Policy brief
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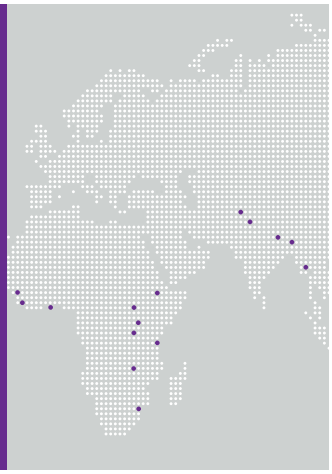
Maize value chains in East Africa



In brief

- Agriculture is of paramount importance to the economies of the East African Community (EAC) countries, accounting for over 80% of total employment in 2014. However, agricultural exports are limited and constrained by a large informal sector.
- Uganda and Rwanda have a sizeable market shares in maize flour exports, but price fluctuations impair competitiveness. Uganda has a larger share of formal processors and traders, and surplus maize flour from Uganda is exported to DRC and South Sudan, while Rwanda exports lower quality flour to DRC.
- This study uses a global value chain (GVC) framework to assess opportunities for Rwanda and Uganda to strengthen their stance in the EAC maize value chain, focusing on five stages of value chains: inputs, production, processing, aggregation, and marketing and distribution.
- The investigators conclude that a focus on upstream processes could benefit Uganda, and upgrading downstream elements like marketing and distribution would benefit Rwanda

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Background

Agriculture is of paramount importance to the economies of the East African Community (EAC) countries, accounting for over 80% of total employment in 2014. However, agricultural exports are quite limited and constrained by a large informal sector. This is also the case for maize: between 70-80% of EAC maize is accessed through untaxed and unregulated channels. Globally, maize generated $219.5 billion in revenue, making it the world's third most dominant crop, next to rice and wheat. End uses depend on geographical location and food security considerations. While developed countries focus on animal feed and ethanol production, maize is mainly used for home consumption in developing countries.

The four leading grain traders (the "ABCDs") control 70-90% of globally traded grain,[1] buying and selling grain to food manufacturers, biofuel companies, and animal feed corporations. Africa's share in global maize trade was 1.5-3.5% by volume and 20% by revenue in 2013.

This study uses a global value chain (GVC) framework to assess opportunities for Rwanda and Uganda to strengthen their stance in the EAC maize value chain, focusing on five stages of value chains: inputs, production, processing, aggregation, and marketing and distribution.

Locating Rwanda and Uganda in the regional maize value chain

From 2004 to 2013, the biggest maize importers in Sub-Saharan Africa were Zimbabwe and Kenya. Kenya is a big maize consumer with a production deficit. Its processors thus have the power to lead regional chains and demand high quality commensurate with EAC or Kenyan standards. Uganda has favorable production conditions and is not a major consumer. The specificity of the Ugandan diet implies that maize is grown mostly as a cash crop. These conditions imply Uganda's potential role as a maize supplier to supply Kenya and other markets. Uganda and Rwanda both have a sizeable market shares in maize flour exports, but price fluctuations impair competitiveness. This has left trade to be predominantly between countries of geographical proximity. Uganda has a larger share of formal processors and traders, and surplus maize flour from Uganda is exported to the DRC and South Sudan, while Rwanda exports lower-quality flour to the DRC.

The potential for sector development

Both Rwanda and Uganda enjoy widespread maize farming, with recent increases in production and export volumes. Uganda's maize production increased from 1.3 million MT in 2004 to 2.7 million MT in 2013; Rwanda's increased from 88,000 MT to 667,000 MT in the same period. Both countries also have opportunities for further development, although the profile of each

1. The ABCDs are: Archer Daniels Midland, Bunge Group, Cargill, and Louis Dreyfus.

may influence the focus of future policies. Favourable growing conditions present potential for increased foreign and domestic investments in Uganda, which has natural comparative advantages for growing maize and may benefit from upgrading to more large-scale production to take advantage of scale economies. Land-constrained Rwanda is an exporter of maize flour and can assess possibilities for further investments in downstream segments of the chain.

On the whole, the sector has received considerable policy support in both countries in terms of input subsidisation under the Crop Intensification Program in Rwanda and the identification of maize as priority crop in Uganda's Development Strategy and Implementation Plan (DSIP). There is likely potential for increased exports to Kenya, as the major regional consumer of maize. However, in spite of identification of maize as a priority crop in DSIP, there has been little, if any, follow up in terms of implementation.

Impediments to realising full potential

The segregation of the maize sector in both countries hinders information flow between downstream and upstream participants. Minimex, Rwanda's largest maize processor, is exceptional, with storage facilities and links with Bralirwa brewery to buy maize grits. Secondly, despite the harmonisation of maize standards at the EAC level, country-level adherence is still low. The failure to comply with these guidelines is the result of: 1) Consumers' unawareness of the benefits of food safety; 2) consumers' sensitivity to higher prices; or 3) inability of national governments to publicise, test, or enforce the standards at all stages of value chain.

The maize value chain in Uganda and Rwanda: From inputs to marketing and distribution

Inputs: Ugandan farmers source 85-90% of their seed informally while only 5-15% of total seed is improved. The heavy reliance on informal sources has led to the persistence of counterfeit seed on the market (Bold et al. (2015). With seed imports highly restricted, seeds are supplied by 20-25 local suppliers. Only 5% of maize plantings receive the recommended fertiliser dosage. Insecticides and fungicides are used even less. By contrast, input supply in Rwanda is managed by the Ministry of Agriculture under the Crop Intensification Program (CIP). Seed supply is 100% subsidised while fertilisers are subsidised at a 50% rate. Maize seed imports are still high and increasing; 22 million MT in 2014, up from 250,000 MT in 2005.

Production: Uganda's Eastern region accounts for 47% of total maize produced, while the Western, Central, and Northern regions produce 21%, 19%, and 13%, respectively. Maize is produced by 2.5-3 million smallholder farmers, operating plots less than 0.5 hectares on average and with weak access to finance. Recently, foreign companies have made investments and initiated strategies like contract farming to address the inefficiency of small plots. Rwandan maize plots are slightly larger but still small, at 0.6 hectares

on average. Cooperatives pool farmers' produce; these constitute 40% of the total maize bought by the National Strategic Grain Reserve.

Aggregation: Value chain integration is not widespread in Uganda; networks of village agents, retail traders, and wholesalers buy maize from farmers and sell it to processors. Since traders have no capacity to differentiate outputs by quality, farmers have no incentive to invest in expensive inputs. Liquidity constraints and post-harvest losses (22-30% of total produce) are key challenges at the aggregation stage. Poor drying could limit access to regional markets –maize is harvested with 20-25% moisture content, much higher than the 13.5% EAC standards. In Rwanda, farmers sell maize to cooperatives and small-scale traders; the latter provide immediate cash to farmers but make no quality inspections. Small and large trading companies co-exist; Rwanda Grain and Cereal Corporation buys 30% of all maize, from 60-70 affiliated cooperatives and sell it to institutional buyers, mills, and processors in Rwanda and Kenya. Storage is a big challenge: current capacity is only 50,000 MT against an estimated need of 200,000 MT.[2]

Processing: Dry mill technology is dominant in Uganda; large and medium-scale urban millers use roller mills to produce 50 tons of Number 1 (highest quality) flour per day, which they sell to regional markets and institutional buyers. Animal feeds are produced by medium-sized millers. Number 2 (second-highest quality) flour is produced by about 600 small-scale rural millers (85% of millers) who use hammer mills and have a capacity of less than ten tons per day. In Rwanda, hammer mill technology is used by all millers, which is 22% cheaper than Uganda's roller mills. As such, while Uganda feeds urban buyers with Number 1 flour, Rwanda serves mostly rural, DRC, and Burundi markets, where consumers are more price conscious. Minimex is the dominant processor, with 43,000 MT capacity. The company has backward and forward linkages, sourcing raw materials from 10-15 cooperatives; using warehouse facilities provided by sister company ProDev; and selling maize grits to Bralirwa. Maize bran is mostly exported to livestock producers in Kenya.

Marketing and distribution: For Uganda, harvested maize ends in five uses: post-harvest losses (30%), on-farm consumption (18%), domestic market (28%), export market (22%), and seed savings (2%). For the domestic market, 60% is processed into flour, 37% into animal feed, and 3% sold to breweries. There is no evidence of meaningful ethanol production. Buyers are categorised into four tiers: Tier 1 buyers are largescale millers in Kenya who buy 20-30% of total volume. These demand high EAC/Kenyan standards, some paying as high premiums as 30%. Tier 2 buyers are major institutional food programmes (dominated by World Food Programme-Uganda) which buy 50% of total volumes and pay lower margins than Kenyan buyers. Tier 3 buyers are regional customers in Rwanda, South Sudan, or smaller mills in Kenya (this tier accounts for 10-20% of total volume). Tier 4 buyers are

2. This estimate was made by industry stakeholders during field research conducted in May and June of 2015.

less formal buyers with no quality demands, constituting less than 5% of total volume. In Rwanda, distribution estimates are limited by data, but rough estimates indicate 35% of maize is consumed on-farm, 24% is traded informally, 20% is lost to post-harvest handling, 9% is sold to Minimex, 6% to prisons, 2% to WFP, 2% to the National Strategic Grain Reserve, and 2% to other buyers. Interviews with actors revealed four institutional buyers (NGOs, RGCC, NSGR, and WFP) and one non-institutional buyer, Minimex. Exports go to DRC and Burundi (99%); 69% of exports were sold to DRC between 2009-2012, where 61% was informally traded. The DRC market is growing; export revenues from maize sales to the DRC increased from $75,000 in 2008 to $6.2 million in 2013 (FAOSTAT estimates).

Policy recommendations

The study identified a number of product, process, and functional upgrading needs that could strengthen the maize value chain in both Uganda and Rwanda.Uganda faces a number of opportunities. First, Uganda's fertile soils allow the country to target economies of scale, to expand and commercialise production. Second, it could provide education programmes for its 2.5 to 3 million farmers, expand testing facilities at borders, improve maize quality and enhance in conversations with stakeholders.

In general, Uganda could focus on upstream processes, addressing shortages of critical inputs, poor storage conditions, and warehouse capacity. It is also imperative to enhance access to the Kenyan seed market, improve the clarity of land rights, attract regional FDI into the sector, encourage financial institutions to support the sector, and collaborate with regional institutions like Trade Mark East Africa (TMEA) to build capacity by providing financial and/or advisory services. Ultimately, increasing the export of EAC-certified maize to Kenyan processors is of paramount importance. It is also imperative to educate farmers and traders on the importance of standards. The adoption of WTO-level standards by the EAC have imposed prohibitively large fixed costs on smallholder farmers (2012). This presents a case for possible mutual recognition of equivalence agreements.

For Rwanda, while some upstream upgrading potential exists in the aggregation segment of the supply chain, upgrading downstream elements like marketing and distribution would best strengthen the country's grip on the DRC and Burundi markets.

Product and process upgrading is needed in both Uganda and Rwanda. This includes studies on livestock industries, particularly to better integrate maize into animal feeds industry. There is also a general need to encourage communication between GVC participants – maize processors, livestock input providers, among others – to identify possible solutions to technical challenges and supply bottlenecks. Introducing mandatory flour fortification is necessary, particularly in the case of Rwanda. This could be done through publicising the benefits of fortification.