COMMODITY INTERMEDIARIES IN MOZAMBIQUE

A SUMMARY FOR STAKEHOLDERS

AUGUST 2021

NCBA CLUSA
The National Cooperative Business Association • CLUSA International

NORWEGIAN EMBASSY

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EXECUTIVE SUMMARY

In September 2020, NCBA CLUSA Mozambique, through the Norwegian funded PROMAC II project, commissioned Eduardo Mondlane University, together with Boston College Carroll School of Management, to undertake a study on commodity commercialization for the principal smallholder value chains in northern and central Mozambique. The study, which involved two complementary surveys with smallholder farmers and a range of commodity intermediaries covering the 2019/2020 agricultural season, focused on the four provinces along the two main trade corridors of northern and central Mozambique (Nampula and Zambézia provinces along the Nacala corridor and Sofala and Manica provinces along the Beira corridor). It included eight value chains – maize, peanut, pigeon pea, common bean, cowpea, sesame, soybean and cassava – crops which are identified by the Government of Mozambique's *Plano Operational para o Desenvolvimento Agrário*, or PODA, and are also promoted by NCBA CLUSA Mozambique's PROMAC II project. The study's objective was to provide a description of how these value chains are commercialized from the smallholder farm gate to large scale commodity traders, with the ultimate goal of informing development actors of the constraints faced by smallholders to increasing their market participation and incomes, identifying how these constraints could be overcome, and making recommendations for how this system can be more effective for producers and the intermediaries alike.

This document presents a summary of the most important findings and recommendations from the more detailed study report. They include:

FARMING SYSTEMS ARE UNDERDEVELOPED. To incentivize farmers and other market actors to engage in market orientated behaviors discussed in this report, policy makers and program implementers should first address smallholders' low productivity. Although they have larger farms than the national average, the interviewed farmers farm on average just 2.87 hectares of land. They farm around five different crops, one of which is nearly always maize. Consequently, they have small amounts of surplus to sell. Among growers of the eight crops studied, 89% sold at least one crop, but median sales volumes were only 50 kg for peanut, 58 kg for cowpea, 128 kg for bean, 152 kg for cassava, 157 kg for sesame, 229 kg for pigeon pea, 300 kg for maize and 478 kg for soybean. Additionally, only 12% of farmers possessed land title certificates (DUAT). This lack of land security, combined with limited access to finance, may be one of the reasons why few farmers invest in yield enhancing inputs: only 23% used improved seeds, and less than 10% used any other kind of yield-enhancing inputs (irrigation, pesticides, fertilizer, inoculant or herbicides).

THE KEY INFORMANTS, ON THE WHOLE, DO NOT LACK ACCESS TO MARKETS FOR THEIR PRODUCE. Farmers and intermediaries alike (60% and 85% of respondents respectively) perceive an increase in the number of traders operating in rural areas over the last five years. However, the market is largely informal — 43% of the sampled intermediaries were not registered enterprises, and most farmers sell directly and individually (e.g., without aggregating through brokers or farmers' organizations), at local purchasing points or at local markets.

FARMERS ARE OFTEN UNABLE TO MAXIMIZE THEIR PROFITS FROM SURPLUS. Survey results show that farmers who transport their produce from farm gate to buying posts get prices that are on average only 8% higher[1] than if they had sold at the farm gate — making this stage (transporting goods from farm to buying post) one of the value chain stages with the lowest margins. In fact, more often than we would expect, farmers actually get lower prices at buying posts and local markets than at the farmgate, possibly due in part to their poor negotiation skills and lack of market information. 87% of farmers reported weak negotiation skills as a major constraint to marketing. Less than 50% of farmers receive price information, and when they do it usually comes from neighbors, relatives or friends. Although 70% of farmers own a cellphone, only 5% of total farmers use this as a tool for negotiating prices – suggesting a need for both digital literacy and other sustainable, preferably private sector led, market information technology solutions.

LIMITED OPPORTUNITIES EXIST FOR SMALLHOLDERS TO INCREASE THEIR MARGINS THROUGH VALUE ADDITION. Both farmers and intermediaries report the existence of price premiums; however, this is usually only for basic value addition such as crop aggregation and cleaning or drying, and only around half of farmers access these premiums. Buyer-supplier relationships tend to focus on the fundamental exchange of goods, with few opportunities for suppliers to add value by meeting buyers' needs. More work needs to be done to make price premiums more fairly and transparently implemented, with a shared value proposition for all actors and with buyers and suppliers engaging with each other as partners.

MANY FARMERS SELL LOW AFTER THE HARVEST. Although for many crops, especially maize, the price tends to increase after harvest until the next year, at least 80% of the interviewed smallholder farmers sold their crop within four weeks after they harvested and, for most crops, 50% sold within two weeks. Not only does this prevent them from earning higher prices, but they also end up buying back food crops such as maize at much higher prices during the lean season from around January to March. Even if farmers knew prices would rise by 20% within two months, a quarter of them would still sell immediately after the harvest. Our results suggest that this is partly due to inadequate storage facilities, which raises the risk involved in storing their crop. However, perhaps a more important factor is farmers' immediate need for cash, with poorer farmers far more likely to sell in the first two weeks than

1 Assuming that they transport on their head and have no transport costs

wealthier farmers. Farmers would benefit from finance mechanisms which smooth out their income over the year and enable them to store adequate amounts of product to see them through until the next harvest.

AGGREGATION AND INCLUSIVE BUSINESS APPROACHES, WHICH COULD POTENTIALLY INCREASE THE MARGIN TO THE FARMER, ARE RARELY USED. Farmer organizations are used by less than 2% of the surveyed farmers, and less than 5% are involved in contract farming schemes. More research is needed to understand why more inclusive business models do not represent a solid value proposition to farmers and/or the private sector, and what incentives could be used to buy down firms' risk in experimenting with such business models (e.g., matching grants for firms running contract farming schemes).

FARMERS AND AGGREGATORS ARE NOT ACCESSING APPROPRIATE FORMAL FINANCIAL PRODUCTS AND SERVICES. Where farmers access credit, 80% of the time it is provided by NGOs. Inclusive financial tools such as mobile money are rarely used – even though over 70% of farmers own a cellphone, 98% of those who sold their surplus are paid in cash. Most intermediaries – even those who anecdotally are known to receive pre-finance from their buyers — list their own funds as their primary source of finance.

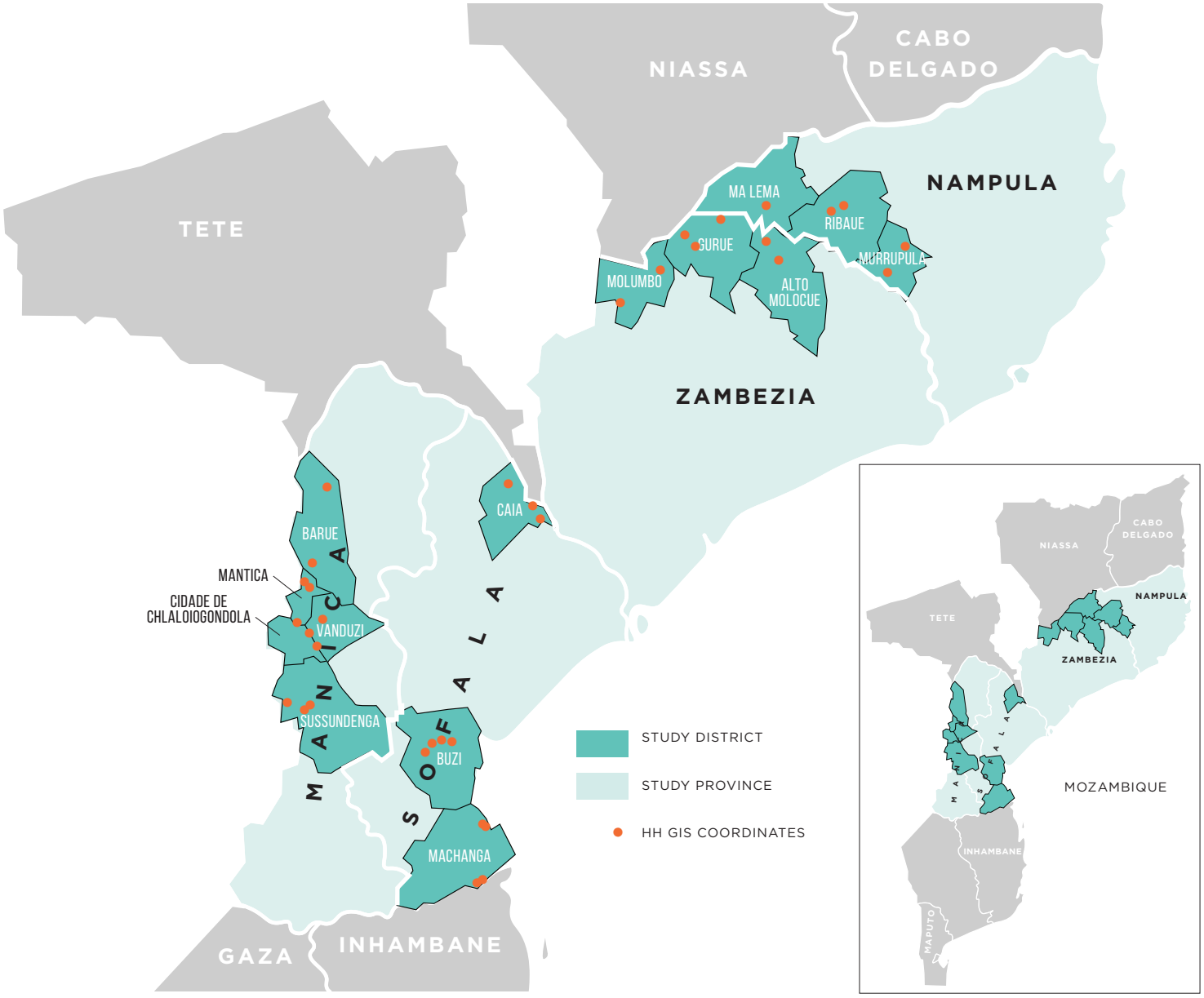
WEALTH INEQUALITY IS ASSOCIATED WITH INEQUALITY ACROSS NEARLY ALL PERFORMANCE MEASURES LISTED IN THIS PAPER, INCLUDING POSSESSION OF DUAT, FARM SIZE, INPUT USE, MARKET ORIENTATION TO SENSITIVITY, PRICE INCREASES AND MARGINS OBTAINED THROUGH SELLING SURPLUS. Low wealth is a constraint to better performance and improved livelihoods because it forces farmers to take rational actions that they would not otherwise take, such as selling when prices are lower or forgoing investments in inputs. This could be partly resolved through mechanisms that alleviate financial and liquidity constraints, so farmers could invest in agricultural intensification. These mechanisms include cash transfers, targeted safety net assistance and village savings and loans associations (VSLAs), micro finance directed at inputs and production costs, increased engagement in contract farming schemes, or pre-financing for farmer organizations to aggregate or store members' produce. These should be combined with interventions that promote the uptake of yield enhancing technologies. Designing these two elements in tandem should lead to far greater impact than either one alone, making it easier for resource deprived farmers to participate in the market.

THE ACTORS

DATA SOURCES AND METHODOLOGY

We collected data via two surveys during September 2020 — the household survey (administered to 443 smallholder farmers consisting of 32 randomly sampled farm householders per district) and an intermediary survey (which interviewed 146 intermediaries consisting of 115 assembly traders, six retailers, 16 warehouse operators, seven large scale traders and two transporters). These surveys were conducted in 11 districts — Manica, Barue, Sussundenga, and Vanduzi in Manica province; Machanga, Buzi, and Caia in Sofala province; Molumbo, Gurue, and Alto Molocue in Zambézia province; and Malema, Ribaue, and Murrupula in Nampula province.

FIGURE 1. STUDY AREA AND SAMPLED HOUSEHOLDS



THE INTERMEDIARIES

LARGE-SCALE TRADERS (LSTS)

- Usually foreign owned or managed large-scale processors or exporters with headquarters in cities.
- They buy from other intermediaries (e.g., assembly traders), often with informal contracts and by providing pre-finance.
- Sometimes buy directly from smallholders through a network of fixed and temporary purchasing posts. May send their own trucks to collect from the farm gate, offering a price premium, if farmers can aggregate at least 30 tons.
- Begin buying relatively late in the marketing season when crops have lower humidity levels.
- After cleaning, fumigating, drying, grading, bagging, large scale traders resell, usually to export markets. Some consume products themselves in other value chains such as the poultry industry.

WAREHOUSE OPERATORS (OR LOCAL WHOLESALERS)

- Medium-to-large-scale aggregators who are well established in the communities.
- They use their own facilities to procure agricultural commodities from assembly traders and smallholders for onward sales.
- Usually clean, fumigate, dry, grade and bag produce.
- Often, they are foreign owned or managed (25% of those interviewed were Bangladeshi).

RETAILERS

- Food traders who use their shops to procure agricultural
- commodities from assembly traders and smallholders. They re-sell
- after cleaning, drying, grading and bagging.

LOCAL TRANSPORTERS

- Small-to-medium-scale aggregators who use their own small trucks to procure at either farm gate or temporary purchasing posts. Often these are taking advantage of the back haul.

ASSEMBLY TRADERS

- These make up the base of the intermediary pyramid. Due to their prevalence, they made up the largest share of interviewed intermediaries (around 75%).
- Assembly traders are small-to-medium-scale aggregators, a large group with considerable variation among them.
- They set up temporary purchasing posts at the community or village level, local markets, and along roadsides. They begin buying early in the marketing season when prices are lowest and humidity is relatively high, and resell later after limited cleaning, drying, grading, and bagging.
- Although often referred to as “Bangladeshis,” almost all sampled assembly traders (94%) were in fact local residents — the remainder were non-local residents or foreign traders.
- Given their proximity to farmers, some surveyed farmers incorrectly classed these sales as farm gate — though some do also procure at the actual farm gate when commodities are very scarce.

FARMER AND INTERMEDIARY CHARACTERISTICS

FARMERS

- Heads of household are predominantly male (86%). They are on average 46 years old. The vast majority (76%) are married or are in a marital union. They average 5 years of schooling and more than 75% know how to read and write. Families have on average 6 members.
- Across all crops, surveyed farmers cultivate on average 3 hectares. Nearly all (99%) surveyed farmers produce maize, on around half of this area. Typically, on the other half they cultivate a mix of the other studied crops — the most popular additional crops are pigeon pea, cassava and sesame. Despite farming larger areas than the national average, the surveyed farmers' production systems are still underdeveloped and as a result farmers have only small amounts of surplus available to sell, selling low median volumes — 50 kg for peanut, 58 kg for cowpea, 128 kg for bean, 152 kg for cassava, 157 kg for sesame, 229 kg for pigeon pea, 300 kg for maize and 478 kg for soybean. These low volumes will likely reduce the incentive for farmers to engage in many of the market orientated behaviors discussed in this paper; however, the fact that 62% of farmers are selling at least some of their production, albeit in low volumes, indicates that the target group is market-oriented and suggests that there is potential for donor and other interventions to increase farmers' gains from commercialization.

INTERMEDIARIES

- The vast majority (96%) are male. Women intermediaries are slightly more common in Manica and Sofala, but only for bean (5% of intermediaries), maize (4%) and sesame (1%). The intermediaries are better educated than farmers — 71% have middle school or higher education, 20% have completed high school, and 5% have university degrees. Over 65% have at least five years of experience trading commodities — especially peanuts, where over 38% have more than 15 years of experience. This suggests that it is a durable income generating activity, and also presents opportunities for donors and other actors to engage with traders with a long-term perspective.
- Just over half (57%) of the sampled intermediaries reported having their activities formally registered. The most likely to have formal operations are warehouse operators (100% of those interviewed) and large-scale traders (86%), compared with just 50% of assembly traders and 33% of retailers. All interviewed foreign aggregators indicated that their activities were formally registered. Note, however, that our study did not verify these statements.
- The vast majority (88%) are Mozambican. 12% were foreign, the majority of which being from Bangladesh (10% of total intermediaries), with some from India (1%) and a minority from Mauritius (less than 1%). Bangladeshi intermediaries are more concentrated in Zambézia and Nampula (accounting for 21% and 8% of intermediaries respectively), these being areas where they originally started trading. Little is known about these foreign traders, though they play an important role in commercialization in rural areas, where many are now well established, well connected to buyers (from whom some receive prefinancing) and suppliers, and often buy commodities year-round.

MARKETING SYSTEMS

VOLUMES OF TRADED COMMODITIES

The top panel of Table 1 below shows the total volumes of crop traded by each intermediary type. Although these data should be treated with some caution since the sample size for each group was not proportionate to their total number, it shows that large scale traders account for the largest share of traded produce (which is not surprising given their size and scale of operations), particularly for bean, pigeon pea, sesame and soybean. Assembly traders account for the second largest share, and seem to focus more on maize, pigeon pea, sesame and soya. We observed some very large assembly traders, with traded quantities for all crops highly concentrated among a few intermediaries. Among all sampled assembly traders of each crop, the top 20% of the traders accounted for 77% of the total traded volume of maize, 74% of pigeon pea, 73% of sesame, 69% of soybean, 65% of cowpea, 60% of peanut, and 60% of bean.

Pigeon pea, soybean, maize and sesame account for the largest total volumes traded. This ranking is consistent with the average sales volumes per intermediary (bottom panel of Table 1) and fairly consistent with the percentage of intermediaries who trade each crop, with the most important being maize (90% of intermediaries trade this), pigeon pea (62%), sesame (58%), and bean (41%). Note that soybean trading is more concentrated amongst fewer intermediaries. Similarly, crops with the largest shares of total sales value are maize (27% of total sales value), sesame (22%), pigeon pea (15%), and soybean (12%), with all remaining crops representing less than 10% each to the total value of sales in the sample. This corresponds with the average volume sold per farmer — the top two crops being maize (with 640 kg per farmer), and soybean (with 809 kg per farmer).

TABLE 1. VOLUME TRADED BY INTERMEDIARY TYPE AND CROP

INTERMEDIARY	CROP						
	BEAN	COWPEA	MAIZE	PEANUT	PIGEON PEA	SESAME	SOYA BEAN
TOTAL QUANTITY TRADED (MT)							
Assembly traders	461	356	7,695	32	3,969	2,184	2,390
Retailers	56	6	481	0	35	779	0
Transporters	3	0	16	0	1	19	20
Warehouse operators	164	98	2,196	0	2,754	724	1,065
Large-scale traders	2,056	9	8,375	0	18,402	9,651	20,268
All sample	**2,740**	**470**	**18,762**	**32**	**25,162**	**13,357**	**23,743**
AVERAGE QUANTITY TRADED (MT PER INTERMEDIARY)							
Assembly traders	10	8	75	4	58	34	77
Retailers	19	3	80	0	12	260	0
Transporters	1	0	8	0	1	10	20
Warehouse operators	33	11	157	0	212	80	213
Large-scale traders	685	9	1,396	0	4,600	1,930	5,067
All sample	**46**	**9**	**144**	**4**	**277**	**161**	**579**

Source: NCBA CLUSA intermediary survey 2020

FIGURE 2. PERCENTAGE OF GROWERS WHO PRODUCE FOR THE MARKET, OWN CONSUMPTION OR BOTH

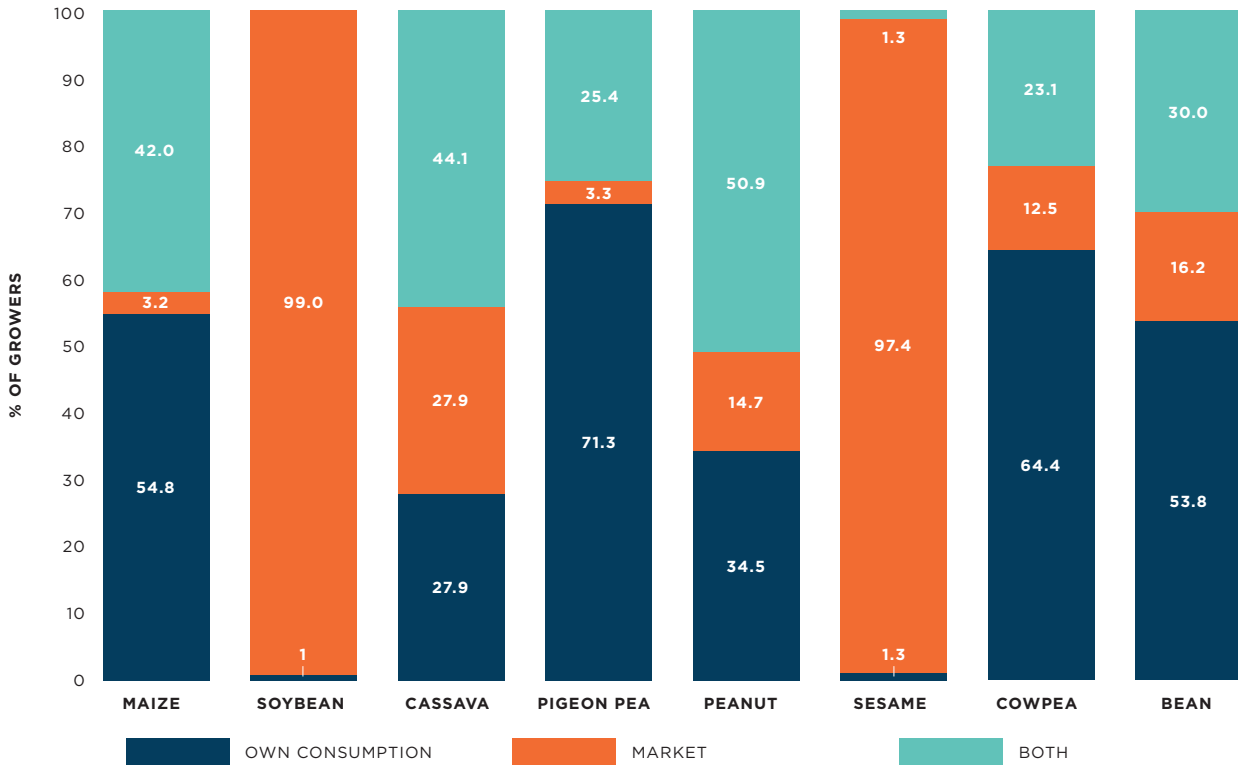
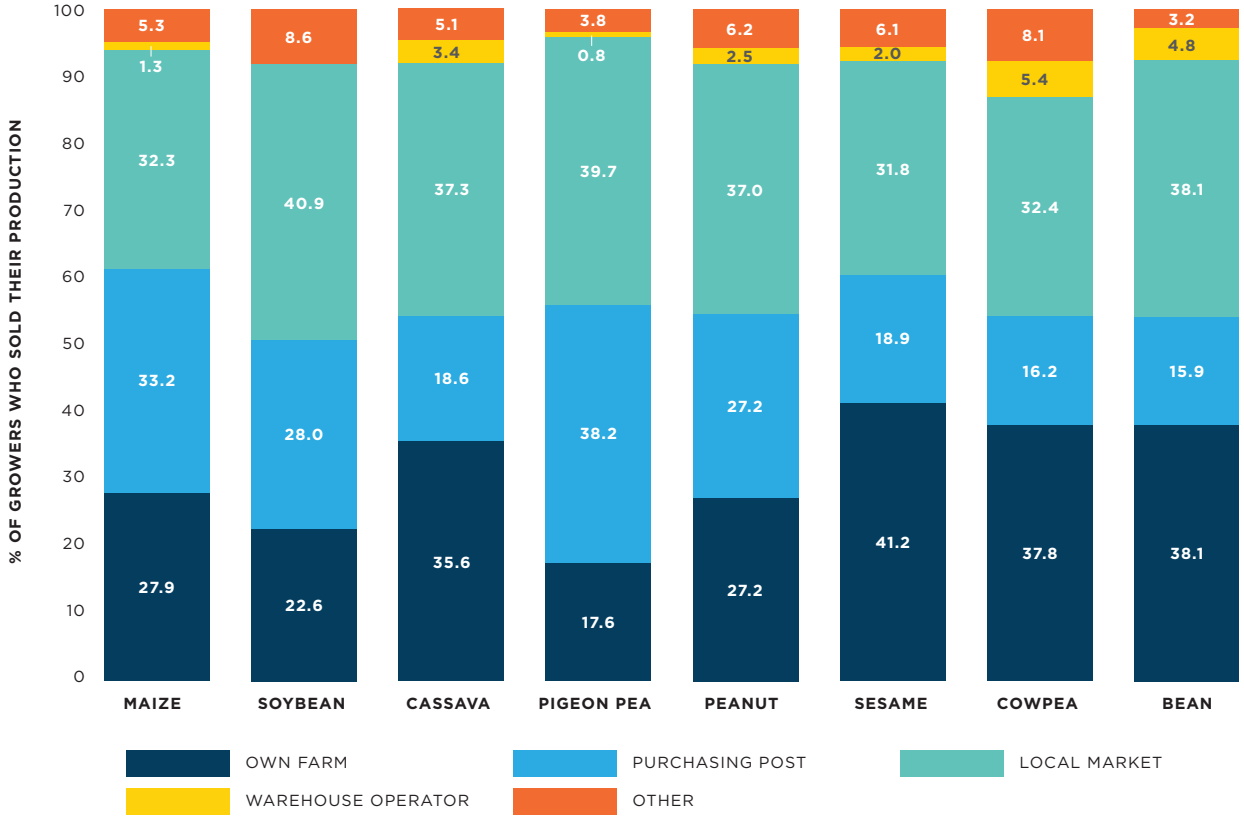


FIGURE 3. MAIN SELLING POINTS AMONG GROWERS WHO SOLD THEIR HARVEST



MARKETING INTENSITY FOR AGRICULTURAL OUTPUT

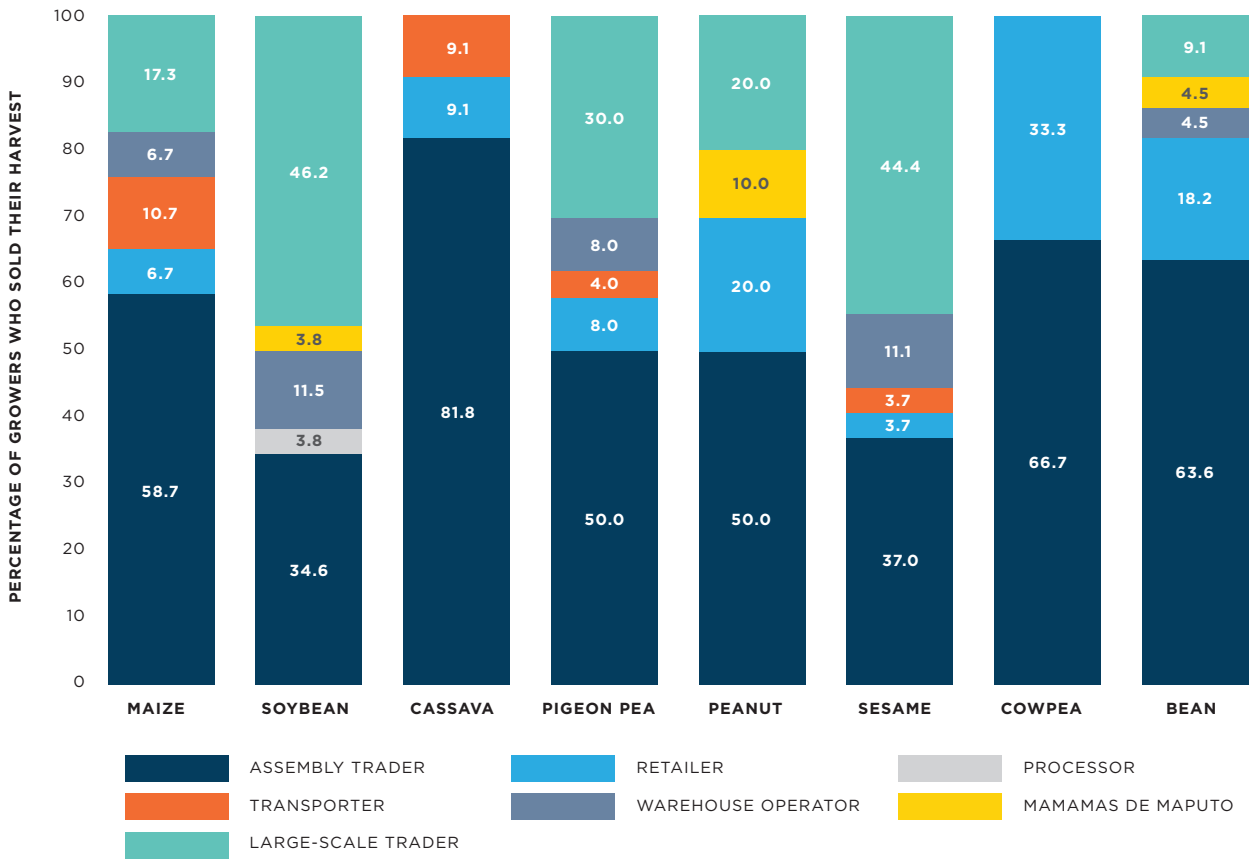
Except for soybean and sesame, 62% of farmers produce mainly for sale and consumption. Crops with the largest share of growers who produced solely for consumption are cassava (71% of growers), cowpea (64%), maize (55%) and peanut (53.8%). Crops with the largest share of those who produced solely for the market include soybean (99%), sesame (97%) and pigeon pea (28%).

POINTS OF SALE

Agricultural markets are becoming more vibrant, with an increasing number of buyers. When asked about their biggest marketing challenges, neither farmers nor intermediaries identified a lack of buyers as one of their principal constraints. Both groups perceive an increased number of traders operating in rural areas over the last five years (60% of sampled intermediaries and 85% of farmers). Across all crops, most produce is sold via local markets, farm gate, and purchasing posts (in this order). However, both local markets and farm gate sales are likely to be over-represented in our study: due to the proximity of purchasing posts to farmers' homes, many farmers misattributed these sales as farmgate; in addition, many assembly traders set up mobile buying posts at local markets, causing farmers to classify these sales as local market sales when actually buying post would be the more accurate classification. Therefore, we conclude that, of the three sales points (local markets, farm gate and purchasing posts), purchasing posts are probably the most important point of sale.

The most active buyers at purchasing posts are assembly traders, who focus mostly on more locally consumed crops such as maize, cassava, cowpea, bean and, to some extent, pigeon pea and peanut. Large scale traders are the second most important buyers at purchasing posts, focusing on more market orientated crops such as soybean, pigeon pea and sesame but also buying some volumes of maize, peanut and, to a smaller extent still, beans.

FIGURE 4. MAIN BUYERS OF FARMERS' HARVEST AT PURCHASING POSTS



Although farmgate sales were probably over-represented in our study, we did observe various actors buying direct from the farm gate — particularly assembly traders (focusing particularly on soybean, pigeon pea and maize) and small to medium transporters (probably passing trucks who stop at the roadside). Many large-scale traders claim to be willing to collect produce directly from the farm gate if the aggregated amount is at least 30 tons, although in practice these volumes are difficult for many farmer groups to aggregate — especially for low yielding (in terms of weight) products such as sesame.

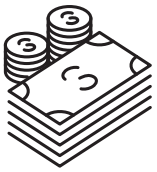
SALES AND PAYMENT MECHANISMS

Our results suggest a limited uptake of inclusive business models and low levels of financial inclusion (including digital financial inclusion) for smallholder farmers.

By far most farmers sell individually, directly to buyers. Virtually none of the surveyed farmers who sell their produce do so through **farmers' organizations** — just 2% of cassava growers and 1% of soybean growers. More needs to be done to understand and address the reasons why farmers' organizations fail to present a clear value proposition to farmers (for instance, through improved storage and governance, and greater access to appropriate finance mechanisms such as "rolling capital" to enable them to purchase members' produce and pay immediately).

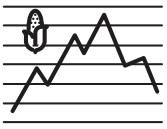
Similarly, few farmers used **intermediary brokers** (intermediary agents — usually operating at the farm gate level — who earn a commission by selling commodities on behalf of other value chain players). Brokers were active for all crops except cassava, but the share of farmers who used them was consistently low — between 6% of farmers for bean growers to 17% of farmers for soya growers). In contrast, brokers do seem assist intermediaries to procure from other intermediaries — 47% of intermediaries use brokers (17% of retailers, 43% of large-scale traders, 44% of assembly traders, and 81% of warehouse operators). Anecdotally, some entrepreneurially minded individuals use their cellphones to link maize farmers with buyers (maize mills) — suggesting a way for rural entrepreneurs with minimal resources, particularly youths, to generate an income.

Contract farming mechanisms are used only by a very small proportion of farmers who sell their produce (5% of farmers across all crops), despite their potential to include even the smallest farmers in the market. More work needs to be done to mobilize the private sector and build a compelling business case for these actors to engage smallholders in their business strategies through more inclusive approaches.



Almost all sampled intermediaries (98%) pay their suppliers in cash. The use of checks and M-Pesa and was negligible (under 1% of intermediaries). This suggests that, despite recent increases in cellphone ownership, cellphones are not yet being fully used as a tool for inclusive finance or to facilitate trading - likely due to factors such as low levels of farmer digital literacy, poor network connection and weak mobile money agent networks in some areas. In addition, it is likely that some actors prefer to operate informally and leave no digital record.

PRICE INFORMATION



Fewer than half of farmers received price information. And social networking (neighbors, friends, and relatives) was by far the most common source, accounting for 40% of farmers who received price information across all value chains.

Over 70% of farmers own a cellphone. However, less than 5% of surveyed farmers who received price information received it through their cell phones. In addition, less than 20% of total farmers use a cell phone to negotiate prices. Intermediaries, not surprisingly, are more likely to use cellphones to negotiate — 82% of these used cell phones to negotiate prices with their suppliers (whether farmers or other intermediaries) and 92% with buyers.

Given the high rate of access to cellphones but limited use to receive price information or to communicate with buyers, we concluede that simply owning a cellphone does not result in increased engagement in markets. Technologies must also be coupled with specific knowledge and skills in how to use them (including digital literacy) and negotiation skills in general (87% of farmers report a lack of negotiation skills as a major constraint to marketing). In the case of price information, dissemination systems (whether privately or publicly managed) need to exist in the first place. NCBA CLUSA Mozambique's weekly price bulletin, which disseminates prices via SMS, WhatsApp groups and community radio programs during sales time, begins to address this need.

TIME TO MARKET

FARMER TIME TO MARKET AND SENSITIVITY TO FUTURE PRICE INCREASES

When deciding whether to sell or store their crop, farmers take into account a range of factors which affect the risks and benefits of each option. These include the risks associated with storing (e.g., theft and pests – the latter being a particular issue for crops such as common bean), a normal post-harvest reduction in weight as product dries, the crops' importance for food security (making crops such as sesame, soybean and to some extent pigeon pea more risky to store), the presence of buyers, and the likelihood that the market value will increase over time. Generally, the crops most often stored until prices rise include maize, peanut, sorghum and dried cassava.

Among smallholder farmers who sold their crops, most sell their crops right after harvest, when prices are at their lowest — at least 80% do so within four weeks after harvest and, for most crops, at least half sell within two weeks, with some variation between crops (64% for soybean growers, 60% for cowpea growers, 58% for bean growers, 57% for maize growers, and 51% for both pigeon pea and sesame growers).

To assess how sensitive farmers are to price increases, we asked them what fraction of the harvest they would choose to hold on to if they knew the price was going to be higher within a two-month period. Faced with a 10% price increase, only 7% of farmers would store more than half of their production volume to sell later. Nearly a quarter, 24%, would store at least half their produce if instead prices were to increase by 20%. Or in other words, around three quarters would still sell their produce after harvest, even if they knew they would make 20% more if they waited two months.

Our data suggest that storage is one of the most important factors driving farmers to sell early. Among farmers who stored their harvest for some period of time, which is nearly all (97%) farmers, 99% of them used their own homes as storage facilities rather than any kind of granary or silo. Not surprisingly, only 29% of farmers who store their produce felt that their storage conditions were fit for purpose. When questioned regarding the primary reasons for postharvest losses due to inadequate storage, the most important was pests and diseases (74% of respondents ranked this as the most important reason).

However, the fact that over 75% of farmers would still sell their product within two months of harvest, even with a 20% price increase, also suggests financial stress, and we propose that the more important cause is farmers' pressing need for cash, leading the more cash-strapped farmers to sell earlier than wealthier farmers.[2] Among sellers, the proportion of maize farmers who sold their crops within two weeks after harvest is considerably higher for the lowest wealth quintile compared to those in the highest wealth quintile (for instance, 65% of maize farmers in the lowest quintile sell within two weeks, versus 45% of maize farmers in the highest quintile). In addition, for a 10% increase, 57% of farmers in the highest wealth quintile would store their produce, versus 48% for the lowest quintile. For a 20% increase, which is the usual increase over two months for crops like maize, the figures are 73% versus 55%. Of course, as well as having better access to liquidity the wealthier farmers would also have better storage facilities, and other factors are also at play — such

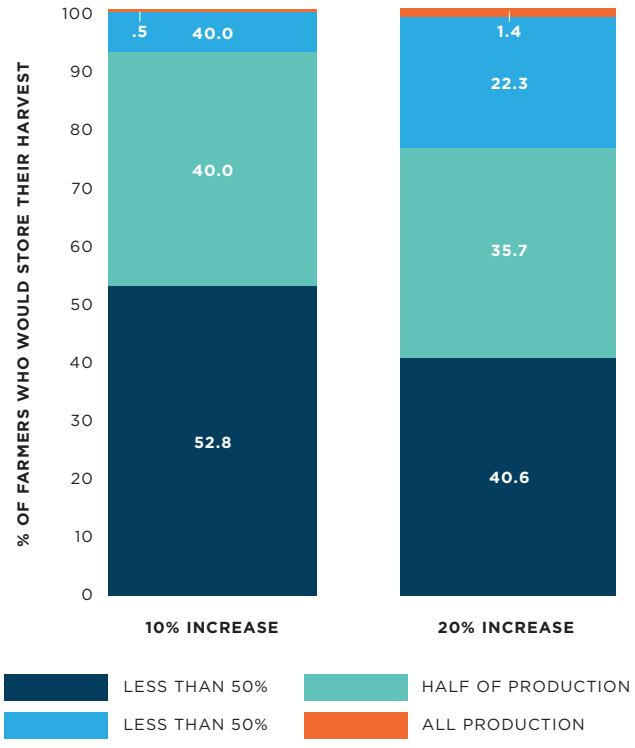
2 Supporting this, when asked about their most significant marketing challenges, storage conditions ranked lower than liquidity in farmers' list of concerns (70% versus almost 100% of farmers, respectively)

as their larger volumes to sell to start with (and therefore a greater financial incentive to store) and lower overall risk exposure. More research is required, therefore, to determine conclusively which factors are the most important decision-making determinants for each crop, and what interventions would enable farmers to make the most informed and profitable business decisions.

INTERMEDIARIES' SENSITIVITY TO PRICE INCREASES

In contrast to farmers, we found intermediaries — generally much less cash and storage constrained — to be around three times as likely as farmers to store produce when faced with a price increase. In fact, this price speculation seems to be the traders' *modus operandi* for locally consumed (rather than export) crops. Our data support this: the share of intermediaries who would hold onto their stock for at least two months if faced with higher prices is considerably higher for traders of locally consumed products rather than export orientated crops — with 44% of cowpea aggregators, 34% of soya aggregators, 34% of maize aggregators, 31% of peanut aggregators and 27% of bean aggregators willing to hold onto their commodities for at least two months, compared with only 22% of pigeon pea and 14% of sesame aggregators. However, while such a price speculation strategy can represent large gains for traders, it is often at the expense of farmers who are trapped in a cycle of selling low and buying high. Appropriate financial mechanisms such as VSLAs, cash transfers and targeted safety net assistance, micro credit or selling via farmers' organizations (which then themselves store until later in the season and later pay the difference to members) could help farmers smooth out their incomes, carry stock into the lean season and therefore escape this poverty trap.

FIGURE 5. SHARE OF FARMERS WHO WOULD STORE THEIR PRODUCTION IN RESPONSE TO PRICE INCREASES



CORRELATION BETWEEN PERFORMANCE INDICATORS AND WEALTH

Our survey collected data on a range of household assets, from which we computed an asset poverty index to identify farmers whose wealth index is below the median wealth index. Using this, we found that wealth inequality is associated with inequality across nearly all of the performance measures listed our full paper, from possession of DUAT, farm size, productivity, input use and market orientation through to sensitivity to price increases and margins obtained through selling surplus. Low wealth is a constraint to better performance and improved livelihoods because it forces farmers to take actions that they would not otherwise take, such as selling when prices are lower and forgoing investments in inputs — which in turn keeps them poor. This could be partly resolved through mechanisms which alleviate financial and liquidity constraints of farmers so they can invest in agricultural intensification, such as cash transfers, targeted safety net assistance and VSLAs. These mechanisms foster both social protection and productive investment. Other mechanisms, such as micro-finance directed at inputs and production costs, increased engagement in contract farming schemes, and pre-finance for farmer organizations to aggregate, can be combined with interventions that promote the adoption of yield enhancing technologies. Designing these two elements in tandem (liquidity and production orientated) should lead to far greater impact than either one alone,

making it easier for resource deprived farmers to participate in the market.

INTERMEDIARY FINANCE

We asked intermediaries about their primary sources of finance. Across all intermediary types, the vast majority (82%) of the sampled intermediaries use their own money as their primary source. The use of own finance was particularly high among the sampled retailers (100%), large scale traders (86%), assembly traders (84%), and warehouse operators (63%). The use of other forms of finance as the primary source was relatively rare. Only 10% stated that pre finance from buyers was their primary source of finance. Those most likely to access this are warehouse operators — 31% of warehouse operators use pre-finance as their primary source, compared with only 14% of the surveyed large-scale traders and 9% of the assembly traders. The fact that our survey showed that only 9% of assembly traders depend primarily on pre-finance, even though they often have long-standing agreements with large downstream buyers, is surprising. This may require further investigation.

4% of total intermediaries used money from informal credit (e.g., loans from friends and family) as their primary source, which was highest among warehouse operators (6%) and assembly traders (4%).

The only group to report using formal credit as their primary source were the warehouse operators (6% of warehouse operators) — which is also unusual given that in our experience many large-scale traders and other actors access loans from local commercial banks. This too could merit further investigation, but high interest rates are likely to be a factor in dissuading many intermediaries from accessing formal finance.

Given the above, it comes as no surprise that, when asked to rank their biggest marketing challenges, intermediaries rated liquidity and limited credit as the most important. Further research is required to understand what formal and informal financial products are specifically available for aggregators and commodity traders, and why these are not more commonly used despite a great need.[3] This may involve training for financial institutions to better assess and manage agricultural projects, combined with activities that buy down the risk for private sector actors to develop appropriate, inclusive financial products for intermediaries. Some mechanisms to support greater access to financial services could be donor funded guarantee schemes, subsidized interest rates, renewed efforts to promote a national warehouse receipts system, and ICT tools such as mobile money or digital credit scoring tools.

3 NCBA CLUSA Mozambique conducts an annual survey of financial products for the agriculture sector. This survey can inform a deeper investigation of the potential for formal credit to intermediaries.

MARKETING PREMIUMS AND MARGINS

MARKETING PREMIUMS

Some price premiums exist in the commodity value chain. For intermediaries, the most common premium is for crop aggregation — 69% of intermediaries pay and 66% receive a premium for this. Cleaning and drying ranks just slightly below this and, less commonly, some pay or receive premiums for other quality standards such as fumigation. Smallholder farmers most commonly receive premiums for cleaning and drying (69% of farmers received these), bagging (56%), and aggregation (42%). However, the fact that only around half of actors report paying or receiving a premium indicates that these are not standard practice — probably due to a lack of the knowledge, skills and resources (e.g., post-harvest knowledge, skills and equipment). But a lack of trust between market actors is also a barrier to transactions. Trust is eroded through unenforceable contracts, or cheating such as rigged scales, impurities and side selling. This impedes collaboration between buyers and suppliers to develop products which maximize mutual gains.

MARKETING MARGINS

We estimated the marketing margins at different stages of the commercialization process. These margins are computed as the difference between the selling prices and the buying prices for intermediaries. Although data unavailability meant that they do not consider the costs related to value addition (cleaning, storage, transport), and therefore cannot be used to calculate exact margins (especially where actors have incurred high transport costs), they are nevertheless still good proxies for the value added at each stage of the value chain — especially given that our surveys indicated that value addition was relatively uncommon.

Firstly, our data show that it is profitable for smallholder farmers to sell their production surplus at farm gate for bean, cowpea and soybean, but not for maize. Maize farmers actually make a loss if they sell their surplus at the farm gate, compared with much high maize margins for more downstream actors (55% for assembly traders and around 25% for both warehouse operators and LSTs).

As would be expected, farmers generally obtain better prices by taking their produce to markets (local markets, assembly traders and retailers) rather than selling at the farm gate. Looking more closely, and specifically comparing selling at the farm gate versus selling to assembly traders at buying posts, farmers access prices that are on average 8% higher if they sell to buying posts — except pigeon pea and sesame, which fetch higher prices at the farm gate. Farmers' margins increase further still if they can transport from the farm gate to local markets, with on average 25% higher prices (41% for peanut, 38% for bean, 28% for sesame, and 10% for soybean — all more market-orientated crops — compared to 23% for maize and 16% for cowpea, which are crops orientated towards consumption). Again, pigeon pea is the exception, which gets higher prices at farm gate. The fact that sesame and pigeon pea show up as crops for which the farm gate price appears to be higher than buying post or local market prices merits further exploration: it is unlikely to be a coincidence that these are both export crops for which there is little internal demand, and the high farm gate prices may relate to factors such as the characteristics of the intermediaries who trade these commodities, and the contractual relationships between intermediaries and the exporters to whom they sell.

Although there is considerable variation between crops, in general warehouse operators and retailers consistently rank as the intermediaries with the highest margins, with average margins of around 26%. Note that these two types of intermediaries (warehouse operators and retailers) differed significantly in the way they earned their margins

— while retailers seemed to obtain low prices when buying, warehouse operators earned their margins through the high prices they charged when selling. Except for maize where margins were higher, marketing margins for the other two main operators, large scale traders and assembly traders, were on average around 20%. In summary, although the largest margins are found relatively downstream (with retailers and warehouse operators), we do not always see a pattern of margins increasing at each stage of the commercialization process - the picture is far more nuanced than this, and one that definitely deserves further investigation.

TABLE 2. MARKETING MARGINS AT VARIOUS VALUE CHAIN STAGES

VALUE CHAIN CHANNEL		CROPS						
		MAIZE	PEANUT	BEAN	COWPEA	PIGEON PEA	SESAME	SOY BEAN
Production cost (MZN/kg): Manica & Zambézia (CLUSA M&E)		13.5	-	32.9	26.3	-	-	13.8
Farmgate price (MZN/kg): All studied provinces		15.5	45.3	49.1	29.0	28.5	46.2	21.8
Farmgate price (MZN/kg): Manica & Zambézia (CLUSA M&E)		13.2	46.3	47.4	28.1	27.8	47.6	21.3
Price at local markets (MZN/kg): Manica and Zambézia		16.2	65.3	65.5	32.5	27.5	60.8	23.4
Assembly traders' price (MZN/kg)	BUYING PRICE	14.5	52.5	52.3	30.2	27.6	46.0	21.6
	SELLING PRICE	22.5	63.5	65.6	36.5	32.7	54.9	24.9
Retailers price (MZN/kg)	BUYING PRICE	14.0	35.0	45.0	35.0	23.3	45.0	-
	SELLING PRICE	16.0	43.0	65.0	42.5	31.3	57.0	-
Warehouses operators' price (MZN/kg)	BUYING PRICE	16.2	76.7	58.4	33.0	27.5	46.1	19.8
	SELLING PRICE	20.3	100.0	67.0	43.1	33.2	58.1	24.2
LSTs price (MZN/kg)	BUYING PRICE	14.5	52.5	53.6	30.0	27.7	46.1	21.6
	SELLING PRICE	18.2	63.5	64.3	36.4	32.8	55.0	25.9
Margins at farm gate level	MZN/KG	-0.3	-	14.5	1.8	-	-	7.5
	%	-2.2%	-	44.1%	6.8%	-	-	54.3%
Margins at local markets level	MZN/KG	3.0	19.0	18.1	4.4	-0.3	13.2	2.1
	%	23.1%	40.9%	38.2%	15.6%	-1.1%	27.8%	9.8%
Margins at assembly trader level	MZN/KG	8.0	11.0	13.3	6.3	5.1	8.9	3.3
	%	55.2%	21.0%	25.4%	20.9%	18.5%	19.3%	15.3%
Margins at retailer level	MZN/KG	2.0	8.0	20.0	7.5	8.0	12.0	-
	%	14.3%	22.9%	44.4%	21.4%	34.3%	26.7%	-
Margins at warehouse operator level	MZN/KG	4.1	23.3	8.6	10.1	5.7	12.0	4.4
	%	25.3%	30.4%	14.7%	30.6%	20.7%	26.0%	22.2%
Margins at LSTs level	MZN/KG	3.7	11.0	10.7	6.4	5.1	8.9	4.3
	%	25.5%	21.0%	20.0%	21.3%	18.4%	19.3%	19.9%

Source: NCBA CLUSA household and intermediary surveys 2020, and NCBA CLUSA PROMAC II M&E systems.

Note: Production costs and prices at local markets are obtained from NCBA CLUSA M&E system, which covers only two provinces (Manica and Zambézia) and only selected crops. All other prices are gathered from NCBA CLUSA household and intermediary surveys, which cover four provinces, namely Manica, Sofala, Zambézia, and Nampula.

CONCLUSION

The data from our study are somewhat reassuring in that they point towards a market that functions. Most importantly, we see evidence of an increase in the number of buyers and marketing options available in rural areas, with a range of local and foreign intermediary buyers filling a critical void in the marketplace. We also observe the existence of some price premiums for quality and quantity. Smallholders on the whole appear to understand price behavior and — when their storage and cash flow permits — can usually obtain (slightly) higher margins by transporting produce from their farm to sales posts or further afield. However, a series of marketing challenges consistently emerge from our data, indicative of a commodity market that is still largely informal, undeveloped and offers little opportunity for adding value. This often prevents farmers from maximizing their gains, while larger market players can obtain significantly better margins (comparing, for instance, margins earned by farmers transporting maize from farm gate to buying posts, versus maize margins obtained by retailers and warehouse operators). Additional constraints that contribute the vast inequity between the farmers and assembly traders and the large-scale traders include the low volumes of produce traded; farmers' limited negotiation skills, access to price information, storage and liquidity; challenges in accessing finance; an extremely low use of ICT tools such as cellphones and inclusive digital finance; a lack of trust between market actors, and, linked to this, a low uptake of inclusive business approaches.

Our data point towards further avenues of research that will help us better understand the factors that prevent actors from engaging in the kinds of business models that could mitigate these challenges. In addition, by showing how nearly all performance measures are linked to farmer wealth, our data also point to the need to develop financial mechanisms that alleviate farmers' financial and liquidity constraints (e.g., the combining of cash transfers and vouchers with initiatives that increase on-farm production). These should target specific financial needs that would foster access to inputs, increase farm area and allow for better timing of product to market so that even the poorest, most resource deprived farmers can adopt behaviors that will enable them to climb out of the poverty trap by increasing their production and engaging more with the market.

Lastly, we have demonstrated the range of intermediaries active during the commercialization period. More than this, though, we also have shown the huge inter group, and often also intra group, diversity that exists between them. Since it was beyond the scope of our study to delve deeply into each group individually, we now recommend more research — starting with assembly traders, due to our limited knowledge of this much discussed but little understood group — to better understand each group's role, behaviors and needs within the market system, and identify how to engage with them (at the policy as well as field level) in ways that promote mutual gains for all market system actors.

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