SOYABEAN VALUE CHAIN ANALYSIS IN ZAMBIA

by

Brian P. Mulenga, Alefa Banda, Winnie Kasoma-Pele and Antony Chapoto

Working Paper 157
November, 2020

Indaba Agricultural Policy Research Institute (IAPRI)
Lusaka, Zambia
Downloadable at: http://www.iapri.org.zm
Soya Bean Value Chain Analysis In Zambia

By

Brian P. Mulenga, Alefa Banda, Winnie Kasoma-Pele and Antony Chapoto

Working Paper No. 157

November 2020


Mulenga and Antony are Researchers at Indaba Agricultural Policy Research Institute while Pele is an intern. Banda was former Research Associate at IAPRI.
ACKNOWLEDGEMENTS

The Indaba Agricultural Policy Research Institute is a non-profit company limited by guarantee and collaboratively works with public and private stakeholders. IAPRI exists to carry out agricultural policy research and outreach, serving the agricultural sector in Zambia so as to contribute to sustainable pro-poor agricultural development. The Institute extends its appreciation to the Embassy of Sweden for the continued financial support to produce this report. Also, IAPRI is indebted to the United States Agency for International Development (USAID) in Lusaka for supporting the Institute until May 2020. We further would like to acknowledge the technical and capacity-building support from Michigan State University and its researchers. Any views expressed or remaining errors are solely the responsibility of the authors. Direct comments and questions to:

The Executive Director
Indaba Agricultural Policy Research Institute
26A Middleway, Kabulonga, Lusaka.
Telephone: +260 211 261194;
Telefax +260 211 261199;
Email: chance.kabaghe@iapri.org.zm
INDABA AGRICULTURAL POLICY RESEARCH INSTITUTE TEAM MEMBERS

The Zambia-based IAPRI research team comprises of Chance Kabaghe, Ballard Zulu, Antony Chapoto, Hambulo Ngoma, Auckland Kuteya, Munguzwe Hichaambwa, Mulako Kabisa, Stephen Kabwe, Rhoda Mofya-Mukuka, Thelma Namonje-Kapembwa, Mitelo Subakanya, Mary Lubungu, and Brian P. Mulenga. Michigan State University-based researchers associated with IAPRI are Eric Crawford, Milu Muyanga, Steven Haggblade, Thomas S. Jayne, Nicole Mason, Melinda Smale, and David Tschirley.
EXECUTIVE SUMMARY

INTRODUCTION

Soybeans in Zambia has been identified as one of priority value chains with considerable potential for improving nutrition outcomes, income generation, job creation opportunities, particularly for women and youth, and trade. The soybeans market is increasing rapidly, with commercial farmers producing the bulk of the crop in Zambia. The past five years has seen a rise in smallholder farmers’ contribution to total production. Furthermore, the smallholder soybean sub-sector has shown increased potential for enhancing productivity and output owing to availability and uptake of improved production technologies.

With a rapidly growing livestock sector in the SADC region, including Zambia, regional and country-level demand for soybeans is on the increase and is expected to remain high in the foreseeable future. Therefore, the growing demand for soybeans presents a significant opportunity for regional soybeans value chain growth and trade, thus facilitating income growth for both producers, processors, and other value chain actors. However, the sector’s growth potential is hampered by a number of challenges including high production and transaction costs, poor transport infrastructure and uncertain trade policies. Addressing these challenges could help boost soybeans production and strengthen the value chain both locally and in the region.

Therefore, the goal of this report is to provide an analysis of the soybeans value chain in Zambia and understand how to better address the constraints and exploit existing opportunities in the value chain. This will help inform the Regional Value Chain (RVC) of interventions and policies that should be prioritized to boost local production, marketing and promote intra-regional trade.

METHODOLOGY

The study involved review of secondary literature on past work in the soybeans sector, policy documents, and press articles to extract major policy pronouncements that affect the value chain. This process was critical in identifying data and information gaps for filling up during field research work which targeted farmers growing soybeans, grain traders, processors, and various service providers in the value chain. The study utilized quantitative data, specifically from the nation-wide representative Rural Agricultural Livelihoods Survey (RALS) of 2012, 2015, and 2019. Analysis of these data helped establish smallholder soybeans production and marketing behavior and patterns across the country. Stakeholder interviews with value chain players including farmers, traders, processors, service providers were conducted to elicit information on practical value chain challenges and opportunities.

FINDINGS

Production

The soybeans value chain in Zambia has undergone notable transformation in the past ten years. Initially, production was dominated by commercial farmers, with minimal smallholder contribution. However, production trends indicate increasing share of smallholder production to total national production, standing at 45% in 2019 up from 17% in 2010. Production of soybeans
in the country has continued to increase from about 110,000 metric tons (MT) in 2010 to 281,000 MT in 2019. Generally, yields have remained low, particularly among smallholder farmers, hovering around 0.9 -1 MT/Ha against average yields of about 2.5 MT/Ha for commercial farmers.

Soybeans profit under smallholder production is projected at about ZMW 1,507.08\(^1\) per hectare as at 2018. Smallholder production is still profitable even without use of inoculum, provided a producer adheres to good management practices. Under commercial production, farmer net profits are projected at ZMW 514.19 per hectare at soybeans output price of ZMW 3,537.06/MT. With good management practices and correct input application, a commercial farmer is able to break-even if yield and price declined to 3.35 MT/Ha and ZMW 3,389.93/MT, respectively.

With regards to input supply and use, majority of smallholder farmers use recycled (farm-saved) seed, and rarely use agro-chemicals such as fertilizer, inoculum, and herbicides. Commercial farmers on the other hand use a mixture of farm-saved and certified seed purchased from the commercial market.

**Marketing**
Smallholder soybeans marketing is heavily reliant on product aggregation, which happens at different levels and scales, involving different actors. At the village level, smallholder farmers identify bulking centers where farmers take their crop to accumulate sufficient volume that is economical to transport to district centers. Main buyers of soybeans in 2019 included National Milling in Lusaka, Pembe in Lusaka, Mt. Meru in Katuba (Chibombo District) near Lusaka, Global Industries on the Copperbelt province, and Export Trading Group. Others are NWK Agricultural Services, AFGRI Corporation, Parrogate and Seba Foods. From rural district centers, larger trucks are used to transport the commodity to supply processors. Considerable volume of trade is taking place across the Zambia-Malawi and the Zambia – Democratic Republic of Congo (DRC). For Zambia and Malawi, soybeans flows in or out depending on the price differential between the two countries.

Commercial farmers have a well-structured market that may sometimes involve forward contracts and preferential procurement arrangements. The crop is bulked on farms and moved directly to the processor or a warehouse in readiness for export. Main buyers of soybeans from commercial farmers are processors who produce mainly cooking oil and soy cake (e.g. Global Industries, Novatek, Mt Meru, Zamanita) or stock feed manufacturing (e.g. Olympic Milling, National Milling, Tiger Feeds, Nutri Feed, Quality Feeds, and Pembe Milling).

**Processing**
The soybeans processing industry has continued to grow, mostly triggered by increasing demand for soybeans-based food, cooking oil and the booming livestock and poultry sector. In 2010, most of the soybeans was in the hands of processors, with installed and operating capacity estimated to be 30,025 and 21,819 MT/month respectively. Currently, the oilseed crushing and refinery capacity stands at about 550,000 and 450,000 MT/annum, respectively.

---

\(^1\) At the time of writing this report, the exchange rate was ZMW 18.34 per USD
**Policy**
The focus on maize through input and marketing subsidies acts to impede crop diversification by smallholder farmers into other high value crops such as soybeans. Further, the high cost base associated with soybeans production coupled with poor infrastructure and market access creates an entry barrier for smallholder farmers – most of whom heavily rely on the Farmer Input Support Program (FISP) for inputs. As a result, soybeans is dominated by the large scale commercial farmers who are not dependent on government subsidized inputs.

Another policy logjam hindering growth of Zambia’s soybeans sector has to do with unstable trade policies. A prominent symptom of unstable trade policies in Zambia is the unscheduled (ad hoc) nature in which government imposes export/import bans in the country. For example, in 2017, the government imposed an export ban on soybeans without prior communication to stakeholders as well as cancelling existing export permits at the time, resulting in Zambia losing about ZMW 1 billion (USD 544,256) in export revenue due to the ban.

In addition to the relatively high cost of production for soybeans, soybeans products, including cooking oil is subject to the standard value added tax (VAT) at 16%, making the locally produced cooking oil less competitive than imports from countries such as Kenya, and Tanzania, which have removed VAT on edible oil.

**Trade**
Despite the rapid increase in soybeans production and oilseed crushing capacity (currently estimated at 550,000MT per annum up from 375,000MT per annum in 2013), Zambia remains a net importer of vegetable oils (Meyer et al. 2018). In addition to soybeans, Zambia’s total oilseed crushing comprises cottonseed and sunflower and hence all capacity is not utilized for soybeans, thus Zambia has continued to export significant volumes of raw soybeans. Zambia continues to receive an influx of cheap imported edible oil, mostly from the Far East and East Africa.

In addition to formal trade, informal trade continues to thrive, mainly driven by the unstable trade policy environment and price differential with neighboring countries (e.g. Malawi and DRC), which in some instances it is twice or thrice the domestic prices. The porous nature of most of Zambia’s borders with neighboring countries such as Malawi, DRC, and Tanzania, make it relatively easy for smugglers to move soybeans.

**Logistics and Trade Costs**
High transport costs averaging about ZMW 0.95/Km/MT reduce farmers’ farm gate price. Further, soybeans is almost entirely transported by road, which is more expensive than other modes such as railways. In addition, farmers have to pay a local district council Crop Levy when transporting soybeans and other grain across district boundaries but within Zambia. Currently the Crop Levy is ZMW 0.94/Kg, which represents between 15% – 17% of the market price. For processors, the cost of doing business remains relatively high, precipitated by the unfavorable tax regime.
Access to Finance
Access to finance remains a challenge especially among smallholder farmers as well as other actors in the value chain, who besides having no collateral also have low repayment ability. Efforts to address the challenge of access to credit and finance, such as the Zambia Agricultural Commodity Exchange (ZAMACE) and the warehouse receipt system (WRS) have floundered, mainly due to lack of buy-in from financial institutions. The collaboration between ZAMACE and LuSE is expected to enhance credibility of ZAMACE, which in turn is expected to build confidence among financial institutions to participate.

COVID-19
The soybeans value chain has not been spared by the effects of the COVID-19 pandemic. Although it might be too early to detect any discernable impacts of the pandemic on the soybeans value chain, the general interruption of the food systems does affect the soybeans sector. As most Zambia’s neighbors started to record cases of COVID-19, countries took swift measures including closing borders and intensifying screening at border entry points. This resulted in delayed movement of food items such as edible oil and possibly industrial products such as soybeans meal, and cake to destination countries.

RECOMMENDATIONS FOR NATIONAL AND REGIONAL POLICY REFORMS

National level

- Government and private sector should rectify implementation challenges of the electronic voucher based FISP (e-FISP) and revert to rolling it out country-wide. The flexibility of the e-FISP in terms of input choice helps facilitate diversification into crops such as soybeans.
- There is need to entrench transparency and predictability in trade policies to help actors devise investment strategies with a high degree of certainty. Enacting the Agricultural Marketing Bill is one way to entrench consultation, transparency and predictability in agricultural trade policies.
- To help ease access to finance, the Moveable Assets Act that recognize crop stocks that include soybeans as collateral needs buy-in from key stakeholders, particularly financial intuitions, whose role is central to the full operationalization and implementation of the Act. Financial institutions should be engaged to help provide guidance on how credit risk profile of the agricultural sector can be improved.
- To help address the high production and marketing costs, certain specific taxes on value addition such as VAT on refined oil needs further scrutiny, and where economically viable, government should consider making such products VAT exempt.

Regional level
• Leverage regional platforms such as the Regional Network of Agricultural Policy Research Institutes (ReNAPRI) for enhanced regional lesson-sharing on productivity and marketing enhancement policies.

• Build national and regional market information systems, with lessons from South Africa’s robust South African Grain Information System (SAGIS) to help with real-time tracking of stock and market information for better policy decision making.

• Using regional platforms such as ReNAPRI, governments in the region should be encouraged to view trade as a means of increasing productivity and ensuring self-sufficiency.

• To help curtail smuggling and contravening of regional trade protocols, there is need to strengthen monitoring systems and devising mechanisms that enhance product traceability among COMESA and SADC member countries.
Table of Contents

ACKNOWLEDGEMENTS ........................................................................................................ iii
EXECUTIVE SUMMARY ...................................................................................................... v
LIST OF FIGURES ................................................................................................................ ii
LIST OF TABLES ................................................................................................................ iii
1.0 Introduction ..................................................................................................................... 4
2.0 Data and methods .......................................................................................................... 6
  2.1 Data ............................................................................................................................ 6
  2.2 Methods ...................................................................................................................... 6
3.0 Results and discussion .................................................................................................. 7
  3.1 Evolution of the value chain over the past 10 years .................................................... 7
  3.1.1 Input supply ........................................................................................................... 7
  3.1.2 Production ............................................................................................................ 10
  3.1.3 Aggregating and Marketing .................................................................................. 16
  3.1.4 Processing ........................................................................................................... 17
  3.1.5 Mapping Zambian Soya Value Chain ................................................................... 18
  3.2 The effectiveness of the national policy framework to support the value chain ...... 19
  3.3 Formal and informal trade dynamics ......................................................................... 23
  3.3.1 Formal trade ....................................................................................................... 23
  3.3.2 Informal trade .................................................................................................... 26
  3.4 Drivers of high logistics and trade/transport costs ....................................................... 27
  3.5 Access to finance for soya producers (including structured finance) ....................... 28
  3.6 Access to and quality of inputs .................................................................................. 29
  3.6.1 Input access ....................................................................................................... 29
  3.6.2 Input quality ...................................................................................................... 30
  3.7 Effect of the covid-19 pandemic on value chain functioning ..................................... 31
4.0 Conclusion and recommendations ............................................................................... 32
REFERENCES .................................................................................................................... 35
LIST OF FIGURES

Figure 1. Main sources of soybeans seed for smallholder farmers ........................................... 8
Figure 2. Area planted to soybeans in hectares, 2009/2010 - 2018/2019 agricultural seasons ... 11
Figure 3. Expected soybeans production, 2009/2010 - 2018/2019 agricultural seasons .......... 12
Figure 4. Expected soybeans yield (MT/Ha), 2009/2010 - 2018/2019 agricultural seasons ...... 13
Figure 5. Zambia Soya bean value chain map ........................................................................... 18
Figure 6. Procedure for export permit application ...................................................................... 21
Figure 7. Soya bean and related products export trend, 2015-2019 ........................................... 24
Figure 8. Soybeans grain and related products import trend, 2015-2019 ................................. 26
LIST OF TABLES

Table 1. Main source of seed among smallholder soybeans producers during 2010/2011, 2013/2014, and 2017/2018 agricultural seasons .......................................................... 9
Table 2. Gross margin analysis or smallholder production .............................................. 14
Table 3. Gross margin analysis for commercial/large scale production .......................... 15
Table 4. Government policies, challenges and impacts on soybeans value chain ............. 23
1.0 Introduction

The World Bank Group, under its project “Supporting the soybeans regional value chain in the Southern African Development Community (SADC)” has as one of its goals to promote industrialization and trade within the SADC region. This will be achieved through boosting intra-regional trade, unlocking investment, creating jobs, and reducing poverty by supporting the development of the soybeans regional value chain. The soybeans value chain presents an avenue for a more inclusive industrialization and trade development strategy given the sector’s composition, which include a significant proportion of smallholder producers, processors, and service providers in the SADC region. Thus, by focusing on the soybeans value chain, the project can help to integrate smallholders into the regional value chain, thereby enhancing access to new knowledge and higher quality inputs that can increase productivity and incomes. For downstream value chain actors, consistent supply of high-quality soybeans will help to strengthen the business case for continued investment and upgrading.

In Zambia, the soybean has been identified as a priority value chain, owing to its numerous benefits ranging from nutrition, income generation, job creation, particularly for women and youth, and trade potential (Soya Policy action Group [SOPA] 2017; Munguzwe et al. 2014; Lubungu et al. 2013). The soybeans market is increasing rapidly, with commercial farmers producing the bulk of the crop in the country and growing scope for export (Munguzwe et al. 2014; TechnoServe 2011). Although commercial farmers dominate the sector in terms of production, the past five years has seen a rise in smallholder farmers’ contribution to total production, with increased potential for enhancing productivity and output owing to availability and uptake of improved production technologies. For example, according to the Crop Forecast Survey (CFS) conducted by the Ministry of Agriculture (MoA) and the Zambia Statistical Agency (ZSA), in 2019 smallholder farmers accounted for 45% of total production up from only 17% in 2015.

With regards to utilization, soybeans in Zambia, is mostly used as an industrial crop, including oil production, soybeans chunks and soybeans meal. The by-product (such as soybeans cake) is used as an animal feed and is either fed directly to animals or processed with other ingredients into animal feed stock. As an animal feed, soybeans by-products provide relatively low cost, high quality protein in feed ration formulation. With a rapidly growing livestock sector in the SADC region, including Zambia, regional and country-level demand for soybeans is on the rise and is expected to remain high in the foreseeable future. This presents a significant opportunity for regional soybeans value chain growth and trade, thus facilitating income growth for value chain actors.

Notwithstanding the strong production, processing, marketing, and trade potential, soybeans remains a marginally attractive commercial crop mainly due to high production and transaction costs, poor transport infrastructure and uncertain trade policies. Furthermore, the crop remains less attractive to smallholders and small enterprises as they lack appropriate inputs, expertise and guaranteed markets (Munguzwe et al. 2014; Lubungu et al. 2013; TechnoServe 2011). To improve the soybeans value chain, it is important to design well informed and targeted...
interventions aimed at making key improvements along the value chain in order to take advantage of the growing domestic market and regional export opportunities within SADC and beyond.

Against this background, the goal of this report is to understand how to better address the constraints and exploit existing opportunities in Zambia’s soybeans value chain. This will help inform the RVC of interventions and policies that should be prioritized to boost local production, marketing and promote intra-regional trade.
2.0 Data and methods

2.1 Data
As a starting point, the study involved review of secondary literature on past work in the soybeans sector, policy documents, and press articles to extract major policy pronouncements that affect the value chain. This process was critical in identifying data and information gaps to fill up during fieldwork which targeted farmers growing soybeans, grain traders, processors, and various service providers. Particular attention was paid to capture potential leverage points of hubs for value chain performance.

In addition to desk review, analysis of nationally and district level representative Crop Forecast Survey (CFS) conducted annually by Ministry of Agriculture (MoA) and Central Statistical Office (CSO), and the Rural Agricultural Livelihoods Survey (RALS) of 2012, 2015, and 2019 was conducted to establish smallholder soybeans production and marketing behavior and patterns. Outputs from analyses of these datasets helped identify and select areas of higher concentration of commercial and smallholder soybeans producers, which in turn informed the sampling of provinces/districts and sub district areas in which to carry out the field work for the study. The selected districts were Mkushi (Central Province), Mpongwe, Masaiti (Copperbelt), Lundazi, Chipata and Katete (Eastern Province). Ideally, these districts should have been physically visited by researchers, however, due to COVID-19 containment measures, movement across districts were restricted and also most farmers and stakeholders preferred virtual or telephone interviews as opposed to physical meetings. Thus, the bulk of the interviews were conducted over the phone or via email.

2.2 Methods
Quantitative data from the nationally representative databases were analyzed using Stata and Excel to generate graphs and tables. Qualitative data from key informant interviews and value chain actors were analyzed for content. Where necessary, qualitative data was also used to validate and complement results from quantitative data analysis. Following the methodology section, the rest of the report is organized as follows. Section 3 presents a discussion on how the soybeans value chain has evolved over the past 10 years including the current status, section 4 is a discussion on the policy environment in the country as it relates to soybeans, while section 5 addresses the issue of formal and informal trade dynamics. In section 6 the report examines drivers of high logistics and trade costs, section 7 addresses the challenges associated with access to finance, section 8 is a discussion on access to and quality of inputs. Section 9 builds in some notable effects of the COVID-19 on the value chain, before concluding and presenting national and regional policy recommendations in section 10.
3.0 Results and discussion

3.1 Evolution of the value chain over the past 10 years

3.1.1 Input supply

Seed

The key inputs in the production of soybeans are seed, fertilizers and agro-chemicals such as inoculum and herbicides. Input supply remains one of the key challenges in the soybeans value chain, particularly for smallholder production. With regard to seed, the bulk of purchased soybeans seed in Zambia is produced domestically, with only a small quantity being imported, mostly from South Africa and Malawi. As most of the soybeans seed varieties used in Zambia are open pollinated, and thus can easily be recycled, the use of farm-saved seed from own harvest still remains wide spread among both smallholder and large scale commercial producers, albeit much more among the former. The high prevalence of using farm-saved seed has driven down demand for soybeans seed, which has created a disincentive for local seed companies to invest in the production of soybeans seed.

Despite the booming seed sector in Zambia, only a few seed companies are involved in production and supply of soybeans seed, notable among them are Zambia Seed Company (Zamseed), Pannar, Pioneer, MRI, Kamano and Seedco (RALS 2019). Besides private sector, the public sector, through the Zambia Agriculture Research Institute (ZARI), is involved in seed production, but at a limited scale owing to the institute’s low capacity to multiply seed.

Figure 1 shows the proportion of smallholders acquiring seed from 3 sources (own harvest, purchased and other sources) in the 2010/11, 2013/14 and 2017/18 agricultural seasons. Generally, the proportion of smallholder farmers using farm-saved seed declined marginally from 58% in 2011 to 53% in 2018. During the corresponding period, the percentage of smallholder farmers who purchased seed significantly increased from 10% in 2011 to 38% in 2018, mainly driven by the favorable market price for soybeans during the 2016 and 2017 marketing seasons, which motivated an increasing number of smallholder farmers to venture in soybeans production.
Figure 1. Main sources of soybeans seed for smallholder farmers
Source: IAPRI/MoA/CSO RALS, 2012, 2015 and 2019

Agro-chemicals

Supply of agro-chemicals such as herbicides, inoculum and fertilizers, is dominated by the private sector with limited involvement of public sector. A soybeans value chain study by Munguzwe et al. (2014) identified numerous major suppliers of agro-chemicals including companies such as Amiran Limited, CropChem Limited, Agro-Smart Services Limited, ATS Agrochemicals, Agrifocus and Cropserve Limited. In addition to these established agro-chemical companies, chemicals used in soybeans production are also stocked by various agro-dealer shops around the country. Public sector involvement is mainly through ZARI, which is the only producer of inoculum in Zambia Lubungu et al. (2013), which is supplied in form of liquid and dehydrated powder. Domestic production of inoculum is supplemented by imports such as Soya Grow from South Africa (Munguzwe et al. 2014; TechnoServe, 2011). Key suppliers of fertilizer are Nitrogen Chemicals of Zambia (NCZ), Greenbelt Fertilizers (GBF), Export Trading Group (ETG), Nyiombo, Sasol and Omnia Fertilizers. Lime is also available from local producers like Ndola lime and Turtle Agro Limited.

Smallholder farmers’ access to inputs

Smallholder farmers—classified as those that cultivate less than 20 Ha—access their inputs mostly through local agro-dealer shops dotted around the country. These agro-dealer shops tend to be concentrated in central business districts (locally known as boma). As soybeans input availability is largely demand-driven, input stocking levels and variety available varies across production regions, with high production regions such as Central, Eastern, and Copperbelt provinces stocking higher quantities and wider variety of seed and other inputs such as chemicals.

Interviews with smallholder farmers and agro-dealer shops in Central province, the highest production region in the country, reveal that soybeans input stocking levels remain relatively low. This was mainly attributed to the risk associated with dealing with leftover stock in the event of low demand, especially for seed where most farmers use farm-saved seed. As a result
agro-dealers have to strike a delicate balance of meeting demand but at the same time ensuring they do not overstock. Seed packaging has remained the same over the past 10 years with seed available in various packages ranging from 2Kg to 25Kg bags.

In terms of seed sourcing, the main sources among smallholder farmers vary, but one feature remains consistent, which is that over half source their seed from own harvest. Table 1 gives a summary of the main sources of seed among smallholder farmers for 2010/2011, 2013/2014, and 2017/2018 agricultural seasons. Consistently, the highest proportion of farmers in all the three seasons reported own harvest as their main source of seed. Two major factors explaining this phenomenon are: 1) farmers usually face cash constraints during input purchase period, and tend to prioritize maize input over other crops including soybeans; 2) farmers have realized that there is little loss of hybrid vigor in recycling soybeans seed (Munguzwe et al. 2014). One other important result from the table is that only about 8-10% of smallholder farmers in all 3 agricultural seasons acquired seed on a cash basis through purchases from various commercial entities. The majority acquired seed on a non-cash basis from sources that include Non-Governmental Organizations (NGOs), extension personnel, research institutes etc.

**Table 1. Main sources of seed among smallholder soybeans producers during 2010/2011, 2013/2014, and 2017/2018 agricultural seasons**

<table>
<thead>
<tr>
<th>Seed source</th>
<th>2011 Number of households (%)</th>
<th>2014 Number of households (%)</th>
<th>2018 Number of households (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private retailer/agro-dealer at boma</td>
<td>4,003 (7.1%)</td>
<td>149 (0.2%)</td>
<td>14,271 (7.2%)</td>
</tr>
<tr>
<td>Private seed company</td>
<td>662 (1.2%)</td>
<td>6,958 (8.5%)</td>
<td>4,363 (2.2%)</td>
</tr>
<tr>
<td>Government Food Security Pack</td>
<td>97 (0.2%)</td>
<td>2,435 (2.9%)</td>
<td>58 (0.1%)</td>
</tr>
<tr>
<td>Government Farmer Input Support Program</td>
<td>87 (0.2%)</td>
<td>96 (0.1%)</td>
<td>1,418 (0.7%)</td>
</tr>
<tr>
<td>Another farmer</td>
<td>10,628 (19%)</td>
<td>25,518 (31.3%)</td>
<td>53,265 (26.7%)</td>
</tr>
<tr>
<td>Own Harvest</td>
<td>32,821 (58.5%)</td>
<td>38,265 (47%)</td>
<td>106,514 (53.3%)</td>
</tr>
<tr>
<td>Outgrower/input credit, not NWK and/or Cargill</td>
<td>710 (1.3%)</td>
<td>1,300 (1.6%)</td>
<td>2,605 (1.3%)</td>
</tr>
<tr>
<td>Private retailer/agro-dealer outside boma</td>
<td>161 (0.3%)</td>
<td>661 (0.8%)</td>
<td>3,538 (1.8%)</td>
</tr>
<tr>
<td>Local seed producer</td>
<td>214 (0.4%)</td>
<td>349 (0.4%)</td>
<td>1,091 (0.6%)</td>
</tr>
<tr>
<td>Coop/farmer group. e.g. ZNFU Lima credit</td>
<td>448 (0.8%)</td>
<td>855 (1.1%)</td>
<td>1,796 (0.9%)</td>
</tr>
<tr>
<td>Friends or relatives</td>
<td>5,254 (9.4%)</td>
<td>2,090 (2.6%)</td>
<td>6,818 (3.4%)</td>
</tr>
<tr>
<td>COMACO (Community Markets for Conservation)</td>
<td>547 (1.0%)</td>
<td>2,401 (3.0%)</td>
<td>2,114 (1.1%)</td>
</tr>
<tr>
<td>Other sources</td>
<td>431 (0.9%)</td>
<td>392 (0.6%)</td>
<td>1,842 (1.4%)</td>
</tr>
<tr>
<td>Total</td>
<td>56,064 (100%)</td>
<td>81,506 (100%)</td>
<td>199,802 (100%)</td>
</tr>
</tbody>
</table>

Source: IAPRI/CSO/MoA, RALS 2012, 2015, and 2019
Another important input in soybeans production is inoculum, which enhances both production and nitrogen fixation. Among several benefits of soybeans (and other legumes) is that it is able to ingest atmospheric nitrogen that other plants need to get from the soil. Inoculation is the process of coating the seed with the right bacteria to ensure nodulation, which increases bean size, boosts harvests, and better fixes nitrogen (Keyser and Li 1992; Brockwell et al. 1995; Albareda et al. 2009). Access to inoculum among smallholder farmers continues to be low, with many farmers not aware of the benefits associated with inoculum. Among those who are aware only a few can afford it given that access remains cash-based. A 125 gram pack of inoculum currently costs ZMW 45, and a farmer requires 4 packs to inoculate enough seed to plant a hectare, which brings the total per hectare to ZMW 180.

**Commercial farmers’ access to inputs**

In Zambia, commercial farmers (also referred to as large scale farmers) are classified as those who either cultivate a total area of 20 Ha and above or are highly commercialized based on their average annual turnover. Access to seed and other allied inputs for soybeans production for this group remains less of a challenge compared to their smallholder counterparts. These farmers access most of their inputs through more formalized channels such as seed company outlets and agents, agro-chemical companies (e.g. Amiran, Syngenta, ATS, and Osho) as well as established agro-dealer shops. Agro-dealers and agro company outlets in regions with high concentration of commercial farmers usually stock large quantities and wider variety of inputs to meet the high demand for inputs by commercial farmers in areas such as Mkushi in Central province.

### 3.1.2 Production

Zambia has remained self-sufficient with respect to soybeans production. As the second-largest soybeans producer in Southern Africa, Zambia has continued to register output increase as more smallholder farmers engage in soybeans production (Chapoto and Chisanga 2016). In the last 10 years, the country has seen an increase in soybeans production mostly driven by area expansion among smallholder farmers. Over the 10-year period, area cultivated under smallholder production increased over 5-fold from 28,871 hectares in 2009/2010 season to about 176,670 hectares in 2018/2019 season, whereas that under commercial production barely doubled from about 30,000 hectares to slightly over 60,000 hectares during the same period (Figure 2). Most of the commercial production is concentrated around Central, Lusaka, Copperbelt and Southern provinces, whereas smallholder production is spread across the country with Central and Eastern provinces being among the highest.
Figure 2. Area planted to soybeans in hectares, 2009/2010 - 2018/2019 agricultural seasons
Source: MoA/CSO Crop Forecast Survey, various years

Increase in area cultivated has resulted in a corresponding increase in expected output for both smallholder and commercial farmers, with smallholder output currently standing at 127,000 metric tons (MT) in the 2018/2019 season up from about 27,000 MT in 2009/2010 season. Similarly, commercial farmers’ output has increased to over 153,000 MT in 2018/2019 season up from about 85,000 MT in 2009/2010 season (Figure 3). The booming livestock and poultry sector in the country continues to be among the major drivers of soybeans demand, which has triggered supply response from soybeans producers. Although smallholder production has been increasing at a higher rate, with a year-on-year increase of about 8%, compared to commercial production, whose year-on-year average increase is 4%, the latter still dominates production, accounting for about 55% of the total output as at 2018/2019 agricultural season.

However, the sharp rise in the share of smallholder production to total production is noteworthy. In the last 10 years, smallholder contribution to total production almost doubled from 23% in 2010 to 45% in 2019. Key among the push factors for increased smallholder share of total production include soybeans price, which despite being volatile has remained favorable compared to crops like maize. As maize became more politicized resulting in market distortions, commercial farmers divested from maize and invested in soybeans, which was, and to a large measure remains, less political. This contributed to the initial increase in soybeans production in the country, which was mostly driven and dominated by commercial farmers.

When prices surged, many smallholders began substituting soybeans for maize, mainly through land reallocation. Further, a growing number of urban residents in formal employment are venturing in smallholder farming dubbed “weekend farming” in nearby rural towns. Many of
these *weekend farmers* as they are commonly known in Zambia, produce cash crops including soybeans and horticultural crops motivated by the high price and market availability. This phenomenon has contributed to the rise in smallholder share of soybeans production. Smallholder production peaked in 2017 following a sharp rise in soybeans prices the previous season. This resulted in oversupply in 2018, which, in part, led to a slump in prices, and consequently decline in production (due to reduced area planted) in 2019.

![Expected Production in Metric Tonnes (MT)](chart.png)

**Figure 3.** Expected soybeans production, 2009/2010 - 2018/2019 agricultural seasons

Source: MoA/CSO Crop Forecast Survey, various years

Although soybeans output has been increasing over-time, this increase is mainly driven by expansion of area planted rather than increased yields. Generally, yields have remained low, particularly among smallholder farmers, hovering around 0.9 - 1 MT/Ha against average yields of about 2.5 MT/Ha for commercial farmers. Until 2017/2018 average yield for commercial farmers remained above 2 MT/Ha, however, the severe drought conditions of the previous two seasons had devastating effects on yields resulting in a sharp decline (Figure 4). Commercial farmers have maintained a relatively good yield owing to good management practices and correct application of the inputs. Further, most commercial farmers irrigate their crop, thus cushioning themselves against the adverse effects of weather shocks, particularly droughts.

Low yields among smallholder farmers is attributed to a myriad of factors, including climate change, a decline in soil fertility over-time and limited use of improved seeds and inoculum (Siamabele 2019; Munguzwe et al. 2014; Lubungu at al. 2013; TechnoServe 2011). Smallholder soybeans production is almost entirely rain-fed with little to no fertilizer applied unless residual fertilizers are available in the soil when grown in rotation with maize and/or cotton. The low
fertilizer use is partly due to the widespread perception among smallholder farmers that soybeans does not require fertilizer.

**Figure 4.** Expected soybeans yield (MT/Ha), 2009/2010 - 2018/2019 agricultural seasons
Source: Crop forecast survey various years

**Gross margin analysis**

**Smallholder production**

Soybean profit (gross margins adjusted for return to management) under smallholder production is projected at about ZMW 1,507.08 per hectare as at 2018. With good management practice and input application, a smallholder can realize a yield of 2.5 MT/HA and can still break-even with a slight yield decline to 2.43 MT/HA at a price of ZMW 4,290.60/ MT. As illustrated in Table 2 below, smallholder production is still profitable even without use of inoculum, provided a producer adheres to good management practices.

Smallholder producers face several challenges hindering soybeans yield improvements and profitability. The major constraints include limited crop management systems attributed mainly to limited extension support and farmer education resulting in low yields, limited and/or no access to mechanization (due to high costs) which limits area planted, capital constraints mostly driven by high lending interest rates and/or collateral requirements by commercial banks, poor post-harvest handling, and relatively high input costs (such as herbicides and inoculum). In addition to commercial banks and other private sector lending institutions, public sources of capital/finances for smallholders e.g. Citizens Economic Empowerment Commission (CEEC) exist to provide affordable credit to small and medium enterprises. However, such institutions continue to be viewed as bureaucratic and sometimes “political”.

---

13
Table 2. Gross margin analysis or smallholder production

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Rate/Ha</th>
<th>Unit Price</th>
<th>Amount (ZMW/Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soya grain</td>
<td>MT</td>
<td>2</td>
<td>3,537.06</td>
<td>7,074.12</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td>7,074.12</td>
</tr>
<tr>
<td><strong>Variable Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed</td>
<td>Kg</td>
<td>100</td>
<td>18.14</td>
<td>1,814.40</td>
</tr>
<tr>
<td><strong>Fertilizers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp D</td>
<td>50 kg bag</td>
<td>4</td>
<td>259.35</td>
<td>1,037.40</td>
</tr>
<tr>
<td><strong>Chemicals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soy Flow</td>
<td>Lt/100Kg</td>
<td>0.4</td>
<td>189.63</td>
<td>75.85</td>
</tr>
<tr>
<td>Roundup</td>
<td>kg</td>
<td>3</td>
<td>78.94</td>
<td>236.82</td>
</tr>
<tr>
<td><strong>Insecticides</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decis forte</td>
<td>ml</td>
<td>250</td>
<td>0.45</td>
<td>112.50</td>
</tr>
<tr>
<td>Packing</td>
<td>Bags</td>
<td>40</td>
<td>2.00</td>
<td>80.00</td>
</tr>
<tr>
<td><strong>Ploughing</strong></td>
<td></td>
<td></td>
<td></td>
<td>400.00</td>
</tr>
<tr>
<td>Labor</td>
<td>Man-days</td>
<td>70</td>
<td>22.34</td>
<td>1,563.80</td>
</tr>
<tr>
<td>Transport</td>
<td>MT/Km</td>
<td>150</td>
<td>1.20</td>
<td>180.00</td>
</tr>
<tr>
<td><strong>TVC</strong></td>
<td></td>
<td></td>
<td></td>
<td>5,500.77</td>
</tr>
<tr>
<td>Interest</td>
<td>% of TVC</td>
<td>0.2</td>
<td>1,100.15</td>
<td></td>
</tr>
<tr>
<td><strong>TVC + interest</strong></td>
<td></td>
<td></td>
<td></td>
<td>6,600.93</td>
</tr>
<tr>
<td><strong>Gross Margin</strong></td>
<td></td>
<td></td>
<td></td>
<td>473.19</td>
</tr>
<tr>
<td>Fixed Costs</td>
<td>% of TVC + Interest</td>
<td>0.3</td>
<td>6,600.93</td>
<td>1,980.28</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td>8,581.20</td>
</tr>
<tr>
<td>Profit (+return to management)</td>
<td></td>
<td></td>
<td></td>
<td>1,507.08</td>
</tr>
<tr>
<td>Break-even Price</td>
<td>ZMW/ton</td>
<td></td>
<td></td>
<td>4,290.60</td>
</tr>
<tr>
<td>Break even yield</td>
<td>MT/ha</td>
<td></td>
<td></td>
<td>2.43</td>
</tr>
</tbody>
</table>

Source: Zambia National Farmers Union Headquarters, 2020

There have been efforts and opportunities to help address some of the challenges smallholder farmers face. For example, in 2014 – 2016/2017 there was an initiative to link smallholder farmers with the Conservation Agriculture Scaling Up Project (CASU), implemented by FAO which was promoting sustainable smallholder production systems involving soybeans rotations with cereals, among others, and use of conservation farming techniques as well as facilitating linkages to appropriate inputs. In 2019, FAO launched a follow-on project, Sustainable Intensification of Smallholder Farming Systems in Zambia (SIFAZ), which aims to address challenges of climate change through promoting climate smart agriculture systems, focusing on research in agricultural development, farm mechanization, and marketing systems. Projects like
SIFAZ can help enhance productivity of smallholder soybeans producers through facilitating their access to mechanization and market linkages.

**Commercial production**

Table 3 presents a soybeans enterprise budget under commercial production. As illustrated in the budget, farmer net profits (gross margin adjusted for fixed costs and interest on investment) are projected at ZMW 514.19 per hectare at soybeans output price of ZMW 3,537.06/MT. With good management practices and correct input application, a commercial farmer is able to break-even if yield and price declined to 3.35 MT/Ha and ZMW 3,389.93/MT, respectively.

Generally, commercial soybeans producers face fewer production-related challenges compared to their smallholder counterparts. Commercial farmers have better access to inputs and do not rely on public extension system – which is not only underfunded but also over-stretched in terms of extension worker to farmer ratio.

**Table 3.** Gross margin analysis for commercial/large scale production

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Rate/Ha</th>
<th>Unit Price</th>
<th>Amount (ZMK/Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soya grain</td>
<td>MT</td>
<td>3.5</td>
<td>3,537.06</td>
<td>12,379.71</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td>12,379.71</td>
</tr>
<tr>
<td><strong>Variable Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>seed</td>
<td>Kg</td>
<td>100</td>
<td>18.14</td>
<td>1,814.40</td>
</tr>
<tr>
<td><strong>Fertilizers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lime</td>
<td>L</td>
<td>8</td>
<td>62.50</td>
<td>500.00</td>
</tr>
<tr>
<td>NPC SOYA BASAL</td>
<td>kg</td>
<td>200</td>
<td>7.68</td>
<td>1,536.00</td>
</tr>
<tr>
<td><strong>Chemicals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inoculant</td>
<td>g/kg of seed</td>
<td>100</td>
<td>1.13</td>
<td>113.00</td>
</tr>
<tr>
<td>Decis forte</td>
<td>ml</td>
<td>250</td>
<td>0.45</td>
<td>112.50</td>
</tr>
<tr>
<td>Soy Flow</td>
<td>L/100Kg</td>
<td>0.4</td>
<td>189.63</td>
<td>75.85</td>
</tr>
<tr>
<td>Roundup</td>
<td>kg</td>
<td>3</td>
<td>78.94</td>
<td>236.82</td>
</tr>
<tr>
<td>Labor</td>
<td>Man-days</td>
<td>10</td>
<td>22.34</td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td>Liters</td>
<td>70</td>
<td>11.09</td>
<td>776.30</td>
</tr>
<tr>
<td>Oil</td>
<td>Liters</td>
<td>4</td>
<td>20.00</td>
<td>80.00</td>
</tr>
<tr>
<td>Transport @$0.2/km/MT</td>
<td>MT/km</td>
<td>263</td>
<td>2.00</td>
<td>526.00</td>
</tr>
<tr>
<td>Insurance</td>
<td>% of TR</td>
<td>0.70%</td>
<td>12,379.71</td>
<td>86.66</td>
</tr>
<tr>
<td>Packaging</td>
<td>Bags</td>
<td>70</td>
<td>2.00</td>
<td>140.00</td>
</tr>
<tr>
<td>Combine Hire</td>
<td>US$/Ha</td>
<td>1</td>
<td>851.70</td>
<td>851.70</td>
</tr>
<tr>
<td>Repairs &amp; maintenance</td>
<td>% of fuel</td>
<td>50%</td>
<td></td>
<td>388.15</td>
</tr>
<tr>
<td>Electricity</td>
<td>Irrigation/mm</td>
<td>37.5</td>
<td>9.82</td>
<td>368.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>---------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td><strong>TVC</strong></td>
<td></td>
<td>7,605.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interest</strong></td>
<td>% of TVC</td>
<td>20%</td>
<td>7,605.61</td>
<td></td>
</tr>
<tr>
<td><strong>TVC with interest</strong></td>
<td></td>
<td></td>
<td>9,126.74</td>
<td></td>
</tr>
<tr>
<td><strong>Gross Margin</strong></td>
<td></td>
<td>3,252.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fixed Costs</strong></td>
<td>% of TVC+ Interest</td>
<td>30%</td>
<td>9,126.74</td>
<td></td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td></td>
<td>11,864.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Profit (+return to management)</strong></td>
<td></td>
<td>514.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Break-even price/MT</strong></td>
<td></td>
<td>3,389.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Break even yield</strong></td>
<td></td>
<td>3.35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Zambia National Farmers Union Headquarters, 2020

### 3.1.3 Aggregating and Marketing

*Aggregation and main marketing channels for smallholder farmers*

Aggregation involves product volume accumulation to a scale that is economical to supply to the formal markets. Aggregation plays a critical role in providing market services to smallholder producers, who are in large numbers but produce relatively small quantities of soybeans each.

Typically, the soybeans crop marketing starts around early May and runs up to July. However, usually, much of the crop would have been sold by the second week of June i.e., within four to six weeks. The price tends to be higher a few weeks after the start of the season (between ZMW 4 and ZMW 6 per Kg, as was the case in the 2017/2018 and 2018/2019 seasons). The high price is mostly driven by competition among large buyers seeking to meet their quotas with processors, especially when supply on the market is low, e.g., due to poor harvest. As these quotas are close to being met, the price starts to drop and can fall by as much as 30-40% by the time the product runs out (Munguzwe et al. 2014).

However, many poor smallholder farmers fail to fully benefit from the high prices as they tend to sell to small traders at the earliest selling opportunity they get, usually early in the marketing season when prices are still trending upwards but not yet at the peak. Usually, such distress sells are made in order to meet immediate cash needs. It is not uncommon to find small buyers setting up buying points early in the season (sometimes even before the official start of the marketing season) purchasing directly from farmers at a relatively lower price and later supply to larger aggregators, who in turn sell to processors or exporters. Lack of a reliable source of market information has continued to be a challenge for most smallholder farmers, particularly as it regards price discovery. Most farmers lack information to help them make well-informed decisions regarding who to sell to and when. Musika Development Initiative and ZNFU have continued to provide information linking farmers, traders and processors by providing buyer contact details for major crops and livestock, country wide.

Aggregation happens at different levels and scales, involving different actors. At the village level, smallholder farmers identify bulking centers where farmers take their crop to accumulate sufficient volume that is economical to transport to district centers. In some instances, poor road infrastructure compel farmers to use ox-drawn carts to deliver the crop from their homesteads to
the bulking center. Once sufficient volumes are achieved, the crop is transported for further aggregation and storage at rural district centers or designated storage sheds.

From rural district centers, larger trucks with carrying capacity of over 30 MT are used to transport the commodity to supply processors such as National Milling, Mt. Meru, Global Industries, Tiger feeds, and Mpongwe Milling with some being exported thereafter. It was also found that a significant amount of trade in soybeans (some of it informal) is taking place across the Zambia-Malawi and the Zambia-D.R. Congo. In the case of trade between Zambia and Malawi, soybeans flows in or out depending on the price differential between the two countries.

Main buyers of soybeans in 2019 included National Milling in Lusaka, Pembe in Lusaka, Mt. Meru in Katuba (Chibombo District) near Lusaka, Global Industries on the Copperbelt province, and Export Trading Group. Others are NWK Agri-services, AFGRI Corporation, Parrogate and Seba Foods. The most prominent marketing company found was Global Industries which bought about 60% of the total marketed soybeans and offered the highest price of about USD 400/MT delivered to their processing plant. Numerous local aggregators have continued to be active on the market, with Shifa in Chipata and Aliboo in Lundazi identified as major buyers in Eastern province.

**Main marketing channels for commercial farmers**

Generally, commercial farmers have a well-structured market that may sometimes involve forward contracts and preferential procurement arrangements. The crop is bulked on farms and moved directly to the processor or a warehouse in readiness for export.

Main buyers of soybeans from commercial farmers are processors who produce mainly cooking oil and soy cake (e.g. Global Industries, Novatek, Mt Meru, Zamanita) or stock feed manufacturing (e.g. Olympic Milling, National Milling, Tiger Feeds, Nutri Feed, Quality Feeds, and Pembe Milling). A number of processors typically enter into supply contracts with commercial farmers. The price is normally fixed in USD and quantities are agreed upon prior to harvest. Quoting prices in USD terms helps cushion commercial farmers from exchange rate fluctuations mainly characterized by depreciation of the local currency against major convertible currencies. Besides local processors, some commercial farmers, large scale traders and out-grower companies export some of the soybeans they produce and buy from smallholders respectively. The main export destinations are South Africa, Zimbabwe, Botswana, Malawi and Angola.

3.1.4 Processing

The soybeans processing industry has continued to grow, mostly triggered by increasing demand for soybeans-based food, cooking oil and the booming livestock and poultry sector. In 2010, most of the soybeans was in the hands of processors, with installed and operating capacity estimated to be 30,025 and 21,819 MT/month, respectively. About 10,229 MT/month was used for stock feed formulation and about 1,000 MT per month for human consumption (Agriculture Consultative Forum 2011). By 2014, the crushing capacity stood at 375,000 MT/annum of oilseeds, way above the requirement of 120,000 MT/annum (Munguzwe et al. 2014). Currently,
the oilseed crushing and refinery capacity stands at about 550,000 and 450,000 MT/annum, respectively.

Expansion of the crushing capacity by some processors such as Global Industries on the Copperbelt with current installed capacity to crush 360,000 MT of soybeans per year has significantly contributed to the increase in national demand for the soybeans (Mulenga et al. 2019). Despite being relatively new in the industry (started up only in 2017 with investment from India), Global Industries has continued to garner increasingly larger share of the market for the high-protein soybeans meal demanded by expanding aquafeed production. In 2019, there were reports that the shortfall in soybeans supply and increased competition has culminated in most processing plants operating at below capacity, with some having to face the threat of plant closure before the end of year.

3.1.5 Mapping Zambian Soya Value Chain

Figure 5 is a schematic depiction of the major components of the soybeans value chain in Zambia. The value chain map has not changed for the past 10 years, except for the new entrants at each stage of the map. The main functions of the soybeans value chain starts from input supply flowing through to production, aggregating and marketing, processing, wholesaling, retailing and consumption. Though not included in the schematic illustration of the value chain map in Figure 5, a considerable amount of inputs used in soybeans production, such as seed, herbicides, inoculum and even fertilizers are imported and later supplied to producers.

Figure 5. Zambia Soya bean value chain map
Source: Adapted from Munguzwe et al. 2014
3.2 The effectiveness of the national policy framework to support the value chain

Zambia does not have a specific policy or strategy on soybeans. Zambia’s agricultural policy promote crop diversification, with soybeans identified as one of the high value crops for agricultural diversification, income growth, job creation and foreign exchange earner. However, policy implementation has continued to lean more heavily toward maize production and marketing, as evidenced by high public expenditure in the maize sub-sector. Currently, maize input and output subsidies through the Farmer Input Support Program (FISP) and the Food Reserve Agency (FRA) absorb about 50% of the annual agricultural budget allocations (Mulenga et al. 2019).

The continued heavy spending towards the FRA and FISP can be seen in the 2020 budget with just below half of the budget being allocated to these two programs. The proportion allocated to these programs has, however, been steadily reducing in the last few years, with the 2020 allocation being the lowest since 2017, dropping from 69.9% in 2017 to 49.9% in 2020 (Mulenga et al. 2019). This is a positive step towards promoting diversification away from maize and into other crops such as soybeans. However, the proportion of funds dedicated to these programs still remains too high. The heavy public expenditure on maize continue to provide incentives for smallholder farmers to grow maize, with over 92% of the 1.6 million smallholder farmers growing maize compared with only 12.5% growing soybeans (RALS, 2019).

The focus on maize acts to impede crop diversification by smallholder farmers into other high value crops such as soybeans. Further, the high cost base associated with soy beans production coupled with poor infrastructure and market access creates an entry barrier for smallholder farmers – most of whom heavily rely on FISP for inputs. As a result, soybeans is dominated by the large scale commercial farmers who have produced about 65% of the crop on average over the past 5 years (although this reduced to about 55% in 2019), as these do not rely on government subsidized inputs. Even among commercial farmers, the crop is only marginally attractive owing to the high production cost, poor infrastructure and the recurring ad hoc export bans. Although soybeans is a crop of high nutrition value for humans, consumption remains low in Zambia. The bulk of soybeans consumption is in the form of oil or meal as feed, with minimal direct human consumption. The low human consumption of soybeans, could in part, be explained by the maize-centric policies that tacitly send a signal that maize is the most important food crop in Zambia.

Another policy logjam impeding growth of Zambia’s soybean sector has to do with unstable trade policies. A prominent symptom of unstable trade policies in Zambia is the unscheduled (ad hoc) nature in which government imposes export/import bans in the country. Although export bans may not be a problem in themselves, the ad hoc and opaque manner in which they are implemented creates uncertainty in the market and discourages private sector investment in soybean production and trade. In the recent past, the Zambian government has imposed export restrictions and sometimes outright export bans on soybeans on the premise of ensuring adequate domestic supplies for feed manufacturers. For example, in 2017, the government imposed an export ban on soybeans without prior communication to stakeholders as well as cancelling existing exports permits at the time. An assessment by the Soya Policy Action Group [SOPAG]
(2017) revealed that Zambia as a country lost about ZMW 1 billion in export revenue due to the ban.

Besides soybeans, the government has in the recent past imposed export bans on soybeans products, the most recent being the ban on stock feed exports, which was triggered by allegations that millers who had accessed subsidized maize from FRA diverted some of the maize to producing stock feed, which they were exporting to neighboring Democratic Republic of Congo (DRC), Zimbabwe, Namibia and Botswana. These allegations were refuted by the millers association of Zambia, but government through the Ministry of Fisheries and Livestock (MFL) proceeded to impose a ban in March of 2020.

Prior to economic liberalization in 1991, Zambia’s agricultural marketing was state-managed, with the national agriculture Marketing Board (NAMBOARD) being the sole buyer of agricultural products including maize and other staples. After liberalization, the country’s agricultural marketing system floundered as NAMBOARD no longer provided marketing services. This left a void in marketing services, and led to the emergence of small scale informal traders popularly known as “briefcase buyers”. The void left by NAMBOARD presented investment opportunities for large scale grain traders and beginning 2002, the country experienced steady flow of foreign investment in grain trading. Zambia’s grain marketing has since then undergone significant transformations driven by colossal investments in grain marketing infrastructure, including warehouses, transportation, led by the private sector. The influx of private sector capital coincides with the period that Zambia became a surplus producer of key commodities such as maize, soybeans, and wheat (Chisanga at Chapoto 2018). Among foreign investments in Zambia’s grain marketing sector include AFGRI, Cargill and NWK Agri Services. However, the persistently unstable trade policy environment has continued to crowd-out private sector participation in grain marketing including soybeans, thus hindering further growth.

A major symptom of policy instability has been the ad hoc manner in which export restrictions, which in some cases result in outright ban on grain exports, are implemented. Trade policy inconsistencies have undercut private sector investments in the sector, forcing some of them to scale down and eventually exit the market. For example, AFGRI and Cargill, which were among the biggest private sector players in grain marketing and trade, including soybeans, left the market due to unpredictable trade policies.

Another rather indirect restriction is the delay in processing export permits as a result of multiple layers of bureaucracy one has to navigate through to obtain a permit (Figure 6). In addition, the process is highly centralized, with the bulk of the activities and decision making taking place at the MoA Head Quarters in Lusaka. One way this process can be improved is to decentralize the system and facilitate application and approvals at provincial level.
Figure 6. Procedure for export permit application
Source. Ministry of Commerce, Trade and Industry
The Ministry of Commerce, Trade and Industry (MCTI) and MoA need to coordinate to help enhance predictability as these are the two major ministries regulating agriculture marketing and trade in Zambia. The MCTI’s mandate is to regulate trade in line with the Control of Goods Act CAP 421. On the other hand, the MoA has, as one of its mandate, to implement Agricultural Trade Policies. To improve trade policy implementation through enhanced consultation system the MoA developed the draft Agricultural Marketing Bill, addressing some of the underlying factors on which trade policy uncertainty hinges, such as lack of a functional trade policy consultative system. One of the key provisions of the Bill is the establishment of the Agricultural Marketing Council, a statutory body to advise Government on market related issues, to monitor and analyze the performance of the agricultural market, and to investigate and advise on all statutory interventions in the market. However, the Bill has been pending for over 15 years now.

Efforts to enhance transparency and predictability of trade policies have had minimal success, with most of them involving stakeholder engagement with government. A case in point is SOPAG work that used research evidence to advocate for improved policy consistency and transparency in the sector. At present the setting up of the Zambia Agriculture Information System (ZAIS) – an independent system set up by MoA and private sector players under which market players will be mandated by law to declare their stocks at given time points – is expected to help with information for real-time stock tracking of grain volumes available in the country. Such information could aid expose unjustified trade restrictions. For example, where soybeans stock levels are reported to be in surplus, any attempts to restrict exports would be unjustified and the likelihood of government going against such publicly available evidence is minimized.

Another key policy strand affecting soybeans is government’s protectionist measures aimed at insulating local edible oil producers from external competition. With the booming soybeans sector in Zambia, there is a demand from some stakeholders to protect the sector from cheaper imports which are more competitive than locally produced products. In addition to the relatively high cost of production for soybeans, soybeans products, including cooking oil is subject to the standard value added tax (VAT) of 16%, making the locally produced cooking oil more expensive than imports from countries such as Kenya, Tanzania, which have removed VAT on edible oil. Thus, the demand for imported oil has surged, and as a result, edible oil smuggling into Zambia has been rampant. To help address the problem of smuggling, the government introduced import duty on processed oil, currently taxed at 25% of the value of import or ZMW 4/Kg, whichever is greater. However, crude oil remains duty-free but attracts the 16% standard VAT. Table 4 summarizes some of the major policies and associated impact on the value chain.
Table 4. Government policies, challenges and impacts on soybeans value chain.

<table>
<thead>
<tr>
<th>Policy</th>
<th>Challenge</th>
<th>Impact on Value Chain</th>
</tr>
</thead>
</table>
| Trade               | Unpredictable and opaque export and import restrictions                   | ✓ Value chain actors such as traders and processors unable to devise investment strategies due to trade policy uncertainty  
|                     |                                                                           | ✓ Zambia’s exports are less competitive due to erratic supply                           
|                     |                                                                           | ✓ Market share for Zambian exports shrinking and taken over by other more reliable competitors |
| Palm oil import policy | Palm oil imports from Kenya and Tanzania enjoy duty-free status under the COMESA agreement, although some of it is alleged to originate from East Asia, e.g., Malaysia and Singapore, thus flouting the COMESA rules of origin | ✓ Cheap imports depress domestic prices, weakens demand for locally produced oils thus hurting local producers |
| Maize centered policies | Policies such as input subsidy (seed and fertilizer) under the FISP and output subsidies through above-market price setting by the FRA incentivizes maize production country-wide | ✓ Crop diversity is impeded as farmers respond to incentives by focusing on maize at the expense of other high value crops such as soybeans |

Source: Markowitz 2018; TechnoServe 2011 and updated with interviews stakeholder interviews

3.3 Formal and informal trade dynamics

3.3.1 Formal trade
Trade plays an important role in both domestic and regional soybeans value chains through increasing market opportunities for both exporters and importers. Furthermore, trade helps equalize supplies between surplus and deficit regions and thus contribute toward regional price stabilization.

Export
Zambia exports soybeans and related products to the Southern and East African region, with South Africa, Zimbabwe, Tanzania, Kenya, Botswana, and Malawi being the primary export markets. South Africa remains Zambia’s main trading partner having imported USD 1,250,000 worth of soybeans and related products in 2019. In second place is Zimbabwe importing slightly over USD 1 million worth of soybeans and related products, while the rest of the countries imported less than USD 100,000 worth of soybeans.
There are five main tradeable soybeans and related products exported from Zambia to the region, and these are: 1) soybeans seed; 2) soybeans (whether or not broken, exclude seed); 3) soybeans oil (excluding crude) and fractions; 4) soybeans flour and meal; and 5) soybeans sauce. Figure 5 shows the export trends in the last 5 years for soybeans and related products. It is clear from the trend that soybeans (whether or not broken, excluding seed) has dominated exports in the last five years averaging about 19,000 MT per annum, which is about 48% of the total average volume of exports. Soybean flour and meal come second at 38%, which is almost 15,000 MT exported per annum. Soya bean oil and fractions, and soybeans sauce exports have remained stable and dismal over the reference period (2015 -2019).

In 2017, there was a sharp increase in exports of soybeans grain and soybeans seed, mostly driven by an increase in production. This was followed by a drastic drop in 2018, which was attributed to the decline in production due to drought conditions experienced that year as well as the low producer price the previous season. The low producer price discouraged farmers from producing soybeans in the 2017/2018 agricultural season.

In terms of imports, Zambia imports a number of soybeans products, with soybeans oil and fractions making up the bulk of imports. Between 2015 and 2019, soybeans oil (excl. crude) and fractions accounted for about 87% of soybeans related imports averaging around 6,000 MT per annum, followed by soybeans seed at 9% (Figure 8). South Africa and Malawi continues to be the main sources of imported soybeans seed. Between 2015 and 2017 there was a drastic decline
in soybeans oil (excl. crude) and fractions imports. This is attributed to the export/import ban on edible oils during that period. The ban was implied as there was no Statutory Instrument issued by the government to that effect, but only a pronouncement. However, the tide changed from 2017 onwards. Most of the imported edible oils including soybeans oil (excluding crude) and fractions used to be imported from within the SADC region, mainly South Africa. However, the tides changed around 2012, when price competitive palm oil imports from East Asia and East Africa penetrated the Zambian market (Chisanga and Sitko 2013).

Despite the rapid increase in soybeans production and oilseed crushing capacity (currently estimated at 550,000MT per annum up from 375,000MT per annum in 2013), Zambia remains a net importer of vegetable oils (Meyer et al. 2018). In addition to soybeans, Zambia’s total oilseed crushing comprises cottonseed and sunflower and hence all capacity is not utilized for soybeans, thus Zambia has continued to export significant volumes of raw soybeans.

Zambia continues to receive an influx of cheap imported edible oil, mostly from the Far East and east Africa. The cheap imported oil are perceived as a threat to the local edible oil industry, which is less competitive due to the high production and marketing costs. For example, as stated earlier, Zambia’s cooking oil still attracts 16% VAT, whereas countries such as Kenya, Tanzania, where most of the cheap imports originate have removed VAT on edible oil. There are widespread reports that some of the oil imported into Zambia from COMESA member states is not wholly produced in the “originating” countries. Rather, the oil is imported from Asia as crude, then processed and repackaged before being exported to Zambia. This contravenes the COMESA rules of origin requiring that the products be wholly produced within member states for it to enjoy the duty-free status under the COMESA protocol. The MCTI noted that the issue is hard to prove, but has been reported to the COMESA secretariat for further investigations. Thus, regional efforts to address the matter are on-going.
3.3.2 Informal trade

In addition to formal trade, informal trade continues to thrive, mainly driven by the unstable trade policy environment which is characterized by ad hoc trade restrictions including export/import bans, which depresses domestic prices. Soybeans smuggling is quite rife, but has a relatively short window, lasting about 3 months (May – July) at most, during which period the regional demand for the commodity is high. Zambia’s neighboring countries such as DRC and Zimbabwe are structurally deficit in staple grains including soybeans, and thus present a guaranteed market and usually at a favorable price. Thus, the price differential, which in some instances is double or three times that of domestic prices, remains the major push factor driving smuggling. The porous nature of most of Zambia’s borders with neighboring countries such as Malawi, DRC, and Tanzania, make it relatively easy for smugglers to move soybeans and other grains such as maize across the borders.

Another push factor driving smuggling has to do with the bureaucratic, centralized, and long process of obtaining export permits. Thus, export license applicants have to travel to Lusaka to apply and obtain their permit. This is discouraging, particularly for small scale traders who find the process too long and costly, thus prefer to take risks and smuggle the commodity instead. To help ease the trading process for small scale traders and discourage smuggling, the MCTI has operationalized the simplified trade regime (STR) initiative under COMESA. So far, the STR is operational with neighboring Malawi and Zimbabwe, with efforts currently underway to expand to other COMESA member countries that have significant level of small-scale trading with Zambia. However, as this is targeted toward small scale traders, there are limits on quantities that

Figure 8. Soybeans grain and related products import trend, 2015-2019
Source: CSO (various years)
can be traded under this initiative. Main features of the STR include relaxing rules of origin requirements for commonly traded good among partner countries, and capturing trade volumes.

3.4 Drivers of high logistics and trade/transport costs
Smallholder farmers often grow small quantities of soybeans, which they sell almost entirely. On average smallholder farmers produce and sell about 0.5 MT of soybeans, which may not be economical to transport to processors or large aggregators in district centers. High transport costs averaging about ZMW 0.95/Km/MT reduce farmers’ (both commercial and smallholder) farm gate price as farmers have to defray transport costs on their own. Further, soybeans is almost entirely transported by road, which is more expensive relative to other transportation modes such as railway. In addition, farmers have to pay a local district council Crop Levy when transporting soybeans and other grain across district boundaries but within Zambia. Currently the Crop Levy is ZMW 0.94/Kg, which represents between 15% – 17% of the market price. The introduction of the crop levy was received with resistance from agricultural stakeholders, with major concerns being that (1) it increases the cost of doing business; and (2) reduces the competitiveness of the agricultural produce from Zambia.

The high transaction costs mostly driven by transport costs and local crop levies reduce producer farm gate price and more broadly limit Zambia’s regional competitiveness in soybeans (SOAPG 2017). A representative of traders spoken to indicated that unscrupulous members of the local councils sometimes attempt to charge Crop Levy at every district boundary, which is illegal. A trader is only supposed to pay the Levy once and produce a receipt at every district boundary as proof of payment. Only when a trader does not have a receipt of payment should they be charged Crop Levy again. However, some traders have fallen victim to this scheme where they were made to pay the Crop Levy more than once for the same crop. Reports of this scheme reached the relevant authorities, including the MoA, and has since been addressed.

For processors, the cost of doing business remains relatively high, precipitated by the unfavorable tax regime. Currently, tax incentives are limited only to agricultural production equipment and not for value addition. Such a tax system limits the competitiveness of locally processed soybeans products against imports from other countries such as Kenya, Tanzania and the Far East. To help bolster competitiveness, there is a need for some form of tax relief for soybeans value addition in order to reduce the cost of production and enhance the competitiveness of Zambian soybeans products in the region. Efforts to address these impediments have included the work by SOPAG, where analytical assessments identified taxes that discourage investment in soybeans processing and trade. These include value added Tax (VAT) on crushers, VAT on machinery under lease finance, Crop Levies, and import duties on processing equipment.
3.5 Access to finance for soya producers (including structured finance)

Actors in the soybeans sector, particularly smallholder farmers, have continued to experience challenges in regards to accessing finance. This challenge is not only peculiar to soybeans producers but pervasive across the entire agriculture sector. Banks and other lending institutions demand collateral, which most smallholder farmers do not have, or if they do (mostly in form of land), it does not meet the criteria of the banks. For example, many smallholder farmers own land, however, land without proper infrastructure investments on it such as buildings, may not be regarded as appropriate collateral by commercial banks. Thus, collateral has proven to be one of the key barriers to smallholder farmers’ access to finance.

Besides collateral, banks and other financial institutions are also interested in repayment ability. Efforts to address the challenge of access to credit and finance, such as the Zambia Agricultural Commodity Exchange (ZAMACE) and the warehouse receipt system (WRS)\(^2\) have floundered.

The phenomenon of struggling commodity exchanges is pervasive across Africa. For example, since its establishment in 2007, followed by new legislation introducing a warehouse receipt system in 2010, ZAMACE has had little success as a commodity exchange.

An analysis by Sitko and Jayne (2012) identified 5 key impediments to successful and full operationalization of ZAMACE. These are; (1) The limited success in attracting financial institutions’ commitment to commodity exchanges; (2) the risks associated with contract non-compliance and opportunistic behavior; (3) the potential for conflict of interest among brokers; (4) the potential for market manipulation in a thinly traded market; and (5) the high fixed costs that are imposed on actors trading in a thin market.

In February, 2020, ZAMACE formalized its partnership with the Lusaka Securities Exchange (LuSE) in conjunction with Musika Development Initiative. The collaboration with LuSE is expected to improve the perception around ZAMACE and enhance its credibility, which in turn is expected to build confidence among financial institutions to participate, considering that LuSE has garnered a reputation and credibility in managing an exchange. With this collaboration, the warehouse receipt will become a recognized financial instrument, and will sit in the Central Securities Depository, just like any other shares traded on LuSE. Thus by implication, LuSE could be a guarantor for ZAMACE in this respect. With regards to conflict of interest, a number of alterations have been made to the rules and governance of the exchange to ensure adherence to the rules and regulation of trading in financial instruments. Further, ZAMACE has embarked on training brokers on rules, regulations and governance. With this transformation of ZAMACE’s operations, less political crops like soybeans, wheat and sorghum are likely to attract increasing trading volumes.

---

\(^2\) A **warehouse receipt system** (WRS) enables farmers to deposit storable goods (usually grain such as soybeans) in exchange for a **warehouse receipt** (WR). A WR is a document issued by certified warehouse operators as evidence that specified commodities of stated quantity and quality have been deposited at a particular location. The WR can then be used as collateral to access finance and/or credit.
The Moveable Assets Act that recognizes crop stocks that include soybeans as collateral has been a positive move, however, it needs to be fully operationalized and implemented to ensure that stocks in warehouses are trusted by the market. This will only be possible if there is buy-in from financial institutions. Generally, there has been little to no buy-in from commercial banks to participate in the warehouse receipt system as they continue to perceive smallholder farmers as high risk borrowers. Further, the financial sector is very limited and not well developed to foster easy access of the financial services especially for farmers.

3.6 Access to and quality of inputs

3.6.1 Input access

Access to good quality and affordable inputs remains a challenge, particularly for smallholder farmers, due to low stocking levels by local agro dealer shops, and prevalence of counterfeit inputs, especially seed. Input access is less of a challenge for commercial farmers as these are supplied by well-established input suppliers including seed company agents and outlets, agro-chemical company agents and large scale agro-dealers.

*Seed*

There is a high prevalence among both smallholder and commercial farmers to use recycled seed from seed own harvest, despite the recommendation of certified hybrid seed (Consumer Utility Trust Society [CUTS] 2016; Munguzwe 2014; Lubungu 2013). As expected use of farm-saved seed is more common among smallholder than commercial farmers. Both smallholder and commercial farmers interviewed indicated planting a mix of farm-saved and purchased seed, in varying proportions with commercial farmers using between 50-60% farm-saved whereas smallholder farmers reported using about 80-100% farm-saved seed.

Zambia still maintains the genetically modified organism (GMO) free seed policy, including for soybeans. Thus, only GMO-free seed is imported into the country. In 2018, Zambia launched the SADC seed certification and harmonized seed regulation system, which placed Zambia in a position to produce and trade certified seeds in the SADC region. This has contributed toward ensuring availability of high quality seed to farmers through eliminating national regulatory barriers. Generally, the standards for seed certification in Zambia are compliant with that of the SADC Technical Agreement on seed certification and quality assurance. Further, Zambia has made significant progress towards harmonization of seed laws in the COMESA region, thus broadening the seed market potential across the region. The COMESA seed trade harmonization regulations came into effect in 2015 after Ministers of Agriculture endorsed the COMESA Seed Harmonization Implementation Plan (COMSHIP) whose overall goal is to increase seed trade, among others, within the COMESA region. The seed sector in SADC and COMESA region is liberalized and private sector-led, with governments providing an enabling policy environment in seed marketing and trade. While the sector has some notable constraints, generally it is open.
**Agro-chemicals**

Smallholder soybeans production is entirely rain-fed with minimal to no fertilizer applied. Often times, smallholder farmers rely on residual fertilizers that remain in the soil when soybeans is grown in rotation with maize and/or cotton. The low use of fertilizer among smallholders is partly as a result of farmer perceptions that soybeans does not require fertilizers. In terms of access, fertilizer is readily available from key suppliers such as Nitrogen Chemicals of Zambia (NCZ), Greenbelt Fertilizers (GBF), Export Trading Group (ETG), Nyiombo, Sasol and Omnia Fertilizers. Of these, smallholder farmers indicate GBF, Nyiombo, ETG, and Omnia as their key suppliers of fertilizers. The open regime in fertilizer trade is a major contributing factor to availability of fertilizer in the region and Zambia in particular.

In addition to fertilizer, use of other agro-chemicals such as inoculum and herbicides among smallholder farmers remains low, with a study by Lubungu et al. (2013) suggesting only up to 20% of smallholder farmers use inoculum in Eastern province. Smallholder farmers interviewed in Mkushi and Mpongwe in Central and Copperbelt province respectively reported not using inoculum, citing affordability as the main hindrance. A similar pattern was reported for herbicides, which remain very low among smallholder farmers. For commercial farmers, the use of agro-chemicals both inoculum and herbicides is high, and supply is mostly through agro-chemical agents who supply directly to farmers, as well as outlets located in close proximity to commercial farming communities such as the Mkushi area in Central province.

### 3.6.2 Input quality

Input quality, particularly seed, has been and continues to be of considerable concern especially for smallholder production. Seed quality can be compromised either through contamination or outright counterfeit seed supplied by unscrupulous dealers. Although seed multiplication process in Zambia is regulated and inspected by the Seed Control and Certification Institute (SCCI), it is still possible for farmers involved in seed multiplication to comingle pure seed with non-seed beans, resulting in contamination. The seed retail level is another potential source of contamination, among both the unregistered agro-dealers and those registered by the seed companies, though this is less frequent. Some dealers are said to go beyond contamination and actually counterfeit entire bags of seed.

Addressing the issue of counterfeit and poor quality inputs requires policies and legislation that will improve inspection and monitoring of input supply. The related key pieces of regulations related to this issue are the Seed Control and Certification Institute (SCCI) - Plant Variety and Seeds Act (CAP 236), Plant Breeder’s Rights Act (No. 18 of 2007) and Zambia Environmental Management Agency (ZEMA) - The Environmental Management Act, 2011.

Although legislation exists to address input quality, the low capacity of institutions such as SCCI and ZEMA have led to the presence of counterfeit products on the market. To mitigate this, it is essential that the enforcement structures are strengthened through formulating legislation that support royalty collection from multiplications being done by non-seed producers and increasing penalties for sell of counterfeit products and increase capacity of SCCI to check on certified seed.
From a practical point of view, it is essential to ramp up sensitization campaigns to consumers/farmers on counterfeit inputs. Institutions like ZNFU through its District Farmers Association meetings and monthly magazines can be leveraged to accelerate sensitization efforts. Furthermore, increasing allocation of resources to SCCI, Zambia Bureau of Standards (ZABS), Zambia Seed Trade Association (ZASTA) and other allied institutions can help enhance monitoring and inspection of input production and supply.

3.7 Effect of the covid-19 pandemic on value chain functioning

The soybeans value chain has not been spared by the effects of the COVID-19 pandemic. Although it might be too early to detect any discernable impacts of the pandemic on the soybeans value chain, the general interruption of the food systems does affect the soybeans sector. As most Zambia’s neighbors started to record cases of COVID-19, countries took swift measures including closing borders and intensifying screening at border entry points. This resulted in delayed movement of food items such as edible oil and possibly industrial products such as soybeans meal, and cake to destination countries such as South Africa, Zimbabwe, Botswana, and in the East, Tanzania, and Kenya. Zambia and its major soybeans trading partner, South Africa, engaged in a bilateral agreement to allow smooth flow of essential commodities, following the imposition of a total lockdown in South Africa.
4.0 Conclusion and recommendations

The soybeans production in Zambia has continued to grow, with notable transformation from being a predominately commercial crop to a more inclusive production system involving smallholder farmers. Similarly, marketing and processing continues to grow, mostly driven by the increasing demand for processed soybeans products both for human consumption and industrial use such as feed for livestock, poultry, and fish. With regards to trade, the sector has registered positive strides, however, there is still scope for further trade growth and development.

To strengthen soybeans production and marketing linkages, there is need for supportive policies both at the national and regional level. At the national level, the following policy recommendations should be considered:

- Government and private sector should rectify implementation challenges of the e-FISP and revert to rolling it out country-wide. The flexibility of the e-FISP in terms of input choice to farmers has been shown to help with diversification into crops such as soybeans. However, this should be flanked by other supportive interventions such as enhanced extension system and farmer education on production and management practices in order to boost productivity.

- The unstable food trade policy environment in Zambia stifles private sector investment in soybeans, productivity and regional trade. Prominent Among the underlying policy issues characterizing Zambia’s unstable food trade environment are; non-tariff trade barriers, in particular import and export controls, which in extreme cases involve outright trade bans. Although trade restrictions may not be a problem in themselves, the manner in which they are implemented, mostly opaque and ad hoc, creates uncertainty among value chain actors and discourages investment and sector growth. Therefore, there is need to entrench transparency and predictability in trade policies to help actors devise investment strategies with a high degree of certainty.

- The Agriculture Marketing Act that has provisions/proposals for the establishment of an independent Marketing Council with the mandate of regulating the agriculture produce and advice on import/export of agriculture produce should be enacted. This could help avoid unilateral trade policy decision making (as is sometimes the case where government imposes trade restrictions without wider consultations or supporting evidence) and promote consultative and evidence-based process. The overall goal is to entrench consultation, transparency and predictability in agricultural marketing and trade policy decision making.

- To help ease access to finance, the Moveable Assets Act that recognize crop stocks that include soybeans as collateral needs buy-in from key stakeholders, particularly financial intuitions, whose role is central to the full operationalization and implementation of the Act. The collaboration between LuSE and ZAMACE is expected to build confidence among financial institutions as the warehouse receipt will now become a recognized financial instrument sitting in the Central Security Depository of LuSE, where company shares traded on LuSE also sit. Further, financial institutions should be engaged to help provide guidance on how credit risk profile of the agricultural sector can be improved.

- Cheap palm oil imports are a threat to the nascent edible oil industry in Zambia as Zambian products are not competitive due to the production and marketing cost structure.
To help address the high production and marketing costs, certain specific taxes on value addition such as VAT on refined oil needs further scrutiny, and where economically viable, government should consider making such products VAT exempt. This will help bolster the competitiveness of locally produced oil, and in the medium to long term, contribute towards growth of the local oil industry and job creation. With regards to levies, the following recommendations should be considered:

- District councils should explore other potential revenue alternatives such as land tax and improved efficiency in the collection of several other taxes or levies.
- If the crop levy is maintained, it should be minimized and e-payments introduced so that abuse of funds is reduced.
- Crop levies should be reinvested back in the community e.g. feeder roads to help ease commodity transportation to market centers.

At the regional level, the following recommendations should be considered:

- Leverage regional platform such as the Regional Network of Agricultural Policy Research Institute (ReNAPRI) for enhanced regional lesson-sharing on productivity and marketing enhancement policies and programs.
- Build national and regional market information systems, with lessons from South Africa’s robust systems such as South African Grain Information System (SAGIS) to help with real-time tracking of stock and market information for better policy decision making. For such market information systems to be effective in the context of significant informal trade such as Zambia, there is need to enhance existing informal trade monitoring systems such as the Famine Early Warning System Network (FEWS NET). Furthermore, there is need to expand the simplified trade regimes initiatives under COMESA to include more countries. Currently, the simplified trade regime initiative Zambia has operationalized under COMESA includes only two major trading partners; Malawi and Zimbabwe, with efforts to include DRC underway. This will help formalize and officially capture more informal trade. Such inclusive market information systems will capture transactions that would otherwise not be detected, hence enhancing accuracy of market information system.
- Soybeans and related products present immense opportunity for regional trade growth and employment creation within the SADC region. However, the continued interference by governments, notably in Zambia and Malawi poses a challenge for the growth of the regional value chain. In particular, export restrictions by member countries have potential to depress domestic prices, and consequently trigger supply response through reduced production. This has potential to reverse the gains recorded in terms of attaining self-sufficiency in soybeans. Using regional platforms such as ReNAPRI, governments in the region should be encouraged to view trade as a means of increasing productivity and ensuring self-sufficiency both at domestic and regional level. Absent productivity enhancing policies including open regional trade in soybeans and related products, the region’s production could slump, driving up prices of soybeans and related products. Therefore, beyond enhancing productivity and self-sufficiency, open regional trade is key in stabilizing regional prices - a key market attribute for increased private sector investment in the value chain.
Given increasing reports of edible oil smuggling from East Asia through East Africa, and flouting of COMESA rules of origin, there is need to strengthen monitoring systems and devising mechanisms that enhance product traceability among COMESA and SADC member countries. This will help curtail smuggling and contravening of regional trade protocols.
REFERENCES


