

IMPROVING LIVESTOCK INSURANCE TRIGGER MECHANISMS AND GENDER RESPONSIVE PRODUCTS FOR DROUGHT-AFFECTED (AGRO-)PASTORALISTS IN KENYA.



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BACKGROUND

Livestock insurance currently relies on the Normalized Difference Vegetation Index (NDVI) – a satellite measure of "greenness" – as a trigger for drought payouts. However, NDVI doesn't always reflect the actual forage conditions on the ground during droughts. This mismatch, a phenomenon known as basis risk, means herders might not receive payouts even when their animals are starving, leading to community mistrust of insurance schemes. Additionally, cultural and local environmental factors (such as forage types and water access) are not fully accounted for in early products, resulting in many pastoralists feeling the coverage wasn't suitable for their needs. Early findings reveal a gender gap in how current insurance benefits are distributed. This underscores the need for gender-inclusive insurance models. The BIMA project was launched to address these gaps by developing more inclusive and accurate drought triggers, along with improved insurance solutions.

OBJECTIVES

To develop an insurance payout trigger that meaningfully integrates ground conditions and climate data (beyond just satellite NDVI) for more timely, accurate drought.

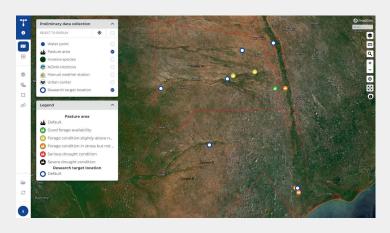
To create insurance products that intentionally include and benefit women, youth, and other marginalized groups.

To rebuild community trust in IBLI and boost enrolment by making the insurance more equitable and transparent.

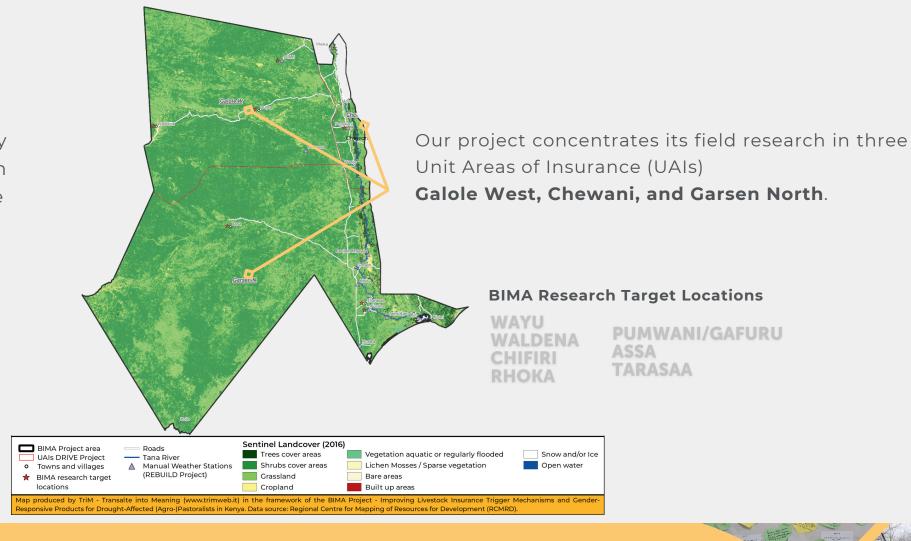
STUDY AREA

Tana River County, Kenya

a drought-prone region with predominantly pastoral and agro-pastoral communities in Kenya's coastal arid and semi-arid landscape



3Map visualization



METHODOLOGY

We employ a **mixed-methods approach** to develop and test improved insurance mechanisms. Key components include:

Land Degradation Surveillance Framework (LDSF) to systematically measure on-the-ground conditions.

to systematically measure on-the-ground conditions. 9 transects, 27 plots (2, 4, & 6 km from community weather stations) and 108 sub-plots set for data capture.



Participatory workshops with key stakeholders

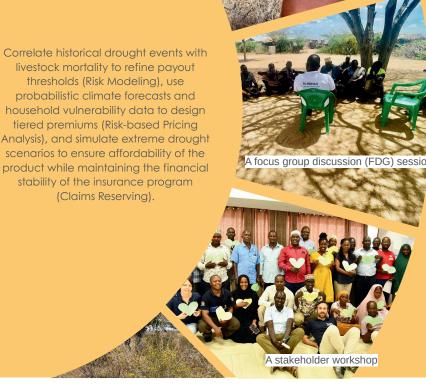
pastoralists, national and county government, insurers, and researchers to validate findings and co-design solutions



Actuarial product

development

thresholds (Risk Modeling), use probabilistic climate forecasts and household vulnerability data to design tiered premiums (Risk-based Pricing Analysis), and simulate extreme drought scenarios to ensure affordability of the product while maintaining the financial stability of the insurance program (Claims Reserving).



Proximal optical sensor capture spectral reflectance data

Community Surveys & Focus Groups

e.g., time-use and power dynamics surveys to capture differences in decision-making, livestock ownership, and climate perceptions within households



Remote Sensing (Optical Sensors & NDVI Analysis

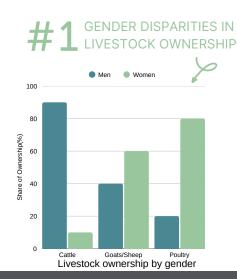
by use of portable optical sensors at field plots alongside analysis of NDVI satellite data. Rainfall data used in the decadal NDVI estimates derived from GPM, RFE, and CHIRPS satellites.



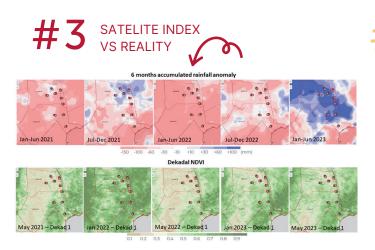
Data Integration (3Map IMS)

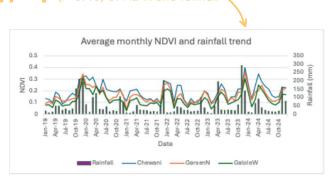
The 3Map Information Management System is utilized to support the collection of different geospatial data, integrating all collected information, both secondary data from open datasets and primary data measured on the ground, such as social survey data, ground biophysical measurements, and satellite rainfall estimates-into a unified platform.

INTERIM INSIGHTS



#2 WOMEN'S LIMITED BENEFITS / Time taken on specific activities by gender in minutes





MODERATE POSITIVE ASSOCIATION



Average monthly NDVI and rainfall trend

SUMMARY

Pastoralist men typically own and control most large livestock (e.g. cattle), whereas women tend to own smaller animals like shoats and poultry.

Men take insurance on major herd animals; many women do not directly receive insurance benefits.

Women's significant labor in herd management is largely uncompensated.

The NDVI anomalies over the 6 years agree with the National Drought Management Authority (NDMA) reports on drought, validating its suitability as a drought indicator.

Trend of NDVI anomalies

Rainfall influences vegetation health more than land surface temperature.

Higher-than-normal NDVI values at the end of the short rainy season may falsely suggest vegetation health despite longer harsh periods.

The phenological behavior implies that IBLI payout triggers could misrepresented if the length of the rainy season and the start of the season are not factored in.

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