Agricultural Trade: A Qualitative Analysis of Barriers to Local Trade in Zambia

by

Stephen Kabwe, Mooya Nzila, and Jairos Sambo

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Indaba Agricultural Policy Research Institute (IAPRI)
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Lusaka, Zambia

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ACKNOWLEDGMENTS

The Indaba Agricultural Policy Research Institute (IAPRI) is a non-profit company limited by guarantee and collaboratively works with public and private stakeholders. IAPRI exists to carry out agricultural policy research and outreach, serving the agricultural sector in Zambia so as to contribute to sustainable pro-poor agricultural development.

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Any views expressed or remaining errors are solely the responsibility of the authors.

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EXECUTIVE SUMMARY

Africa has huge potential for trade, both locally and globally, due to its natural resource and agricultural opportunities. However, there are major local and regional impediments to trade, these have slowed down its development and limited the participation of farmers and traders in local and regional trade.

There has been a tendency in Zambia to focus studies on the barriers to international and regional trade. This focus on tariffs, non-tariff barriers (for example import quotas and export restrictions), and subsides (FAO and AfDB 2015; AfDB 2013) can miss the issues affecting trade at local level.

Zambia remains a nation of mostly smallholder farmers, with persistently high rural poverty rates. Trade is an opportunity to boost farmers’ incomes and support the growth of Zambia, but this needs to start locally. Smallholder farmers need to be able to access markets reliably and cheaply if they are to benefit from selling their produce; this means not only accessing local traders but those traders having low-cost access to national markets and processing facilities. This study adds to the regional picture by examining the barriers faced by smallholder farmers in accessing the market and then follows the produce through transportation to local markets and on to regional processing facilities. The findings of this work are stark—local trade and transport in Zambia is mired in inefficiency, which adds to the cost of accessing the market, as well as the cost of the end product.

Trade begins with the farmer, and as this study demonstrates, farms can be located a long way (up to 60 km) from a regional trade hub (or boma), with only poor roads providing any access. The incentive for farmers to go to a market to sell their maize is low; indeed those farmers surveyed indicated they often wait for local traders to approach them—giving them little say over when to sell and at what price. This decision is driven by high transport costs, as traveling to the boma costs on average 11ZMW per 50 kg bag of maize. On top of this, local taxes are due, whether the maize is sold or not, and a short journey can take a few hours due to the poor state of vehicles and roads. Improving local infrastructure is key to enabling farmers to have better access to markets, and gives them a greater incentive to increase production. In this regard, the US$200 million from the World Bank for upgrading, rehabilitating, and maintaining feeder roads across the country, as highlighted in the 2018 budget by Minister of Finance, the Hon. Felix Mutati, is welcome.

Despite these challenges farmers are managing to get their goods to the boma and selling to traders. At this stage, traders need to ensure there is a smooth access to national markets and processing. The findings from this study suggest this is not always the case and the transport of maize in Zambia is beset by problems.

Maize is subject to local taxes (crop levies). IAPRI’s work reveals that double taxation on the same crop exists in some districts (for example Kalomo and Kapiri Mposhi). This happens when agricultural produce transported by the farmers from the farm to the boma is charged crop levy and then charged again on shipment from the boma.

Police and council road blocks add to journey times. This study found at least three road blocks on a stretch of 100 km of highway mounted by the Zambian Police. Because of these road blocks, traders or truckers lose about 30-60 minutes of their travel time and often have to pay official or unofficial fines to enable passage.
Though necessary, weigh bridges add further delays to journeys. At times, these can be seamless, taking less than one minute to pass, but at others can cause significant delays—often a result of the IT failures in the weigh bridge station.

Together these delays add to the cost of transport. Based on evidence gathered from four trucking routes, IAPRI estimate that these delays, fines, and tolls add between 10-16% to the cost of 50 kg bag of maize. This study demonstrates that there are significant physical impediments to local trade in maize within Zambia, poor roads, road blocks, and local taxes, which all restrict market participation and increase costs. But the issues go deeper.

Trade is built on trust and IAPRI’s fieldwork reveals growing mistrust between the agents introduced by millers and traders. Traders feel agents have increased the cost of doing business and in some cases, agents cheat with regard to the price of the agricultural produce. Ultimately this cost will be passed onto farmers via lower prices for their goods. Indeed IAPRI’s research suggests that it is near impossible to sell grain without engaging a miller’s agent—a worrying development and barrier to an open and functioning market.

Given these issues there’s a clear case for policy action to improve the flow of trade in Zambia and support smallholder farmers to access the market.

First, Zambia needs to address the stock and quality of its physical infrastructure especially the feeder roads. The 2018 Budget announcement on funding for this is welcome, however, this needs to be focused on improving access to markets.

Second, roadblocks by Zambia police and local councils are seen as a nuisance in facilitating the movements of agricultural produce and they add to the cost of doing business through stoppage time on the road. There is a strong case to do away with random roadblocks and consolidate road blocks (combining council and police checks) to minimize delays. To facilitate this development, the Ministry of Commerce, Trade and Industry, and the Ministry of Agriculture should work hand in hand with the Ministry of Home Affairs to make sure these issues are resolved.

Third, there needs to be more trust in the market. The relationship between, and role of, agents and traders needs resetting from a low base. IAPRI would like to see more use of the ZAMACE platform to buy and sell maize. By its nature, a commodity exchange sets a standard for produce and instills trust and confidence in the market. The warehouse receipt system could also reduce the need to transport maize across the country to sell it.
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# ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AfDB</td>
<td>Africa Development Bank</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
</tr>
<tr>
<td>FGDs</td>
<td>Focus Group Discussions</td>
</tr>
<tr>
<td>FRA</td>
<td>Food Reserve Agency</td>
</tr>
<tr>
<td>GRZ</td>
<td>Government of the Republic of Zambia</td>
</tr>
<tr>
<td>IAPRI</td>
<td>Indaba Agricultural Policy Research Institute</td>
</tr>
<tr>
<td>mt</td>
<td>metric tons</td>
</tr>
<tr>
<td>NRFA</td>
<td>National Road Fund Agency</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Developement</td>
</tr>
<tr>
<td>ZAMACE</td>
<td>Zambian Commodity Exchange</td>
</tr>
<tr>
<td>ZMW</td>
<td>Zambia Kwacha</td>
</tr>
<tr>
<td>ZRA</td>
<td>Zambia Revenue Authority</td>
</tr>
</tbody>
</table>
1. INTRODUCTION

Agricultural Trade plays a major role in promoting sustained economic growth and food security. Africa has huge potential for trade both globally and locally due to its natural resource and agricultural potential. In Africa for example, it is estimated that exports alone in 2010 contributed close to 40 billion US dollars of total world exports representing about 10% of world exports (Africa Growth Initiative 2012). However, trade faces major local and regional impediments that have slowed it down, which in a way, has an impact on sustained participation of farmers and traders in local and regional trade. This, in a way, has affected the creation of new jobs along the value chains and affected food security of consumers and the country at large. Major international and regional barriers to trade are not limited to trade tariffs alone; there are also non-tariff barriers such as import quotas, voluntary export restrictions, subsides, domestic content requirements, and social regulations. In addition, inadequate infrastructure and poor governance of the transport sector (FAO and AfDB 2015; AfDB 2013) lead to high transaction costs, which hinder the smooth flow of tradeable goods and services. Other studies have further shown that non-tariff barriers such as transport costs and price fluctuations for commodities, bribery among public officers, and fragmented informal markets hinder agricultural trade or reduce the volume of traded goods (Torres and Van Seters 2016). These findings are supported by other studies, which highlight that economic diversification, conflicts, and infrastructural deficiencies lead to low regional and international trade (Africa Growth Initiative 2012; Brenton 2012).

The importance of international and regional trade and its barriers cannot be emphasized, but local trade, which contributes to international and regional is equally important. Without a strong local trade, it is quite difficult to have a strong international and regional trade. Local trade is also affected by challenges such as high transport costs, and inadequate and poor road infrastructure, which slow down movements of tradeable goods and services. Some studies have shown that transport cost per ton per kilometer from farm-gate to primary collection markets tend to be three to five times higher than those from secondary markets to wholesale markets located in the countries’ capitals, thus the huge cost tends to discourage farmers from trading (FAO and AfDB 2015). So transport is critical in facilitating both local and international trade. However, there is a dearth of empirical evidence on what factors impend the movement of agricultural commodities between areas of production and processing areas. This paper will help fill in that knowledge gap. We hypothesize that the journey time and delays on minor and major routes influence the cost for transporting agricultural and non-agricultural products and that impends movement of commodities.

It is against this background that this study was designed to investigate the major agricultural trade barriers between areas of production and areas of processing. The specific research questions include:

i. What are the trade barriers that farmers/traders/truckers face when they are moving agricultural produce from areas of production to areas of processing/consumption?

ii. What is the share of the transportation cost to the total variable cost of the trader?

Enhanced local agricultural trade has the potential to increase income among the value chain actors. However, this agenda may be hampered by challenges, among them high transportation costs, and road blocks among others. Reduction of transportation costs between areas of production and areas of processing can be considered to be an important factor that may enhance agricultural trade flow along the value chains. Therefore, understanding challenges that are faced by traders/farmers as they are moving agricultural
commodities from production areas to processing areas can help policy makers make policy decisions that can stimulate local trade.

The rest of this paper is organized into five chapters as follows. Following this introductory chapter, Chapter 2 describes how data was captured and the methods used to generate the findings, while Chapter 3 presents the study findings and discussions. Conclusion and recommendations are drawn in Chapter 4.
2. DATA AND METHODS

2.1. Study Areas Selection

The areas for the qualitative survey were purposively sampled based on the level of agricultural production and trade between farmers and traders and the flow of the agricultural produce from the areas of production to the areas of processing (consumption). Kalomo, Choma, Petauke, Kapiri Mposhi, and Mpongwe were selected for the qualitative survey. These districts, for example, are among the high maize producing districts and 2017 Crop Forecast Survey results showed that farmers would sell maize during the 2017/18 marketing season. Table 1 below provides a summary of Focus Group Discussions done per province and by gender.

2.2. Methods

The study utilized both primary and secondary sources of data. Primary data was obtained through qualitative methods, which included Key Informant Interviews, Focused Group Discussions (FGDs) and observations. Primary data was also supplemented by secondary data from literature on trade related studies to ascertain what has been done before and what has not been done in order to know what the study would contribute.

In order to determine the barriers to moving agricultural commodities from areas of production to areas of processing, we interviewed the farmers through eight focus group discussions, 10 medium scale traders, and 16 truck drivers to highlight some of the challenges they face when they are moving agricultural commodities from areas of production to areas on consumption. Of the 16 truck drivers, eight drove 5-15 metric ton or less trucks. Usually these truck drivers service farmers who transport goods from production areas (villages) to the bomas. The other eight drivers interviewed are those that drive 30 metric ton trucks and transport agricultural products from the boma to the processing centres such as Lusaka, Kitwe, and Ndola.

To answer research question number one, which is trying to determine the challenges faced by traders/farmers as they are transporting agricultural commodities, we interviewed traders/farmers and truck drivers to shed more information on what goes on as they are transporting the agricultural products.

Table 1. Focus Group Discussion by Province

<table>
<thead>
<tr>
<th>Province</th>
<th>Number of FDGs</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>2</td>
<td>Male 4, Female 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male 5, Female 2</td>
</tr>
<tr>
<td>Copperbelt</td>
<td>2</td>
<td>Male 4, Female 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male 10, Female 5</td>
</tr>
<tr>
<td>Eastern</td>
<td>2</td>
<td>Male 9, Female 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male 4, Female 5</td>
</tr>
<tr>
<td>Southern</td>
<td>2</td>
<td>Male 3, Female 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Male 4, Female 0</td>
</tr>
</tbody>
</table>

Research question number two is to determine what the share of the transport cost is to the total variable cost of moving 30 metric tons of agricultural produce from boma to the processing centres. The study team interviewed traders and truck drivers to get quantitative information. Traders and truck drivers were chosen because they are involved in moving the agricultural products. Road Development Agency officials were also interviewed.
3. RESULTS

In this section, we used data from the survey to describe the barriers to movement of agricultural products from production to centres of processing in Zambia. The results are presented based on the perspectives of barriers to trade from the three actors interviewed namely smallholder farmers, traders, and the truckers.

3.1. Crops Patterns and Selling of Crops

Crop production is the most important enterprise farmers engage in to support their livelihoods, growing 3-4 crops per season. Maize is the most important crop grown and traded in all the surveyed areas.

3.2. Barriers Faced by Farmers

3.2.1. Where Can Farmers Sell Their Products?

Studies have highlighted that maize marketing in eastern and southern Africa is highly concentrated where 50% of maize bought is sold by a very small percentage of farmers, ranging between 2-7% depending on the season. (Kuteya 2017; Jayne, Mather, and Mghenyi 2010). Sitko and Jayne (2014) indicated that the majority of small-scale farmers who participate in the market sell the maize grain at the homestead because they do not have enough surplus to warrant them taking the produce to the boma market. This study also finds that farmers who sell their produce do so either at the homestead or sell it at the boma. Interviews with the farmers show that selling their agricultural produce at either point depends on the prevailing market price. If the market price is relative high, the majority of farmers manage to transport their produce to the boma for selling. However, if the price of the produce is perceived to be low, the majority of farmers prefer selling for the price at the homestead, in order to minimize the costs. During the 2015/16 marketing season, the prices of maize and soybeans were relatively high because of the anticipated low production of these crops. This resulted in the price of maize to be as high as (Zambia Kwacha) ZMW 2.5/kg in some areas. This situation made farmers transport most of its produce to the boma. The average distances from the production areas to boma was 20-60 km radius (Table 2); the average distance from some farming area to the main market was as high as 100 km.

Table 2. Responses on Various Issues as Farmers Move Produce to the Boma

<table>
<thead>
<tr>
<th></th>
<th>Mpongwe</th>
<th>Kapiri</th>
<th>Mposhi</th>
<th>Petauke</th>
<th>Kalomo</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of the feed roads (farm to the boma)</td>
<td>Poor</td>
<td>Poor</td>
<td>Poor</td>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>Council crop levy (ZMW/50 kg bag)</td>
<td>Nil</td>
<td>1.0</td>
<td>Nil</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Cost of transport from farm to the boma (ZMW/50 kg bag)</td>
<td>12.5</td>
<td>10.0</td>
<td>6.0</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>Average distance from farm to the boma (km)</td>
<td>34</td>
<td>30</td>
<td>19</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Average time taken from farm to boma (hrs.)</td>
<td>1.0</td>
<td>1.3</td>
<td>1.2</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Average time taken from the production district to the processing district (hrs.)</td>
<td>2.5</td>
<td>3.0</td>
<td>10.0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Type of vehicle used (4-15 tons)</td>
<td>Canters</td>
<td>Canters</td>
<td>Canters</td>
<td>Canters</td>
<td></td>
</tr>
</tbody>
</table>

The mode of conveyance used by farmers and traders when transporting agricultural produce from farming communities to the boma is usually small trucks of 5–15 tons called canters. Normally, trucks carry farmers and bags of agricultural produce and both are charged. A 50 kg bag of maize or soybeans is charge ZMW6 to ZMW13 per 50 kg for a distance 20-40 kilometers. As the agricultural produce is moved from agricultural communities, there are challenges they face and the next section highlights the same.

3.2.2. Barriers Faced When Moving Agricultural Produce from Agricultural Community to the Boma Market

Farmers face various barriers as they are moving the agricultural produce from agricultural communities to the boma markets:

**High Transport Costs:** It can cost the same to move a 50 kg bag of maize from the farm to the boma as from the boma to processing district. The main reason for this high cost is because of the state of feeder roads, which are in deplorable condition. This leads truckers to charge more to recoup the cost of repairing the broken-down vehicles, which break down due to the poor state of feeder roads.

**Long Transport Times:** Another driver of transport costs, but a separate barrier to market access, is the long journey time to reach the boma market. The study has shown that for 20–30 km of rural road, a journey can take over 60 minutes. Farmers resort to transporting their commodities using ox-carts that delay movement of the commodities to the market and take over three hours, where a truck would take one hour. In addition to high transport costs paid to the ferry, the commodities from the farm to the boma and the poor condition of the roads contribute to high incidences of accidents (Picture 1).

**Box 1. Petauke Farmer’s Quote**

“We have a short cut to go to town which takes us about 30 minutes when using a bicycle but because of the poor states of the roads, it takes us about 1-2 hours or more to move our produce to the boma”.

**Picture 1. The Poor Condition of Some Feeder Roads**

**Local Crop Levies:** The crop levy a local tax on the movement of maize farmers have to pay whether they sell their maize or not, so it deters them traveling to the boma. Furthermore, farmers indicated that the check points for the council levy slows down movement of agricultural produce from the farm to the boma. For example, if some farmers do not have money to pay, the truck is detained at the check point until the full levy is paid. The crop levy is also part of the local taxes that was introduced in Zambia after the Local Government Act was revised in 1992. The Act has given power to introduce local taxes so as to generate revenue to pay for the social service needs of people in their localities, as well as raise revenue to meet the public wage bill, rather than waiting for Central Government to provide the financial resources for each local authority.

### 3.3. Barriers Traders Face as they Move Agricultural Produce to Processing Areas

Traders buy the produce either from the farm or boma. Traders sell the agricultural produce to the processors in the same district or, in most cases, to processors in urban districts like Lusaka, Kabwe, Ndola, and Kitwe. The distance from production areas to the processing areas can range from 117 km to as high as 505 km. Time taken to transport the agricultural produce from production districts to processing districts ranges from 2.5 hrs. to as high as 10 hrs. Traders use 30 metric ton (mt) trucks to transport the produce from production to processing areas and pay around ZMW450 to ZMW540 per 30 mt truck.

Moving the agricultural produce from producing to processing districts faces various barriers (Table 3):

**Local Crop Levies:** In some districts, the crop levy has been collected twice for the same crop sold and action, which reduces the profits of farmers (Box 2). Traders in some cases pass on this cost to farmers who have already paid the tax when there brought the crop to the boma.

**Police and Council Road Blocks:** Regular roads blocks slow down the movement of agricultural produce and goods and services in general—the time and cost of fines or levies payable at road blocks add to the cost of doing business.

### Table 3. Responses to Various Issues as Agricultural Produce Moves from Production to Processing Districts

<table>
<thead>
<tr>
<th></th>
<th>Mpongwe</th>
<th>Kapiri</th>
<th>Petauke</th>
<th>Kalomo</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of main road (from production to processing districts)</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Poor between Mazabuka and Kafue</td>
</tr>
<tr>
<td>Council crop levy (ZMW/30 mt truck)</td>
<td>540</td>
<td>540</td>
<td>540</td>
<td>450</td>
</tr>
<tr>
<td>Cost of transport from production districts to processing districts (ZMW/50 kg bag)</td>
<td>8.0</td>
<td>8.5</td>
<td>10.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Average distance from Production district to Processing district (km)</td>
<td>117</td>
<td>200</td>
<td>505</td>
<td>373</td>
</tr>
<tr>
<td>Average time taken from farm to boma (hrs.)</td>
<td>2.5</td>
<td>3.0</td>
<td>10.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Type of vehicle used (30 mt)</td>
<td>Truck</td>
<td>Truck</td>
<td>Truck</td>
<td>Truck</td>
</tr>
</tbody>
</table>

3.4. Truckers Perspective on the Barriers to Movement of Agricultural Produce

Discussing with the truck drivers the study has highlighted how much time is taken by a 30 mt truck transporting agricultural produce from an agricultural district to a processing district. Considering the southern route, Kalomo to Lusaka a stretch of 370 km, the study has reviewed that a 30 mt truck we on average take about 40-60 minutes in stoppages because of the check points and roads blocks mounted by the councils and Zambia Police. Council check points are mounted on each district before entering the district and when leaving the district. Truck drivers indicated that they take long stoppage time (5-20 minutes) on council check points because the receipts have to be verified by the council staff to make sure the levy was paid for the commodity. Figure 1 below shows the police/council check points and toll gates/weigh Bridge between Kalomo and Lusaka. Because of these experiences, a stretch (Kalomo to Lusaka), which may take a truck on average five hours to travel, takes six hours or more.

Figure 1. Improved Weigh Bridges with Two Lanes

<table>
<thead>
<tr>
<th>KALO</th>
<th>CHO</th>
<th>MON</th>
<th>MAZ</th>
<th>KAF</th>
<th>LSK</th>
</tr>
</thead>
</table>

**Key**

- **KALO** = Districts, KALO=Kalomo, CHO=Choma, MON=Monze, MAZ=Mazabuka, KAF=Kafue, LSK=Lusaka.
- **Council check points** (takes about 5 – 20 minutes)
- **Police check points** (time taken varies from 2 minutes to a high of 20 minutes)
- **Toll gates and weigh bridges** (time taken is about 1- 3 minutes)

Source: Authors.
3.4.1. Truck Drivers and Police Road Blocks

Zambia police check points are also mounted along the route and if a vehicle is faulty, they are requested to pay a fine. However, truck drivers or traders indicated that that the fines are too high. Because of the high fines, drivers end up negotiating with police officers to pay less without a receipt; the amount would range between ZMW100 and ZMW150 or even more depending on the fault. Failure to pay results in the impounding of the vehicle, thus increasing the cost to the transporter in terms of the fine and the time to retrieve the vehicle. The experiences highlighted above act as avenues for corruption, consequently undermining the efforts toward enhanced the facilitation of local-trade between areas of production and consumption.

<table>
<thead>
<tr>
<th>Box 3. Driver’s Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>“To avoid any delay, our boss budget for a ZMW300 to pay police along the way. Without that money put aside, you are assured the truck would be impounded and that will delay the delivery of the commodity to market.”</td>
</tr>
</tbody>
</table>

The Eastern Province route has few road blocks except in designated areas (Nyimba, Luangwa Bridge) and Chongwe Districts because there are very few districts between Petauke and Lusaka. This stretch is about 400 km and trucks take about 10-11 hours. The major reason for taking so long to drive from Petauke to Lusaka is the hilly terrain between Nyimba and Chongwe. It takes a truck about 2 ½ hrs. to transport the agricultural commodity from Mpongwe to the Kitwe/Ndola processing areas. This includes 15-30 minutes of stops at 3-4 road blocks that the truck encounters as they deliver agricultural commodities from production to processing areas.

3.4.2. Truck Drivers Experiences with Weigh Bridges and Toll Gates

Weighbridges and toll gates play an important role in raising funds for road maintenance and development. Efficient road infrastructure can help to minimize supply chain barriers to trade. Studies have shown that gross domestic product would increase six-times more if road infrastructure is improved instead of government removing trade tariffs (Moavenzadeh et al. 2013). Development and maintenance of road infrastructure can only be achieved if there are adequate resources. Collection of fees at tollgates and weighbridges can help generate the resource needed by government for development and maintenance of road infrastructure.

This section, highlights the experiences at some of the toll gates and shows how they may affect the movement of commodities in particular agricultural commodities. The study reveals that there have been some great improvements on the two major weigh bridges the research team visited, namely Kafue and Kapiri Mposhi weigh bridges, compared to the old ones that were being used (Picture 2). The new weigh bridges have two entry lanes for vehicles to use compared to old weigh bridges, which had only one entry lane. Because of these improvements, truck drivers indicated that the flow of traffic is faster now compared to what it used to be with the old weigh bridges. Currently when there is normal traffic, trucks may be in the queue for not more than 15 minutes. When the vehicle has been captured by systems, it is cleared within one minute depending on the speed of the internet, which if slow may take up to a maximum of five minutes for the vehicle to be cleared.
However, despite the improvement, there are challenges such as poor internet connectivity, and system failure coupled with language barrier between NRFA/RDA and Tanzanian trucker drivers affect the smooth flow of vehicles. Furthermore, especially since the government introduced the night ban of trucks and buses, the result is congestion at weigh bridges and toll gates during specific times. For example, the identified time periods of congestions include 07:00-09:00 hrs, 13:00-15:00 hrs during lunch hours, and between 19:00-20:00 hrs. Congestion is at a peak during these hours because people are rushing to go to and from work. Morning rush hours for trucks and buses are after the night ban has just been lifted and in the evening when the night ban is going to be in effect. So when trucks carrying agricultural produce are found during these time periods, they are delayed as well. For the Kafue weigh bridge, the situation is exacerbated by the release of vehicles by the Zambia Revenue Authority passing through Chirundu Board post at 05:00 hrs onwards. During these peak hours, vehicles wait in the queue for more than 30 minutes to be cleared. In this regard, a waiver on night ban for some truckers carrying products like maize or other perishable goods may be necessary.

The study found that the flow of vehicles at toll gate plazas, especially the automated ones, (e.g., Shimabala and Katuba Toll Gate Plazas) was pretty fast (Picture 3). The vehicles that pass the toll gates are usually cleared within a few minutes during normal periods.
However, when there is congestion, vehicles take 10-15 minutes to be in the queue before they pay a fee. The time it takes to pass toll gates is not an impediment to local agricultural trade. This evidence was found at all the toll gates visited. Additionally, specific challenges were found at toll gates, which include the following: fumes from vehicles and the noise from trucks, which pose a serious health problem to the National Road Fund Agency (NRFA) officers who work there. Of special concern is the poor ventilation at the makeshift toll gates.

Another major impediment to trade, which seemed predominantly among truckers with regard to the introduction of toll gates, is the huge aggregated cost of toll-fees. Generally, all truckers said that the fee was not high *per see* but the fact that they have to pay ZWK150 at each toll-gate, the total aggregated amount was usually huge due to several toll-gates found along major roads, like the Great North Road. For example, along the Great North Road truckers pay a fee of ZWK150 at three different toll gates. This implies that they have to pay K450 one-way to Lusaka from Kapiri, Mpongwe, or Ndola and cost is usually transferred to the traders who have booked the truck. The trader then transfers this cost to the farmer by buying agricultural commodities at a low price. It must be clear that officials from NRFA have defended this by saying it is in fact law that for every 100 km, there has to be a toll-gate and this is accepted internationally.

In general, traders, farmers, and truck drivers acknowledged that government has tremendously improved the main (trunk) road network from producing districts to processing districts, with an exception of a few patches like the Mazabuka-Kafue stream, Luangwa-Lusaka stream and some parts in Mpongwe. The main barriers to transporting agricultural produce is with the feeder roads, which stakeholders indicated were in poor condition in all the surveyed districts. This slows down the movement of the commodities, which adds to the cost of transportation.

### 3.5. Experiences of Truck/traders with the Introduction of Agents at Milling Companies

Those marketing grain to the millers encounter significant traffic congestion during peak months. Usually, there are long queues and in some cases, it takes truck drivers/traders up to two days for their trucks to offload the grain. In order to ease the traffic of traders entering the milling premises, most milling companies have engaged a few agents who act as middlemen between traders or farmers and the milling companies. Before the agents were brought in the grain marketing systems, traders used to entrust the delivery of the commodity to the milling company to the drivers of the truck. As indicated above, this arrangement brought congestion at the milling companies and some milling companies introduced agents in the business value chain. The experience with this arrangement from traders/truck drivers’ point of view suggests that it has increased the cost of doing business in grains. Traders pay an agent a commission of ZMW500 for selling 30 metric tons of the commodity. Some traders indicated that certain agents are not honest enough because they cheat on the price of the grain. Even after they cheat, they still demand to be paid a commission of ZMW500. If a trader opts not to use an agent, that trader may not even sell the crop or if he/she manages to sell, the commodity would be found with a lot of problems such as high moisture content, grain not of good standard during inspection. Traders indicated that when a trader decided to sell the commodity by himself or herself, the process normally takes longer than usual. When the selling process takes longer, thieves start stealing the commodity from the truck, which results in sustaining more losses, and hence, affecting profits earned by traders.
Traders and truck drivers feel the introduction of agents along the value chain is a welcome move, however having trustworthy agents was important for this arrangement to develop and enhance coordination between processors and traders.

3.6. Share of Transportation Cost to Total Variable Cost Moving 30 Mt Truck

The state of the road network both feeder or main road has an effect on the cost of transport and that may hinder agricultural trade. In all the FGDs, farmers indicated that the feeder roads are in a bad state and they contribute to the breakdown of vehicles (can ters); when the vehicles are moving, they take a long time to travel even when the distances to the boma from the villages is short. High cost of fuel and the bad condition of feeder roads make the cost of transporting the agricultural commodities to the market very expensive. For example, farmers in Petauke pay ZMW6 per 50 kg bag for 25 km distance. Drivers indicated that if the feeder road was better than the state in which it was, the vehicle (can ter) could take less than one hour. While in Kalomo the cost of transporting a 50 kg bag ranges between ZMW15 and ZMW30 per 50 kg bag for the distance of 30 to 60 km radius. With this situation, most farmers wait for Food Reserve Agency (FRA) to open its market in order to sell to the agency rather than taking the produce to the boma to sell to the traders. That is, unless if the farmers are in a desperate financial situation, then they transport to the boma and sell to the trader.

The cost of transport is the second highest in terms of contribution to the total variable costs for a trader. The share of transport cost to the total variable costs is between 6% and 12% (see Table 4).

The fluctuation in commodity prices has also been cited as a hindrance to trade. Key informants and sentiments from FGDs showed that in most cases, when prices are depressed, selling of agricultural produce slows down. Normally farmers stop bringing the crop in large amounts to the market because of low prices. They normally wait for the traders to go to the villages to buy the commodity. When farmers sell the produce to the private traders, in most cases, it is because they might have an emergency, but usually they wait to sell to the FRA. A good example is the 2017 marketing season when despite the country recording a bumper harvest, the marketing of grain to the private traders has been slow where traders/farmers have been citing low prices for the grain.

Table 4. Percentage (%) Cost of Transport to the Total Variable Costs by Districts

<table>
<thead>
<tr>
<th>Cost Items</th>
<th>Kapiri Mposhi</th>
<th>Mpongwe</th>
<th>Petauke</th>
<th>Kalomo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of buying maize at the Boma</td>
<td>86.6</td>
<td>89.3</td>
<td>85.4</td>
<td>83.8</td>
</tr>
<tr>
<td>Cost of transport from boma to the market</td>
<td>8.8</td>
<td>6.1</td>
<td>10.7</td>
<td>12.1</td>
</tr>
<tr>
<td>Cost of loading</td>
<td>1.8</td>
<td>0.6</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Cost of packing bags</td>
<td>1.2</td>
<td>2.1</td>
<td>0.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Cost of council levy</td>
<td>0.4</td>
<td>0.9</td>
<td>0.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Cost of helpers</td>
<td>0.4</td>
<td>0.6</td>
<td>0.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Toll gate fees</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Cost of security</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Fee to an agent selling maize</td>
<td>0.0</td>
<td>0.0</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Rentals to the council</td>
<td>0.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

4. CONCLUSIONS AND RECOMMENDATIONS

Local trade is important for the continued growth of Zambia, the development of its farms, and the need to contribute to regional and international trade. However, several barriers affect trade of agricultural produce within the country.

This paper answers the two research questions: The first one is: What are the barriers restricting the movement of agriculture produce from areas of production to consumption? The second question is: What is the percentage of the total cost of transportation when moving 30 mt of agricultural produce from production areas to consumption areas?

The study has established that barriers to local trade exist in Zambia including the following:

- Poor condition of feeder roads in most rural areas, which affects the movement of agricultural produce, adds to the cost of transporting the produce from area of production to consumption areas. The study finds that because of the poor state of these feeder roads, the average cost (ZMW11) per 50 kg bag when transporting the agricultural produce from farming communities to the boma is higher than the average cost (ZMW10) of transporting the same bag—even if the distance is farther (over 300 km vs 100 km maximum).
- Double taxation on the same crop exists in some districts (Kalomo and Kapiri Mposhi). The stoppages—that are as a result of council check points—add to the cost of doing business in time wasted because the receipts for the crop level payment have to be verified at every point.
- The study found at least three road blocks on a stretch of 100 km along the highway are mounted by the Zambian Police. Because of these road blocks, traders or truckers lose 30-60 minutes of their travel time. Additionally, random road blocks are also mounted by the Traffic Police Officer, which also adds to lost travel time.
- The study also found that the operation of the busiest weigh bridges at Kapiri Mposhi hinder the smooth flow of trucks mainly because of language barrier between Tanzanian drivers and officials from Road Development Agency and intermittent internet connectivity. Furthermore, the night ban of truck and buses movement contribute to congestion at weigh bridges and toll gates during certain hours (07:00-09:00 hrs. and 19:00-20:00 hrs) because trucks pile up at the weigh bridge seeking to be cleared. However, the study has shown that the toll gate fees are competitive with what other countries are charging in the region.
- The agents that have been introduced by most milling companies were introduced to facilitate trade between the traders/farmers and the milling companies. However, there is increasing mistrust between these agents and traders. Traders feel agents have increased the cost of doing business, especially since, in some cases, agents cheat with regard to the price. In cases where the trader chooses not to use an agent, it becomes very difficult to sell the grain.
- The study has also established that the transport costs are second in terms of contributing to the total cost of procuring and transporting the crop to the market. Its percentage contribution is about 10%. The cost of fuel and the bad condition of the road network are the major reason for the transportation expense.

In view of the aforementioned issues raised, the following are the recommendations that could minimize or eradicate the trade barriers highlighted in this study:

First and foremost, Zambia needs to address the stock and quality of its physical infrastructure, especially the feeder roads affecting the efficiency of moving agricultural
produce from areas of production to areas of processing and consumption. We, therefore, commend government for securing US$200 million from the World Bank for rehabilitating, upgrading and maintaining the feeder roads in Zambia. A portion of the resources from the revenue sources, such as the weigh bridges, toll gates, and council levies should be channeled to such projects where road users can see the benefits of paying those fees and levies.

Secondly, roadblocks by Zambia police/council checks are a hindrance in facilitating the movement of agricultural produce and in actuality, they add to the cost of doing business. Therefore, random roadblocks should be eliminated and police should not be allowed to mount them—they should be in designated areas only. Furthermore, crop levies should be eliminated and in their place, the implementation of a mechanism that shares the revenue from such activities as Mineral Royalty and Road Tax to increase financing for local authorities as stated by government in the Industrialization and Job Creation Strategy Paper (GRZ 2013) should be actualized. To facilitate this development, the Ministry of Finance, Ministry of Commerce, Trade and Industry, Ministry of Agriculture and Ministry of Home Affairs must work hand in hand with the Ministry of Local Government to make sure these issues are resolved. This will reduce the time of travel for all commodities (non-agricultural and agricultural).

Thirdly, agents offer a service to traders and millers. However, if the trust between agents and trade is eroded, that may affect the business dealings of the two actors. Therefore, traders and millers need to start using the Zambian Commodity Exchange (ZAMACE), as that platform improves the trusts among players and helps to increase the standards of grain stored in the certified storage facilities.
REFERENCES


