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Does value chain inclusiveness increase smallholder resilience during pandemics? Lessons from the Zambia's sugar-belt

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Abstract

This paper asks whether value chain integration increases smallholder resilience during shocks. Using a qualitative research study design and the test case of the 'sugar-belt' in Zambia, the paper draws on interviews with participants from different stakeholder groups, including household case studies and group discussions. Results show sugarcane value chain integration enhances smallholder livelihood resilience during pandemics through its coordination arrangement, but more could be done. Indirect involvement in, and joint procurement processes of inputs between smallholders and the management company, existing ready and stable access to markets and access to Fairtrade relief funds that point to direct livelihood support proved crucial for strengthening smallholder livelihood resilience during the pandemic. There were COVID-19-related adjustments by the management company, which further increased smallholder support. However, in as much as coordination arrangements seemed to have worked well during COVID-19, smallholder livelihoods remained narrow and risky, raising the need for diversification that could strengthen sustainable resilience. This paper sheds light on how value chains could be organised to enhance pandemic recovery and build livelihood resilience. It helps us to reflect on the

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‘(in)effectiveness’ of value chain institutions and the role and importance of smallholder coordination arrangements during pandemics. Ultimately, the result is a contribution to livelihood resilience thinking in value chains—one we hope is appropriate to our conjuncture.

KEYWORDS

COVID-19, livelihood resilience, sugarcane, value chain inclusion, Zambia

1 | INTRODUCTION

COVID-19 has brought global value chains (GVCs) and food systems into sharp focus, but how smallholder co-optation in GVCs helps with building resilience during shocks remains an interesting area of research (Fan et al., 2021). Previous crises such as the 2007–2008 and the Asian crisis of 1997–1998 provided key lessons in agrarian political economy (Vogelij, 2009), but differences in the nature and scope of the COVID-19 pandemic and the earlier crises raise the need to explore the role and importance of value chain inclusion and resilience when it matters the most. This necessitates a critique of how value chain literature makes the case for GVC inclusion in the context of the disruptions that the pandemic caused globally, questioning core arguments and attempt to shift related contours of such claims. Value chains continue to circulate a fittingly relevant framework for capturing not only diverse conditions for small-scale producers in the global south but also their experiences during shocks such as COVID-19. Global decision texts such as the two draft resolutions adopted by the Economic and Social Council of the United Nations on the inclusive and resilient recovery from COVID-19 for sustainable livelihoods, well-being and dignity for all: eradicating poverty and hunger in all its forms and dimensions to achieve the 2030 Agenda raise the need to explore whether value chain inclusion of vulnerable smallholders strengthens livelihood resilience and enhance resilient recovery from shocks. Evidence on how smallholder households integrated in specific value chains including outgrower schemes play out during pandemics remains less established in livelihood, resilience recovery and critical agrarian studies (Borras et al., 2011; Cotula et al., 2009; Hayes et al., 2020; Nalwimba, 2021), including whether integration helps to build resilience (Manda et al., 2020). Inclusiveness in value chains aims to identify ways in which low-income households can be ‘better’ incorporated into existing or new coordination arrangements (contract farming) and ways through which greater value from the chain could be extracted often from an economic perspective (Hall et al., 2017; Smalley, 2013; Vicol, 2017). More broadly, inclusiveness in value chain is almost universally recognized among policy makers as well as the scientific community as an important element in improving the economic viability or even the long-term sustainability of smallholder livelihoods (Helmsing & Vellema, 2011; Manda, 2022c). Resilience is a multi-dimensional concept, circulating the ability of an organisation or a system to plan, absorb, sustain and adapt to shocks and disruption. One would have, therefore, to test whether this principle of inclusiveness also increases resilience.

Because of the COVID-19 pandemic, controversy has raged over food systems as well as the resilience of GVCs, asking about the role, importance and the logics of dependence on few global players (companies or countries), and whether GVCs are prioritising low cost and efficiency at the expense of resilience (Gereffi et al., 2022; Kochan & Nowicki, 2018; Miroudot, 2020). In addressing the question of resilience for who, recent reports have focused on companies (ability of firms to resume normal operations), GVCs and countries, but rarely on livelihood experiences in the lower nodes of globally linked value chains such as smallholders. A focus on the micro-functioning of firms and companies (e.g., transaction costs including economic bargaining) in dominant value chain approaches has not interrogated how smallholder value chain inclusion in different coordination mechanism shapes aspects of livelihood

resilience (Birthal et al., 2005; Lee et al., 2012; Vicol, 2017). Specifically, most of those discussions have however been conducted outside the resilience realm and no specific attention has been given to the question of shocks—even though ‘disruption’ is a relatively well-established concept in relation to value chain leanness (e.g., Behzadi et al., 2017). GVCs and resilience-based reports such as Gereffi et al. (2022) examine resilience at the levels of the firm (operational efficiency), the GVCs (appropriate governance) and the national state (national security).

Given disruptions caused by COVID-19, and despite its foundation at the firm level, analyses of resilience must examine broader influences at community level, what poor producers make out of such shocks and the role and importance of value chain integration. Dominant value chain arguments contend smallholder integration present opportunities for smallholders to accumulate—circulating somewhat of inclusive and ‘win-win’ scenarios (Vicol, 2017). Academic and scholarly actors have responded through efforts towards inclusive and resilient recovery from COVID-19 for sustainable livelihoods and well-being (Fromm, 2022; Nchanji et al., 2021). However, most of these analyses centre on impacts of COVID-19 policy responses on traditional value chains in some cases state driven (Nchanji et al., 2021). Although evidence is mixed, existing literature generally suffers from its exclusive focus on the impact of COVID-19 on livelihoods, more generally (Manda, 2022a); livelihoods and gender (Montalvao & Van de Velde, 2020); and vulnerability and resilience of food systems; such as those in Africa (Moseley & Battersby, 2020). Others focus on prospects for agricultural transformation and accumulation (Nalwimba, 2021), livelihoods and land-use decisions during the pandemic (Nolte et al., 2022), including impact on smallholder farmers across different agricultural activities (Kapembwa & Joshi, 2020).

Studies that can help to shed light on the extent to which value chain integration shapes smallholder livelihood resilience during pandemics are urgently needed. This includes how we can think about the ‘(in)effectiveness’ of value chain institutions on the one hand, and the role and importance of smallholder coordination arrangements during pandemics on the other. The centrality of resilience points to the ability of an individual, a household or a community to withstand a shock or setback of some type and recover, or ‘bounce back’, after a setback. It is about the ability to cope with adversity, adapting, learning and innovating (Chen et al., 2020). Resilience has become an important operational concept in COVID-19 land food systems literature as pathway to imagining impacts, opportunities and challenges of the pandemic. While the emphasis on resilience is multi-dimensional, it is often taken that the root question of resilience is nearly the same as the question of livelihood sustainability, but with a greater emphasis on the ability to cope with—and recover from—shocks or disasters (Vaitla et al., 2012). We draw from this resilience perspective to reflect on how smallholder coordination arrangements in sugar value chains shape livelihoods during pandemics—using the test case of Zambia.

The primary objective of this study is to explore and understand whether value chain integration increases smallholder resilience during pandemics and what this means in reality. The paper draws on a single case study of a sugar-cane outgrower scheme in rural Zambia. Specific questions ask:

1. What have been COVID-19 policy responses in Zambia, and what do these mean for the agricultural and sugar-cane sectors?
2. How and in what ways have livelihoods been resilient in smallholder coordination arrangements in the sugar sub-sector?
3. What have been the wider implications of COVID-19 pandemic responses and what do these tell us about smallholder value chain integration and livelihoods in general?

To the best of our knowledge, this study represents one of the first studies to shed light on the role and importance of value chain integration in the context of pandemics. The rest of the paper is outlined as follows. Section 2 focuses on theoretical elements around COVID-19, livelihoods and resilience. Section 3 is the research design and methodology, and we present results in Section 4. A wider discussion on the implications of value chain integration and implications for resilience comes in Section 5, and Section 6 is the conclusion.

2 | COVID-19 AND LIVELIHOOD RESILIENCE

COVID-19 pandemic disruptions to global production and supply chains have once again led to a resurgence in questions about the role and importance of increased reliance on regional and international markets and supply chains to ensure national and household food security. Related systems' vulnerabilities have led to calls for policy experts and development practitioners to build shorter supply chains in order to cultivate food systems resilience (HLPE, 2020). For smallholders hooked to globally linked value chains such as sugarcane, different ways exist through which COVID-19-induced impacts on agricultural production as well as wider supply chains increasingly relied upon in production (Helmsing & Vellema, 2011; HLPE, 2020). Some of these relate to production, transportation and marketing elements, but how pre-existing smallholder coordination arrangements particularly outgrower schemes play out to build livelihood resilience is something we continue to know so little about, necessitating a focus on livelihoods and resilience framing. Resilience has different meanings, for instance, for companies, GVCs and countries. In so doing, we explore how smallholders adjusted to disruptions caused by the COVID-19 pandemic and provide lessons that can guide early-stage outgrower schemes in building resilience for future value chain disruptions (multi-dimensional). We do not think value chain resilience as standard concept that can be deployed uniformly across different smallholder coordination arrangements particularly that value chains are product-specific and shaped by different local, national, regional and global dynamics (Gereffi et al., 2022).

Livelihoods point to the means of gaining a living or resources used and activities undertaken in order to live. It comprises the capabilities, assets (including both material and social resources) and activities for a means of living (Chambers, 1995). In the context of shocks such as COVID-19, a livelihood is thus sustainable when it can cope with and recover from stresses and such shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base (Scoones, 2009). As Bellwood-Howard and Dancer (2021) note, COVID-19 is more of a shock that accentuates existing longer-term patterns of social differentiation. Value chain integration can build resilience by delivering processes of production and marketing, including incomes that can shape consumption and well-being. What smallholders rely upon and are able to do during the pandemic relates to the coordination arrangement itself (Hall et al., 2017). It also relates to terms on which they are incorporated in value chains (Manda et al., 2020). What terms of incorporation produce which livelihood outcomes and thus resilience is important in this study. More generally, previous studies highlight COVID-19 affected labour movements (availability, access and utilisation), which can lead to production and productivity declines. The pandemic can also affect access to inputs such as seed, fertiliser and agricultural chemicals as procurement processes take longer than expected and prices skyrocketed (HLPE, 2020; Kapembwa & Joshi, 2020). Meanwhile, disruptions to marketing links and difficulties in accessing physical markets can lead to losses in incomes, affecting access to social services, food and well-being. Some of these elements can entrench pre-existing inequalities and social differentiation. Livelihoods to be resilient is not only a function of adaptability to changing environments but also wider support for smallholders. Livelihoods can related to support by value chain management companies and even government schemes (Gereffi et al., 2022). Thus, dynamics of resilience are shaped and vary across not only firm capabilities and the governance structure of GVCs but also through the role of the state within the firm-GVC nexus. Firm activities do not operate in institutional or regulatory vacuums. In Zambia, for instance, the state assists firms to overcome COVID-19 challenges through measures such as industrial policies and trade restrictions.

As with other countries across the sub-Saharan Africa, Zambia's agriculture and food systems were already facing climate change and weather variability, pests and diseases and deteriorating economy (Nchanji et al., 2021). For traditional value chains such as maize, beans and others, COVID-19 affected transportation availability and costs of farm inputs and labour, leading to reduced production, incomes and food insecurity. Meanwhile, low investment in agricultural mechanisation exposed traditional value chains predominantly maize. In addition, labour-intensive value chains were affected by social distancing and restricted transportation, affecting also labour-dependent operations such as planting, plant management, harvesting, threshing and storage (ibid.). As overall logistics slowed down,

fertiliser prices, including seeds, herbicides and pesticides for horticultural production, were greatly affected (Manda, 2022b). There are reports about the impacts of COVID-19 on access to agricultural services, increased labour and input prices and difficulties in transferring inputs from point of sale (collection) to production areas (Nchanji et al., 2021). Grain businesses, distribution and trade were effected, compounded by little or no state incentives to support aggregators and traders (Manda, 2022a). A recent report by Nkumbu (2021) focuses on whether small-scale producers can take advantage and accumulate market opportunities by supplying supermarkets and find evidence to that effect, but wider results vary (Manda, 2022a).

Whereas 80% of countries across sub-Saharan Africa entered into full or partial lockdown with the outbreak of COVID-19, Zambia never initiated a lockdown save for a day where lockdowns were made in two districts. Zambia's food systems are heavily reliant on South Africa's capital, including in the sugar sub-sector. The largest sugarcane investment in Zambia since the neoliberal reforms of the 1990s came from South Africa's Illovo Sugar Plc—a subsidiary of Associated British Foods. Illovo has operational presence in six countries across South Africa, Zambia, Malawi, Tanzania, Mozambique, Swaziland and Zambia. Lockdowns in other countries especially South Africa and Zimbabwe affected the supply of food products in Zambia (e.g., chain stores owned by South African capital) (Nalwimba, 2021). However, the effects of the pandemic on the food supply chains depend on the type of markets and the commodity (Lee et al., 2012). For instance, spot markets such as those related to traditional production patterns (e.g., maize) are more vulnerable and affected by disruptions compared to futures markets (Hayes et al., 2020). Further, food supply chains that are labour intensive have been most affected by COVID-19 compared to those that are less labour intensive. It is generally taken that elements that altogether enhance livelihoods also help build resilience. COVID-19 policy restrictions hampered smallholder ability to sell their produce, with concerns producers have increasingly been forced into livelihood insecurity (Mishra & Rampal, 2022). Some of rural producers have responded by selling their commodities at lower prices, engaging in land sales and reorganising production patterns (Nolte et al., 2022). More widely, COVID-19 impacts have been unevenly distributed, exacerbating pre-existing inequalities across gender (Manda, 2022c). Rural producers are not a homogenous category. Pandemic impacts will vary between and across farmer groups and most importantly across the nature and character of coordination arrangements they find themselves into (Manda et al., 2020). Whereas policy efforts promote value chain integration for rural producers defined as empowerment, the benefits of inclusion during pandemics remain an interesting area of research—and is a focus of this paper.

3 | RESEARCH DESIGN AND METHODOLOGY

3.1 | Studying the 'Sugarbelt' District of Mazabuka

Zambia has a population of 18.38 million; a large proportion remains largely agricultural based (over 1.5 million smallholder farmers). About 48.9% of the population relies on agriculture, with 59% of the population rural based. With 1.6 million small-scale farmers, 71.5% own less than 2 ha of land, compared to 23.8% and 4.7% who own 2–5 ha and 5–20 ha respectively. There are about 400 000 medium-scale farmers who operate 20–100 ha of land and about 740 large-scale farmers operating above 1000 ha of land (Chapoto et al., 2017). However, Zambia shut down its educational institutions, imposed foreign travel restrictions (March 17), experimented with a single border closure (May 10), and partial lockdowns in two districts (2020). The country also imposed a partial closure of non-essential businesses, imposed bans on social gatherings and suspended cross-border passenger and cargo transportation services (Nchanji et al., 2021; Nkomesha, 2020; World Aware, 2020).

This study focused on the 'Sugarbelt' district of Mazabuka, located in the Southern province of Zambia (Figure 1). The region has an estimated population of 221 893 (67% rural based) (Central Statistics Office [CSO],

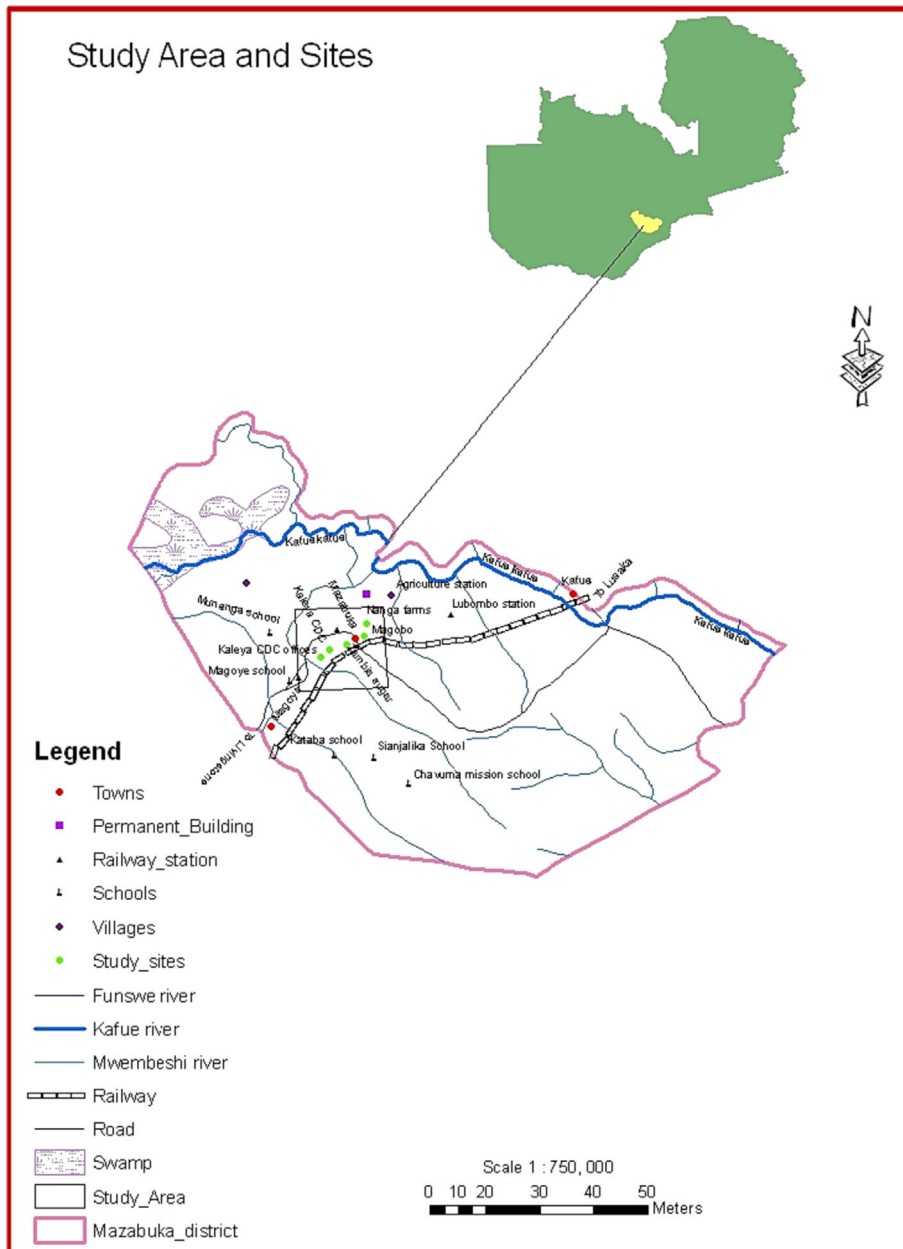


FIGURE 1 Map of the sugar district of Mazabuka. [Colour figure can be viewed at wileyonlinelibrary.com]

2014). Agriculture dominants include sugarcane and more widely maize production, including livestock (Hall et al., 2017; Manda et al., 2018).

In the district of Mazabuka, land and water availability drives sugarcane production (Kalinda, 2014). Other traditional crops such as Maize and cotton exist but have historically been influenced by government policy (Manda et al., 2019). Poor rainfall patterns, challenges of inputs and poor soils in some rural areas alongside possibilities of accessing ZaSPIC-linked irrigation water catalysed sugarcane have been cited as driving sugarcane uptake among villagers—141% increase ($n = 225$) between 2009 and 2015 (Manda et al., 2018). There are 385 smallholder

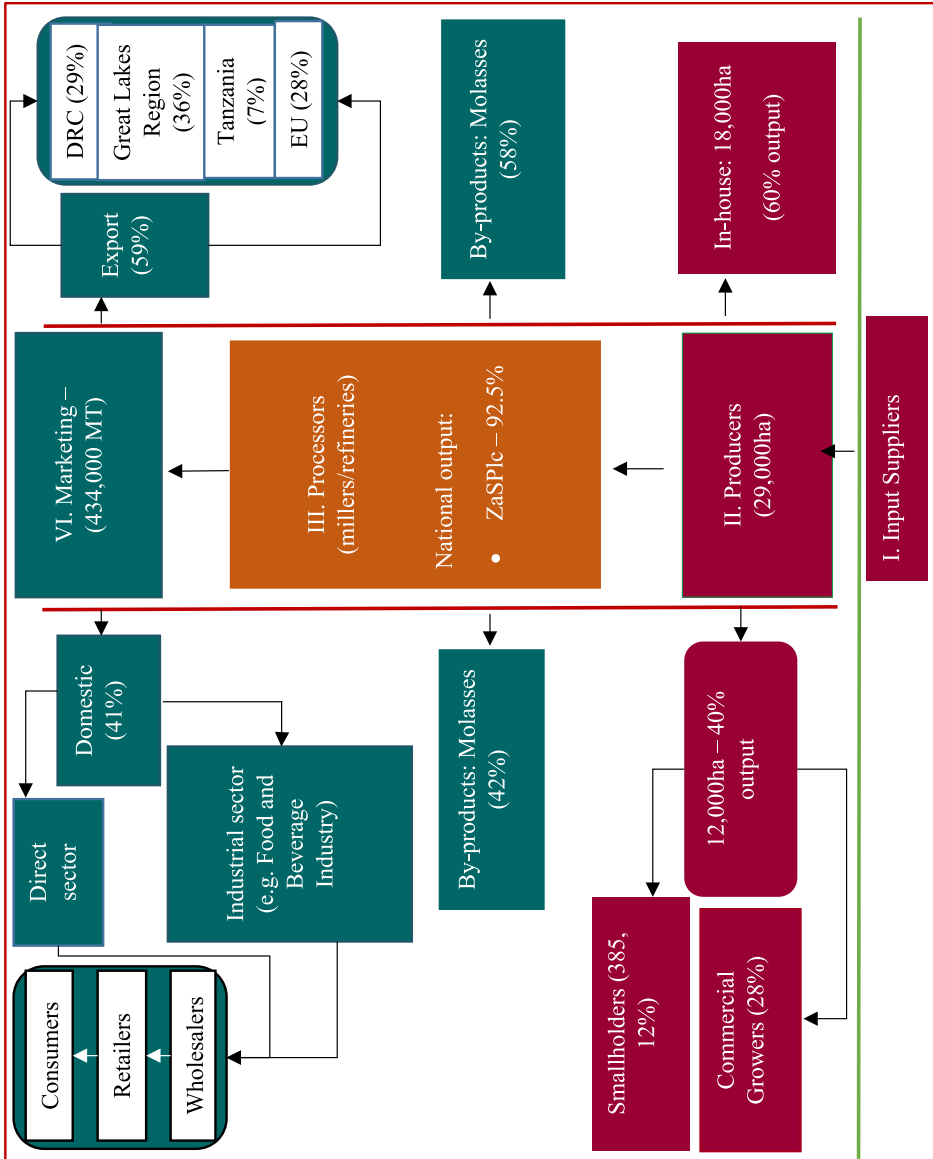


FIGURE 2 Zambia sugar industry structure (Manda, 2019). [Colour figure can be viewed at wileyonlinelibrary.com]

sugarcane growers in Mazabuka across three¹ independent outgrower schemes (Zambia Sugar, 2020). These operate under management companies, which are linked to ZSPIC, but state and donor institutions continue to push for more smallholder integration into the sugar sub-sector across the region and beyond.

The leading firm and off taker (ZaSPIC) dominates the sugar market, producing over 420 000 tons of sugar a year (92% market share). Smallholder production is only about 12%, compared to 28% and 60% for commercial farmers and ZaSPIC respectively (Figure 2).

The structure represented in Figure 2 allows ZaSPIC to influence production, market and commercial channels in the district, and the institutional environment shaping smallholder outgrower schemes and integration (Manda et al., 2018). The presence of ZaSPIC and management companies ensures strict smallholder coordination. We focus on smallholders under KASCOL. KASCOL was formulated in the early 1980s and sits on 2400 ha of land split between 160 smallholders (about 1100 ha) and KASCOL and the Management Company (about 1300 ha). However, all land belongs to KASCOL, with smallholders as tenants running a 14-year renewable lease. Each farmer has about 7.5 ha of sugarcane plots and an additional 0.5 ha as dwelling land for subsistence production. Farmers are organised through a farmer association KASFA (Kaleya Smallholder Farmers Association) and have 19.5% equity share in KASCOL. KASCOL facilitates smallholder production through provision of agronomic services and procurement of inputs (fertiliser and chemicals), including marketing and other commercial services. Combined (KASCOL and KASFA) run a single Cane Supply Agreement with ZaSPIC (Figure 5). KASCOL then deducts the cost of these services from farmer inflows.

3.2 | Data collection

Data collection proceeded in two stages. Stage I involved conducting preliminary phone interviews with growers, management company representatives and district officers between April and July 2022 to generate stakeholder groups. Interviews also built on our previous research connection, forming six stakeholder groups: national state, district actors, NGOs, farmer associations, farmers and wider sector institutions. We attempted to attain stakeholder representation—at least one representation from a stakeholder group at different levels. Selection of participants was purposive based on a preliminary list of stakeholders drawn through a literature review on the one hand, and on being an outgrower farmer and in the scheme or one's perceived knowledge about the sugar sub-sector and related COVID-19 impacts in the agricultural sector on the other. Rather than prescribe a sample size a priori, we deployed a snowball technique to widen our sample of experts and capture participants from different stakeholder groups. This allowed 'identification of cases of interest from people who know people who know what cases are information rich' (Patton, 1990, p. 175). Approaching the sampling this way enabled the inclusion of diverse stakeholders, necessary in collecting diverse views and perspectives on COVID-19 dynamics and smallholders in Zambia more generally and in Mazabuka specifically. We paid attention to data/thematic saturation, specifically adequacy of the data rather than the sample size itself—a point in data collection when no additional issues or insights are identified and data begin to repeat so that further data collection is redundant, signifying that an adequate sample size is reached (Hennink & Kaiser, 2022).

Through our local research contact, we were able to move phone communication from one household/ respondent to the other, making sure the communication cost was not transferred to the respondent while adhering to COVID-19 guidelines. We interviewed national government actors in the Ministry of Agriculture ($n = 2$) to understand policy responses in the agricultural sector. NGOs operating with small-scale farmers in agriculture helped clarify pressing social and economic issues facing smallholders ($n = 1$). Interviews with District Officers ($n = 3$) explored district dynamics in agriculture and sugarcane—production, input access, migrant labour and marketing. We also conducted in-depth household interviews ($n = 2$) as pathway to exploring interesting case studies that could shed light on livelihood impacts and responses during COVID-19. Meanwhile, community interviews with sugarcane farmers as members of the Farmer Association under a sugarcane contract with KASCOL offered an opportunity to explore and

understand input supply, production and marketing more broadly ($n = 19$). This included discussions with KASCOL ($n = 1$) and KASFA ($n = 1$) representatives ($n = 1$). Meanwhile, together with our local facilitators, we conducted two group discussions to explore wider experiences of COVID-19 and livelihoods ($n = 15$) across gender. Interviews and group discussions mainly focused on how livelihoods for smallholder cane producers played out during the pandemic in relation to traditional cropping patterns (including social relations and support systems).

We sorted and coded qualitative data in Nvivo. Sorting and coding allowed generation of broad themes which were analysed manually (Bazeley, 2007; Kumar, 2005), while maintaining local narratives and experiences around COVID-19—grounded. Analysis involved comparing data across thematic areas with research questions, generating rich empirical and theoretical insights. However, we acknowledge a focus on research questions as our analytical lens may limit wider interpretations.

3.3 | Research rigour, ethics and limitations

Our results rely on relatively smaller qualitative sample but look intensively on the realities of pandemic impacts in smallholder coordination arrangements. We note COVID-19 emerged at the back of reduced rainfall patterns in Southern Africa, alongside a wider deteriorating economy in Zambia (IMF, 2016). There might be elements of dissatisfaction elements that may point to the government response to COVID-19 and historical negative sentiments of the government generally blamed for the deteriorating economy on the one hand, and climate extremes and risks on the other hand. It is possible responses might mix different issues in looking livelihoods and resilience and we encourage caution. The challenge in collecting information is that these experiences are still evolving (unfolding events). In our data collection and analysis, we triangulated multiple sources to increase the reliability of our findings. Conducting research during COVID-19 required us to generate a clear strategy for data collection. We engaged officers in the Ministry of Agriculture (Agribusiness and Marketing) to explore government responses during the pandemic *vis-à-vis* agricultural sector. We engaged in peer debriefings with our previous contacts (smallholders) in sugarcane outgrower schemes, including peer research with district officials in Mazabuka and former. Not only did this enable us gain understanding of groups of stakeholders in which we attempted to sample of our participants, but also helped to add specificity to research questions. Throughout out the study, we emphasised voluntary participation. In communities, we endeavoured to meet participants in their convenient time and accommodated those that preferred phone conversations. We constantly scrutinised and interpreted data in light of new/repetitive evidence (reflexivity) while considering thick description (Guillemin & Gillam, 2004). Some of this relates to follow-up interviews, such as with interesting households with a story to tell, and carefully addressing emerging data gaps. However, we conducted this single snapshot study when impacts of COVID-19 were still unfolding (2022). There may be limitations on generalisations (common in qualitative research) (Guenther, 2019) and in some cases challenges related to recall questions. This may raise biases as we cannot control for accuracy. Smallholders face challenges of input and farm-gate prices, including climate change. Farmers may find it difficult to disentangle the negative effects caused by the pandemic and other realities, which may raise challenges of attribution. As with Hoyweghen et al. (2020), we asked farmers to account for experiences to specific periods when containment measures were announced, reflecting on production, markets, transportation links and social relations. With over a decade of conducting research in Mazabuka, we are confident about not only inclusion of participants in key stakeholder groups (ensuring representation) but also the robustness of the data collection, analysis and interpretation. In terms of ethical considerations, we followed national guidelines on social distancing and masking. We ensured anonymity to avoid possible victimisation and privacy—informed consent. We held debriefings to address raising issues.

4 | RESULTS

4.1 | COVID-19, policy responses and firm adjustments

4.1.1 | Policy responses

Broadly speaking, COVID-19 in Zambia was largely urban centred—the former being the most affected. Early days of the pandemic were characterised by poor coordination between political agencies. Responses were placed within the political unit linked to the Council of Ministers on Disaster Management (the so-called ‘phased strategy’). However, national interviews show the scale and magnitude of the pandemic, including donor pressure compelled the country to place COVID-19 response strategies under the Ministry of Health.

There are key actors that have shaped not only policy responses but also the country-wide view of COVID-19. The first positive COVID-19 cases in Zambia were recorded on 18 March 2020. By 5 June 2022, Zambia had recorded 321 623 COVID-19 cases and 3987 related deaths (WHO, 2022). Strict health guidelines such as those on social distancing, public hygiene and additional screening at the main airport were imposed by the President on 25 March 2020. This followed a declaration to close schools, colleges and universities. There were restrictions on public gatherings and closure of restaurants, bars and other smaller businesses such as salons. The government passed restrictions on public gatherings and discouraged local and district movements. Movements of people to the capital Lusaka (epicentre), including intra- and inter-district movements, were discouraged. Political and media narratives show some Government representatives were unconvinced about circulating a countrywide closure due to COVID-19. Meanwhile, the President argued we may find ourselves ‘under forced lockdown if all our neighbours close their borders’, and that ‘this situation would make us economically vulnerable and weaker’ (GRZ, 2020a). Although the Government further argued for a multi-sectoral approach to combating COVID-19 led by the Ministry of Health, concerns were still registered about inadequate state responses. For the state and the then President Lungu: ‘if we lock ourselves, where will money come from? What about money for social cash transfers? Who will harvest the crops for our national food security?’ (GRZ, 2020a). While being concerned about the economy, the speech set out important elements that had implications for rural and peri-urban farmers:

If we maintained the status quo of the controlled movement of our people and restriction of some businesses due to the pandemic, where will the money come from...to pay salaries ... FISP Social Cash Transfer? Who will harvest the crops for our national food security? Who will deliver farming inputs? (GRZ, 2020b)

There were fears among state actors that a COVID-19-driven closure of the economy could raise the need for the government to address costs from having to support distribution of food and other credit schemes. The reliance of Zambia’s food systems on regional supplies was particularly concerning among state actors (Interview MoA 2022).

The first Statutory Instruments declared SARS-CoV-2 as notifiable infectious disease in line with Section 9 of the Public Health Act (SI No. 21 of 2020). The second Statutory Instrument provided measures to control the spread of COVID-19, including mandatory quarantine measures for patients and those suspected to be suffering from COVID-19 (SI No. 22 of 2022). Other measures included mandatory wearing of facemasks and limiting public gatherings to only 50 people. In rural areas, policy pronouncements affected social and economic relations. In Mazabuka, temporary lockdowns in the neighbouring Kafue district including other measures disrupted access to urban markets specifically Lusaka. This relates to (1) farmers in traditional value chains in livestock and crop production and (2) smallholders diversifying away from sugarcane. More generally, however, policy responses were at national level focused, ‘trying to build resilience at that level and little interventions in rural geographies’ (National Interview MoA 2022). Policy responses concentrated around health policies ($n = 24$) and monetary and fiscal ($n = 18$), including broad fiscal policies ($n = 8$). There were those related to population movements ($n = 21$) (Figure 3).

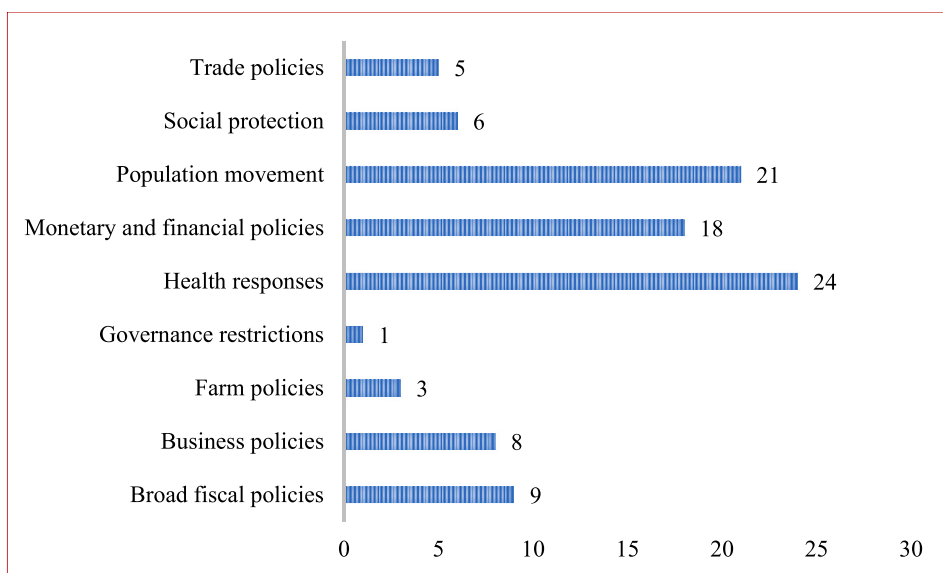


FIGURE 3 Count of Policy Descriptions in Zambia between March and December 2020. [Colour figure can be viewed at wileyonlinelibrary.com]

Overall, COVID-19 responses in Zambia varied between strict imposition in certain sectors and relaxation. The agricultural sector interventions were limited in scope but generally relaxed.

4.1.2 | Firm adjustments during COVID-19

Interviews with KASCOL representatives revealed ‘COVID-19 was new to us’ and that ‘we had to make quick adjustments as a company’ (KASCOL Interviews 2022). First, we changed our operations by reducing numbers of workers working in groups (e.g., cane cutting and weeding). This was achieved by increasing the number of ferrying vehicles used to take workers to sugarcane fields—‘we are talking about thousands of hectares of sugarcane fields’, explained one Officer. The Officers explained COVID-19 changed the way the company recruited casual workers: ‘using a pre-generated list announced on radio, and targeting those available as opposed to using a lottery systems as we were not sure of who was available. We did not want people to overcrowd our Offices, but we realised this excluded some people’. The company also reduced overcrowding in the field by migrating to drip irrigation. Meanwhile, interviews with KASCOL reveal the company did not receive any support from the Government, but that ‘the government allowed us to continue operating as long as we put in place COVID-19 measures’(2022). There were regulatory adjustments: ‘the government also allowed us to continue to import as most of our inputs come from South Africa (regulatory)’ (Interview with KASCOL Representative 2022). However, KASCOL reported delays in imports of between 4 and 30 days. Officers expressed opinions production was resilient due to adjustments to ‘our management and agronomic services’. Resilience in production was also through (1) favourable rainfall distribution and (2) reduced load shedding. KASCOL and KASFA representatives confirmed the former intensified patrols on smallholder fields and increased firm-farmer interaction. Thus, was compounded by the fact that even with COVID-19, ‘the wider sugarcane prices have been stable, in fact, ‘there has been a steady increase in the prices driven by high demand of the commodity’ (KASCOL Interview 2022). More widely, continued production and increased smallholder support by KASCOL had implications on smallholder livelihoods.

4.2 | Livelihoods and resilience

This section draws from interviews, group discussions and household case study interviews with smallholders to explore pathways through which value chain integration by small-scale farmers is perceived to help strengthen resilience. We do this by analysing what we call Resilience Pathways. In so doing, we compare lived experiences for small-scale farmers integrated in sugar value chains with experiences farmers in 'traditional value chains'. This was necessary as smallholders are also growers of other crops besides existing side by side with non-cane growers in the same district context. Analysis reveals four main resilience pathways during the COVID-19 period (1) input supply and production, (2) market linkages and stability, (3) direct support towards food security and hired labour and (4) support towards businesses and trading.

4.2.1 | Resilience Pathway 1: Input supply and production

First, smallholders perceived resilience through controlled input supply and managed production. In 2020, ZaSPIC reports production from outgrowers (smallholders inclusive) increased by 12.4% alongside a 14.9% increase in land use with overall production remaining strong in 2021 (Figure 4). It was reported by one KASFA representative that the association lost about 5 smallholders due to COVID-19, and that 'such a loss on our farmers has never happened before' (Human capital). All these were male victims, with recent country reports revealing most men generally disregarded COVID-19 rules (Manda, 2022a).

Traditional crops such as maize generally rely on state input supply and extension services, including state-driven marketing agencies such as the Food Reserve Agency (FRA). During COVID-19, government policy responses were largely macro in nature, such as those related to the stimulus package—imports and exports. Actual agricultural support in rural communities was largely missing in part due to shrinking fiscal space and poor physical presence and reach. Smallholders explained their counterparts in maize, cotton and soybeans, including livestock complained about inability to access urban markets in Lusaka, which led to losses to incomes (see Manda, 2022a).

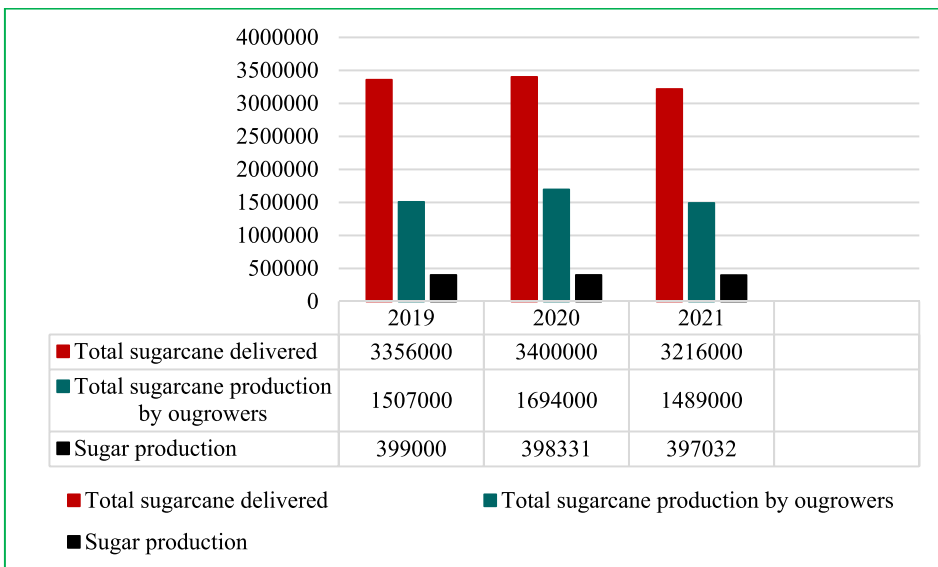


FIGURE 4 Sugarcane and sugar production (Zambia Sugar Annual Reports). [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/terms-and-conditions)]

In the sugar sub-sector, however, farmers reported production dynamics were controlled by KASCOL. As such, ‘our own sugarcane volumes were not quite affected’, explained one Farmer (Household Case Study Interview). There are several transmission channels through which COVID-19 affected production. Sugarcane heavily relies on blended fertilisers and chemicals largely imported. Zambia’s sugar sub-sector heavily relies on South Africa supply chains. Farmers experienced high input costs and delayed delivery of inputs, affecting the sugarcane crop. ‘Input costs went up. In some cases, even the inputs that were delivered to us were delivered very late’ (Farmer Interview 2022). Farmers estimated a 20%–25% increase in input costs, eroding their net income flows. Whereas some farmers reported a decline in sugarcane output, KASCOL records show a stable and in some cases above average sugarcane output (Figure 5).

However, results show different pathways through smallholders integrated in sugarcane production remained resilient (Figure 6).

Procurement of blended fertilisers and chemicals is conducted by KASCOL on behalf of farmers under the Cane Farmers Agreement. ‘All we see here are inputs’, explained one farmer. This was identified as shielding farmers from the impacts of the disruptions in markets and logistics. During COVID-19, ‘KASCOL procured these services on our behalf, which means farmers did not directly feel the pressure and disruptions related to COVID-19 policy responses. These materials still made way to our farmers, despite occasional despite occasional delays’ (Farmer Interview 2022). Agronomic services during the pandemic proved crucial to farmers. However, farmers still reported occasional delays in supply of materials, raising the need for more pandemic planning and coordination. Not only that, sugarcane is a high water user. During the pandemic, farmers relied on the Cane Farmers Agreement to access water for sugarcane production, and for household gardening, including fertiliser and chemicals. One Smallholder Development Officer attributed the resilience during COVID-19 to ‘the setup of the organisation. The title deeds are owned by KASCOL and smallholders abide by our by-laws and provisions and during COVID-19, individual farmers enjoyed rights in line with their agreements’ (2020). Specifically, these relate to labour provision specifically can cutters and inputs such as water, fertiliser and chemicals.

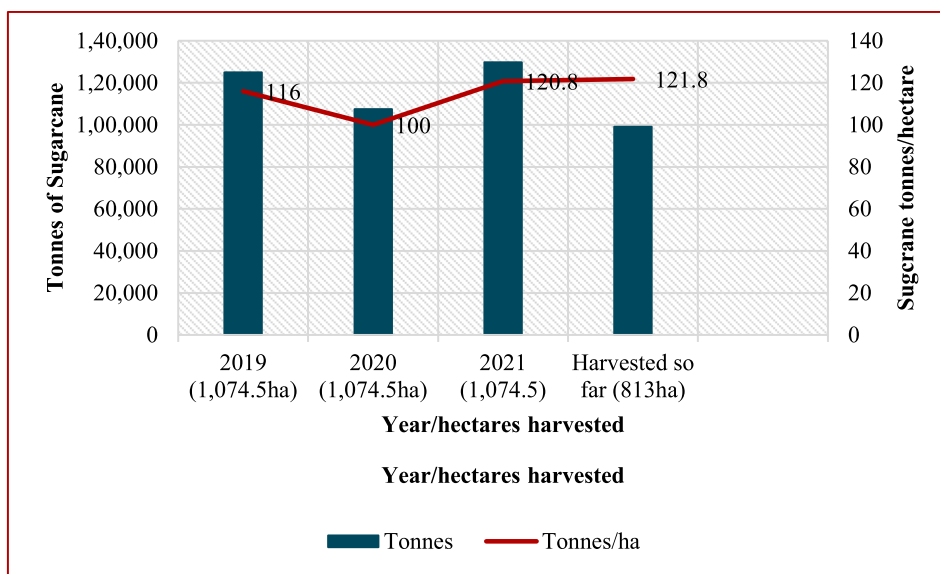


FIGURE 5 Smallholder sugarcane output (KASCOL Records 2022). [Colour figure can be viewed at wileyonlinelibrary.com]

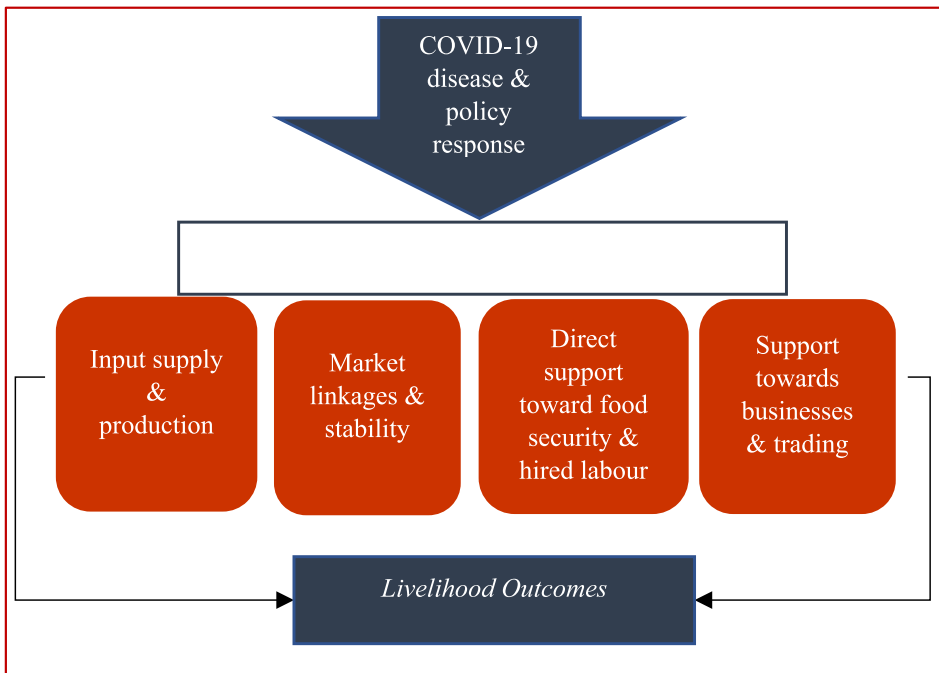


FIGURE 6 Value chain dynamics and aspects of strengthening resilience. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1002/ijid.3837)]

4.2.2 | Resilience Pathway 2: Market linkages and stability

The second resilience pathway is through market linkages and stability. Geographic proximity assumes even greater relevance following COVID-19 and related policy responses. Traditional and transitional supply chains are typically oriented towards production for domestic markets mix of small-scale and medium scale producers (Burke et al., 2019). However, relative capital-intensive production methods, market orientation and comparatively distance to outlets in the traditional chains mean COVID-19 and the related policy responses presented new market risks for producers (Manda, 2022a, 2022b). Social restrictions limited physical access to markets. Supply and demand side market disruptions also relate to price increases and fluctuations. District interviews with various actors confirm producers in traditional value chains such as maize, cotton and others could not move their products to the markets in Lusaka as they faced government restrictions in availability and access to inputs and output markets. This includes skyrocketing input prices in the wider deteriorating economy. Some of these relied on alternative market opportunities, facing low and fluctuating prices from exploitative private buyers in local spaces. For smallholders in the sugar sub-sector and in Kaleya specifically, sugarcane contractual arrangements driven by the Cane Farmers Agreement ensured continued market linkages and stability during the pandemic (Figure 7). ‘For us, the marketing contract shielded us from all this. Transporters came here to carry our sugarcane and deliver at the doorstep of the processor, reducing anxieties among producers’ (Sugarcane Farmer 2022). The presence of the Management Company and related tight production and marketing arrangement were therefore crucial in facilitating access to markets during the pandemic—within reach. Fairtrade premium payments further boost smallholder incomes (Section 4.2.3). These arrangements are only available to smallholders in contractual and outgrower coordination arrangement, while producers in traditional crops faced different dynamics.

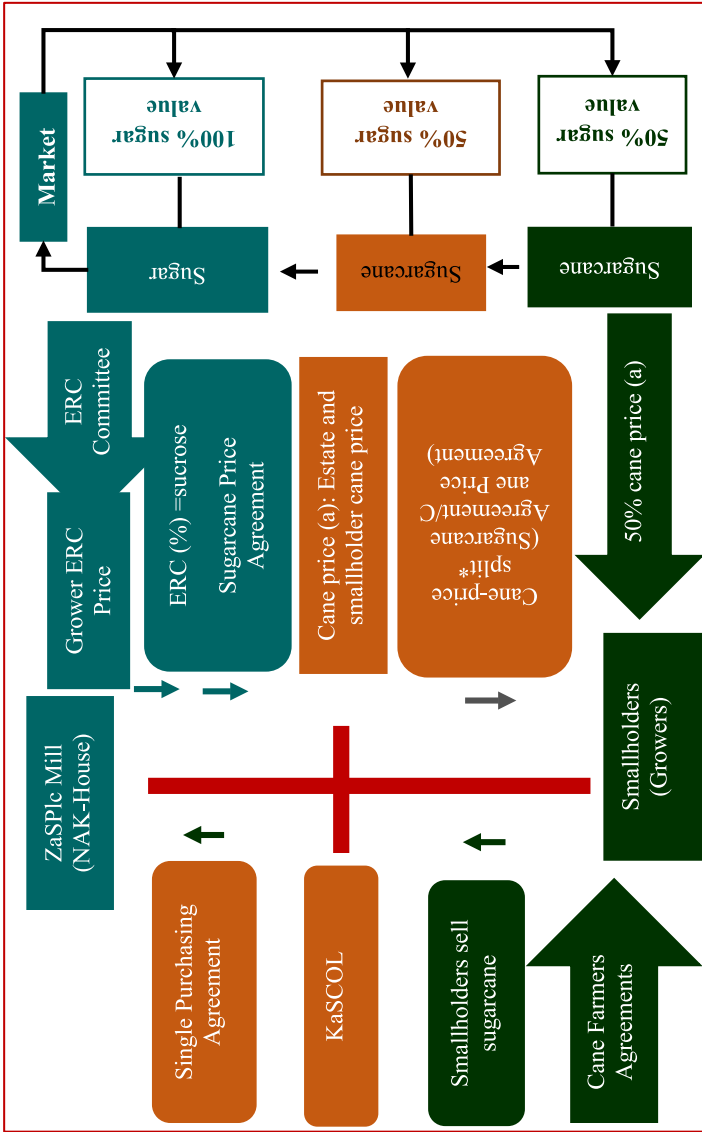


FIGURE 7 Production and marketing arrangement in Kaleya. Upward arrow shows product movement. Downward arrow shows price transmission. [Colour figure can be viewed at wileyonlinelibrary.com]

4.2.3 | Resilience Pathway 3: Direct support towards food security, hired labour and welfare

The third resilience pathway relates to direct support towards food security and hired labour, including welfare. Documentary evidence shows that policy responses in agriculture in Zambia have largely been at macro level such as through a stimulus package (Section 4.1). Agricultural-based and COVID-19-related interventions in traditional value chains have largely been missing, including information on best trading practices during the pandemic. In fact, early government pronouncements and expectations about small-scale producers' opportunity to supply chain stores vis-à-vis supply chain disruptions from South Africa did not yield the desired outcome. The state argued:

'We have entered a new normal Every dark cloud has a silver lining. [COVID-19] opens a window of opportunity for Zambian farmers to produce and sell their products to chain stores that for a long time have denied them business and opted for foreign products ... chain stores [should] prioritise local agricultural products in their localities ... buy agriculture products from our farmers...only products that cannot be sourced from locals should be imported.' (GRZ, 2020b)

In reality, evidence is mixed between those that argue 'this golden opportunity is as of now being captured by peri-urban and other local capitalized farmers who have the networks to interact with the powerful procurement departments of the chain stores' (Nalwimba, 2021, p. 1) and those that find no evidence of such benefits (Manda, 2022b). District interviews confirm farmers did not receive incentives around direct food security and hired labour. Social protection measures and support mechanism were largely thin, affecting food security for poor rural people. Some of these relate to limited coverage of social cash transfer, food security packs and fertiliser input subsidies.

On the contrary, smallholders integrated into the sugar sub-sector as outgrowers fared differently. Integration into sugarcane value chains allowed market and price guarantees—future markets. Farmers agreed there were no significant declines or fluctuations in these process during the pandemic (Group Discussion 2021). In addition, value chain integration allowed KASFA to get Fairtrade Certification. Recent reports show shortly after the COVID-19 pandemic began, Fairtrade quickly mobilised resources (over €15.8 million) to support measures aimed at providing relief from the impacts of COVID-19 while building long-term resilience to future shocks—launching the Fairtrade COVID-19 Producer Relief and Resilience Fund. Since its inception, the Fairtrade COVID-19 Producer Relief and Resilience program supported 939 Fairtrade producer organizations in 57 countries, benefitting 550 762 farmers and workers to date (Fairtrade, 2022). During COVID-19, KASFA applied for a grant from Fairtrade, supporting two objectives. First, farmers used the grant to boost production through purchase of additional inputs. Sugarcane is a labour-intensive crop. In Kaleyā, cane-related labour draws from within the estate as well as compounds surrounding the scheme. Smallholder frequently argued that 'COVID-19 meant that works from surrounding compounds and migrant labour stopped or reduced coming to Kaleyā, which affected privately hired labour' (Interview Kaleyā 2022). Second, the grant also went into procurement of implements such as hoes and shovels and for hiring extra labour for early management of weeds and clearing of field. In addition, KASFA drew from the fund to give ZMK2000 to each member towards building household food security. The fund also enhanced pandemic adaptation through purchasing COVID-19 materials such as disinfectants, sanitisers and masks, covering also the two primary schools within the estate (human capital). However, farmers agreed, 'there was no support at the collective level from KASCOL (the management company) and ZaSPIC (the off taker)', including 'provision of social amenities during the pandemic despite this being enshrined in the Cane Farmers Agreement' (KASFA Representative 2022). However, smallholders credited the coordination arrangement as having permitted access to additional funding from Fairtrade. Some expressed opinions, 'we have realised benefits of Fairtrade beyond the pandemic' (Kaleyā Farmer 2022). There was continued supply of water and energy by KASCOL against reduced rainfall (climatic factors) and power deficits (countrywide) respectively (IMF, 2016). Sugarcane is a labour-intensive crop across land clearing, planting, weeding, irrigation and harvesting. Whereas COVID-19 still affected hired labour, farmers reported access to financial

resources through the grant enabled some farmers to hire extra labour and enhance sugarcane production and household food security. However, reduced flow of migrant workers in search of short-term piece works due to fear of the disease were in some cases reported, with farmers that could not afford to hire extra labour reporting reduced yields and cane quality.

4.2.4 | Resilience Pathway 4: Support towards businesses and trading

The fourth and final resilience pathway relates to business and trading. Multilevel interviews reveal producers in traditional value chains did not receive incentives on businesses, trading and alternative livelihood strategies. This was compounded by peculiarities related to seasonality, which frequently lead to low and fluctuating incomes in months where marketed outputs are concentrated (April, May). Smallholders integrated in sugarcane coordination arrangement responded to low incomes and food insecurity by drawing from Fairtrade support to engage in alternative business and trading opportunities. Not only that, a larger majority of farmers reported drawing from sugarcane savings to engage in small business ventures such as trading in foodstuff as alternative livelihood and fall-back strategies. There are farmers that also drew from sugarcane savings to trade in clothing. Thus, more widely, the ways smallholder farmers play out within the outgrower scheme and through the pandemic period sets us to think about agency and resilience capacity, switching to new trading practices, and in some point delving into non-agricultural activities. We found no reports of in-migration, but some farmers reported they went beyond the scheme in search of alternative production spaces to boost household food security.² Value chain integration also presented psychological benefits 'knowing that as a group we own shares in KASCOL' (Group Discussion 2022).

4.3 | Wider implications

To understand the role and importance of value chain participation *vis-à-vis* the COVID-19 pandemic is to try to first understand realities in traditional cropping patterns and how these compare with sugarcane growers. The second is to explore dynamics around livelihood assets. A larger majority of farmers expressed views that inclusion in sugarcane value chains played a crucial role in strengthening resilience during the pandemic, but that more could have been done through actual planning. Analysis shows farmers in traditional cropping patterns such as maize were vulnerable to state COVID-19 policy responses. Poor coordination arrangements in these traditional value chains negatively affected farmers across gender, leading to social differentiation (Manda, 2022c). National policy responses affected social movements as well as trade exchanges at district and regional level. In Kaleyia, social relations were affected, with respondents frequently pointing to impacts on social gathering such as church and funerals (disrupted social networks). For the wider industry, NGO interviews show the government has been protective of the sugarcane value chain, arguing, 'We don't want to shake these guys (ZaSPIC and subsidiary companies) providing employment' (NGO Interview 2020). Sugarcane on the other hand did not have major sector-specific government COVID-19-related regulations with output generally increasing between 2019 and 2022 (Zambia Sugar Plc, 2021). Importation of inputs such as chemicals and fertilisers from regional sources such as South Africa continued and were handled by KASCOL—thereby shielding farmers from negative market disruptions. Despite historical tensions between KASCOL and farmers about the role and importance of the management company (Manda et al., 2018), farmers generally agreed that 'without KASCOL, things could have been worse' (Household Case Study Interview 2022). The argument is that the presence of management companies such as KASCOL can help to shield farmers from pandemic impacts, and challenges related to availability and access to imported inputs regionally—where much of the pandemic vulnerabilities were common.

However, whereas farmers saw this coordination arrangement as potentially increasing their resilience, given that all costs incurred by the intermediary were still deducted before final payment was due to farmers, means risks

associated with sugarcane growing ultimately accrued to smallholders even during the pandemic (Group Discussion 2019). This feature remains a key conundrum in contractual farming literature. Despite the role and importance of KASCOL in the coordination mechanism, farmers still expressed opinions that reliance on sugarcane alone was risky. Some farmers argued that reliance on a single crop creates feelings of anxiousness among farmers: 'what if the very crop you rely on is to fail? How will we feed our families?' Others expressed opinions that whereas the idea of producing crops and livestock around sugarcane plantation was discouraged by KASCOL (strict agronomic requirements), sugarcane could still be mixed with tree crops such as citrus oranges, 'especially that we are on Fairtrade contract' (Farmer Interview 2022). Analysis shows COVID-19 pandemic strengthened smallholder innovativeness away from the schemes. Some of this relates to increased farming activities and engagements away from the scheme in crop and livestock production, including other income-generating activities (i.e., hospitality industry, businesses, and upgrading educational qualifications to formally engage as teachers in government and private schools). The argument was that these elements were heightened during the pandemic. Smallholders did not report any land sales in part due to the coordination arrangements where KASCOL owns the land. However, no significant sales were reported even outside the outgrower schemes (natural capital). Smallholders complained generally about COVID-policy response's disruptions to schools and colleges (human capital). They reported changes in health-seeking behaviour. These elements were blamed on national policy responses (human). A few farmers reported some changes in food-seeking approaches such as increasing reliance on family and friends despite strains to social relations. More generally, there were disruptions to social networks previously relied upon as fall-back strategy (social capital).

5 | DISCUSSION: COVID-19 PANDEMIC, VALUE CHAIN INTEGRATION AND LIVELIHOOD RESILIENCE

The overall objective of this paper was to explore and understand whether value chain integration increases smallholder livelihood resilience during pandemics. Here, we have shown sugarcane value chain integration enhances livelihood resilience during pandemics through its coordination arrangement, but more could be done. Unlike traditional crops where producers were scared to go into the markets and faced constraints related to policy, etc., indirect involvement in procurement processes for sugarcane farmers, existing ready markets within the coordination mechanism and access to Fairtrade relief funds proved crucial for building small-scale farmers livelihood resilience during the pandemic. Some of this relates to joint procurement process of inputs, market access and stability and direct food security support. However, in as much as this coordination arrangement seemed to have worked well during the pandemic, livelihoods remained narrow and risky, raising the need for crop diversification to strengthen sustainable resilience. This paper helps us to think about the role and importance of smallholder coordination mechanisms in enhancing pandemic recovery and strengthening resilience. Ultimately, the result is a contribution to resilience thinking in value chains *vis-à-vis* shocks, one we hope is appropriate to our conjuncture—the opposite being (in)effectiveness of value chain institutions, and the role and importance of smallholder coordination arrangements during pandemics.

As with Tallontire et al. (2011), we are not blind to the role and importance of local agency where producers in developing countries need to fully understand the governance of global value chains in order to negotiate their own terms of inclusion and alignment—agency. Previous studies have shown there are different scenarios for smallholder access in agrifood markets, opportunities and constraints facing smallholders in diverse chain structures (Lee et al., 2012). Others have shown binaries of inclusion and exclusion and what this means for livelihoods (Manda et al., 2020), including power asymmetries, imperfect information and unsupportive policies. However, the present study goes beyond previous binaries in which farmers are either powerless participants or disadvantaged or excluded (Chen et al., 2020)—to analyse benefits that flow from them during pandemics. This paper argues producers may still develop their agency collectively to negotiate opportunities within their integration (Vorley et al., 2012). Smallholder interactions with value chains vary in form pointing to the multi-dimensional and evolving nature of business spaces. COVID-19 enables a focus on how value chain spaces influence not only the terms of participation of producers in the

territory in which the chain touches ground, but also how this aligns to pandemic recovery and resilience—the ability to absorb, adapt and/or transform to unexpected shocks or events (Lee et al., 2012). This study shows individual rather than collective agreements worked better during the pandemic under specific conditions directed by the management company. This is different from previous reports such as Chen et al. (2020). This is not to say collective production arrangements that enhance market imperatives and negotiation power are always unfavourable (Key & Runsten, 1999). Meanwhile, in terms of the centrality of a future dialogue on whether value chain integration increases smallholder resilience during the pandemic, we emphasise previous arguments about the role and importance of outgrower schemes as important avenues through which smallholders can have guaranteed access to inputs, information and markets (Cotula et al., 2009; Hall et al., 2017; Vicol, 2017). It turns out this feature is very crucial during the pandemic. This raises the need to continuously reflect on the micro-functioning of firms and, in our case, management companies around elements such as transactional costs and enforcements of contracts (Manda et al., 2018). As with previous studies (Key & Runsten, 1999), context-specific dynamics of outgrower schemes, and the nature of relationships farmers enter into with value chain firms, including institutional arrangements and value chain dynamics that shape what farmers can benefit on the one hand, and elements they can be shielded from during crisis periods are crucial. Value chains such as sugarcane can create complex contexts within which smallholders can pursue their livelihoods (Manda, 2022c). However, pandemic experience in Zambia shows these fears are not always true. Scale-appropriate production arrangements supported by stable institutions are key in strengthening resilience (Magar et al., 2021).

Tight control over land and water resources, including commercial services such as procurement of resources on behalf of farmers, played a crucial role in shielding farmers from negative market shocks and negative outcomes of COVID-19 policy restrictions. Whereas the relationship between the company and KASFA as a collective remains problematic (Manda, 2019), individual smallholder contractual relationships with KASCOL remain sound and binding, ensuring input provisioning, including agronomic services through the Smallholder Development Office. Compared to farmers in traditional cropping patterns, sugarcane producers fair better. Meanwhile, in as much as this worked well during the pandemic, livelihoods remained narrow and risky, raising the need for diversification into ventures that could greatly enhance sustainable resilience (Matenga, 2017). More widely, during the pandemic, labour availability reduced, affecting hired labour access and utilisation (labour regimes), but access to financial capital can make a difference (Amin & Viganola, 2022).

Dynamics in livelihoods reflect consequences of contractual arrangements where farmers can carry related risks and benefits, but pandemic experiences mean achieving ‘win-win’ narratives is possible (Borras et al., 2011). However, management companies should ensure availability of supplementary resources that can cushion smallholder food security during pandemics and ultimately boost resilience (preparedness). Understanding coordination arrangements, operations and the way farmers are integrated is a vital step towards creating resilient livelihoods during shocks. Overall, our study helps us to think about the ‘(in)effectiveness’ of state institutions (facilitate/regulate), and the role and importance of smallholder coordination arrangements during pandemics. This study reinforces arguments resilience is multi-dimensional, and that an interplay between firm-level capabilities and smallholder resilience can generate resilience experiences for the latter, producing ‘win-win’ scenarios during pandemics.

6 | CONCLUSION

This paper asked whether value chain integration increases smallholder resilience during the pandemic. The study reveals sugarcane value chain integration enhances livelihood resilience during pandemics through its coordination arrangement, but more should be done. Unlike traditional crops where producers were scared to go into the markets and faced constraints related to policy, indirect involvement in procurement processes for sugarcane farmers, existing ready markets within the coordination mechanism and access to Fairtrade relief funds proved crucial for building small-scale farmers livelihood resilience during the pandemic. Some of this relates to joint procurement process of inputs, market access and stability, and direct food security support. However, in as much as this coordination

arrangement seemed to have worked well during the pandemic, livelihoods remained narrow and risky, raising the need for crop diversification to strengthen sustainable resilience. This paper helps to think about how value chains could be organised to enhance pandemic recovery and build resilience. Ultimately, the result is a contribution often ignored resilience perspective with value chains *vis-à-vis* pandemics, one we hope is appropriate to our conjuncture. More broadly, our study helps us to think about the '(in)effectiveness' of value chain institutions and the role and importance of smallholder coordination arrangements during pandemics. One key insight is that coordination arrangements where lead firms alongside management companies deliver smallholder support in procurement, production and marketing (joint activities) are better placed to build resilient livelihoods. Terms on which smallholders are included and contractual provisions they can rely on during pandemics are also important. Findings demonstrate policies are needed that can compel private value chain actors to maintain and enforce contractual arrangements through periods of shocks (e.g., smallholder production, market links and joint procurement) as pathway to increasing smallholder resilience during pandemics. However, there are questions about gender and household response pathways during pandemics that require further research. More research is needed to assess the manner in which men and women are positioned differentially in the outgrower value chains and during pandemics.

CONFLICT OF INTEREST STATEMENT

We have no conflicts of interest to disclose.

DATA AVAILABILITY STATEMENT

Data are drawn from a project, which can only be accessed upon request.

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ENDNOTES

- ¹ Kaleya (managed by Smallholders Company Limited, KASCOL), Magobbo (managed by Nanga Farms) and Manyonyo (managed by Zambia Sugar Plc) (see Zambia Sugar, 2020, Annual Report)
- ² Land scarcity remains a key challenge in sugarcane coordination arrangements. Some of this relates to agronomic practices around monoculture production of sugarcane. Growing families and demand for food means farmers acquire or rent pieces of land further away from sugarcane schemes (see Manda et al., 2018).

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