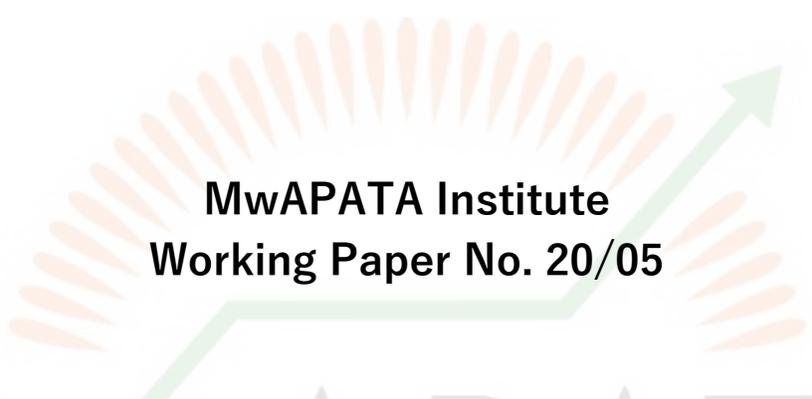


An Early Assessment of the Impact of COVID-19 in Malawi



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Executive Summary

The global COVID-19 crisis has impacted every facet of Malawian life and touched every aspect of agricultural value chains. One of the main challenges in dealing with the crisis is that the costs and benefits of combating (or not combating) the spread of the disease are not obvious. Our goal with this analysis has been to collect and present data from numerous respondents representing nodes across the agricultural spectrum to begin to allow policy makers to make informed decisions. The most important takeaway, however, is that these data are only a starting point. The challenges presented by this novel virus, and the ways Malawians react to them, are dynamic and rapidly evolving. The only way to ensure informed decisions are made will be through a concerted effort to monitor situations.

The degree to which smallholder farmers' production has been affected depends largely on how well farmers understand the restrictions and recommendations put in place early to contain the outbreak. All the farm households interviewed reported to have heard information about COVID-19. Most farmers said they would avoid hand shaking and practice some social distancing. The majority said their production for the 2020 harvest would not be affected. We attribute this to the fact that most rely on family labor and harvest for home consumption (so they are not affected by market closures, for example). The main conclusion is that COVID-19 is not expected to have a major impact on production levels for the 2020 harvest season, but we emphasize there is a great deal of uncertainty and we are not able to reliably quantify the expected losses. If the pandemic lasts into next cropping season, the effects could be far greater for agricultural production.

For transporters, although fewer than 1% say their revenues have been unaffected, the plurality (24%) said it has been international border crossings that are most impacted by COVID-19. Given the relatively small role international trade plays, this bodes well for their ability to withstand the disturbances presented by the pandemic. However, the second most affected route (cited by 19% of respondents) is the busiest transportation corridor (within Central). Higher transportation costs are also affecting food processors; the majority of processors interviewed for this study said the cost of raw materials were greater or that

supply of raw materials has been low. Processors have reported relatively little effect on their hiring ability, which may be due to the fact that our interviews were done at a time while the demand for labor was seasonably low regardless of COVID-19.

Eighty-nine percent of the wholesalers and retailers also report the food sourcing side of business has been adversely affected by COVID-19, either due to high prices or difficulty finding a seller. These higher prices and scarcities will likely lead to consumers facing more expensive food and a lack of diversity in what is available.

Recommendations

Economically, the data that seems particularly important is food prices. These are the figurative “canary in the mine” – if food prices begin to spike, it becomes important to dig into the drivers of that change to find the best way to minimize the negative impacts on welfare. There could be several reasons related to COVID-19 for food prices to be climbing – a worsening of the disease, or a protracted or expanded governmental effort to contain the virus could lead to decreased supply (and higher prices). Bottlenecks in transportation or limited availability of food in wholesale markets would also raise prices.

Farmers are concerned that traders will take advantage of the limited number of outlets available to farmers to offer lower prices. Importantly, while price fluctuations may indeed signal a need for intervention, it does not immediately imply nefarious trader behavior – there are ample legitimate reasons to expect price fluctuations during the COVID-19 pandemic (decreased demand, decreased supply, increased transportation costs, etc.).

Beyond price monitoring, we emphasize that health and economic impacts of COVID-19 are inexorably connected – *the most important strategy to protect the economy and agricultural value chains is protecting the health of those participating in it.* We have found that there is very limited awareness of the most important measures promoted by the Government of Malawi that people can implement themselves to control the pandemic (social distancing, hand washing and mask wearing). This suggests that more can be done to spread the message. Most respondents interviewed throughout the value chain have said they receive their information related to COVID-19 by radio and word-of-mouth. This implies more aggressive radio campaigns to promote healthy behavior may be the most effective

strategy for getting through this crisis.

The effectiveness of disease control is also linked to peoples' abilities to weather the economic storm – social safety nets will play an important role in Malawians' ability to adhere to virus control mandates. The measures that Government have adopted (e.g., closing food markets, or reducing the number of people permitted in public places), can negatively impact people all along the value chain. Understandably, given the choice between safer behavior and hunger versus riskier behavior and having food, many will choose the latter despite any rules put in place – safety nets could help them avoid having to make that choice.

That said, Malawi was operating a resource-constrained budget *before* the pandemic. It is therefore likely going to be necessary to temporarily forgo other plans in lieu of short-term support for businesses and consumers in order to expedite the country's economic and public health recovery.

Another clear warning signal is related to agricultural inputs. While the harvesting activities and marketing of agricultural outputs suffered in the early months of the crisis, the potential impact on inputs in the near future is much greater because Malawi relies on imports. For example, the majority of fertilizer used in the country are imported. If cross-border travel restrictions remain in place, farmers may not be able to obtain inputs in a timely manner from the market. Assisting businesses or social programs prepare for the upcoming demand for inputs now could pay major dividends in the coming planting season.

Assisting businesses now will also facilitate a return to business after the major threat from disease has subsided. One option for assisting food traders during the crisis could be the provision of subsidized loans to help them stay in business. There are high fixed costs associated with closing and re-opening a business. Barring financial support to weather the pandemic, some may choose (or need) to simply close forever.

Given that supplies are low, and prices are unseasonably high despite fewer customers found in the market, the most pressing issue to address - after the physical health of individuals and financial health of businesses - is opening supply lines. Since domestic supply is more important to most wholesalers interviewed, it seems that opening up domestic corridors should be the highest priority in the near term. Again, however, it will be

crucial to begin plans as soon as possible to arrange a safe means for imported input delivery.

Since the most effective economic strategy will likely be containing the spread of the disease, further efforts to consider are expanding the availability of hand washing stations and masks (e.g., these could be provided and/or their use required upon arrival at a market) and/or monitoring compliance with social distancing recommendations.

A major caveat to much of this analysis is that it is, by necessity, largely speculative. Farmers, traders, transporters, and so on, either do not keep or have little incentive to share detailed records that would be necessary to quantify the negative impacts of the past several months and attribute them to COVID-19.

Moreover, there are indications that the official data on the number of cases and deaths caused by the pandemic in Malawi are underreported. The Ministry of Health has done a laudable job sharing the information it has available, but that information is limited. For instance, as of the time we are finishing this analysis, fewer than 5,000 cases and 160 deaths have been confirmed as attributable to COVID-19, representing a mortality rate of just over 3%. In comparison to other counties in the world, these could be seen as encouraging indicators that the pandemic is being well-managed in Malawi. However, all told, fewer than 38,000 tests have been carried out in a country of over 18 million (meaning just 0.2% of Malawians have been tested). At least one epidemiological study suggests the true toll could be 8 times greater than the official count in urban areas. In rural areas the official mortality rate is lower than in urban areas (2.2% versus 3.9%). Rather than evidence that rural Malawians – who have less access to health care facilities – are less susceptible to serious illness or death, this disparity more likely implies that data for rural deaths from COVID-19 are undercounted to an even greater extent.

In short, given the information available, any quantified predictions as to what the overall economic impact of COVID-19 will be on Malawi's agricultural sector would be unreliable at best and irresponsible at worst. Therefore, the highest priority, we believe, should be placed on understanding and limiting the magnitude of the disease on the health of the population.

1. Introduction

In Malawi, the first cases of infection by a new severe acute respiratory syndrome-associated coronavirus (SARS-CoV2) were recorded early April 2020. SARS-CoV2 manifests as an illness called coronavirus disease 2019, or COVID-19. It is highly contagious, lethal, and, as the name suggests, not seen in humans prior to 2019. The threat is global and has affected people in every country of the world. On March 11, 2020 the World Health Organization declared COVID-19 a global pandemic. The goal of this report is to lay out what we know and don't know about how the pandemic is affecting Malawi, especially the agricultural sector, and how Malawians and the Government of Malawi (GoM) are responding.

Before the first COVID-19 cases were reported, the GoM proactively set up a Special Cabinet Committee on COVID-19 to propose measures to minimize the number of COVID-19 cases. The Committee was tasked with the responsibility of designing containment measures and to facilitate implementation of safety nets to mitigate the impact of the disease on the social-economic development of the country.

On 20th March 2020, the GoM declared COVID-19 a State of Disaster and announced the initial coping measures that would be implemented, including restrictions on public gatherings (such as weddings, funerals, religious congregations, rallies, and government meetings) and the closure of all schools, colleges and universities. Initially this limit was set to less than 100 people and was later reduced to 10. The GoM also announced it would increase loans under the Malawi Enterprise Development Fund from MK12 billion to MK15 billion (\$21 million) to cushion micro, small and medium scale businesses from the adverse effects of COVID-19 pandemic. Additionally, an emergency cash transfer program was announced to serve small-scale businesses in and around the major markets in Blantyre, Lilongwe, Mzuzu, Zomba and others urban centres.

On April 1, 2020, all international flights to and from Malawi were suspended. Only flights carrying health personnel, essential health equipment, and emergency relief cargo were exempted from this ban. Cargo flights and those ferrying returning Malawi citizens and residents were handled on a case by case basis.

On April 8, 2020, six days after Malawi's first confirmed case, the GoM launched a multisectoral National COVID-19 Preparedness and Response Plan to ensure preparedness for a timely, consistent, and coordinated response to limit the spread and impact of the outbreak. Ten operational clusters were formed to facilitate Plan implementation, namely, Coordination; Communication; Health; Water, Sanitation and Hygiene (WaSH); Protection and Social Support; Employment; Security and Enforcement; Education; Food Security; and Transport and Logistics. The Plan was estimated to cost about MK150 billion (US\$203 million), though only MK6.5 billion (US\$9 million) was available at the time of the launch.

It was obvious that the agri-food systems central to the Malawian economy would be hard hit by the measures put in place to contain the spread of COVID-19. Notably, however, the initial Plan contained no cluster specifically dedicated to mitigating the negative effects on agri-food systems. Except for the Food Security cluster, which narrowly focused on food assistance to food insecure households affected by COVID-19, the agri-food system was, at least in the initial response, overlooked. The Ministry of Agriculture and Food Security is currently finalizing a new agriculture cluster response plan that will form part of the National COVID-19 Response Plan. The proposed agriculture cluster has an estimated budget of about US\$30 million, though only about 0.36% of this budget is currently available.

On April 14, 2020, the GoM announced an intention to put in place a nationwide 21-day lockdown that would close all central markets, regulate opening times of local markets, only allow for harvesting of crop and livestock grazing under precaution, and suspend all non-essential businesses or services. The implementation of the lockdown was stopped by the Malawi high court following a petition by a human rights group arguing the lockdown did not provide adequate support for the poor.

As of August 14th, 2020, 37,746 tests have been conducted in Malawi, revealing in 4,905 confirmed cases and 153 deaths.¹ Despite the apparently low mortality rate as yet (3.1% compared to 6.1% in the United States, for example), the impact of the pandemic may still be in its early stages in Malawi: This total number of deaths is 256% higher than it was in the third week of July. Also, as in most of Africa, these numbers are almost certainly

¹ <http://covid19.health.gov.mw/>

underestimating the total spread.² Only 0.2% of Malawians have been tested, and the test positivity rate is 13%, which is a sign of uncontrolled community spread; The World Health Organization recommends sustaining test positivity rate below 5% for 14 days before reopening businesses, by comparison.³ Epidemiologists in Blantyre extrapolated from findings of serological (antibody) testing to estimate that only 1 in 8 deaths caused by COVID-19 in the city have actually been attributed to the disease (Chibwana et al., 2020). The number of missed cases could be much greater in rural areas.

COVID-19 poses a new challenge to an already vulnerable agricultural sector in Malawi, threatening the performance of the agri-food system and domestic food security. While the measures to control the outbreak are essential for reducing the health effects of the pandemic, it is also imperative to understand how they and the disease make the livelihoods of Malawians vulnerable, and to consider how policy makers might support those affected in the agri-food system while endeavoring to control the pandemic. Although the data on COVID-19 and its effects are admittedly incomplete, we believe a rapid assessment of key value chains and how actors may be affected could be substantially useful.

Again, our objective is to assess the impact of the disease and the measures installed to control its spread on Malawi's agri-food systems, and to inform policy responses to minimize the negative impacts of COVID-19. We have interviewed samples of respondents all along the agricultural value chain including farmers, wholesalers and traders, transporters, processors, and consumers to ascertain how affected they have been, whether and how they plan to adjust, and, ultimately, what policy makers can do to help.

Where appropriate, we will focus mainly on two crops: maize and soybeans. Maize is the main staple in Malawian diets. It is grown by over 90% of all smallholder farmers and covers more than half of the country's arable land (Derlagen, 2012; Jayne et al., 2010). After maize, soybeans are the most commonly grown food crop and increasingly used as a main cash crop for many farmers.

The remainder of this paper is organized to address key questions surrounding the

² <https://www.economist.com/middle-east-and-africa/2020/08/08/africa-closes-in-on-1m-reported-cases-of-covid-19>

³ <https://www.jhsph.edu/covid-19/articles/covid-19-testing-understanding-the-percent-positive.html>

impacts of COVID-19 on agriculture in Malawi, especially for maize and soybeans. The next section briefly offers details of the maize and soybean value chains in the country, including information on the “key players” and major policies that have been aimed at the sector in recent years. Then, in Section 3 we examine how COVID-19 and the measures government has implemented to contain it have impacted (or may impact) the labor force and agricultural production in Malawi. In the fourth section we investigate how COVID-19 has impacted the logistics of transportation. Section 5 examines the impact thus far on other private sector actors involved in buying, selling and processing maize and soybeans. In Section 6 we discuss the evidence we have collected on how the pandemic and response have affected consumers thus far. In the penultimate section we emphasize the limitations we face in our ability to predict the impact of the pandemic going forward, due primarily to the fact that the scale and scope of the pandemic remains largely unknown. Finally, in the conclusion we discuss the pressing policy needs that could be addressed to minimize the negative welfare impacts of COVID-19 and offer recommendations for prioritization.

Throughout this analysis we will draw on existing information in the literature where appropriate, and from previously established data sources such as the Living Standards Measurement Study/Integrated Household Survey (LSMS/IHS), a joint effort of the World Bank and Government of Malawi. We also conducted numerous small-sample surveys in May 2020 specifically for the purpose of performing a rapid assessment of the unfolding impacts of COVID-19 in the country. These will be relied on heavily as well.

2. Key food commodity value chains

Maize and soybeans are two of the main crops grown in Malawi. In most recent years, Malawi has produced roughly 3 million metric tonnes (mmt) of maize and 100,000 tonnes of soybeans. While maize production tends to fluctuate, however, soybean production appears to be steadily increasing, from about 56,000 tonnes in 2006 and 2007 to 176,000 in 2017 and 2018 (Table 1). In most years Malawi has been a net importer of maize and a net exporter of soybeans. During unusually good years, however, such as in 2007 or 2011, the country has exported significantly more maize than it imports.

Table 1. Production, Imports and Exports of Maize and Soya in Malawi

Year	Maize (metric tonnes)				Soybean (metric tonnes)			
	Production ^a	Export ^b	Import ^b	Food Aid ^{b,c}	Production ^a	Export ^b	Import ^b	Food Aid ^{b,c}
2006	2,393,175	1,160	55,808	64,118	53,862	2,799	0	2,422
2007	3,138,724	391,255	20,180	47,847	58,074	10,840	0	420
2008	2,561,769	21,438	28,176	62,214	58,050	146	8,437	698
2009	3,644,447	3,665	54,416	53,115	83,345	3,786	2,173	1,309
2010	3,269,589	7,841	15,395	23,959	65,958	10,671	1,868	1,493
2011	2,805,517	357,302	6,106	41,319	35,561	5,041	90	4,314
2012	3,233,535	15,393	0	36,537	389,120	2,184	790	2,479
2013	3,638,867	1,857	60,514	18,103	116,965	14,333	597	695
2014	3,970,941	3,847	32,226	11,327	112,944	23,241	1,112	1,549
2015	2,746,041	1,511	104,682	3,053	123,422	9,557	51	860
2016	2,352,333	3,139	322,226	-	136,437	8,161	437	-
2017	3,229,955	6,312	33,469	-	187,922	54,044	606	-
2018	2,730,679	1,910	465	-	164,858	25,714	105	-

Notes: a – source is APES; b – source is FAOSTAT (no data for 2016-2018); c - food aid data found is not categorized into specific crops. Figures shown are for “cereals” and “pulses”.

The key players in Malawi’s agriculture sector can be broken into three categories: public, private and non-governmental. The government’s role is spearheaded by the Ministry of Agriculture, which is responsible for research, extension, regulation, promoting improved input use, and monitoring food security. The Agricultural Development and Marketing Corporation (ADMARC) is another key component of the government strategy, responsible for procuring and selling farm inputs such as fertilizers, seeds and pesticides to smallholder farmers, and buying produce from both traders and smallholder farmers, and providing storage facilities on behalf of the government.

Another key government player is the Malawi Bureau of Standards (MBS). Establishing and enforcing food quality and safety standards is the responsibility of the MBS. The objective of these rules is to enable local producers compete in the global marketplace. The MBS carries out regular inspections and provides certification for producers, traders and exporters.

The private sector is composed of a wide range of small and large-scale actors. The vast majority of farmers are smallholders, and most produce primarily for their own consumption. For example, according to the LSMS/IHS surveys, just 25% of maize produced by smallholders is ever sold by just 15% of smallholders. The share of households selling

Table 2. Buyers of crop over time for maize and soybeans

Sales going to	Maize			Soybeans		
	2009/10	2012/13	2015/16	2009/10	2012/13	2015/16
Other households (%)	91.43	84.01	74	93.11	78.6	78.86
Traders in village (%)	4.38	11.96	18.17	6.89	17.09	13.52
Traders out of village (%)	3.52	5.36	7.48	0.00	4.47	7.62

Source: LSMS/IHS

soybeans has increased from 3% in 2010 to 7% in 2016. When these crops are sold, it is usually to other households, though the share of sales going to traders (either within or outside the village) has been trending upwards since at least 2010 (Table 2).

In addition to traders, there are a number of agro-processors in Malawi's agriculture sector. They operate either through permanently established outlet stores scattered through the country that sell various commodities to the community and then purchase goods from the farmers, or via temporary buying centers established by renting facilities during the buying season and then disappearing between buying seasons (Tinsley, 2009).

A number of private organizations have also been established to represent farmers. These include the Farmers Union of Malawi (FUM) and National Smallholder Farmers Association (NASFAM), among others. These groups buy and sell farm products from farmer members at competitive prices through local associations and support the marketing and export of value-added products. Some of these promote marketing services through commodity exchanges (e.g., the Agricultural Commodity Exchange for Africa (ACE) and COMEX), however there is no evidence that smallholder farmers have ever directly sold on one of Malawi's commodity exchanges.

In principle, the COMEX system (there are two main commodity exchanges in Malawi, the Agricultural Commodity Exchange for Africa (ACE) and Auction Holdings Limited Commodities Exchange (AHCX)) would function for smallholders through a warehouse receipt system (WRS) (Edelman et al., 2015; Baulch et al., 2018). Smallholders could deposit their produce at a certified warehouse or deposit point and, after it has been graded, receive a receipt for the deposit. This receipt could then be sold or used as collateral or redeemed for cash at market prices later in the year. Receipts are also transferrable; anyone holding a

receipt can collect on its value or transfer ownership (for example, on a commodity exchange).

There are currently 19 ACE-certified warehouses in Lilongwe, Blantyre, Dowa, Balaka, Dedza, and Zomba districts. Twelve of these are located in the urban centers of Lilongwe and Blantyre. These urban warehouses account for the bulk of ACE's overall storage capacity. ACE also operates 15 deposit points in Mchinji, Kasungu, Ntchisi, Lilongwe, Dedza, Salima, Nkhotakota, Mzuzu, Mzimba, Ntcheu, Dowa, and Mangochi districts. ACHX has warehouses in Chitipa, Karonga, Bwnengu and Mzuzu in the Northern Region; Kasungu, Mponela, Lilongwe and Chilamulla in the Central Region; and Dedza, Balaka, Limbe and Luchenza in the Southern Region. In practice, smallholder farmers rarely use the WRS because, among other reasons, they are more confident in prices offered in spot transactions, they prefer to avoid carrying charges, and the minimum volume requirements for making a deposit are too large (see Baulch et al. (2020) for more details).

Nongovernmental organizations are typically geared towards emergency relief in times of food crisis (e.g., the World Food Program (WFP)), developing plant varieties (e.g., the International Institute of Tropical Agriculture (IITA) and the International Maize and Wheat Improvement Center (CIMMYT)), or providing training to farmers (e.g., Cultivating New Frontiers in Agriculture (CNFA) and Africa Research in Sustainable Intensification for Next Generation (Africa RISING)). See Appendix A for a more detailed summary of key players in Malawian agriculture.

Key agricultural policies are summarized in Appendix B, and the subject is given a thorough treatment in Mapemba et al. (2020). The overwhelming majority of policy effort is focused on maize, and the largest is the Farm Input Support Program (FISP). The goal of FISP is ostensibly to enhance food self-sufficiency by increasing access to and use of improved agricultural inputs, especially fertilizer. This program, in some form or another, has been in place since the early 2000's.

The remainder of this study is focused on the impact of COVID-19 on the agricultural sector, especially for maize and soybeans. For more details on the role of smallholders in Malawi, we refer readers to Mangani et al. (2020) and Muyanga et al. (2020).

3. COVID-19 Related Disruptions in Labor and Production

According to the Crops and Livestock Production Forecast, the 2019/20 season was projected to be a very good agricultural year due largely to favourable weather. For example, at 3.6 million metric tons, Malawi's maize production in 2020 was projected to exceed the country's five-year average for second consecutive year (Table 3). This estimate is about 25% higher than the five-year average and 6% higher than the previous year.⁴ Production of legumes, such as groundnuts, soybeans, pigeon peas and beans, is also expected to have increased. Soybean production was expected to increase by 20% to 0.27 million metric tons.

Table 3. Crop Production Forecasts – 2020 vs. Recent Years ['000 tonnes]

	2015-2019 average	2019	2020 forecast	% change 2019-2020
Maize	2,959	3,392	3,600	6.1
Rice (paddy)	113	134	145	8.2
Sorghum	89	137	140	2.1
Groundnuts	n/a	n/a	424	4.2
Soybeans	n/a	n/a	266	19.6

Source: FAO/GIEWS Country Cereal Balance Sheet. Note: percentage change calculated from unrounded data. Groundnut and soybean forecast, and growth estimates provided through personal communication.

While the projected above-average agricultural production in 2020 could significantly improve food availability and households' incomes, the COVID-19 pandemic threatens these possibilities. The typical Malawian growing season starts in November and goes through April. The pandemic struck at a time when the country was gearing up for the 2020 harvest and is thus likely to disrupt harvesting and selling of farm produce.

To assess these impacts, we draw from a primary data collected from 287 rural households conducted in May 2020 via phone interviews. The households were drawn randomly from the MwAPATA Institute's Malawi Rural Agricultural Livelihood Survey (MRALS) 2019 sample. The MRALS 2019 survey covered two (2) districts in the Northern Region (Rumphi and Mzimba), four (4) in the Central Region (Lilongwe Rural, Dowa, Kasungu, and Mchinji), and two (2) in the Southern Region (Neno and Blantyre Rural). The

⁴ See also FEWSNET Malawi Food Security Outlook Update of April 2020

Table 4. Maize Production Technology in Malawi (2010-2016) by farm size

<i>Inputs used</i>	Farm size group				
	Overall	0-1 ha	1-2ha	2-5ha	5+ha
Hybrid/improved seeds (% of area planted)	22.7	23.7	20.9	19.3	24.3
Commercial fertilizer (% households)	16.1	14.8	21.6	18.6	5.3
Subsidized fertilizer (% households)	16.4	14.5	21.5	24.6	7.0
Irrigated (% households)	7.4	6.4	9.6	10.5	7.9
Observations (% households)	50.0	34.5	9.8	3.9	1.8

Data sources: LSMS/ISA (Malawi's Integrated Household Panel Survey (IHPS) 2010, 2013 and 2016)

MRALS 2019 is representative of farm households at the selected districts level.

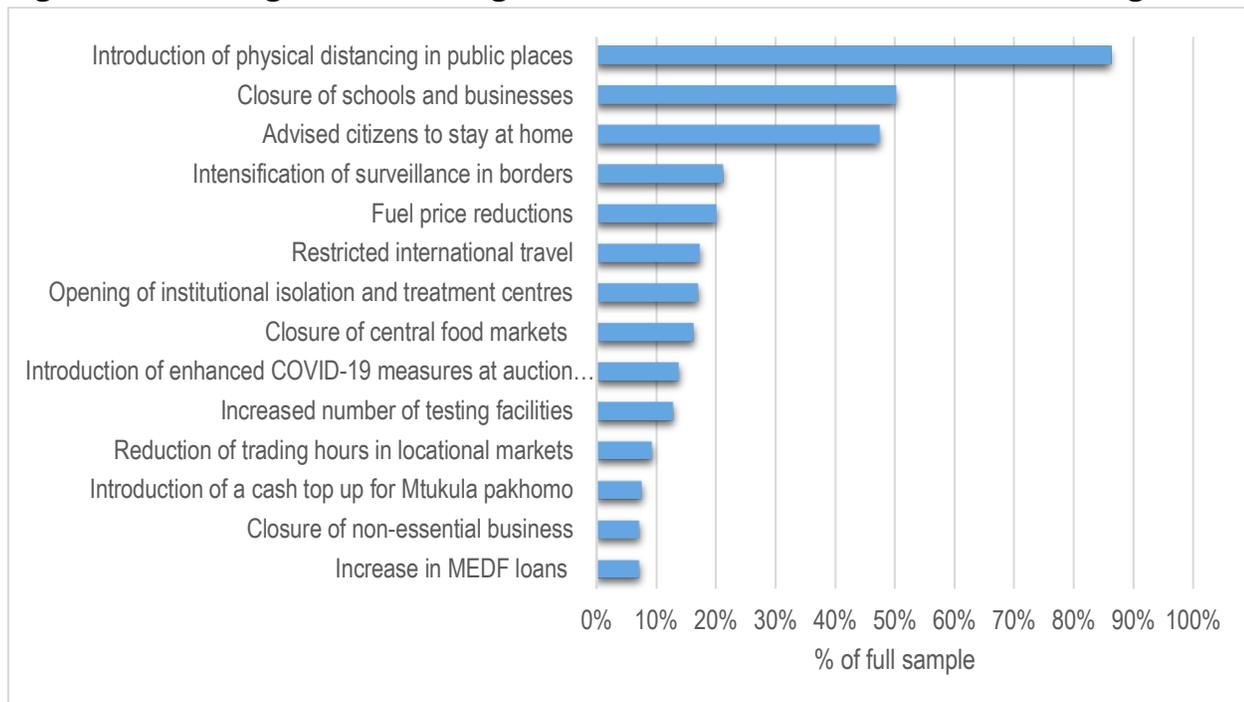
In terms of demographic characteristics of the sample, 82% of the households were headed by males. Forty-six percent of the household heads did not have any formal education; 26% had Primary School Leaving Certificate; 28% had post-primary education. The majority (81%) of the household heads were monogamously married. About 75% of the household heads reported farming as their primary occupation. Other heads were engaged in casual employment, businesses, and wage employment. Of the households that were farming, only 6% of them used irrigation. The rest relied on rain-fed agriculture. This is in line with the share of households using irrigation in nationally representative samples from the LSMS/IHS survey data (e.g., for maize as shown in Table 4).

The degree to which GoM measures affect household production depends largely on how well farmers understand the restrictions and recommendations to contain the outbreak. All the farm households interviewed reported to have heard information about COVID-19. Most of them (76%) received this information through local radio stations; the rest received information through interactions with health care workers, from neighbors, or television.

Without being prompted, the respondents were asked to mention the measures they were aware of. The results, presented in Figure 1, show that 86% of the respondents were aware of the physical (social) distancing in public places measure; half were aware of school and business closures; 47% had heard about the advice to stay at home.

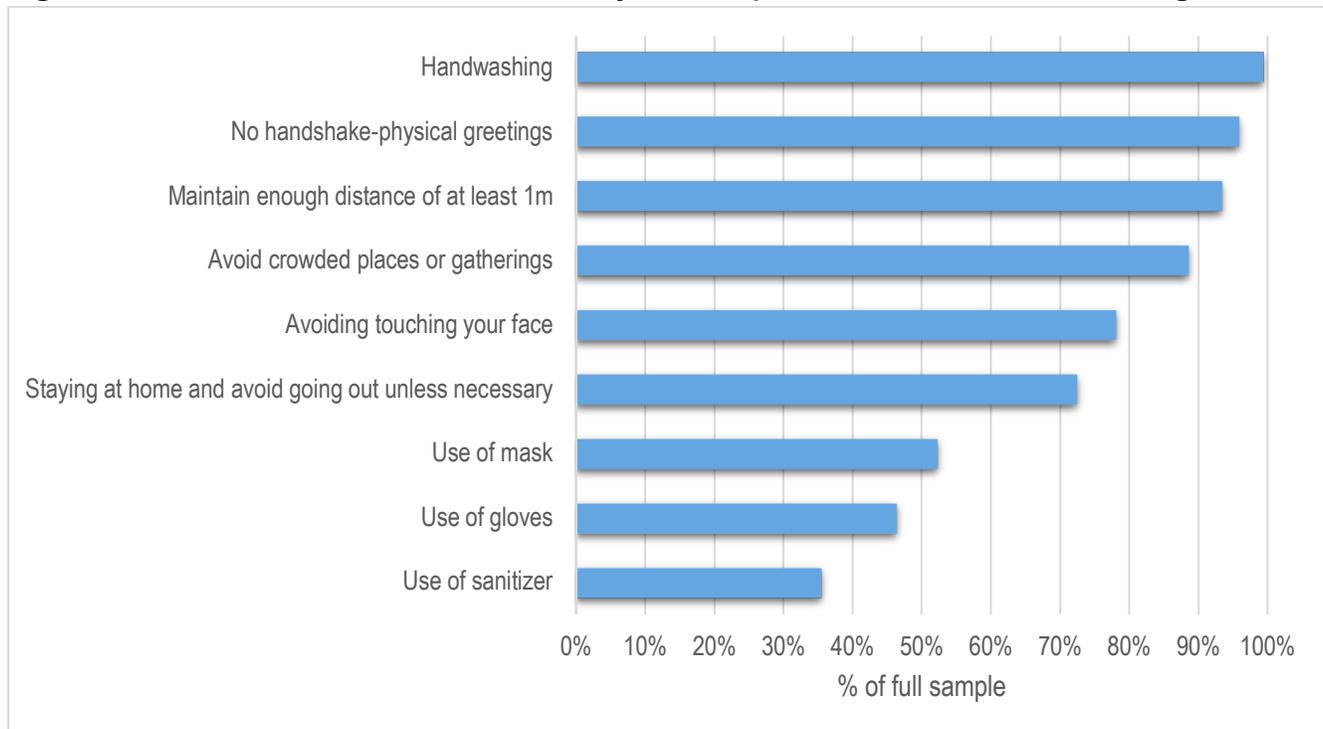
Respondents were also asked about precautionary measures that their household

Figure 1: Knowledge of measures government uses to reduce risk of contracting COVID-19



Source: MwAPATA COVID-19 survey conducted in May 2020

Figure 2: Measures households believe they can adopt to reduce risk of contracting COVID-19



Source: MwAPATA COVID-19 survey conducted in May 2020.

members adopt to minimize the risk of contracting COVID-19 (Figure 2). The majority (99%) reported they were aware handwashing is effective, 96% indicated that they would avoid handshaking (physical greetings), and 94% would maintain distance of at least one meter.

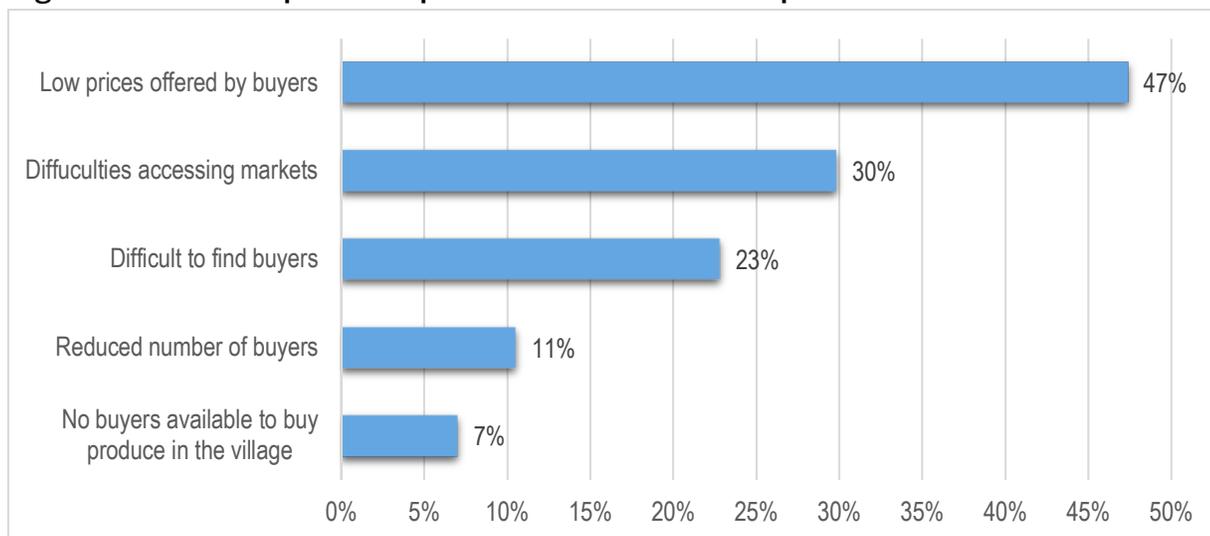
The ultimate question here, however, is whether these measures have the potential to affect labor availability for farmers. Survey results indicate that just 18% of the households had experienced labor supply related disruptions. However, although a minority were affected, amongst those experiencing disruption the majority reported “strong” or “devastating” impacts. Since COVID-19 struck towards the end on the 2019/20 main cropping season, the labor impacts for maize and soybeans likely affected harvesting and transportation (to the homestead or market). Out of the households that experienced farm labor constraints, most of them (75%) were from the Central Region while 17% are from the North and 8% are from the Southern Region.

The fairly small number of households impacted on labor may be due to the fact that most Malawian farms are small and rely primarily on family labor. According to the LSMS/IHS (2016) data, average household farm size is less than one hectare. However, according to the same data, there are is a growing proportion of medium-scale farms in Central and Northern Regions. Medium-scale farms are more likely to rely on hired farm labor; the difference in farm size patterns could be driving the difference in reported farm labor supply disruptions.

Only 8% of the households reported disruptions or delays in crop harvesting activities due to COVID-19. These disruptions and delays could lead to losses due to pests while mature crops remain vulnerable in the field. In turn, the agri-food system more generally may suffer as less food may be available for consumption and sale. Respondents indicated this is more likely to affect maize than soybeans.

The minority of respondents (20%) indicated farm produce selling activities had been adversely affected by the pandemic. The respondents experiencing problems selling farm produce were asked about specific problems they had encountered, and results are presented in Figure 3. Most of the problems are interrelated and include low prices (impacting 47% of the affected), difficulties accessing the farm produce markets (30%), and difficulties finding buyers (23%). Most of these complaints, however, were common even

Figure 3. Farmer-reported impacts of COVID-19 on crop sales



Source: MwAPATA COVID-19 survey conducted in May 2020. Percentages are shares amongst the 20% of respondents who said their sales were affected that answered “yes” to follow-up questions regarding whether each of these factors had been worsened by the pandemic.

before the threat of COVID-19. The closure of borders has also introduced uncertainty for buyers who may not be able to access export markets for the foreseeable future. This, in turn, implies that domestic prices will be less predictable in the near future, all of which disincentivizes the purchase of agricultural products, making it harder for farmers to sell.

Respondents were asked if they expected the COVID-19 pandemic to reduce crop production in the ongoing cropping season compared to last year’s cropping season for some selected crops. Just 15% of households expected reduced production of maize, and only 9% expected a reduced production of soybeans. These expected reductions in production are attributed to losses due to delays in harvesting and post-harvest losses as a result of extended storage periods as farmers search for markets and better prices. Most households anticipating reductions in crop production because of COVID-19 reported that they would rely on past savings to cope when possible; others said they would (or could) do nothing.

The main conclusion is that COVID-19 is not expected to have a major impact on production levels for the 2020 harvest season. We are not able to quantify the expected losses with any reliable degree of certainty. However, our conclusion would not change even if those expecting loss were expecting total losses – they represent a small minority of

Table 5: Anticipated effects of COVID-19 in the 2020/21 main agricultural season

Activity	Region			Full sample
	Central	Northern	Southern	
	---Share responding “yes” the activity will be affected in 2020/21---			
Land preparation	32%	10%	46%	31%
Procurement of farm inputs	41%	64%	46%	45%
Planting	4%	5%	8%	5%
Weeding	4%	10%	3%	5%
Harvesting	4%	14%	5%	6%
Selling	11%	14%	15%	12%
Other	5%	0%	0%	4%

Source: MwAPATA COVID-19 survey conducted in May 2020.

farmers. In most cases the overwhelming majority of farmers expect no effect and no impact on 2020 production levels.

Respondents were also asked whether and how they anticipate the effects of the COVID-19 pandemic would spill into the next main cropping season. The results are presented in Table 5. A sizeable proportion (45% of the sample) anticipated disruption in the procurement of farm inputs and in carrying out land preparation activities (31%). Twelve percent anticipate problems selling farm produce next year as well. The respondents indicated that these disruptions related to restrictions in movement resulting in reduced availability of labor and farm inputs when they will be needed.

As seen in Table 5, responses on how households anticipate being affected by COVID-19 if it spills into 2020/21 season varied across the regions. For example, about 64% of the Northern Region anticipate difficulties procuring farm inputs if COVID-19 persists, compared to 41% in Central. Land preparation activity disruptions are not expected to be as challenging in the Northern Region compared to the Central and Southern Regions. This could be attributed to earlier commencement of land preparation activities in the Southern and Central Regions compared to the Northern Region.

Respondents were also asked whether they expect this to impact their next Dimba season cropping activities (dry season planting in low lying wetlands). Only a few farmers engage in Dimba season farming and most of them grow horticultural crops through irrigation. As such, it is not surprising that only 4% expect a reduction in Dimba season maize production, and virtually none plant dry season soybeans (so none expect a reduction in dry

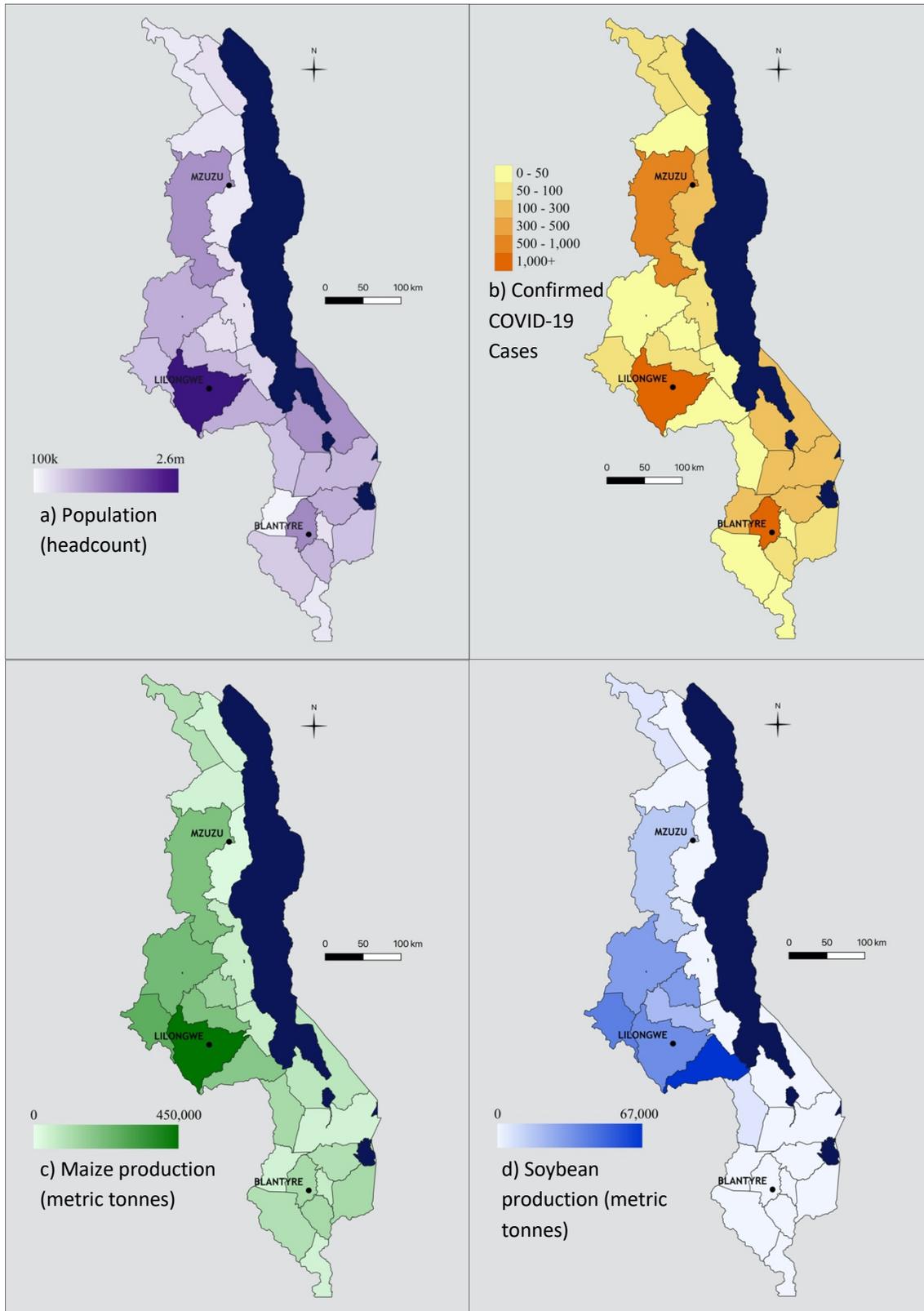
season soybean production). The few who do intend to grow dry season maize in wetland areas already have the inputs they plan to use, and labor is primarily from the household, which explains the minimal expected impact on maize.

Since the pandemic may last throughout this year and into next, respondents were also asked if they expect a decline in crop production next growing season compared to the 2019/20 season. The majority (56%) say they do expect a drop in maize production. Production of maize will be particularly vulnerable if there are delays in the procurement of farm inputs, specifically fertilizers. Only 13% of respondents expect reduced production of soybeans. Maize and soybean production will both surely be hindered if there are delays in farmers' ability to prepare land and acquire seed.

An important caveat to the results presented in this section thus far is that they are based almost exclusively on the farmers' expectations; the unfortunate truth is that all expectations are based on the currently very uncertain future of how the pandemic will continue to affect Malawi. One evidence-based way we can look at how COVID-19 may affect production going forward is to compare the geographical distribution of production of maize and soybeans to the geographical distribution of COVID-19 cases. Again, the level of COVID-19 testing in Malawi is quite low, so this comparison must be interpreted cautiously, but a correlation in the geographic dispersion of crop production and confirmed cases provides some indication of which crops may be more affected.

Figure 4 presents four district-level choropleth maps: the top-left panel (a) indicates population distribution, followed by the distribution of confirmed COVID-19 cases in the top-right panel (b); The bottom-left and bottom-right panels (c and d respectively) show maize and soybean production levels. Not surprisingly, the distribution of COVID-19 cases is highly correlated with the population distribution, with the most confirmed cases found in the districts that include Malawi's three major cities (Lilongwe, Blantyre and Mzuzu). Maize production by district also follows population distribution, so it is likely that maize production will suffer in proportion to the effect of COVID-19 on the population. Soybean production, on the other hand, is uncommon in the south (closer to Blantyre). While a significant share is produced in the hard-hit districts around Lilongwe and Mzuzu, the majority of soybean production occurs in other districts in North and Central Regions, especially Dedza. It seems, as of now, soybean production may be less affected by COVID-19 compared to maize.

Figure 4: Geographic Distribution of COVID-19 Cases, Maize, and Soybean production



Sources: Population-National Statistics Office. Maize and soybean production - Agricultural Production Estimates Survey (2019); COVID-19 cases as of August 16, 2020 (<https://covid19.health.gov.mw/>). Mapped by authors.

4. Logistics of transportation

The transport sector is an important component of the functioning of the agricultural value chain in terms of the country’s ability to aggregate, store, process, and distribute food products. Transport, particularly lorries and trucks, enable the flow of maize and soybeans and inputs used to produce them from farmers to markets and vice versa. The impact of COVID-19 and the measures that have been adopted to mitigate its spread could, through its effect on transportation, undermine the timely availability of inputs to farmers and processors, and the availability of food for consumers.

To examine how COVID-19 is affecting or can be expected to affect transportation of agricultural products, including those related to maize and soybeans, 60 transporters were interviewed. Transporters of farm produce and inputs in Malawi work individually and do not have a specialized association. However, one of the major farm input and food commodities suppliers in Malawi, Farmers World, developed a roster of 240 transporters. These transporters haul farm inputs and produce across the country and in the southern and eastern Africa region. The 60 transporter interviewees were randomly selected from this roster and interviews were done by telephone due to the limited possibility of field surveys during the COVID-19 pandemic.

The transporters that were interviewed carry a variety of commodities, primarily maize (88%) and soybeans (59%, Table 6). The major routes for most of these commodities are within the central region (Table 7). This is expected since the Central Region districts are major producing areas for these commodities.

Table 6: Major Food Commodities Transported

Food Commodity ^a	Share of respondents ^b (N=56)
Maize	88%
Soybean	59%
Tobacco	34%
Groundnuts	30%

Source: MwAPATA COVID-19 survey conducted in May 2020. a- Other transported products include rice, milk, beans, pigeon peas, instant flower, and vegetables. These were all transported by a relatively small share of our sample (11% or less). b- Four of the 60 transporters in our sample did not report hauling crops.

Table 7: Major Routes used by transporters in Malawi by commodity

Major routes	Maize (n=49)	Soybean (n=33)	Routes most affected by COVID-19? (n=54)
All regions	10%	12%	13%
Within Southern Region	2%	0%	6%
Within Central Region	29%	33%	19%
Within Northern Region	2%	3%	0%
Southern to Central	12%	9%	11%
Central to Southern	14%	12%	6%
Central to Northern	8%	6%	7%
Northern to Southern	2%	3%	2%
Northern to Central	14%	12%	13%
International borders	6%	9%	24%

Source: MwAPATA COVID-19 survey conducted in May 2020. Note: These results are for the “most important” route.

Transporters also haul maize and soybeans (and tobacco and groundnuts) across borders (typically either through Beira-Mozambique, Chipata-Zambia, or Songwe-Tanzania). Exported maize and soybeans are mostly sold to neighboring countries, while other commodities like tobacco are typically exported further outside the region. That said, the share of transporters crossing international borders is smaller (between 6 and 9%), largely due to the fact that large articulated trucks are usually required to provide this service profitably.

Across all crop commodity transporters, the plurality (24%) said it has been international border crossings that are most affected by COVID-19 (Table 7). Given the relatively small role international trade plays amongst our interviewees, this bodes well for their ability to withstand the disturbances presented by the pandemic. However, the second most affected route (cited by 19% of respondents) is the busiest transportation corridor (within Central), and only 2 of the 56 transporters reported no disturbances. The majorities of maize (71%) and soybean (82%) haulers reported that revenues have been affected by COVID-19.

Every transporter interviewed reported having knowledge about COVID-19 and the various measures government has put in place to reduce its potential spread. This is a higher level of awareness than we generally found in other segments of the value chains. The main

explanation for this level of knowledge may be the nature of transporters' role – they come into contact with a wider variety of other people. This implies a higher level of risk but could also expose them to more sources of information. The majority (57%) report the radio as a key source of information, followed by friends on social media (37%) and newspapers (25%).⁵

Ninety-two percent of the transporters interviewed are planning to transport and distribute various agricultural inputs in the 2020/2021 agricultural season, with most planning to move fertilizer (other products mentioned are seeds and agrochemicals). Unlike crop commodities, however, only 22% of the respondents who plan to haul inputs are planning to move primarily only within one Region. Nine percent plan to move inputs across borders, while the remaining 69% expect to be transporting inputs between regions within Malawi. Moreover, while relatively few transporting companies say their cross-border input trade will be affected, it should be noted that Malawi imports 70% of the fertilizer used in the country. In other words, while restrictions at border crossings would affect relatively few transporters, they could affect a far greater share of farmers. Importantly, timing is also critical. The effectiveness of inputs, especially fertilizer, is substantially diminished if farmers' access is delayed. Altogether, this suggests that, as time progresses into the next planting season, movement restrictions could become even more burdensome on the agricultural sector.

By a large majority (92%), transporters interviewed expressed concern about protracted COVID-19 containment measures hindering their businesses, with 65% responding the impacts would be “strong” or “devastating”. Understandably, however, relatively few have derived plans to help their businesses survive. Most say they have no plans to act on their own (41%), or that they have begun laying off staff, reducing salaries or otherwise scaling down their business (29%). The remainders say they may diversify into other commodities and/or provide personal protective equipment for drivers. Just one respondent said they would consider applying for a loan.

Finally, transporters were asked if they've seen any opportunities arising from the crises that might help their businesses survive. Most (85%) said there were none, while 12% mentioned lowered fuel costs and 3% said they have begun transporting medical equipment.

⁵ Some reported more than one source, which is why the total between groups is greater than 100%.

5. Impact on major private sector actors

In addition to farmers and transporters, the major key private sector actors in the maize and soybean value chains can be categorized as the processors and those who buy and sell food products (wholesalers and retailers).

5.1. Processors

Food processors are high volume buyers of food ingredients used in the manufacturing of food products. Food processors are important not only for value addition, but they also create employment, purchase locally grown crops, and contribute to agriculture commercialization and exports by accessing regional and overseas markets. Some processors have direct contracts with farmers, while others buy from traders and aggregators. In Malawi, processors provide a range of extension services to farmers; provide agricultural inputs such as seed, fertilizer and herbicides; and transport to markets.

In Malawi, processors are mostly engaged in maize, rice, cooking oil, milk, tobacco, cotton, tea, sugarcane, soybeans and livestock feed. The processors are largely private-owned and highly concentrated in the cities of Lilongwe and Blantyre. The processors we have interviewed recently are very concerned that COVID-19 and the measures to contain it could have disastrous effects on the country's agri-food processing activities.

A sample of processors was drawn from the list of top food processing companies in Malawi and interviewed for this report. According to the Top Food Processing Companies in Malawi Business Director, there are 26 major food manufacturing and processing companies in the country. We interviewed representatives from 13 (50%) of these, which are located in Blantyre, Lilongwe and Mzuzu. Again, telephone interviews were used due to the limited possibility of face-to-face meetings during the pandemic.

About a third of the respondents (4 of 13, or 31%) are engaged in processing maize and soybeans. Other processed commodities include groundnuts, coffee, cassava, macadamia nuts, popcorn, rice, sugarcane, pigeon peas and honey (Table 8). Amongst the maize processors, the main output market was supermarkets.

Table 8. Commodities processed by major companies in Malawi

Commodity	Frequency (N=13)
Groundnuts	3
Coffee	2
Maize	2
Soybean	2
Cassava	1
Macadamia nuts	1
Popcorn	1
Rice	1
Sugarcane	1
Pigeon peas	1
Honey	1

Source: MwAPATA COVID-19 survey conducted in May 2020.

All the processors interviewed reported having some awareness about COVID-19, attributable to a range of information sources. The majority (7 of 13) sourced information about COVID-19 from the radio. Other important sources include newspapers (5/13) and television (4/13) with relatively few learning directly from government officials, social media or the internet.

Our results further show that the processors have knowledge of the various measures that government has put in place to control the spread of COVID-19. Nine of the 13 (69%) indicated awareness of the introduction of isolation centers to avoid the spread of the virus, but relatively few were aware of recommendations around social distancing in public places (4 of 13) and handwashing (3 of 13), or the closure of central food markets (just 1 respondent).

As to the specific effects COVID-19 related measures, 5 of 13 respondents reported that transportation costs of raw materials were greater (which may be due to fewer transporters operating in the market), 3 said that supply of raw materials were low, and 5 of 13 said they noticed no effects. Amongst just those dealing in maize and soybeans, the primary effect on their supply was said to be increased transportation costs.

Regarding the effect of COVID-19 measures on human resources thus far, 9 of the total 13 and all 4 maize and soybean processors reported no effects. It should be noted, however, that at the time of our interview, most agricultural commodities were still in the early stages

of the harvest season, so processing labor demands could have been in a seasonal lull irrespective of COVID-19 measures. Three reported reduced number of workers, and one said their costs have gone up as workers demand higher wages. Among those reporting effects on human resources, profits are also “strongly” or “devastatingly” affected. If the challenges controlling the pandemic continue, these effects are likely to be felt by maize and soybean processors as well.

Regarding distribution of their products, 7 of 13 respondents reported that COVID-19 measures have not yet had an effect, while 5 (including half of the maize and soybean processors) reported that there has been decline in demand of the processed commodities. One respondent, though not a processor of maize or soybeans, cited increased transportation costs as the major effect of COVID-19 on their distribution efforts.

While many processors have not reported effects on procurement, human resources or distribution, most are concerned about the potential for lockdowns. When asked what would happen if a lockdown were instituted in Malawi, the majority (8 of 13) of all processors interviewed, including half of the maize and soybean processors, said they would need to scale down their operations. Five of these (though not the maize or soybean processors) said they would shut down altogether. Seven out of 13 respondents (and 3 of 4 maize and soybean processors) said the negative effects of a lockdown would be “strong” or “devastating”.

5.2 Buyers and Sellers

Food traders, particularly wholesalers and retailers, are important for the functioning of agricultural value chains and the agri-food system in general. A food wholesaler is any business that sells food products to other businesses, usually in bulk at wholesale prices that are typically lower per unit than retail prices. Those who buy and sell food commodities (which we’ll generally call “wholesalers” but which have also been called “traders”) are a key link in the value chain, consolidating upstream production to facilitate access to downstream actors. For example, wholesalers eliminate the need for retailers to seek out many individual food processors, or for food processors to seek out many farmers. Wholesalers often also undertake transportation and warehousing functions for food.

On the other hand, food retailers tend to sell food exclusively to consumers. Food retailing is an essential economic, social, and cultural activity. Examples include supermarkets, grocers, butchers and vendors commonly found in the informal markets throughout Malawi. A successful food retail sector is a critical part of local communities as they can support local farmers and provide employment. Food retailers can also contribute to provision of high quality locally sourced food products.

Food wholesaling and retailing has become more important with the growing population, increasing attention to food security, changing dietary habits, and geographically dispersed food production. COVID-19 and the measures that the GoM has adopted to mitigate its spread could have negative effects on food wholesaling and retailing activities.

To investigate how food buyers and sellers have or may be affected, we collected primary data on the effects of the pandemic from 62 randomly selected food traders interviewed by phone. The full list from which the selection was drawn was obtained from the population of market traders in popular commodity markets in Lilongwe. The interviewees operate in the food markets of Wakawaka (39% of respondents), Nsungwi (26%), Lizulu (18%) and Tsoka (18%) in Lilongwe district. These are each district's main food commodity sources.

Table 9. Major Food Commodities Sold in Lilongwe Markets

Food Commodity	Frequency (N=62)	Percent
Tomatoes	12	19.35
Onions	11	17.74
Other Vegetables	11	17.74
Irish Potato	8	12.90
Rice	7	11.29
Garlic	7	11.29
Fruits	6	9.68
Maize	5	8.06
Fish	5	8.06
Beans	4	6.45
Groundnuts	1	1.61
Soybean	1	1.61
Carrots	1	1.61
Sweet Potato	1	1.61

Source: MwAPATA COVID-19 Wholesaler/retail survey conducted in May 2020

Most wholesalers and retailers sell multiple commodities to diversify risk and make seasonal adjustments to their portfolios. A plurality (19.35%) of the wholesalers and retailers buy and sell tomatoes, followed in popularity by onions, other vegetables, Irish potatoes, rice, garlic, fruits, maize, fish and beans (Table 9). This includes relatively few sellers of maize (8% of respondents) or soybeans (just one respondent), but the lessons gleaned from these data are relevant for across commodities.

When asked where they learned information about COVID-19, the majority of the wholesalers and retailers responded radio (87%), seconded by friends and neighbors (18%).⁶ Relatively few access information about COVID-19 directly from government officials or newspapers.

When asked about their knowledge of measures government has introduced to reduce the spread of COVID-19, the majority (58%) reported they were aware of social distancing in public places (Table 10). This ranged from 55% of respondents in Tsoka market to 64% of respondents in Lizulu. This was followed by handwashing (31% of all respondents, but as few at 10% in Tsoka). Only 10% of respondents indicated they were aware of the recommendations around wearing masks. Given the rapid rise of cases and deaths in recent

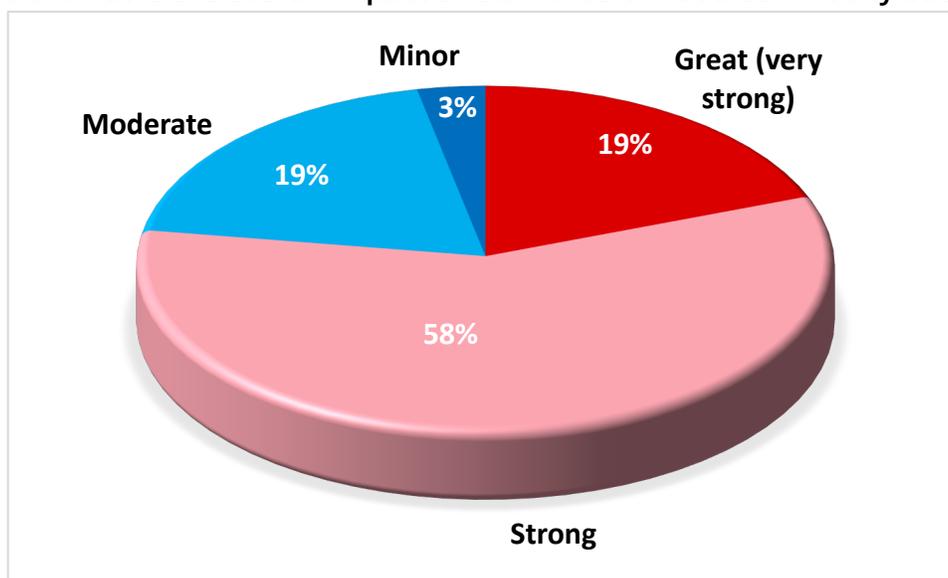
Table 10. Awareness of COVID-19 spread prevention recommendations

Government measures	Food Markets				Total
	Lizulu	Nsungwi	Tsoka	Wakawaka	
Social distancing in public places (n=36)	63.6%	56.3%	54.5%	58.3%	58.1%
Handwashing (n=19)	36.4%	25.0%	9.1%	41.7%	30.6%
Social distance at Admarc markets (n=17)	27.3%	25.0%	36.4%	25.0%	27.4%
Social distance at tobacco auction floors (n=14)	18.2%	25.0%	36.4%	16.7%	22.6%
Closure of schools (n=12)	0.0%	25.0%	36.4%	16.7%	19.4%
Movement restrictions (n=8)	9.1%	12.5%	9.1%	16.7%	12.9%
Use of masks in public places (n=6)	0.0%	12.5%	18.2%	8.3%	9.7%
Closure of central food markets (n=3)	0.0%	6.3%	9.1%	4.2%	4.8%
Reduction of trading hours in local markets (n=3)	0.0%	6.3%	18.2%	0.0%	4.8%
Closure of borders (n=1)	0.0%	6.3%	0.0%	0.0%	1.6%
Avoid handshakes (n=1)	0.0%	0.0%	9.1%	0.0%	1.6%

Source: MwAPATA COVID-19 survey conducted in May 2020.

⁶ Some respondents report multiple information sources.

Figure 5. What is the overall impact of COVID-19 on food commodity business?



Source: MwAPATA COVID-19 survey conducted in May 2020.Z

weeks, these responses are not encouraging. Social distancing, mask wearing, and hand washing are the three control measures most strongly emphasized by Malawi's government.⁷

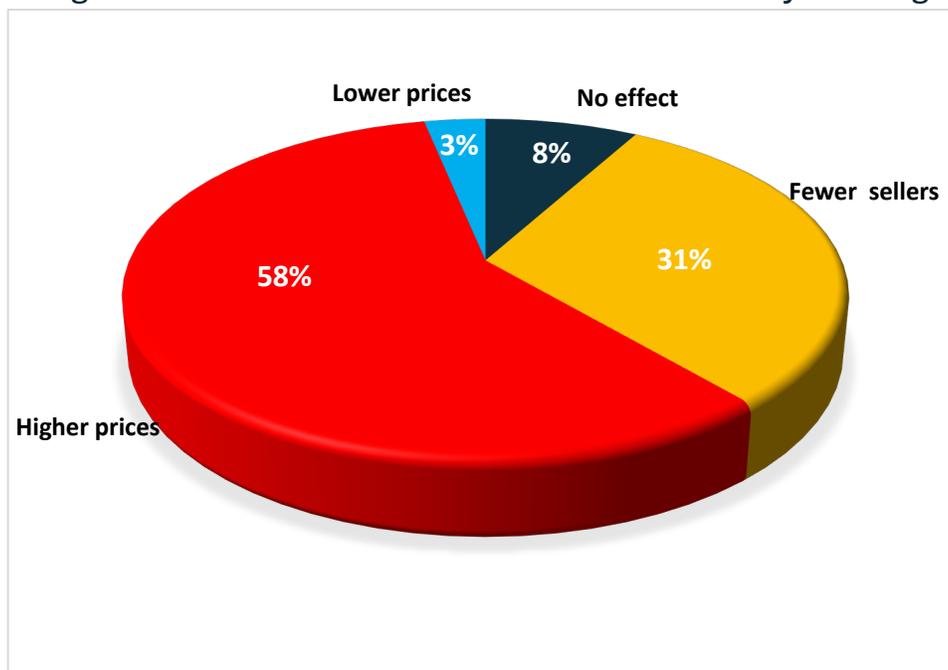
Our survey indicated most wholesalers and retailers source their food commodities from Ntcheu, Dedza, Dowa, Mzimba, Mulanje and within Lilongwe. Few traders source food commodities from South Africa, Mozambique and Tanzania. This further highlights the relative importance of emphasizing these domestically-focused measures to contain the virus (as opposed to border closings, for example). Nevertheless, between 42% (for social distancing) and 90% (for mask wearing) of the wholesales in our sample do not report being aware of their importance.

The results on the overall impact of COVID-19 on food commodity businesses showed that 77% of the wholesalers and retailers said their businesses strongly or very strongly impacted by COVID-19 (Figure 5). Moreover, the wholesalers reporting they were affected cover the full spectrum of crops traded reported in Table 9.

Fewer customers in the markets and high transport costs were the underlying factors

⁷ Learn more about the Government's activities and coordination with donors at <https://www.unicef.org/malawi/coronavirus-disease-covid-19>.

Figure 6. Effects of COVID-19 on the food commodity sourcing



Source: MwAPATA COVID-19 survey conducted in May 2020.

affecting selling food. Thus, the commodities were greatly affected by some of the measures that government has put in place to prevent the spread of COVID-19, specifically movement restrictions and reduction in numbers of people in public places - commodity markets are otherwise typically crowded.

Eighty-nine percent of the respondents report the food sourcing side of business has been adversely affected by COVID-19, either due to high prices or difficulty finding a source (Figure 6). The latter can be the result of either high transport costs to get to the seller, or the fact that fewer sellers have are found in markets. These higher prices and scarcities will likely lead to consumers facing more expensive food and a lack of diversity in what is available. Only 11% reported no effect (or, perplexingly, that COVID-19 lead to lower prices) regarding commodity procurements.

Most wholesalers and retailers have no plan to protect their businesses from the effect of COVID-19, at least in the near term. When asked what measures they were taking to cushion the impact of the pandemic on their businesses, 53% of respondents said “none”. However, 21% have resorted to borrowing money to raise capital for their businesses. Fifteen percent are scaling down their activities in an effort to minimize costs and remain in

business; 10% are diversifying into other activities in an effort to stay afloat. Respondents were also asked if the changing market had offered any unexpected opportunities to wholesalers and retailers. Unfortunately, none were reported.

6. How consumers have been affected

The adoption of measures to contain COVID-19 is likely to disproportionately affect poorest households in terms of their physically and economic access to food. Relatively poorer Malawians typically depend on local markets as a main source of food. Restrictions around travelling to and within markets could limit their ability to earn income and exhaust their limited savings. This coupled with limited access to social safety nets could leave many Malawians ill prepared to manage household consumption patterns during the economic turmoil surrounding COVID-19.

This section is based on a sample of 98 respondents, of which 82 were drawn from social networking platforms and 16 were from a database of policy contacts at the MwAPATA Institute. As a caveat – this sample was chosen for the purpose of doing a relatively rapid assessment, and the representativeness is not known. Most interviewees were urban or peri-urban households in salaried employment, for example, and all had access to a mobile phone. Interviews took place during June 2020. The highest proportion of respondents (72%) were in formal employment, followed by those in business (16%), farming (7%) and other livelihoods (4%). Unfortunately, more representative data are not available, though this sample can at least provide anecdotal evidence of the unfolding impact of the pandemic on consumers.

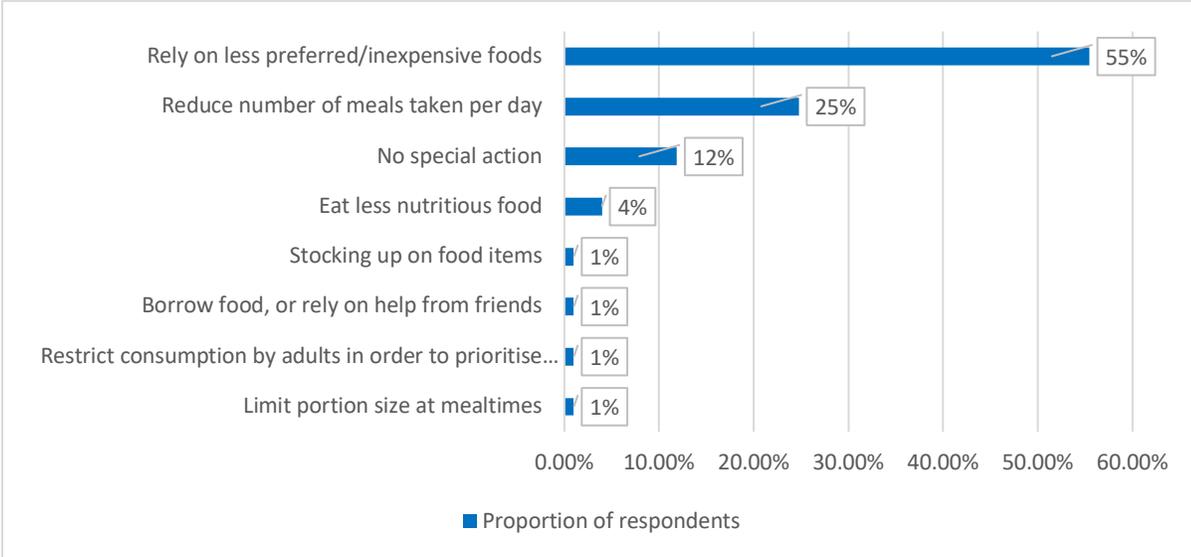
Just over half of the respondents (53%) reported suffering some form of income and livelihood effect. Amongst those that reported some effects, the most common response (26% of respondents) was that their incomes were lower, but an additional 21% reported they were not able to work at all. The effects on the remaining proportion related to delayed salaries, low labour availability and thefts. While it may seem encouraging that nearly half of our interviewees reported no income effects, it is important to keep in mind that, at the time our interviews were being conducted, the number of COVID-19 cases was still relatively small. It will be important to keep monitoring the situation now that case counts are increasing.

The majority of those whose incomes had been reduced were in formal employment (52%), and business (44%), suggesting some employers have resorted to cutting salaries. Businesses, in turn, are losing revenue because of the deteriorating spending power of their customers.

To understand how COVID-19 is affecting food consumption at household level, respondents were asked where they buy their food and how COVID-19 containment measures affect their ability to access these items. The majority of respondents (73%) buy food from open markets, followed by supermarkets (19%), and small shops or their own production (8%). The relative importance of food sources did not vary across livelihood sources. Importantly, this shows that most people buy their food where COVID-19 containment measures related to shopping have been the most restrictive (open markets). Seventy-nine percent of the respondents said they have found stock shortages at food sellers as the main challenge related to COVID-19. Short supply was not specific to any one type of food.

Figure 7 presents the main coping mechanisms households are adopting to respond to COVID-19 livelihood impacts. While 12% say they have taken no special actions, the majority

Figure 7: Households' coping mechanisms in the light of the impacts of COVID-19 containment measures



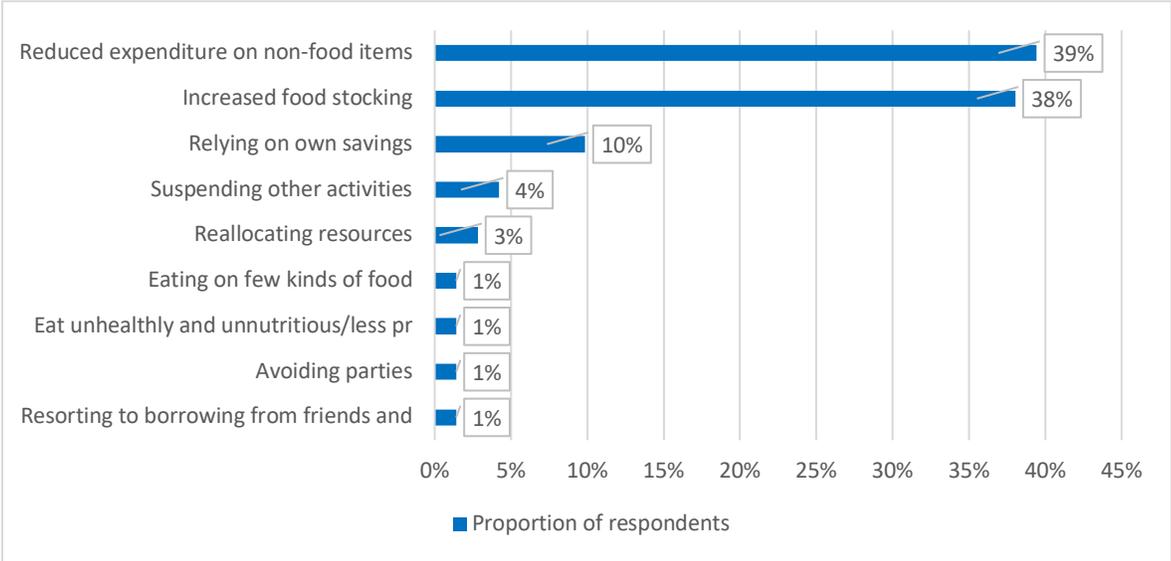
Source: MwAPATA COVID-19 surveys, May/June 2020

have reduced the number of daily meals taken by their households. Keeping in mind that this is a primarily urban sample of salaried workers, this finding is surprising. In the absence of external support, we should expect the impacts to be greater on poorer households.

Households were asked to indicate how they are preparing for the potential impact of COVID-19 lockdowns if government was to impose them. About 39% of respondents reported they had reduced expenditure on non-food items, followed by 38% who had increased their food stocks, and 10% who reported to be relying on personal savings (Figure 8).

This suggests that the general quality of life would be significantly eroded at the household level if government was to impose stricter lockdown measures without also providing social safety nets, as households are already struggling to cope with the current measures. This also suggests that, unaided, the livelihoods of the majority of households may not be resilient enough to endure the rigors of stricter and sustained containment measures. This underscores the importance of social support measures, especially those targeting the poorest households, if the GoM imposes strict and sustained lockdowns going forward.

Figure 8: How households are preparing for potential hard lockdowns?



Source: MwAPATA COVID-19 surveys, May/June 2020

7. Looking ahead -- Uncertainty

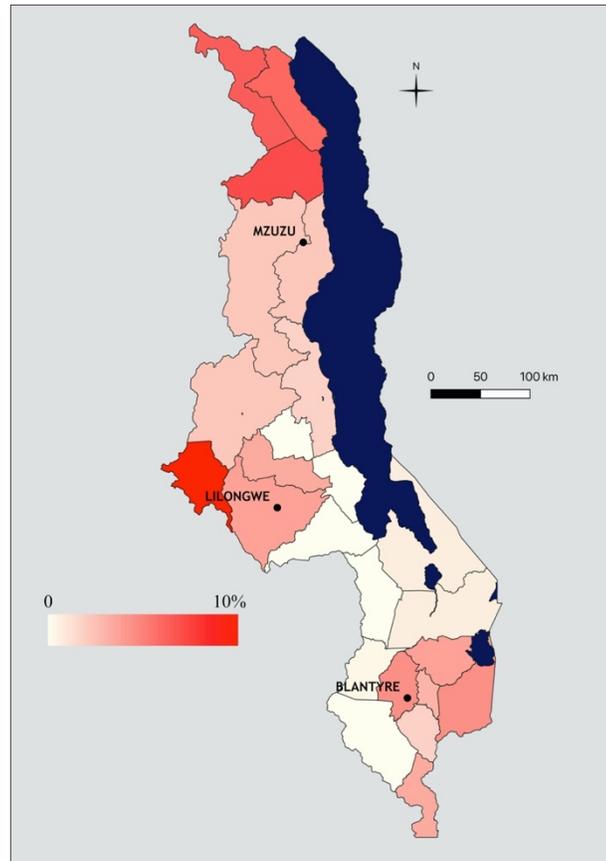
A major caveat to much of the analysis we have presented thus far is that it is, by necessity, largely speculative. Farmers, traders, transporters, and so on, either do not keep or have little incentive to share detailed records that would be necessary to quantify the negative impacts of the past several months and attribute them to COVID-19 in a statistically rigorous way. We are left, then, with their impressions and predictions. These are the most educated guesses available to us, and we have endeavored to seek them out and compile them in a systematic and useful way. The newness and rapidly evolving nature of the unfolding pandemic, however, requires us to acknowledge the fact that there is a limited degree of truth we are able to uncover with respect to the magnitude of the effects thus far.

The same is true of what the effects will be going forward. We are able to highlight areas that it will be wise to continue monitoring. These include the threat to food security based on limited incomes and access to markets, and the potential for an impending inputs shortage if international trade continues to be limited by containment measures in Malawi and other countries. However, it would be extremely difficult at this point in time to accurately predict what the macro-level effects of the COVID-19 pandemic will be, for example, on the agricultural GDP of Malawi in 2020, 2021 or beyond.

This uncertainty is driven, in large part, by the fact that the current scale and future spread of the pandemic in Malawi is unclear. The Ministry of Health has done a laudable job sharing the information it has available, but that information is limited. For instance, as of the time we are finishing this analysis, fewer than 5,000 cases and 160 deaths have been confirmed as attributable to COVID-19, representing a mortality rate of just over 3%. In comparison to other counties in the world, these could be seen as encouraging indicators that the pandemic is being well-managed in the country. However, all told, fewer than 38,000 tests have been carried out in a country of over 18 million (meaning just 0.2% of Malawians have been tested). Nominally, Malawi's situation is comparable to Kenya, which has confirmed nearly 28,000 cases and 500 deaths in a country of over 50 million.⁸ Kenya has similarly limited testing, however, and a study – based on the prevalence of antibodies in the

⁸ <https://ourworldindata.org/coronavirus/country/kenya?country=~KEN>

Figure 9. Official COVID-19 Mortality Rates by District in Malawi as of August 16, 2020



Source: Ministry of Health (<https://covid19.health.gov.mw/>). Mapped by authors.

blood of Kenyan blood donors – estimates the actual number of infected adult Kenyans is closer to 1 in 20, meaning between 1.5 and 2 million Kenyans have actually had the disease (Uyoga et al., 2020). In Blantyre, a similar study of 500 asymptomatic health workers revealed 84 positive cases (Chibwana et al., 2020). Using age-stratified extrapolations and their results, that study’s authors estimate that only 12.5% of the deaths in Blantyre that have been caused by COVID-19 have actually been confirmed as such.

The prevalence of unconfirmed, unattributed deaths in rural parts of the country (where there is even less testing) could be much greater. The Ministry of Health’s own data suggest as much. In just the two main cities (Lilongwe and Blantyre) the official mortality rate is 3.9%. By comparison, the official mortality rate in the rest of the (mostly rural) areas is 2.2% (Figure 9). Rather than evidence that rural Malawians – who have less access to health care facilities – are less susceptible to serious illness or death, this disparity more likely implies that rural deaths from COVID-19 are being undercounted. Most soberingly, the authors of

the aforementioned study in Blantyre conclude that “due to limited capacity to test for [COVID-19], there are no reliable estimates of the true burden of infection and death.”

In short, given the information available, any predictions as to what the overall economic impact of COVID-19 will be on Malawi’s agricultural sector would be unreliable at best and irresponsible at worst. Therefore, the highest priority, we believe, should be placed on understanding and limiting the magnitude of the disease on the health of the population.

8. Conclusion

The global COVID-19 crisis has impacted every facet of Malawian life and touched every aspect of agricultural value chain. One of the main challenges in dealing with the crisis is that the costs and benefits of combating (or not combating) the spread of the disease are not obvious. Our goal with this analysis has been to collect and present data from numerous respondents representing nodes across the agricultural spectrum to begin to allow policy makers to make informed decisions. The most important takeaway, however, is that these data are only a starting point. The challenges presented by this novel virus, and the ways Malawians react to them, are dynamic and rapidly evolving. The only way to ensure informed decisions are made will be through a concerted effort to monitor situations.

The data that seems particularly important is food prices. These are the figurative “canary in the mine” – if food prices begin to spike, it becomes important to dig into the drivers of that change to find the best way to minimize the negative impacts on welfare. As we’ve seen, there could be several reasons related to COVID-19 for food prices to be climbing. For example, while farmers have reported little impact on their production activities thus far, a worsening of the disease, or a protracted or expanded governmental effort to contain the virus could lead to decreased supply (and higher prices). Bottlenecks in transportation or limited availability of food in wholesale markets would also raise prices.

Farmers are also concerned that traders will take advantage of the limited number of outlets available to farmers to offer lower prices. Importantly, while price fluctuations may indeed signal a need for intervention, it does not immediately imply nefarious trader behavior – there are ample legitimate reasons to expect price fluctuations during the COVID-19 pandemic (decreased demand, decreased supply, increased transportation costs, etc.).

While high-frequency (daily) price monitoring will be an important tool for signaling if or when interventions are necessary, our research also offers suggestions into how intervention might best address the challenges related to COVID-19. Most significantly, the health and economic impacts of COVID-19 are inexorably connected – the most important strategy to protect the economy and agricultural value chains is protecting the health of those participating *in it*. We have found that there is very limited awareness of the most important measures promoted by the Government of Malawi that people can implement themselves to control the pandemic (social distancing, hand washing and mask wearing). This suggests that more can be done to spread the message. Most respondents interviewed throughout the value chain have said they receive their information related to COVID-19 by radio and word-of-mouth. This implies more aggressive radio campaigns to promote healthy behavior may be the most effective strategy for getting through this crisis.

The effectiveness of disease control is also linked to peoples' abilities to weather the economic storm – social safety nets will play an important role in Malawians' ability to adhere to virus control mandates. The measures that Government have understandably adopted, especially related to social distancing (e.g., closure of central food markets, mandating a reduction in number of people permitted in workplaces and at public gatherings), can negatively impact people all along the value chain. Unfortunately, most people we've spoken to do not have any means at their disposal to independently cushion their businesses or households from the impacts of COVID-19. Given the choice between safer behavior and hunger versus riskier behavior and having food, many will choose the latter despite any rules put in place. Before the pandemic Malawi was operating a resource-constrained budget. It is therefore likely going to be necessary to temporarily forgo other plans in lieu of short-term support for businesses and consumers in order to expedite the country's economic and public health recovery.

One clear warning signal is related to agricultural inputs. While the harvesting activities and marketing of agricultural outputs suffered in the early months of the crisis, the potential impact on inputs in the near future is much greater because Malawi relies on imports. For example, the majority of fertilizer used in the country are imported. If cross-border travel restrictions remain in place, farmers may not be able to obtain inputs in a timely manner from the market. Assisting businesses or social programs prepare for the upcoming demand

for inputs now could pay major dividends in the coming planting season.

Assisting businesses now will also facilitate a return to business after the major threat from disease has subsided. One option for assisting food traders during the crisis could be the provision of subsidized loans to help them stay in business. There are high fixed costs associated with closing and re-opening a business. Barring financial support to weather the pandemic, some may choose (or need) to simply close forever.

Given that supplies are low, and prices are unseasonably high despite fewer customers found in the market, the most pressing issue to address -- after the physical health of individuals and financial health of businesses -- is opening supply lines. Since domestic supply is more important to most wholesalers interviewed, it seems that opening up domestic corridors should be the highest priority. Inputs, however, especially fertilizer, are primarily imported. If border closings remain a possibility into the planting season, it will be crucial to begin plans as soon as possible to arrange a safe means for input delivery.

Again, the most effective economic strategy will likely be containing the spread of the disease. Further efforts to consider are expanding the availability of hand washing stations and masks (e.g., these could be provided and/or their use required upon arrival at a market) and/or monitoring compliance with social distancing recommendations. Prices will be the best “real time” indicator of burgeoning problems in the agricultural sector, but problems that can be anticipated in advance, such as the need for social safety nets or assuring the availability of inputs in the face of limited international commercial trade, could be addressed sooner.

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Appendix A. Key players in Malawian Agriculture

Type of sector players	Name	Role	Sources/Reference
Public sector	Ministry of Agriculture	<p>Provision of farm inputs, extension and advisory services</p> <p>To expand and diversity agricultural production and exports</p> <p>To increase farm incomes</p> <p>To promote agricultural policies, legislation and regulations with stakeholder participation</p> <p>To generate and disseminate agricultural information and technologies</p> <p>To regulate and ensure quality control of agricultural produce and services</p> <p>To monitor and manage the food security situation</p>	<p>https://assets.publishing.service.gov.uk/media/57a08b85ed915d3cfd000d8a/FAC_Research_Paper_No13.pdf</p>
	ADMARC	<p>Procuring and selling farm inputs such as fertilizers, seeds and pesticides for crops to all smallholder farmers in Malawi</p> <p>Buying produce from both traders and smallholder farmers at good prices, add value, for sale on both export and local markets</p> <p>Ensuring easy accessibility of staple food maize in the country through a vast market network</p> <p>Provision of reliable markets for smallholder produce</p> <p>Attending to social obligations on behalf of government through handling and selling of Farm Inputs Subsidy Programme (FISP)</p> <p>Provision of storage facilities on behalf of the government</p>	<p>Chirwa, E. (2015).The role of ADMARC in smallholder agricultural marketing: past, present and future.Presentation to Oxfam-CISANET meeting, Lilongwe</p>
	MCCI	<p>Promotes business development and growth, advocates business advocates for business communities including stallholder farmers and undertakes activities to promote business opportunities in general</p>	<p>https://www.unido.org/sites/default/files/files/2018-02/Malawi_Quality_Times_Digest_Issue_5.pdf</p> <p>https://www.mccci.org/index.php?option=com_content&view=article&id=40&Itemid=121</p>

Private Sector	Agro-dealers such as RAB Processors Limited, Global Trading, Farmers' World, Export Marketing, AGORA	They operate either through permanently established outlet stores scattered through the country that sell various commodities to the community and then purchase goods from the farmers, or via temporary buying centers established by renting facilities during the buying season and then disappearing between buying seasons.	Tinsley, R.L. (2009). Value Chain Analysis for Soybeans in Malawi
	Farmers Union of Malawi (FUM), National Smallholder Farmers Association (NASFAM), Malawi Unions of Savings and Credit Cooperatives (MUSCCO), Agricultural Research and Extension Services (ARET), Development of Malawian Enterprises Trust (DEMAT), Initiative for Development and Equity in African Agriculture (IDEAA), International Centre for Soil Fertility and Agriculture Development (IFDC)	buy and sell farm products from farmer members at competitive price through their local associations and supports the marketing and export of value-added products Promotion of production of value-added products Links to crop and input financing (cash/credit) Promotion of financially viable, transparent and democratically governed farmers associations for collective action on production, input provision and input marketing Marketing services through Commodity Marketing Exchange Facilitate linkages between sellers and buyers, exporters and importers of agricultural communities Empower farmers, traders, processors and other market participants with relevant information and intelligence that enhances the bargaining power and competitiveness in the market place	https://assets.publishing.service.gov.uk/media/57a08cb1e5274a27b2001367/R8275_040514_Directory.pdf
Non-state actors	WFP, FAO, European Union, USAID CGIAR Centres (World Agroforestry Centre, IITA, ICRISAT, CIAT, CYMMY, IFPRI), AFRICARE, Care International, Churches Action for Relief and Development, CPAR-Malawi, Evangelical Lutheran Development Project (ELDP), Churches Action for Relief and Development (CARD), Oxfam Malawi, Save the Children Federation US, World Vision, Plan	Provision of grants Conduct demand-driven research to generate new appropriate technologies Provision of training of farmers in various fields and small loans Productivity Research Creating or adopting new technologies (such as the "dwarf" varieties of wheat and rice that brought about Asia's and Latin America's green revolution) to increase productivity on farmers' fields Conserving germplasm and making it available to all farmers Promoting seed banks/multiplication Provide stakeholder linkages Provide technical, extension and advisory	Makoko (2004). https://assets.publishing.service.gov.uk/media/57a08cb1e5274a27b2001367/R8275_040514_Directory.pdf

	Malawi, CISANET	<p>services</p> <p>Supporting farmers with relevant food storage, processing and utilization technologies</p> <p>Promotion of production of value-added products</p> <p>Links to crop and input financing (cash/credit)</p> <p>Promotion of financially viable, transparent and democratically governed farmers' associations for collective action on production, input provision and input marketing</p> <p>Marketing services through Commodity Marketing Exchange</p> <p>Facilitate linkages between sellers and buyers, exporters and importers of agricultural communities</p> <p>Empower farmers, traders, processors and other market participants with relevant information and intelligence that enhances the bargaining power and competitiveness in the market place</p>	
	Cultivating New Frontiers in Agriculture (CNFA)	<p>Provision of business trainings to train rural retailers/agro-dealers</p> <p>Provision of access to working capital and trade credit by linking them with input suppliers and microfinance institution</p> <p>Assist input suppliers to develop and deliver technical training to agro-dealers in product knowledge, handling and safe use of pesticides, herbicides and fertilizers, and use of improved seed</p> <p>Strengthen the linkage between input and output distribution channels and use the rural retailer as a link back to cash markets for their farmer customers</p>	<p>https://www.cnfa.org/program/malawi-agrodealer-strengthening-program/</p>

Appendix B. Main agricultural policies in Malawi

Name of Policy/program/plan	Goal/Objective/Purpose	Source
National Agricultural Policy (2016)	To promote agricultural productivity and sustainable management of land resources to achieve national food security, increased incomes and ensure sustainable socio-economic growth and development.	https://cepa.rmportal.net/Library/government-publications/national-agriculture-policy-2016/view
<i>Agriculture Sector Wide Approach (ASWAp)</i>	<p>To improve food security and nutrition, increase agricultural incomes and ensure sustainable use of natural resources. Specifically, to:</p> <ul style="list-style-type: none"> Ensure food self-sufficiency and promote food diversification for nutrition at household level Ensure sustainable food availability at national level Promote agricultural exports for improved balance of trade Promote commercial production and agro-processing for market development Promote sustainable agricultural land management Promote sustainable agricultural water management and irrigation development 	https://www.malawi.gov.mw/agriculture/index.php/projects/aswap
National agricultural investment Plan	The NAIP adopted the goal of the NAP which is sustainable agricultural transformation that will result in significant growth of the agricultural sector, expanding incomes for farm households, improved food and nutrition security for all Malawians, and increased agricultural exports.	https://www.scotland-malawipartnership.org/files/9815/3113/0121/National_Agricultural_Investment_Plan_2018_Final_Signed.pdf

Food Security Policy (2006)	To increase agricultural productivity and enhancement of diversity in food production to guarantee that the population has access to nutritious food for a healthy lifestyle.	https://www.agriculture.gov.mw/Food%20security%20policy/D-Food-Security-Policy-11-09-06.pdf
Farm Input Subsidy Program (FISP)	The goal of the Farm Input Subsidy Program (FISP) is to enhance food self-sufficiency by increasing smallholder farmers' access to and use of improved agricultural inputs, thereby boosting the incomes of resource-poor farmers.	http://ebrary.ifpri.org/utills/getfile/collection/p15738coll2/id/124970/filename/124971.pdf
<i>National Seed Policy (2018)</i>	To provide clear guidelines for the development and promotion of the seed industry in order to raise agricultural productivity through the provision of sustainable, adequate and high quality seeds	http://extwprlegs1.fao.org/docs/pdf/mlw180417.pdf
<i>National Irrigation Policy (2016)</i>	To contribute to sustainable national economic growth and development through enhanced irrigated agriculture production and productivity	https://cepa.rmportal.net/Library/government-publications/national-irrigation-policy-2016