Oil Seeds: A Case of Sunflower

Key Messages

- *The national production of edible oil seed is much lower than its demand. The country spends a considerable amount of foreign currency for importing cooking oil. In 2012 half of edible oils supplies were imported at a cost of USD 230 million (TZS 360 billion).*
- *Sunflower is one of the key oil seed crops in Tanzania. It is grown by many small scale farmers hence the development of the sunflower oil sector has a great potential for improving livelihoods and welfare of relatively poorer households.*
- *The crop, however, faces many constraints such as:*
    - *Low productivity and quality of sunflower due to frequent droughts, low accessibility and usage of quality seeds, diseases and pests, limited use of proper agronomic practices resulting in poor quantity and quality of the output and high post-harvest losses.*
    - *Processing of sunflower is constrained by inadequate and inappropriate machinery, low capacity of processing industries and unconducive investment climate for prospective entrants to the industry.*
    - *Marketing of sunflower is constrained by lack of proper marketing strategy like branding and packaging, limited access to finance for trade and marketing, limited access to quality infrastructure (marketing and transport), lack of proper policy and regulatory frameworks to protect the industry against unfair competition from imports and weak enforcement of standards along the value chain.*
- *These constraints need to be addressed to enhance the competitiveness of the sunflower commodity value chain.*

1. Introduction

Oil seed crops such as sunflower, cotton, palm, groundnuts and sesame are important as they provide edible oils in terms of nutrition and also a good source of income for rural livelihood in Tanzania (MITI, 2016a). However, the country's production of such oil seed is lower than its demand; it is estimated that 50% of edible oil used in Tanzania is imported (Mtui, 2008; Tanzania Edible Oil Seeds Actors [TEOSA], 2012; URT, 2015). Thus, Tanzania spends a lot of resources in importing edible oil. In 2012 half of edible oils supplies were imported at the cost of USD 230 million (TZS 360 billion) (TEOSA, 2012). There has been a growing interest and efforts by the Government and other stakeholders to improve the competitiveness of domestic sources of edible oils to substitute imports. The production of sunflower oil, and in general edible oils, ranks among the priority areas for industrial development in Tanzania including the Integrated Industrial Development Strategy, 2025 (MITI, 2016b). Sunflower contributes to about 40% of total national cooking oil requirements in Tanzania, ranking as one of the most important sources of cooking oil with very high nutritional value (Ugulumu, 2008; Mtui, 2008; Ugumulu and Inanga, 2013, Irika, 2015; URT, 2015; MITI, 2016a). The Government through the National Sunflower Oil Sector Development Strategy aims to intensify

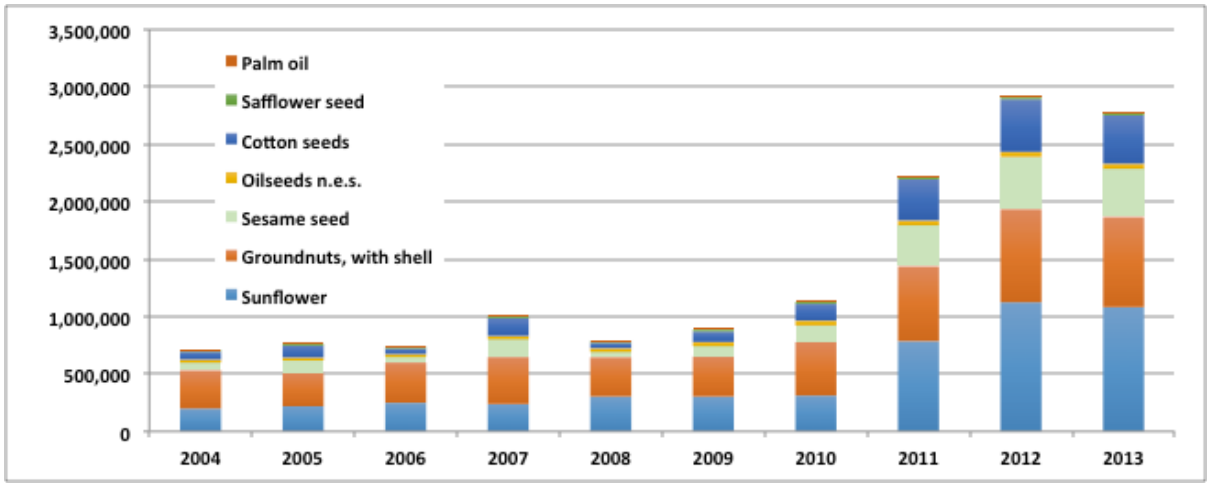
its support to the sector by its commitment to provide favourable conditions to support the sunflower industry so as it can contribute to the socio-economic development (MITI, 2016a).

2. Production, Productivity, Structure, Conduct and Performance

Production and Productivity

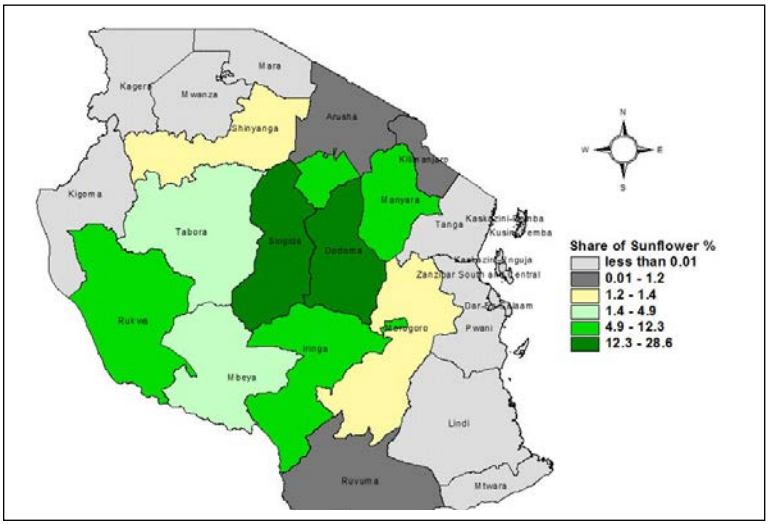
In Tanzania the sunflower sub-sector represents one of the key sectors of agriculture. Recent statistics (Figure 1) indicate that oilseed production in Tanzania comes from sunflower (35 %), groundnut (25 %), sesame (13 %) and cotton (19 %). The country has been experiencing an increase in sunflower production over the past decade. The amount of sunflower seed produced in the country in 2015 reached 2,878,500 tons compared to 373,390 tons in 2005. Sunflower thrives in a wide range of agro-ecological conditions in Tanzania; the major producing regions are Njombe, Singida, Dodoma, Manyara, Rukwa, Mbeya, Tabora and Iringa (Figure 2).

Figure 1. Tanzanian Oil Crop Production by Type, 2004–2013 (tons)



Source: FAO (2015) in MITI (2016a)

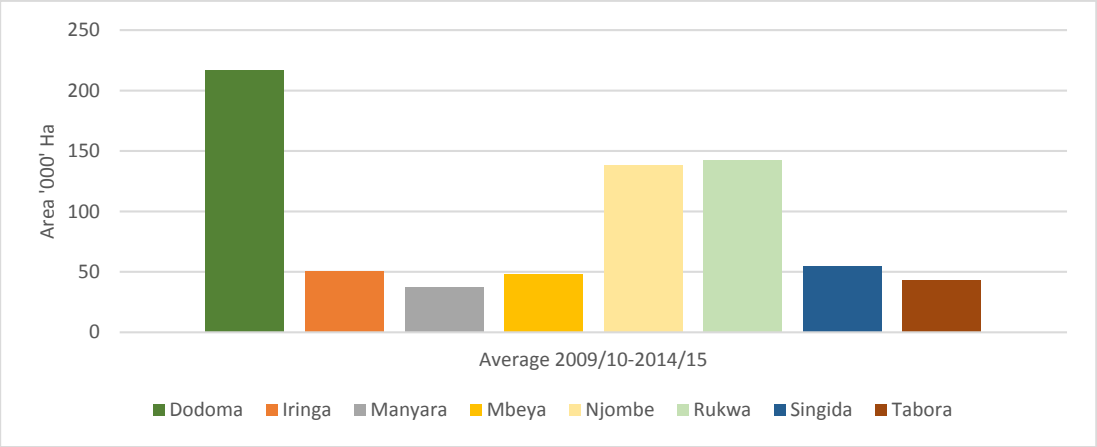
Figure 2. Regional Contribution to Sunflower Production in Tanzania



Source: Authors' illustration based on data from the National Agriculture Census 2007/08 (NBS, 2012)

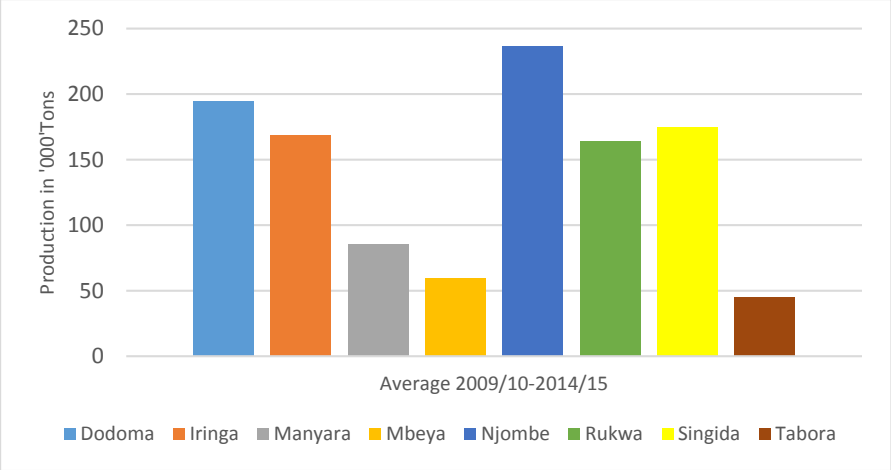
There has been an increase in oil production in terms of quantity and cultivated area in the past decade. Sunflower production reached about 1 million tons in 2013 (FAO, 2012). Most of the production growth has been associated with expansion of land areas under sunflower cultivation rather than output per unit of land area. Singida Region leads in terms of the area under sunflower production (Figure 3) but it ranks the third in terms of amount of sunflower produced (Figure 4).

Figure 3. Land Area under Sunflower Production per Region in Tanzania (in '000 hectares)



Source: Ministry of Agriculture Food Security and Cooperatives (MAFS) (2015)

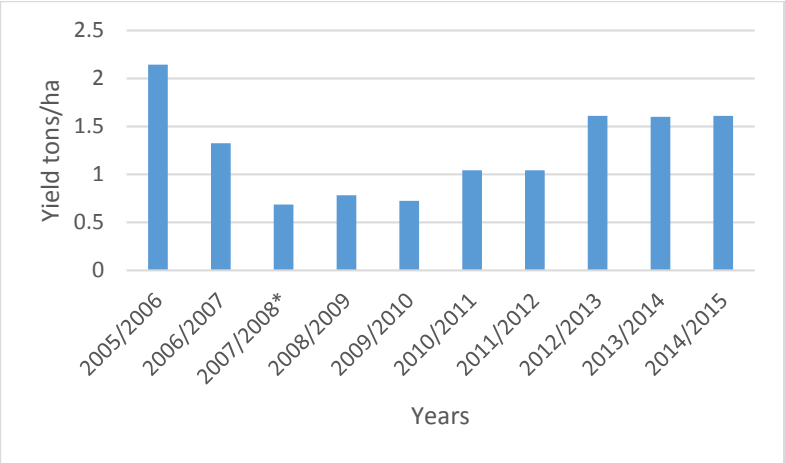
Figure 4. Sunflower Production per Region in Tanzania ('000 tons)



Source: Ministry of Agriculture Food Security and Cooperatives, MAFC (2015)

Productivity of sunflower ranges between 0.8 t/ha and 1.1 t/ha, the average of which is far below the production range of 1.2-2.0t/ha in most African countries (Irika, 2015). Nevertheless, average yields of sunflower for recent years has been improving to around 1.6 t/ha (MAFC, 2015) – see Figure 5.

Figure 5. Sunflower Yields per Unit Area in Tanzania (2005/2006-2014/2015)



Sources: Ministry of Agriculture Food Security and Cooperatives (2015)

Structure, conduct and performance

The sunflower sub-sector is primarily smallholder-based. Also, the edible oil seed trade which includes sunflower is not structured; there are rampant uses of non-standard measurements and packages while prices are set by a few players due to poor market linkages, inadequate information and poor infrastructure. Currently, the middlemen and processors control the sunflower market. The sub-sector is still emerging with very rudimentary institutional arrangements; in general, the institutional capacity in the subsector is still low. The sub-sector is just emerging and therefore characterized by weak industry actors' organizations (TEOSA, 2012).

Sunflower Value Chain

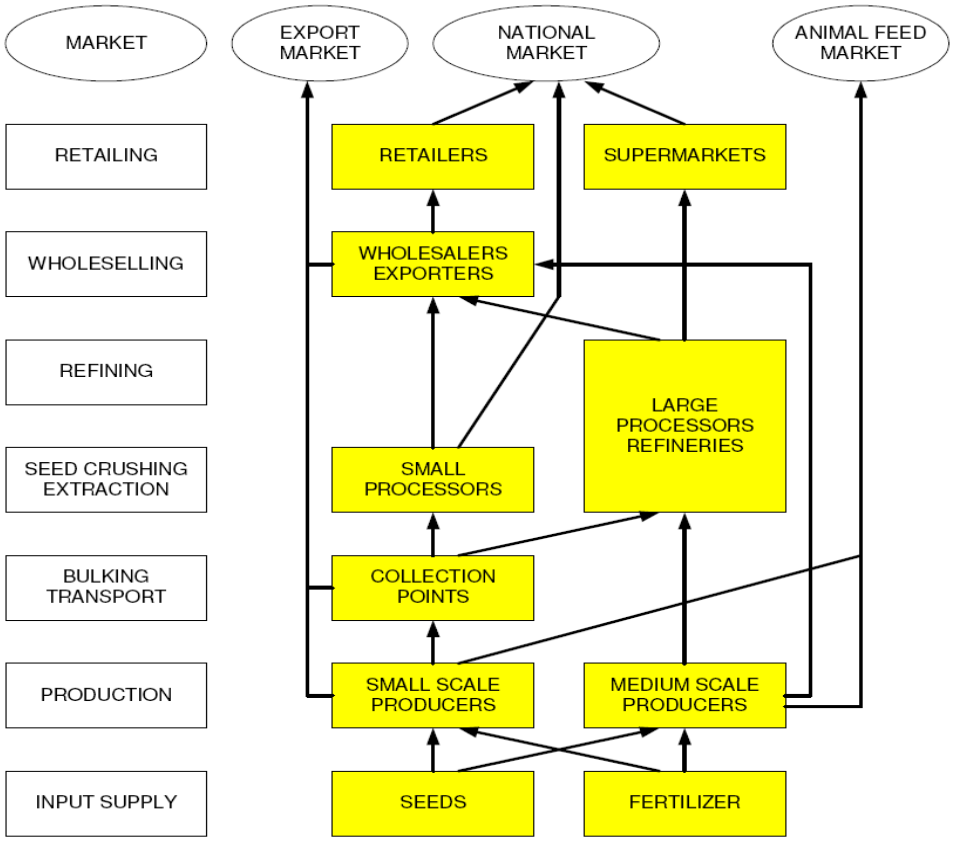
The value chain for sunflower is subdivided into backward and forward linkages whereby the starting point of the chain is a farmer who is the focal point. The farmer has a backward linkage with input suppliers for mainly seeds, chemicals and fertilizers. Farmers are also dependent on farm machinery owners (operators) for land tillage and harrowing operations. These are usually done on contractual basis or in cash terms.

On the forward linkage, the farmer follows different routes after harvest to reach the processor. Farmers may sell direct to the mills or they may sell through the middlemen who pass through their farms to buy sunflower seeds. At this stage the transportation facility is needed and transporters have the role of moving the sunflower from production points to the mills. In some cases, it has been reported that the millers also own trucks which go around production areas to collect sunflower seeds sometimes in combination with collectors (the middlemen) who normally have some contracts to supply. The millers also have linkages with suppliers of machinery, spare parts and packaging materials (URT, 2015).

Marketing activities start after sunflower seeds have been processed to produce edible oil that is then filtered and packaged. The processing activity also includes stockists, retailers, wholesalers, transporters and distributors. The small scale operators do have direct links with consumers who normally visit processing mills directly and purchase the oil. Another relationship within the value chain is between small oil mills located in different areas that normally depend on one relatively well equipped mill for oil filtering and refining. There are a few oil millers that are equipped with filtration and refining units that offer services to other millers at low cost (URT, 2015)

The sunflower value chain has many nodes, from input supply to sale of oil seed (Figure 6). There are a wide range of stakeholders who play different roles in the value chain. Some of the key sunflower stakeholders are the farmers, the Local Government Authorities (LGAs), MALF, the Ministry of Industry Trade and Investments (MITI), regulatory bodies like the Tanzania Bureau of Standards (TBS), the Tanzania Official Seed Certification Institute (TOSCI), the Tanzania Food and Drugs Authority (TFDA), the Small Industries Development Organization (SIDO), development partners and NGOs supporting the value chain.

Figure 6. Sunflower Value Chain in Tanzania



Source: RLDC, 2008

3 Constraints and Opportunities in the Sunflower Value Chain

Constraints and Opportunities at Production Level

Constraints:

The following are the constraints at production level:

- Reliance on rain-fed agriculture and unreliable rainfall
- Low soil fertility
- Diseases, insects and pests
- Limited access to quality sunflower seed
- Limited access to critical agriculture support services and the use of outdated technologies by farmers that results in underperformance
- Limited access to agricultural information and advisory services
- Weak research and farmer linkage
- Limited access to insurance services
- Limited use of modern technologies in production, post-harvest handling and small scale processing facilities.
- Uncoordinated regulatory frameworks (levies, taxes) that act as a disincentive to farmers
- Limited institutional capacity and weak farmer organizations
- High post-harvest losses due to limited access to quality storage facilities and improved post-harvest handling technologies

Opportunities

High demand for edible oil seed in Tanzania, East African countries and around the world creates huge opportunity for income generation by the smallholder farmers through enhanced production and quality of sunflower produced in Tanzania. The United Republic of Tanzania has a large, national demand for edible oil. The Rural Livelihood Development Company estimated a minimum national demand of around 330,000 tons of edible oil per annum in 2010 (URT, 2015). As noted above, Tanzania imports more than half of the edible oil consumed compelling the country to spend a lot of resources on importation of edible oil. Enhancing local sunflower production will certainly lead to substantial reduction in foreign exchange outflows. Furthermore, increased sunflower production will create employment opportunities along the sunflower value chain. It will open windows for processing industries which will create jobs ranging from milling machine operators to those that save in tea shops and restaurants next to mills, mechanics that provide repair and maintenance services, as well as those who provider services for transporting sunflower mills including ox carts

(Zilihona, 2013). Job creation will contribute to increased rural employment opportunities resulting in reducing rampant rural-urban migration.

Constraints and Opportunities to Marketing and Trade

Constraints: There are many constraints to marketing and trading of sunflower, key ones include:

- Poor marketing logistics and infrastructure
- Limited access to finance for trade and marketing in sunflower
- Lack of proper policy and regulatory frameworks to protect the industry against unfair competition from imports (especially cheap ones)
- Weak enforcement of standards and measurements along the value chain has constrained the domestic oil in accessing export markets
- There is no single identified market segmentation for such oil; therefore, there is a need for promotion and advertising effort so that the millers could be noticed and increase their sales
- There is no formal structure for edible oil and seed trade; also, the market does not have quality standards and measurement packages
- Transportation facilities: the rural infrastructure, especially roads, are not in good conditions leading to high transportation costs

Opportunities

There is huge opportunity to market sunflower oil in Tanzania due to high demands by households, bakeries, schools, colleges, hotels, etc. A significant number of consumers are shifting from imported to local processed oil and especially sunflower. The growing demand for locally produced oil is partly due to awareness raised by various campaigns in the country about the health benefits of these locally produced edible oils. Sunflower oil is low in saturated fats and it contains a high proportion of omega 6 polyunsaturated fats, which help to reduce blood cholesterol levels if eaten as part of a heart healthy diet (The British Nutrition Foundation, 2009).

Constraints and Opportunities to Processing and Value Addition

Constraints:

Some of the constraints identified above are also applicable here. Constraints unique to processing include:

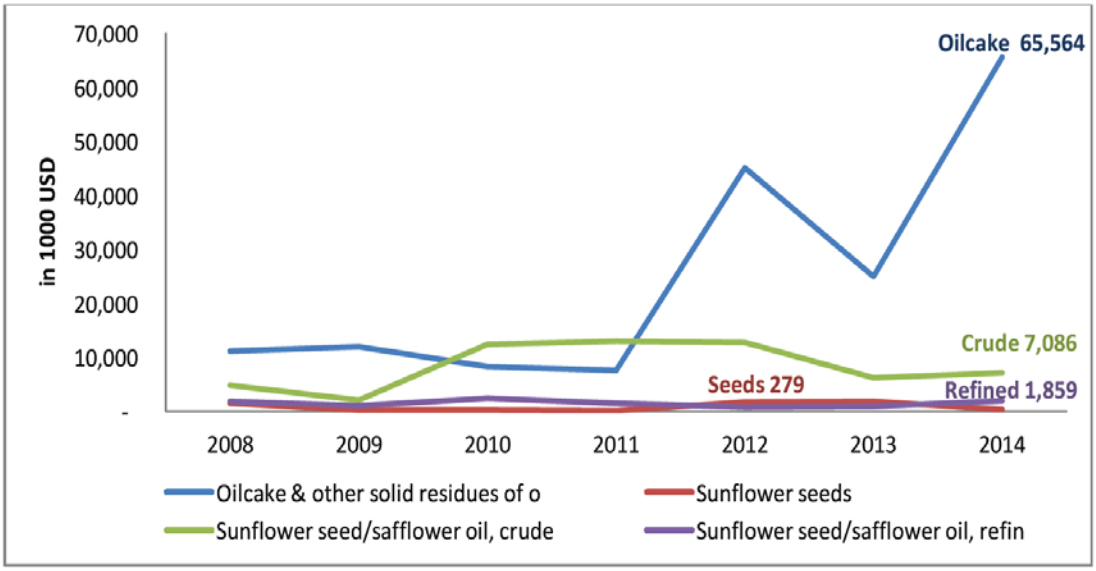
- The processing industry is still young containing rudimentary, poor quality small processing units in the rural areas and very few large processing industries
- Poor agricultural financing compels the small processors to use low quality technology which leads to production of low quality oil
- Low quality packaging techniques

- Use of old technologies in processing results in labour intensive production and thus prohibitively expensive to an extent that imported substitutes are sold at relatively lower prices
- Low processing capacity compel farmers to sell raw sunflower which fetches a low price.
- Lack of recognition for co-existence of small and large scale edible oil processors for designing and implementing strategies to create an enabling environment for all of them.
- Storage Capacity and Supply Mismatch: Since most of smallholder farmers lack storage facilities, they normally prefer to sell their produce as soon as possible to avoid post-harvest losses. This leads to limited availability of raw materials for formal processing industries

Opportunities

Sunflower products in Tanzania are mainly edible oil and livestock feed obtained after crushing the seed known as seedcake. The exports of oilcake and other waste have generated by far the largest revenue for Tanzania in this value chain until now (Figure 7). Tanzania has only recently started to produce and export refined sunflower oil, and it was able to record an export growth of 29% between 2012 and 2013 and doubling of exports between 2013 and 2014 (MITI, 2016a). Sunflower seed processing is characterized by small scale seed crushing factories and few large oil refinery companies. There is a huge opportunity to invest in large oil refinery industries. There are also investment opportunities in other areas associated with sunflower processing such as production of packaging materials for edible oils, production of storage facilities and production of sunflower by-products such as the seed cake for livestock, among others.

Figure 7. Tanzania's Exports of Sunflower Products (2008-2014)



Source: MITI, 2016a

4. Development Partners

As observed in the foregoing parts, the sunflower industry is an emerging and potentially profitable sub-sector. As a result, it has attracted support in various aspects including policy, trade, business services, the civil society and development partners in its value chain (Table 1).

Table 1. Development Partners Supporting Sunflower Value Chain in Tanzania

Development Partners	**What they are doing**
USAID Tuboreshe Chakula, a Feed the Future Project	Tuboreshe Chakula assessment of oil expellers to improve the sector's production, food safety, food quality and fortification
Agriculture Market Development Trust (AMDT) in collaboration with the Swedish and Danish Embassies.	Sunflower Oil Market Assessment (Trade support initiative)
The Swiss Development Cooperation (SDC) through funding to the Rural Livelihood Development Company (RLDC)	Seed production and seed marketing, sunflower production through contract farming, a light version of a warehouse receipt system, pollination for increased yields, business plans for refineries, and sunflower oil branding and marketing
Southern Highlands Agricultural Development Company Limited (SHADECO) in collaboration with SNV-Tanzania and IFAD through *Muunganisho wa Ujasiriliamali Vijijini* (MUVI) programme	Introduced village-based contract farming arrangement of inclusive business model. The objective was to institute structured market for sunflower seeds in Tanzania
United Nations Industrial Development Organization (UNIDO)	Since 2012 has been working in collaboration with Tanzania's Ministry of Industry and Trade to upgrade and modernize the country's agro-industry and improve the competitiveness of locally processed goods, including sunflower oil, on national and international markets

Source: Author's compilation
Notes: This is an indicative list it is not an exhaustive list

5. Recommendations and Policy Implications

In order to enhance the competitiveness of the sunflower value chain in Tanzania to meet the growing domestic and export demand for sunflower oils, the following policy actions are recommended:

- Design and implement policy interventions to enhance availability of improved inputs (e.g. quality seed and fertilizer) to sunflower farmers.
- Invest in research and specially to ensure availability of improved seeds that are disease and drought tolerant.

- Put in place a policy environment to encourage public investment in irrigation schemes to avoid production that is heavily dependent on rainfall and to reduce losses caused by droughts.
- Invest in physical infrastructure (rural roads, railway network and airports) and marketing infrastructure specifically the storage facilities.
- Create an enabling policy environment to encourage investments in sunflower processing industries. This will improve sunflower oil shelf life, packaging and packaging materials, and access to markets for sunflower products.
- Create an enabling environment to support investors in obtaining necessary business facilities such as permits and reduction of administrative barriers to both local and foreign partners.
- Enhance farmers' access to agricultural extension services and information.
- Facilitate coordination among actors along the value chain.
- Enhance agricultural financing to enable small scale producers and processors access credit so that they can afford high quality technologies required to increase production and improve sunflower oil quality. This will enable them to overcome challenges in oil refining and packaging; hence to meet market demand and necessary standards.

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7. CONTACTS

Permanent Secretary,
Ministry of Agriculture Livestock and Fisheries
Email: ps@kilimo.go.tz
Value Chain Specialist:
Nganga Maduhu Nkonya

Email: ntemizeph@yahoo.com

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