



# FINANCIAL & ECONOMIC ANALYSIS OF **WHEAT VALUE CHAIN**

HAND IN HAND INITIATIVE IN TANZANIA

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# INTRODUCTION

Tanzania's agricultural sector spans diverse agro-ecological zones, covering an extensive land area of approximately 885,800 sq. km. It holds significant importance in the country's economic growth, contributing 26.1% to the GDP and providing employment to over 66.3% of the workforce. The decline of the agriculture shares from 29% in 2015 to 26.6% in 2019 in the total GDP and the corresponding rise in the shares of 'modern sectors' apparently confirms that structural transformation is taking place in Tanzania!

Despite its prominence, the sector faces challenges, as evident in its cereal yield of 1,678 kg per hectare, which is only 43% of the global average (3,907 kg per hectare). These challenges are attributed to factors like limited input usage, inadequate adoption of modern agricultural practices, insufficient access to technology, and climate change, all of which contribute to low productivity in the sector.

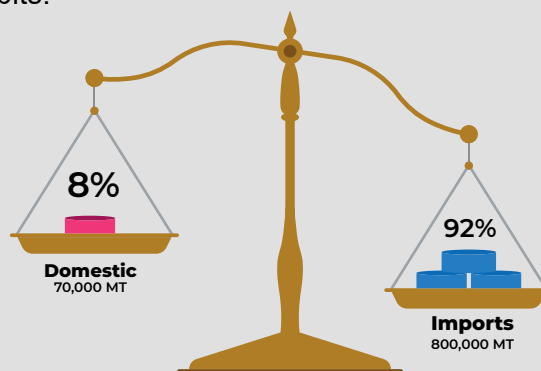
According to the Tanzania's Five Years Development Plan 2021/22–2025/26, it is only about 20 percent of the 13.5 ml hectares is planted with improved seeds and only 2.8 ml Hectares (about 20 percent) uses mineral fertilizers.

The Government of the United Republic of Tanzania has clearly laid out its agenda and priorities for agricultural transformation in multi-year, multi-sectoral strategies, including the third National Five-Year Development Plan (FYDP III), Pathways for Sustainable Food Systems 2030, and the Agenda10/30 and the Building Better Tomorrow programme.

In Tanzania, wheat's annual demand (domestic and industrial) is about 1,000,000 tons, against a local production of less than 100,000 tons. The Country's Food and Agriculture Delivery Compact aims to close this deficit of over 90% and reduce wheat import bill of about USD 221 million.<sup>2</sup>

According to the Ministry of Agriculture's report of 2022, Tanzania produced about 70,000 MT of wheat from about 60,000 hectares of planted land. To offset country's deficit 800,000 MT of wheat were imported. Majority of the wheat production in the country comes from large commercial farms in the Northern Highlands or small and medium sized family farms in the Southern Highlands. Specifically, wheat is primarily grown in the Northern regions of Kilimanjaro, Arusha, and Manyara.

In terms of consumption, wheat ranks fourth among food crops in Tanzania, following maize, cassava, and rice. Wheat is predominantly consumed in the form of wheat flour, which serves as both an intermediate and final product. In the 2023/24 period, wheat consumption in Tanzania is projected to increase by 4 percent to 1.175 million MT, with urban and peri-urban areas experiencing a notable shift towards wheat consumption based on the USDA Grain and Feed Annual Report of 2023. They added that, major cities like Dar es Salaam, Mwanza, and Arusha are driving this trend due to the demand for convenient and easily prepared staple foods that can be consumed on the go. Urban areas account for 80 percent of Tanzania's total wheat consumption reflecting the impact of urbanization on dietary preferences and consumer habits.

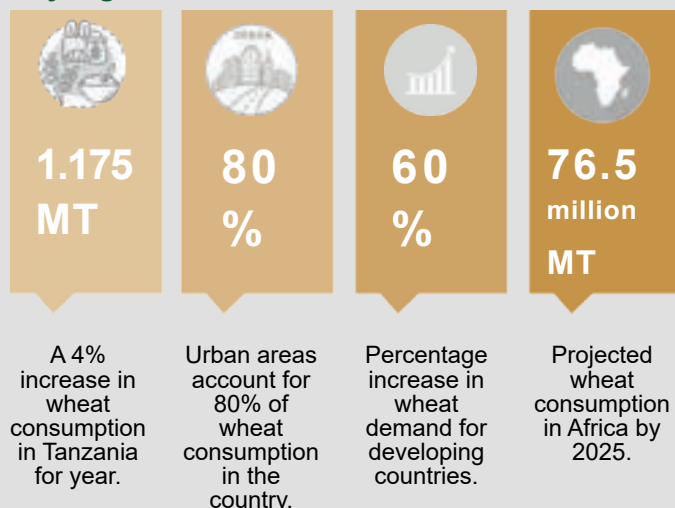


*On average, less than 8% (72,000 MT) of the wheat consumed in Tanzania is domestically grown, the rest is imported (about 800,000 to 100,000 MT)*

Projections indicate that developing countries' demand for wheat will increase by 60 percent by 2050. In Africa, wheat consumption is expected to reach 76.5 million metric MT by 2025, with of which 48.3 million MT or 63.4 percent of that being imported<sup>3</sup>.

East African countries like Tanzania, Kenya, Rwanda, and Burundi, as well as Nigeria in West Africa, Ethiopia, Sudan, and South Africa, account for a significant portion of wheat imports. In addition, the adverse effects of climate change, such as temperature increases, are estimated to reduce wheat production in developing countries by 20-30 percent.<sup>2</sup>

### Key Figures



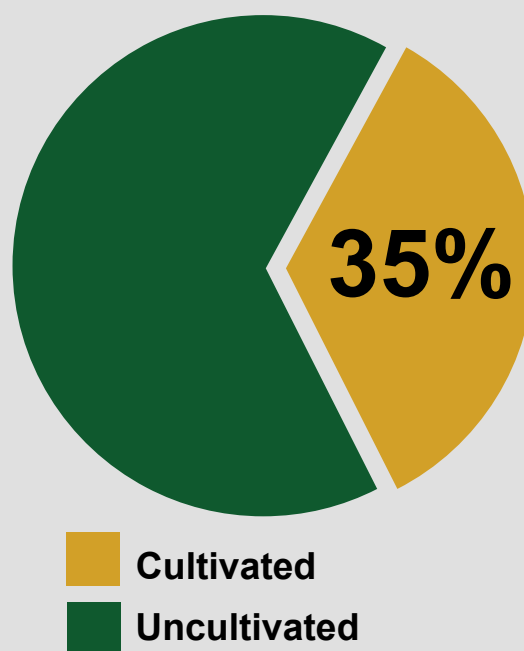
### Challenges

Pests and diseases like fungus and rust, which are caused by weather variation and climate change impact, higher prices and limited access to preferred and quality seeds and pesticides are some of the main challenges for increased wheat production in Tanzania and the Manyara region. The limited cultivation is also attributed to limited access to financial services and technologies especially to the medium and small-scale farmers.

Once these challenges are addressed, the overall, investing in wheat production in Tanzania is deemed profitable. This is because of the enabling policy environment for agricultural investment in the country, growing population and increasing demand for wheat consumption especially in urban areas.

According to the regional agriculture offices in Manyara, the wheat production area in the Manyara region is around 36,855 hectares. However, only 34.8% (12,832.3 hectares) of this wheat-producing land is currently cultivated.

Smallholder farmers in the region have shown less interest in wheat cultivation due to limited availability and access to agricultural machinery and equipment for wheat production, limited supply and unaffordability of preferred seeds with low resilience to the impact of weather variation and climate change. It is because of this, investment in wheat production through seed multiplication, storage facilities and processing will play a crucial role to enhance profitability of the wheat value in the region and the country.



*Only 35% percent of the 36,855 hectares of the arable land in Manyara region is cultivated*

<sup>2</sup>African Development Bank Group. (2023). Tanzania: Country Food and Agriculture Delivery Compact. African Development Bank.

<sup>3</sup>Tadesse, W., Bishaw, Z. and Assefa, S. (2019), "wheat production and breeding in Sub-Saharan Africa: Challenges and opportunities in the face of climate change", International Journal of Climate Change Strategies and Management, Vol. 11 No. 5, pp. 696-715. <https://doi.org/10.1108/IJCCSM-02-2018-0015>

# TANZANIA POTENTIAL

1

## Vast arable land for cultivation

Only 24% of the 44 million hectares are under cultivation

2

## Potential for irrigation

Only 2.5% of the potential irrigation land of 29.4 million hectares are currently under irrigation indicating vast opportunities to enhance water utilization and agriculture output

3

## Growing population with rising urban middle class

61 million people with the highest density in urban areas which are characterized by high consumption

4

## Strategic positioning and bloc memberships

East African Community (EAC) and Southern African Development Community (SADC) membership enables access to regional markets. Considering other multiple bilateral agreements.

5

## Investor friendly environment

The new Standard gauge railway, Julius Nyerere hydro-power project. Digitalization of agriculture & Incentives through the TIC and EPZA

6

## Government measures to support wheat & barley cultivation

Cost reduction through Duty Remission procedure (from 35% to 10%) and cutting excise duty from Tzs 765 to Tzs 620 per litre to promote wheat and barley cultivation

## WHEAT'S INVESTMENT CASES

Investment in the wheat value chain in Tanzania and more specifically in the Manyara region has been limited due to limited access to and affordability of relevant agricultural machinery, equipment, and supplies, expensive and climate-vulnerable seeds, and market related concern of stable prices which affects return on investments and overall profitability. To encourage more farmers to engage in wheat production through increased profitability of wheat production, investments are encouraged in AgriEquip Rentals, seed multiplication, cultivation in potential areas, establishment of a large wheat flour and by products processing factories, and improvements on the state-of-the-art storage facilities.

Tanzania boasts significant untapped investment potential in its agricultural sector. With a vast expanse of arable land totaling 44 million hectares, only 10.8 million hectares (24%) are currently under cultivation, leaving substantial room for expansion of the total production area and for increased productivity. Similarly, the potential for irrigation covers 29.4 million hectares, but only 727,280.6 hectares (2.5%) are currently under irrigation, indicating large untapped opportunities to enhance water utilization and agricultural output. Moreover, within the scope of agricultural diversification, wheat production emerges as a key component alongside varied crop portfolios such as horticulture, traditional cash crops, food crops, and oilseeds, presenting lucrative opportunities for investment and development along the value chain.

Additionally, Tanzania's strategic location and membership in economic blocs such as the East African Community (EAC) and the Southern African Development Community (SADC) enables access to regional markets, fostering cross-border trade and cooperation. Moreover, being part of the Africa Free Trade Area (AfCFTA) and engaging in bilateral arrangements with other countries further widens market opportunities and strengthens trade networks.

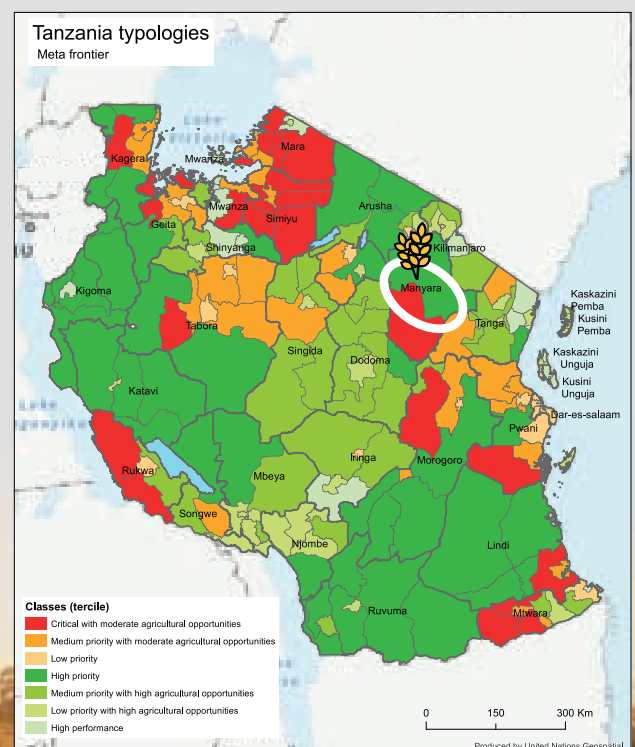
The Tanzanian government has taken two significant measures to support the wheat and barley industries. This includes reducing costs for wheat flour producers providing relief from Customs Duty through the Duty Remission procedure, with the rate reduced to 10 percent for one year, down from the usual 35 percent on imported raw wheat for processing. Secondly, in a bid to encourage the use of locally grown and malted barley in beer production, the excise duty on beer made from such barley has been lowered from TZS 765 per liter to TZS 620 per liter.

Tanzania offers attractive fiscal and non-fiscal incentives for investors, including tax breaks, land access, and regional market reach. The Tanzania Investment Centre (TIC) further supports the key agriculture sector with streamlined permit processes, international property rights protection, and various tax benefits. With reduced import duties, VAT benefits on exports, and more, Tanzania stands as a prime destination for business growth and investment.

In addition, The Export Processing Zone Authority (EPZA) offers an initial ten-year exemption from corporate tax, followed by corporate tax rate specified in the Income Tax Act. Additionally, investors benefit from a ten-year exemption on withholding tax for rent, dividends, and interests, along with a waiver of all local government taxes and levies for products produced in the Export Processing Zones during the same period. The EPZA also streamlines export procedures by exempting pre-shipment and destination inspection requirements and facilitating onsite customs inspections.

Despite Tanzania not currently holding a cost advantage in wheat production, it remains critical to pursue investments in this area, leveraging the abundance of resources and the potential for cost reduction through technological advancements. Furthermore, as highlighted, the significant market demand underscores the importance of adopting measures for food security.

***Shown on the map, is the Manyara region which is a wheat-prioritized region under the Hand in Hand initiative.***



## I. SEED MULTIPLICATION

### Background and Justification

An investment in seed multiplication focuses on establishing a center for wheat seed multiplication to solve the challenge of inadequate, affordable, and preferred quality wheat seeds in Tanzania and Manyara region. Quality seed is one of the most fundamental and rapid yield enhancing inputs for wheat production. A seed multiplication facility establishment in the Hanang district in Manyara region will increase availability of affordable quality seed, reduce associated production costs, increase yields, and contribute on improving the overall farmers' profitability. Due to its location advantage, seeds produced in the region will also benefit on accessing markets in other regions and nearby countries including Kenya and Uganda.

According to the Ministry of Agriculture, the annual seeds demand for wheat is expected to be at 48,000 MT.

by 2025. Currently, the government of Tanzania is aiming at producing 55,000 MT of quality seeds also by 2025. An increase in wheat seed multiplication, is expected to bring wheat farmers back into producing wheat who had stopped production because of limited access to quality seeds. This, in turn, would lead to an increase in the annual seed demand. It is because of this, that the government has prioritized an increase in wheat seed production in the country.

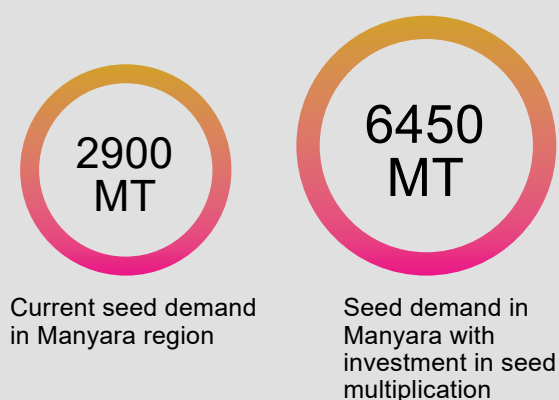
To meet the anticipated growing demand, it is imperative that wheat seed multiplication units are established in Manyara and other regions with wheat seeds growing potential. These units need to have the combined capacity to produce at least 48,000 MT of seeds annually - the target being to

attain the national demand for quality wheat seeds in the country and sell surplus to nearby countries, regional and international markets.

To attain the targeted production, at least 12,000 hectares of land (assuming average production of 4 MT per hectare with good agriculture practices) is required. In the Manyara region, there is 950,000 ha of land suitable for agricultural production, of which only 3% (28,000 ha) is suitable for wheat production. However, only 12,832.3 hectares (45.8 percent) of wheat-producing land is cultivated. The National Agricultural Seed Agency (ASA) also has at least 3500 hectares of land in the Ruvuma region allocated for general seed production among others.

An investment in seed multiplication includes components such as land with adequate separation zones for different types of seeds, water availability in supporting irrigation especially for the off season and weather variations, seed processing units (seed cleaners, gravity separators, seed graders, and packaging machinery), storage facilities, equipment and machinery (tractors, tillage equipment, seeders, sprayers, and harvesting equipment), quality control and testing equipment (seed testing kits, moisture meters, germination chambers, and disease testing facilities). Other components include infrastructure for seed drying (drying sheds or drying equipment like grain dryers), office and administrative facilities, access roads, and utilities. These elements are necessary to effectively support cultivation, multiplication, processing, and storage of wheat seeds.

The Manyara region plans to stimulate its industrial and economic development base through attracting additional private and public-private partnership investments to increase its value addition in key sectors like agriculture and manufacturing to strengthen competitiveness as well as to raise its GDP.





## Financial Analysis

The financial analysis of the wheat seed multiplication venture considers a five-year investment period. The analysis assumes a constant price and considers a yield of 4MT per hectare. This is possible only with the use of modern and improved agriculture practices. For example, currently the Tanzania Agricultural Research Institute (TARI) Harvests around 3 MT per Hectare with Ngoli Variety and up to 5 MT per hectare with Sifa variety, that is in high demand in the market. A tax rate of 30% was used for the analysis purpose of this study, the real discount rate being at 8%.

There is an opportunity to increase profitability by utilizing the tax incentives. For example, Dar es Salaam Stock Exchange entrants, issuing at least 35% of their shares publicly, can enjoy a 25% reduced tax rate for three years. Agriculture investments benefit from a 100% capital allowance on agricultural equipment. Moreover, strategic investors, as per the Tanzania Investment Act, receive a withholding tax exemption on foreign bank interest, reducing costs and enhancing investment appeal.

In addition to that and for prudence purposes, the analysis assumes delays on adoption by farmers, legislative and infrastructure improvements. It also considers climate realities, thus, adjusting the expected cash flows. All these additional adjustments were made to ensure that the analysis does not postulate unrealistic profits.

### Income Statement Indicators (Figures in TZS)

YEAR	01	02	03	04	05
Net Sales (A)	3,250,000,000	3,250,000,000	3,250,000,000	3,250,000,000	3,250,000,000
Input Costs (B)	1,987,943,750	1,987,943,750	1,987,943,750	1,987,943,750	1,987,943,750
Gross Margin (C = A - B)	1,262,056,250	1,262,056,250	1,262,056,250	1,262,056,250	1,262,056,250
Maintenance (D)	20,865,000	20,865,000	20,865,000	20,865,000	20,865,000
Other Expenses and External Services (E)	90,000,000	90,000,000	90,000,000	90,000,000	90,000,000
Value Added (F = C - D - E)	1,151,191,250	1,151,191,250	1,151,191,250	1,151,191,250	1,151,191,250
Labour Costs (G)	188,500,000	188,500,000	188,500,000	188,500,000	188,500,000
EBITDA (H = F - G)	962,691,250	962,691,250	962,691,250	962,691,250	962,691,250
Depreciation (I)	72,320,000	72,320,000	72,320,000	72,320,000	72,320,000
Interest Expenses (K)	14,295,680	00	00	00	00
EBIT (J=H-I)	890,371,250	890,371,250	890,371,250	890,371,250	890,371,250
Profit Before Taxes (PBT) (L = J - K)	876,075,570	890,371,250	890,371,250	890,371,250	890,371,250
Income Tax (M)	262,822,671	267,111,375	267,111,375	267,111,375	267,111,375
Profit After Taxes (PAT) (N = L - M)	613,252,899	623,259,875	623,259,875	623,259,875	623,259,875
Profit Margin Rate [%] (O = N / A)	18.9%	19.2%	19.2%	19.2%	19.2%



Based on the analysis, the investment on wheat seed multiplication in Tanzania and more specifically the Manyara region demonstrates profitability, at a stable profit margin of 19.2%. The payback period is estimated to be 4.23 years, indicating a relatively quick return on investment.

The Net Present Value (NPV) amounts to TZS 112,485,338 equivalent to US\$ 45,000 reflecting positive returns over the five-year period. The Internal Rate of Return (IRR) is calculated at 9.75%, further indicating the attractiveness of the investment over the analysis period. These financial indicators suggest that the wheat seed multiplication venture is a viable and potentially lucrative investment opportunity in the country.

### Financial Profitability Analysis (Figures in TZS)

YEAR	01	02	03	04	05
<b>REVENUES</b>					
Sales	3,250,000,000	3,250,000,000	3,250,000,000	3,250,000,000	3,250,000,000
Residual	00	00	00	00	977,400,000
Subtotal	3,250,000,000	3,250,000,000	3,250,000,000	3,250,000,000	4,227,400,000
<b>LOANS</b>					
Investment-Loans	00	00	00	00	00
Working Capital-Loan	571,827,188	00	00	00	00
Subtotal	571,827,188	00	00	00	00
<b>OWN RESOURCES</b>					
Investment-Own Resources	1,339,000,000	00	00	00	00
Working capital-Own Resources	00	00	00	00	00
Subtotal	1,339,000,000	00	00	00	00
<b>INVESTMENT COSTS</b>					
Initial investment	1,339,000,000	00	00	00	00
Replacement	00	00	00	00	00
Subtotal	1,339,000,000	00	00	00	00
<b>RECURRENT COSTS</b>					
Operation	2,098,443,750	2,098,443,750	2,098,443,750	2,098,443,750	2,098,443,750
General	188,865,000	188,865,000	188,865,000	188,865,000	188,865,000
Maintenance	20,865,000	20,865,000	20,865,000	20,865,000	20,865,000
Subtotal	2,287,308,750	2,287,308,750	2,287,308,750	2,287,308,750	2,287,308,750
<b>FINANCIAL COSTS</b>					
Working Capital-Capital	571,827,188	00	00	00	00
Working Capital-Interest	14,295,680	00	00	00	00
Subtotal	586,122,867	00	00	00	00
<b>CASH FLOW</b>					
Cash flow before financing	-576,308,750	762,691,250	762,691,250	762,691,250	1,740,091,250
<b>Adjusting Cash flows Uncertainty</b>					
Adoption rate by farmers	0.00	0.15	0.15	0.10	0.08
Legislative and Infrastructure improvement	0.00	0.15	0.15	0.10	0.08
Climate realities	0.00	0.15	0.15	0.10	0.08
Adjusted Net Cash flows	-576,308,750	419,480,187	419,480,187	533,883,875	1,322,469,350
<b>FINANCIAL COSTS</b>					
IRR					9.75%
NPV					TZS 112,485,338
Payback (years)					4.23

## II. STORAGE FACILITIES

### Background and Justification

An investment in a wheat storage facility focuses on construction of the state of the art storage facilities for short and long term storage of wheat grains. The storage facilities will allow farmers to keep their produce and release them to the market when they are satisfied with the market price. This is also meant to ensure year round supply of raw materials to the wheat processing industry.

Investing in storage facilities is essential to enable farmers to store their produce immediately after harvest and wait for peak low prices to rise. At the same time, the investment will address seasonal operation of wheat processing industries, through year round supply of raw materials.

Access to banking services and individual or collective storage facilities such as using warehouse receipt systems can be used to encourage farmers to store their wheat, access and use other financial services and inputs and sell it at more favorable prices. Addressing issues like side buying and selling in contract farming and facilitating connections between farmers and buyers/processors would also be beneficial.

Proposed investment involves the establishment of the state-of-the-art storage facilities in each of the two main districts that produce wheat in the Manyara region, that is Babati and Hanang districts. These facilities are to be strategically located in areas with known production capacities at substantial quantity with high concentration of smallholder farmers.

Proposed storage facilities are also meant to serve multiple purposes, including aggregation, grading, packing, and transportation. These facilities are also meant to relate to processing factors (off takers) and traders' factories like AZAM and AZANIA through proper consultations and agreements along the value chain.

With the adoption of the proposed investment approach in Manyara, it's expected that the yearly wheat grain yield will rise to an average value of 110,565 metric tons (MT). This projection is based on cultivation of 36,855 hectares of land and achieving an improved yield of at least 3.0 MT per hectare, as advised by TARI. In contrast, the current average yield per hectare is 1.25 MT, as per the United States Department of Agriculture (USDA).<sup>5</sup>

Now, the local agricultural office in Manyara reports that an average warehouse, covering 800 square meters, can store up to 600 MT of wheat grains only. Given the limited storage capacity in the region, which currently stands at less than 18,000 MT, there's an evident shortfall in storage capacity by approximately 92,565 MT annually. This underscores the urgent need for more storage facilities in the region.

### Production Infrastructure

The production infrastructure for a decentralized warehouse for storage involves establishing warehouse structures with appropriate storage equipment, implementing security measures, setting up inventory management systems, and ensuring access to utilities and services. It also includes provisions for quality control and testing facilities, a robust IT infrastructure, and training programs for warehouse staff.

The Manyara investment context has access to the necessary infrastructures and has the potential to establish series of decentralized storage facilities for easy access. Strategic location of the regional capital town, Babati, has direct links to other big regions of Singida, Tabora and the lake zone regions of Mwanza, Mara and Shinyanga. It also links with the national capital of Dodoma and Arusha regions through the Great North Road.

### Before Investment



**18,000MT**

*(Current capacity for wheat grains storage in Manyara)*

### After Investment



**110,565MT**

*(Expected annual wheat grain harvest)*

## Financial Analysis

The financial analysis of the decentralized storage facility takes into consideration a five-year investment period. The analysis assumes a constant price and focuses on the revenue generated from the storage services provided. The facility has a reasonable capacity to store 8,500 bags of grains, with storage occurring in three different phases. The facility will have ability to store other grains such as sunflower, maize and beans. The tax rate used for the analysis is 30% with the real discount rate being 8%.

There is an opportunity to increase profitability by utilizing the tax incentives. For example, Dar es Salaam Stock Exchange entrants, issuing at least 35% of their shares publicly, can enjoy a 25% reduced tax rate for three years. Agriculture investments benefit from a 100% capital allowance on agricultural equipment. Moreover, strategic investors, as per the Tanzania Investment Act, receive a withholding tax exemption on foreign bank interest, reducing costs and enhancing investment appeal.

In addition to that and for the prudence purposes, this analysis assumes delays of adoption by farmers, legislative and infrastructure improvements. It also considers climate realities, which adjusted the expected cash flows. All these additional adjustments were made to ensure that the analysis does not postulate unrealistic profits. Based on the financial analysis, the decentralized storage facility demonstrates promising returns. The investment has the potential to yield an average profit margin of 51.3%. This indicates a significant return on investment relative to the costs involved. The Net Present Value (NPV) of the investment amounts to TZS 26,205,256 equivalent to US\$ 10,000 indicating positive returns over the five-year period. The Internal Rate of Return (IRR) is calculated at 10.11%, suggesting a favorable rate of return for the investment and a payback period of 3.03 years. These financial indicators suggest that the decentralized storage facility business is a viable investment opportunity. The analysis also shows potential to generate substantial profits. Therefore, two of the like models are recommended to be established in Manyara region.

### Income Statement Indicators (Figures in TZS)

YEAR	01	02	03	04	05
Net Sales (A)	168,045,000	168,045,000	168,045,000	168,045,000	168,045,000
Input Costs (B)	00	00	00	00	00
Gross Margin (C = A - B)	168,045,000	168,045,000	168,045,000	168,045,000	168,045,000
Maintenance (D)	1,230,000	1,230,000	1,230,000	1,230,000	1,230,000
Other Expenses and External Services (E)	00	00	00	00	00
Value Added (F = C - D - E)	166,815,000	166,815,000	166,815,000	166,815,000	166,815,000
Labour Costs (G)	31,200,000	31,200,000	31,200,000	31,200,000	31,200,000
EBITDA (H = F - G)	135,615,000	135,615,000	135,615,000	135,615,000	135,615,000
Depreciation (I)	12,543,333	12,543,333	12,543,333	12,543,333	12,543,333
Interest Expenses (K)	00	00	00	00	00
EBIT (J=H-I)	123,071,667	123,071,667	123,071,667	123,071,667	123,071,667
Profit Before Taxes (PBT) (L = J - K)	123,071,667	123,071,667	123,071,667	123,071,667	123,071,667
Income Tax (M)	36,921,500	36,921,500	36,921,500	36,921,500	36,921,500
Profit After Taxes (PAT) (N = L - M)	86,150,167	86,150,167	86,150,167	86,150,167	86,150,167
Profit Margin Rate [%] (O = N / A)	51.3%	51.3%	51.3%	51.3%	51.3%

## Financial Profitability Analysis (Figures in TZS)

YEAR	01	02	03	04	05
<b>REVENUES</b>					
Sales	168,045,000	168,045,000	168,045,000	168,045,000	168,045,000
Residual	00	00	00	00	212,983,333
Subtotal	168,045,000	168,045,000	168,045,000	168,045,000	381,028,333
<b>OWN RESOURCES</b>					
Investment-Own Resources	275,700,000	00	00	00	00
Working capital-Own Resources	00	00	00	00	00
Subtotal	275,700,000	00	00	00	00
<b>INVESTMENT COSTS</b>					
Initial investment	275,700,000	00	00	00	00
Subtotal	275,700,000	00	00	00	00
<b>RECURRENT COSTS</b>					
Operation (internal resources + purchased)	00	00	00	00	00
General (in cash & in kind)	32,430,000	32,430,000	32,430,000	32,430,000	32,430,000
Maintenance	1,230,000	1,230,000	1,230,000	1,230,000	1,230,000
Subtotal	32,430,000	32,430,000	32,430,000	32,430,000	32,430,000
<b>CASH FLOW</b>					
Cash flow before Adjustment	140,085,000	135,615,000	135,615,000	135,615,000	348,598,333
<b>Adjusting Cash flows Uncertainty</b>					
Adoption rate by farmers	0.15	0.15	0.15	0.10	0.08
Legislative and Infrastructure improvement	0.15	0.15	0.15	0.10	0.08
Climate realities	0.15	0.15	0.15	0.10	0.08
Adjusted Net Cash flows	- 77,046,750	74,588,250	74,588,250	94,930,500	264,934,733.33
<b>FINANCIAL COSTS</b>					
IRR					10.11%
NPV					TZS 26,205,256
Payback (years)					3.03



### III. WHEAT PROCESSING FACILITIES

#### Background and Justification

This investment covers a wheat processing factory in Tanzania and more specifically the Hanang District in the Manyara region. The wheat processing facility is meant to be placed in areas where wheat is produced at a large quantity with large numbers of smallholder farmers within and outside Manyara region.

An investment in a major wheat processing facility in the Manyara region would solve market problems by providing a local market for farmers' products. A construction of a processing facility, warehouses, and collection facilities closer to farmers' locations is meant to eliminate the need to transport wheat grains to distant markets like in Arusha region. This is also meant to contribute to supporting value addition of the wheat that is produced locally. This is key to help create a competitive market and give farmers more pricing flexibility and income.

The proposed model entails the establishment of specialized plants dedicated to the comprehensive processing of wheat grains, primarily focused on producing high-quality wheat flour. The proposed plant is aimed at having a capacity of processing about 60 MT of wheat grain per day. In the Manyara region alone, considering the annual production of 110,565 Tons, 6 plants of this type are being considered.

During the wheat processing operations, the wheat grains need to undergo various stages such as cleaning, conditioning, milling, and sieving. The cleaning stage involves impurities removal including debris and foreign matter from raw wheat grains. This is to ensure the highest standards of hygiene and product quality. Conditioning, on the other hand, aims to optimize the moisture content of the grains for optimal processing and milling.

The milling process is the core of the wheat grain processing, where the grains are transformed into flour through grinding and refining. This stage involves the separation of the bran (outer protective layer) and the germ (nutrient rich core) from the endosperm (starchy part) of the wheat kernel.

Apart from the valuable wheat flour, the processing of wheat grains also generates two notable by products. Pollard, a coarse granular material, consists of the bran, germ, and fragments of the endosperm. This fiber rich and protein rich by product holds potential as a valuable component in animal feed formulations due to its nutritional composition. The second byproduct, chaff of grains, refers to the outer protective coverings and fragments that are separated during the milling process. While chaff does not possess significant nutritional value, it still finds utility as a potential ingredient in various applications such as composting or animal bedding.

#### Production Infrastructure

A wheat processing plant encompasses various components and facilities. The plant typically includes grain reception areas for unloading and storing wheat grains, cleaning, and conditioning equipment to remove impurities and adjust moisture levels and milling equipment to transform grains into flour. Storage facilities are essential for storing intermediate and finished products, while packaging and bagging are for appropriate branding and distribution convenience.

Quality control measures are necessary to ensure consistency and quality of the products, and sustainable use of utilities such as electricity, water, and sometimes steam in supporting plant's operations. Waste management systems and maintenance facilities are also part of the infrastructure to handle associated waste and equipment maintenance.

In addition to production infrastructure, a wheat processing plant needs to also include office spaces as part of its overall facility. These offices serve as administrative and management areas where various tasks related to the plant's operations are conducted.

## Financial Analysis

The financial analysis of the wheat processing facility considers a five-year investment period, assuming constant prices. The analysis incorporates a corporate tax rate of 30% with the real discount rate being 8%. There is an opportunity to increase profitability by utilizing the tax incentives. For example, Dar es Salaam Stock Exchange entrants, issuing at least 35% of their shares publicly, can enjoy a 25% reduced tax rate for three years. Agriculture investments benefit from a 100% capital allowance on agricultural equipment. Moreover, strategic investors, as per the Tanzania Investment Act, receive a withholding tax exemption on foreign bank interest, reducing costs and enhancing investment appeal. In addition to that and for prudence purposes, this analysis assumes delays of adoption by farmers, legislative and infrastructure improvements. It also considers climate realities, which, adjusts the expected cash flows. All these additional adjustments were to ensure that the analysis does not postulate unrealistic profits.

According to this analysis, an investment in the wheat processing facility proves to be profitable within the country. The profit margin stabilizes at 5.2%, indicating a moderate return on investment. The Net Present Value (NPV) is estimated at TZS 359,744,359 equivalent to US\$ 144,000 suggesting that the project has positive value and is financially viable. Furthermore, the Internal Rate of Return (IRR) is calculated at 10.20%, which is higher than the required rate of return. This indicates that the project is expected to generate returns that surpass the cost of capital, making it an attractive investment opportunity. Additionally, the Payback Period is determined to be 3.13 years, implying that the initial investment is projected to be recouped within a relatively short timeframe. There's significant potential for growth and improved cost efficiency, making it an attractive prospect for forward-thinking investors and therefore it is recommended for investment.

### Income Statement Indicators (Figures in TZS)

YEAR	01	02	03	04	05
Net Sales (A)	20,685,600,000	20,685,600,000	20,685,600,000	20,685,600,000	20,685,600,000
Input Costs (B)	18,379,920,000	18,379,920,000	18,379,920,000	18,379,920,000	18,379,920,000
Gross Margin (C = A - B)	2,305,680,000	2,305,680,000	2,305,680,000	2,305,680,000	2,305,680,000
Maintenance (D)	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000
Other Expenses and External Services (E)	103,180,000	103,180,000	103,180,000	103,180,000	103,180,000
Value Added (F = C - D - E)	2,190,500,000	2,190,500,000	2,190,500,000	2,190,500,000	2,190,500,000
Labour Costs (G)	480,800,000	480,800,000	480,800,000	480,800,000	480,800,000
EBITDA (H = F - G)	1,709,700,000	1,709,700,000	1,709,700,000	1,709,700,000	1,709,700,000
Depreciation (I)	187,800,000	187,800,000	187,800,000	187,800,000	187,800,000
Interest Expenses (K)	55,629,854	77,949,200	28,864,342	00	00
EBIT (J=H-I)	1,521,900,000	1,521,900,000	1,521,900,000	1,521,900,000	1,521,900,000
Profit Before Taxes (PBT) (L = J - K)	1,466,270,146	1,443,950,800	1,493,035,658	1,521,900,000	1,521,900,000
Income Tax (M)	439,881,044	433,185,240	447,910,697	456,570,000	456,570,000
Profit After Taxes (PAT) (N = L - M)	1,026,389,102	1,010,765,560	1,045,124,960	1,065,330,000	1,065,330,000
Profit Margin Rate [%] (O = N / A)	5.0%	4.9%	5.1%	5.2%	5.2%

## Financial Profitability Analysis (Figures in TZS)

YEAR	01	02	03	04	05
<b>REVENUES</b>					
Sales	20,685,600,000	20,685,600,000	20,685,600,000	20,685,600,000	20,685,600,000
Residual	00	00	00	00	2,752,800,000
Subtotal	20,685,600,000	20,685,600,000	20,685,600,000	20,685,600,000	23,438,400,000
<b>LOANS</b>					
Investment-Loans	1,000,000,000	00	00	00	00
Working Capital-Loan	1,581,325,000	00	00	00	00
Subtotal	2,581,325,000	00	00	00	00
<b>OWN RESOURCES</b>					
Investment-Own Resources	2,641,800,000	00	00	00	00
Working capital-Own Resources	00	00	00	00	00
Subtotal	2,641,800,000	00	00	00	00
<b>INVESTMENT COSTS</b>					
Initial investment	3,641,800,000	00	00	00	00
Replacement	00	00	00	50,000,000	00
Subtotal	3,641,800,000	00	00	50,000,000	00
<b>RECURRENT COSTS</b>					
Operation (internal resources + purchased)	18,769,920,000	18,769,920,000	18,769,920,000	18,769,920,000	18,769,920,000
General General (in cash & in kind)	205,980,000	205,980,000	205,980,000	205,980,000	205,980,000
Maintenance	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000
Subtotal	18,975,900,000	18,975,900,000	18,975,900,000	18,975,900,000	18,975,900,000
<b>FINANCIAL COSTS</b>					
Working Capital-Capital	1,581,325,000	00	00	00	00
Working Capital-Interest	00	00	00	00	00
Primary loan - Capital	176,858,825	387,028,158	436,113,016	00	00
Primary loan - Interest	55,629,854	77,949,200	28,864,342	00	00
Subtotal	1,813,813,679	464,977,359	464,977,359	00	00
<b>CASH FLOW</b>					
Cash flow before Adjustment	-1,821,580,000	1,820,220,000	1,820,220,000	1,770,220,000	4,573,020,000
<b>Adjusting Cash flows Uncertainty</b>					
Adoption rate by farmers	0.15	0.15	0.15	0.10	0.08
Legislative and Infrastructure improvement	0.15	0.15	0.15	0.10	0.08
Climate realities	0.15	0.15	0.15	0.10	0.08
Adjusted Net Cash flows	-1,001,869,000	1,001,121,000	1,001,121,000	1,239,154,000	3,475,495,200
<b>FINANCIAL COSTS</b>					
IRR	10.20%				
NPV	TZS 359,744,359				
Payback (years)	3.13				

# ENVIRONMENTAL ASSESSMENT



Based on the analysis conducted through EX-ACT Value Chain tool, this section presents a comprehensive overview of the project's environmental indicators. The assessment primarily focuses on Green House Gas (GHG) emissions.. This indicator is essential for evaluating the project's environmental impact and sustainability.

The results indicate a significant decrease in GHG emissions, with a recorded fall of approximately 5%. This was caused by prioritization in the adoption and utilization of environmentally friendly practices and technologies throughout the value chain. On implementing sustainable agricultural practices, such as improved handling and packaging, use of clean energy in processing and waste management, the project effectively mitigate the environmental impact associated with increased GHG emissions. Emphasizing on the use of eco-friendly technologies and practices will also contribute to the overall sustainability of the project, helping to minimize its carbon footprint and reduce environmental impact.

Moreover, tax exemption to the advance and eco-friendly equipment is of added advantage to invest in this value chain. In contrast, the analysis reveals a positive outcome in terms of food loss. However, the project has managed to reduce food losses, indicating improved efficiency in the handling and management of agricultural produce. This reduction in food loss is a positive outcome, as it contributes to food security and sustainability. Although the model shows a positive result, there is still an opportunity for further improvement. Employment of more advanced and improved post-harvest handling technologies and techniques will contribute to reduce food losses to single digit percentages.

## GHG Emissions

The estimation of greenhouse gas (GHG) emissions using the EX-ACT VC tool considers emissions for each actor and activity within the value chain starting from harvesting stage to consumers. The total GHG emissions were calculated by aggregating emissions across all activities and actors in both the current and planned scenarios. Positive environmental impact is indicated by a decrease in GHG emissions, represented by a green marker, while negative impact is shown by an increase in emissions, represented by a red marker. No significant impact is denoted by a yellow marker. In this specific analysis, the intervention resulted in a positive environmental impact as total GHG emissions decreased from 41,204 to 39,212 tCO<sub>2</sub>-e per year. However, large-scale farmers experienced a great positive change with a decrease of up to 22% in their GHG emissions. The impact of different activities along the value chain varied, with some showing a positive change indicating reduced emissions, while others had no significant impact. The monetary value of GHG emission has also decreased by US\$87,972 which shows a positive impact of the project to the society in general.





## GHG Emissions (tonnes of CO<sub>2</sub>-e)

Total GHG Emissions, entire Value Chain:		41,204	39,212		
GHG Emissions, by Category of Actor:		Current	Planned	Change	Change (%)
A: Smallholder Farmers	379	365	●	-14	● -4%
B: Medium Scale Farmers	15,273	14,703	●	-570	● -4%
C: Large Scale Farmers	25,552	19,986	●	-5,566	● -22%
D: Aggregators	0	2,614	●	2,614	● 0%
E: Processors	0	1,544	●	1,544	● 0%
F: Super Dealers	0	0	●	0	● 0%
G: Retailers	0	0	●	0	● 0%
N/A	0	0	●	0	● 0%
N/A	0	0	●	0	● 0%
GHG Emissions, by Activity:		Current	Planned	Change	Change (%)
Primary Production	40,048	34,551	●	-5,497	● -14%
Transport	951	1,087	●	136	● 14%
Processing	0	155	●	155	● 0%
Wastewater	0	0	●	0	● 0%
Packaging	205	421	●	217	● 106%
Storage	0	0	●	0	● 0%
New Infrastructure - Actor level	-	2,997	●	2,997	● 0%
New Infrastructure - VC level	-	0	●	0	● 0%

## Monetary Value of GHGs emitted in the value chain

Social Cost of Carbon (USD / tCO <sub>2</sub> -e)	\$44.15		
	Current	Planned	Change
Total Value (USD / tCO <sub>2</sub> -e / year)	\$1,819,165	\$1,731,193	● -\$87,972

### Total Food Losses

Food losses throughout the agrifood value chain have significant implications for the environment, economy, and society. The assessment of food loss considers the quantity of food lost in terms of metric MT, which occurs at various stages of the value chain from harvesting to consumer. The environmental impact of an agrifood value chain project is considered positive if the food loss value decreases, with a negative percentage change between the current and planned scenarios. In this analysis, the intervention resulted to a decrease in food losses from 5,509 to 4,917 metric MT, indicating a positive environmental impact. This reduction in food loss signifies an improvement in the project's sustainability and efficiency in managing food resources along the value chain. However, employment of more improved post-harvest handling technologies will further reduce food losses and enhance profitable agribusiness.

<b>Food Losses (tonnes)</b>					
<b>Total Food Losses, entire Value Chain:</b>	5,509	4,917			
<b>Food Losses, by Category of Actor:</b>	<b>Current</b>	<b>Planned</b>		<b>Change</b>	<b>Change (%)</b>
A: Smallholder Farmers	30	24	●	-6	-20%
B: Medium Scale Farmers	1,739	1,393	●	-346	-20%
C: Large Scale Farmers	3,740	2,441	●	-1,299	-35%
D: Aggregators	0	27	●	27	0%
E: Processors	0	1,032	●	1,032	0%
F: Super Dealers	0	0	●	0	0%
G: Retailers	0	0	●	0	0%
N/A	0	0	●	0	0%
N/A	0	0	●	0	0%
<b>Food Losses, by Activity:</b>	<b>Current</b>	<b>Planned</b>		<b>Change</b>	<b>Change (%)</b>
Primary Production	5,129	3,657	●	-1,472	-29%
Transport	0	0	●	0	0%
Processing	0	168	●	168	0%
Wastewater	0	436	●	436	0%
Packaging	0	0	●	0	0%
Storage	381	656	●	275	72%

The implementation of interventions along the value chain will contribute to the decline in the monetary value of food losses for primary actors, thanks to the planned improved agricultural practices. These interventions will enhance efficiency, reduced post-harvest losses, and improved food management. However, the monetary value of food losses will increase for non-primary actors, primarily due to their limited involvement or non-existence before the interventions. The decline in food losses among primary actors demonstrates the positive impact of the interventions, while the increase among non primary actors highlights the need for support and capacity building. Continued efforts to strengthen the value chain and provide resources can further reduce food losses and maximize the economic value of agricultural produce.

Overall, the environmental assessment conducted using the EX-ACT VC tool provides insights into the project's impact on GHG emissions and food loss. These findings are meant to guide future decision making processes and help identify areas where additional measures may be required to mitigate potential environmental challenges.





# SOCIO-ECONOMIC ASSESSMENT

The social economic assessment conducted using the EX-ACT VC tool is divided into three distinct categories: Production, Productivity and Value Added, Profitability and Employment Generation, focusing on Women and Youth participation. These categories encompass various aspects examined for increased understand of the social and economic implications of the project. The assessment considered factors such as changes in production levels, productivity enhancements, value addition, profitability measures, employment opportunities, and the involvement of women and youth in the project value chain. By analyzing these categories, a comprehensive understanding of the project's social and economic impacts was obtained.

## Production, Productivity and Value Added

In terms of primary production along the food value chain, an expectation was on the increase in production, while productivity rates remain constant. The production of the processed amount shows no significant impact, but there will be an increase in yield. Additionally, the production per labor unit of small food producers was projected to rise from 54,947.0 to 58,179.1, signaling improved efficiency.

Regarding the value-added dimension, which assesses the contribution of the production process to economic growth, a positive impact on the economic dimension was anticipated in the context of the agrifood value chain project or policy. This positive effect is to be expected if each value added measure shows an increase from the current scenario, and the difference between the current and planned scenario is positive. Consequently, along the value chain, the economic dimension in terms of value added displayed a positive trend, indicating a favorable impact on economic growth.


<b>Production and Productivity</b>	<b>Current</b>	<b>Planned</b>	<b>Change</b>	<b>Change (%)</b>
Total Primary Production (tonnes / year)	34,191	36,569	2,378	7%
Average Yield - primary product (tonnes / ha)	2.5	2.5	0.0	-1%
Total Amount Processed (tonnes / year)	0	0	0	0%
Average Yield - processed product (tonnes / ha)	0.0	0.8	0.8	0%
Production per labour unit of small-scale food producers	54,947.0	58,179.1	3,232.2	6%
<b>Value-Added</b>	<b>Current</b>	<b>Planned</b>	<b>Change</b>	<b>Change (%)</b>
Total Gross Production Value (USD / year)	14,463,433	54,668,867	40,205,434	278%
Total Gross Value Added (USD / year)	5,399,647	9,854,474	4,454,827	83%
Total Net Value Added (USD / year)	5,228,647	9,735,935	4,507,289	86%
<b>Share of Net Value-Added, by Category of Actors (%)</b>				
A: Smallholder Farmers	1%	0%	0%	-21%
B: Medium Scale Farmers	44%	32%	-11%	-26%
C: Large Scale Farmers	56%	39%	-17%	-31%
D: Aggregators	0%	3%	3%	0%
E: Processors	0%	10%	10%	0%
F: Super Dealers	0%	2%	2%	0%
G: Retailers	0%	13%	13%	0%
N/A	0%	0%	0%	0%
N/A	0%	0%	0%	0%

## Profitability

The profitability table below demonstrate the impact of the intervention on profit. This is in comparison to future scenarios for all actors in the value chain. There is an expectation of increase in profit across the board, signifying a positive outcome for the actors in the value chain. This anticipated increase in profit indicates improvements in financial performance and the economic viability of the project.

By implementing the intervention, actors involved in the value chain will experience enhanced profitability. This improvement is attributed to various factors such as an increase in production, reduced production costs, and enhanced market opportunities. The intervention is meant to lead to more efficient resource allocation, better utilization of inputs, and increased value creation throughout the value chain, resulting in higher profit margins for the value chain actors.

The positive impact on profit signify the potential for increased economic growth and sustainability within the agrifood sector. It also indicates that the intervention is set to successfully generate favorable conditions for the actors to generate higher revenue and achieve greater financial stability. This improved profitability contributes to the overall development and competitiveness of the agrifood value chain, attracting more investments and stimulating further growth of the sector.

<b>Profitability</b>	<b>Current</b>	<b>Planned</b>		<b>Change</b>	<b>Change (%)</b>
Profit Margin (%)					
A: Smallholder Farmers	19%	25%	●	6%	31%
B: Medium Scale Farmers	38%	43%	●	5%	12%
C: Large Scale Farmers	28%	34%	●	6%	21%
D: Aggregators	0%	18%	●	18%	0%
E: Processors	0%	5%	●	5%	0%
F: Super Dealers	0%	2%	●	2%	0%
G: Retailers	0%	7%	●	7%	0%
N/A	0%	0%	●	0%	0%
N/A	0%	0%	●	0%	0%
 Average Income of Small-Scale Producers	258	359	●	101	39%

## Employment Generation and Women and Youth Participation

### Employment Generation

Employment generated across the value chain is summarized for both current and planned scenarios. Jobs are a key pathway, and labor is the most important asset to generate steady income for a sustainable pathway out of poverty and towards shared prosperity. Thus, along the entire value chain, job opportunities were observed to increase from 945 in the current scenario to 1099 in the planned scenario for smallholder farmers, medium scale farmers and the aggregators.

### Women Participation

Women's participation in the value chain is categorized under; Number of women in ownership, number of women in managerial positions and the number of women employed as hired. This analysis reveals that, women ownership will increase from 33 in the current scenario to 69 in the planned scenarios. Other indicators along the value chain did not give any impact in both scenarios.

### Youth Participation

Youth participation is a key pathway towards social change, economic growth, and innovation. Youth participation in the value chain is categorized under; youth ownership which will increase from 37 in the current scenario to 70 in the planned scenario. The number of youths employed does not seem to be impacted in both scenarios. Moreover, through Building a Better Tomorrow (BBT)-Youth Initiative for Agribusiness program, it will contribute to increasing number of youths employed in the agriculture sector, and A number of youth led agribusiness enterprises.



<b>Employment generation</b>		Current	Planned	Change	Change (%)
Total Number of Jobs Created (No. / year)		945	1,099	154	16%
Total Number of Jobs Created by Category (No. / year)					
A: Smallholder Farmers		15	18	3	20%
B: Medium Scale Farmers		593	712	119	20%
C: Large Scale Farmers		337	337	0	0%
D: Aggregators		0	4	4	0%
E: Processors		0	28	28	0%
F: Super Dealers		0	0	0	0%
G: Retailers		0	0	0	0%
N/A		0	0	0	0%
N/A		0	0	0	0%
Share of Remunerated Jobs (%)		100%	100%	0%	0%
Average Daily Wage - Primary production (USD / year)		2.6	2.6	0.0	0%
Average Daily Wage - Post-primary production (USD / year)		0.0	0.0	0.0	0%
<b>Women participation</b>		Current	Planned	Change	Change (%)
Number of women owners		33	69	36	111%
Number of women employed		0	0	0	0%
Number of women in managerial positions		0	0	0	0%
Proportion of women in managerial positions		0	0	0	0%
<b>Youth participation</b>		Current	Planned	Change	Change (%)
Number of youth owners		37	70	33	89%
Number of youth employed		0	0	0	0%

## KEY RISKS AND MITIGATIONS

RISKS	POTENTIAL IMPACT	PROBABILITY	MITIGATION STRATEGIES
<b>Operational and Strategic Risks</b>			
Inadequate storage and processing facilities	High	High	<ul style="list-style-type: none"> <li>▶ Policies and strategies that attract and support investment in wheat storage and processing facilities are developed and implement in close collaboration between the government and private sectors.</li> <li>▶ Public Private Partnership projects in facilities development are undertaken to foster sector development.</li> <li>▶ Memorandum of Understanding between the Government and wheat processing companies (Such as wheat flour Milling companies and Breweries) is signed to work together on the development of local and regional storage facilities for increased wheat processing capacity.</li> </ul>
Shortage and low quality of wheat seed	High	High	<ul style="list-style-type: none"> <li>▶ The government through Tanzania Agricultural Research Institute (TARI), Tanzania Official Seed Certification Institute (TOSCI) and private sector spearhead research and production of pre-basic seeds for quality wheat seeds suited to weather conditions and soils of different parts of the country.</li> <li>▶ Increased collaboration of seed companies with the Agricultural Seed Agency (ASA) in expanding production and distribution of wheat seed for increased access of quality seeds and sensitized use of quality seeds in the country.</li> <li>▶ The government attract and increase private sector participation in wheat seed production, and distribution in the country.</li> </ul>

Low quality of agrochemicals such as fertilizers and pesticides	High	High	<ul style="list-style-type: none"> <li>▶ Increased enforcement and monitoring of agrochemical used in agricultural production based on the existing national regulations by the Tanzania's Plant Health and Pesticides Authority (TPHPA) in Tanzania.</li> <li>▶ Increased adherence of the private sector and agricultural producers on the importation and use of agro chemical based on the existing national regulations and safety standards.</li> <li>▶ Strengthened capacity of Tanzania's Fertilizer Regulatory Authority on the identification of counterfeit fertilizer and enforcement of laws to eliminate access and use of counterfeit products by the producers.</li> </ul>
Poor farm implements and low mechanization	High	High	<ul style="list-style-type: none"> <li>▶ Increased attraction and support to private sector participation in facilitating increased availability of affordable agricultural machineries for wheat production.</li> <li>▶ Increased public private partnership for increased access to modern and affordable technologies based on the local context and needs. This will be done in close collaboration with existing local institutions such as Centre of Agricultural Mechanization and Rural Technology (CAMARTEC) and Small Industries and development Organization (SIDO).</li> </ul>
<b>Health, Safety and Environmental Risks</b>			
Low/excessive rainfall can affect wheat production	High	Medium	<ul style="list-style-type: none"> <li>▶ Increasing access and use of weather information and advisory for informed decision and planning of agricultural activities.</li> <li>▶ Increased provision and use of agricultural insurance services against various perils, including weather related incidences.</li> <li>▶ Increased access and use of precision agricultural technologies through digital agricultural technologies, remote sensing, and geospatial information for efficient water use and increased agricultural productivity.</li> <li>▶ Spearheading for the development of preferred wheat seeds that sustain the impact of weather variation and climate change impacts.</li> <li>▶ Increased investment in water storage infrastructures, affordability, and availability of water efficient irrigation technologies in close collaboration with the National Irrigation Commission (NIRC) and with Basins Authorities in the country.</li> </ul>

Pests, weed and diseases can affect wheat production	Medium	Medium	<ul style="list-style-type: none"> <li>▷ Increased access to agricultural extension services and good agricultural practices to all agricultural producers targeting small and medium scale farmers.</li> <li>▷ Increased research and communication of findings in relation to emergency of pests and diseases for appropriate actions by the agricultural stakeholders in the country.</li> </ul>
New environmental regulations and sustainability practices requirement can reduce Wheat production.	Medium	Low	<ul style="list-style-type: none"> <li>▷ Public involvement in designing policies and laws in conservation and Sustainable practices.</li> <li>▷ Imparting agricultural practices that preserve environment while increasing agricultural produce</li> <li>▷ Introduce rewards opportunities for farmers involved and certified in Environmental conservation and sustainable agricultural</li> </ul>
<b>Legal, Regulatory and Political Risks</b>			
Regulatory and legal changes	Medium	Medium	<ul style="list-style-type: none"> <li>▷ Stay up to date with various transformation in the legal environment of your operations.</li> <li>▷ Comply with all old and newly introduced legal requirements in the sector.</li> <li>▷ Joining sectorial associations and advocacy groups to influence changes in policies, laws and regulations in the sector</li> <li>▷ Link and develop good formal relationships with sector regulators and facilitators to attain a sit in structuring regulatory framework in an industry.</li> </ul>
<b>Market and Financial Risks</b>			
Wheat Price fluctuations may arise due to changes in forces of demand and supply global supply and demand factors.	High	High	<ul style="list-style-type: none"> <li>▷ Farmers and their organizations need to invest in various marketing strategies for increased access to market information.</li> <li>▷ Farmers, producer organizations and local private sector and the Government needs to invest in Storage facilities to store a large quantity of wheat during peak production and/or the low demand seasons.</li> <li>▷ Empower National Food Reserve Agency (NFRA) to extend their operations into wheat to stabilize prices of wheat if needed.</li> <li>▷ Signing memorandum of understanding with wheat processors, to receive incentives in exchange of stable prices and contract farming</li> </ul>



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