Projet de recherche et innovation pour des systèmes agro-pastoraux productifs, résilients et sains en Afrique de l'Ouest (PRISMA)

Photo credit: PRISMA project

A regional index insurance scheme for West African pastoralists

This brief is a summary of the paper:
Estefania-Salazar, E., & Iglesias, E. (2026). Enhancing drought resilience: An index insurance scheme for West African pastoralists. Climate Risk Management, 52, 100808. https://doi.org/10.1016/j.crm.2026.100808

EXECUTIVE SUMMARY

West African pastoralists face intensifying drought cycles that reduce forage, raise livestock mortality and distressed livestock sales threatening livelihoods. A regional IBLI scheme covering 12 countries shows strong feasibility, relatively low actuarially fair premiums, and major welfare gains. Premiums fall significantly when risks are pooled regionally, and moderate subsidies can unlock near-universal positive welfare impacts. Key findings show actuarially fair premiums as low as 1–2.6% of the insured value, broad welfare benefits, and potential premium loading reductions of up to 50% when risks are pooled regionally. These results position IBLI as a cornerstone for climate resilience, requiring government leadership and smart subsidies to achieve scale.

Problem Statement

Drought frequency and severity have increased across the Sahelian and Sudanian zones, reducing grazing biomass and destabilizing pastoral economies. Approximately **50 million West African pastoralists** rely on climate-sensitive rangelands. Drought-driven losses can trigger **distress livestock** sales **pushing these communities into poverty traps**. Moreover, existing insurance systems are scarce, fragmented, crop-focused, or inaccessible, leaving pastoralists without effective financial protection.

Objective

Design and evaluate the first large-scale, regional **Index-Based Livestock Insurance (IBLI)** scheme for West African pastoralists, covering 12 countries and more than 2.6 million km^2 of rangelands.

Highlights

- Regional IBLI designed for 12 West African countries to reduce drought losses.
- Optimized insurance zones cut basis risk compared to administrative boundaries.
- NDVI reliably tracks forage scarcity and supports accurate drought payouts.
- Regional pooling lowers premium loadings by up to 50%.
- Up to 89% of territory shows welfare gains from moderate-trigger IBLI.

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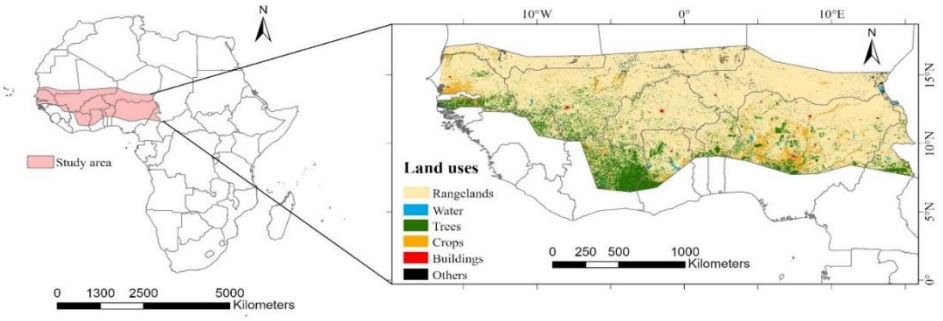
Figure 1. Case study



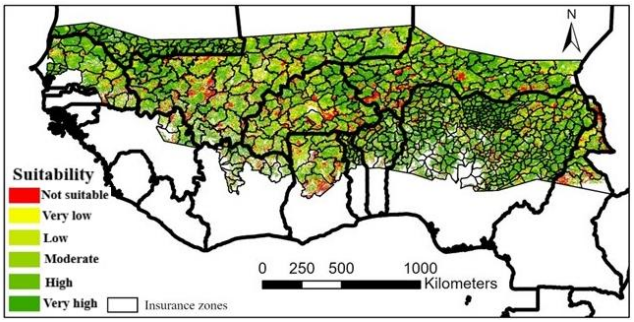
Results

The study's results show that it is **technically feasible, economically viable, and socially beneficial** to introduce a regional IBLI program across West Africa. The first major finding is that the vegetation indicator used to trigger insurance payouts—the **Normalized Difference Vegetation Index (NDVI)**—closely matches real-world grazing conditions. This means NDVI can reliably detect drought stress and is suitable for triggering insurance payments in an objective and transparent way.

A second key result relates to **insurance zone design**. Traditional schemes rely on administrative boundaries, which often group together areas that experience very different climate conditions. This mismatch creates "basis risk," where herders suffer losses but the index fails to trigger payouts. This problem is reduced by using machine-learning methods to create **optimized insurance zones** that group together areas with similar drought behavior. These optimized zones significantly improve insurance quality, ensuring that payouts more accurately reflect actual losses.

The study also estimates the **cost of insurance**. Across the 12 countries, actuarially fair premiums (the true cost of covering expected losses) average **2.6% of insured value for moderate drought coverage** and **1.0% for more severe drought coverage**. These values are comparable to, or lower than, similar livestock insurance programs in East Africa. Importantly, the welfare analysis shows that in **89% of the region**, herders would experience better economic outcomes if they purchased the moderate-trigger insurance product, even before applying subsidies.

Figure 2. Index insurance performance



Another major finding is the value of **regional risk pooling**. Because droughts affect different West African countries at different times, pooling insurance risk across all 12 countries reduces the financial reserves insurers must hold. The analysis shows that regional pooling can cut buffer fund requirements—and therefore premium markups—by up to **50%**, making the insurance both cheaper for herders and less costly for governments or donors who may subsidize premiums.

Lastly, the study finds that **premium subsidies dramatically increase adoption and welfare benefits**. With a 50% subsidy, nearly the entire region (99%) would see positive welfare gains. These results suggest that a regional IBLI program would significantly strengthen drought resilience for millions of pastoralists across West Africa.

Policy recommendations

- Support the development of tailored IBLI under a regional reinsurance framework to reduce costs through risk pooling
- Offer premium subsidies to boost adoption and welfare gains.
- Use GPS-based mobile tools to improve enrollment and payout accuracy.
- Monitor NDVI and livestock data systems to enhance insurance quality.

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