Livestock Feed Assessment and Forecasting with Earth Observation

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Jameel Observatory stocktaking webinar on enhancing forecasting and earth observation data and applications for drylands of the Horn of Africa, 20 January 2026



Livestock Feed Crisis

- **Current State: Reactive Feeding**
  - No strategic planning for livestock nutrition
  - Decisions made without data insights
  - Chronic feed crises and resource conflicts

- **Impact**: Suboptimal productivity, preventable shortages, economic losses



Photo credit: ILRI

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What if we could prevent livestock feed crisis?

- **Africa's livestock sector**
  - Critical for GDP, livelihoods, and food security
  - Strategic feed management = healthier animals = better yields

- **The Missing Link**: Knowing feed supply versus feed demand



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Feed Supply: What is Available

- **Comprehensive feed resources mapping**:
  - Natural grass
  - Crop residues and by-products
  - Cultivated fodder crops
  - Browse
  - Concentrate feeds
- **Tracked by**: Type, quantity, quality, season



Feed Demand: What is Needed

- **Livestock Inventory**:
  - Cattle, goats, sheep populations
  - Herd composition, live weight, age, production data
  - Nutritional requirements by species





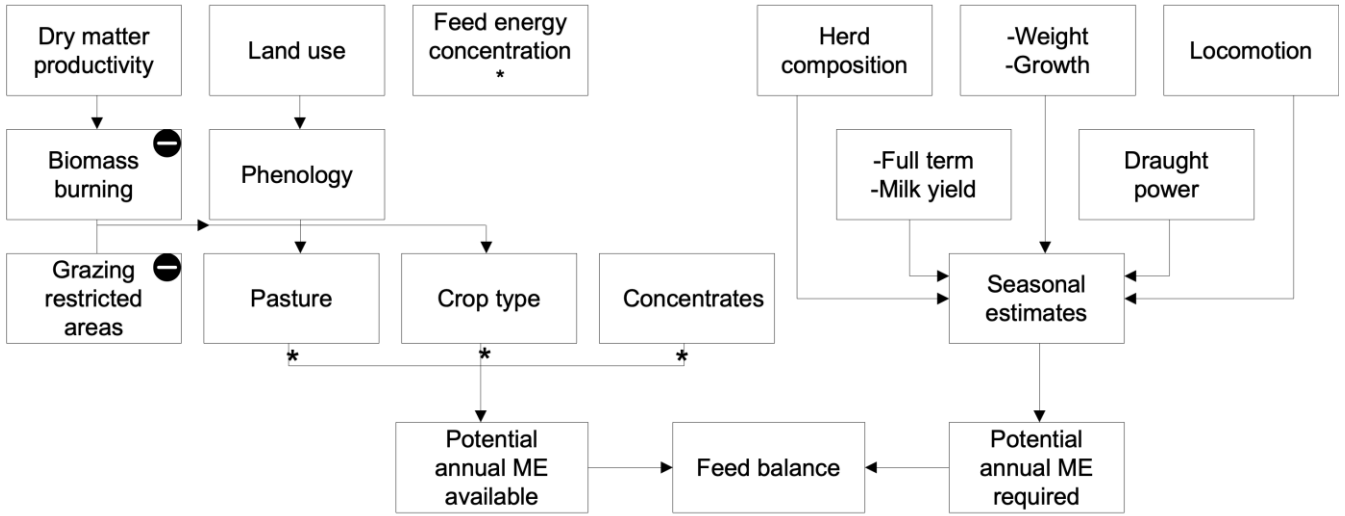




Photo credit: ILRI

Livestock Feed Balance Model

- **Systematic Assessment**
- Feed Supply: Map all available resources
- Feed Requirements: Know livestock needs
- Balance Analysis: Supply vs demand
- Ground Truthing - Field validation of EO data

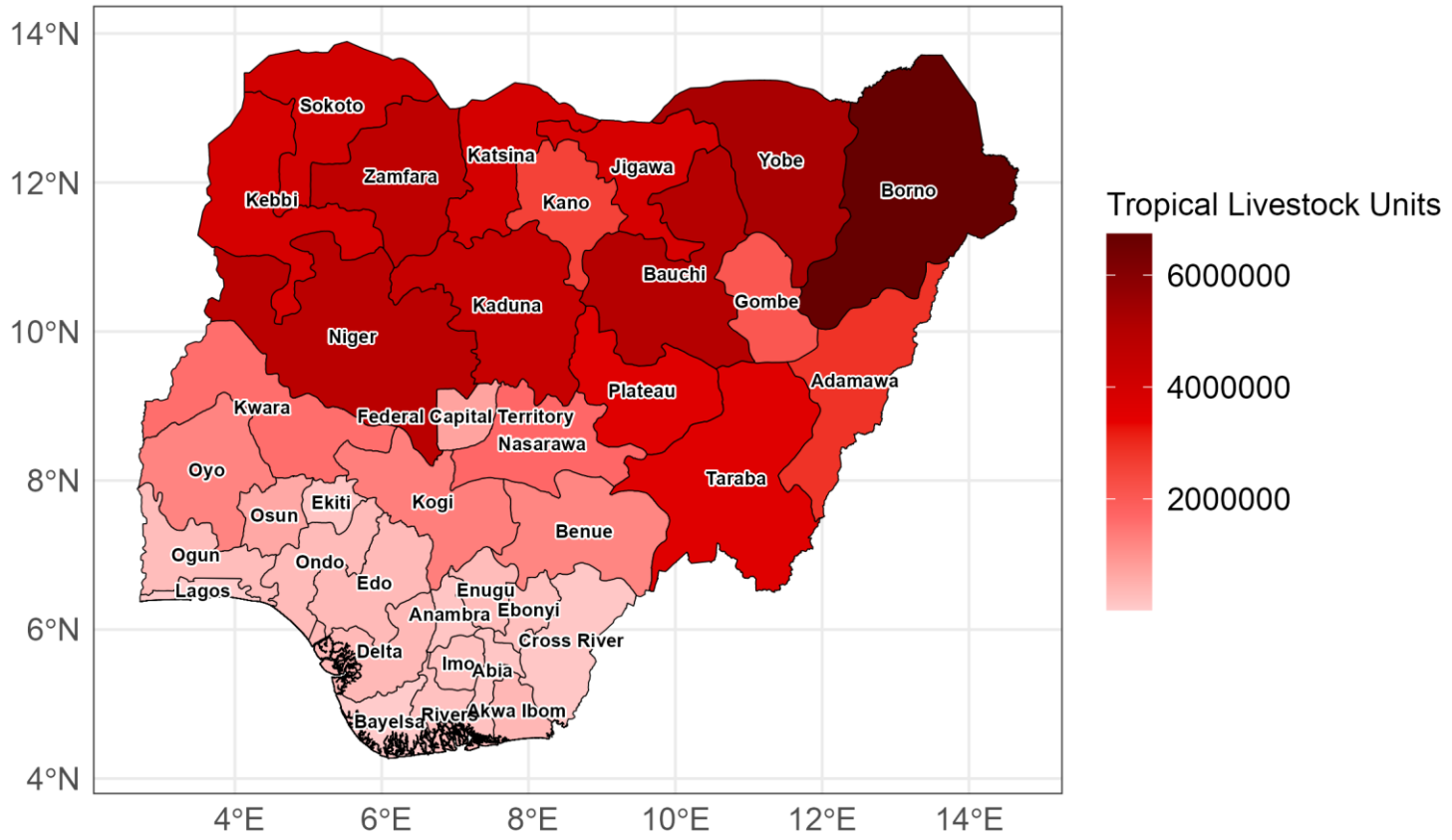


Source: Fravel et al. 2024

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Tropical Livestock Units - Nigeria

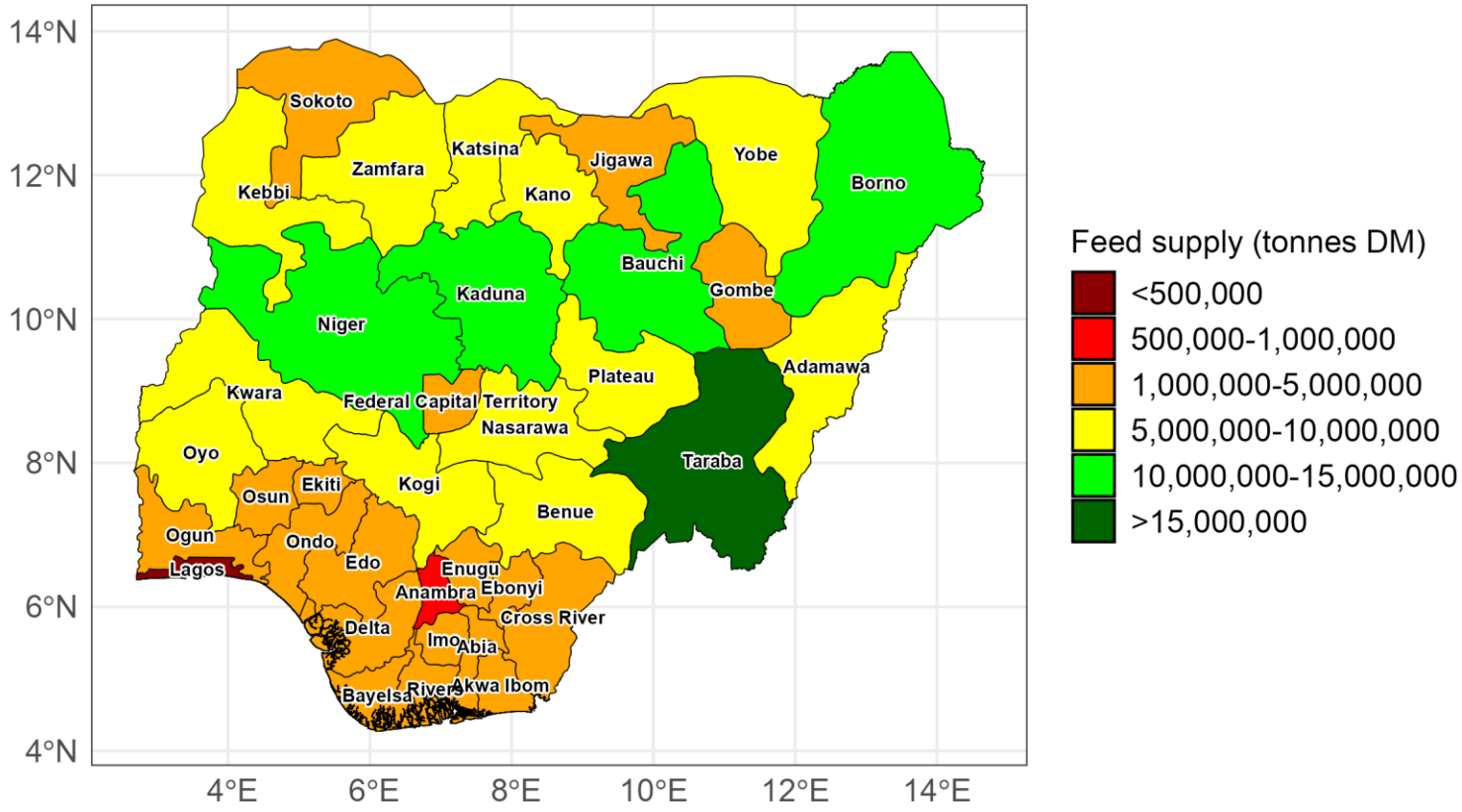
- Dry savannah zones host most of the ruminant population
- Humid forest zones have minimal livestock population



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Feed Supply - Nigeria

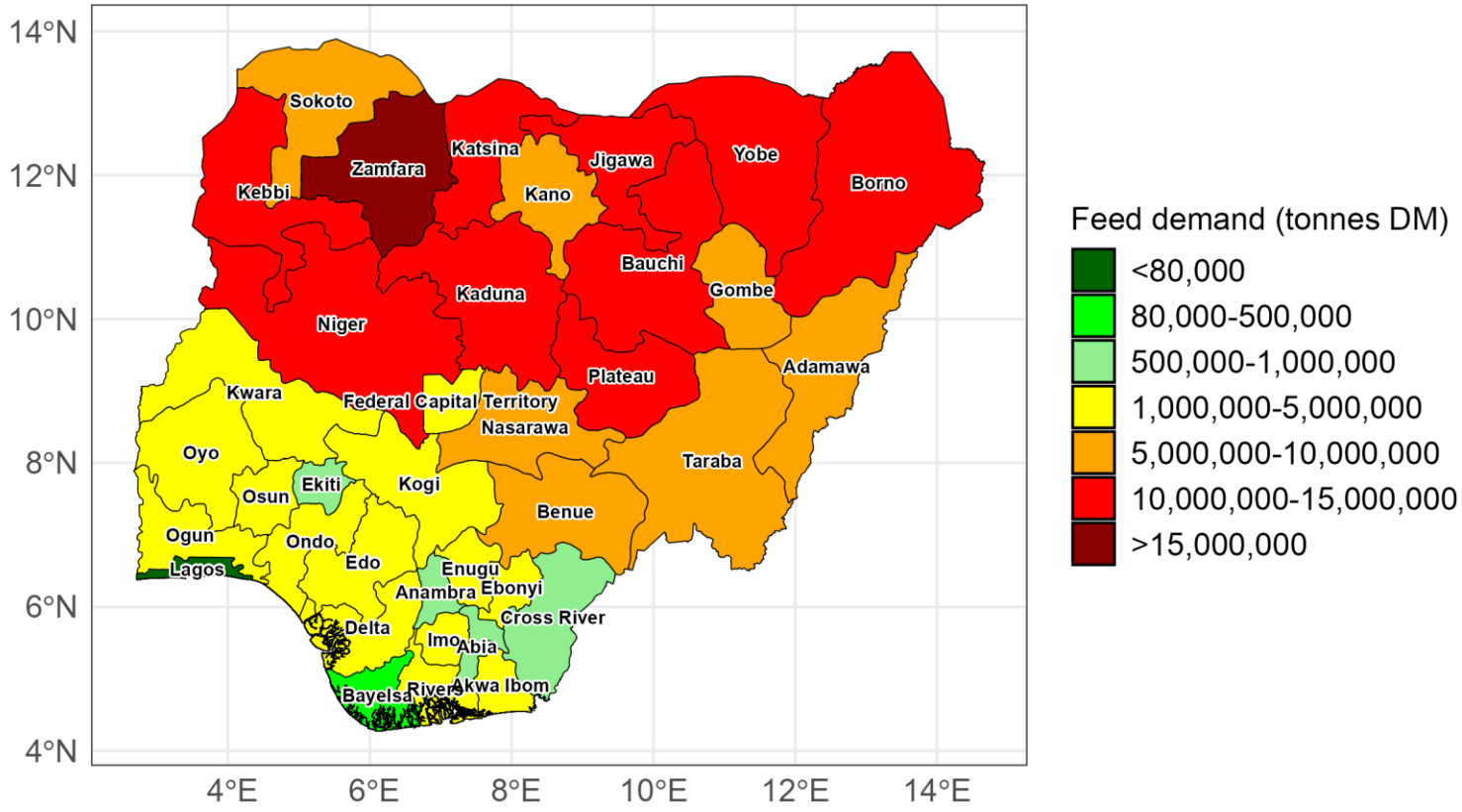
- Feed distribution does not match animal population distribution
- Feed is not available where livestock are most concentrated.



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Feed Demand - Nigeria

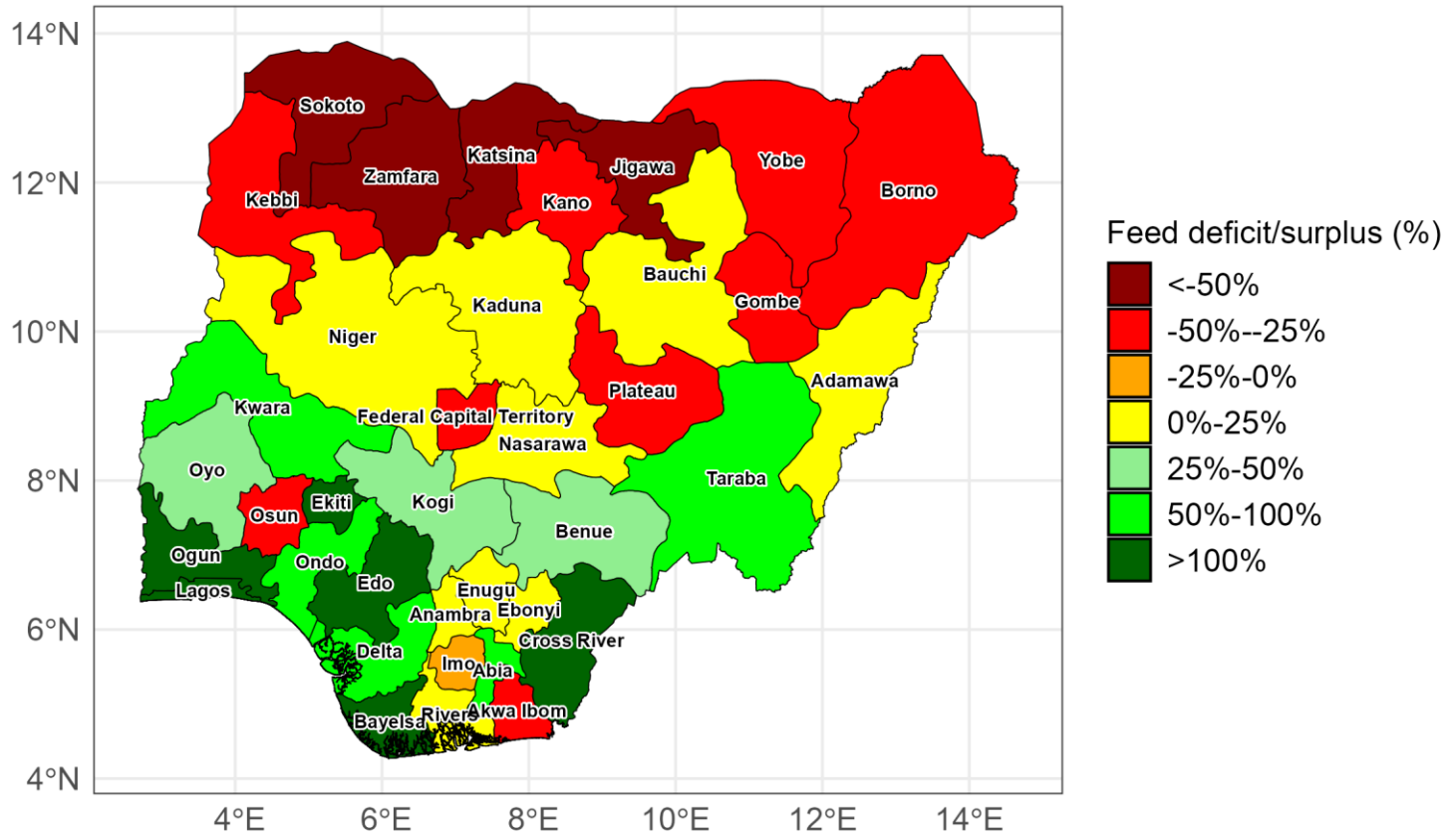
- Huge demand in the dry savannah zones
- Less demand in the humid forest zones



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Feed Balance - Nigeria

- National deficit: 8.33%
- Huge state-level disparities
- High surpluses in Bayelsa, Cross River, and Edo states
- Serious deficits in livestock-dense states such as Jigawa, Sokoto, Zamfara, and Kano.



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From Data to Decisions

- **Government**: Early warning and crisis prevention
- **Industry**: Strategic investment targeting
- **Trade**: Link surplus regions with deficit areas
- **Productivity**: Healthier animals = better yields

Impact: Transform reactive feeding into strategic planning


POLICY BRIEF

Securing Nigeria's Livestock Future:
Insights from the Nigeria Feed Inventory and National Feed Balance

1 Introduction: A Feed Revolution for Resilience

2 Are We Feed Secure? The National Deficit Behind the Illusion of Surplus

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The Jameel Observatory for Food Security Early Action is an international partnership led by the University of Edinburgh collaborating with the International Livestock Research Institute (ILRI), Save the Children UK, the Abdul Latif Jameel Poverty Action Lab (J-PAL) and Community Jameel.

Based at ILRI in Nairobi, Kenya, we combine the local knowledge and concerns of communities facing on-the-ground threats of hunger with innovations in data science and humanitarian action; teaming up to devise solutions that can predict, prepare for, and overcome climate-related food security and malnutrition challenges in dryland areas.
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