



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

HAND IN HAND INITIATIVE IN TANZANIA

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# INTRODUCTION

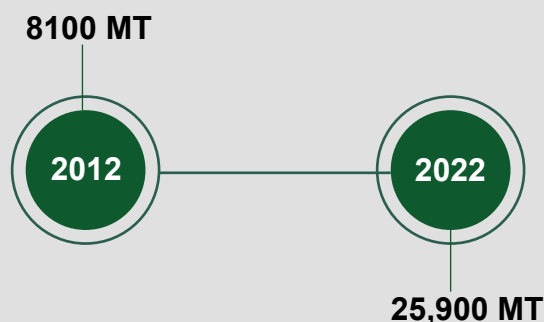
Soybean is a significant crop in Tanzania due to its nutritional value and versatile applications at both household and industrial levels. Increasing soybean production offers several benefits, including reducing the country's reliance on imports and preserving foreign exchange reserves. For instance, in 2021, Tanzania generated USD 75 million through soybean exports<sup>1</sup>.



**USD 75 Million**  
Soybean Exportation  
in 2021

The market potential for soya bean end products in Tanzania is substantial, given the country's total population of approximately 60 million people and a significant number of animals. Tanzania has the largest livestock population in Africa, the animal population includes approximately 36,584,883 cattle, 26,580,497 goats, 9,087,935 sheep, 3,670,229 pigs, and 97,940,331 chickens. This large consumer base presents a promising opportunity for the utilization of soybean products in various industries and sectors within Tanzania.

Soybean production is spread across a large part of the country. The widespread expansion of soybean production in the country is primarily due to its rising demand as a crucial component in animal feed. According to the ministry of agriculture, over the past decade, soybean production in Tanzania has shown steady growth, with the production volume rising from 8,100 MT in 2012 to 25,900 MT in 2022. The report linker<sup>2</sup>, which is a trade-based statistics database, estimated that the production of soybean in Tanzania is to reach 32,310 MT by 2026, growing at an average rate of 4.5% year on year. This is attributed by different government initiative to increase soybean production such as Tanzania Sustainable Soybean Initiative (TSSI) led by The Southern Agricultural Growth Corridor of Tanzania (SAGCOT).

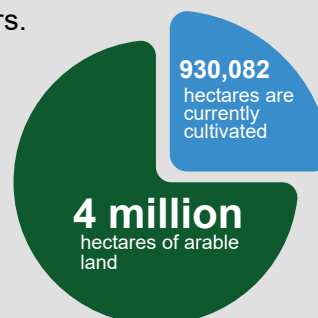


*Illustration of steady growth in soybean production in Tanzania (2012 vs 2022)*

## Challenges

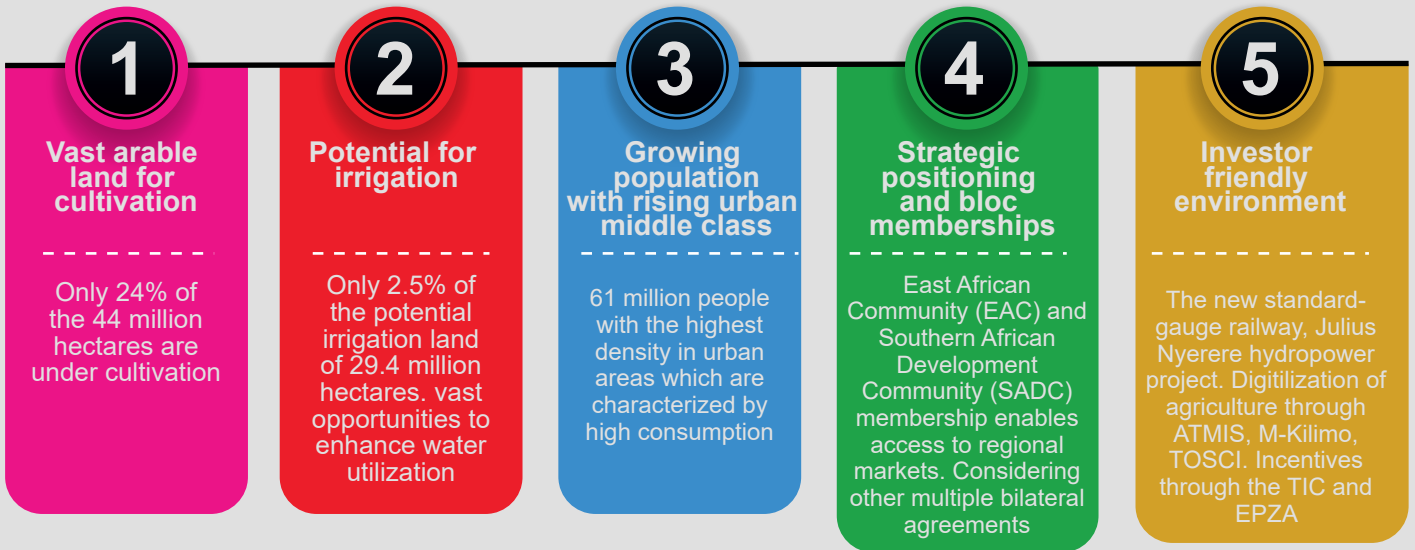
Soybean production in Tanzania faces several challenges including limited access and use of the improved quality seeds. Agricultural advisory and extension services are also yet to be improved to attain optimal productivity for soybean production despite ongoing efforts by the government. Furthermore, compared to countries from which substitute soybeans are imported, the cost of production in Tanzania is perceived to be higher attributed by low yield caused by limited use of agricultural input, machinery, and unavailability of appropriate seeds at affordable cost.

According to a Ruvuma agriculture regional officer, the total land area available in the Ruvuma region is about 6 million hectares which includes the arable land area covered by water, forest, and wildlife. Total arable land is estimated to be 4.0 million hectares, of which 930,082 hectares are currently used for agricultural crop cultivation based on the 2022/2023 regional information. However, the land area that is used for soybean production is currently not known because it is practiced mainly for subsistence agriculture. Soya bean production is also influenced by a warehouse receipt system that guarantee market to small scale producers.



# TANZANIA POTENTIAL

## SNAPSHOT

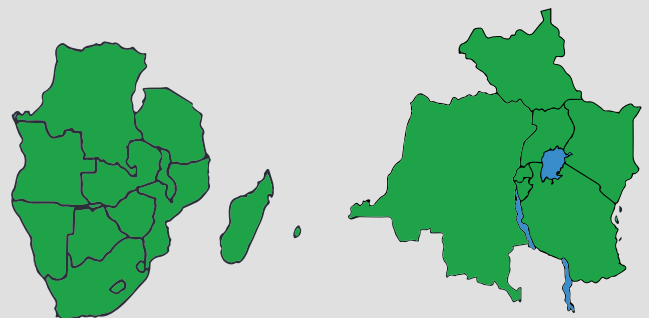


Tanzania boasts significant untapped investment potentials in its agricultural sector. With a vast expanse of arable land totaling 44 million hectares, only 10.8 million hectares (24%) are currently under cultivation, leaving substantial room for expansion and increased productivity. Similarly, the potential for irrigation covers 29.4 million hectares, but a mere 727,280.6 hectares (2.5%) are currently under irrigation, indicating vast opportunities to enhance water utilization and agricultural output. Moreover, along the value chain, various crop portfolios like horticulture, traditional cash crops, food crops, and oilseeds offer promising investment avenues.

The country's large and growing population of about 61 million people, coupled with a rising urban middle class and increased purchasing power, creates a significant consumer base and demand for goods and services.

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.

### Tanzania membership in various economic blocs



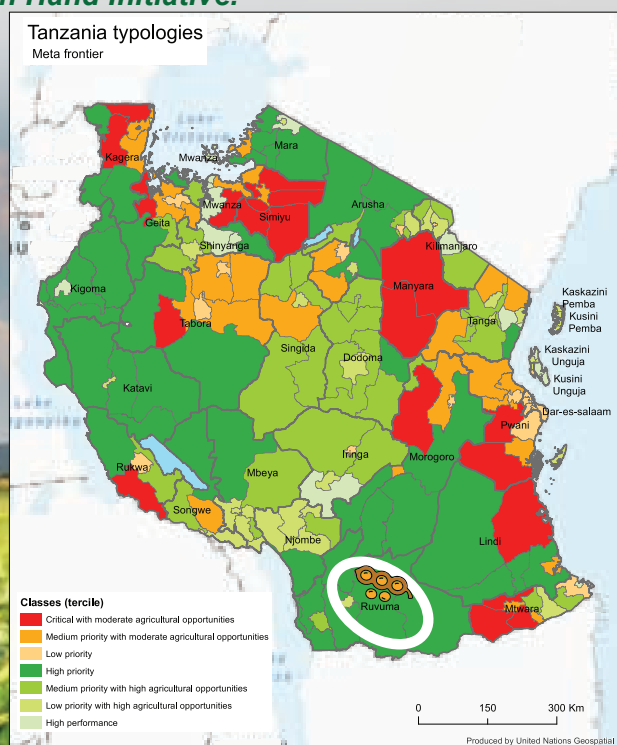
**SADC**  
(Southern African Development Community)

**EAC**  
(East African Community)

Tanzania offers an investor friendly environment. The new Standard Gauge Railway (SGR), and the Julius Nyerere hydropower project for power generation. The power station is expected to have an installed capacity of 2,115 megawatts (2,836,000 hp) and to produce 5,920GWh of power annually . Improved water and communication infrastructure. Additionally, the digitalization of the agricultural sector through online facilities like Farmers registration, Agricultural Trade Management Information System (ATMIS), M-Kilimo for increased access to extension services, and e-labeling from Tanzania Official Seed Certification Institute (TOSCI) enhances transparency and ease of doing business.

The Tanzania Investment Centre (TIC) offer streamlined services for permits and approvals, protection of private property rights through membership in international organizations like Multilateral Investment Guarantees Agency (MIGA) and The International Centre for Settlement of Investment Disputes (ICSID), and a favorable 10% import duty on semi processed goods. Additionally, investors benefit from a pay and refund scheme for excise duty on fuel, generous capital expenditure allowances, and VAT deferment on project capital goods. Zero rated VAT on agricultural exports, exemptions on essential agricultural items, and import duty drawbacks on raw materials for exports further promote investment.

***Shown on the map, is the Ruvuma region which is a Soybean prioritized region under the Hand in Hand Initiative.***



The Export Processing Zone Authority (EPZA) offers an initial ten-year exemption from corporate tax, followed by a corporate tax rate specified in the Income Tax Act<sup>4</sup>. 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. EPZA also streamlines export procedures by exempting pre-shipment and destination inspection requirements and facilitating onsite customs inspections. Investors receive business visas for key staff at the point of entry and an initial immigrant quota of up to five persons during the startup period.

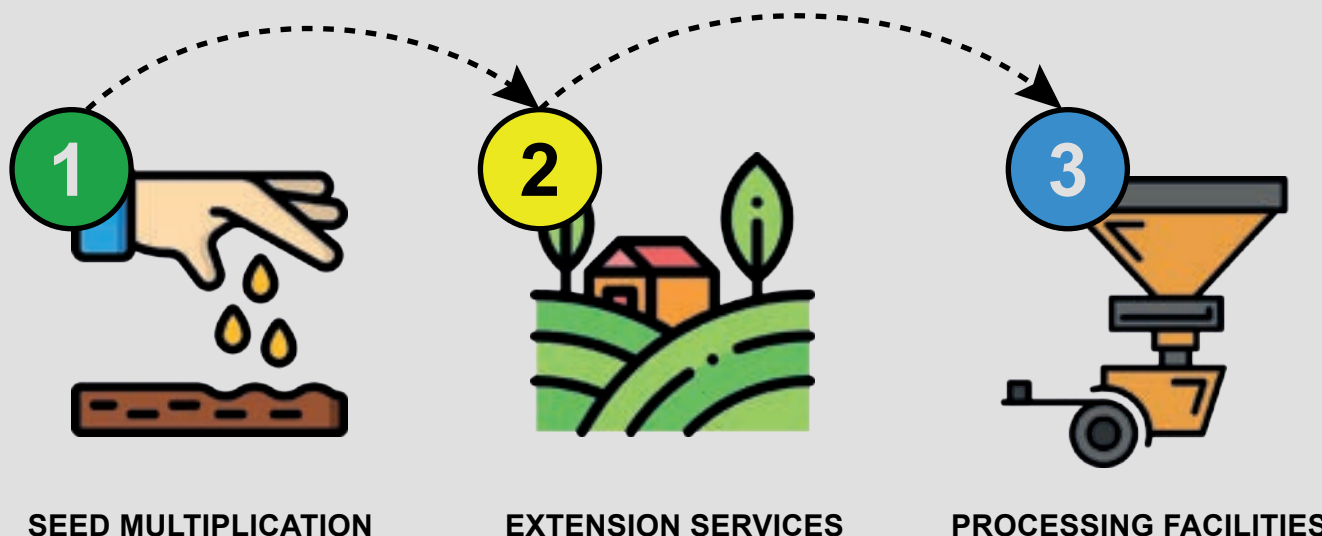
The government has implemented various measures to promote the domestic production and processing of soybean oil and boost the livestock sector. For soybean oil, a 10 percent Customs Duty has been levied for one year, up from the previous rate of 0 percent. This aims to bring the levels of crude soybean oil duties in line with other crude oils like sunflower and cotton, which are taxed at 10 percent. The goal is to encourage the production of edible oil seeds within the country, encourage foreign investment in the soybean value chain, and reduce foreign currency spent on oil imports.

Despite Tanzania not currently holding a cost advantage in soybean 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.

<sup>3</sup>URT (2020) Ministry of Energy Power Master Plan 2020 Update. <https://www.nishati.go.tz/uploads/documents/en-1638532283-PSMP%202020%20UPDATE%20FINAL%20signed.pdf>

<sup>4</sup><https://www.epza.go.tz/services/epz-sez-licensing>

# SOYBEAN INVESTMENT CASES



Investment opportunities in the soybean value chain are abundant, particularly in seed production, extension services, (supply of inoculants, fertilizer and portable farm machinery for fertilizer application, planting, weeding, post harvest handling technologies, transportation, branding) and processing industries. These opportunities arise from the existing gap in meeting the domestic demand for soybean in Tanzania. According to Songea Namtumbo Cooperative Union (SONAMCO) and information from the Ministry of Agriculture, the annual demand for soybean in the country is approximately 140,000 MT, while the current domestic production stands at around 30,000 MT per year. As a result, Tanzania relies on soybean imports from neighboring countries like Zambia and Malawi to bridge this supply deficit.

At the same time in country off takers are competing with foreign buyers who also buy Soybean from local producers. This, testifies a significant market potential and scope for investment in various stages of the soybean value chain to meet the internal demand, reduce reliance on imports and an opportunity to capitalize on foreign market. With the lucrative investment conditions in Tanzania as discussed previously, Soybean offers a promising opportunity for investment with positive returns on investment.

The Ruvuma Region in Tanzania offers favorable conditions for industrial development and thriving businesses in soybean value chain. With a population of over 1.56 million people, the region benefits from its strategic location within the Mtwara-Lindi Economic Growth Corridor, linking it to neighboring countries. It possesses abundant natural resources, including fertile land, access to water sources, waterfalls suitable for hydropower, and access to Lake Nyasa for fishing and tourism. Ruvuma's economic strength lies in its agricultural sector, with opportunities for modernization and commercialization. The region already has some small scale industries that can be upgraded to medium and large scale establishments. Infrastructure in the region includes stable electricity supply, waterfalls for hydropower, and well connected road network, water, and air transportation systems. It is in the light of this that, this economic and financial analysis presented hereunder, prioritized investment cases on Soybean seed multiplication, extension services and processing facilities.





## SEED MULTIPLICATION

### Background and Justification

This investment case involves economic and financial analysis for the establishment of a center dedicated to seed multiplication. It is crucial to address the issue of inadequate access to quality Soybean seeds to enable farmers to attain optimal productivity through reliable and genetically superior seeds that exhibit desirable traits such as disease resistance, high yield potential, and adaptability to local conditions.

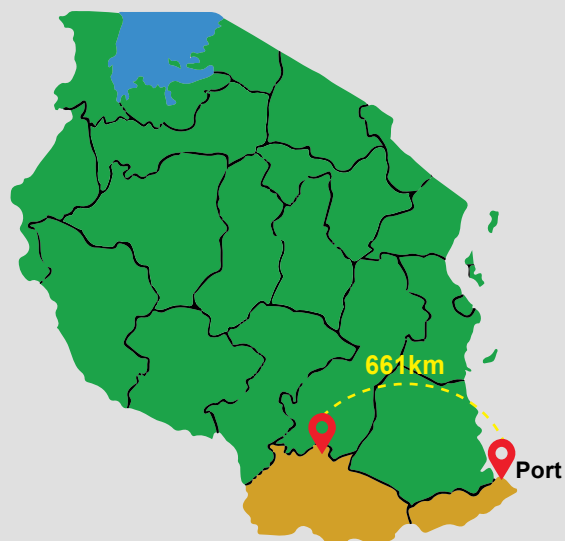
In the Ruvuma region, there is an estimated potential land area for irrigation of 197,000 hectares and 6,750 hectares available for soybean farming. Considering that the basic seed requirement for each hectare is 0.1MT, this translates to an annual seed demand of 675MT. To meet this demand and support the identified hectares, an investment in seed multiplication is necessary.

Based on the potential yield of one hectare of seed multiplication, which is 1.2 MT, it is determined that an investment in seed multiplication is needed for approximately 562.5 hectares. This will enable farmers to cultivate the available land and maximize their yields and being able to supply seeds to nearby regions and countries. The Agricultural Seed Agency (ASA) already has 3500 hectares of land for agricultural seed production in the Ruvuma region suitable for Soybean Seed Multiplication. Most of the land is already cleared, have access to power, water, and access roads. On ensuring that the land is effectively utilized, the land is opening to both public and private investors through the Public Private Partnership modality.

**1 hectare = 1.3MT** of seeds produced

**562 hectares** of land required for investment

**8,500 hectares** of land available for investment



*Strategic position of Ruvuma, 661km next to Mtwara port*

An investment in Soybean seed multiplication is suggested to take place in the Ruvuma region, primarily because it offers a comparative advantage of easy access to nearby markets and abundant land suitable for this activity. In addition to 3,500 hectares of land under ASA, the regional has also allocated 5,000 hectares of arable land with irrigation potential for seed multiplication purposes. The region is well connected with tarmac roads and has access to air transportation. Additionally, the presence of Mtwara port is advantageous, located some 661 kilometers away, facilitating efficient transportation and trade opportunities.

### Production Infrastructure

An investment in the production infrastructure for soybean seed multiplication includes various components such as land, 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), 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 support the cultivation, multiplication, processing, and storage of soybean seeds.

In the context of the Ruvuma region, most of the necessary infrastructures for the establishment of the soybean seed multiplication units are already in place. The presence of arable land, manpower and government support to facilitate the establishment of investment are among the few infrastructures available to support investment in Ruvuma region. With the ability to acquire these infrastructures, it becomes feasible to set up and establish a soybean seed multiplication unit in the region. In close collaboration with the local government authorities and through the public private partnership modality with ASA, any potential investors are assured to obtain the land that is required to achieve an annual production of at least 675 MT to meet the current demand for soybean production.

### Financial Analysis

The financial analysis of the soybean seed multiplication venture considers a five-year investment period. The analysis assumes a constant price and considers a yield of 1200 Kgs per acre, with a reasonable harvest area of 550 acres. The tax rate used for the analysis is 30% and 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 there will be delays of 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 profitability. Based on the analysis, an investment cost of 949,192,000 Tanzania shillings, equivalent to US\$ 379,676 in Soybean seed multiplication demonstrates profitability, with a stable profit margin of 10.1%. The payback period being estimated to be 3.45 years, indicating a relatively quick return on investment. The Net Present Value (NPV) amounts to TZS 26,800,548.85, reflecting positive returns over the five-year period. The Internal Rate of Return (IRR) is calculated at 8.57%, further indicating the attractiveness of the investment over the analysis period. These financial indicators suggest that the soybean seed multiplication venture is a viable and potentially lucrative investment opportunity.

#### Income Statement Indicators (Figures in TZS)

YEAR	01	02	03	04	05
Net Sales (A)	3,300,000,000	3,300,000,000	3,300,000,000	3,300,000,000	3,300,000,000
Input Costs (B)	2,620,750,000	2,620,750,000	2,620,750,000	2,620,750,000	2,620,750,000
Gross Margin (C = A - B)	679,250,000	679,250,000	679,250,000	679,250,000	679,250,000
Maintenance (D)	9,471,920	9,471,920	9,471,920	9,471,920	9,471,920
Other Expenses and External Services (E)	45,000,000	45,000,000	45,000,000	45,000,000	45,000,000
Value Added (F = C - D - E)	624,778,080	624,778,080	624,778,080	624,778,080	624,778,080
Labour Costs (G)	129,200,000	129,200,000	129,200,000	129,200,000	129,200,000
EBITDA (H = F - G)	495,578,080	495,578,080	495,578,080	495,578,080	495,578,080
Depreciation (I)	21,782,280	21,782,280	21,782,280	21,782,280	21,782,280
Interest Expenses (K)	17,527,637	3,717,584	00	00	00
EBIT (J=H-I)	473,795,800	473,795,800	473,795,800	473,795,800	473,795,800
Profit Before Taxes (PBT) (L = J - K)	456,268,163	470,078,216	473,795,800	473,795,800	473,795,800
Income Tax (M)	136,880,449	141,023,465	142,138,740	142,138,740	142,138,740
Profit After Taxes (PAT) (N = L - M)	319,387,714	329,054,751	331,657,060	331,657,060	331,657,060
Profit Margin Rate [%] (O = N / A)	9.7%	10.0%	10.1%	10.1%	10.1%



## Financial Profitability Analysis (Figures in TZS)

YEAR	01	02	03	04	05
<b>REVENUES</b>					
Sales	3,300,000,000	3,300,000,000	3,300,000,000	3,300,000,000	3,300,000,000
Residual	00	00	00	00	840,280,600
Subtotal	3,300,000,000	3,300,000,000	3,300,000,000	3,300,000,000	4,140,280,600
<b>LOANS</b>					
Investment-Loans	00	00	00	00	00
Working Capital-Loan	701,105,480	223,055,037	00	00	00
Subtotal	1,266,105,480	223,055,037	00	00	00
<b>OWN RESOURCES</b>					
Investment-Own Resources	949,192,000	00	00	00	00
Working capital-Own Resources	00	00	00	00	00
Subtotal	384,192,000	00	00	00	00
<b>INVESTMENT COSTS</b>					
Initial investment	949,192,000	00	00	00	00
Replacement	00	00	00	00	00
Subtotal	949,192,000	00	00	00	00
<b>RECURRENT COSTS</b>					
Operation	2,730,750,000	2,730,750,000	2,730,750,000	2,730,750,000	2,730,750,000
General	73,671,920	73,671,920	73,671,920	73,671,920	73,671,920
Maintenance	9,471,920	9,471,920	9,471,920	9,471,920	9,471,920
Subtotal	2,804,421,920	2,804,421,920	2,804,421,920	2,804,421,920	2,804,421,920
<b>FINANCIAL COSTS</b>					
Working Capital-Capital	701,105,480	223,055,037	00	00	00
Working Capital-Interest	17,527,637	3,717,584	00	00	00
Primary loan-Capital	00	00	00	00	00
Primary loan-Interest	00	00	00	00	00
Subtotal	1,283,633,117	226,772,621	00	00	00
<b>CASH FLOW</b>					
Cash flow before Adjustments	- 453,613,920	495,578,080	495,578,080	495,578,080	1,335,858,680
<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	-453,613,920	272,567,944	272,567,944	346,904,656	1,015,252,596
<b>FINANCIAL COSTS</b>					
IRR	8.57%				
NPV	TZS 26,800,548.85				
Payback (years)	3.45				



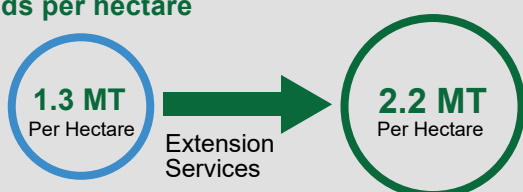
# EXTENSION SERVICES

## Background and Justification

This model suggests using extension services centers for soybean. Extension service offers technical advice on soybean to farmers, and also supplies them with the necessary inputs and services to support their soybean production. It provides information to farmers and passes to the farmer's new ideas developed by soybean research stations. Agricultural extension programmes cover a broad area including improved water management, and the control of weeds, pests or plant diseases.

In the extension service model, the entity will allocate the required resources to provide comprehensive extension services. These services will be offered to smallholder and medium scale farmers based on a commission structure tied to their revenues. By enhancing farmers' yields from 1.3 MT per hectare to 2.2 MT per hectare, the extension service provider will be entitled to a portion of the increase. Initially, a proposed rate of 0.1 MT per hectare can be charged for the services rendered, amounting to TZS 110,000 per hectare equivalent to USD 50. This arrangement ensures that the extension service provider is fairly compensated for their assistance in improving farmers' productivity and yields.

### Yields per hectare



**USD 50**

charged for services per hectare = TZS 110,000

## Production Infrastructure

Establishment of the necessary facilities and resources to effectively deliver extension services to farmers also include post-harvest handling. This includes physical infrastructure such as centers or offices where farmers can access information and guidance, as well as technological infrastructure such as communication tools, computer systems, printers, digital gadgets, and internet connectivity to facilitate knowledge sharing and remote assistance.

Additionally, the production infrastructure may include vehicles, motorbikes, and bicycles for extension workers to reach farmers in remote areas, equipment and tools for demonstrations and field trials, and training facilities to enhance the capacity of extension staff. The production infrastructure also needs to consider the availability of resources like educational materials, reference books, audio visual aids, and demonstration plots or farms where farmers can observe and learn best practices. These resources contribute to effective knowledge transfer and practical learning experiences for farmers.

Furthermore, the production infrastructure may involve establishing partnerships and collaborations with ongoing government initiatives such as Building Better Tomorrow (BBT), Tanzania Sustainable Soybean Initiative and ongoing research at various institutions, universities, and other stakeholders to leverage their expertise and resources in delivering quality extension services. For example, in the Ruvuma region, it is necessary to establish a strong relationship with the Tanzania Agriculture Research Institute (TARI) through the Uyole Research centre, the Sokoine University of Agriculture (SUA), College of Agricultural Sciences and Technology at Mbeya University of Science and Technologies, COPRA and Cereals and other Produce Board (CPB).

In summary, the production infrastructure for agriculture extension services provision encompasses physical, technological, and knowledge resources that enable the effective delivery of extension services to farmers. It involves setting up facilities, equipment, and partnerships to ensure timely and relevant information dissemination, capacity building, and practical support to improve agricultural practices and enhance farmers' productivity and livelihoods.

## Financial Analysis

The financial analysis of the soybean extension services provision considers a five-year investment period, assuming constant prices of inputs and output for the period of five years and the ability to serve 3,500 hectares per year. The tax rate used for the analysis is 30% and 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.

For prudence purposes, this analysis assumes there will be delays of adoption by farmers, legislative & infrastructure improvements, and willingness of the farmers to pay for the extension services. 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 profitability.

According to the analysis, the analyzed investment cost of 301,000,000 Tanzania shillings, equivalent to US\$ 120,400 proves to be profitable. The profit margin stabilizes at 26.1%, indicating a healthy return on investment. The Net Present Value (NPV) is estimated at TZS 25,423,469.22 equivalent to US\$ 10,169, suggesting that the project has positive value and is financially viable. Furthermore, the Internal Rate of Return (IRR) is calculated at 9.93%, 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 3.82 years, implying that the initial investment is projected to be recouped within a convenient timeframe.

Based on these financial indicators, it is evident that the soybean extension services project is financially feasible and holds promising prospects for generating profits and providing a positive return on investment and therefore is recommended.

### Income Statement Indicators (Figures in TZS)

YEAR	01	02	03	04	05
Net Sales (A)	385,000,000	385,000,000	385,000,000	385,000,000	385,000,000
Input Costs (B)	38,500,000	38,500,000	38,500,000	38,500,000	38,500,000
Gross Margin (C = A - B)	346,500,000	346,500,000	346,500,000	346,500,000	346,500,000
Maintenance (D)	3,850,000	3,850,000	3,850,000	3,850,000	3,850,000
Other Expenses and External Services (E)	22,500,000	22,500,000	22,500,000	22,500,000	22,500,000
Value Added (F = C - D - E)	320,150,000	320,150,000	320,150,000	320,150,000	320,150,000
Labour Costs (G)	154,800,000	154,800,000	154,800,000	154,800,000	154,800,000
EBITDA (H = F - G)	165,350,000	165,350,000	165,350,000	165,350,000	165,350,000
Depreciation (I)	21,925,000	21,925,000	21,925,000	21,925,000	21,925,000
Interest Expenses (K)	6,254,270	00	00	00	00
EBIT (J=H-I)	143,425,000	143,425,000	143,425,000	143,425,000	143,425,000
Profit Before Taxes (PBT) (L = J - K)	137,170,730	143,425,000	143,425,000	143,425,000	143,425,000
Income Tax (M)	41,151,219	43,027,500	43,027,500	43,027,500	43,027,500
Profit After Taxes (PAT) (N = L - M)	96,019,511	100,397,500	100,397,500	100,397,500	100,397,500
Profit Margin Rate [%] (O = N / A)	24.9%	26.1%	26.1%	26.1%	26.1%



## Financial Profitability Analysis (Figures in TZS)

YEAR	01	02	03	04	05
<b>REVENUES</b>					
Sales	385,000,000	385,000,000	385,000,000	385,000,000	385,000,000
Residual	0.00	0.00	0.00	0.00	209,375,000
Subtotal	385,000,000	385,000,000	385,000,000	385,000,000	594,375,000
<b>LOANS</b>					
Investment-Loans	0.00	0.00	0.00	0.00	0.00
Working Capital-Loan	91,520,833.33	0.00	0.00	0.00	0.00
Subtotal	91,520,833.33	0.00	0.00	0.00	0.00
<b>OWN RESOURCES</b>					
Investment-Own Resources	301,000,000.00	0.00	0.00	0.00	0.00
Working capital-Own Resources	0.00	0.00	0.00	0.00	0.00
Subtotal	301,000,000.00	0.00	0.00	0.00	0.00
<b>INVESTMENT COSTS</b>					
Initial investment	301,000,000.00	0.00	0.00	0.00	0.00
Replacement	0.00	0.00	0.00	0.00	0.00
Subtotal	301,000,000.00	0.00	0.00	0.00	0.00
<b>RECURRENT COSTS</b>					
Operation	38,500,000.00	38,500,000.00	38,500,000.00	38,500,000.00	38,500,000.00
General	181,150,000.0	181,150,000.0	181,150,000.0	181,150,000.0	181,150,000.0
Maintenance	3,850,000.00	3,850,000.00	3,850,000.00	3,850,000.00	3,850,000.00
Subtotal	219,650,000.00	219,650,000.00	219,650,000.00	219,650,000.00	219,650,000.00
<b>FINANCIAL COSTS</b>					
Working Capital-Capital	91,520,833.33	0.00	0.00	0.00	0.00
Working Capital-Interest	6,254,270.30	0.00	0.00	0.00	0.00
Subtotal	97,775,103.64	0.00	0.00	0.00	0.00
<b>CASH FLOW</b>					
Cash flow before Adjustments	-145,550,000	155,450,000	155,450,000	155,450,000	346,825,000
<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	-80,052,500	85,497,500	85,497,500	108,815,000	263,587,000
<b>FINANCIAL COSTS</b>					
IRR					9.93%
NPV					TZS 25,423,469.22
Payback (years)					3.82



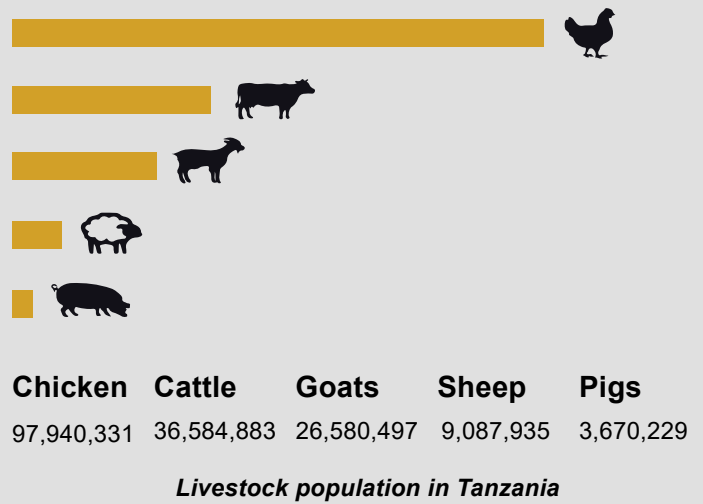
# SOYBEAN PROCESSING FACILITIES

## Background and Justification

This investment case suggests establishing processing facilities in the soybean production area to add value to the soybean crop. Instead of solely focusing on reducing losses through improved logistics and services, the objective is to transform soybeans into value added processed products or by products that have a longer shelf life, thus minimizing losses and increasing value along the value chain. The proposed model includes the processing of raw soybeans to produce food, animal and fish feeds.

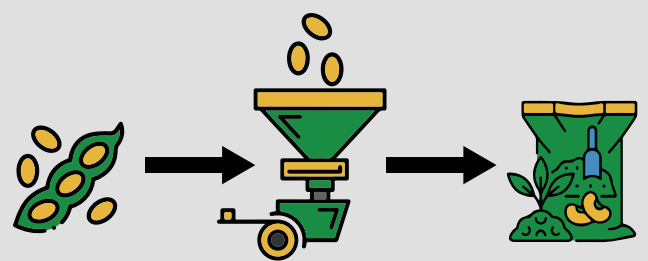
Considering the significant intervention in soybean seed multiplication and extension services, it is necessary to establish a soy processing factory that will serve as the primary market for the produced soybeans. With the expected high annual production of soybeans after the intervention, the model suggests the establishment of processing industries in Tanzania, especially in high soybean producing areas in the country including Namtumbo, Songea, and Madaba districts in the Ruvuma region.

This decentralized approach ensures accessibility and market availability for soybean producers in these districts, promoting local economic development and enhancing the value chain within the soybean industry.



## Production Infrastructure

The production infrastructure for soybean animal food pellet production involves setting up specialized machinery and equipment to process soybean and other ingredients into compacted food pellets and soybean cake. It includes a pelletizing machine, feeding system, grinding, and mixing equipment, conditioning and pelletizing chambers, cooling and packaging systems, and auxiliary equipment. The infrastructure aims to optimize the processing of soybean into high quality pellets for animals, ensuring efficiency and consistency in production.



*Machinery specialized in processing soybeans into compacted food pellets*



## Financial Analysis

The financial analysis of the soybean processing facility considers a five-year investment period, assuming constant prices. The analysis incorporates a corporate tax rate of 30% and considers only one stream of revenues, animal feeds. The 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.

Furthermore, and for prudence purposes, the analysis assumes that there will be delays of 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 profitability.

According to the analysis, the investment of 454,600,000 Tanzania Shillings equivalent to US\$ 181,840 proves to be profitable. The profit margin stabilizes at 3.5%, indicating a healthy return on investment. The Net Present Value (NPV) is estimated at TZS 48,560,179 equivalent to US\$19,424, suggesting that the project has positive value and is financially viable. Furthermore, the Internal Rate of Return (IRR) is calculated at 10.39%, 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 3.2 years, implying that the initial investment is projected to be recouped within a relatively short timeframe.

Based on these financial indicators, it is evident that the soybean processing facility project is financially feasible and holds promising prospects for generating profits and providing a positive return on investment and therefore the three facilities are recommended.

### Income Statement Indicators (Figures in TZS)

YEAR	01	02	03	04	05
Net Sales (A)	5,264,220,000	5,264,220,000	5,264,220,000	5,264,220,000	5,264,220,000
Input Costs (B)	4,677,454,000	4,677,454,000	4,677,454,000	4,677,454,000	4,677,454,000
Gross Margin (C = A - B)	586,766,000	586,766,000	586,766,000	586,766,000	586,766,000
Maintenance (D)	4,660,000	4,660,000	4,660,000	4,660,000	4,660,000
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)	478,926,000	478,926,000	478,926,000	478,926,000	478,926,000
Labour Costs (G)	190,050,000	190,050,000	190,050,000	190,050,000	190,050,000
EBITDA (H = F - G)	288,876,000	288,876,000	288,876,000	288,876,000	288,876,000
Depreciation (I)	25,775,000	25,775,000	25,775,000	25,775,000	25,775,000
Interest Expenses (K)	00	00	00	00	00
EBIT (J=H-I)	263,101,000	263,101,000	263,101,000	263,101,000	263,101,000
Profit Before Taxes (PBT) (L = J - K)	263,101,000	263,101,000	263,101,000	263,101,000	263,101,000
Income Tax (M)	78,930,300	78,930,300	78,930,300	78,930,300	78,930,300
Profit After Taxes (PAT) (N = L - M)	184,170,700	184,170,700	184,170,700	184,170,700	184,170,700
Profit Margin Rate [%] (O = N / A)	3.5%	3.5%	3.5%	3.5%	3.5%



## Financial Profitability Analysis (Figures in TZS)

YEAR	01	02	03	04	05
<b>REVENUES</b>					
Sales	5,264,220,000	5,264,220,000	5,264,220,000	5,264,220,000	5,264,220,000
Residual	00	00	00	00	340,725,000
Subtotal	5,264,220,000	5,264,220,000	5,264,220,000	5,264,220,000	5,604,945,000
<b>LOANS</b>					
Investment-Loans	00	00	00	00	00
Working Capital-Loan	414,612,000	125,736,000	00	00	00
Subtotal	414,612,000	125,736,000	00	00	00
<b>OWN RESOURCES</b>					
Investment	454,600,000	00	00	00	00
Working capital	00	00	00	00	00
Subtotal	454,600,000	00	00	00	00
<b>INVESTMENT COSTS</b>					
Initial investment	454,600,000	00	00	00	00
Replacement	00	00	00	15,000,000	00
Subtotal	454,600,000	00	00	15,000,000	00
<b>RECURRENT COSTS</b>					
Operation	4,776,704,000	4,776,704,000	4,776,704,000	4,776,704,000	4,776,704,000
General	198,640,000	198,640,000	198,640,000	198,640,000	198,640,000
Maintenance	4,660,000	4,660,000	4,660,000	4,660,000	4,660,000
Subtotal	4,975,344,000	4,975,344,000	4,975,344,000	4,975,344,000	4,975,344,000
<b>FINANCIAL COSTS</b>					
Working Capital-Capital	414,612,000	125,736,000	00	00	00
Working Capital-Interest	00	00	00	00	00
Subtotal	414,612,000	125,736,000	00	00	00
<b>CASH FLOW</b>					
Cash flow before Adjustments	223,440,000	231,160,000	231,160,000	216,160,000	571,885,000
<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	122,892,000.00	127,138,000	127,138,000	151,312,000	434,632,600
<b>FINANCIAL COSTS</b>					
IRR	10.39%				
NPV	TZS 48,560,179				
Payback (years)	3.20				

# ENVIRONMENTAL ASSESSMENT

This section provides a summary of the environmental indicators analyzed using the EX-ACT VC tool, specifically focusing on GHG emissions, water usage, and food loss. The results indicate an increase in GHG emissions due to the higher production levels achieved by small and medium farmers in the planned scenario. The impact of food loss is expected to decrease in the planned scenario due to the implementation of additional processing facilities and extension services along the value chain. The analysis does not discuss the total water usage as it is not considered a significant factor in the value chain especially during the processing and the analysis started from the harvest to the end user.

## GHG Emissions

<b>GHG Emissions</b> (tonnes of CO2-e)						
<b>Total GHG Emissions, entire Value Chain:</b>		7,262	9,318			
<b>GHG Emissions, by Category of Actor:</b>		Current	Planned	Change	Change (%)	
A: Smallholder Farmers		4,380	4,317	●	-63	-1%
B: Medium Scale Farmers		1,117	1,665	●	549	49%
C: Large Scale Farmers		1,750	1,435	●	-314	-18%
D: Processors		6	1,739	●	1,733	29797%
E: Super Dealers		0	0	●	0	0%
F: Retailers		9	161	●	152	1637%
N/A		0	0	●	0	0%
N/A		0	0	●	0	0%
N/A		0	0	●	0	0%
<b>GHG Emissions, by Activity:</b>		Current	Planned	Change	Change (%)	
Primary Production		7,012	7,084	●	72	1%
Transport		193	587	●	394	205%
Processing		1	121	●	120	14680%
Wastewater		0	0	●	0	0%
Packaging		56	141	●	84	150%
Storage		0	0	●	0	0%
New Infrastructure - Actor level		-	1,350	●	1,350	0%
New Infrastructure - VC level		-	0	●	0	0%

The environmental impact assessment of the project considers changes in GHG emissions, represented by different markers. A green marker signifies a positive impact with a decrease in emissions, a red marker indicates a negative impact with an increase in emissions, and a yellow marker implies no significant impact. Along the value chain, the intervention leads to an increase in GHG emissions from medium farmers and processors due to the use of high quality seeds and subsequent increase in production. However, for large farmers and Small scale farmers with improved farming practices leads to decline in emissions. Furthermore, activities throughout the value chain contribute to an overall increase in GHG emissions, resulting in a negative environmental impact for the project. Considering the goal of increasing production and productivity, the increase in GHG from increased from the project interventions, an emphasis on adoption and use environmentally friendly practices and technologies across the value chain is encouraged.

<b>Monetary Value of GHGs emitted in the value chain</b>			
Social Cost of Carbon (USD / tCO2-e)	\$44.15		
	Current	Planned	Change
Total Value (USD/tCO2-e/year)	\$320,621	\$411,392	● \$90,771

## Total Food Losses

<b>Food Losses (tonnes)</b>					
<b>Total Food Losses, entire Value Chain:</b>	310	255			
<b>Food Losses, by Category of Actor:</b>	<b>Current</b>	<b>Planned</b>		<b>Change</b>	<b>Change (%)</b>
A: Smallholder Farmers	219	133	●	-86	-39%
B: Medium Scale Farmers	55	49	●	-6	-11%
C: Large Scale Farmers	28	28	●	0	0%
D: Processors	8	46	●	37	442%
E: Super Dealers	0	0	●	0	0%
F: Retailers	0	0	●	0	0%
N/A	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	262	150	●	-112	-43%
Transport	0	0	●	0	0%
Processing	0	0	●	0	0%
Wastewater	0	0	●	0	0%
Packaging	0	10	●	10	0%
Storage	0	96	●	96	0%

Food losses within the value chain have significant implications for the environment, economy, and society. These losses occur at various stages of the value chain and are measured in terms of quantity, expressed in metric MT. In the context of an agrifood value chain project, a positive environmental impact is observed when the value of food losses decreases, accompanied by a negative percentage change between the two scenarios. The provided table illustrates that food losses are estimated to decrease, primarily attributed to the increased presence of processing facilities that effectively reduce distances and transportation related losses.

Significant losses in the value chain of harvested produce occur mainly during the harvesting and transportation stages. To combat these issues, there is a focus on employing improved technologies. In the harvesting phase, the use of mechanized equipment, efficient techniques, and proper handling can minimize post harvest losses, enhancing efficiency and preserving quality. In the transportation stage, advanced technologies, including improved storage, packaging techniques, and temperature controlled transit, can reduce losses by maintaining freshness and ensuring timely delivery to markets. The encouragement and adoption of these innovative technologies across the value chain contribute to loss mitigation, overall efficiency enhancement, optimization of productivity, reduction of food waste, and increased economic viability.



# SOCIAL ECONOMIC ASSESSMENT

The results of social economic assessment exhibit an increase in both production and productivity rate for the transition from the current to the planned scenario within the agrifood value chain. In order for the Project or Policy to have a positive impact on the economic dimension, each measure of value added should increase compared to the current scenario, with a positive change observed between the current and planned scenarios.

This growth can be attributed to the availability of a larger quantity of high quality seeds at a lower price, provision of enhanced extension services and improved processing facilities. Therefore, it is noteworthy that the value added from the harvest stage along the value chain indicated a positive economic impact resulting from the agrifood value chain project. Integration of this Project with the women and youth inclusion Program popularly known as Building a Better Tomorrow (BBT) will improve community livelihood and raise their income.

## Production, Productivity and Value Added

<b>Production and Productivity</b>	<b>Current</b>	<b>Planned</b>	<b>Change</b>	<b>Change (%)</b>
Total Primary Production (tonnes / year)	7,991	14,950	6,959	87%
Average Yield - primary product (tonnes / ha)	1.5	2.2	0.7	48%
Total Amount Processed (tonnes / year)	175	9,785	9,609	5482%
Average Yield - processed product (tonnes / ha)	0.8	0.8	0.1	9%
Production per labour unit of small-scale food producers	11,478.2	18,484.7	7,006.5	61%
<b>Value-Added</b>				
	<b>Current</b>	<b>Planned</b>	<b>Change</b>	<b>Change (%)</b>
Total Gross Production Value (USD / year)	4,280,673	31,811,765	27,531,091	643%
Total Gross Value Added (USD / year)	2,158,502	6,543,029	4,384,527	203%
Total Net Value Added (USD / year)	1,802,331	6,083,053	4,280,722	238%
<b>Share of Net Value-Added, by Category of Actors (%)</b>				
A: Smallholder Farmers	44%	42%	-2%	-4%
B: Medium Scale Farmers	11%	15%	4%	39%
C: Large Scale Farmers	43%	13%	-30%	-70%
D: Processors	1%	17%	16%	1746%
E: Super Dealers	0%	6%	6%	1773%
F: Retailers	1%	6%	5%	460%
N/A	0%	0%	0%	0%
N/A	0%	0%	0%	0%
N/A	0%	0%	0%	0%

In the transition from the current scenario to the planned scenario, both production and productivity rates exhibit an increase within the agrifood value chain. This growth is attributed to the availability of a larger quantity of high quality seeds at a lower price, as well as the implementation of enhanced extension services and improved processing facilities. These factors collectively contribute to the overall increase in production and productivity along the value chain.

The economic dimension of the agrifood value chain project is assessed through the measurement of value added, which represents the contribution of the production process to economic growth. For the project or policy to have a positive impact on the economic dimension, each measure of value added should increase compared to the current scenario, with a positive change observed between the current and planned scenarios. Therefore, it is noteworthy that value is added in the seed stage along the value chain, indicating a positive economic impact resulting from the prioritized investment cases.

## Profitability

The table presented below illustrates the positive impact of the intervention on profitability for all actors within the value chain, as compared to the current scenarios. The estimated profitability has shown an increase across various actors, attributed to the improved productivity resulting from the availability of low cost seeds and the implementation of enhanced processing facilities. These factors have collectively contributed to the overall profitability enhancement along the value chain.

<b>Profitability</b>	<b>Current</b>	<b>Planned</b>	<b>Change</b>	<b>Change (%)</b>
<b>Profit Margin (%)</b>				
A: Smallholder Farmers	20%	37%	17%	88%
B: Medium Scale Farmers	19%	49%	30%	155%
C: Large Scale Farmers	64%	58%	-7%	-10%
D: Processors	2%	11%	9%	443%
E: Super Dealers	1%	4%	3%	286%
F: Retailers	2%	3%	1%	52%
N/A	0%	0%	0%	0%
N/A	0%	0%	0%	0%
N/A	0%	0%	0%	0%
Average Income of Small-Scale Producers	221	755	535	242%

## Employment Generation and Women and Youth Participation

The employment opportunities generated within the value chain were analyzed and compared between current and planned scenarios. Recognizing the significance of jobs in uplifting individuals from poverty and fostering shared prosperity, employment serves as a crucial pathway towards sustainable income generation. The findings indicate there will be a notable increase in job opportunities along the entire value chain, specifically from 1674 in the current scenario to 2401 in the planned scenario. This growth in employment is attributed to the higher production levels resulting from increased access and use of high quality soybean seeds, particularly benefiting smallholder and medium scale farmers in the planned scenario.

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. Thus, along the value chain, increased production and processing facilities will result to the increase of youth and women ownership, as well as the number of youth and women employed in the planned scenarios. The degree of empowerment can shall be measured from the number of established profitable enterprises and youth/women led agribusinesses.

This milestone can be achieved through the PPP (Public Private Partnership) in line with the BBT program. In terms of implementation and partnership, a spoke and hub model will be adopted to facilitate effective involvement.

<b>Employment generation</b>	<b>Current</b>	<b>Planned</b>	<b>Change</b>	<b>Change (%)</b>
Total Number of Jobs Created (No. / year)	1,674	2,401	727	43%
<b>Total Number of Jobs Created by Category (No. / year)</b>				
A: Smallholder Farmers	1,508	2,087	579	38%
B: Medium Scale Farmers	155	280	125	81%
C: Large Scale Farmers	7	7	0	0%
D: Processors	4	27	23	575%
E: Super Dealers	0	0	0	0%
F: Retailers	0	0	0	0%
N/A	0	0	0	0%
N/A	0	0	0	0%
N/A	0	0	0	0%
Share of Remunerated Jobs (%)	45%	82%	36%	80%
Average Daily Wage - Primary production (USD / year)	2.8	2.8	0.0	0%
Average Daily Wage - Post-primary production (USD / year)	0.0	0.0	0.0	0%
<b>Women participation</b>	<b>Current</b>	<b>Planned</b>	<b>Change</b>	<b>Change (%)</b>
Number of women owners	346	528	181	52%
Number of women employed	1,170	2,136	966	83%
Number of women in managerial positions	0	0	0	0%
Proportion of women in managerial positions	0	0	0	0%
<b>Youth participation</b>	<b>Current</b>	<b>Planned</b>	<b>Change</b>	<b>Change (%)</b>
Number of youth owners	100	159	59	59%
Number of youth employed	254	715	461	181%

## KEY RISKS AND MITIGATIONS

RISKS	POTENTIAL IMPACT	PROBABILITY	MITIGATION STRATEGIES
<b>Operational and Strategic Risks</b>			
Inadequate supply and access to desired Soybean seeds	High	High	<ul style="list-style-type: none"> <li>▷ Ongoing advocacy by the Government and private sectors on increased investment in research and development efforts to improve soybean seed multiplication and distribution systems.</li> </ul>
Inadequate processing soybean facilities	High	High	<ul style="list-style-type: none"> <li>▷ On going advocacy by the government and other key stakeholders that support the soybean processing sector.</li> <li>▷ Incentives by the Government in supporting an increase in agricultural investments including soybean processing industries.</li> <li>▷ Engagement of investors for such facilities</li> </ul>
<b>Health, Safety and Environmental Risks</b>			
Drought, excessive rain and frost can negatively impact soybean yields.	High	Medium	<ul style="list-style-type: none"> <li>▷ To use agriculture insurance covers against various perils such as losses due to adverse weather conditions caused by a hailstorm, fire, and drought.</li> <li>▷ To use soybean seeds with improved drought and disease resistance.</li> <li>▷ To develop irrigation schemes to manage water availability during drought.</li> <li>▷ To use agricultural weather information and advisory services.</li> <li>▷ To use water efficient technologies including climate smart agriculture.</li> </ul>
insects, weeds and diseases can damage soybean crops, leading to yield losses.	Medium	Medium	<ul style="list-style-type: none"> <li>▷ To use good agricultural practices and integrated pest management practices with minimal impact to the environment and human health based on the national regulations.</li> </ul>
Biodiversity loss and environmental degradation	Medium	Low	<ul style="list-style-type: none"> <li>▷ Implement conservation practices such as cover cropping and no till farming to reduce soil erosion and nutrient runoff.</li> <li>▷ Participate in voluntary environmental certification programs to demonstrate sustainable practices.</li> <li>▷ To offer financial incentives to farmers who are implementing environmentally friendly initiatives including intercropping.</li> </ul>



Legal, Regulatory and Political Risks			
Regulatory and legal changes	Medium	Medium	<ul style="list-style-type: none"> <li>▷ Stay informed about changes in regulations and laws that may affect your industry or organization.</li> <li>▷ Maintain a strong compliance program to ensure adherence to new requirements.</li> <li>▷ Engage with industry associations and advocacy groups to influence regulatory decision making processes.</li> <li>▷ Maintain good relationships with government officials and policymakers to stay informed and have a voice in the regulatory landscape.</li> </ul>
Market and Financial Risks			
Soybean prices can fluctuate due to domestic and global supply and demand factors.	High	High	<ul style="list-style-type: none"> <li>▷ To diversify marketing strategies and explore alternative markets.</li> <li>▷ Engage private sector for investments and upscaling of existing soy initiatives.</li> <li>▷ Government could establish programs or subsidies that provide price stabilization.</li> <li>▷ To be informed about market trends and adjust production plans accordingly.</li> <li>▷ To put in place market information system accessible to agricultural stakeholder.</li> <li>▷ Establish agricultural market system to reflect on the demand for soybean at both national and international market.</li> </ul>

Permanent Secretary  
Ministry of Agriculture-Administration Department, Kilimo IV  
P.O. Box 218240487 Dodoma, Telegram: "Kilimo Dodoma"  
Tel: +255 733 800 200 | Fax: +255 (026) 2320037  
Email: ps@kilimo.go.tz

