Research Proposal: Strengthening Veterinary Services in Sudan Khartoum

# Research Proposal: Enhancing Veterinary Capacity and Livestock Health Systems in Sudan Khartoum

**Abstract:** This research proposal outlines a critical study focused on addressing the severe shortage of qualified veterinary personnel and fragmented veterinary services within Khartoum State, Sudan. With livestock contributing significantly to household livelihoods (approximately 70% of rural income) and national GDP, the current state of veterinary infrastructure in Sudan Khartoum represents a major vulnerability to food security, economic stability, and public health. This project aims to conduct a comprehensive assessment of the existing veterinary workforce distribution, service gaps, disease burden patterns (particularly zoonotic diseases like Rabies and Brucellosis), and socio-economic barriers impacting access to essential veterinary care in Khartoum State. The findings will directly inform the development of a targeted, sustainable strategy to strengthen the **Veterinarian** workforce and service delivery model specific to the complex urban, peri-urban, and agricultural contexts surrounding **Sudan Khartoum**. The research is imperative for safeguarding Sudan's livestock sector resilience.

## 1. Introduction: The Critical Context of Veterinary Services in Sudan Khartoum

**Sudan Khartoum**, as the nation's political, economic, and administrative capital, serves as a crucial hub for livestock trade and processing. However, this central position is compounded by significant challenges in veterinary service provision. A severe shortage of licensed **Veterinarian** professionals plagues the region; Khartoum State reportedly has fewer than 20 government-employed veterinarians serving a population exceeding 8 million people across urban centers, peri-urban settlements, and surrounding agricultural zones. This scarcity is exacerbated by inadequate infrastructure (limited diagnostic laboratories, cold chain for vaccines), inconsistent supply chains for essential medicines, and the compounding effects of ongoing conflict and displacement since 2023. The resulting gaps in preventive care (vaccination campaigns) and responsive disease control lead to devastating livestock losses, reduced meat/dairy production, increased zoonotic disease transmission risks to humans (e.g., Rabies from unvaccinated dogs), and significant economic hardship for smallholder farmers and traders dependent on livestock. This research directly confronts the urgent need to build a resilient veterinary system in **Sudan Khartoum** as a cornerstone for sustainable development.

## 2. Problem Statement: The Multi-Faceted Crisis in Veterinary Services

The current situation represents a confluence of critical failures impacting livestock health and human welfare in Khartoum State:

* **Workforce Deficit:** Extreme shortage of qualified veterinary personnel, particularly in rural districts surrounding Khartoum and within the city's informal settlements.
* **Disease Burden:** High prevalence of preventable diseases (Foot-and-Mouth Disease, Peste des Petits Ruminants) and rising zoonotic threats due to inadequate surveillance and vaccination coverage.
* **Service Fragmentation:** Services are often centralized in Khartoum city, inaccessible to peri-urban communities; coordination between government veterinary services, NGOs (e.g., FAO projects), and private practitioners is weak.
* **Resource Constraints:** Chronic underfunding leads to shortages of vaccines, diagnostic kits, and essential equipment even in the capital city.
* **Conflict Impact:** Recent instability has disrupted veterinary supply chains, displaced livestock populations, and damaged facilities within Khartoum State.

This research is vital to move beyond symptom management to develop evidence-based solutions for the **Veterinarian** workforce and service structure in **Sudan Khartoum**.

## 3. Research Objectives

1. To conduct a detailed mapping of the current veterinary service delivery points (government clinics, private practices, mobile units) and veterinarian distribution across Khartoum State, identifying critical geographic and demographic gaps.
2. To assess the prevalence and impact of priority livestock diseases (FMD, PPR, Rabies) on smallholder households in key districts of Khartoum State through targeted household surveys and veterinary clinic data review.
3. To identify socio-economic barriers (cost, distance, trust, cultural factors) preventing livestock owners from accessing veterinary services in urban and peri-urban areas of Khartoum.
4. To evaluate the capacity of existing government veterinary staff (quantity, skills, training needs) and infrastructure (labs, equipment) in Khartoum State.
5. To develop a context-specific, actionable roadmap for strengthening the veterinary workforce and service delivery model tailored to the unique challenges of Sudan Khartoum.

## 4. Methodology

This mixed-methods study will employ:

* **Desk Review:** Analysis of existing reports from the Ministry of Animal Resources (Sudan), World Organisation for Animal Health (WOAH) Sudan, FAO, and recent conflict impact assessments related to livestock in Khartoum.
* **Quantitative Survey:** Structured household surveys with 300 randomly selected livestock-owning households across 6 districts of Khartoum State (including urban centers like Omdurman, Khartoum North, and peri-urban areas like Al-Salam and El-Matam). Key metrics: disease occurrence, service access barriers, economic losses.
* **Qualitative In-depth Interviews:** 25 interviews with key stakeholders: government veterinary officers (Ministry of Animal Resources), private veterinarians, NGO program managers (e.g., Mercy Corps, IFAD), livestock traders at major markets (e.g., El-Balad Market), and community leaders.
* **Focus Group Discussions:** 8 FGDs with livestock keepers' groups to explore nuanced barriers and community perspectives on service needs in specific locations within Khartoum State.
* **Service Point Assessment:** On-site evaluation of 15 veterinary clinics (government & NGO-run) in Khartoum, documenting equipment, vaccine stock, staff numbers/skills, and patient load.

Data will be analyzed using SPSS for quantitative data and thematic analysis for qualitative data. The research team includes Sudanese veterinary epidemiologists and social scientists with deep local knowledge of Khartoum's context.

## 5. Expected Outcomes & Significance

This research will deliver:

* A detailed, GIS-mapped report on veterinary service gaps and disease hotspots within Sudan Khartoum State.
* Empirical evidence on the economic impact of veterinary service deficits on household food security and income in Khartoum.
* Specific, actionable recommendations for:
	+ Rationalizing veterinarian deployment (e.g., targeted mobile units for peri-urban areas).
	+ Strengthening community-based animal health worker (CAHW) programs to extend reach.
	+ Improving vaccine supply chain management specific to Khartoum's logistics challenges.
	+ Developing training modules addressing priority diseases and client communication for local vets in Khartoum State.
* A concrete, scalable model for enhancing veterinary services that can be adapted across Sudan but is firmly rooted in the realities of Sudan Khartoum.

The significance lies in transforming the response from reactive crisis management to proactive system strengthening. A robust veterinary workforce is not merely an animal health issue; it is fundamental to protecting human health (zoonosis control), ensuring food security for millions, stabilizing rural economies vital for national recovery, and building resilience against future shocks within Sudan Khartoum.

## 6. Conclusion

The dire state of veterinary services in **Sudan Khartoum** poses an existential threat to livestock-dependent communities and national stability. This research proposal directly addresses the critical shortage of qualified personnel and systemic weaknesses by focusing intensely on the specific context of Khartoum State. By generating precise, locally relevant data on veterinary service gaps, disease burdens, and access barriers, this project will provide the essential evidence base for strategic investments to rebuild a functional **Veterinarian** workforce. The resulting roadmap is not just an academic exercise; it is a practical blueprint for action that can catalyze tangible improvements in livestock health, food security, economic resilience, and public health outcomes across Sudan Khartoum. Investing in this research is an investment in the fundamental well-being of Sudan's people and the stability of its most critical agricultural hub.