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Market competitiveness and the future of West African cattle and beef value chains

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Highlights

- Local crop-livestock technologies can substantially raise farm productivity and earnings.
- Beef demand is growing, with some preference for fresh over frozen meat.
- Demand is generally highly price sensitive.
- Capacity of producers to meet higher and changing beef demand is low.
- Key interventions needed for strengthening West Africa's cattle value chains are upstream.

Motivation

In West Africa, there has been a renewal of policy debates associated with the promotion of value-added beef exports in lieu of traditional, largely pastoral-based, trade in live animals from the Sahel to coastal West African countries. These pressures emerge in part from climate-induced tensions between pastoral and agricultural communities over land and resources. At the same time, the increased dynamism of red meat demand among coastal countries in West Africa (e.g. Nigeria, Ghana, Cote d'Ivoire) has driven several planned investments in Sahelian countries (e.g. Chad, Mali, Niger, Burkina Faso) to develop export-oriented infrastructure such as slaughterhouses that can enable these countries to capture the value added associated with the production of livestock.

While demand for meat is expected to grow strongly in West Africa (Zhou and Staatz 2016), prevailing factors such as low animal productivity, instability of pasture resources, limited investments by farmers, undeveloped markets and poor market integration will most likely limit the ability of regional producers to take full advantage of this potential (FAO and AfDB 2015). Moreover, with

growing demand, has come increased competition from imports from sources outside Africa, often at prices well below what Sahelian suppliers can provide.

Work led by scientists at the International Livestock Research Institute (ILRI) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is contributing to identifying and appropriately quantifying priority strategies (including policies and private sector investments) to address the long-standing inefficiencies and emerging trade-offs within the West Africa cattle and beef value chain.

Objectives

The project 'Assessment of the competitiveness of West African cattle and beef value chains' explored the complex links between feed productivity, animal production, and consumer demand in the cattle and beef value chains in West Africa. It focused on two key corridors for live animal trade in the region (i.e. Burkina-Faso–Ghana, Niger/Chad–Nigeria) and five major end-markets for beef consumption (Abidjan, Accra, Abuja, Kano and Lagos). The project pursued the following specific objectives:

1. Identify the main factors constraining crop-livestock integration and adoption.
2. Investigate the effects on livestock productivity of candidate feeding systems, crop, and cultivar mixes appropriate for commercial livestock production.
3. Evaluate consumer demand for specific beef products and cuts.
4. Evaluate the competitiveness of Sahelian producers in meeting higher and changing consumer demand.
5. Quantify the dynamic interactions and economic impacts at different stages of the value chain as they influence competitiveness and trade.

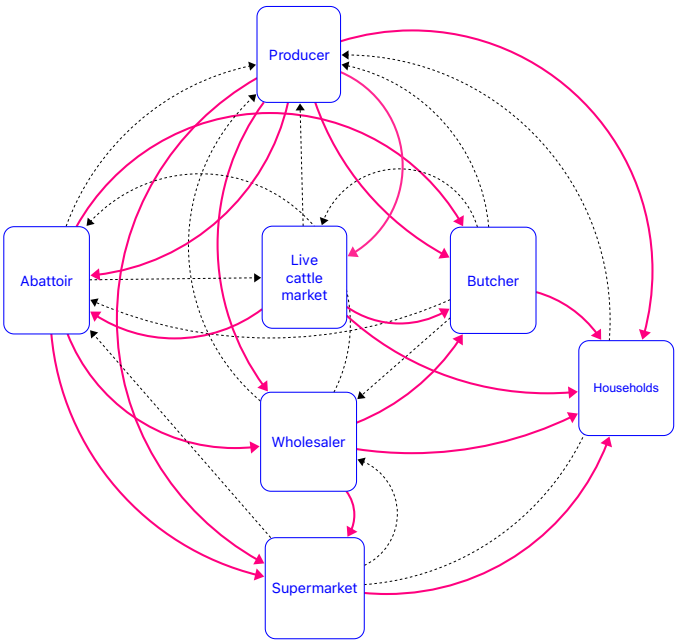
Four distinct but related research studies were undertaken to explore the linkages between feed resources and animal productivity, market demand, and the competitiveness of cattle and beef value chains in West Africa.

Methods

The study by (Kumar et al. in press.) investigated factors constraining the adoption of crop-livestock integration at study sites in Niger and Burkina-Faso, applying a whole-farm crop-livestock simulation method to identifying scenarios for potential uptake of feed systems, crops, and cultivars (this addressed objectives i and ii as earlier outlined). Wane et al. (2021) examined patterns of demand for source-differentiated products with a study in Cote d'Ivoire (objective iii). It applied the Almost Ideal Demand System (AIDS) econometric approach to demand analysis, using primary data collected from 562 households in Abidjan.

In two studies addressing the response of cattle producers and value chains to emerging consumer demand for meat in the region, Rich and Wane (2021) analysed the competitiveness of beef exports from Burkina Faso to Ghana (objective iv), while Aboah et al. (2021) investigated factors influencing the dynamics of trade in the cattle and beef value chain (objective v). The study on value chain competitiveness in Burkina Faso and Ghana combined system dynamics modelling of upstream and downstream marketing and trade of live animals and meat with the use of social accounting matrices. Supply and demand-side factors were jointly analysed in Aboah et al. (2021), which used feedback loops in a system dynamics (SD) model to trace and quantify the complex cause-and-effect interactions between and among various variables driving cattle and beef trade in Nigeria (Figure 1).

Figure 1: SD model representation of actor interactions in Nigeria's cattle value chain (Source: Aboah et al., 2021).



Data to parameterize the SD model was collected using (individual and group) key informant interviews in three major cities: Abuja, Kano and Lagos, and from secondary sources. The four related studies were completed between 2019 and 2021.

Results

Findings from the related studies provide useful information for conceptualizing policy and commercial strategies that increase efficiency across the target value chains in West Africa and address potential trade-offs between different actors. The field surveys from sites in Niger and Burkina Faso (Kumar et al. in prep.) indicated that crop residues played a major role in the feeding of raised cattle and came from millet, sorghum, groundnut, cowpea and maize. However, the purchase of fodder was minimal, even during the drier seasons when the

own-grown biomass supply was low. Results from whole-farm integrated crop-livestock economic modelling indicated improved feed technologies led to increases in fodder availability, livestock productivity (measured as weight gain), and household gross earnings. Out of seven (7) scenarios depicting combinations of farming and feeding options, adoption of improved dual-purpose millet (shifting land from legumes to millet) along with the use of higher-yielding breeds of local cattle yielded the highest increases in household cash flows compared to baseline conditions, depending on the farm household typology.

Meat supply in Abidjan comprises of meat from domestically raised animals, products of live cattle imports from Sahelian countries, and frozen meat imports from Asia, Latin America and Europe. Wane et al. (2021) reported that live animals and meat imports make up the bulk of the meat supply. Their analysis of food demand revealed that most households (63%) will reduce their beef consumption following a price increase. The tendency was to switch to chicken as these two products were highly substitutable. Fish was also found in the study to be a superior food product, with consumers reducing their consumption of beef to compensate for a hike in the price of fish. Analysis of data from a complimentary survey done in Nigeria (Aboah et al. 2021) showed a preference for Sahelian and local products over (frozen) beef imports from outside the region. No differences were found, however, between the meat of domestically raised versus imported live animals.

Rich and Wane (2021) showed from analysis of the Burkina-Faso/Ghana livestock corridor that there is limited competitiveness of the main products (offal) demanded in the destination markets of this corridor. The simulation of market segmentation strategies, infrastructure development, and animal productivity generated only marginal improvements to competitiveness, the changes not being enough to give producers any advantages in the competition against third-country imports. The study further showed negligible gains in employment if the Sahelian country focused on increased exports of meat rather than of live animals.

System dynamics modelling of the cattle value chain in Nigeria (Aboah et al. 2021) showed that the dominant drivers of cattle trade in Nigeria are upstream focused, and economic, biological, and bio-economic in nature. The prices that wholesalers of live animals are willing to pay, delays in the maturation of producing animals, and time delays in animal sales were found to be the main system bottlenecks, making wholesalers (primarily) and producers the dominant players in the value chain. The results indicated the presence of power play in the value chain where producers are potentially exploited by wholesalers.

Discussion

The farm-level study in Burkina Faso (Kumar et al. n.d.) would suggest that there is still considerable scope for farmers to attain substantial improvements in farm productivity through the adoption of low resource technologies for crop-livestock systems. Whole-farm simulations showing transmission of these technological improvements into higher incomes and cash flows further emphasize the potential to improve efficiency upstream of the cattle value chain. As such, attention still needs to be paid by regional governments to the low technological and upstream investments that have the capacity to reach many smallholder producers across the region. This may contrast with the current increased focus on downstream infrastructure to boost livestock exports.

While much has been said about the growth in demand for animal-source proteins in the region, it is important to note that the emerging demand may not be uniform for all animal-source food products and may not always provide scope for local cattle producers to benefit. Consumers in Abidjan did not prioritize beef in their expenditures, preferring chicken and fish. There was, however, indication in cities in Nigeria that when consumers purchased beef, the preference was for fresh meat cuts from locally sourced or Sahelian-raised animals over frozen meat imports. As such, while beef demand is highly price sensitive, there remains some scope for cattle producers, who are currently not competitive against meat imports from third-country producers, to capitalize on local dietary preferences.

Bottlenecks that persist upstream of the value chain (i.e. on-farm and early on in marketing and distribution channels, including emanating from an imbalance of power among value chain actors, limit the access of farmers to consumers in the region with high demand for live cattle and red meat). Further, unfavourable regional policies, weak transportation infrastructure and currency fluctuations continue to inhibit cattle trade and the efficient functioning of cattle value chains. However, the emergence of relatively low-cost digital technologies raises prospects in the region of market strategies that will allow, for example, for more direct contact between producers and final demand.

Conclusion

This brief reports on a collection of independent but related studies completed in selected net producer and net importer countries under a project led by ILRI and ICRISAT examining the competitiveness of cattle and beef value chains in West Africa. The studies, using standard (i.e. econometric demand analysis and farm simulation) models as well as newer applications of

analytical approaches (i.e. system dynamics modelling) have highlighted important linkages between crop-livestock productivity, consumer demand, and market competitiveness. Three key takeaways are: (1) there remains considerable scope to improve on-farm outcomes through the adoption of accessible crop-livestock technologies in West Africa's cattle value chains, (2) strategic interventions will be needed for domestic producers to take advantage of higher consumer demand for animal-source foods, and (3) the major interventions that can make a difference will be in addressing challenges upstream of the value chain.

While not a complete assessment of the cattle and beef value chain in West Africa, this project has provided information that is useful for signalling appropriate policy and investment direction across the region. It tells us for example, that studies to facilitate the adoption of farm technologies will still be important going forward. Ongoing work that builds on this project is tracing the impacts of identified interventions on actors and activities throughout the value chain. Additional work will be needed to understand multi-objective trade-offs (e.g. between nutrition, gender equity, climate mitigation, and environmental impacts) that potentially arise as interventions are introduced to upgrade cattle and beef production and trade in the region.

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