

# Maping Performance of Tea Sector in the Last Thirty Years and Future Prospects in Tanzania

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# Abstract

Tea is an important crop in Tanzanian domestic and cross-border trade. Tea is ranked as the fifth most produced and exported cash crop in Tanzania. Despite the contributions of the tea sector to the country, it is highly featured by several challenges which hinder its rapid growth. Therefore, this study was designed to map the performance of the tea sector over the last thirty years and predict the future. The study used secondary data which were outsourced from Food and Agriculture Organization Statistics, Tea Board of Tanzania (TBT) and National Bureau of Statistics (NBS). To supplement collected secondary data, the study conducted a critical literature review on the area under tea production, farmer's tea productivity, prices of green leaf and made tea, key actors of tea sector, challenges and opportunities. The results showed that over the last thirty years, the area under tea production slightly increased. Green leaf tea production increased at a decreasing rate while the price of green leaf tea has increased but considering the time value of money the prices are likely the same. Similarly, the price of made tea has fluctuated over time which affects returns on investment in tea production. Also, it was found that the tea sector faces several challenges such as poor infrastructure, inadequate working capital for farmers, high production costs, delays in payments, the limited number of tea processing companies and unreliable market prices. Also, it was found that there are numerous opportunities in tea sectors such as tea cultivation and processing, supply of modern tea plucking tools, and establishment of primary tea processing at the farm level. The study concluded that over the past thirty years, there has been a decline in the tea sector in the future, therefore there is an urgent need to reform policies and strategies that may create a conducive enabling environment for public and private investments in the tea sector.

#### **Keywords**

Component, Formatting, Style, Styling

## **1. Introduction**

Tea (Camellia sinensis) is an important perennial crop in Tanzanian domestic and cross-border trade. The crop is ranked as the fifth most produced cash crop accounting for 5.8% export value and the fifth most exported crop by Tanzania. In Africa, the country is ranked seventh tea producer and globally ranked thirteen among the top tea producers contributing 0.5% of total produced tea (Mdoe et al., 2024). Tea was officially introduced in Tanzania in 1904 by settlers who first planted the crop in Tanga and Mbeya (Burgess, 1992). By the time tea was introduced, most of the planted areas were for experiments and not for commercial purposes. Commercialization of tea began in 1934 whereby areas planted with tea crops increased to 1000 hectares with annual production of 20 MT of made tea (Jensen, 2009). The tea sector skyrocketed in the 1990s whereby the production of made tea was 93 MT annually. However, more evolution happened in the year 2000s when the annual production of made tea shut up to 135 MT (Baffes, 2005). The rapid growth tea sector is attributed to an increase in demand for tea on crossborder trade. Also, the increase in demand for raw materials for tea processing companies influenced more Tanzanians to engage in tea farming (Sutton & Olomi, 2012).

Currently, Tanzania is ranked as the third largest tea producer in Africa after Malawi and Kenya. The country produces an average of 2600 to 3200 MT of tea annually with a total of 23805.55 Hectares under tea production (Dogeje & Ngaruko, 2023). Large tea farmers who work as estate companies dominate tea production in the country. Estate companies account for 51.3% of the total planted area while smallholder farmers account for 48.7%. Tea in Tanzania is cultivated in six (6) major regions namely, Iringa, Njombe, Tanga, Kagera, Mara and Mbeya. Also, the country has a total of 23 tea processing factories of which one (1) is owned by smallholder farmers and 22 are owned by companies. Out of 22 tea processing factories, 19 are in full operation and 3 are closed their operations. The inadequate number of tea processing factories in the country gives a small room for smallholder farmers to select market outlets for their produce (Kachenje et al., 2022).

The few tea processing factories across the country make the companies fall into duopolistic behaviors (Loconto, 2015). Low competition in processing green leaf tea fuel companies to take advantage of suppressing farmers by setting up high standards of green leaf tea to be purchased, set several criteria that a farmer has to obey on his field before being registered as an out grower of the company (Dogeje

et al., 2023). Additionally, companies reject green leaf tea plucked and transported by farmers from the field to the companies. This happens deliberately, especially when a farmer hasn't met the required standard of two leaves and one bud. Despite the fact that more than 50% of smallholder tea farmers in Tanzania operate in contract farming, this system doesn't help them strengthen their bargaining power (Dogeje, 2023). This happens since all bargaining powers on tea marketing are centered on buying companies and monitored by the Tea Board of Tanzania (TBT).

The consumption rate of tea in Tanzania is low which is estimated to be 14% of total production, making 86% of produced tea for export purposes (Bamwenda, 2021). This is due to a number of reasons caused by environmental, economic and behaviors. Most households in Tanzania live under the poverty line which hinders them from having three (3) meals per day, especially breakfasts in the morning. Likewise, some people exempt themselves from drinking tea for medical reasons mainly due to high concentrations of caffeine. There are people who don't prefer tea as part and parcel of their daily routine and this has impacted their behaviors. The environment of people also has high effects on tea consumption. People in temperate regions have a higher chance of consuming tea compared to regions with high temperatures.

The primary markets of made tea from Tanzania are Kenya, the United Kingdom, Pakistan, South Africa, Russia, Romania, India, the United States of America and United Arabs. The tea sector provides the country with export earnings worth 45 million annually (Kachenje et al., 2022; Tea Board of Tanzania, 2023). In 2023, the market value of made tea produced in Tanzania ranged from TZS 1680 (USD 0.7) per kilogram in the Mombasa market to TZS 2160 (USD 0.9) per kilogram in Dar es Salaam. On the other hand, tea farmers sell their green-leaf tea to processing companies for TZS 366 (USD 0.1525). The market share of a farmer on made tea is estimated to range from 10% to 13%. The recovery percentage of tea processing in the country is still low with five (5) kilograms of green leaf tea into one (1) kilogram of final-made tea.

For so many years Tanzanian tea sector has been accelerating in an increasing direction. However, since 2022 the performance of the sector has started declining. This is evidenced by changes in market prices of made tea in the auctions and the closure of tea processing factories. This worsens the tea sector as the impact of market shakes reach the farmers. A decrease in the number of tea processing factories in tea-producing regions reduces market competition for green-leaf tea (Dogeje et al., 2023). This weakens farmer's abilities to properly manage their field, which further affects production. Therefore, this study aimed to map the performance of the Tanzanian tea sector, by uncovering trends, challenges, and opportunities and making predictions for the future.

#### **1.1. Theoretical Review**

The study is governed by the theory of production which was put in place by clas-

sical economists like Adam Smith (1776), Jean-Baptiste Say (1803), Thomas Malthus (1815), Edward West (1815), and Scots J. Mill (1821). The theory explains how a firm combines factors of production that may give desired outputs. Classical economists used two factors capital and labor in developing the theory. Labour (L) are human beings who exert forces that facilitate the production process while capital (K) are machines used in a production process. The theory assumes that when labor and capital are increased, it ultimately increases output. Initially, output increased at an increasing rate, after some time output increased at a constant rate and later on output increased at a decreasing rate. The combination of factors of production can be expressed in a functional form called production function as seen in Equation (1)

$$Q = f\left(L, K\right) \tag{1}$$

where;

Q = Firm's output, L = Amount of labor used and K = Technology/Machines used.

Economists further describe that the theory of production answers key economic questions such as how to produce, when to produce, how much to produce and for whom to produce. Further explains the different combinations of production factors while considering prices of outputs. Factors of production are further classified into fixed and variable. Fixed factors of production entail all inputs which can not be altered in a short period of time. Variable factors of production entail all factors which can be altered in a short period of time.

This theory underpins the study on the ground that the performance of the tea sector in Tanzania depends on the combination of different factors of production. Farmers' productivity depends on how much factors of production are combined to produce targeted outputs. The amount of greenleaf tea produced per hectare depends on; the amount and type of labor, agrochemicals, fertilizer, and technologies used. Initially, the amount of green leaf tea produced increased with the increase in factors of production. But it reaches a point when any addition in inputs yields the same output. Later on, tea production reaches a point when an increase in factors of production yields less output. Therefore, the fluctuations of the tea sector in Tanzania over the last thirty years depend on factors combination shown in Equation (2).

$$Y = f\left(x_{1} + x_{2} + x_{3} + x_{4} + \dots + x_{n}\right)$$
(2)  
$$Y = f\left(\sum_{i=1}^{n} x_{i}\right), i = 1, 2, 3, 4, \dots, n$$

where: Y = Tea outputs,  $x_i =$  Inputs used in tea production.

## **1.2. Empirical Review**

#### 1.2.1. Tea Production Trend in Tanzania over 30 Years

Tanzania is a net exporter of made tea with an estimated export value of more than USD 45 Million. The sector employs more than 50,000 Tanzanians and touches

more than 2 million livelihoods. Since its introduction in 1908, the crop has been earmarked with an increase in a decreasing rate of growth. Baffes (2005) in a study on Reforming Tanzania's Tea Sector: A Story of Success showed that the history of tea production in Tanzania is marked with ups and downs. From the 1960s to the 1980s the sector grew by 29% while in the 1990s the sector dropped by 10%. Then, tea production in the country went up in the 2000s. The same findings were reported by Munishi et al. (2017) in a study exploring factors affecting the performance of smallholder tea farmers in Tanzania, which showed that between 1960 to 1985 the country's tea output increased by 30%, then went down in the end of 1990 and skyrocketed in the 2000s.

Tanzania has been earmarked with a progressive increase in tea production over the past 30 years. The study by Hicks (2009) on the Current status and future development of global tea production and tea products showed that tea-producing countries experienced increases and decrease in tea production. But in the year 2009, these countries experienced a mass increase in their tea production. Such countries included China, Myanmar, India, Japan, Cambodia and Sri Lanka. Also, the study conducted Kumarihami & Song (2018) showed that over the past 25 years, the trend of global tea production has been significantly declining for developed nations while it has been increasing in developing nations. This shows that not only Tanzanian has been going through fluctuations of in tea outputs, but this is a global phenomenon.

A study by Muthamia & Muturi (2015) in Kenya on determinants of earnings from tea export in Kenya, showed that the country is the third largest tea producer, however, over the last forty years production and contribution to GDP has been going up and down. In the early 1980s, production increased until the early 1990s when production dropped and recovered at the end of the 1990s and 2000s. Similarly, a study conducted in Uganda by Muzira et al. (2023) showed that the history of tea production in the country went through growth and negative growth. The country witnessed an increase in tea production in the early 1960s and a decline in production in the 1970s, and production picked up in 2007.

#### 1.2.2. Determinants of Performance of Tea Subsector in Tanzania

The performance of the tea sector in Tanzania is featured by several factors which determine the shape. Over the past 30 years, the Tanzanian tea subsector has experienced an increase in production and in some years decrease in production. Such variations have been caused by several factors. A study by Sutton & Olomi (2012) on an enterprise map of Tanzania, showed that over the last 30 years changes in policies and an increase in public-private partnership (PPP) have made the increase in production of tea. However, the sector has been constrained by an increase in human population which reduces tea farm sizes. The study went further pointing out that too many taxes and high production costs hinder farmers' attainment of full potential in tea production. Munishi et al. (2017) added that limited access to credits, high transport costs, lack of extension services, low prices, and inadequate market outlets were factors affecting the performance of small-

holder tea farmers. Additionally, in a study by Dogeje et al. (2023), most smallholder tea farmers in Tanzania do not use a contract farming system in cultivating their crops. Tea farming without prior knowledge of desired qualities, prices for the commodity and assurance of the buyer, reduces incentives for farmers to produce tea to its full potential.

# 2. Material and Methods

The study used secondary data which were sourced from Food and Agriculture Organization Statistics (FAO, Stat), National Bureau of Statistics (NBS), Tanzania Board of Tanzania (TBT) and the Tanzanian Ministry of Agriculture (MoA). These sources provided data for different variables such as; tea production in the last 30 years, prices of green leaf tea, price of made tea and yield per unit area. Also, the study supplemented secondary data from literatures which were critically reviewed from different articles, books, reports and web pages (Figure 1).





# **Data Analysis**

The study used an excel spreadsheet to analyze quantitative secondary data. The tool helped the study to summarize data in figures on tea production, area cultivated tea, yield per area, prices of green leaf tea and prices of made tea in the past thirty years.

# 3. Results and Discussion

# 3.1. Green Leaf Tea Production Trend in Tanzania from 1994 to 2023

Data (Figure 2) shows that over the past thirty (30) years, Tanzania had an average green leaf production of 128733.33 MT. However, in the year 2005, the country attained the highest yield of green leaf tea with a total production of 162,000 MT. On the other hand, in 1998, Tanzania experienced the lowest green leaf production with a total production of 95,000 MT. The major reasons for the decline in tea production in 1998 were low prices of green leaf tea, inefficiency of tea processing and poor infrastructure as shown by Kachenje et al. (2022). Also, the decline in tea production in 1998 was a result of a shortage of labor in tea plantations caused by delays in timely wage payments as also shown by Baffes (2005). A similar situation happened in Uganda whereby tea production dropped in the 1990s as a result of political instabilities which resulted into evacuation of foreign companies that invested in tea processing (Muzira et al., 2023). Likewise, Kenya experienced fluctuations in tea production in the 1990s as a result of high operation costs, high wage demand by tea pluckers, and inefficiencies of tea processing factories (Nyaoga et al., 2015; Kariuki et al., 2022). This means that the low adoption rate of advanced technologies in the tea sector leads to high operational costs. High operational costs in green leaf tea production and processing affect the returns on investment.



**Figure 2.** Tea production trend in Tanzania from 1994 to 2023. Source: FAO-Stat 2024, Tea Board of Tanzania (2023) and Baffes (2005).

# 3.2. Area Harvested Green Leaf Tea

Data (Figure 3) showed that the area harvested green leaf tea in Tanzania changed over time. Despite the increase in areas under tea production over thirty years, market trends and cost of tea production affected areas under harvests. From 1994 to 2009 the area under tea harvest in Tanzania has remained more or less the same, but in 2010 area under harvest dropped compared to other years over the last thirty years. The country harvested green leaf tea under 11,410 hectares. The main

reason for the decline in area tea harvest in 2010 was the lack of casual labor a result of low and delays in payments as also reported by Loconto (2015). In 2015, the country had the largest area under tea harvest with an average area of 22,509 hectares. The increase in the area under tea harvest in 2015 was influenced by an increase in demand and price of green-leaf tea globally.



**Figure 3.** Area harvested green leaf tea from 1994 to 2023. Source: FAO-Stat (2024), Tea Board of Tanzania (2023) and Baffes (2005).

# 3.3. Price of Green Leaf Tea over Thirty Years in Tanzania

The price of green-leaf tea in Tanzania is determined by the Tea Board of Tanzania (TBT). The board is mandated to oversee the tea sector in the country including setting the price of green-leaf tea. Study findings (**Figure 4**) showed that regardless of the time value of money, the price of green-leaf tea has been progressively increasing. But the change in price doesn't account for the time value of money. In 1994 the price of green leaf tea was TZS 72.5 and in 2023 was TZS 366. This means that over thirty years, the price increased by TZS 293.5, however, the increase in price doesn't account for time value of money and is reflected in the costs of farm inputs. This is supported by the study of Kachenje et al. (2022) who showed that the return on investing in green-leaf tea is low due to ongoing lower prices of green-leaf and made tea. Similarly, a study in Kenya by Muthamia & Muturi (2015) showed that despite the remarkable contributions of the tea sector to the country's Gross Domestic Product, yet prices of green leaf tea remain a problem.





# 3.4. Price of Made Tea over the Past Thirty Years in Tanzania

Over the past thirty years, Tanzania experienced an average price of USD 1.45 equivalent to TZS 3488 per kilogram of made tea. In 2016, the country experienced the highest price of made tea reaching USD 2.81 (TZS 6744) per kilogram. The rise in the price of made tea was due to an increase in global demand for tea (**Figure 5**). Contrary, in the year 2023, the country experienced the lowest price of USD 0.74 (TZS 1776). Such a decrease in the price of made tea in the country was highly attributed to the fall in demand for tea globally (**Nyaoga et al., 2015; Dogeje et al., 2023**). A study by (Kariuki et al., 2022) showed that the fluctuation of tea prices globally has reduced farmers' engagement in farms.



Figure 5. Prices of made tea over thirty years in Tanzania. Sources: Tea Board of Tanzania (2023) and Sutton & Olomi (2012).

## 3.5. Challenges Facing Actors along Tea Value Chain in Tanzania

#### 3.5.1. High Tea Production Costs

Empirical shows the average cost of producing green leaf tea in Tanzania is high. This is attributed to high initial fixed costs as well as high operational costs. The variable costs are fertilizer, herbicides, farm management, pruning and plucking costs. These costs significantly affect the return of farmers per kilogram of greenleaf tea.

#### 3.5.2. Delay in Payments of Tea Pluckers

Most tea farmers in Tanzania, run their farms with low or no running capital. The major labor force used is themselves and family members. During peak seasons tea farmers hire pluckers who are expected to be paid on time after harvests. Therefore, low and inadequate working capital plus delays in payments from teabuying factories results in the failure of farmers to cover all operational costs.

#### 3.5.3. Poor Infrastructures

Green leaf tea needs high care and handling before and when harvesting. The crop needs to last less than six (6) hours before reaching the processing factory. Whenever leaves stay more than six (6) hours before processing lose the desired quality. Therefore, poor infrastructure in rural areas hinders the on-time transportation of harvested green leaf tea from the farm to the processing factors. This leads into loss to farmers due to the rejection of harvested tea processing factories.

## 3.5.4. Limited Number of Tea Buying Companies

Over thirty years the number of tea processing factories has remained redundant. The number of processing factors increased in the 1990s and 2000s. But since 2005 the number of tea processing factories has started decreasing. Few tea buying companies in the market have created monopolistic behavior in tea sector. These factories have more power than farmers as they control every in the market.

## 3.5.5. Fluctuations of Market Prices of Made Tea

The unstable market for made tea is among the major challenges facing tea sector in Tanzania. Large amount of tea produced in Tanzania is meant for export. The ongoing global fluctuations of market price of made tea subsequently affect the sector. Currently, the global market price of made tea is low compared to average costs borne by farmers in Tanzania.

#### 3.6. Opportunities in Tea Sector in Tanzania

#### 3.6.1. Establishment of Tea Processing Factories

Currently, the country has a total of 19 tea processing companies. This number is low compared to the currently produced tea. Therefore, there is an opportunity existing in tea processing that needs to be expounded.

## 3.6.2. Establishment of Tea Farms

Tanzania has a total of 44 Million hectares with 67% hectares suitable for irrigation and 40% hectares suitable for growing tea. But the current status shows that the country uses only 0.5% of arable land in tea cultivation. Therefore, there is an opportunity for tea growing in the study area.

#### 3.6.3. Supply of Improved Tea Plucking Tools

The majority of farmers use the mechanical tea plucking method. This method is tedious and makes farmers pluck low amounts of tea. Also, the method is labor intensive which adds up to more operational costs. Therefore supply of simple modern, affordable tea-plucking tools may help to leverage farmers' potential.

#### 3.6.4. Establishment of Primary Tea Processing Factories at Farm Level

Low durability of green leaf tea after harvest, causes a need for the primary tea processing factories. These factories may help farmers to process green leaf tea so as to extend shelf life before reaching tea processing companies. Primary tea processing factories can help to reduce the amount of green leaf tea rejected by buying companies which is caused by loss of quality after harvest.

# 3.7. The Future of Tea Sector in Tanzania

Based on what the study has found, it is evident that the current situation in the tea sector in Tanzania needs support from both government and non-government organizations. The future of Tanzania's tea industry is shaped by strategic reforms,

research investments, and production expansion efforts. One major development is the merger between the Tea Board of Tanzania and the Tanzania Smallholders Tea Development Agency, which aims to enhance operational efficiency and provide better support for smallholder farmers. This restructuring is expected to strengthen marketing, processing, and export strategies. Investment in research and development is also crucial, particularly with the integration of the Tea Research Institute of Tanzania into the Tanzania Agricultural Research Institute. These research efforts focus on improving pest control, enhancing tea yield, and developing climate-resilient farming techniques to ensure long-term sustainability.

The expansion of tea cultivation and processing capacity presents another opportunity. Tanzania's tea production has shown significant growth, with projections indicating an increase from 35,000 tons in 2014 to 49,000 tons by 2023. This progress is driven by improved farming methods, government subsidies, and collaborations between private estates and policymakers. Furthermore, enhancing export strategies can significantly benefit the tea sector. The tea industry generates over USD 50 million annually in foreign exchange earnings, and improving market access and branding could further boost Tanzania's tea exports. Strengthening participation in international tea auctions and direct export channels will be crucial in ensuring global competitiveness. Overall, the tea sector in Tanzania appears poised for sustainable growth, supported by ongoing reforms, increased investments in research, and initiatives to boost production and exports.

# 4. Conclusion and Recommendations

# 4.1. Conclusion

The study aimed to map the performance of the tea sector over thirty (30) years and look at future prospects in Tanzania. The trend over thirty years indicates that tea production in Tanzania has increased at a decreasing rate. Numerous reasons are highlighted for such fluctuations in the tea sector. Also, findings showed that prices of green leaf tea are determined by the Tea Board of Tanzania, and over thirty years the amount changes but more the same value when accounted for to time value of money. Additionally, the area planted and harvested green leaf tea has increased over the last thirty years. Contrary, the price of made tea has been increasing at a decreasing rate. However, it has been found that the tea sector lacks adequate technical and infrastructural supports which are critically important for the takeoff.

# 4.2. Recommendations

The study would like to recommend that;

1) Modernize Farming Practices by providing subsidized access to modern agricultural inputs like fertilizers, high-yield tea seedlings and equipment. Also, there is a need to initiate training programs on sustainable farming methods and crop management techniques. 2) Infrastructure Development: through investment in improving rural road networks to ensure efficient transport of tea leaves to factories. Also, there is a need to expand rural electrification projects to enhance storage and processing capacity.

3) Tax Reform: Simplify the taxation system by consolidating taxes and lowering rates to reduce the financial strain on farmers.

4) Climate Adaptation: Introduce irrigation systems and promote drought-resistant tea varieties to mitigate the effects of erratic weather. Develop disaster risk management plans to support farmers during climate-related disruptions.

5) Market Accessibility: Establish cooperatives or farmer associations to strengthen their bargaining power and collective access to markets. Also, there is a need to create e-commerce platforms or marketplaces to connect farmers directly with domestic and international buyers.

6) Enhanced Government Support through the increased funding for agricultural extension services to provide farmers with technical support and guidance.

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# **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

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