security, substantial economic losses, and reduced livelihoods in communities dependent on livestock. Therefore, this study evaluated the effectiveness of existing livestock emergency practices in responding to and recovering from crisis impacts in Northern Nigeria.

The significant challenges posed by disasters to livestock production and their broader implications for communities, including increased poverty and malnutrition. These challenges underscore the critical importance of implementing effective measures to protect and maintain sustainable livestock systems during emergencies. Hence, it is vital to recognise that livestock plays a substantial role in livelihoods and food security; therefore, safeguarding livestock during disasters is of paramount importance. Furthermore, there is a global non-existence or limited information regarding the awareness and implementation of the Livestock Emergency Management Guidelines and Standards (LEGS) which further impedes effective disaster management strategies. Livestock emergencies pose significant challenges to the well-being of livestock production and productivity worldwide. Insufficient livestock emergency practices and preparedness capacity in various countries and limited international coordination have resulted in inadequate measures to mitigate risks and minimise the impact of livestock emergencies. The ineffectiveness of these practices can have unfavourable conditions on human health and livestock wellbeing, thereby causing food insecurity. Specifically, in Northern Nigeria, this region faces numerous livestock-related challenges, including disease outbreaks, natural disasters, and conflicts, which have severe consequences for the livelihoods

of communities that rely on livestock. Additionally, across the globe, there is little or lack of awareness and ineffective implementation of the Livestock Emergency Management Guidelines and Standards.

### **1.1. Review of literature**

This section offers a thorough literature review focusing on Livestock Emergency Management Guidelines and Standards (LEGS) for crisis response and recovery. It examines current livestock emergency practices in New Zealand, Australia, and Canada, compares these with those in Nigeria, and identifies gaps in Nigeria's approach. In line with Section 38(1) of the Agricultural Tenancies Act (ATA, 1995) of the United Kingdom, livestock is defined as any creature raised for food, skins and hides, wool, fur, or for use in farming of the land. However, in Western countries, the category encompasses primarily cattle, donkeys, sheep, goats, pigs, horses, and mules; other animals, such as buffalo, oxen, llamas, and camels. Livestock emergency management becomes more accessible and effective when it actively involves a diverse range of audiences, including veterinarians and disaster managers (Glasse, 2022). Incorporating veterinarians into the livestock emergency management framework brings valuable expertise in animal health and welfare. Their knowledge and experience can contribute to the formulation of effective emergency response and recovery plans that prioritise the well-being of livestock during crises.

According to the United States Department of Agriculture (USDA, 2021), livestock emergency management encompasses the process of preparedness and responding to emergencies that may affect livestock. This involves recognising and addressing the specific considerations and challenges associated with planning and evacuating livestock during a disaster. The overarching goal of livestock emergency management is to build communities that are prepared to face emergencies while safeguarding the welfare and sustainability of livestock (Vieira and Anthony, 2021). Iwasaki (2016) opines that this approach recognises the integral role that livestock plays in improving the livelihoods and food security of communities. Engaging a wide range of stakeholders, including veterinarians, and disaster managers in livestock emergency management can be better understood, effectively implemented, and integrated into comprehensive emergency management strategies, ultimately fostering resilient communities that prioritise the well-being of both humans and livestock. In some countries, recognising the importance of protecting livestock during emergencies and incorporating it into disaster management plans is a priority. This is because livestock plays an essential role in supporting the livelihoods and food security of communities. Therefore, livestock protection measures may include early warning systems, evacuation plans, provision of veterinary services, the establishment of emergency shelters for livestock, and other management practices. Nevertheless, in other regions, the prioritisation of livestock protection within disaster management may still be lacking, this can be attributed to several factors such as limited resources, competing priorities, or a lack of awareness about the significance of livestock in the overall resilience of communities (Effler *et al.*, 2020).

Considering the essential role that livestock activities play in supporting the well-being of communities, it is very important that protecting livestock becomes an integral part of disaster management strategies worldwide (Gyawali *et al.*, 2020). Challenges in livestock emergency management include institutional and political factors, limited prioritisation of resources, cultural practices, and market linkages. Overcoming these challenges requires

coordinated efforts, capacity-building, policy improvements, and raising awareness about the importance of livestock emergency preparedness and these could be part of the basic required components for livestock emergency management. Consequently, specific organisations are responsible for ensuring livestock welfare during emergencies, including developing animal-inclusive emergency management plans such as Animal Welfare Emergency Management (AWEM), which aims to protect public safety, well-being, livestock, food security, and biosecurity (Squance *et al.*, 2021). However, inadequate responses can increase livestock producers' risk behaviours, compromising the desired outcomes. To address this issue, there is a need to transition from an inclusive approach to a fully integrated approach, where livestock are seamlessly integrated into emergency management practices. Such a shift requires a trans-disciplinary approach to emergency management, where a comprehensive framework that supports this integration is essential for improving AWEM and achieving effective emergency response and preparedness (Squance *et al.*, 2021). Nevertheless, numerous countries such as New Zealand, Australia and Canada have an excellent recognition of the importance of including livestock in emergency management legislation and policy as illustrated in Table 1 below. Overall, this review aims to shed light on the various aspects of livestock emergency management, its implementation in different regions, and the assessment of its effectiveness in dealing with crises. By identifying gaps and evaluating existing practices, this study provides valuable insights for enhancing livestock emergency management strategies in Nigeria and beyond.

Table 1: Illustrating the involvement of Livestock Emergency Management in New Zealand, Australia, and Canada.

<b>Aspect</b>	<b>New Zealand</b>	<b>Australia</b>	<b>Canada</b>
<b>Legislative Framework</b>	Established	Established	Established
<b>Local Government Involvement</b>	Prominent	Varied	Varied
<b>Animal Welfare Considerations</b>	Comprehensive	Comprehensive	Comprehensive
<b>Preparedness and Mitigation</b>	Strong	Varied	Varied
<b>Livestock Management and Readiness, Response, and Recovery</b>	Highly effective	Effective	Effective
<b>Coordination and Integration</b>	Well-coordinated	Varied	Varied

Conversely, the Livestock Emergency Practices encompass various stages, including mitigation, preparedness, response, and recovery. These practices involve key stakeholders such as government agencies, livestock producers, and emergency organisations/responders by implementing and enforcing effective policies, activities, and programmes, thus, stakeholders contribute to the protection of livestock, before, during and in the aftermath of emergencies. Adequate implementation of these practices offers numerous benefits to livestock producers, including enhanced livelihood production and productivity. Moreover, it helps mitigate the

negative impacts that livestock crises can have on producers. The utilisation of a comprehensive framework like the Livestock Emergency Management Guidelines and Standards (LEGS) is very important in developing emergency responses and recovery strategies. By leveraging the use of LEGS, the overall livelihood of livestock producers can be significantly improved.

Furthermore, the application of livestock emergency practices for crisis response is relevant by engaging in recovery and response planning, organisations and communities to enhance their preparedness in livestock development, business continuity and resilience. They can identify hazards, and potential risks, develop strategies to mitigate them and establish protocols to guide their actions during and after an emergency. This proactive approach allows for a more coordinated, efficient, and effective response, minimising the negative impacts and facilitating a smoother recovery process. During the response phase of disasters, several crucial considerations must be addressed regarding the livestock industry. One significant issue is the displacement of livestock, which can lead to their congregations and an increased risk of disease transmission in communities (Heath and Sein'Z, 1999; Love, 2016).

The effects of disasters and crises on livestock populations are extensive, causing serious problems for livelihood, food security, and animal welfare (Beyene *et al.*, 2023). The use of livestock emergency practices is essential to solve these issues and to encourage a more efficient response and recovery (Rasool *et al.*, 2021). Crisis recovery planning for livestock in times of crisis is essential to reduce risks and provide a synchronised response to problems (Malik *et al.*, 2020). Therefore, the movement of cattle must be addressed, disease transmission must be stopped, and early animal health interventions must be provided. During this phase, particular risks and hazards to livestock were identified and protocols and action plans were created. To successfully implement response plans and protect livestock during emergencies, government organisations, non-governmental organisations, and local communities must work together and coordinate (Adekola and Bamiloye, 2022; Copestake and Wellard, 2023). Collaboration among diverse stakeholders is essential for a successful crisis recovery (Van der Wal, 2020). Collaboration among government organisations, veterinary clinics, academic institutions, non-profit organisations, and neighbourhood groups makes it easier to pool resources, knowledge, and assistance. Evidence-based decision-making and the creation of policies are influenced by thorough studies on the efficacy of response strategies, preventative actions, and collaborative efforts (Salajan *et al.*, 2020). Livestock emergency procedures are continually assessed to ensure flexibility and responsiveness to new problems (Settembre-Blundo *et al.*, 2021). Using livestock recovery procedures is essential for improving crisis recovery and preserving livestock welfare. Stakeholders can successfully safeguard livestock and foster community resilience by combining response planning, preventive measures, and cooperative actions. Table 2 below provides a comprehensive overview of the recommended livestock emergency practices that should be implemented in response to specific disaster-related challenges, and it also highlights the most suitable strategies and actions to be taken to address various emergencies that may arise within the livestock sector.

Subsequently, institutional and political factors have been a major challenge affecting livestock emergency practices' effectiveness. The capacity and commitment of relevant institutions, along with political support and alignment with stakeholders, play a decisive role in the successful implementation of livestock emergency practices (NLRPIR, 2021). Adequate resources, infrastructure, and policies need to be in place to mitigate and support emergency

preparedness, response, and recovery efforts. However, it is a common observation that livestock is often given lower priority in the allocation of resources by most state governments in Nigeria, particularly in the Northern states (NLRPIR, 2021). This lack of prioritisation can have detrimental effects on the livestock sector, hindering its development, resilience, and ability to effectively respond to emergencies. Insufficient financial support, limited infrastructure, and inadequate institutional capacities can result from this neglect.



Table 2: Details of Specific Disaster Occurrences with Emergency Practices That Can Be Implemented (Adapted from Verma, 2022)

<i>S/N</i>	<b>Disaster</b>	<b>Impact on animals and their welfare</b>	<b>Emergency Practices</b>
<i>1</i>	<p>Drought: A drought occurs when there is an extended absence of significant rainfall. Drought conditions often develop slowly but if accompanied by extreme heat may exacerbate the condition.</p>	<p>Droughts are recognized as the primary cause of livestock mortality worldwide due to severe limitations on feed, fodder, and access to drinking water. In the initial stages, livestock experience malnutrition and dehydration. As conditions persist without improvement, weaker animals succumb to starvation, and if the situation doesn't improve, even healthy animals become incapacitated.</p>	<p>In regions prone to drought, livestock farmers should adopt strategies for the conservation of feed, fodder, pasture, and water resources when they are abundant. During extended drought periods, if the need arises to relocate livestock, endeavours should be made to carry out these movements during the cooler parts of the day. It is crucial for livestock producers to be well-versed in recognizing symptoms of malnutrition, heat stress, and dehydration among their animals and to take prompt corrective measures when needed.</p>
<i>2</i>	<p>Floods come in two main categories: slow floods and flash floods. Slow-rising floods typically occur as floodwaters gradually move downstream in a river or stream, often allowing for predictions of water levels to a certain extent. In contrast, flash floods are typically the consequence of sudden, intense rainfall events, such as cloudbursts or rapid snowmelt, and they manifest abruptly. Flash floods can also be triggered by the sudden failure of a dam or the release of substantial water volumes from dams following heavy rainfall in their catchment areas.</p>	<p>During floods, livestock face the possibility of getting drowned, being swept away, or becoming stranded without access to shelter, feed, fodder, or clean drinking water. Flood conditions often compel animals to traverse through contaminated floodwaters for extended periods, heightening the risk of infectious diseases such as foot rot and dermatitis. Additionally, the flooding can wash away dung from manure heaps or pits, resulting in elevated concentrations of nitrogen and phosphorus which has a negative effect on the health of the animals.</p>	<p>In regions susceptible to flooding, it is advisable to build livestock housing at elevated levels to prevent floodwaters from entering the sheds. When there is advance notice of heavy rainfall or impending floods, it is prudent to relocate livestock to higher ground, ensuring their safety. In areas already eroded by floods, initiatives should be taken to facilitate drainage from livestock shelters, and any affected animals should receive prompt attention for examination and necessary treatment should be applied if necessary.</p>

As seen in Table 2 above, clearly states that disasters such as drought and flood have certain negative impacts such as diseases on livestock, the table also proffers necessary emergency practices that are required to mitigate these negative impacts from affecting livestock. Collaboration between government authorities, livestock stakeholders, and relevant organisations can help drive policy changes, secure necessary funding, and enhance the resilience and preparedness of the livestock sector in Nigeria. This lack of prioritisation can lead to limited financial and institutional support, making it challenging to effectively implement and sustain the necessary interventions for livestock emergency practices. To address this challenge, it is important to advocate for increased recognition and prioritisation of livestock emergency preparedness, response, and recovery highlighting its significance for national food security, livelihoods, and overall resilience. Collaborating with policymakers and increasing awareness regarding the significance of livestock in emergencies can facilitate the mobilization of essential support and resources required for the successful implementation of livestock emergency practices. To address this issue, it is crucial to advocate for greater recognition of the importance of the livestock sector in ensuring food availability, promoting economic growth, and enhancing livelihoods. By highlighting the significant role of livestock in emergencies and emphasising its contribution to the overall well-being of communities, it is possible to encourage state governments to allocate more resources and prioritise the development and implementation of livestock emergency management and livestock emergency practices.

Comparing Nigeria's livestock emergency management procedures to those of New Zealand, Australia, and Canada. Table 3 below shows Nigeria's shortcomings in such procedures. Among the inadequacies that have been found are the lack of a thorough legal framework, limited engagement of local governments, inadequate consideration of animal welfare, paucity of preparedness and mitigation activities, and requirement for better coordination and integration among stakeholders. These discrepancies point to the necessity for Nigeria to create and implement comprehensive laws and regulations addressing livestock emergency management. Local government agencies should be held more accountable and involved, and emphasis should be placed on fostering livestock welfare issues during emergencies. To successfully handle livestock hazards and sustain the resilience of communities in Nigeria that depend on livestock, it is imperative to improve preparedness, mitigation, and coordination. To close the gaps in livestock emergency management that have been discovered, Nigeria must learn from the methods and experiences of nations such as New Zealand, Australia, and Canada, and adapt and put them into practice.

The gaps highlighted in Table 3 underscore concerns related to the legislative framework, coordination, and integration among relevant stakeholders with several other issues that are anticipated to have adverse effects on livestock as explained in Table 2 because these issues are inadequately implemented or limited in Nigeria when compared to practices in other countries like New Zealand, Australia, and Canada. The comparative analysis of Livestock Emergency Management frameworks in New Zealand, Australia, Canada, and Nigeria identified the gaps in Nigeria's approach in a way to proffer sustainable recommendations for improvement. The legislative framework is a fundamental pillar of effective Livestock Emergency Management (Abdel-Basset *et al.*, 2020). New Zealand, Australia, and Canada have established comprehensive legislative structures to guide livestock-related emergency responses. In contrast, Nigeria faces a significant gap in this aspect, lacking a comprehensive legislative framework for Livestock Emergency Management.

Table 3: Comparative Assessment of Livestock Emergency Management Across Countries Compared to Nigeria with Identified Gaps

Aspect	New Zealand	Australia	Canada	Nigeria	Identified Gaps
<b>Legislative Framework</b>	Established	Established	Established	Limited	Nigeria lacks a comprehensive legislative framework for Livestock Emergency Management.
<b>Local Government Involvement</b>	Prominent	Varied	Varied	Limited	Nigeria needs to enhance local government involvement and accountability in Livestock Emergency Management.
<b>Animal Welfare Considerations</b>	Comprehensive	Comprehensive	Comprehensive	Limited	Nigeria should prioritise animal welfare considerations during emergencies and disasters.
<b>Preparedness and Mitigation</b>	Strong	Varied	Varied	Limited	Nigeria should focus on enhancing preparedness and mitigation efforts to reduce livestock risks.
<b>Livestock Management Readiness, Response, and Recovery</b>	Highly effective	Effective	Effective	Deficient	Nigeria needs to develop a robust livestock emergency management plan for readiness, response, and recovery to improve Livestock Emergency Management.
<b>Coordination and Integration</b>	Well-coordinated	Varied	Varied	Limited	Nigeria needs to improve coordination and integration among relevant stakeholders involved in Livestock Emergency Management.

Similarly, New Zealand, Australia, and Canada exhibit prominent levels of local government engagement because local government involvement is crucial for decentralised and effective Livestock Emergency Management. Nigeria's local government participation and accountability in this sphere remain limited. This identified gap underscores the need for Nigeria to empower and engage local authorities, fostering community-driven livestock emergency management plans and actions. Furthermore, preparedness and mitigation strategies are crucial for minimising the effect of emergencies on livestock and communities (Lottering *et al.*, 2021). New Zealand demonstrates strong preparedness and mitigation efforts, while Australia and Canada show varied levels of focus. Nigeria on the other hand exhibits limited emphasis on preparedness and mitigation in Livestock Emergency Management. New Zealand's livestock emergency management plan for readiness, response, and recovery is highly effective due to its comprehensive approach, the country's experience in managing emergencies, such as earthquakes and biosecurity threats, has contributed to the robustness of its livestock emergency management practices. Meanwhile, Nigeria's livestock emergency management plan faces significant challenges, resulting in limitations in readiness, response, and recovery. Finally, effective coordination and integration among stakeholders are vital for a cohesive Livestock Emergency Management system (Ogunmakinde, *et al.*, 2023). New Zealand showcases well-coordinated efforts, while Australia and Canada adopt varied approaches. Nigeria, however, experiences limited coordination and integration among stakeholders involved in Livestock Emergency Management.

Hence, it is imperative to understand the profound significance of livestock emergency management, owing to the critical role that livestock plays in Nigeria. Livestock products have significant domestic, industrial, and export value, making them crucial for food security, income generation, and economic growth. These products provide sustenance for the population and contribute to the livelihoods of livestock breeders, crop farmers, and those involved in the agro-processing and marketing of livestock goods (Garba, 2022). Moreover, livestock products serve as essential raw materials for various industries and play a vital role in generating non-oil foreign exchange earnings for Nigeria while there are indications that the Nigerian cattle industry generates approximately 6.8 billion USD of its estimated annual potential of 20 billion USD (Garba, 2022; Okello *et al.*, 2014). The livestock sector, therefore, plays a multifaceted role in Nigeria's economy, encompassing food production, industrial development, and the overall well-being of livestock-dependent communities (Garba, 2022). Herds are considered valuable assets, symbolizing prosperity, and contributing to the socioeconomic fabric of many communities in Northern Nigeria.

The Fulani community undeniably holds a significant position in the country's economy because they serve as the primary cattle breeders, supplying most of the meat consumed by Nigerians and offering a readily obtainable and affordable source of animal protein. Possessing over 90% of the nation's livestock, the Fulani community plays a crucial role, contributing one-third of the agricultural Gross Domestic Product (GDP) and 3.2% of the country's overall GDP (Bello, 2013). Their contribution to the local food supply and national food security is of paramount importance. Being the most well-known and populous pastoral group in Nigeria, the Fulani, particularly in the Sahel region, hold a prominent presence. The Fulani's traditional way of life is characterized by their unique encampments, known as Rural Grazing Areas "RUGA," which consist of temporary structures constructed from stalks. These encampments serve as the natural habitat for orthodox Fulbe settlements, tightly knit family units, and their livestock (Bello, 2013). Nigeria's post-independence history has been marred by recurring episodes of violent crises, including coups, countercoups, targeted reprisal attacks, and a

devastating civil war that claimed millions of civilian lives. In recent times, historical disputes between farmers and herders have taken a concerning turn, leading to frequent loss of lives and destruction of property. The competition for limited resources has exacerbated tensions, resulting in a severe humanitarian crisis, and posing a significant threat to human security in the country (Mofolorunsho and Oricha, 2017; Usman and Eyo, 2022).

The Northern part of Nigeria has witnessed a surge in clashes between herdsmen and crop farmers, with competition for land, pasture, water, and other vital resources being the underlying cause. Resolving this complex issue requires comprehensive strategies that consider the interests of both parties. Dialogue, mutually beneficial solutions, and sustainable land management practices must be promoted. Additionally, addressing the effects of climate change, which intensifies resource scarcity and conflicts, is crucial (Ikhuoso *et al.*, 2020).

The dire situation calls for immediate attention, concerted efforts to alleviate suffering, and address the root causes of the crisis (Okoli and Iortyer, 2014). Terrorism has further compounded the challenges in Nigeria, particularly in the northeastern region, where the Boko Haram Islamic sect has conducted attacks since 2009. Communities heavily reliant on agriculture have been primary targets, resulting in destruction, crop wastage, and loss of human lives and animal mortality. Recognizing the severity of the situation, some state administrations have implemented anti-grazing legislation to ease tensions and promote peaceful coexistence between herders and farmers (Fadare *et al.*, 2022; Usman and Eyo, 2022). Addressing the violent crises in Nigeria requires a multifaceted approach that addresses the root causes and promotes peaceful coexistence. Sustainable land management practices, dialogue, and mutually beneficial solutions can foster harmony between crop farmers and herders. Additionally, concerted efforts to alleviate suffering and counterterrorism are essential to restore stability and security in the affected regions. By addressing these challenges, Nigeria can work towards a safer, more stable, and resilient future for all its citizens.

Disasters and crises have a significant influence on livestock populations, affecting livelihood, food security, and animal welfare. Livestock emergency procedures are essential for addressing these issues because they enable quicker reactions and recuperation. Developing action plans, identifying hazards, and coordinating efforts across governmental agencies, non-governmental organisations, and local communities are all parts of crisis recovery planning for cattle. For a crisis to be effectively recovered, collaboration among all stakeholders is essential, with a focus on incorporating local knowledge and indigenous practices.

Table 4: Nigeria's Cattle Conflict Zones, Cattle Rearing Hubs, and Cattle Movement Patterns

<b>Geopolitical Zones</b>	<b>States</b>	<b>Conflict Zone</b>	<b>Cattle Rearing Hub</b>	<b>Major Transit Point</b>	<b>Major Consumer Hub</b>	<b>Description</b>
<b>North-West</b>	Sokoto	Yes (Armed bandits strongholds)	Yes (Major cattle rearing hub)	No	No	Cattle rustling hotspots Armed bandits strongholds/operational bases
	Kaduna	Yes (Ethnic militias and bandits) and Routes used for cattle rustling movement	Yes (Major cattle rearing hub)	No	Yes (Consumer hub)	
	Kano	Yes (Ethnic militias and bandits) and Routes used for cattle rustling movement	Yes (Major cattle rearing hub)	No	Yes (Consumer hub)	
<b>North-East</b>	Borno	Yes (Jihadist strongholds Sambisa Forest)	Yes (Cattle rearing hub)	Yes (Major transit point)	No	Jihadist strongholds/operational bases Cattle rustling hotspots
	Yobe	Yes (Jihadist strongholds)	Yes (Cattle rearing hub)	No	No	
<b>North-Central</b>	Abuja	Yes (Ethnic militias and bandits), and Routes used for cattle rustling movement	Yes (Cattle rearing hub)	Yes (Major transit point)	Yes (Consumer hub)	Major transit points Armed bandits strongholds/operational bases Cattle rustling hotspots
	Niger	Yes (Armed bandits bases) and Routes used for cattle rustling movement	Yes (Cattle rearing hub)	Yes (Major transit point)	No	
<b>South-West</b>	Lagos	No	No	No	Yes (Major Consumer hub)	Major consumer hubs Transit points for stolen cattle
	Oyo	No	No	Yes (Major transit point)	Yes (Consumer hub)	
<b>South-East</b>	Enugu	No	No	Yes (Major transit point)	No	
	Anambra	No	No	No	Yes (Consumer hub)	
<b>South-South</b>	Rivers	No	No	No	Yes (Consumer hub)	
<b>Geopolitical Zones by Movement Direction</b>	From North-West to South-West, North-East to Central					Movement patterns for cattle rustling

As shown in Table 4 above, it is evident that the conflicts within the Northern states of Nigeria have not been adequately managed. This escalation could be a contribution or attributed to ineffective livestock emergency practices among livestock producers. In summary, the imperative to enhance Livestock Emergency Management in Nigeria cannot be overstated, particularly when benchmarked against countries like New Zealand, Australia, and Canada. The evident deficiencies in Nigeria's current approach underscore the urgent necessity for improvements in the Livestock Emergency Management system. The stakes are high, as the persisting gaps would continue to pose a threat of disasters like floods and droughts, which in turn result in adverse consequences for livestock, including diseases and livestock mortality. Rectifying these shortcomings is germane for Nigeria to effectively safeguard its livestock assets and improve economic value and the livelihoods of its livestock producers in times of emergencies and disasters. Response planning is a proactive approach that aims to anticipate and propose appropriate actions in the face of unexpected events and incidents. It is based on the anticipation of various scenarios, an understanding of their potential consequences, and the readiness to mitigate those consequences. Additionally, response planning involves the process of post-event reconstruction and restitution.

To ensure effective response planning, a balance must be struck between the costs associated with preparing for potential scenarios and the probability and severity of those events. The higher the likelihood and/or impact of a disaster, the more crucial it becomes to engage in comprehensive contingency planning. Ultimately, it is important to deduce from the framework in Figure 1.1 that continuity plays a major role in effective livestock emergency practice and planning. Therefore, to bolster more responsive systems, training and resource materials must confront hurdles like time constraints, communication disparities, diverse professional backgrounds, and financial restrictions that community partnerships face. However, by adhering to these principles, stakeholders involved in livestock emergency management can establish an effective and robust system that efficiently addresses emergencies, protects livelihoods, and ensures the resilience of livestock-dependent communities.

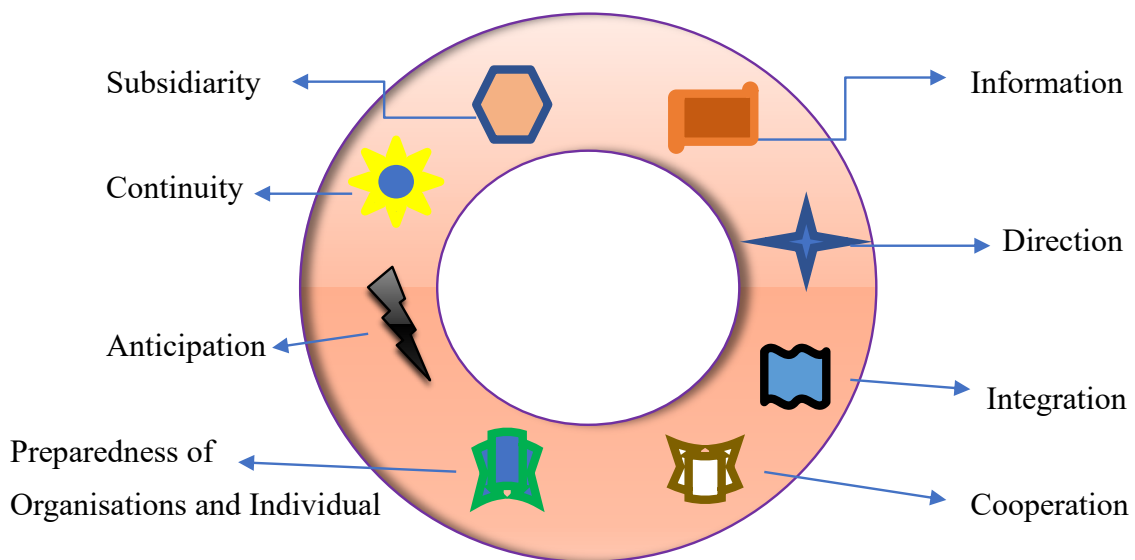


Figure 1.1: A Framework Design Illustrating Effective Practices in Livestock Emergency Planning

## 1.2 Conceptual Framework

The framework that was used in this study, as shown in Figure 1.2 below, shows the connections between livestock emergency procedures, livestock crises, livelihoods, and the relevant stakeholders, including government agencies, livestock producers, and emergency responders. The livestock emergency practices will contribute towards livestock crises and livelihood status, while the other factors in this framework give a view of how major stakeholders and the Livestock Emergency Management Guidelines and Standards and emergency responses and recovery will positively or negatively affect the livelihood levels of the livestock producers. The framework highlights the inherent deficiencies in Nigeria's context, particularly in terms of risk management and the coordination gaps among relevant stakeholders engaged in Livestock Emergency Management. Addressing conflict crises will help resolve some of the challenges faced by livestock producers in Nigeria.

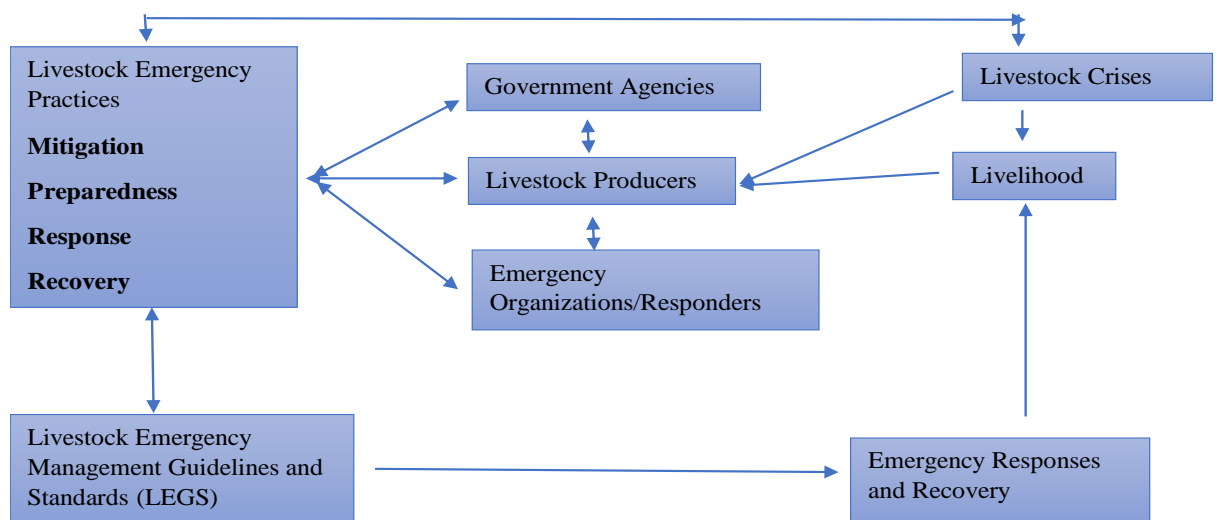


Figure 1.2: The Study Conceptual Framework

## 2. Method

Section Two outlined the research methodology, which is vital in evaluating the effectiveness of existing Livestock Emergency Practices in Northern Nigeria. This section explains the study area, research design, data collection and analysis adopted for the study. The northern region of Nigeria comprises 19 states as shown in Table 5 below, and it is further categorised into three geo-political zones (North-East, North-Central, and North-West). According to data from the most recent census conducted in 2006, Northern Nigeria accounts for approximately 53% of the entire country's population (National Population Commission, 2009). This area is marked by unfavourable health indicators, lower socioeconomic status, and the highest incidence of deaths and diseases compared to the country's southern regions (Sarki and Roni, 2019).



Table 5: The Geo-political Zones in Nigeria are categorised into Northern, Southern states, and the Federal Capital Territory

Geo-political Zones in Nigeria	States
North-East	Borno, Yobe, Adamawa, Taraba, Bauchi, Gombe
North-Central	Benue, Kogi, Kwara, Plateau, Nasarawa, Niger
North-West	Sokoto, Zamfara, Katsina, Kano, Kaduna, Kebbi, Jigawa
Southern States	Lagos, Ogun, Oyo, Osun, Ekiti, Ondo, Edo, Delta, Bayelsa, Rivers, Akwa Ibom, Cross River, Enugu, Anambra, Imo, Ebonyi, Abia
Federal Capital Territory (FCT - Abuja)	

The Northern Nigerian economy is significantly influenced by livestock raising (Falola *et al.*, 2022; Ogunniyi *et al.*, 2021). Livestock rearing has been an integral part of Northern Nigerians because it has played an integral part in the region's economy, culture, and way of life (Shettima and Tar, 2008). Livestock raising has a long history in the area and is essential to the livelihoods of the people who live there (Wakdok and Bleischwitz, 2021). Livestock plays a key role in the livelihoods of households in Northern Nigeria, serving as a significant productive asset, a means of storing wealth and providing transportation and other social functions.

## 2.1 Research Design, Data Collection and Data Analysis

This research used qualitative research by obtaining data through open-ended questions with the selected participants which informed the interpretation of the findings (Creswell and Creswell, 2017). A well-designed research plan ensures alignment with research objectives, ethical considerations, resource allocation, and reliability of findings. It also allows for flexibility and adaptation during the study, promoting credible and meaningful data analysis. Moreover, this research aligns with the philosophy based on the pragmatist paradigm, which is often associated with methodological and philosophical approaches, and this is based on the proposition of the use of what works best and its flexibility in solving research problems where reality is re-evaluated and interpreted. It recognizes that our understanding of reality is not fixed, but subject to individual and collective interpretations (Allemang *et al.*, 2022; Maarouf, 2019). Data for this study was gathered from both primary and secondary sources. The secondary data sources utilised included published books, project reports, official statistics, journals/articles, and research available from online academic databases. Additionally, a semi-structured interview was used to gather the primary data for this study, this focused on disaster risk management, the effectiveness of the livestock emergency practices currently being used in responding and recovering to emergencies in Northern Nigeria, the livestock emergency practices that are currently used by livestock producers in Northern Nigeria for dealing with emergencies, and the effectiveness of developing Livestock Emergency Management Guidelines and Standards (LEGS) in ensuring the safety of livestock.

Furthermore, the study used thematic analysis to analyse and discuss its findings (Riger and Sigurvinsdottir, 2016). Thematic Analysis falls under the category of qualitative analysis and is employed to examine and present patterns or themes related to the data (Alhojailan, 2012). However, the identified themes include livestock emergency practices, livestock emergency management, responding to emergencies or crises, emergency response and recovery, and Livestock Emergency Management Guidelines and Standards. The ethical issues relating to this study and the data collected were stored in line with the United Kingdom General Data Protection Regulation (GDPR) which provides legal grounds for data processing, such as consent, public interest, and legitimate interests.

### Ethics committee approval process

The ethics application for the study was made on 20/04/2023 and the research was carried out with the approval of the University of Derby, Derby, United Kingdom. The University Ethics Commission dated 29/04/2023 and numbered Ethics ETH2223-3919. However, ethics committee approval was obtained for this research.

### 3. Results

This section presented the outcome of the research endeavours, offering a comprehensive analysis of the findings and conclusions regarding the development of Livestock Emergency Management Guidelines and Standards (LEGS) and profound implications for livestock emergency management.

#### 3.1 Demographic Information of the Participants

Table 6 below, gives comprehensive details about the participants who granted their consent for the semi-structured interview. This information encompasses the years of experience within the livestock sub-sector, gender, and job designation. A total of 7 participants actively engaged with the research questions, offering valuable insights into the study.

Table 6: Detailed Information Regarding the Participants for This Study

Participants/ Respondent	Gender	Years of experience	Job Title
Respondent 1	Male	13	Senior Livestock Husbandry Officer
Respondent 2	Male	10	Research Assistant
Respondent 3	Male	5	Livestock Husbandry Officer
Respondent 4	Male	5	Animal Husbandry Officer
Respondent 5	Male	7	Animal Livestock Officer
Respondent 6	Male	11	Animal Livestock Officer
Respondent 7	Male	9	Chief Livestock Officer

The findings of this study showed that most of the respondents four (4) talked about response practices when handling issues relating to livestock emergencies. Among these four (4) respondents, three (3) talked about searching for alternative sources of feeding the livestock. They thought that most of the emergencies threatened feeding the livestock and as such they suggested looking for other means of getting feed. One (1) of the respondents said:

*“Finding other ways to get feeds”* -Respondent 2

While another respondent said:

*“Alternative searching for feed due to scarcity of feed”* -Respondent 4

Also, in support of response practices to mitigate the effect of emergencies on livestock, one (1) of the respondents talked about relocation practices, processing of livestock for other

uses to get back value and selling of the livestock to keep the proceeds for other uses. Respondent 7 talked about these and specifically, he submitted:

*“Relocation which is very rampant; by looking for a safe and passive location where they can get feed and maybe water... some people do put their livestock on sale to avoid all these livestock emergency issues....”* -Respondent 7

The guiding principles for effective livestock interventions in emergencies involve reintroducing livestock into affected communities or providing new livestock to replace those that were lost or severely impacted by the crisis (Fitzpatrick and Young, 2013).

A similar study conducted by Abebe *et al.* (2008) demonstrated that the pre-emptive development of the destocking intervention strategy in Ethiopia offered notable benefits to livestock farmers during periods of drought. This is what one (1) of the respondents said.

*“... it's effective because at least they savaged their livestock. The livestock being taken to other locations are being savaged to some extent, although they may lose weight some may die, At the end of the day, when normalcy is returned, their livelihood will continue..., Some slaughter their livestock so they salvage some resources that could be used to either replace the livestock breed in the future or at least put up some other means of livelihood”.* Respondent 7

This approach facilitated improved contingency planning and readiness among traders, enhancing their preparedness for future drought scenarios. Some practices are put in place so that livestock farmers can cope with unforeseen emergencies. These practices are themed as preparatory practices. A total of three (3) respondents gave submissions on preparatory measures that they employ to manage livestock emergencies. Two (2) of the respondents said they do make use of feed conservation to ensure that supply is adequate when there is a shortage of feed production for the livestock while one (1) of them said to cope with unforeseen emergencies, farmers constantly share relevant information. Also, crop residues are kept for easy access when there is a shortage of supply of crops. One (1) of the respondents said:

*“Feed conservation when there is excess”* -Respondent 1

In building fodder production capacity, there will be an increase in the supply of fodder for cattle to feed. Thus, fodder trees and shrubs have been recognized for their elevated Crude Protein (CP) content and reduced fibre levels, making them a viable alternative feed source during the dry season. This resource can aid in mitigating the seasonal variations in livestock production (Tolera *et al.*, 2012). One (1) of the respondents said:

*“...if we build capacity in the Northern region that can help to sustain during the time of lack, it might mainstream and stimulate the emergence of a sort of value chain that can process fodder and make them available for sales, in portable forms. If we have fodder to sell that is portable and affordable by livestock producers in northern Nigeria, that can be more effective ....”* -Respondent 7

Two (2) of the respondents identified the use of homestead farming to keep their farm under close watch and provide for their immediate family. This strategy is employed to ensure that the farmer gets back on its feet after encountering an emergency. LEGS aims at improving the quality of emergency response and recovery through an increase in appropriateness, feasibility of livelihood-based interventions and timeless (Huertas and Morales, 2003). One (1) of the respondents said:

*“Division of cattle into homestead grazing and far off grazing during offseason.”* - Respondent 6

Another recovery practice identified was the raising of different species of livestock. This helps to ensure that the business is sustained and keeps going. On the effectiveness of livestock emergency practices, only three (3) of the respondents indicated that the livestock emergency practices currently being used in responding to emergencies or crises in Northern Nigeria were effective, and four (4) respondents said they were not effective. Also, four (4) of the respondents indicated that the practices were effective in recovering from the impacts of emergencies or crises in Northern Nigeria. By adhering to LEGS, emergency management professionals and stakeholders can ensure that the rights of individuals, particularly their access to food and the maintenance of a decent standard of living, are upheld (Pavanello, 2009). One (1) of the respondents said:

*“Sharing of information has been very effective as it helps to communicate the challenges faced by a livestock farmer with other livestock farmers so that they can take precautions.”*- Respondent 1

The sharing of relevant information among the farmers which is one of the means by which livestock farmers recover from emergencies or crises provides the livestock farmer with an avenue to learn from other livestock farmers and see how things are being done.

The findings in this study revealed that there is a significant lack of awareness regarding effective livestock emergency management practices, resembling the results previously reported by Effler *et al.*, (2020) that showed there are still regions that lack prioritisation of livestock protection when managing disaster and this deficiency is attributed to lack of awareness among other factors that shows that the livestock producers lack enough information on the condition at hand. To ensure that the public and the relevant stakeholders are helped to understand the situation at hand, Ajimuse (2020) cried out for the need to intensify educational institutions to design courses targeted towards informing stakeholders on ways to promote emergency management.

#### **4 Discussion and Conclusion**

A multifaceted approach is needed to promote livestock welfare during disasters to reduce susceptibility and ensure efficient management. This entails the adoption of rules based on empirical data that prioritise cattle in emergency planning. Governments and relevant stakeholders must participate in coordinating and assisting in livestock catastrophe management, even though livestock farmers are ultimately responsible. However, a problem arises because there is no established method for evaluating how well global systems are working in managing disasters affecting livestock. Addressing the challenges related to livestock emergencies in Nigeria necessitates the establishment of comprehensive and efficient Livestock Emergency Guidelines and Standards (LEGS) for emergency response and recovery in Nigeria.

Natural and human-induced disasters have had devastating consequences for both humans and livestock. Consequently, there is a need for urgent jointly exerted effort from all stakeholders to ensure that precautionary measures are taken to curb the effect of the crises and that adequate response and recovery measures are taken to help livestock producers cope with crises after occurrence. Livestock emergency management practices require government funding, prioritise disease control and livestock welfare, and improve sustainable livelihoods in communities that rely on livestock husbandry is crucial to mitigate the effects of crises on livestock, increase the level of awareness of livestock emergency management practices among livestock producers and encourages partnership and relationship building among relevant stakeholders. There is a need for all the tiers of government to buy in and make adequate

provision for funding to improve programmes and strategies on preparedness, mitigation, effective coordination, and collaboration among relevant stakeholders.

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### **Conflicts of Interest**

The author conducted the study alone. There is no conflict of interest.

### **Ethics**

This research was conducted in full compliance with ethical guidelines. As part of the postgraduate taught program at the University of Derby, an ethics application was submitted to and approved by the College of Business, Law, and Social Sciences Ethics Committee. The ethical approval was obtained following a thorough review process, and the study adhered to the ethical principles set forth by the University's Ethics Policy. The research was supervised and overseen by my project supervisor to ensure that all ethical standards were met.

As part of the ethics application, the following supporting documents were submitted: Participant Information Sheet, Research Invitation Letter, Consent Form: Template Sheet Information, and Debriefing Form.

Subsequently, informed consent was obtained from all participants before their involvement in the study. They were assured of confidentiality and anonymity, and the data collected was securely stored in accordance with the University of Derby's data protection policy. Participants were also made aware that they could withdraw from the study at any point without any consequences.

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