



TEGEMEO INSTITUTE

# Policy Brief

## A Farm Gate-to-Consumer Value Chain Analysis of Kenya's Maize Marketing System

Lilian Kirimi, Nicholas Sitko, T.S. Jayne, Francis Karin, Milu Muyanga, Megan Sheahan, James Flock, and Gilbert Bor

No. 5/2011

*Maize is the most important staple food in Kenyans' diets, providing roughly a third of the caloric intake for Kenya's population. It is also the central crop in Kenyan agriculture, being grown by 98% of Kenya's 3.5 million smallholder farmers. Developing appropriate maize marketing and trade policies in the context of a growing structural deficit in maize and ever shrinking smallholder farm sizes requires a detailed understanding of the organization and performance of Kenya's maize value chain. This study describes the operation of Kenya's maize value chain two decades after the liberalization process began.*

**BACKGROUND:** Maize marketing and trade policy in Kenya have been dominated by three major challenges: (i) the classic food price dilemma: how to keep farm prices high enough to provide production incentives for farmers, while at the same time keeping them low enough to ensure poor consumers' access to food; (ii) how to effectively deal with food price instability, which is frequently identified as a major impediment to smallholder productivity growth and food security; and, (iii) the growing problem of access to land and the shrinking size of smallholder farms. In this context, a major agricultural policy issue is how to achieve broad-based smallholder-led agricultural growth under conditions of increasingly acute land pressures.

**OBJECTIVES:** The objectives of the study were to provide a full picture of Kenya's maize value chain from the farm gate to the retailing of maize meal to consumers; to identify major trends in maize prices, maize meal prices, and marketing margins charged at various stages of the system; and, to identify actions by the public sector to overcome production and marketing problems and support the Kenyan government's national policy objectives of food security and smallholder-led development.

**DATA AND METHODS:** The study used four kinds of data: (i) interviews of maize assemblers, wholesalers, retailers, and

millers; (ii) farmer focus group discussions (FGDs) in four maize-surplus producing regions and three maize-deficit regions; (iii) panel data on 1,267 farm households from the Tegemeo Institute rural household surveys; and (iv) maize production, consumption, and price information from the Ministry of Agriculture and Food and Agricultural Organization. Details of the sample and methods of analysis are described in the main report referenced at the end of this brief.

### MAIN FINDINGS: FARM LEVEL

1. Land fragmentation and decreasing land-size holdings: The mean size of smallholder farms in Kenya declined by 15% over the 1997-2007 period. About one-third of the smallholder farms were less than 1.0 hectares in size. Therefore, even with major improvements in the performance of the maize value chain, a large percentage of smallholders will continue to be unable to produce a maize surplus that would enable them to link to markets, without major increases in farm productivity.

2. A relative decline in the importance of maize as a share of gross farm revenue: Households produced roughly the same quantity of maize in each of the four survey years, implying that the real value of production declined. The proportion of households selling maize increased from 35% in 1996/97 to 49% in

2006/07, partially due to a rise in households that used fertilizer on maize, from 54% in 1997 to 70% in 2007. However, the total quantity of maize sales declined by 12% over the same period, suggesting that the mean quantity sold per selling household was declining.

3. High degree of differentiation and market concentration within the smallholder sector: Only 2% of the farms accounted for 50% of the overall marketed maize from the smallholder sector. These farm households appeared to enjoy substantially higher welfare levels, in terms of asset holdings, crop income, and non-farm income, than the rest of the rural population. This implies that, at least in the short run, policies that put upward pressure on maize prices benefit only a small minority of producers, while directly hurting the majority.

4. Evidence of the importance of marketing training on farm income: The prices received by farmers selling maize in the same month and in the same village showed a high degree of variability. This variation suggests that marketing savvy, enhanced through market skills training, plays a significant role in their ability to obtain remunerative prices for their maize. Farmers who received training from Kenya Maize Development Program received 9.9% higher prices on average compared to those who did not receive training.

#### MAIN FINDINGS: MIDDLE LEVEL

1. Kenya's introduction into the East African Community (EAC) has resulted in an improvement in the regional trade policy environment. A reduction in regional trade barriers is very much in Kenya's interests since the country can generally procure maize more cheaply from its regional neighbors than from the world market.

2. With the exception of the 2008-09 crisis period, grain-marketing policies in Kenya have become more stable over time. The role of the National Cereals and Produce Board (NCPB) in the market has become more clear and truncated especially since the National Rainbow Coalition government took power in 2002. However, a major source of uncertainty continues to revolve around the timing of the waiver of the 50% tariff rate on imported maize.

3. The structure of Kenya's maize market and the relative importance of its various actors change significantly depending on national production levels: In a normal/good year, domestic production from small- and large-scale farmers forms the major source of domestic supply. At this time, players in the market include small-scale assemblers/brokers, large wholesalers, large-scale millers, NCPB, informal flour retailers, supermarkets, and posho millers. In a year when the main harvest in the grain basket areas is poor, and imports constitute a major share of the marketed supplies, the marketing channels become more concentrated and less competitive, with the main players being large millers, wholesalers, and the NCPB.

4. Evidence of growing investment in private sector grain assembly: Small-scale farmers have a variety of potential markets through which to sell maize, with small-scale assemblers being the most important market channel. With about 10-100 traders purchasing maize in each village, and with 73% of the farmers selling their maize at the farm-gate, the assembly traders are apparently pushing much deeper into rural areas than the conventional wisdom would indicate. This reflects an increase in the participation of the private sector in the maize trade following liberalization.

5. As a result of the expansion of private sector marketing options, farmers

generally feel that the maize marketing system has improved. Nearly 70% of responses from FGDs indicated that the marketing conditions had improved, with little variation in terms of responses across the districts.

6. Decreasing importance of NCPB as a market option for farmers: NCPB purchases a relatively small proportion of maize produced by smallholder farmers. Roughly 3% of the 1,267 farm households contained in the Tegemeo rural surveys sold maize to NCPB, but NCPB purchased large volumes from large- and small-scale farmers in a few major surplus zones such as Trans Nzoia and Uasin Gishu.

7. The performance of the assemblers is highly dependent on the functioning of downstream actors in the value chain, particularly the wholesale sector: Fifty-nine percent of the assembly traders interviewed do not store any of the grain they purchase from farmers. The majority of the assembly traders sell quickly to wholesalers bulking up grain in the district towns. Wholesalers are, therefore, instrumental for the viability of the assemblers.

8. Medium-scale wholesalers play a vital role in Kenya's maize market by exploiting spatial arbitrage opportunities and thus mitigating grain price volatility: This is critical since harvest periods vary by region and many major consumption centers are far removed from production areas.

9. Limited transportation capacity in the country limits the efficiency of maize markets during major import periods: When imports are concentrated within a short period coinciding with the temporary waiver of the import tariff, the demand for transport can outstrip supply, contributing to maize shortages in inland areas and maize prices rising well over the cost of importation.

10. Contrary to the perceived wisdom, we find that limited storage is not due to insufficient storage facilities but is primarily caused by disincentives for traders to store grain. These are due to high risks, constraints on borrowing capital, features of the East African grain market in which supplies are coming on the market at various times of the year, sudden changes in the import tariff rates on maize and the NCPB's maize selling price, which can depress seasonal price rises and hence affect the returns to storage. In order to drive down the price of maize grain and meal to rural and urban consumers, there is a need to address the disincentives to on-farm and trader storage.

#### MAIN FINDINGS: CONSUMER LEVEL

1. Consumer data indicates the growing importance of wheat in consumers' diets, particularly among more affluent consumers: The share of maize in staple food declined from 58% in 1995 to 45% in 2003. Maize (wheat) accounted for 59% and 38% (22% and 38%) of the staple consumption among the 20% poorest and richest urban households, respectively. Over time, the consumption of wheat products had grown, particularly among these higher income groups, with its share rising from 25% in 1995 to 31% in 2003.

2. Market channels for acquiring maize vary across income groups: About 64% the households in the poorest income quintile preferred duka/shops, and open retail markets. Among the second poorest income group, the most important retail outlets were dukas/shops, roadside kiosks, small supermarkets, and markets, while supermarkets accounted for 37% among high-income group.

#### MAIN FINDINGS: MAIZE PRICES, MARKET MARGINS AND TRADE

1. Price margins at multiple stages of the value chain were low and declining: This signals that farmers were receiving a

higher proportion of the final consumer price of maize meal over time. Also consumers were benefiting from lower retail maize meal prices (at least up to 2009, when the analysis was conducted).

2. Spatial price margins between surplus and deficit regions were also low. Wholesale prices in surplus areas were in the range of 90-95% of the prices in the main deficit market of Nairobi.

3. The price margins between wholesale grain and retail maize meal declined significantly. After adjusting for inflation, there was a highly statistically significant decline in maize milling and retailing margins by Ksh 0.068 per kg per month between 1994 and 2008, or roughly Ksh 12,000 per ton (roughly US\$180). This is associated with a substantial increase in competition at both the milling and retailing stages. Thus, maize market liberalization has conferred important benefits for maize consumers in Kenya.

4. Uncertainty over government behavior continues to stifle private investment in maize markets: Massive food price rises in 2008 could have been avoided if rules governing government intervention in the maize market were clearly spelled out.

**POLICY IMPLICATIONS:** Based on the findings of this study, the following actions are proposed for consideration by the Government of Kenya:

1. Raise public investment in maize seed breeding, agronomic research, and effective farmer training systems to make it possible for improvements in smallholder crop productivity.

2. Explore options for improving public and private extension programs to enable farmers to adopt improved farm technologies generated from point 1.

3. Examine options for bringing more land in Kenya under potential cultivation by smallholder farmers.

4. Support training programs to enable smallholders to develop more effective marketing strategies and to negotiate more effectively with traders, in order to raise the prices that they receive for their maize.

5. Raise public investment in road, rail, and port infrastructure to reduce marketing costs as well as the costs of modern inputs such as fertilizer to the farm gate.

6. When early warning estimates predict a need for large import quantities, remove the import tariff soon enough to allow traders to import over a sufficiently long period to avoid transport capacity constraints and domestic stock-outs.

7. Consider the costs and benefits from the standpoint of governments of transitioning from discretionary trade and marketing policy to adherence to more systematic rules-based policies.

The full report is available at: [www.tegemo.org](http://www.tegemo.org).

Funding for this study was provided by USAID/Kenya and by the Bill and Melinda Gates Foundation under the Guiding Investments in Sustainable Agricultural Markets Programme.

\* Kirimi is a research fellow at the Tegemeo Institute. Sitko and Jayne are research fellow and professor, International Development, respectively, at Michigan State University (MSU). Karin is a senior research assistant at Tegemeo Institute. Muyanga is a research fellow at Tegemeo Institute. Sheahan is a graduate research assistant at MSU. Flock is an analyst with ACIDI-VOCA, and Bor is a senior lecturer at Moi University.