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中国动物卫生与流行病学中心
China Animal Health and Epidemiology Center

A GF-TADS initiative for
PPR control



GF-TADS
GLOBAL FRAMEWORK FOR THE
PROGRESSIVE CONTROL OF
TRANSBOUNDARY ANIMAL DISEASES



Socio-Cultural Issues Associated with PPR Eradication in Africa:

“A Narrative Synthesis of the Current State of Knowledge”

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INTRODUCTION

- Peste de petits ruminants, a viral disease caused by PPR virus (PPRV), from the genus *Morbillivirus*.
- It is characterized by high morbidity and mortality rates, often exceeding 90% in immunologically naive populations.
- PPR is a major constraint to small ruminant production, posing a constant threat to food security and the sustainable livelihoods of farmers across Africa and Asia.
- The continued circulation of PPRV results in severe economic losses, highlighting the profound negative socioeconomic impact on pastoral communities.
- The disease is classified as a highly contagious, transboundary animal disease (TAD), necessitating global, concerted efforts for its control and eradication.

INTRODUCTION Cont'd.

- According to the FAO/WOAH, 2015, the Global Strategy for the Control and Eradication of PPR provides a coordinated framework designed to guide endemic countries toward progressive risk reduction, with the ultimate goal of achieving global PPR freedom by 2030.
- The pillar of this control program includes mass vaccination, strengthening veterinary services, and improving surveillance (Weka et al., 2025).
- However, despite the availability of a safe and effective vaccine, PPR outbreaks persist in endemic, indicating that technical tools alone are insufficient to achieve eradication (Woma et al., 2025).
- The challenge of eradicating PPR is deeply intertwined with the socio-cultural realities of small ruminant production in Africa (Adeoye et al., 2023; Ashango et al., 2025).

AIM/OBJECTIVES/JUSTIFICATION

- This narrative review aims to synthesise the findings from research documents to construct a "state of knowledge" regarding the socio-cultural issues and dynamics that influence PPR eradication efforts across Africa.

"socio-cultural factors are defined as the shared beliefs, norms, gender roles, livelihood practices, and community behaviours that shape how farmers perceive PPR as an animal disease and engage with disease control interventions."

- PPR eradication remains a global priority under the FAO/WOAH Global Eradication Programme (GEP) for 2030, yet progress is still impeded in many endemic regions, partly due to insufficient understanding of the sociocultural factors shaping disease control behaviours.
- Given that Africa bears the highest PPR burden, and deep livelihood dependence on small ruminants—there is a critical need to examine how context-specific sociocultural dynamics influence eradication efforts.
- The review was restricted to studies from Africa to maintain contextual and methodological consistency, and to ensure analytical coherence and relevance

Methodology

SECONDARY DATA

- Google scholar
- Scopus
- Expert recommendation

SYSTEMATIC STRATEGY

- Relevant Keywords
- Boolean Operator
- Selection Criteria

**Data
Source**

**Search
Strategy
Selection**

**Data
Extraction &
Management**

**Quality
Appraisal**

- Standardize excel based Extraction Matrix
- Reference manager enabled
- Structured Workflow PRISMA 2020

- No studies were excluded solely on the basis of quality
- Appraisal findings informed the interpretation of evidence

Selection Criteria and Thematic Focus

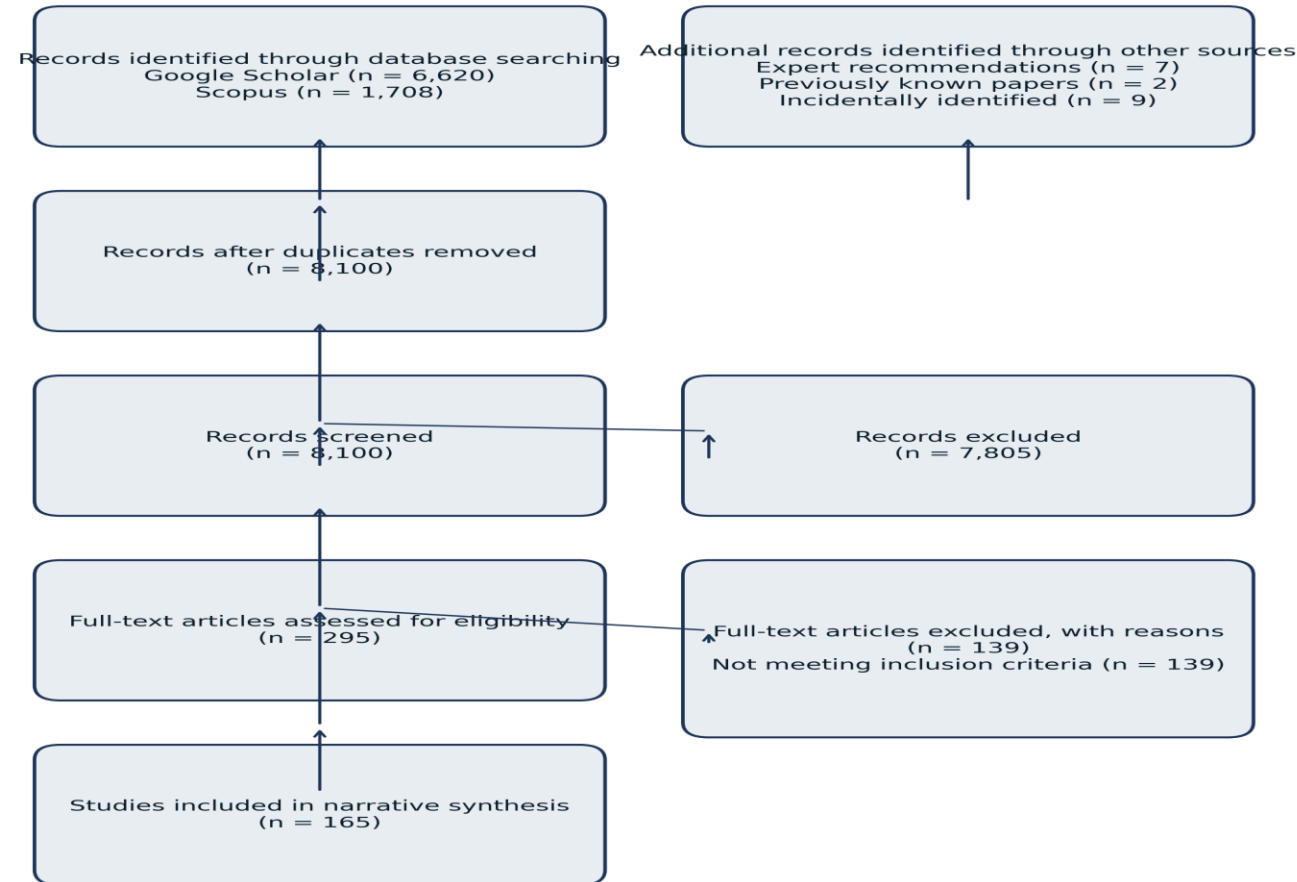
Inclusion Criteria

- Relevance to Socio-Cultural Determinants
- Geographical Scope
- Study Design and Type
- Publication Characteristics
- Population and Disease Focus
- Relevance to PPR Eradication Efforts

Exclusion Criteria

- Non-Sociocultural Focus.
- Outside Africa
- Non-Scientific or Non-Peer-Reviewed Sources
- Insufficient Information
- Duplicates
- Irrelevant Species or Disease Focus

PRISMA Workflow Chart



Analytical Framework: Sociocultural Determinants

Knowledge and Perceptions

Cultural Norms and Social Practices

Livelihood Realities and Behavioural Incentives

Data Synthesis and Integration

- A narrative synthesis approach was used to integrate evidence across studies. Extracted data were grouped into thematic categories reflecting the analytical framework.
- Findings from each study were grouped, Patterns and differences within each dimension were summarised, and overlapping themes were cross-mapped.
- Contextual variations across countries and production systems were examined.
- The integrated findings were then used to explain how socio-cultural factors interact to influence PPR control and eradication outcomes.

Result/Discussions

- The review process adhered to the key principles of transparency, rigour, and replicability, as recommended by PRISMA 2020 Guidelines.
- The use of multiple databases enhanced the diversity of evidence and contributed to the robustness of the review's conclusions
- A total of 8,328 records were initially retrieved from Google Scholar (n = 6,620) and Scopus (n = 1,708), Which was screened down to 156 (Google Scholar: n = 62; Scopus: n = 94).
- Additional nine relevant studies were identified incidentally, bringing the total number of studies included in the narrative synthesis to 165

TABLE 1: PRISMA Aligned Study Selection Table

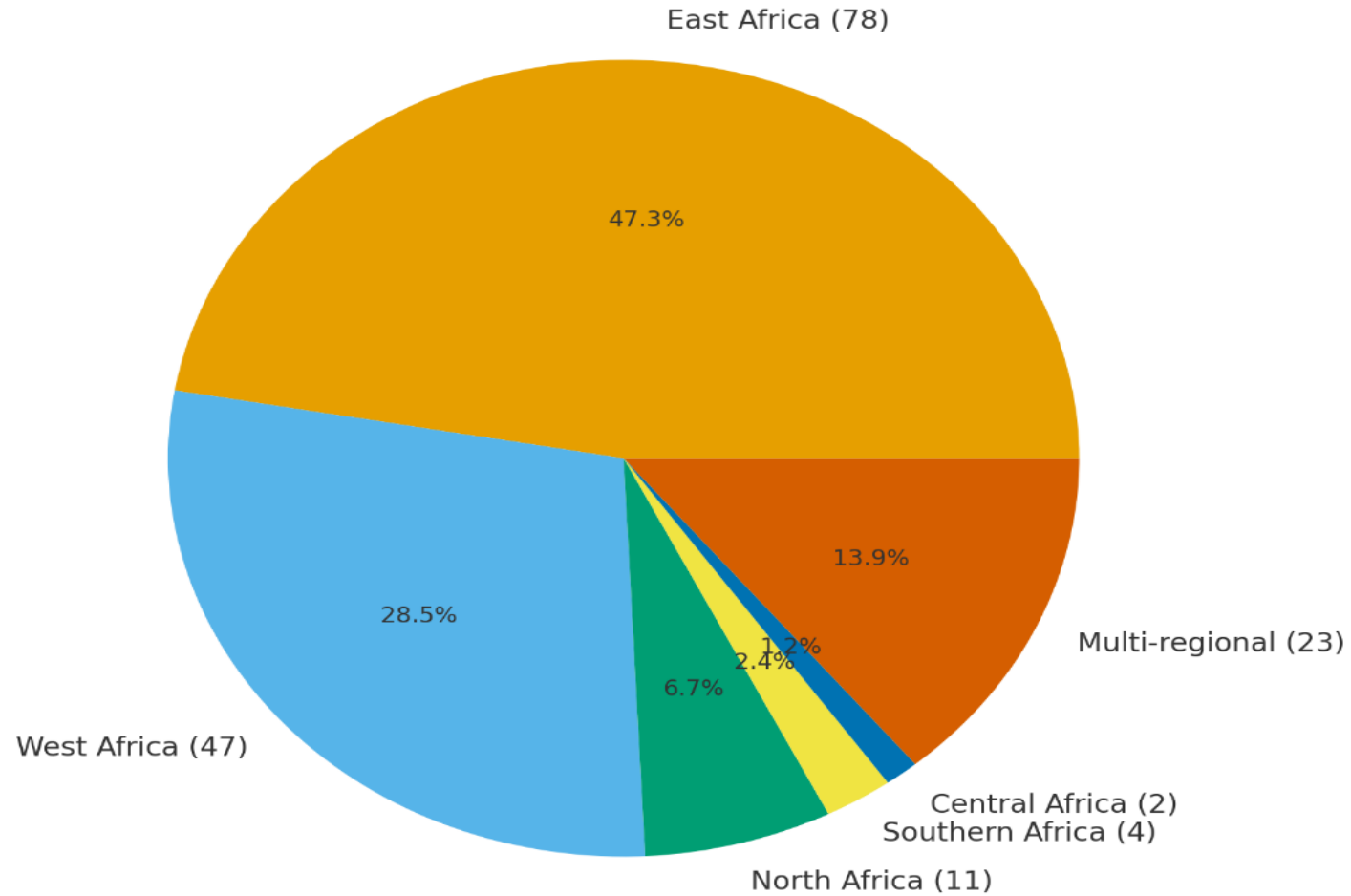
Stage of Selection	Google Scholar	Scopus	Total
Records identified through database searching	6,620	1,708	8,328
Duplicates removed	120	108	228
Records after duplicates removed	6,500	1,600	8,100
Records screened (titles/abstracts)	6,500	1,600	8,100
Records excluded after screening	6390	1415	7,805
Full-text articles assessed for eligibility	110	185	295
Full-text articles excluded (with reasons)	48	91	139
Studies included from database search	62	94	156
Incidentally identified studies	—	—	9
Total studies included in narrative synthesis	62	94	165

Table 2: Reasons for Exclusion of Full-Text Articles (n = 130)

Reason for Exclusion	Description	No. of studies excluded.
Not focused on socio-cultural determinants	Articles primarily addressed other thematic areas with no socio-cultural component.	36
Study not conducted in Africa	Full texts that examined PPR were carried out outside the African continent.	13
Wrong population	Studies not involving livestock keepers and households.	9
Not related to PPR	Articles addressing general livestock diseases, management, unrelated to PPR	17
Insufficient data for extraction	Articles lacking extractable socio-cultural findings	22
Duplicate publications not captured earlier	Full texts representing repeated analyses or multiple publications of the same study.	10
Studies without primary data	Non-empirical papers that did not present original data relevant to the review question.	13
Methodological mismatch	Studies using designs not relevant to the review	19

Geographic Distribution

Geographic Distribution of Included Studies (n = 165)



Thematic Patterns

East Africa:

**Value chain analyses
Gender related studies
Thermostable vaccines
Control effort**

West Africa:

**Co-infections
Spatial risk analytics
Vaccination logistics
Biosecurity economics
Vaccination pay assessments.**

Central Africa:

**Distribution mapping
Estimation of economic losses
Identification of basic epidemiological
risk drivers.
Field-based and community-level
investigations were identified**

North Africa:

**Patterns among migratory flocks
Illegal livestock importation risks
Breed susceptibility to PPR**

South Africa:

**Adopt Preventive orientation
Risk assessment of PPR introduction
Trade-related exposure pathways
Modelling of potential outbreak**

- Across the reviewed literature, sociocultural dynamics emerged central to PPR persistence in endemic regions.
- Significant evidence gaps remain across several African countries, including Cameroon, the Central African Republic, Mauritania, Guinea, Sierra Leone, Liberia, South Sudan, Eritrea, Botswana, Zimbabwe, and much of North Africa outside Egypt and Algeria.
- These gaps indicate a pressing need community-focused sociocultural studies, and cross-border research collaborations to strengthen the continent's preparedness for PPR eradication.
- The evidence shows that control failures largely stem from behavioural, economic, and institutional constraints rather than from limitations of the vaccine itself.
- Together, these factors undermine efforts to maintain high and sustained population immunity.

Knowledge and perception

- The persistence of PPR across Africa is shaped by a complex interplay of community knowledge systems, cultural norms, and livelihood realities that collectively influence disease exposure, viral circulation, and the effectiveness of control strategies.
- Community perceptions frequently diverge from biomedical explanations. Pastoralists in Kenya, Ethiopia, and Nigeria sometimes attribute disease to spiritual or environmental causes, creating mismatches with veterinary messaging (Griffith et al., 2020; Jones et al., 2016; Zenada et al., 2025; Mohamed et al., 2018).
- Traditional ethnoveterinary practices represent culturally trusted systems for disease management (Benga, 2022; Kihu et al., 2014, 2012; Gitao et al., 2014; Saliu et al., 2008; Nafea et al., 2020; Odo, 2003; Mahmoud et al., 2017).
- Although direct evidence linking these practices to vaccine refusal is limited, their widespread use illustrates the need to integrate local knowledge to build trust.

Cultural Norms and Social Practice

1. Cultural norms surrounding herd management

- ✓ Communal grazing—a deeply rooted practice in pastoral and mixed farming systems—brings animals from diverse households and regions into close contact, facilitating rapid viral spread (Ezeibe et al., 2004; Lugonzo et al., 2023; Mbyuzi et al., 2014).

Evidence from Ethiopia, Tanzania, Nigeria, and other countries consistently links communal grazing and flock-to-flock interactions to higher seroprevalence (Balogun et al., 2017; Ezeibe et al., 2008; Gari et al., 2017; Lugonzo et al., 2023; Lelisa et al., 2022).

- ✓ Specie mixing: The common practice of mixing sheep and goats—despite species-specific susceptibility, such as goats having nearly three times higher risk in Djibouti (Folitse et al., 2017)—intensifies transmission, as demonstrated in Algeria and Nigeria (Mebrahtu et al., 2018; Merdja et al., 2024; Chukwudi et al., 2020).

2. Gendered social norms: *Gender norms significantly influence livestock vaccine access, decision-making, and coverage across African PPR control systems.*

GENDERED ROLES IN SMALL RUMINANT SYSTEMS

WOMEN

- Primary caregivers
- Daily management
- Often excluded from
- formal vaccine processes
- Limited mobility/resources

MEN

- Control over livestock sale
- Higher institutional access
- Main decision-makers for vaccination & treatment
- Control over Income decisions



REDUCED ACCESS TO VACCINATION



HIGHER DECISION POWER

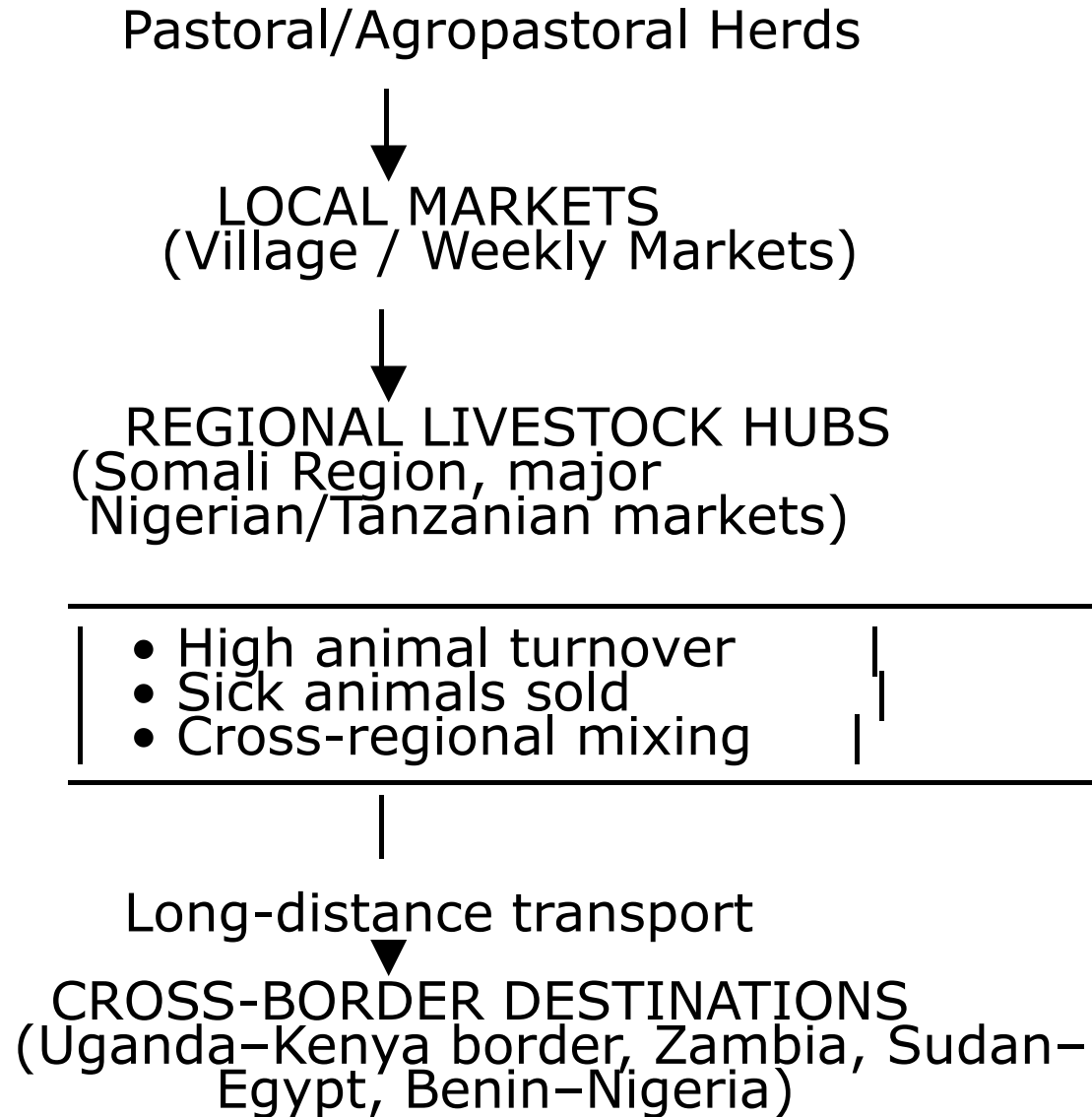


INEQUITABLE VACCINATION COVERAGE → IMMUNITY GAPS

3. Socioeconomic Inequities and Access Barriers

- Although vaccines are safe and effective, uptake is shaped by trust, institutional relationships, delivery costs, and sociocultural interpretations of disease (Weka et al., 2025).
- Even low vaccination costs, such as in Burkina Faso, are significant to resource-limited farmers facing uncertain rains, harsh climatic conditions, and multiple competing livestock diseases (Mantip et al., 2016; Mariner et al., 2017; Markus et al., 2019).
- Where vaccine delivery systems underperform, farmers perceive vaccination as less immediately useful than addressing other livelihood pressures and low farmer participation explain suboptimal vaccination coverage in contexts such as Mali (Ashango et al., 2025; Zannou et al., 2024; Ilboudo et al., 2022, 2023; Lyons et al., 2019)
- Social inequalities further limit equitable access to vaccines, with intersecting factors such as gender, age, disability, ethnicity, and geography shaping participation (Ilboudo et al., 2023; Acosta et al., 2022).
- Delivery inefficiencies—often making public systems more expensive than private services. These structural and behavioral constraints underscore the critical need for strategies that align preventive health interventions with the lived realities of farmers.

4. Livestock Trade & Mobility Network Driving PPR Spread



5. Mobility, Transboundary Trade, and Movement Control

- Livestock movements; pastoral, commercial, or transboundary, emerge as the strongest determinant of PPR spread.
- Mobility networks in Tanzania (Mwanandota et al., 2025), cross-border trade between Sudan–Egypt and Benin–Nigeria (Abraham and Berhan, 2001; Chota et al., 2019; Kinimi et al., 2022; Walle et al., 2024), and transmission hotspots along the Uganda–Kenya border (Nkamwesiga et al., 2019) collectively demonstrate the regional scale of the challenge.
- Movement control remains difficult, shaped by social norms, kinship ties, cultural values around open grazing, and entrenched informal trade systems (Weka et al., 2025).
- Thus, regional coordination is essential to overcome the limitations of country-level control strategies.

Livelihood Realities and Behavioural Incentives

- FIGURE 3. Livelihood Pressure → High-Risk Behaviours

ECONOMIC LOSSES FROM PPR

Deaths, abortions, reduced value, trade restrictions



THREATS TO FOOD SECURITY & INCOME



LIVELIHOOD-DRIVEN DECISION POINT

Option A: Sell sick animals
→ Market contamination
→ Long-distance spread

Option B: Refuse culling
→ Within-flock persistence
→ Chronic household infection

- Livelihood pressures and economic incentives play a decisive role in shaping farmer behavior.
- Small ruminants are central to income generation, food security, and socio-cultural identity across pastoral regions. Consequently, PPR outbreaks inflict devastating losses, such as the US\$19.1 million estimated in Turkana County, Kenya, where mortality accounted for 88% of total losses (Bello et al., 2018; Chukwudi et al., 2016; Mahatma et al., 2018).
- Mobility patterns linked to livelihood strategies also shape transmission risks. Pastoral and nomadic herds in Uganda, Nigeria, and Sudan are disproportionately affected due to routine movements (Emikpe et al., 2013; Fentie et al., 2018; Kihu et al., 2015b, 2015c), while transhumant herds in Chad exhibit the highest exposure (Kifouli et al., 2025).
- Commercial livestock trade, including transboundary movements, further exacerbates spread, with cross-border flows documented between Sudan and Egypt, and Benin and Nigeria (Abraham and Berhan, 2001; Chota et al., 2019; Kinimi et al., 2022; Walle et al., 2024).
- Woma et al. (2025) emphasize that mobility patterns, communal grazing, informal trade, and ethno-veterinary reliance create structural barriers to high vaccination coverage.
- Distrust of state-led campaigns and reliance on traditional knowledge further influence decisions to vaccinate or report disease.
- These findings position livelihood systems as central sociocultural determinants of PPR persistence.

Agro-Ecological Gradient and PPR Risk in Africa

HIGH-RISK ECOLOGIES

Lowland Semi-Arid Pastoral Areas

↑ High mobility ↑ Communal grazing
↑ High seroprevalence

Livestock movement



| Highland Sedentary / Mixed Systems |

| Ethiopian Highlands | Plateau Zones (Nigeria/Tanzania) |
| Lower baseline risk | Repeated introductions |

Synthesis and Implications

- Local livelihood imperatives
- Culturally embedded land-use systems
- Gendered decision-making
- Trusted indigenous knowledge systems
- The economic realities of rural small ruminant keepers
- Integrating these dimensions is crucial for closing immunity gaps, reducing virus circulation, and achieving durable progress toward PPR eradication in Africa.

Conclusion

The synthesis of evidence across African studies shows that:

- PPR persistence is not driven by virology alone but by the deep interaction of agro-ecological, socioeconomic, cultural, and behavioural determinants that collectively shape disease dynamics.
- Semi-arid pastoral and transhumant systems often characterised by high livestock mobility, communal grazing, and strong reliance on small ruminants for livelihoods, form the core ecological and social environments in which the virus continues to circulate.
- These systems also intersect with informal trade networks, cross-border livestock flows, and restocking practices, creating continuous opportunities for viral introduction and reintroduction across countries and regions.
- Economic pressures further reinforce high-risk behaviours such as selling sick animals, avoiding culling, and delaying reporting,
- Vaccination uptake is constrained by delivery costs, access inequities, institutional trust, and gendered decision-making structures that systematically limit the participation of women—despite their central role in routine herd management.

- Traditional beliefs and ethnoveterinary practices remain highly influential across pastoral communities, shaping disease recognition and treatment choices and, in some contexts, weakening vaccine acceptance.
- These interwoven factors produce persistent immunity gaps, even where PPR vaccines are available, effective, and affordable.
- Eradication efforts built solely on technical interventions are unlikely to succeed.
- The evidence strongly indicates that PPR eradication in Africa requires context-specific, socially attuned approaches that recognise pastoral mobility patterns, support gender equity, strengthen community engagement, address economic vulnerabilities, and integrate culturally grounded knowledge systems.
- Only through this integrated approach can durable progress toward PPR eradication be achieved.

OBSTACLE TO PPR VACCINATION

- Thematic analysis of focus group discussion report content
- 10 themes identified in total
- Currently, the main obstacles appear to be a limited awareness of vaccination, which is substituted with alternative strategies or with an absence of prevention.
- Current low vaccination coverage against PPR and ND in smallholder farms : essentially an issue of availability and awareness.
- A large proportion of smallholder are not even aware of the possibility to vaccinate

Content	Female			Male			Total
	Bauchi	Plateau	Kano	Bauchi	Plateau	Kano	
No prevention at all	3	0	1	8	1	0	13
Other preventive strategies	3	6	5	4	5	6	29
Lack of knowledge	3	2	5	6	0	2	18
Gap between knowledge and practice	2	1	1	1	0	0	5
Treatment rather than prevention	0	1	0	1	0	0	2
Helplessness	1	0	0	1	0	0	2
Perceived negative effect of vaccines	0	1	0	0	0	0	1
Limited access to vaccines	1	0	0	0	1	0	2
Economic consideration	0	1	0	0	0	0	1
Reactive vaccination	0	0	4	1	0	3	8

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Reference

- Acosta, D., Hendrickx, S., & McKune, S. (2019). The livestock vaccine supply chain: Why it matters and how it can help eradicate peste des petits Ruminants, based on findings in Karamoja, Uganda. *Vaccine*, 37(43), 6285-6290.
- Acosta, D., Ludgate, N., McKune, S. L., & Russo, S. (2022). Who has access to livestock vaccines? Using the social-ecological model and intersectionality frameworks to identify the social barriers to peste des petits ruminants vaccines in Karamoja, Uganda. *Frontiers in veterinary science*, 9, 831752.
- Adedeji, A.J., Dashe, Y., Akanbi, O.B., Woma, T.Y., Jambol, A.R., Adole, J.A., Bolajoko, M.B., Chima, N., Asala, O., Tekki, I.S., Luka, P. and Okewole, P. (2019) Co-infection of peste des petits ruminants and goatpox in a mixed flock of sheep and goats in Kanam, North Central Nigeria. *Veterinary Medicine and Science*, 5(3), pp. 412–418.
- Bett, B., Jost, C., Allport, R. and Mariner, J. (2009) Using participatory epidemiological techniques to estimate the relative incidence and impact on livelihoods of livestock diseases amongst nomadic pastoralists in Turkana South District, Kenya. *Preventive Veterinary Medicine*, 90(3-4), pp. 194–203.
- Bikaako, W., Kabahango, P., Mugabi, K., Yawe, A., Stallon, K., Kyewalabye, E., ... & Amuguni, H. (2022). Breaking institutional barriers to enhance women's participation in and benefit from the Peste des Petits Ruminants and Newcastle Disease vaccine value chains for Sembabule district of Uganda. *Plos one*, 17(10), e0270518.
- Britton, A., Caron, A., & Bedane, B. (2019). Progress to control and eradication of peste des petits ruminants in the Southern African development community region. *Frontiers in Veterinary Science*, 6, 343.
- Bukachi, S. (2020). Gender inclusive vaccine ecosystem: enhancing distribution and delivery system for Newcastle disease and PPR among smallholder farmers: the GIVE project: progress on project implementation.
- Kihu, S. M., Gachohi, J. M., Gitao, C. G., Bebora, L. C., Njenga, J. M., Wairire, G. G., ... & Wahome, R. G. (2013). Analysis of small ruminants' pastoral management practices as risk factors of Peste des petits ruminants (PPR) spread in Turkana District, Kenya.
- Lysholm, S., Johansson Wensman, J., Munyeme, M., & Fischer, K. (2020). Perceptions and practices among Zambian sheep and goat traders concerning small ruminant health and disease. *PloS one*, 15(6), e0233611.

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