

United Republic of Tanzania



Ministry of Agriculture

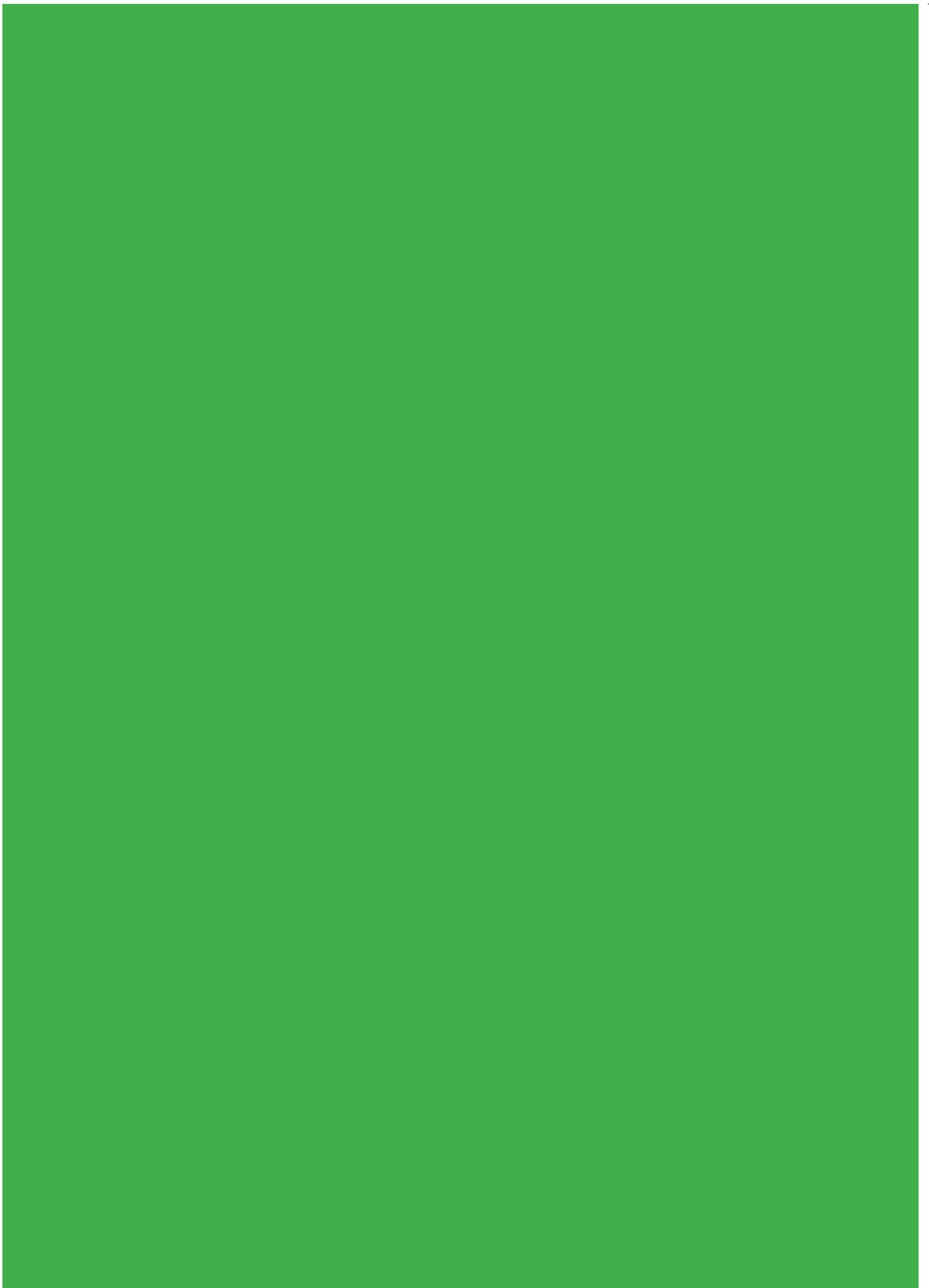


# Sunflower and Palm Oil Value Chain Analysis in Tanzania

Identifying forward and backward linkages, challenges  
and opportunities for economic growth



HUB FOR AGRICULTURAL POLICY ACTION (HAPA)



United Republic of Tanzania



Ministry of Agriculture

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## ABOUT AGRA

AGRA is an African-led non-profit organization formed in 2006 in response to the call by former UN Secretary-General Kofi Annan for a uniquely African green revolution. AGRA's vision is to transform agriculture from a solitary struggle to survive into farming as a business that thrives, putting farmers at the center of the continent's growing economy. AGRA recognizes that developing smallholder agriculture into a productive, efficient, and sustainable system is essential to ensure food security, lifting millions out of poverty and driving equitable growth across the continent. AGRA's mission, therefore, is to catalyze and sustain an agricultural transformation in Africa through innovation-driven productivity increases and access to markets and finance that improve the livelihoods of smallholder farmers. We achieve this mission with and through partners. The alliance has built the systems and tools for Africa's agriculture; high-quality seeds, better soil health, access to markets and credit, and coupled with stronger farmer organizations and agriculture policies.

## About HAPA

Across African countries today, there is a need for better, more timely use of evidence, and more targeted approaches, to improve the quality of policymaking by governments. The Hub for Agriculture Policy Action (HAPA), is a Unit within AGRA that provides policy advisory services to governments seeking to reform, refine, and/ or develop a more clearly defined policy direction. The approach recognizes the urgent need for timely policy support to the agriculture sector, which plays an important role in ensuring inclusive growth. It also recognizes the demands for political expediency and the need to ensure that a particular policy direction is anchored in evidence.

The purpose of the Hub for Agriculture Policy Action (HAPA) is to support AGRA to catalyze and sustain an inclusive agricultural transformation in Africa to increase incomes and improve food security of millions of Africans. The creation of HAPA was in response to a noticeable gap in the utilization of evidence within the policy-making cycle to drive policy change. Through Consolidation and Translation (C&T) of evidence, HAPA's work entails collating existing evidence, expertise and best practice that are relevant to a government request for policy support and processing these into a set of rationalized and costed policy options. Through HAPA, AGRA aims to increase the use of evidence to inform decisions for policymaking and implementation. HAPA works with local partners such as research actors to collate existing data and evidence, expertise, and best practices that respond to a government request for policy support and package these into a set of actionable policy recommendations.

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## Comments

Comments, suggestions as well as requests for clarification of information contained in this report are welcome and should be addressed to: [AGRAHAPA@agra.org](mailto:AGRAHAPA@agra.org) Funders

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# Abbreviations and acronyms

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AMDT	Agricultural Market Development Trust
ASA	Agricultural Seed Agency
ASDP	Agricultural Sector Development Program
CAADP	Comprehensive African Agriculture Development Program
CBOs	Community-based organizations
CPO	Crude palm oil
FFBs	Fresh fruit bunches
GDP	Gross domestic product
LGAs	Local government authorities
NGOs	Non-governmental organizations
PORALG	President's Office Regional Administration and Local Government
QDS	Quality declared seeds
REA	Rural Electrification Agency
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SWOT	Strengths, weakness, opportunities, and threats
TASUPA	Tanzania Sunflower Processors Association
TBS	Tanzania Bureau of Standards
TCCIA	Tanzania Chamber of Commerce, Industry and Agriculture
TFDA	Tanzania Food and Drugs Authority
TFRA	Tanzania Fertilizer Regulatory Authority
TOSCI	Tanzania Official Seed Certification Institute
TRA	Tanzania Revenue Authority
TZS	Tanzania Shillings
VAT	Value added tax



## Foreword Minister for Agriculture

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The edible oil sector has the potential to create wealth for smallholder farmers while also creating employment and revenue through agro-processing. Tanzania relies heavily on the importation of edible oils. Given the current conflict in Russia and Ukraine, prices of edible oils have skyrocketed globally and in the local markets. The current impasse also creates an opportunity for Tanzania to fill the gap left by supply disruptions resulting from the conflict.

However, the production of edible oils has remained low due to the unavailability of sufficient raw materials in the country and poor farming practices - such as the use of poor-quality seeds, low usage of fertilizer, and poor control of pests and diseases. Consequently, most of the sunflower processing industries are not able to access enough materials for processing, leading to idle capacity. This is ironic, given the growing demand and prices of edible oils.

The government of Tanzania through the Ministry of Agriculture aims to make Tanzania a net exporter of edible oil seeds. To this end, the government has undertaken various actions, including fiscal reforms to increase the competitiveness of locally produced edible oil and providing inputs such as seeds and fertilizers to farmers. The government is scaling up these efforts to accelerate the rate of growth of the sector. Consequently, the Ministry of Agriculture in Tanzania requested AGRA through the HAPA initiative to support various studies to inform reforms aimed at creating a better business environment in various sectors.

In Phase 2, the focus was on two aspects. Firstly, the Ministry of Agriculture was interested in understanding the effect of proposed fiscal reforms to enhance the affordability of imported edible oils while increasing sunflower production for domestic and international markets. The second aspect focused on a value chain analysis to identify key challenges facing different actors and activities along the value chain and provide a basis for various reform recommendations that would foster improved sector performance across the value chains.

This report identifies entry points for the Ministry of Agriculture to support farmers to increase productivity through providing inputs such as hybrid seeds and fertilizer and fair contract farming arrangements that protect the interests of the stakeholders involved. This will be done through administration, governance, and effectiveness of contract farming to avoid defaults and potential price exploitation of farmers. Other entry points identified include setting clear standards and quality control guidelines to be adhered to by the backyard processor and promoting smallholder producers' associations to strengthen the coordination of producers in the value chain.

The Ministry of Agriculture is grateful for the support of AGRA through HAPA that made this work possible. It is testimony to the successful partnership between the government of Tanzania and development partners, particularly AGRA.

**Hon. Hussein M. Bashe**  
Minister for Agriculture



## Note from AGRA President

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The combined impact of climate change, runaway inflation started since the outbreak of the covid-19 pandemic, and the trade disruptions resulting from the Russia-Ukraine crisis, have disrupted food systems and affected the food security of millions of people across the globe. The most affected crops are edible seed oils and cereals such as barley, maize, and wheat. Low-income developing nations in Africa are the most affected due to the fragility of their food systems.

Many countries are faced with high debt levels and pressing financing needs. Several of them are carrying debt equal to 70 per cent of their GDP or more, which narrows the fiscal space and makes temporary subsidies on fuel, fertilizers, and food products unmanageable. Social safety programs that were targeted at vulnerable families, especially during the peak of covid-19 control measures are becoming unsustainable. Debt restructuring is needed to save developing countries from an imminent economic disruption. Further, many countries are in dire need of humanitarian interventions to stop families from falling into famine.

Given the challenges, Africa's food systems must evolve and adapt to adequately respond to the unprecedented challenges being experienced globally and on the continent. Africa is heavily affected by global shocks because it is a net food importer. Intra-Africa trade is quite low currently. African countries trade with other continents than they trade with other African countries.

The African Continental Free Trade Area (AfCFTA) and other regional trading blocs provide an opportunity to change this situation by reducing barriers to intra-African trade. African countries must take this opportunity to trade more amongst themselves and become food sufficient.

AGRA is working with African governments and institutions to catalyse an agricultural transformation in Africa improving yields with innovation- and technology and improving access to markets and finance that improve the livelihoods of smallholder farmers. AGRA is also working with governments to reform agricultural policies and create a business-friendly environment for farmers and investors alike. The Hub for Agricultural Policy Action is an initiative of AGRA and its partner, the Bill and Melinda Gates Foundation to support governments in generating and consolidating evidence to inform policy.

The Ministry of Agriculture in Tanzania is one of the first institutions to partner with AGRA through the HAPA initiative. The partnership has seen HAPA support the Ministry through analysis of data to inform various fiscal reforms in the breweries and edible oil sectors in the country. This model of evidence-based policy and decision-making is a welcome departure from previous systems where the policy was informed more by political expedience than data and evidence.

**Dr. Agnes Kalibata**  
President, AGRA



## Note from Vice-President Policy and State Capability Division

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HAPA is a distinct service offering by AGRA to provide policy consolidation and translation advisory services to governments seeking to reform, refine or develop a more clearly defined policy direction. The project has two outcomes (1) Improved policy environments for enabling Inclusive Agricultural Transformation (IAT) in participating countries, and (2) Timely and more responsive processes for improving Inclusive Agricultural Transformation (IAT) regarding relevant policies in participating countries. The intermediate outcomes are: (1) Adoption of policy recommendations for enabling Inclusive Agricultural Transformation (IAT) in participating countries, and (2) timely and reliable evidence on policy alternatives produced, (3) local capacity on evidence-based policy making process enhanced, and (4) The Consolidation and Translation (C&T) approach applied by a critical mass of actors – including local and international policy partners.

To fast-track agriculture transformation in Africa, AGRA had envisioned HAPA as a vehicle to respond to government requests for support. Through Consolidation and Translation (C&T) of evidence, HAPA's work entails collating existing evidence, expertise and best practice that are relevant to a government request for policy support and processing these into a set of rationalized and costed policy

options. The HAPA Initiative was designed as a service desk with the ability to respond quickly to requests for support dealing with policy constraints lasting from 2 to 6 months (short term support). HAPA may also provide policy support of up to 1-year (considered medium term support) to address complex policy challenges, guiding government and providing continuous advice on request through to the adoption of the policy.

Therefore, HAPA's operating model recognizes the urgent need for timely policy support to the agriculture sector, which plays an important role in ensuring inclusive growth. It recognizes the demands for political expediency and the need to ensure that a particular policy direction is anchored in evidence. The approach also addresses the challenge posed by the high turnover of senior government decision makers by engaging local capacity and building on existing knowledge and partnerships. The model also prioritizes coordination and partnerships for delivery. Within AGRA's Policy and State Capability (PSC) division, HAPA works with its sister units, viz: Policy and Advocacy, State Capability and Regional Food Trade. Hence, as part of the PSC, HAPA's activities are aligned and work collaboratively with the other units to supporting overall efforts by PSC.

**Dr. Apollos Nwafor**  
Vice-President, PSC, AGRA

# Executive summary

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More than 60% of edible oils in Tanzania come from palm oil with sunflower oils accounting for less than 40%. Subsequently, the value chains of the products account for the largest number of players at each stage compared to any other edible oil in the country. Currently, the country relies heavily on oil imports to meet a large proportion of its domestic demand which is a result of an overall low domestic production of edible oils. Tanzania's annual demand for edible oils is estimated at 570,000 MT, while domestic production is only about 205,000 MT (MoA, 2021). The deficit of almost 365,000 MT is covered by imports.

The potential to grow palm and sunflower in Tanzania is huge given the increasing demand for edible oils and the lower cost of producing the crops. Each of the palm and sunflower oils has its unique value chain with linkages and interactions that makes each valuable and functional. However, factors such as fragmented cultivations and low yield, poor farming practices, inadequate extension services, limited financial resources as well as un-systemic interventions limit the performance of this industry to meet the demand for edible oils both in the domestic and international markets. In addition, the contractual arrangements in place are not designed to equally safeguard the smallholder farmers against significant price shocks, creating a clear incentive for deviations. Thus, there is a need for carefully designed and coordinated interventions to strengthen these value chain systems. This will go a long way in bringing about positive impacts such as job creation, poverty reduction, and import substitution.

This report undertakes a value chain analysis of sunflower and oil palm crops in Tanzania, to identify key challenges facing different actors and activities along the value chain and provide a basis for various reform recommendations that would bolster improved sector performance all along the value chains.

## Summary of the main findings

**First**, despite the existing production potential in Tanzania, edible oil seed production is characterized by low yields. Consequently, there has been an insufficient supply of raw materials to the commercial processing companies, with many of them operating below installed capacities. Consequently, more than 70% of edible oils consumed in the country are imported.

**Second**, the efficiency of the value chain is determined by the function and roles of the trade and investment institutions along the chain at district/regional levels as well as other public and private organizations at the national level that play specific roles such as overseeing quality, marketing and advisory for sunflower.

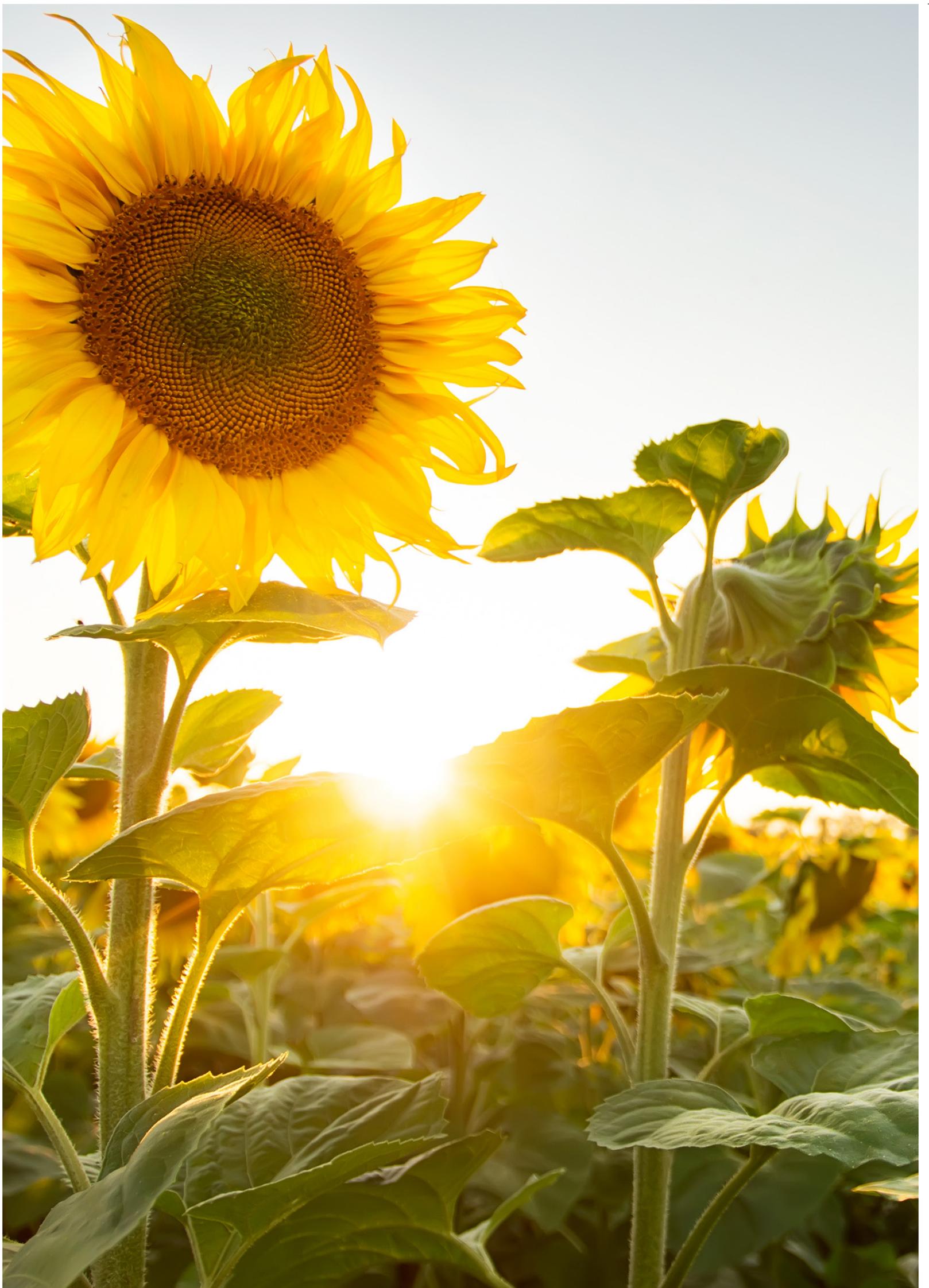
**Third**, despite the existence of contract farming arrangements, the nature of the contracts creates clear incentives for farmers to default. There is significant variation between pre-agreed prices and farm gate prices at the time of harvest making contract farmers earn lower profits than those without contracts. For instance, contracted farmers earn TZS 168,000 per hectare of sunflower compared to TZS 1,008,000 for non-contracted farmers.

**Fourth**, informal processing of both sunflower and palm oil is more profitable than selling the oil seeds to commercial oil processors, making the phenomenon more common and further reducing the availability of the raw materials to commercial processors. A farmer who processes palm would incur a total production cost of TZS 4,517,280 per ha and earn TZS 13,200,200. The revenue is attributed to the sale of not only palm oil but also kernel oil and kernel cake. Similarly, a non-contract farmer who sells unprocessed sunflower seeds earns an average profit of TZS 1,008,000 per ha compared to TZS 3,672,000 per acre earned by the farmer who processes the seeds.

**Fifth**, there is a mismatch between important market players such as research institutions (seeds, diseases, and pests) and small producers; the supply of inputs is left to the unregulated private sector; unbeneficial contract farming to farmers; limited financial assistance to farmers; and absence of warehouse systems for smallholders.

## Key recommendations

- 1) There is a need for clear and supportive systematic interventions that focus not only on one value chain stage e.g., inputs or processing, but rather on strengthening the functioning of the whole value chain. The government and NGOs like AGRA and NIRAS may work with farmers and processors in efforts to improve yields and efficiency in processing.
- 2) Promote contract farming arrangements that are relatively more fair, equitable, and hence enforceable. This is by ensuring the flexibility of the entered agreement to also safeguard farmers against huge price variations between the pre-agreed prices and the actual market prices at the time of the harvest. The current contracts seem to largely protect the buyers but not necessarily the seller.
- 3) Deliberate efforts should be made to encourage large processing companies to focus on the purchase of crude edible oils from the backyard processing farmers. This will not only ensure increased availability of the factories' raw materials but also come with other advantages along the edible oils value chain including job creation and more income for farmers. The establishment of crude edible oils collection points by either the government or farmers' association as well as setting clear standards and quality control guidelines to be adhered to by the backyard processors are among the needed actions.
- 4) Promote and enhance the formulation of a well-organized smallholder producers' association to strengthen the coordination of producers in the value chain.
- 5) Improve the administration, governance, and effectiveness of contract farming to avoid defaults and potential price exploitation of farmers.



# 1. Introduction

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The concept of the value chain in agriculture entails the assessment of stakeholders and their collective actions from the inputs and support services stage of production to transportation, marketing, processing, and distribution until the product reaches its final consumer under enabling environment. It captures the factors influencing industry performance, including access to and the requirement of the end market; the legal, regulatory, tax, and policy environment; coordination between actors in the industry; and the level and quality of support services. For imported or exported products (whether as inputs or final outputs), the value chain analysis covers the role of positive or negative shocks in the international markets on the domestic value chain of the products of interest.

In Tanzania's edible oils industry, palm and sunflower oils constitute the largest share of the consumed and produced oils. The value chain of these products accounts for the largest number of players at each stage compared to any other edible oil in the country. An assessment of the two edible oil value chains will capture a fair representation of the country's oil industry. Any negative constraint at any stage along these edible oils value chains will lead to a reduction in total quantities and an increase in the final prices, both of which negatively affect the welfare of the people of Tanzania. However, improvements at any stage along the value chain will have a significant positive effect on the welfare of the people.

One of the objectives of the Government of Tanzania, under the Ministry of Agriculture, is to promote increased production of edible oil seeds mainly sunflower and palm. This is expected to increase the availability of raw materials needed for the agro-processing industries in the country and hence increase domestic oil production, lower retail prices, and create decent jobs along the sector's value chain.

This report provides a detailed account of the sunflower and palm oil crop value chains in Tanzania. Specifically, the report describes the players along the value chain and existing challenges and opportunities at each stage of the chain.

The report is organized as follows: Chapter 2 provides the contextual framework of the sector, both from the global and domestic perspectives, and the methods; Chapter 3 discusses the value chain analysis of sunflower oil, while the discussion on the palm oil value chain is provided in Chapter 4. Chapter 5 presents a detailed discussion on the enabling environment (policy and legal framework) for the two products. Lastly, Chapter 6 provides a set of recommendations on value-chain-specific policies and public and private sector investments that could drive inclusive growth and transformation in this sector.

## 2. Contextual framework

### 2.1. Global context of the edible oils industry

Supply and demand factors have changed the global edible vegetable oil industry (Kojima et al., 2018) making it a global topic of interest due to:

- i) Rising global demand because of increased global wealth/income,
- ii) Increased awareness of health problems related to trans fatty acids (TFA), and
- iii) Concerns over the environmental impacts of deforestation and conversion of rainforests to croplands especially the establishment of palm oil crop plantations.

Global advances in production technology have increased edible oil supply through improvement in yield and expansion of productive land. The global edible oil production increased from 90.5 million metric tonnes (MT) in 2000/01 to 140.9 and 206.4 million MT in 2009/10 and 2020/21, respectively (Statista, 2022). Among the major categories of vegetable oil, palm oil has the highest volume of production, at 73 million MT (35.4%) in the year 2020/21, followed by soybean oil and sunflower oils with total global production of 59.2 million MT and 19.1 million MT (28.7% and 9.3%), respectively.

The demand for edible vegetable oils has increased in the America, Asia, Oceania, and Europe regions with notable heterogeneity in the specific types of edible oil demand increasing across countries. For example, demand for soybean oil has mainly increased in America, palm oil in Asia and Oceania, and sunflower oil in Europe. Per capita consumption for soybean oil has increased in high and middle-high-income countries, while per capita consumption for palm oil has increased in low-income countries. Per capita consumption of rapeseed oil and sunflower oil has decreased in African and American regions, respectively (Kojima et al., 2018).

It can be noted that shifts in competing oil uses have significantly contributed to changes in the availability

and relative prices of different oil products, with consumer preferences and regulations altering the supply and demand of the same. Limited availability of land, climate change, and the green chemistry approach also plays an important role in the current global production and trade of edible oils and hence the supply and demand of the selected products. Currently, the edible oils trade's supply chain is under heavy stress, from the COVID-19 pandemic and the ongoing war in Ukraine, which has led to an increase in prices threatening a food crisis. For instance, the disruptions of sunflower oil exports from the Black Sea Region, which account for 60% of world sunflower oil output and 76% of exports, have sent global vegetable oil prices skyrocketing (Chepeliev et al., 2022). Developing countries that are highly dependent on the importation of food and energy are the most vulnerable.

The link between the growth of agriculture and agro-processing is central to the economic development of African countries. Agro-processing is an important sector for industrialization (Johari and Kilama, 2018). In Sub-Saharan Africa for example, the services sector accounts for 58% of regional GDP while industries and agriculture contribute 24% and 18%, respectively<sup>1</sup>. Even though the services sector dominates in more developed countries, they have gone through an industrialization process to develop advanced capabilities, including in agro-processing and improved productivity in agriculture.

In Tanzania, Agricultural Sector Development Program (ASDP) Phase II prioritizes oil seed crops, including palm oil, and seeks a reduction of 50% on palm oil importation (URT, 2017). The sector is also covered by the Comprehensive African Agriculture Development Program (CAADP) framework, Southern Agricultural Growth Corridor of Tanzania (SAGCOT), Kilimo Kwanza Resolve, and Agricultural Policy (2012). The Government, under the Prime Minister's Office, has put pressure on local governments as well as the ministries of Agriculture, Industry and Trade to bolster the development of the sector.

<sup>1</sup> World Bank (2022), World Bank national accounts data, and OECD National Accounts data files. Accessed at <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?end=2020&locations=ZG&start=1995&view=chart>

## 2.2. Overview of the edible oil industry in Tanzania

### 2.2.1. Edible oils production and consumption in Tanzania

Palm, sunflower, soybean, groundnuts, and cotton are the main edible oils consumed in Tanzania. Palm oil accounts for the largest share of the country's total domestic consumption (60%). However, more than 95% of palm oil is imported (Olabisi et. al, 2018).

Sunflower oil is the second most-consumed oil, contributing slightly less than 40% of the national cooking oil requirement (BFAP, 2018). However, the low level of oil production can be attributed to insufficient raw materials of sunflower seeds in the country. The use of poor farming technologies (type of seeds, low fertilizer use, planting style, etc.) together with predominantly small-scale subsistence farming has often resulted in low yields of sunflower seeds in Tanzania. Recent statistics indicate a 26% decline in the total area under sunflower production from 754,000 ha in 2010 to 558,000 ha in 2018, resulting in a reduction in production from 787,000 MT to 561,000 MT. Consequently, most of the large- and small-scale sunflower processing industries operate far below their potential in any given year<sup>2</sup> despite the cost of producing sunflower oil in the country is lower than that of any other oilseed crops (ITC, 2016). In addition, there is a growing domestic demand for sunflower oil as

<sup>2</sup> The Sunflower Oil Processors Association said it is facing a shortage of 1.4 million tonnes to effectively meet the gap for edible oil in Tanzania (The East African, 2021 at <https://www.theeastafrican.co.ke/tea/business/tanzania-eyes-edible-oils-market-49132#:~:text=The%20major%20crops%20for%20edible,for%20edible%20oil%20in%20Tanzania.>

well as the by-product (seed cake) for livestock feeding.

The production of palm oil in Tanzania has increased over the years from 17,000 MT in 2010/11 to 42,000 MT in 2018/19 because of an increase in the area under production. However, the yield has remained constant and low at around 1.7 MT per hectare. The leading palm-producing regions in the country are Kigoma, Pwani, and Mbeya with the 2019/2020 data showing that Kigoma accounted for 54%, Pwani 28%, and Mbeya 15% of the country's total palm oil production (URT, 2021).

### 2.2.2. Edible oils importation trends, amounts, and value

Figure 1 presents the trends in quantities of imported edible oils in the country from 2013 to 2021. On average, Tanzania imported approximately 463,000 MT of edible oils in the period 2013-2021. The quantity of imported edible oils increased from 501,000 MT in 2013 to a peak of 542,000 MT in 2016, after which the imported quantity decreased gradually to 402,000 MT in 2021. The average annual demand for edible oils in the country is approximately 570,000 MT

Table 1 summarizes various quantity of imported edible oils into Tanzania over the years. The top five imported cooking oils by frequency of importation (regardless of the quantity and value) are palm oil (27.6%), other fixed vegetable fats and oils (26.5%), margarine (17.7%), sunflower seed, safflower or cottonseed oil and their fraction (8%), and olive oil and its fractions (7.4%).

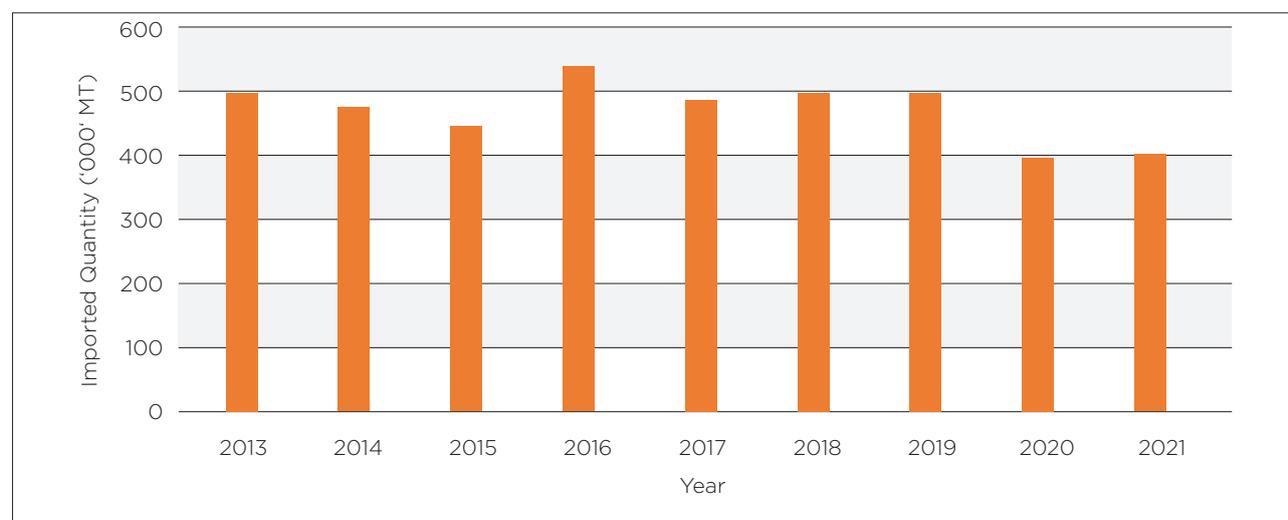


Figure 1: Total imported quantity of edible oils in Tanzania (in '000' MT)

Source: Own construction using Tanzania Revenue Authority Data (2021)

Table 1. Share of imported edible oils in Tanzania by frequency of importation from 2015-2020

Hs4	Hs description	2015	2016	2017	2018	2019	2020	Total (2015-2020)	Total (%)
1511	Palm oil and its fractions whether refined or not chemically modified	624	471	338	665	770	639	3,507	27.56
1515	Other fixed vegetable fats and oils (including jojoba oil) and fractions	908	815	823	419	194	212	3,371	26.49
1517	Margarine; edible preparations of animal or vegetable fats or oils	438	492	347	338	355	288	2,258	17.74
1512	Sunflower seed, safflower or cottonseed oil and their fractions	249	199	168	144	141	120	1,021	8.02
1509	Olive oil and its fractions	215	222	145	126	124	103	935	7.35
1516	Animal or vegetable fats and oils and fractions, hydrogenated, etc.	78	124	65	50	29	37	383	3.01
1513	Coconut (copra), palm kernel or babassu oil and their fractions	71	77	66	54	50	45	363	2.85
1514	Rape, colza or mustard oil and their fractions	70	21	16	18	23	26	174	1.37
1520	Glycerol, crude, glycerol waters and lye	6	112	7	24	13	6	168	1.32
1510	Other oils	36	35	19	14	19	6	129	1.01
1507	Soybean oil and its fractions	15	27	14	5	13	17	91	0.72
1518	Inedible mixtures of animal or vegetable fats	19	18	19	13	9	8	86	0.68
1505	Wool grease and fatty substances derived therefrom (including lanolin)	18	13	16	17	13	8	85	0.67
1508	Groundnut oil and its fractions	10	14	18	8	0	1	51	0.4
1521	Vegetable waxes (excluding Triglycerides), beeswax, and other insect waxes	9	8	8	6	12	5	48	0.38
1504	Fats and oils and their fractions, of fish or marine mammals	7	18	8	5	2	2	42	0.33
1506	Other animal fats and oils	0	1	2	2	0	1	6	0.05
1502	Fats of bovine animals, sheep, or goats	0	1	2	1	0	0	4	0.03
1503	Lard stearin, lard oil, oleo stearin, oleo-oil and tallow oil	1	0	0	1	0	0	2	0.02
1522	Degras; residues from animal or vegetable waxes	0	1	0	0	1	0	2	0.02
<b>Total</b>		<b>2,774</b>	<b>2,669</b>	<b>2,081</b>	<b>1,910</b>	<b>1,768</b>	<b>1,524</b>	<b>12,726</b>	<b>100</b>

Source: Tanzania Revenue Authority (TRA, 2022)

Focusing on the exact amounts and value of imported oils, the data shows that the top five most imported cooking oils base on the five-year average (i.e. 2015-2020) are palm oils (56% of annual average imported value), soybean oil and its fraction (23% of the value), sunflower seed, safflower or cotton-seed oil and their

fractions (7% of the value), margarine (3.2 of the value) and coconut (copra), palm kernel or babassu oil and their fractions (3.1% of the value) (see Figure 2). These importation shares are consistent with the global production of edible oils.

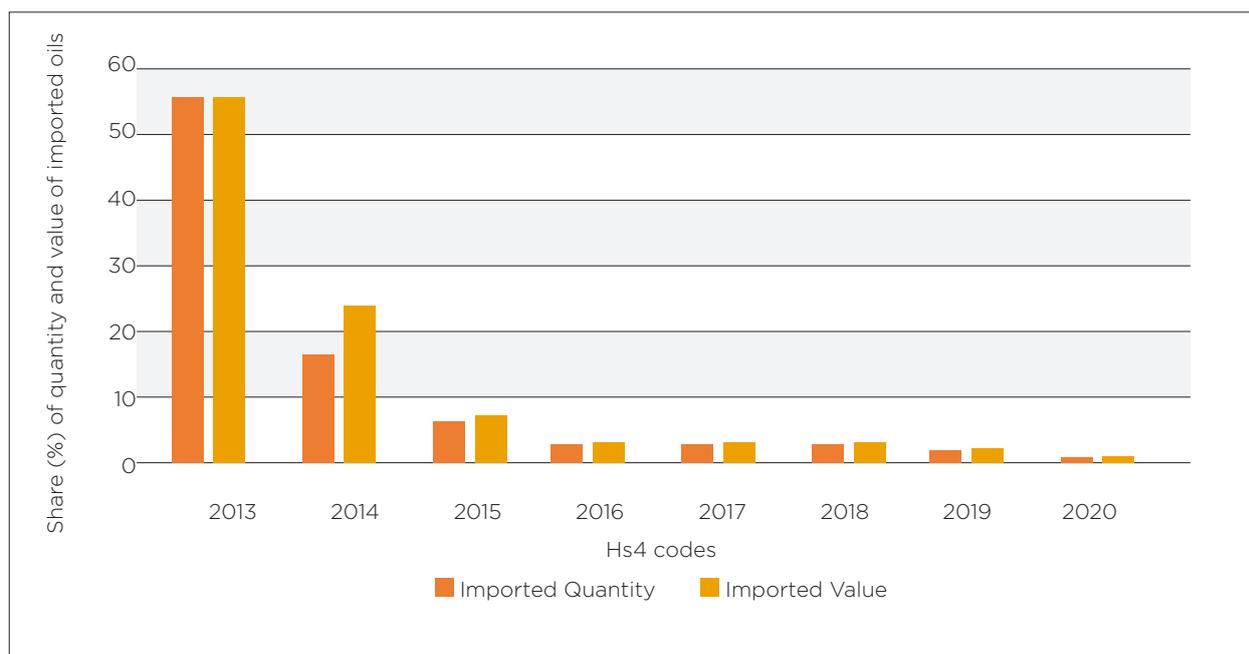


Figure 2: Annual share (%) of the quantity and value of imported oil from 2015 to 2020 by HS4<sup>3</sup> codes

Source: Authors' computation based on TRA data (HS codes are defined in Table 1)

Figure 3 provides a year-by-year comparison of the percentage share of the leading cooking oils in terms of quantity of imports into the country. Despite some

variation across the years for various types of cooking oil, the roles of palm oil, soybean oil, and sunflower have remained stable over the period.

3

Hs4	Hs description
1511	Palm oil and its fractions whether refined or not chemically modified
1515	Other fixed vegetable fats and oils (including jojoba oil) and fractions
1517	Margarine; edible preparations of animal or vegetable fats or oils
1512	Sunflower seed, safflower or cottonseed oil and their fractions
1509	Olive oil and its fractions
1516	Animal or vegetable fats and oils and fractions, hydrogenated, etc.
1513	Coconut (copra), palm kernel or babassu oil and their fractions
1514	Rape, colza or mustard oil and their fractions
1520	Glycerol, crude, glycerol waters and lye
1510	Other oils
1507	Soybean oil and its fractions
1518	Inedible mixtures of animal or vegetable fats
1505	Wool grease and fatty substances derived therefrom (including lanolin)
1508	Groundnut oil and its fractions
1521	Vegetable waxes (excluding Triglycerides), beeswax, and other insect waxes
1504	Fats and oils and their fractions, of fish or marine mammals
1506	Other animal fats and oils
1502	Fats of bovine animals, sheep, or goats
1503	Lard stearin, lard oil, oleo stearin, oleo-oil and tallow oil
1522	Degras; residues from animal or vegetable waxes



Figure 3: Share (%) of the total value of edible oil imports by year and type-using HS4 codes<sup>4</sup>

Given the current dynamics in global issues including the Russia-Ukraine war and heterogeneous impacts of the COVID-19 pandemic across countries, it is important to assess the major sources of Tanzania's edible oils by country. Data shows that different oil

products originate from different countries and vary across years. Figure 4 presents the top sources of oil products imported into Tanzania. The top three sources of imports countries<sup>5</sup> for palm oils (HS 1511) are Indonesia (ID), Malaysia (MY), and the United States of America (US), while for Sunflower oils (HS 1512) they are Antigua and Barbuda (AG), Argentina (AR) and Ukraine (UA) and for soya-bean oils (HS 1507) they are Argentina (AR), United States of America (US) and Uganda (UG).

4

Hs4	Hs description
1511	Palm oil and its fractions whether refined or not chemically modified
1515	Other fixed vegetable fats and oils (including jojoba oil) and fractions
1517	Margarine; edible preparations of animal or vegetable fats or oils
1512	Sunflower seed, safflower or cottonseed oil and their fractions
1509	Olive oil and its fractions
1516	Animal or vegetable fats and oils and fractions, hydrogenated, etc.
1513	Coconut (copra), palm kernel or babassu oil and their fractions
1514	Rape, colza or mustard oil and their fractions
1520	Glycerol, crude, glycerol waters and lye
1510	Other oils
1507	Soybean oil and its fractions
1518	Inedible mixtures of animal or vegetable fats
1505	Wool grease and fatty substances derived therefrom (including lanolin)
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1521	Vegetable waxes (excluding Triglycerides), beeswax, and other insect waxes
1504	Fats and oils and their fractions, of fish or marine mammals
1506	Other animal fats and oils
1502	Fats of bovine animals, sheep, or goats
1503	Lard stearin, lard oil, oleo stearin, oleo-oil and tallow oil
1522	Degras; residues from animal or vegetable waxes

### 2.3. Methods

The value chain analyses of the selected edible oil crops used both primary and secondary data. A thorough review of the literature was carried out while primary data was collected from the selected regions.

Value chain analysis largely used two major types of analytical tools: the value chain maps and various statistical ratios to draw inferences. The analyses rely on the existing value chain maps.

5 Antigua and Barbuda (AG), Argentina (AR), Australia (AU), Belgium (BE), China (CN), Egypt (EG), Germany (DE), India (IN), Indonesia (ID), Italy (IT), Kenya (KE), Malawi (MW), Mauritius (MU), Malaysia (MY), Mozambique (MZ), Singapore (SG), Turkey (TR), United States of America (US), Ukraine (UA), Tanzania (TZ), Uganda (UG), United Arab Emirates (AE),

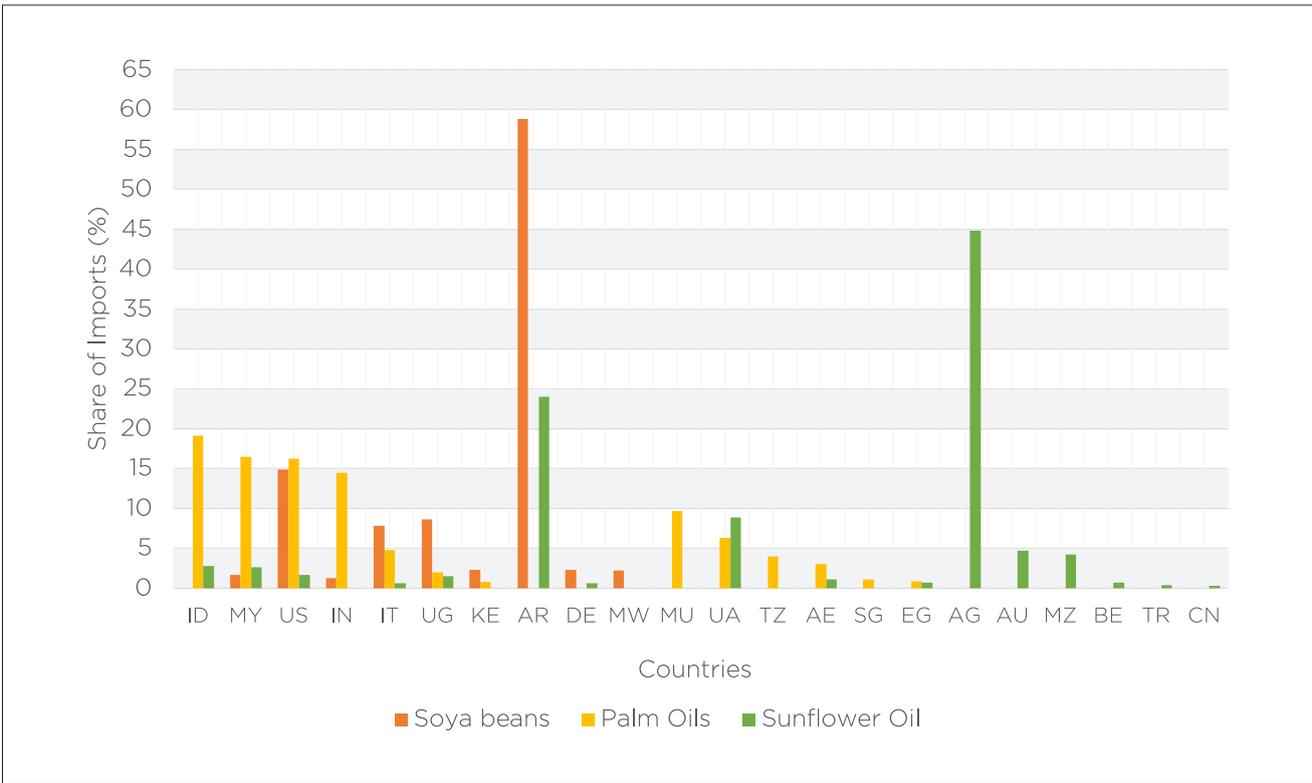


Figure 4: Edible oil products imported in Tanzania from 2015 to 2020, by source and share of total value

## 3. Value chain analysis: Sunflower oil

### 3.1. Overview of the crop production and marketing (trends)

Sunflower is the most produced oilseed in the world, the fourth most consumed vegetable oil, and the third oilseed used as protein feed (Pilorgé, 2020). In 2019/20 Ukraine was the leading producer of sunflower followed by Russia and Argentina. Tanzania is the second producer of sunflower in Africa and the tenth in the world (BoT, 2017).

The sunflower value chain is important for the development of the Tanzanian economy as a source of edible oil and income for smallholder farmers and thus alleviating poverty. Currently, Tanzania imports over 60% of the country's cooking oil valued at over USD 250 million per year (SAGCOT, 2020). The growth of the sunflower industry will reduce dependency on imported edible oil. However, despite the increasing demand for sunflower oil in the country, sunflower production portrays a mixed trend including a decline in area under production since 2015, with minimal improvement in yield (Table 2) from 2013 to 2016.

In response to the declining trend in sunflower production, the government made deliberate decisions to transform the sunflower value chain by offering tax incentives as well as making tariff changes that have favoured domestic sunflower production and encouraged industrial investments in the sunflower oil sector. For example, in the fiscal year, 2018/19 the Government of Tanzania increased the import duty on

crude and refined edible oils from 10 to 25% and from 25 to 35%, respectively. The above action was aimed at increasing the competitiveness and hence local market share of domestically produced/refined edible oils, through increased relative prices of imported edible oils. An increase in import duty was anticipated to make imported oils relatively costly and hence discourage imports. On the other hand, this would provide a larger market share for the local producers of edible oils, hence stimulating increased domestic production and growth of the edible oils industry, predominantly the sunflower oils.

In addition, as part of the initiative to increase sunflower production, the Ministry of Agriculture in its 2021/2022 budget designated a pilot model that included Dodoma, Singida, and Simiyu regions aimed at promoting sunflower production through the provision of improved extension services. Other initiatives included the distribution of affordable sunflower seeds among farmers in the target regions. This study is, therefore, part of the government initiatives to remove hurdles along the value chain and propose a possible option for improvement.

Development partners such as Alliance for a Green Revolution in Africa (AGRA) have promoted the sunflower value chain due to its nutritional benefits and potential to improve farmer incomes and livelihoods. Agricultural Market Development Trust (AMDT) has developed a program (2016-2021) aimed at raising the incomes of at least 150,000 sunflower farmers by 50% through improved access to quality seeds

Table 2. Sunflower production in Tanzania from 2010 to 2019

Item	Financial Years								
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Area ('000' ha)	753.76	1,077.62	1,629.70	1,721.88	1,787.89	1,815.45	462.29	487.77	557.62
Production ('000' MT)	786.90	1,125.00	2,625.00	2,755.00	2,878.50	2,995.50	352.90	543.26	561.30
Yield (MT/ha)	1.04	1.04	1.61	1.60	1.61	1.65	0.76	1.11	1.01

Source: Ministry of Agriculture

(ANSAF *et. al.*, 2019). Donors and non-governmental organizations (NGOs) including Farm Concern International and One Acre Fund have initiated other programs targeting multiple crops including sunflower. The private sector has also joined efforts towards sunflower industrialization through Tanzania Sunflower Processors Association (TASUPA) and other regional sunflower bodies which work towards improving coordination among processors and lobbying for improvements in the value chain. Tanzania Agricultural Development Bank has established a credit guarantee scheme to enable commercial banks to start or increase financing in the sunflower sector (ANSAF *et. al.*, 2019).

The development of contract farming in the sunflower sector is essential to match producers' capacities with processors' needs. To that effect, contract farming could stimulate increased production and industrial supply of sunflower oil seeds. By guaranteeing prices to farmers and committing them to predetermined volumes, contracts can be leveraged to get support from financial institutions. The lack of contract farming compounds the poor supply chain linkages between processors and growers. Without formal contract farming, the processor won't cooperate with the input's supplier, nor achieve economies of scale to positively affect purchasing and encourage farmers to adhere to the contract.

### 3.2. Mapping of the sunflower value chain

A value chain represents all activities required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final customers, and final disposal after use. The chain also has key players as well as service providers who transact a particular product along the value chain, including input providers (e.g., seed suppliers), farmers, traders, processors, transporters, wholesalers, retailers, and final consumers.

A simple sunflower value chain in Tanzania (Figures 5 and 6) focuses on key players/actors along the chain including inputs suppliers, producers, traders, processors, final consumers, policymakers, regulators, standard bodies, community-based organizations (CBOs), NGOs, international organizations, and agricultural extension officers as well as other government institutions.



Figure 5: Value Chain map for Sunflower oil in Tanzania

### i) Input supply

The main inputs in sunflower production are seeds, fertilizers, pesticides, land, labour, irrigation, and research and development. The main sources of seeds are *Gulio* (local market), recycled seeds, and purchased seeds from private stockists. There is also a quality declared seeds (QDS) window that works in collaboration with the local councils. In some instances, farmers buy uncertified seeds resulting in low yield. The Tanzania Official Seed Certification Institute (TOSCI) is the only agency responsible for certifying and approving seeds before being released to farmers.

The availability of good quality sunflower seeds represents the weakest link in the sunflower value chain since most of the small-scale farmers use recycled and traditional seeds sourced from other farmers and hence end up with low yields. Ignorance, lack of capital, and non-availability or expensive quality seeds force farmers to use poor seeds. This is further aggravated by the lack of standards in the sunflower seeds marketing system.

### ii) Production

Small-scale farmers dominate sunflower production in Tanzania. Sunflower farming involves land preparation, planting, regular weeding, and harvesting. While small-scale farmers mainly use hand hoes, the medium and large-scale farmers use tractors and ox-plough. Small-scale farmers still rely on traditional practices, owing to insufficient extension services and the high cost of inputs.

The development of contract farming in the sunflower sector is considered essential to match producers' capacities with processors' needs. Contract farming was officially introduced in 2010 by the Government of Tanzania and was implemented in the 2011/12 financial year for cotton farming (Mwimo et al, 2016). It has now been extended to several other crops including sunflower. Through contract farming, it is envisaged that market risks could be shared between the farmers and buyers.

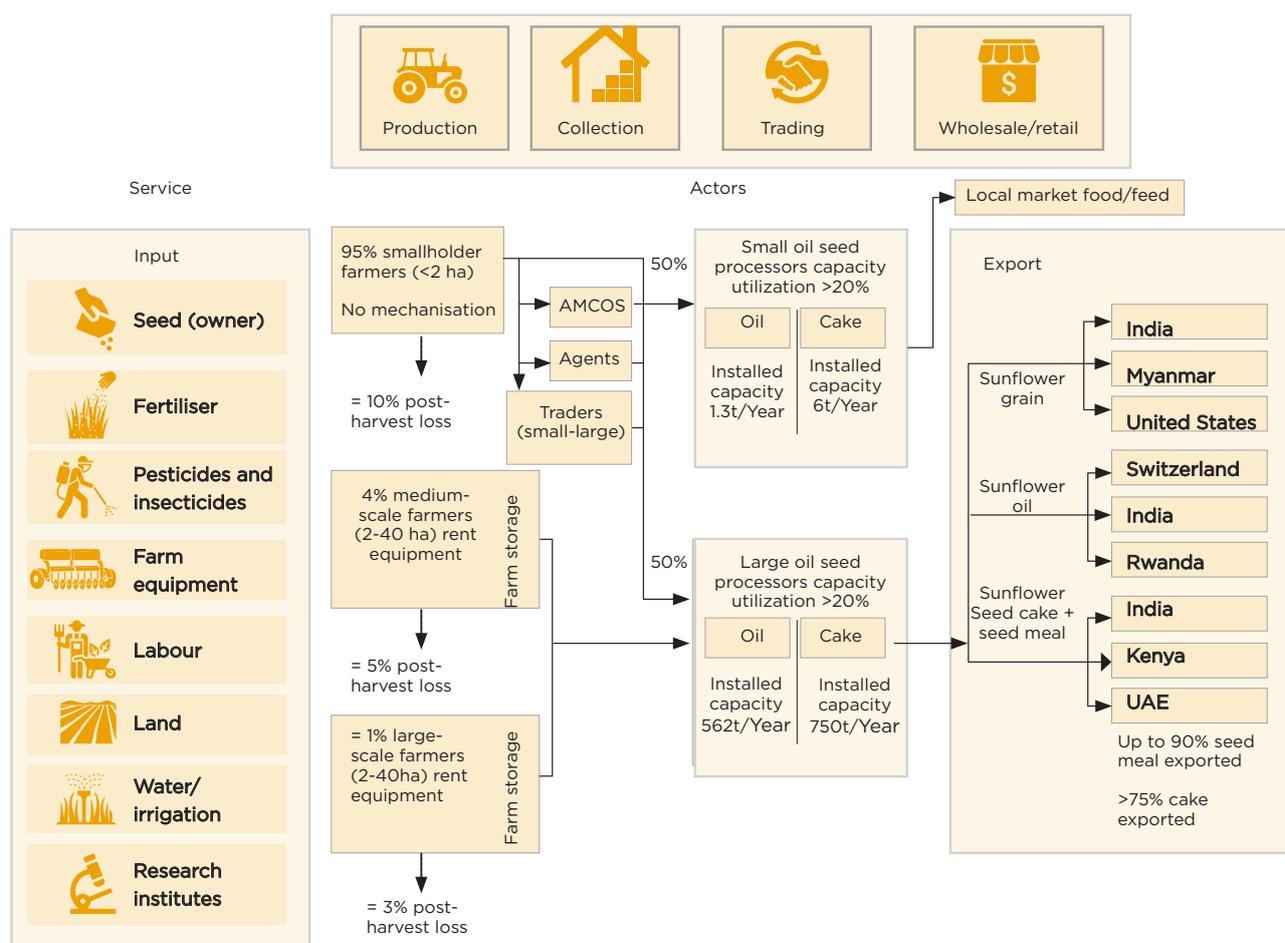


Figure 6: Actors and Service providers in Sunflower Sector Value Chain

Source: Sunflower Sector Development Strategy (with slight changes)

The large processors such as Mount Meru Millers Ltd (with the capacity to process 110,000 MT/year of sunflower seed), and PYXUS (with the capacity to process 120,000 MT/year of sunflower seed), in Arusha and Dodoma, respectively, have contract farming arrangements with farmers. Contract enforcement, however, remains the main problem due to the inexistence of an Act that governs contract farming. If well managed with a 'win-win' clause, contract farming could help to increase production and thus bridge the supply deficit. Moreover, by guaranteeing prices to farmers and committing them to predetermined volumes, contracts can be leveraged to approach financial institutions to offer credit to farmers.

Poor storage facilities such as sacks/bags, warehouses, and lack of cash force small farmers to sell their crops soon after harvest at a very low price, making producers' net income varies significantly depending on the yield, seed quality, and bargaining power, especially with middlemen/traders.

The low sunflower production in Tanzania is explained by inadequate agronomic practices in land preparation, planting, weeding, pests and diseases, and the use of poor inputs. The shortage of government extension officers hinders the adoption of better agricultural practices, and limited access to finance by small-scale farmers further compounds the problem.

### iii) Local trading and bulking

Once sunflower seeds are harvested, they are sold to local traders, collectors, or assemblers either at the farm-gate price which is generally lower than the market price, or at the local markets. Local traders are in two groups: first, those who are commissioned – usually buy for processors, and second those who act independently by locating buyers for the seeds or negotiating with the processors. Some farmers locally process seeds



Diagram 1: Sunflower seed and oil

Source: Author compilation

to produce oil for their use or to be sold in the local markets.

The main strategy for traders is to buy seeds immediately after harvesting and store them in the hired storage facilities. The produce is kept for a period between three to six months before they start selling them to processors. Traders play an important role including pre-financing some farmers and undertaking quality checks for the seeds to ensure that they are properly weaned, packed, and bulked for whole selling mainly to processors.

Some challenges faced by traders include:

- i) Small production per farmer which increases the cost of collection
- ii) Limited storage facilities –leading to post-harvest loss of over 10%
- iii) Poor road infrastructures.

### iv) Processing/milling

Most of the processing is done by the private sector which provides important milling and warehousing services. Large processors buy almost half of their seeds from farmers or traders before processing them and selling both oil and cake. Apart from purchasing seeds, processing them, and selling oil and other by-products, small-scale processors also provide oil extraction services to their clients who are mostly small-scale farmers who decide to add value to their products. Farmers who opt to process their seeds normally earn higher profits compared to those who sell the sunflower seeds immediately after harvest (Figure 7). A farmer who sells unprocessed sunflower seeds earns an average profit of TZS 1,008,000 per ha compared to TZS 3,672,000 per ha earned by the farmer who processes them.



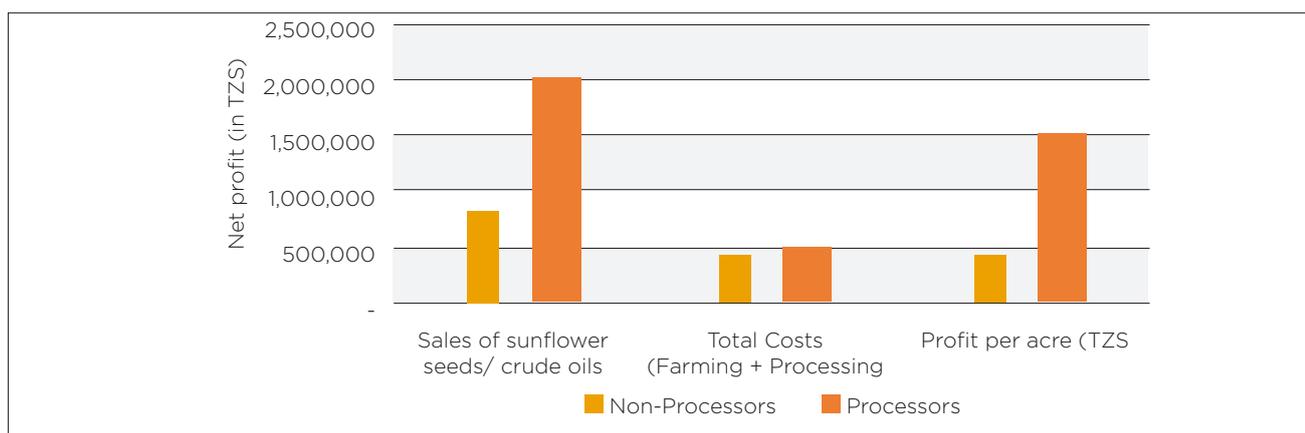


Figure 7: Net profit accruing to processing and non-processing sunflower farmers (TZS/acre)

Lack of storage facilities or warehousing systems forces small-scale farmers to sell their produce cheaply immediately after harvest. Given that crushing equipment is relatively cheap, the processor, therefore, spends more money buying and storing the sunflower grains to smoothen demand. Seed cake is an important sunflower processing by-product. Every 70 kg bag of sunflower seeds produces about 45 kg of sunflower seed cake.

The Tanzania Food and Drugs Authority (TFDA) recommends that edible sunflower oil needs to be double refined to prolong the shelf life. Storing unrefined oil for long and exposing it to fluctuating high temperatures reduces its quality.

Challenges faced by small-scale processors include:

- i) Limited working capital to purchase enough seeds at the time of harvest,
- ii) Unreliable power supply,
- iii) Inadequate storage facilities to store produce for the whole season, and
- iv) Poor branding and packaging.

In addition to these, small processors also face stiff competition for seed from large processors driving up prices to unsustainable levels. Large processors have sometimes resorted to importing cheaper seeds from neighbouring countries such as Burundi, Malawi, Rwanda, and Uganda (Dalberg 2019). Processors also face unreliable supply due to drought, but farmers tend to switch to alternative crops such as maize, green gram, and chickpeas in response to changing relative prices (Isinika et al. 2020).

#### v) Wholesaling and retailing

Most processors undertake wholesaling at the factory for both oil and the seed cake. However, large edible oil importers such as Murzah Oil and Mohamed

Enterprises have their go downs, wholesaling facilities and agents in different regions. These wholesalers also sell other imported edible oils as well as sunflower oil.

Retailing starts with the processors or at the processing sites where most small-scale processors fill plastic containers (unlabelled) with edible oil and sell them in the local markets. Some process the seed and then sell the oil along the roadside either with or without the label. Some processors have sunflower oil selling outlets in urban areas. Most of the oil is traded through general merchandise shops and kiosks which are in urban and rural areas including large or medium supermarkets in big cities. Organized small, medium, and large-scale farmers often target urban markets offering better prices. Locally produced oil favourably competes with other refined oil at the retail outlets. Sunflower seed cake is often sold to traders/processors who stock and export to neighbouring countries such as Kenya.

#### vi) Consumers

Consumers can purchase sunflower oil from farmers after they process their crop; from local traders who purchased seeds from farmers and paid for the processing; or from processors who bought either the seed or oil from the farmers and from retailers who bought the oil from processors or traders. Many consumers in Tanzania prefer local sunflower oil to imported oils (probably because of the price difference). The demand for local sunflower oil is growing especially among middle- and large-income groups regardless of the quality (SIDO, 2009).

Consumers do not know the difference between crude and refined sunflower oil. Their choices are not driven by the level of value addition or quality. It is common for middle to upper-income people to purchase crude/unrefined low-quality sunflower oil at roadside selling points.

### 3.3. Quantifying costs and revenues along the sunflower value chain

The unit costs at various stages of sunflower production for a representative farmer in the Dodoma region, per hectare, are shown in Table 3. The values are based on the information collected from the field across the actors of the value chain. On average, it costs

approximately TZS 1,008,000 to farm one hectare of sunflower, from farm preparation to harvesting. Based on the average farm yield of a typical farmer in Dodoma (1,680 kg per hectare), total revenue (and hence profit) is dependent on whether a farmer practices contract farming or not. While contract farmers would earn an average profit of TZS 168,000/ha, those without a contract would earn a much higher profit, to the tune of TZS 1,008,000/ha.

Table 3. Gross margins of sunflower production in the Dodoma region per ha in 2022.

Stage	Activity	Unit cost	Units	Subtotal
Farm preparation	Plot clearance	48,000	1	48,000
	Ploughing	96,000	1	96,000
	Hallowing	72,000	1	72,000
Planting	Sunflower seeds (Hybrid variety) in KGS	84,000	2	168,000
	Planting costs (Labor)	72,000	1	72,000
Weeding	First-round weeding (Labor cost)	144,000	1	144,000
	Second round (Labor cost)	144,000	1	144,000
Pesticides application	Pesticides	36,000	1	36,000
Harvesting	Cutting of the sunflower stands/ mashuke (labour cost)	36,000	1	36,000
	The hiring of the "Machine ya Kupigia"	48,000	1	48,000
	Winnowing/kupepeta (labour cost per one bag for 24 bags harvest)	1000	24	240,000
	Storage/packing gags (for an average of 24 bags harvested in ha)	1000	24	240,000
Transportation	From the farm to home/processing factory (24 bags)	2000	24	48,000
	Crop cess (cost per 24 bags harvested)	1000	24	24,000
Storage cost (if storing)	Storing the harvest in a private warehouse	1000	24	24,000
TOTAL COST				1,008,000
Revenue per ha	Number of 70kgs bags per ha	Unit price/ kgs	units harvested	Total revenue
Contract farmers	24	700	1,680	1,176,000
Non-contract farmers	24	1200	1,680	2,016,000
Gross profit per ha				
Contract farmers				168,000
Non-contract farmers				1,008,000

Source: Authors' construction based on the fieldwork data

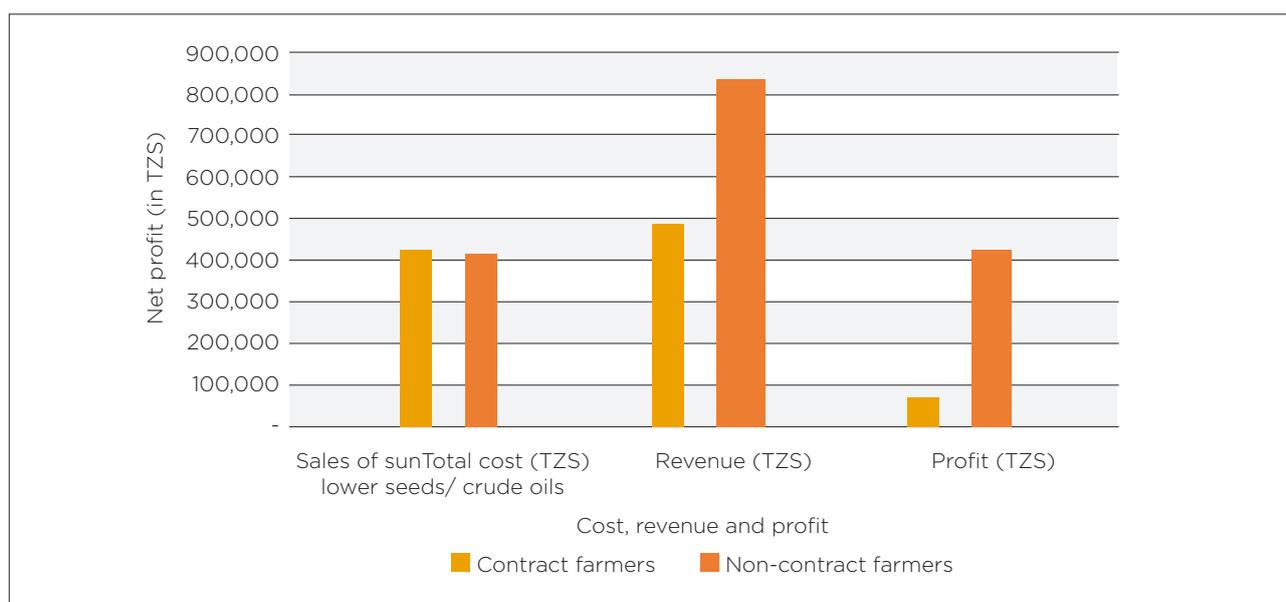


Figure 8: Net profit accrued by sunflower farmers depending on contract status

Source: Authors' construction based on the fieldwork data

### 3.4. Structure, conduct, and performance of the sunflower value chain

Sunflower business is characterized by not only local high demand but also international demand. Tanzania's major sunflower export destinations are India (about 82%) followed by Kenya (5%), and Switzerland (5%). Palm oil has the largest market share, and above 95 % of palm oil used in Tanzania is imported (Olabisi et al, 2018). In addition, there is a growing local demand for sunflower seed cake for livestock feeding and in neighbouring countries.

Capital and knowledge requirements are relatively high for sunflower farmers. Access to finance is still a problem not option of better processing technology.

The conduct of the chain is characterized by inadequate market information (prices and market opportunities) where farmers remain only as price takers. Traders/processors set prices depending on supply and demand within and between seasons. It is common to find groups of producers organized in associations to qualify for grants from donors.

Private sector associations such as TASUPA (representing processors), and the Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA) (representing businesses) have been established. In Tanzania however, the edible oil sector is characterized by push and pull from the competing groups who want to influence policy in their favour. For instance, small-and medium-scale versus large-scale processors on one side, and

sunflower processors and crude palm oil importers on the other side (Isinika and Jeckoniah, 2021).

Performance of the sunflower value chain has evolved over time and since 2000, sunflower production exhibited a gradual upward trend until 2010 and showed an accelerated trend thereafter. Currently, sunflower is produced in almost all regions on Tanzania's mainland thus contributing to more incomes for the value chain actors and poverty reduction.

#### 3.5. Governance in the sunflower value chain

Private and public institutions play major roles in input provision, production, processing, warehousing, marketing, and exporting. The Ministry of Agriculture in collaboration with other public and private stakeholders is responsible for issuing rules and guidelines for the sunflower value chain. The norm is that links between the value chain agents are characterized by service supports and contractual mechanisms that could make the chain competitive. These mechanisms include pre-financing by private traders; bulk input supply (seeds, fertilizers) to support yields; improved seeds provision to scale up yield (research institutions and district councils); certification; warehouse receipts systems for pre-auction advance payments; auctions to support market transparency and higher prices.

The efficiency of the value chain is determined by the function and roles of the trading and investing institutions along the chain at district/regional levels as well as other public and private organizations at the national level that play specific roles in the chain,

among other factors. Their roles include overseeing quality, marketing, advisory, and direct provision of services at every node of the chain. The stakeholders include the Tanzania Bureau of Standards (TBS), TCCIA, CTI, FAIDA Mali, Farm Africa, NSV, RLDC, Tanzania Edible Oil Association, and TFDA among others.

There are several constraints at each node of the chain which include the mismatch between important market players such as research institutions (seeds, diseases, and pests) and small-scale producers. However, the

supply of inputs is left to the unregulated private sector. In addition, financial services are skewed to only processors, with limited access from small-scale farmers, and an absence of warehouse systems for smallholder farmers

### 3.6. SWOT analysis

The strength, weakness, opportunities, and threats (SWOT) analysis of the sunflower value chain in Tanzania (Table 4).

Table 4. SWOT analysis of the Sunflower value chain in Tanzania.

 <h4>Strength</h4> <ul style="list-style-type: none"> <li>• Many private sectors and government institutions are involved in producing hybrid seeds.</li> <li>• Tax incentives</li> <li>• Several smallholder farmers cultivate sunflower oil seed</li> <li>• Pre-existing service</li> <li>• Presence of sunflower associations such as TASUPA (processors), and TCCIA (businesses) support.</li> <li>• Several organizations are in scaling up</li> <li>• Strong political will that has supported</li> </ul>	 <h4>Weakness</h4> <ul style="list-style-type: none"> <li>• Limited coordination of seed production</li> <li>• Expensive quality inputs</li> <li>• Poor agronomic practices leading to low yields</li> <li>• Very high post-harvest loss</li> <li>• Limited availability of financial resources</li> <li>• Weak warehouse system</li> <li>• Poor enforcement of weighing scales</li> </ul>
 <h4>Opportunities</h4> <ul style="list-style-type: none"> <li>• Sunflower oil is a high-value product</li> <li>• Increasing domestic demand</li> <li>• Use of technology (mobile phones) to deliver agronomic advice</li> <li>• Favourable policies and regulations</li> <li>• Power in rural areas allows for processing</li> <li>• Very high export demand</li> </ul>	 <h4>Threats</h4> <ul style="list-style-type: none"> <li>• Rain-fed agriculture</li> <li>• Pests and diseases</li> <li>• Poorly coordinated smallholder producers</li> <li>• Weak public infrastructure (railways and road networks)</li> <li>• Non-systemic interventions</li> <li>• Cheap imported edible oil and inadequate processing technology</li> <li>• Food safety issues and costs of compliance</li> <li>• Quality and certification challenges</li> </ul>

### 3.7. Conclusions and recommendations

Despite the existing potential to increase sunflower production and processing in Tanzania, production has remained low and decreasing. While poor production technologies (including low usage of modern seed varieties and other agronomic practices) partly account for this, several other factors beyond farming practices also play key roles. On one hand, contract farming does not offer the intended outcomes to both farmers and processors. The current design of the contracts creates an obvious incentive for defaulting by farmers, attributable to their inflexible nature to accommodate significant price differences between the pre-agreed contract prices and the existing market prices at the time of harvest. On the other hand, backyard processing by farmers seems like a more profitable option than selling the oil seeds to the processors. All these together leave the commercial processors with insufficient industrial raw materials to meet the installed operating capacity of their factories.

There is a need to ensure that extension services reach farmers to enable them to modernize their farming practices. Farmers should be made more aware of the existing financing opportunities as well as be educated on how to properly utilize financial resources and conduct commercial farming. Warehouse systems should be improved, and the adoption of proper storage practices and technologies be encouraged to reduce post-harvest losses and maintain high-quality seeds. The local governments and the Ministry of Agriculture should devise proper mechanisms to enforce contracts in contract farming to ensure that both contract parties honour their obligations. Farmgate prices should be closely monitored and measures put in place to reduce the power of the middlemen, hence safeguarding farmers from exploitation.

## 4 Value chain analysis: Palm oil

### 4.1. Overview of the crop production and marketing (trends)

Palm is a tree crop indigenous to the tropics used for making cooking oil and soaps. The crop's ideal growing environment is rainy tropical lowlands with a high degree of moisture, stable high temperatures, and deep soils. Globally, Indonesia and Malaysia remain top palm oil producers with a combined output of 84% of the world's palm oil production. In 2020/2021, the global production of palm oil was 72.27 million MT (Statista, 2021).

In Tanzania, production of palm oil has been steadily increasing over years, from 17,000 MT in 2010/11 to 42,000 MT in 2018/19 (Table 5). This has mainly been due to an increase in area under palm oil, not due to an increase in yield. The yield has remained constant and low around 1.7 MT/ha. Kigoma, Pwani, and Mbeya stand as the leaders in the production of palm with Kigoma accounting for 54% of the country's total, Pwani 28%, and Mbeya 15% (URT, 2021).

Though there is a high potential to produce palm in Tanzania, the country relies on imports to bridge local/ domestic demand. The country's annual demand for edible oil is 570,000 MT while the domestic annual supply is about 180,000 MT leaving the country with a deficit of 390,000 MT which is imported. In 2016, palm oil imports accounted for 3% of the country's aggregate imports and more than a quarter of the entire food imports (OEC, 2018). This is a rather discouraging trend given that the country has over 53,000 smallholder households who depend on the crop for livelihood. The low production and yields of palm oil in Tanzania can be attributed to the challenges: small-scale non-commercial cultivation using the low-yielding seed varieties; and limited financing opportunities to invest in large-scale production.

Despite the challenges inherent within the crop's value chain, palm oil demand keeps growing at a rate of 12% per annum (Dalberg, 2017). The trend is expected to continue, mainly owing to the improvements in people's standards of living.

Table 5. Oil palm: area planted, production and yield.

Item	Financial years								
	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019
Area ('000' ha)	14.10	19.14	22.66	23.66	23.86	23.96	24.16	22.86	26.19
Production ('000' MT)	17.00	24.88	40.50	41.00	41.48	41.93	42.28	40.50	42.18
Yield (MT/ha)	1.2	1.3	1.8	1.7	1.7	1.8	1.8	1.8	1.6

Source: Ministry of Agriculture

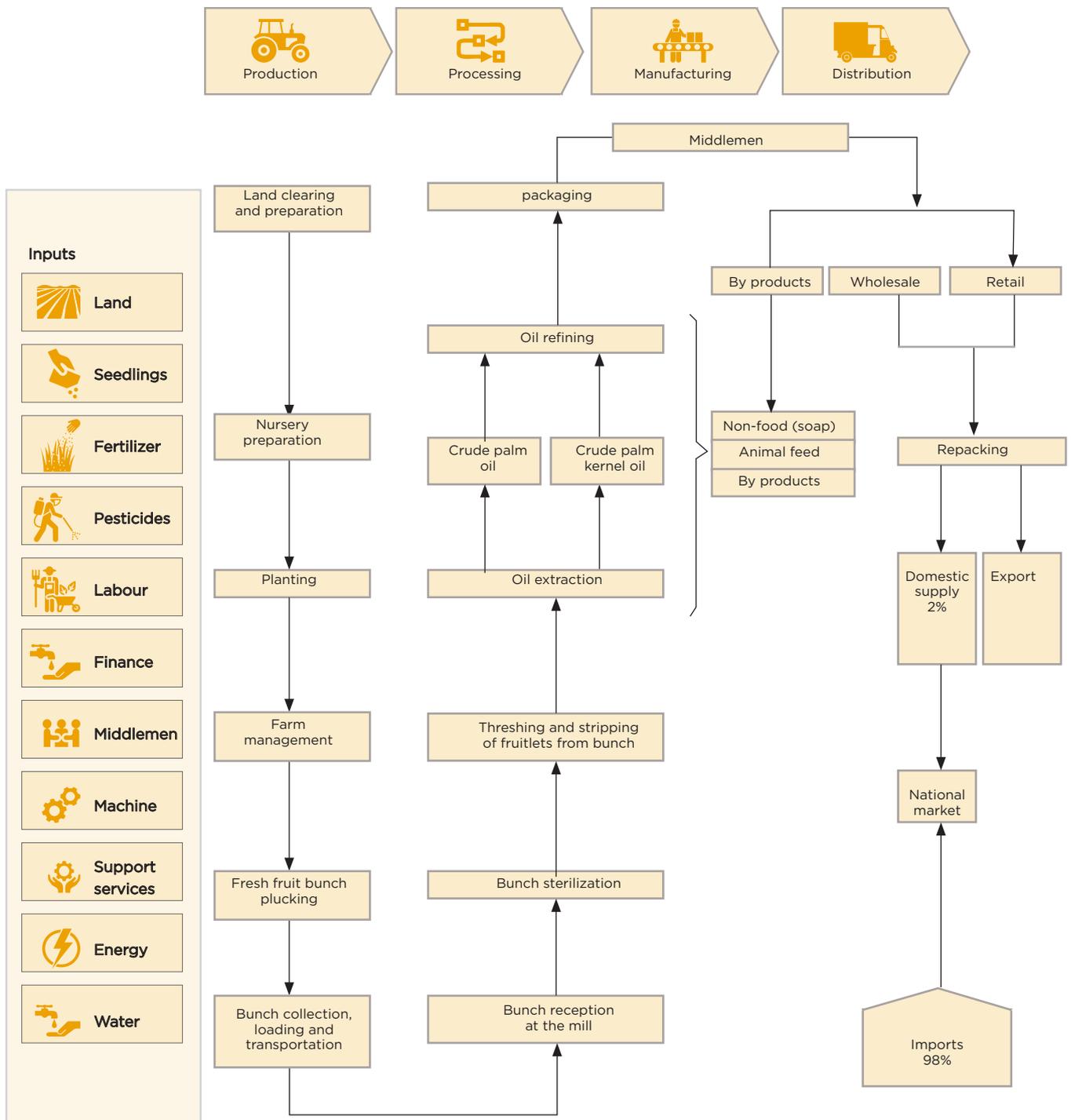


Figure 9: Palm oil value chain map

## 4.2. Palm oil value chain map

The palm oil value chain map in Tanzania is presented in Figure 9. The analysis of the value chain enables a better understanding of the specific stages through which palm oil goes through until it reaches the market.

### i) Inputs

The inputs required along the palm oil value chain are crucial in determining production levels and productivity. The most important inputs include land; seeds and seedlings; fertilizers; pesticides; labour. It takes about 18 months after pollination for the seedlings to be ready for distribution to farmers, however, the main challenge facing oil palm is the limited availability of oil palm seeds (URT-TIC, 2020).

### ii) Production of palm oil

Palm oil in Tanzania is produced either under subsistence by smallholder farmers or commercially. Most of the smallholder farmers under the mixed-cropping system cultivate low-yielding dura variety palm oil trees which have been naturally spreading (UNIDO, 2019). Smallholder palm oil production is often less or not mechanized, less efficient, relies on low-yielding seed varieties, on inter-cropping, doesn't use irrigation, and faces high fluctuations in yield and volume. The production suffers from postharvest losses, inadequate access to finance, and difficulties in marketing. Nevertheless, palm oil production is an important source of livelihood for many rural people with almost half of the products being used for household consumption. On the other hand, the few medium-to-large-scale producers have high productivity since they use more advanced and efficient production techniques, and can access inputs and finance more easily. Large-scale producers mostly target the national market rather than the local market and sometimes export their palm oil.

While both models are essential and complementary, deliberate efforts must be made to promote more commercialization of palm oil farming in Tanzania. Identifying and setting aside adequate lands in ideal climate areas is paramount to fostering such investments in the country. The main challenge to investors is access to sufficient land to support large-scale production.



Diagram 2: Palm oil kernels before and after processing

Source: Author

### iii) Processing of palm oil

Farmers usually produce fresh fruit bunches (FFBs) which they either sell or process on-farm using human-powered machines into crude palm oil. Others act as aggregators by buying fresh fruit bunches from other farmers and processing them together with their fresh fruit bunches. Some farmers rent out their fresh fruit bunch processing machines to those who do not have them. Another group, predominantly women, specializes in collecting kernels obtained after the processing of the fresh fruit bunch into crude palm oil. The actor rents a crude kernel palm oil machine to process kernels. The kernel palm oil constitutes a slightly more efficient and profitable branch of the value chain. The main challenge with processing is that the machines and techniques used are inefficient compared to other palm oil-producing regions of the world. In addition, processing ends with crude palm oil, as the domestically produced crude palm oil is never refined.

Middlepersons purchase crude palm oil from farmers and sell it to crude palm oil wholesalers or retailers. Farmers on some occasions assume this role when there are no middle persons. Retailers, who are mostly women, purchase crude palm oil from middle persons. They repackage the oil in various sized reusable containers ranging from 500 ml to 25 litres. Crude palm oil is predominantly sold within the region.

Prices follow market dynamics at major sales centres. The crude palm oil retailers transport it using local buses incurring a small transport fee and paying a flat day rate levy of TZS 300 to sell at local markets.

#### v) **Palm oil by-products.**

Crude palm oil yields kernels that produce crude palm kernel oil that is used in the production of a variety of products including soaps, shampoos, and cosmetics. However, in Tanzania, it is used mainly used for making soap and kernel cake for animal feed. These soaps are mainly sold locally but sell at a premium in big cities like Dar es Salaam, retailing at around TZS 3,000 to 4,000 per kilogram.

### 4.3. Quantifying costs and revenues along the palm oil value chain

Fundamental drivers that can change actors' behaviour along the production value chain include the costs and benefits (i.e., revenues) attributed to a particular economic activity. This section quantifies the costs and revenues associated with palm oil production in Tanzania based on the primary data collected in 2022. The estimation is based on the authors' informed assumptions<sup>6</sup> and includes:

- i) Average number of harvest bunches per tree per year is 13
- ii) Average oil palm production per plant per year is 28 litres

- iii) Plant population per hectare is 142 plants
- iv) Average weight of kernel oil per hectare is 0.29 tonnes
- v) Average weight of palm cake per hectare is 0.84 tonnes
- vi) Number of seedlings per hectare is 142.

Farmers' income from palm oil depends on whether he/she sells the fresh fruit bunches or processes them before selling. Table 6 presents farming costs and sales for a representative farmer who opts to sell fresh fruit bunches.

On average, the cost of cultivating a hectare of palm trees is approximately TZS 3,580,800<sup>7</sup>. Considering the average yield of 1,800 bunches per hectare and the prevailing market price, this translates to an average revenue of TZS 5,400,000. This, therefore, implies a net gross profit of TZS 1,818,720 per hectare.

Like sunflower farmers, palm oil farmers who process their palm earn higher incomes than farmers who sell unprocessed produce (see Table 7). On average a farmer who processes the fresh fruit bunches would incur a total production cost of TZS 4,517,280 per hectare but earn total revenue of TZS 13,200,000. The revenue increase is attributed to the selling of palm oil together with kernel oil and kernel cake. The difference between the total cost and total revenue gives a net profit of TZS 8,682,720 per hectare; nearly 5 times more than that earned by the non-processing farmer.

6 Estimates used in these assumptions are provided by Tanzania Agricultural Research Institute (TARI), 2022.

7 These cost estimates consider cultivation cost for a newly established palm tree farm (i.e., a virgin farm). This cost size drops from the second year of harvest, going forward since some of the activities (eg. land clearance, purchase of seeds and holes preparation) are only applicable during the first year of farm establishment.

Table 6. Costs, revenue, and gross profit associated with various stages of palm oil production per hectare for a non-processing farmer in 2022.

S/no.	Item	unit	Amount/hectare	Unit price	Amount (TZS)/ha
A). Gross revenue					
1	Oil palm bunches harvested	Bunches	1,800	7,200	5,400,000
Total Gross Revenue					5,400,000
B). Production costs					
1	Purchase of seedlings	Number	142	14,400	849,600
2	Land clearance	Tractor hiring	1	480,000	480,000
3	Holes preparation	Holes	142	2,000	284,000
4	Farmyard manure	Trips	2	150,000	300,000
5	Manure application	Holes	142	300	426,000
6	Planting	Seedlings	142	500	71,000
7	Weeding	Labour	60	5,000	300,000
8	Harvesting	FFBs	1,800	300	5,400,000
9	Transportation of bunches	FFBs	1,800	200	360,000
10	Pruning	Plants	142	1,000	142,000
11	Pesticide	Units	1	384,000	384,000
12	Threshing	FFBs	1,800	200	360,000
Total production cost					3,581,280
Gross profit (A - B)					1,818,720

Table 7. Costs, revenue, and gross profit associated with various stages of palm oil production per hectare for a processing farmer in 2022.

A). Gross revenue					
S/no.	Item	Unit	Amount/ha	Unit price	Amount(TZS)/ha
1	Sale of palm oil	Litres	3,888	3,000	11,664,000
2	Sale of kernel oil	Litres	288	4,000	1,152,000
3	Sale of kernel cake	Kgs	384	1,000	384,000
Gross revenue					13,200,000
B). Production costs					
1	Seedlings	Number	142	6,000	852,000
2	Land clearing	Labour	48	5,000	240,000
3	Holes preparation	Holes	142	2,000	284,000
4	Farmyard manure	Trips	2	150,000	300,000
6	Planting	Seedlings	142	500	71,000
8	Harvesting	FFBs	1,800	300	540,000
9	Transportation of bunches	FFBs	1,800	200	360,000
10	Pruning	Tree	142	1,000	142,000
11	Pesticides	Unit	1	160,000	160,000
12	Threshing	FFBs	1,800	200	360,000
13	ProcessingCost	FFBs	1,800	500	900,000
Total production cost					4,517,280
Gross profit revenue (A - B)					8,682,720

#### 4.4. Structure, conduct, and performance of the palm oil value chain

Palm oil farmers can greatly improve their current low productivity through proper use of agricultural inputs including high-yielding seedlings for re-planting and replacement, adoption of good agronomic practices, and irrigation. Specialized support in the design of irrigation systems that suit the production requirement of the specific area is important. Fortunately, fertilizers and pesticides are not a big production constraint since they can be easily accessed from Dar es Salaam, and with the increase in demand can even be brought closer to production areas.

Machinery for production, processing, and packaging is available in a wide range of sizes and varying efficiencies. Lack of financing and the small-scale nature of production limit the acquisition of more efficient machines, thus making production and processing rudimentary and inefficient. This constraint can be overcome by farmers joining producer groups and associations and improving their access to credit.

Extension services related to production, processing, and marketing are inadequate. This can be enhanced by modern technologies such as smartphones to disseminate agronomic advice through hotlines and short message services (SMS). Postharvest management to improve palm oil quality and food safety are also crucial. There is a need for scientific research at all stages of the value chain to inform holistic interventions.

Poor infrastructure limits agricultural production, processing, and marketing. Transport, water, and energy are very important to stimulate industrial development that will in turn spur the production of palm oil.

#### 4.5. Governance in the value chain

The palm oil value chain has many players including individual farmers, processors, middle persons, wholesalers, retailers, and consumers. None of the players dominates the market. Horizontal and vertical cooperation among players is minimal. Farmers' associations are usually small and unstable. The government and NGOs like AGRA and NIRAS may work with farmers and processors in trying to improve yields and efficiency in processing, interventions which might be short-lived if there is no sustainability. The government may also intervene to protect the domestic market by using fiscal measures such as increasing import duties on imported crude and refined palm oil, but this is yet to reap the expected outcomes.

#### 4.6. SWOT analysis

The SWOT analysis for palm oil in Tanzania is summarized in Table 8.

#### 4.7. Conclusion

The palm oil value chain in Tanzania has its uniqueness with linkages and interactions that make it functional but inefficient and unsustainable. These limit its potential impacts in supplying edible oil in the domestic and international markets and other macroeconomic impacts such as employment creation and forex savings. However, the potential positive impacts such as job creation, poverty reduction, and import substitution can still be realized with carefully designed and coordinated interventions.

Table 8. SWOT analysis of the palm oil value chain in Tanzania

 <h3>Strength</h3> <ul style="list-style-type: none"> <li>• Several smallholder farmers cultivate sunflower oil seed</li> <li>• Pre-existing service</li> <li>• Presence of sunflower associations such as TASUPA (processors), and TCCIA (businesses) support.</li> <li>• Several organizations are in scaling up</li> <li>• Strong political will that has supported</li> <li>• The country has the best oil palm parent stock (Dura and Pisifera)</li> </ul>	 <h3>Weakness</h3> <ul style="list-style-type: none"> <li>• Fragmented cultivation and low yields</li> <li>• Lack of awareness and knowledge of good farming practices</li> <li>• Labour-intensive production with low-profit margins.</li> <li>• Financing constraints</li> <li>• Low farmgate prices</li> <li>• Inadequate processing facilities.</li> <li>• No food safety measures</li> <li>• Limited support for certification</li> </ul>
 <h3>Opportunities</h3> <ul style="list-style-type: none"> <li>• Large suitable land and presence of water for irrigation</li> <li>• Increasing domestic demand for processed and refined palm oil)</li> <li>• Palm oil in agroforestry systems</li> <li>• Use of technology (e.g., mobile phones) to deliver agronomic advice</li> <li>• Favourable policies and regulations</li> <li>• Availability of electricity in rural areas</li> </ul>	 <h3>Threats</h3> <ul style="list-style-type: none"> <li>• Threats</li> <li>• Difficult to identify and secure suitable and available land</li> <li>• Breeding hybrid palm oil seeds is a long term</li> <li>• Food safety issues and high costs of compliance</li> <li>• Weak public infrastructure (railways and roads)</li> <li>• Inadequate technology</li> </ul>

## 5. The state of enabling environment along the palm and sunflower oils value chains

The performance of the edible oil sub-sector depends mostly on the interaction among the value chain actors and the enabling environment. The enabling environment will determine access to inputs; level of operation; access to extension and support services; access to markets, finance, and information; and their interaction. Most of the challenges and threats faced in the edible oil sub-sector emanate from the broader environment beyond the value chain itself. There are four key areas in the enabling environment for sunflower and palm oils value chains namely<sup>8</sup>:

- (i) Policies, laws, standards, and regulations,
- (ii) Fiscal challenges,
- (iii) Infrastructural elements such as energy, roads, ports, water, and telecommunication networks, and
- (iv) Recommendations for improvements.

### 5.1. Policies, laws, standards, and regulations

The Ministry of Agriculture plays a critical role in developing upstream market conditions, while the Ministry of Industry, Trade, and Investment (MITI) play an equally critical role in the development of downstream industries.

To promote the development of the sub-sector, several policies including long and medium-term policy frameworks, regulations, strategies, and programs for the agriculture sector have been formulated and implemented.

The National Development Vision 2025 guides the development agenda of the country and aims to transform the country from a low agricultural productivity economy to a semi-industrialized one, led by modernized and highly productive agricultural activities which are effectively integrated and supported by the necessary industrial and service activities in rural and urban areas.

The movement toward Vision 2025 and the Millennium Development Goals is geared by the National Strategy for Growth and Reduction of Poverty I & II (known as MKUKUTA I and II). The Growth and Reduction of Income Poverty cluster of MKUKUTA focus on equitable and employment-generating growth, sustainable development principles, food security, affordable and reliable modern energy services, and adequate infrastructures for production purposes.

The Agriculture and Livestock Policy of 1997 aims to ensure basic food security for the country, as well as increased output and quality of food commodities and better living standards in rural areas through increased income generation from agricultural production, processing, and marketing. The Agriculture Sector Development Strategy (ASDP) I and II are mainly used by the government to coordinate and monitor agricultural development and to incorporate national reforms under its programs.

ASDP aims to achieve a sustained annual agricultural growth rate of 5%, mainly through a transformation from subsistence to commercial agriculture. The transformation is to be led by the private sector, which is to be facilitated by an improved enabling policy environment and more public expenditure. Oil crops are among the priority and strategic crops mentioned in ASDP II to increase Tanzania's food oil self-sufficiency (reducing by 50% dependence on palm oil imports).

The Kilimo Kwanza initiative was launched by the Government in 2009 to modernize the Tanzanian agricultural sector. The initiative is driven by the private sector and aims to modernize agriculture through better access to fertilizers, tractors, power tillers, seeds, and other agricultural inputs; better access to markets, extension services, and payment systems; improved supply chain management; and access to training for farmers, among others.

Several laws and acts are also in place to govern the agriculture sector. The Seeds Act of 2003, amended in 2007, governs seed production and certification in Tanzania. It controls and regulates all standards related

<sup>8</sup> These are among the key business enabling environment in Tanzania as articulated in the URT-MIT (2018), accessed at <https://www.mit.go.tz/uploads/files/BLUEPRINT-BOOK-compresed.pdf>

to agricultural seeds, and established the National Seeds Committee, which has the responsibility of advising the government on all matters relating to the development of the Tanzanian seed industry. The regulator in this area is the Agricultural Seed Agency (ASA) and Tanzania Official Seed Certification Institute. The Fertilizers Act of 2009 was introduced to regulate the manufacturing, importation, exportation, sale, and use of agricultural fertilizers. The Act established the Tanzania Fertilizer Regulatory Authority and introduced registration and licenses for all involved in the fertilizer or fertilizer supplements sector.

The Produce Export Act provides for the grading, inspection, regulation, and preparation of products to be exported from Tanzania. The law defines produce as any article produced or derived from farming, agricultural operation, or stockkeeping. It restricts the importation of products regulated under the Act, except through designated points of entry, and is subject to inspection or grading in the manner provided for under the inspection rules.

The Tanzania Food, Drugs and Cosmetics Act was enacted to regulate food and other manufactured or imported products. The Act establishes the Tanzania Food and Drugs Authority as the executive agency for controlling the quality and safety of food, drugs, poisons, and cosmetics; and regulating the importation, manufacturing, labelling, storage, promotion, and general distribution of these items. In 2019, the regulation of foods and cosmetics was shifted to the Tanzania Bureau of Standards (TBS).

TBS has issued several standards and specifications that are important for the edible oil sector, and have an impact on the national economy, or the health and safety of the environment. For sunflower and palm oil sub-sectors, the most important standards are:

- i) TZS 1765: 2016(E) Sunflower seed — Specifies the certification requirements to produce pre-basic, basic, and the certified seed of sunflower (*Helianthus annuus* L.). It includes requirements for eligible varieties and fields.
- ii) TZS 2279:2018 /EAS 887:2017(E) Crude and semi-refined palm oil – Specifies the requirements, sampling, and test methods for crude and semi-refined (neutralized and/or bleached) palm oil derived from the fleshy mesocarp of the fruit of oil palm (*Elaeis guin*).
- iii) TZS 559: 2018/EAS795:2018 (E) Palm olein – Prescribe the requirements and methods of sampling and test for crude palm olein; neutralized/refined and bleached palm olein;

neutralized/refined, bleached, and deodorized palm olein.

- iv) TZS 2288:2018/EAS 321:2018(E) Edible fats and oils – Specification.
- v) TZS 50: 2014(E) for Sunflower seed oil – Specification.
- vi) TZS 271: 2014 (E) for Edible palm oil – Specification.
- vii) TZS 2445:2020(E) Edible Palm kernel oil - Specification.

All these policies, laws, standards, and regulations are aimed at improving access to improved seeds, fertilizers, and pesticides for increased yields and crop output; access to finance; increased use of farm technologies; reduction of pre-and post-harvest losses; promotion of agro-processing; and the establishment of sectoral associations.

Despite clearly articulated policies, the challenge usually comes in implementation. Sometimes implementing organs have diverse interests. For example, while the Ministry of Agriculture may wish to establish farm clusters for sunflowers, it may not be the best option for the President’s Office of Regional Administration and Local Government to provide such big clusters of land. The multiplicity of regulatory agencies increases compliance costs for processing industries. For example, the Occupational Safety and Health Authority, TBS, and the Tanzania Fire and Rescue Force have the same objectives of ensuring the health and safety of consumers and the workers. However, there are some conflicts. For example, while the TTB grants export permits, MITI issues export licenses and TBS comes in on quality issues.

## 5.2. Fiscal challenges

The edible oil sector faces at least three types of taxes including cess, VAT, and import duty. This is on top of other forms of taxes along the value chain such as corporate income taxes by processing companies. The complexity of these taxes imposes constraints on agriculture and the edible oil sub-sector. Crop cess is a tax that is charged on all agricultural produce and everyone in the sector has to pay. It is charged by local government authorities (LGAs) at a maximum of 5% of the farm-gate price. The rate however can range between 3%-5% as instituted by the Local Government Finances Act of 2011. One of the complexities comes from the variation in rates across LGAs, while some go for the minimum of 3%, others will peg it at the maximum of 5%. This may create an imbalance in domestic competition. In addition, determination of the farmgate price

is also challenging as farmers feel that their product is sometimes overvalued when calculating the tax. Crossing the produce from one LGA to another may involve a lengthy process to prove that cess has been charged in another LGA to avoid double charging. This may hinder the trading of agricultural produce across LGA. In addition, cess makes imported palm and sunflower oil more competitive as it adds to the costs of domestically produced edible oils. Furthermore, as government policy may not be much geared towards the edible oil sector, cess spending may not go towards the edible oil industry.

Import tariffs are charged to create domestic competitiveness. However, this measure has not been very fruitful. Among the explanations are the under-declaration of imported crude and refined oils which leads to lower import duty being charged; and the smuggling of edible oil into the country that evades the import duty altogether. The 18% VAT on the edible oil sector could also be creating a disincentive for small operators to grow.

### 5.3. Physical infrastructures

Physical infrastructure includes irrigation systems, roads, electricity, storage structures, telecommunication systems, market infrastructure, etc. All these are important at different stages of the value chains of palm and sunflower oils. While the government is trying to improve these infrastructures, the status is far from ideal to support the needed performance of the agriculture sector. Most of the infrastructural issues cut across different sectors and involve players beyond the agriculture sector.

Out of the 2.3 million hectares classified as having high potential for irrigation, less than 2% have improved irrigation infrastructure. This makes production highly dependent on rainfall which increases production risk.

The road network is poor and limited to urban and a few peri-urban areas leaving rural areas where most production takes place with poor transportation systems and thus making it difficult to transport inputs to the farms and agricultural outputs out of the farm to the markets.

There are no market infrastructures in most places and even where they exist, they are poorly managed and maintained. The Rural Electrification Agency has managed to connect most of the rural areas with electricity. However, electricity uptake (connectivity) is still low. Electricity supply is still erratic with frequent outages and low voltage that cannot well support industries that

need steady and high voltage. Recent developments in the telecommunication industry have brought a revolution in agriculture, by improving access to information and extension services, and simplifying transactions. Storage facilities are also important infrastructures. Improper storage leads to high post-harvest losses and thus doesn't allow farmers to store and sell their produce when prices are favourable. Most farmers use traditional storage methods which are not effective. Lack of storage facilities or warehouse systems forces small-scale farmers to sell their produce soon after harvest, and it is left to the processor to balance the purchase of sunflower seeds, process them into oil, and meet the regular demand from consumers. Generally, the poor infrastructure conditions lead to a decrease in value chain efficiency and quality of palm and sunflower oil.

### 5.4. Recommendations for improvements

Following the discussion on the business environment in sunflower and palm oils value chains, the following areas for improvement are recommended:

- i. Improve coordination and harmony in implementing policies, programs, and projects. This should include all stakeholders from their inception as well as setting resolutions and pledging commitment to them.
- ii. Government should review the legal and operational status of regulatory agencies and create robust entities capable of operationalizing the regulatory roles comprehensively to minimize the multiplicity of agencies.
- iii. Regulating and monitoring cess charges so that it does not create a disincentive for producers and collectors. LGAs should be required to make public and list all relevant by-laws related to doing business in their jurisdiction. LGAs should cut the cess rate to 3% and consider reducing it gradually to zero.
- iv. The fiscal policy provided using import duties should go together with a measure to ensure that there is no under-declaration of value and no smuggling.
- v. Removal of VAT for a certain period to create domestic incentive to produce edible oil
- vi. Improve supporting and physical infrastructure including irrigation systems, roads, electricity, storage structures, and market infrastructure.

## 6 Conclusions and recommendations

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Despite the potential and important socio-economic role of agriculture in Tanzania's development, the sector continues to face several challenges. This study was designed to undertake a value chain analysis of sunflower and palm oil crops in Tanzania. The aim was to assess and identify the major value chain actors for each of the crops, their roles, functions, and their value. Specifically, the analysis aimed to uncover key challenges facing different actors and activities along the value chain and provide a basis for various reform recommendations that would foster improved sector performance along all the chains.

Key recommendations presented in this study vary depending on the stage of the value chain. At the farm level, there is a need for deliberate efforts to improve crops' productivity through increased access to improved and affordable agricultural inputs largely seeds, and extension services. In addition, efforts to promote investment and development of commercial farming for both sunflower and palm oil in the country are important to ensure the sustained availability of raw materials in the processing industries. Specifically, government

efforts to set aside sufficient land banks across the relevant agro-ecological zones will create an incentive for potentially interested commercial farmers. In addition, such huge land banks could be used to promote the establishment of crop-specific agro-industrial parks to enhance production and increased job creation in the country.

Related to the above, fundamental challenges to edible oil processors revolve around the insufficiency of raw materials to feed their industry. While low productivity is key to this, non-compliance of farmers to enter contracts as well as increased interest by farmers to engage in backyard processing and sell crude oils to final consumers further reduces the share of harvests that goes to larger processors. It is therefore recommended that the buying prices that are agreed upon when signing a contract mimic the prevailing market prices for the crops to eliminate the deviation incentives by farmers. In addition, larger processors should increase their focus on purchasing the crude oil from the backyard processing farmers for further refinement as opposed to only the purchase of sunflower and palm seeds.

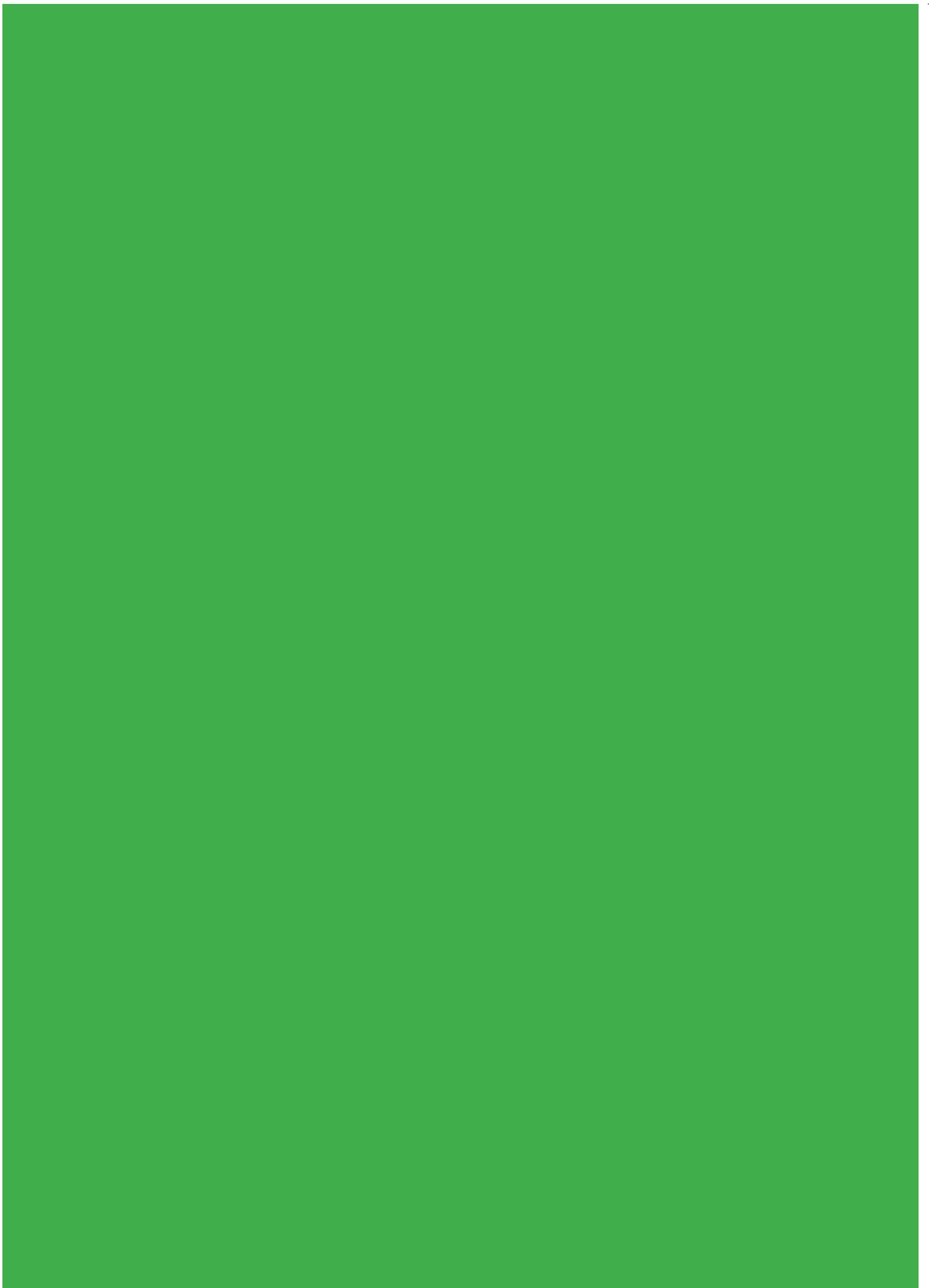
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